Leichhardt Park
Child Care Centre

Architectural Specification

Revision	Date	Approved by
A	23/3/15	JD
B	20/4/15	JD

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1 GENERAL

1.1 GENERAL

General conditions

Contract: AS4000

Interpretation

General: The words principal, and contract administrator have the same meaning, respectively, as owner and architect, unless the context requires otherwise.

Cross reference: The clause **INTERPRETATION**, in the *General requirements* worksection, also applies.

1.2 THE SITE

Protection of persons and property

Temporary works: Provide and maintain required hoardings, barricades, guards, fencing, shoring, temporary roadways, footpaths, signs, lighting, watching and traffic flagging.

Accessways, services: Do not obstruct or damage roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Determine the location of such services.

Property: Do not interfere with or damage property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site, and trees.

Control of run off stormwater: in accordance with Erosion and Sediment control plan

Rectification

Accessways, services: Rectify immediately any obstruction or damage to roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Provide temporary services whilst repairs are carried out.

Property: Rectify immediately any interference or damage to property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site, and trees.

Existing services

General: Attend to existing services as follows:

- If the service is to be continued, repair, divert or relocate. Submit proposals.
- If the service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service. Submit proposals.
- If the service is to be abandoned, remove redundant parts, and make safe.

Proposals: Submit proposals for action to be taken with respect to existing services before starting this work. Minimise the number and duration of interruptions.

- Purpose of submission: For review.

Adjoining property

Notice: At least 10 working days before commencing work, submit to owners and occupants of adjoining property written notice of intention to commence work and an outline description of the type and extent of work.

1.3 CONSTRUCTION PLANT

Access roads

Owner's existing roads: Use only designated roads.

Parking

Owner's existing parking areas: Use only designated parking areas.

Protective clothing

Protective clothing: Make available protective clothing for the use of visitors.

- Safety helmets: To AS/NZS 1801, Type 1.

- Certification: Required.
  . Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Project signboards

General: Provide project-specific signboards and the following:

- Locate where directed.
- Maintain in good condition for duration of the work.
- Obtain permission for removal.
- Remove on completion.

1.4 BUILDING THE WORKS

Surveys

Setting out: Engage surveyor to set out building in accordance with survey set out drawing

Final survey: required

Survey marks

Definition: The term survey mark means a survey peg, bench mark, reference mark, signal, alignment, level mark or any other mark used or intended to be used for the purpose of setting out, checking or measuring the work.

Care of survey marks: Preserve and maintain the owner's survey marks in their true positions.

Rectification: If the owner's survey marks are disturbed or obliterated, immediately give notice and rectify the disturbance or obliteration.

Safety

Accidents: Promptly notify the architect of the occurrence of the following:

- Accidents involving death or personal injury.
- Accidents involving loss of time.
- Incidents with accident potential such as equipment failure, slides and cave-ins.

Accident reports: Submit reports of accidents.

- Purpose of submission: Information only.

Contractor's representative

General: Must be accessible, and fluent in English and technical terminology.

Subcontracting

General: Submit a complete list of proposed subcontractors and suppliers.

Program of work

Construction program: Show the following:

- Sequence of work.
- Critical paths of activities related to the work.
- Allowance for holidays.
- Activity inter-relationships.
- External dependencies including provision of access, document approvals and work by others.
- Periods within which various stages or parts of the work are to be executed.

Time scale: Working days.

Updated program: Identify changes since the previous issue, and show the estimated percentage of completion for each item of work.

Program chart: Display in the contractor's site office an up-to-date bar chart and network diagram based on the construction program.

1.5 COMPLETION OF THE WORKS

Final cleaning

General: Before the date for practical completion, clean throughout, including interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces. Clean debris from the site, roofs, gutters, downpipes and drainage systems. Remove waste and surplus materials.

Samples: Remove non-incorporated samples, prototypes and sample panels.

Reinstatement

General: Before the date for practical completion, clean and repair damage caused by installation or use of temporary work and restore existing facilities used during construction to original condition.

Removal of plant

General: Within 10 working days after practical completion, remove temporary works and construction plant no longer required. Remove the balance before the end of the defects liability period.

0171B GENERAL REQUIREMENTS

1 GENERAL

1.1 RESPONSIBILITIES

Performance

Structural: If required, provide structures, installations and components as follows:

- Structural design actions: To the AS 1170 series.

Design

Design by contractor: If the contractor provides design, use only appropriately qualified persons and conform to all statutory requirements.

Conflict with the documents: If it is believed that a conflict exists between statutory requirements and the documents, notify the contract administrator immediately and provide a recommendation to resolve the conflict.

Noise levels

General: Install systems within the limits of the contract design and documented equipment performance and as documented in the **Noise level schedule**.

1.2 PRECEDENCE

General

Worksections and referenced documents:

- The requirements of other worksections of the specification override conflicting requirements of this worksection.
- The requirements of the worksections override conflicting requirements of their referenced documents.
- The requirements of the referenced documents are minimum requirements.

1.3 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

Common requirements

Requirement: Conform to the following worksections:

- *Adhesives, sealants and fasteners*.
- *Metals and prefinishes*.
- *Termite management*.
- *Timber products, finishes and treatment*.

Cross referencing styles

Within the text:

- Worksection titles are indicated by *Italicised* text.
- Subsection titles are indicated by **BOLD** text.
- Clause titles are indicated by **BOLD** text.
- Subclause titles are indicated by **Bold** text.

1.4 REFERENCED DOCUMENTS

Contractual relationships

General: Responsibilities and duties of the principal, contractor and contract administrator are not altered by requirements in the documents referenced in this specification.

Current editions

General: Use referenced documents which are the editions, with amendments, current 3 months before the closing date for tenders, except where other editions or amendments are required by statutory authorities.

1.5 INTERPRETATION

Abbreviations

General: For the purposes of this specification the following abbreviations apply:

- AS: Australian Standard.
- BCA: National Construction Code Series Volume One: Building Code of Australia Class 2 to 9 Buildings and Volume Two: Building Code of Australia Class 1 and Class 10 Buildings.
- GRP: Glass Reinforced Plastic.
- IP: Ingress protection.
- NATA: National Association of Testing Authorities.
- NCC: National Construction Code.
- NZS: New Zealand Standard.
- PCA: National Construction Code Series Volume 3: Plumbing Code of Australia.
- PVC: Polyvinyl Chloride.
- PVC-U: Unplasticised Polyvinyl Chloride. Also known as UPVC.
- SDS: Safety data sheets.
- VOC: Volatile Organic Compound.
- WHS: Work Health and Safety.

Definitions

General: For the purposes of this specification, the following definitions apply:

- Attendance: Attendance, provide attendance and similar expressions mean give assistance for examination and testing.
- Contract administrator: Contract administrator has the same meaning as architect or superintendent and is the person appointed by the owner or principal under the contract.
- Contractor: Contractor has the same meaning as builder and is the person or organisation bound to carry out and complete the work under the contract.
- Default: Specified value, product or installation method which is to be provided unless otherwise documented.
- Design life: The period of time for which it is assumed, in the design, that an asset will be able to perform its intended purpose with only anticipated maintenance but no major repair or replacement being necessary.
- Documented: Documented, as documented and similar terms mean contained in the contract documents.
- Economic life: The period of time from the acquisition of an asset to when the asset, while still physically capable of fulfilling its function and with only anticipated maintenance, ceases to be the lowest cost alternative for satisfying that function.
- Electricity distributor: Any person or organisation that provides electricity from an electricity distribution system to one or more electrical installations. Includes distributor, supply authority, network operator, local network service provider, electricity retailer or electricity entity, as may be appropriate in the relevant jurisdiction.
- Fire hazard properties: To BCA A2.4.
- Geotechnical site investigation: The process of evaluating the geotechnical characteristics of the site in the context of existing or proposed construction.
- Give notice: Give notice, submit, advise, inform and similar expressions mean give notice (submit, advise, inform) in writing to the contract administrator.
- High level interface: Systems transfer information in a digital format using an open system interface.
- Hot-dip galvanized: Zinc coated to AS/NZS 4680 after fabrication with coating thickness and mass to AS/NZS 4680 Table 1.
- Ingress protection: IP, IP code, IP rating and similar expression have the same meaning as IP Code in AS 60529.
- Joints:
  . Construction joint: A joint with continuous reinforcement provided to suit construction sequence.

  - . Contraction joint: An opening control joint with a bond breaking coating separating the joint surfaces to allow independent and controlled contraction of different parts or components, induced by shrinkage, temperature changes or other causes. It may include unbound dowels to assist vertical deflection control.
  - . Control joint: An unreinforced joint between or within discrete elements of construction which allows for relative movement of the elements.
  - . Expansion joint: A closing control joint with the joint surfaces separated by a compressible filler to allow axial movement due to thermal expansion or contraction with changes in temperature or creep. It may include unbound dowels to assist vertical deflection control.
  - . Isolation joint: A joint between elements of a structure designed to isolate structural movement while permitting horizontal and/or vertical movement between abutting elements.
  - . Sealant joint: A joint filled with a flexible synthetic compound which adheres to surfaces within the joint to prevent the passage of dust, moisture and gases.
  - . Structural control joint: A control joints (contraction, expansion and isolation) in structural elements when used with applied material and finishes.
  - . Substrate joint: A joint in the substrate which includes construction joints and joints between different materials.
  - . Weakened plane joint: A contraction joint created by forming a groove, extending at least one quarter the depth of the section, either by using a grooving tool, by sawing, or by inserting a premoulded strip.
- Local (government) authority: A body established for the purposes of local government by or under a law applying in a state or territory.
- Low level interface: Systems transfer information via terminals and voltage free contacts.
- Manufacturer's recommendations: Recommendations, instructions, requirements, specifications (and similar expressions) provided in written or other form by the manufacturer and/or supplier relating to the suitability, use, installation, storage and/or handling of a product.
- Metallic-coated: Steel coated with zinc or aluminium-zinc alloy as follows:
  - . Metallic-coated steel sheet: To AS 1397. Metal thicknesses specified are base metal thicknesses.
  - . Ferrous open sections zinc coated by an in-line process: To AS/NZS 4791.
  - . Ferrous hollow sections zinc coated by a continuous or specialised process: To AS/NZS 4792.
- Network utility operator: The entity undertaking the piped distribution of drinking water or natural gas for supply or is the operator of a sewerage system or external stormwater drainage system.
- Obtain: Obtain, seek and similar expressions mean obtain (seek) in writing from the contract administrator.
- Pipe: Includes pipe and tube.
- Practical completion or Defects free completion: The requirements for these stages of completion are defined in the relevant building contract for the project.
- Principal: Principal has the same meaning as owner, client and proprietor and is the party to whom the contractor is legally bound to construct the works.
- Professional engineer: As defined by the BCA.
- Proprietary: Proprietary means identifiable by naming manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
- Prototype: A full size mock-up of components, systems or elements to demonstrate or test construction methods, junctions and finishes, and to define the level of quality.
- Provide: Provide and similar expressions mean supply and install and include development of the design beyond that documented.
- Readily accessible: Capable of being reached quickly and without climbing over or removing obstructions, mounting upon a chair, or using a movable ladder, and in any case not more than 2.0 m above the ground, floor or platform.
- Record drawings: Record drawings has the same meaning as as-installed drawings, as-built drawings and work-as-executed drawings.
- Registered testing authority:

  - . An organisation registered by the National Association of Testing Authorities (NATA) to test in the relevant field; or
  - . An organisation outside Australia registered by an authority recognised by NATA through a mutual recognition agreement; or
  - . An organisation recognised as being a Registered Testing Authority under legislation at the time the test was undertaken.
- Required: Required by the documents, the local council or statutory authorities.
- If required: A conditional specification term for work which may be shown in the documents or is a legislative requirement.
- Sample: A physical example that illustrates products, workmanship, materials, or equipment and establish standards by which the work will be judged. It includes samples, prototypes and sample panels.
- Statutory authority: A public sector entity created by a specific law of the Commonwealth, State or Territory.
- Supply: Supply, furnish and similar expressions mean supply only.
- Tests - completion: Tests carried out on completed installations or systems and fully resolved before the date for practical completion, to demonstrate that the installation or system, including components, controls and equipment, operates correctly, safely and efficiently, and meets performance and other requirements. The contract administrator may direct that completion tests be carried out after the date for practical completion.
- Tests - pre-completion: Tests carried out before completion tests, including:
  - . Production: Tests carried out on a purchased item, before delivery to the site.
  - . Progressive: Tests carried out during installation to demonstrate performance in according with this specification.
  - . Site: Tests carried out on the site.
  - . Type: Tests carried out on an item identical with a production item, before delivery to the site.
- Tolerance: The permitted difference between the upper limit and the lower limit of dimension, value or quantity.
- Verification: Provision of evidence or proof that a performance requirement has been met or a default exists.

1.6 CONTRACT DOCUMENTS

Services diagrammatic layouts

General: Layouts of service lines, plant and equipment shown on the drawings are diagrammatic only, except where figured dimensions are provided or calculable.

Before commencing work:

- Obtain measurements and other necessary information.
- Coordinate the design and installation in conjunction with all trades.

Levels

General: Spot levels take precedence over contour lines and ground profile lines.

Drawings and manuals for existing services

Subsurface services: Information shown on the drawings relating to underground or submerged services is accurate to the following quality level:

- Quality level to AS 5488: D

Warranty: No warranty is given as to the completeness or accuracy of drawings and/or manuals of existing services.

1.7 INSPECTION

Notice

Concealment: If notice of inspection is required in respect of parts of the works that are to be concealed, advise when the inspection can be made before concealment.

Tests: Give notice of the time and place of documented tests.

Minimum notice: As documented in the **Notices schedule**.

Light level requirements: to AS/NZS 1680.2.4.

Attendance

General: Provide attendance for documented inspections and tests.

1.8 SUBMISSIONS

General

Submit to: contract administrator

Default timing: Make submissions at least 5 working days before ordering products or starting installation of the respective portion of the works.

Proposed products schedules: If major products are not specified as proprietary items, submit a schedule of those proposed for use within 3 weeks of site possession.

Identification: Identify the project, contractor, subcontractor or supplier, manufacturer, applicable product, model number and options, as appropriate and include pertinent contract document references. Include service connection requirements and product certification.

Non-compliance: Identify proposals for non-compliance with project requirements, and characteristics which may be detrimental to successful performance of the completed work.

Errors: If a submission contains errors, make a new or amended submission as appropriate, indicating changes made since the previous submission.

Electronic copies file format: DWG, PDF

Transmission medium: EMAIL,CD ROM

Hard copy quantity:

- Loose documents up to and including A3: One copy.

Standard contract drawing size: A1

Authority approvals

Authorities' approvals: Submit documents showing approval by the authorities whose requirements apply to the work.

Correspondence: Submit copies of correspondence and notes of meetings with authorities whose requirements apply to the work.

Building penetrations

General: If it is proposed to penetrate or fix to the following, submit details of the methods proposed to maintain the required structural, fire and other properties:

- Structural building elements including external walls, fire walls, fire doors and access panels, other tested and rated assemblies or elements, floor slabs and beams.
- Membrane elements including damp-proof courses, waterproofing membranes and roof coverings. If penetrating membranes, provide a waterproof seal between the membrane and the penetrating component.

Certification

General: Submit certification that the plant and equipment submitted meets all requirements of the contract documents.

Execution details

General: Before starting the installation of building services, submit the following:

- Embedded services: Proposed method for embedding services in concrete walls or floors or chasing into concrete or masonry walls.
- Fixing of services: Typical details of locations, types and methods of fixing services to the building structure.
- Inaccessible services: If services will be enclosed and not accessible after completion, submit proposals for location of service runs and fittings.

Materials

Product certification: If products conformance to product certification schemes, submit evidence of conformance.

Product data: For proprietary equipment, submit the manufacturer's product data as follows:

- Technical specifications and drawings.
- Type-test reports.

- Performance and rating tables.
- Recommendations for installation and maintenance.

Samples

Submission: Submit nominated samples.

Incorporation of samples: If it is intended to incorporate samples into the works, submit proposals. Incorporate samples in the works which have been endorsed for inclusion. Do not incorporate other samples.

Retention of samples: Keep endorsed samples in good condition on site, until the date of practical completion.

Shop drawings

General: Include dimensioned drawings showing details of the fabrication and installation of structural elements, building components, services and equipment, including relationship to building structure and other services, cable type and size, and marking details.

Diagrammatic layouts: Coordinate work shown diagrammatically in the contract documents, and submit dimensioned set-out drawings.

Record drawings: Submit all documented shop drawings amended to include changes made during the progress of the work and up to the end of the defects liability period.

Services coordination: Coordinate with other building and service elements. Show adjusted positions on the shop drawings.

Space requirements: Check space requirements of equipment and services indicated diagrammatically in the contract documents.

Submission medium: electronic

Electronic or Hard copy. Nominate alternatives or include both.

Checking: Make sure that the drawings have been checked before submission.

Building work drawings for building services: Submit detailed dimensioned drawings showing all:

- Access doors and panels.
- Conduits to be cast in slabs.
- Holding down bolts and other anchorage and/or fixings required complete with loads to be imposed on the structure during installation and operation.
- Openings, penetrations and block-outs.
- Sleeves.
- Plinths, kerbs and bases.
- Required external openings.

Tests

General: Submit an inspection and testing plan which is consistent with the construction program. Include particulars of test stages and procedures.

Test reports: Submit written reports on nominated tests.

2 PRODUCTS

2.1 GENERAL

Manufacturers' or suppliers' recommendations

General: Provide and select, if no selection is given, transport, deliver, store, handle, protect, finish, adjust and prepare for use the manufactured items in conformance with the recommendations of the manufacturer or supplier.

Proprietary items/systems/assemblies: Assemble, install or fix to substrate in conformance with the recommendations of the manufacturer or supplier.

Project modifications: Advise of activities that supplement, or are contrary to the recommendations of the manufacturers or supplier.

Sealed containers

General: If materials or products are supplied by the manufacturer in closed or sealed containers or packages, bring the materials or products to point of use in the original containers or packages.

Sources policy

General: Refer Leichhardt Council Purchasing Policies supplied with tender

Prohibited materials

General: Do not provide the following:

- Materials, exceeding the limits of those listed, in the Safe Work Australia Hazardous Substances Information System (HSIS).
- Materials that use chlorofluorocarbon (CFC) or hydro chlorofluorocarbon (HCFC) in the manufacturing process.

Substitutions

Identified proprietary items: Identification of a proprietary item does not necessarily imply exclusive preference for the item so identified, but indicates the necessary properties of the item.

Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives, including the following:

- Evidence that the performance is equal to or greater than that specified.
- Evidence of conformity to a cited standard.
- Samples.
- Essential technical information, in English.
- Reasons for the proposed substitutions.
- Statement of the extent of revisions to the contract documents.
- Statement of the extent of revisions to the construction program.
- Statement of cost implications including costs outside the contract.
- Statement of consequent alterations to other parts of the works.

Availability: If the documented products or systems are unavailable within the time constraints of the construction program, submit evidence.

Criteria: If the substitution is for any reason other than unavailability, submit evidence that the substitution:

- Is of net enhanced value to the principal.
- Is consistent with the contract documents and is as effective as the identified item, detail or method.

2.2 TESTS

Attendance

General: Provide attendance on tests.

Testing authorities

General: Except for site tests, have tests carried out by a Registered testing authority and submit test reports.

- Reports: Submit copies of test reports, including certificates for type tests, showing the observations and results of tests and conformance or non-conformance with requirements.
- Site tests: Use instruments calibrated by authorities accredited by a Registered testing authority.

2.3 MATERIALS AND COMPONENTS

Consistency

General: For each material or product use the same manufacturer or source and provide consistent type, size, quality and appearance.

Corrosion resistance

General: Conform to the following atmospheric corrosivity category as defined in AS/NZS 2312.

Atmospheric corrosivity category: Category C

Galvanizing

Severe conditions: Galvanize mild steel components (including fasteners) to AS 1214 or AS/NZS 4680 as appropriate, if:

- Exposed to weather.
- Embedded in masonry.
- Exposed to or in air spaces behind the external leaf of masonry walls.

- In contact with chemically treated timber, other than copper chrome arsenate (CCA).

3 EXECUTION

3.1 OFF-SITE DISPOSAL

Removal of material
General: Dispose of building waste material off site to the requirements of the relevant authorities.

3.2 WALL CHASING

Holes and chases
General: If holes and chases are required in masonry walls, make sure structural integrity of the wall is maintained. Do not chase walls nominated as fire-resistance or acoustic rated.

Parallel chases or recesses on opposite faces of a wall: Not closer than 600 mm to each other.

Chasing of blockwork: Only in core-filled hollow blocks or in solid blocks which are not designated as structural and to the **Concrete blockwork chasing table**.

Concrete blockwork chasing table

Block thickness (mm)	Depth of chase (maximum mm)
190	35
140	25
90	20

3.3 FIXING

General
Suitability: If equipment is not suitable for fixing to non-structural building elements, fix directly to structure and trim around penetrations in non-structural elements.

Fasteners
General: Use proprietary fasteners capable of transmitting the loads imposed, and sufficient for the rigidity of the assembly.

3.4 SERVICES CONNECTIONS

Connections
General: Connect to network distributor services or service points. Excavate to locate and expose connection points. Reinstate the surfaces and facilities that have been disturbed.

Network distributors' requirements
General: If the network distributor elects to perform or supply part of the works, make the necessary arrangements. Install equipment supplied, but not installed, by the authorities.

3.5 SERVICES INSTALLATION

General
Fixing: If non-structural building elements are not suitable for fixing services to, fix directly to structure and trim around holes or penetrations in non-structural elements.

Installation: Install equipment and services plumb, fix securely and organise reticulated services neatly. Allow for movement in both structure and services.

Concealment: Unless otherwise documented, conceal all cables, ducts, trays and pipes except where installed in plant spaces, ceiling spaces and riser cupboards. If possible, do not locate on external walls.

Lifting: Provide heavy items of equipment with permanent fixtures for lifting as recommended by the manufacturer.

Suspended ground floors: Keep all parts of services under suspended ground floors at least 150 mm clear of the ground surface. Make sure services do not impede access.

Arrangement: Arrange services so that services running together are parallel with each other and with adjacent building elements.

Dissimilar metals
General: Join dissimilar metals with fittings of electrolytically compatible material.

Temporary capping
Pipe ends: During construction protect open ends of pipe with metal or plastic covers or caps.

Piping
General: Install piping in straight lines at uniform grades without sags. Arrange to prevent air locks. Provide sufficient unions, flanges and isolating valves to allow removal of piping and fittings for maintenance or replacement of plant.

Spacing: Provide at least 25 mm clear between pipes and between pipes and building elements, additional to insulation.

Changes of direction: Provide long radius elbows or bends and sets where practicable, and swept branch connections. Provide elbows or short radius bends where pipes are led up or along walls and then through to fixtures. Do not provide mitred fittings.

Vibration: Arrange and support piping so that it remains free from vibration whilst permitting necessary movements. Minimise the number of joints.

Embedded pipes: Do not embed pipes that operate under pressure in concrete or surfacing material.

Valve groupings: If possible, locate valves in groups.

Pressure testing precautions: Isolate items not rated for the test pressure. Restrain pipes and equipment to prevent movement during pressure testing.

Differential movement
General: If the geotechnical site investigation report predicts differential movements between buildings and the ground in which pipes or conduits are buried, provide control joints in the pipes or conduits, as follows:

- Arrangement: Arrange pipes and conduits to minimise the number of control joints.
- Magnitude: Accommodate the predicted movements.

3.6 BUILDING PENETRATIONS

Penetrations
Fire-resistance rated building elements: Seal penetrations with a system conforming to AS 4072.1.

Non fire-resisting building elements: Seal penetrations around conduits and sleeves. Seal around cables within sleeves. If the building element is acoustically rated, maintain the rating.

Sleeves
General: If piping or conduit penetrates building elements, provide metal or PVC-U sleeves formed from pipe sections as follows:

- Movement: Arrange to permit normal pipe or conduit movement.
- Diameter (for non fire-resisting rated building elements): Sufficient to provide an annular space around the pipe or pipe insulation of at least 12 mm.
- Prime paint ferrous surfaces.
- Terminations:
  . If cover plates are fitted: Flush with the finished building surface.
  . In fire-resisting and acoustic-rated building elements: 50 mm beyond finished building surface.
  . In floors draining to floor wastes: 50 mm above finished floor.
  . Elsewhere: 5 mm beyond finished building surface.
  . Termite management: To AS 3660.1.
- Thickness:
  . Metal: 1 mm or greater.
  . PVC-U: 3 mm or greater.

Sleeves for cables: For penetrations of cables not enclosed in conduit through ground floor slabs, beams and external walls provide sleeves formed from PVC-U pipe sections.

3.7 CONCRETE PLINTHS

Construction

General: Provide concrete plinths as documented and under all equipment located on concrete floor slabs as follows:

- Concrete: Grade N20.
- Finish: Steel float flush with the surround.
- Reinforcement: Single layer of F62 fabric.
- Surround: Provide galvanized steel surround at least 75 mm high and 1.6 mm thick. Fix to the floor with masonry anchors. Fill with concrete.

3.8 SUPPORT AND STRUCTURE

General

Requirement: Provide incidental supports and structures to suit the services.

3.9 PIPE SUPPORTS

Support systems

General: Provide proprietary support systems of metallic-coated steel construction.

Vertical pipes: Provide anchors and guides to maintain long pipes in position, and supports to balance the mass of the pipe and its contents.

Saddles: Do not provide saddle type supports for pipes greater than DN 25.

Dissimilar metals: If pipe and support materials are dissimilar, provide industrial grade electrically non-conductive material securely bonded to the pipe to separate them. Provide fixings of electrolytically compatible material.

Uninsulated pipes: Clamp piping supports directly to pipes.

Insulated pipes:

- Spacers: Provide spacers at least as thick as the insulation between piping supports and pipes. Extend either side of the support by at least 20 mm.
- Spacer material: Rigid insulation material of sufficient strength to support the piping and suitable for the temperature application.

Support spacing

Cold and heated water pipes: To AS/NZS 3500.1 Table 5.2. Provide additional brackets, clips or hangers to prevent pipe movement caused by water pressure effects.

Sanitary plumbing: To AS/NZS 3500.2 Table 9.1.

Fuel gas: To AS/NZS 5601.1 Table 5.5.

Other pipes: To AS/NZS 3500.1 Table 5.2.

Hangers

Conform to the **Hanger size table**.

Hanger size table

Nominal pipe size (DN)	Minimum hanger diameter (mm) for single hangers
50 maximum	9.5
65 to 90	12.7
100 to 125	15.8
150 to 200	19.0

3.10 PLANT AND EQUIPMENT

General

Location: Locate so that failure of plant and equipment (including leaks) does not create a hazard for the building occupants and causes a minimum or no damage to the building, its finishes and contents including water sensitive equipment or finishes.

Safe tray and an overflow pipe: Provide to each tank, hot water heater and storage vessel.

3.11 ACCESS FOR MAINTENANCE

General

Standards: Conform to the relevant requirements of AS 1470, AS 1657, AS/NZS 1892.1, AS 2865 and AS/NZS 3666.1.

Work Health and Safety: Conform to the requirements of the applicable Work Health and Safety regulations.

Protection from injury: Protect personnel from injury caused by contact with objects including those that are sharp, hot or protrude at low level.

Plant room flooring surfaces: R10 Slip resistance classification to AS 4586.

Trip hazards: Do not run small services including drains and conduits across floors where they may be a trip hazard.

Manufacturer's standard equipment: Modify manufacturer's standard equipment when necessary to provide the plant access documented.

Clearances

Minimum clearances for access: Conform to the following:

- ≥ 2100 mm clear vertically above horizontal floors, ground and platforms.
- Preferably ≥ 750 m clear, but in no case less than 600 mm horizontally between equipment or between equipment and building features including walls.
- If tools are required to operate, adjust or remove equipment, provide sufficient space so that the tools can be used in their normal manner and without requiring the user to employ undue or awkward force.
- If equipment components are hinged or removable, allow the space recommended by the manufacturer.
- Within plant items: Conform to the preceding requirements, and in no case less than the clearances recommended in BS 8313.

Elevated services other than in occupied areas

Access classifications:

- Access class A: Readily accessible. Provide clear and immediate access to and around plant items. If plant or equipment is located more than 2.0 m above the ground, floor or platform, provide a platform with handrails accessible by a stair, all to AS 1657.
- Access class B: If the plant item requiring access is located more than 2.0 m above the ground, floor or platform, provide a platform with handrails accessible by a non-vertical ladder, all to AS 1657.
- Access class C: Locate plant so that temporary means of access conforming to Work health and Safety regulations can be provided.

Areas in which access is restricted to authorised maintenance personnel: Provide access as follows:

- Instruments, gauges and indicators (including warning and indicating lights) requiring inspection at any frequency: Readily accessible.
- Access required monthly or more frequently: Access class A.
- Access required between monthly and yearly: Access class A or B.
- Access required less frequently than yearly: Access class A, B or C.

Other areas: Provide access as follows:

- Locate to minimise inconvenience and disruption to building occupants or damage to the building structure or finishes.
- In suspended ceilings, locate items of equipment that require inspection and/or maintenance above tiled parts. If not possible, provide access panels where located above set plaster or other inaccessible ceilings. Arrange services and plant locations to reduce the number of access panels. Coordinate with other trades to use common access panels where feasible.
- Do not locate equipment requiring access above partitions.
- Instruments, gauges and other items requiring inspection at any frequency: Readily accessible.
- Access required monthly or more frequently: Readily accessible. Provide clear and immediate access to and around plant items, located less than 2 m above the ground or floor.

- Access required less frequently than monthly: Allow space and locate for safe temporary access.
- Labelling: If equipment is concealed in ceilings, provide marking to **MARKING AND LABELLING**, **Equipment concealed in ceilings**.

Facilities for equipment removal and replacement

Requirement: Provide facilities to permit removal from the building and replacement of plant and equipment, including space large enough to accommodate it and any required lifting and/or transportation equipment. Arrange plant so that large and/or heavy items can be moved with the minimum of changes of direction.

Removal of components: Allow sufficient space for removal and replacement of equipment components including air filters, tubes of shell and tube heat exchangers, removable heat exchanger bundles, coils and fan shafts. Provide access panels or doors large enough to permit the safe removal and replacement of components within air handling units.

Facilities for access

Equipment behind hinged doors: Provide doors opening at least 150°.

Equipment behind removable panels: Provide panels with quick release fasteners or captive metal thread screws.

Removable panels: Provide handles to permit easy and safe removal and replacement.

Insulated plant and services: If insulation must be removed to access plant and services provide access for maintenance, arranged so it can be repeatedly removed and replaced without damage.

Piping:

Conform to the following:

- Provide access and clearance at fittings which require maintenance, inspection or servicing, including control valves and joints intended to permit pipe removal.
- Arrange piping so that it does not interfere with the removal or servicing of associated equipment or valves or block access or ventilation openings.
- Preferably run piping, conduits, cable trays and ducts at high level and drop vertically to equipment.

Electrical and controls

Electrical equipment: Provide clearances and access space to AS/NZS 3000.

Switchboards and electrical control equipment: Locate near the main entrance to plant space. Arrange plant so that, to the greatest extent possible, switchboards are visible from the plant being operated.

Control panels: Locate near and visible from the plant controlled.

3.12 VIBRATION SUPPRESSION

General

Requirement: Minimise the transmission of vibration from rotating or reciprocating equipment to other building elements.

Standard

Rotating and reciprocating machinery noise and vibration: Vibration severity in Zone A to AS 2625.1 and AS 2625.4.

Speeds

General: If no maximum speed is prescribed do not exceed 1500 r/min for direct driven equipment.

Connections

General: Provide flexible connections to rotating machinery and assemblies containing rotating machinery. Isolate pipes by incorporating sufficient flexibility into the pipework or by use of proprietary flexible pipe connections installed so that no stress is placed on pipes due to end reaction.

Inertia bases

General: If necessary to achieve the required level of vibration isolation, provide inertia bases having appropriate mass and conforming as follows:

- Construction: Steel or steel-framed reinforced concrete. Position foundation bolts for equipment before pouring concrete.
- Supports: Support on vibration isolation mountings using height saving support brackets.

Vibration isolation mountings

General: Except for external equipment that is not connected to the structure of any building, support rotating or reciprocating equipment on mountings as follows:

- For static deflections < 15 mm: Single or double deflection neoprene in-shear mountings incorporating steel top and base plates and a tapped hole for bolting to equipment.
- For static deflections ≥ 15 mm: Spring mountings.

Selection: Provide mountings selected to achieve 95% isolation efficiency at the normal operating speeds of the equipment.

Installation: Set and adjust vibration isolation mounting supports to give clearance for free movement of the supports.

Spring mountings: Provide freestanding laterally stable springs as follows:

- Clearances: ≥ 12 mm between springs and other members such as bolts and housing.
- High frequency isolation: 5 mm neoprene acoustic isolation pads between baseplate and support.
- Levelling: Provide bolts and lock nuts.
- Minimum travel to solid: ≥ 150% of the designated minimum static deflection.
- Ratio of mean coil diameter to compressed length at the designated minimum static deflection: ≥ 0.8:1.
- Snubbing: Snub the springs to prevent bounce at start-up.
- Vertical resilient limit stops: To prevent spring extension when unloaded, to serve as blocking during erection and which remain out of contact during normal operation.

3.13 FINISHES TO BUILDING SERVICES

General

Requirement: If exposed to view (including in plant rooms), paint new building services and equipment. Surfaces painted or finished off-site: Conform to the *Metals and prefinishes* worksection.

Exceptions: Do not paint chromium or nickel plating, anodised aluminium, GRP, stainless steel, non-metallic flexible materials and normally lubricated machined surfaces. Surfaces with finishes applied off-site need not be re-painted on-site provided the corrosion resistance of the finish is not less than that of the respective finish documented.

Standard: Conform to the recommendations of AS/NZS 2311 Sections 3, 6 and 7 or AS/NZS 2312 Sections 5, 8 and 10, as applicable.

Powder coating

Standard:

- Aluminium for architectural applications: To AS 3715.
- Other metals: To AS 4506.

Painting systems

New unpainted interior surfaces: To AS/NZS 2311 Table 5.1.

New unpainted exterior surfaces: To AS/NZS 2311 Table 5.2.

Paint application

Coats: Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Make sure each coat of paint or clear finish is uniform in colour, gloss, thickness and texture and free of runs, sags, blisters or other discontinuities.

Combinations: Do not combine paints from different manufacturers in a paint system.

Protection: Remove fixtures before starting to paint and refix in position undamaged when painting is complete.

Underground metal piping

Corrosion protection: Provide corrosion protection for the following:

- Underground ferrous piping.
- Underground non-ferrous metal piping in corrosive environments.

Protection methods: Select from the following:

- Cathodic protection: Sacrificial anodes or impressed current. Incorporate a facility for periodic testing. Conform to the recommendations of AS 2832.1.

- Continuous wrapping using proprietary petroleum taping material.
- Impermeable flexible plastic coating.
- Sealed polyethylene sleeve.

Low VOC emitting paints
Paint types: To the recommendations of AS/NZS 2311 Table 4.2.

3.14 MARKING AND LABELLING

General
Requirement: Mark and label services and equipment for identification purposes as follows:

- Locations exposed to weather: Provide durable materials.
- Pipes, conduits and ducts: To AS 1345 throughout its length, including in concealed spaces.
- Cables: Label to indicate the origin and destination of the cable.

Consistency: Label and mark equipment using a consistent scheme across all services elements of the project.

Electrical accessories
General: Label isolating switches and outlets to identify circuit origin.

Points lists
Automatic control points: Provide plasticised, fade-free points lists for each automatic control panel. Store in a pocket on the door of the panel. Lists to include terminal numbers, point addresses, short and long descriptors.

Pressure vessels
General: Mount manufacturer's certificates in glazed frames on a wall next to the vessel.

Valves and pumps
General: Label to associate pumps with their starters and valves. Screw fix labels to body or attach label to valve handwheels with a key ring.

Underground services
Survey: Accurately record the routes of underground cables and pipes before backfilling. Include on the record drawings.

Records: Provide digital photographic records of underground cable and pipe routes before backfilling. Include in operation and maintenance manual.

Location marking: Accurately mark the location of underground cables and pipes with route markers consisting of a marker plate set flush in a concrete base, engraved to show the direction of the line and the name of the service.

Markers: Place markers at ground level at each joint, route junction, change of direction, termination and building entry point and in straight runs at intervals of not more than 100 m.

Marker bases: 200 mm diameter x 200 mm deep, minimum concrete.

Direction marking: Show the direction of the cable and pipe run by means of direction arrows on the marker plate. Indicate distance to the next marker.

Plates: Brass, aluminium or stainless steel with black filled engraved lettering, minimum size 75 x 75 x 1 mm thick.

Plate fixing: Waterproof adhesive and 4 brass or stainless steel countersunk screws.

Marker height: Set the marker plate flush with paved surfaces, and 25 mm above other surfaces.

Marker tape: Where electric bricks or covers are not provided over underground wiring, provide a 150 mm wide yellow or orange marker tape bearing the words WARNING – electric cable buried below, laid in the trench 150 mm below ground level.

Labels and notices
Materials: Select from the following:

- Cast metal.
- For indoor applications only, engraved two-colour laminated plastic.
- Proprietary pre-printed self-adhesive flexible plastic labels with machine printed black lettering.
- Stainless steel or brass minimum 1 mm thick with black filled engraved lettering.

Emergency functions: To AS 1319.

Colours: Generally to AS 1345 as appropriate, otherwise black lettering on white background except as follows:

- Danger, warning labels: White lettering on red background.
- Main switch and caution labels: Red lettering on white background.

Edges: If labels exceed 1.5 mm thickness, radius or bevel the edges.

Fixing: Fix labels securely using screws, rivets, proprietary self-adhesive labels or double-sided adhesive tape and as follows:

- If labels are mounted in extruded aluminium sections, use rivets or countersunk screws to fix the extrusions.
- Use aluminium or monel rivets for aluminium labels.

Label locations: Locate labels so that they are easily seen and are either attached to, below or next to the item being marked.

Labelling text and marking: To correspond to terminology and identifying number of the respective item as shown on the record drawings and documents and in operating and maintenance manuals.

Lettering heights:

- Danger, warning and caution notices: Minimum 10 mm for main heading, minimum 5 mm for remainder.
- Equipment labels within cabinets: Minimum 3.5 mm.
- Equipment nameplates: Minimum 40 mm.
- Identifying labels on outside of cabinets: Minimum 5 mm.
- Isolating switches: Minimum 5 mm.
- Switchboards, main assembly designation: Minimum 25 mm.
- Switchboards, outgoing functional units: Minimum 8 mm.
- Switchboards, sub assembly designations: Minimum 15 mm.
- Valves: Minimum 20 mm.
- Self-adhesive flexible plastic labels:
  - . Labels less than 2000 mm above floor: 3 mm on 6 mm wide tape.
  - . Labels minimum 2000 mm above floor: 8 mm on 12 mm wide tape.
  - . Other locations: Minimum 3 mm.

Operable devices: Mark to provide a ready means of identification. Include the following:

- Controls.
- Indicators, gauges, meters.
- Isolating switches.

Vapour barriers: Do not penetrate vapour barriers.

3.15 SOFTWARE

General

Requirement: Provide the software required for the operation and management of building services systems and equipment.

3.16 WARRANTIES

General

Requirement: If a warranty is documented, name the principal as warrantee. Register with manufacturers as necessary. Retain copies delivered with components and equipment.

Warranty period: Start warranty periods at acceptance of installation.

Approval of installer: If installation is not by manufacturer, and product warranty is conditional on the manufacturer's approval of the installer, submit the manufacturer's written approval of the installing firm.

3.17 OPERATION AND MAINTENANCE MANUALS

General

Requirement: Submit operation and maintenance manuals for the whole of the work.

Contents

Requirement: Include the following:

- Table of contents: For each volume. Title to match cover.
- Directory: Names, addresses, and telephone and facsimile numbers of principal consultant, subconsultants, contractor, subcontractors and names of responsible parties.
- Record drawings: Complete set of record drawings, full size.
- Drawings and technical data: As necessary for the efficient operation and maintenance of the installation. Include:
  . Switchgear and controlgear assembly circuit schedules including electrical service characteristics, controls and communications.
  . Charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- Installation description: General description of the installation.
- Systems descriptions and performance: Technical description of the systems installed and mode of operation, presented in a clear and concise format readily understandable by the principal's staff. Identify function, normal operating characteristics, and limiting conditions.
- Systems performance: Technical description of the mode of operation of the systems installed.
- Baseline data: To AS 1851.
- Documentation to AS 1851 including the schedule of essential functionality and performance requirements.
- Equipment descriptions:
  . Name, address, email address and telephone and facsimile numbers of the manufacturer and supplier of items of equipment installed, together with catalogue list numbers.
  . Schedules (system by system) of equipment, stating locations, duties, performance figures and dates of manufacture. Provide a unique code number cross-referenced to the record and diagrammatic drawings and schedules, including spare parts schedule, for each item of equipment installed.
  . Manufacturers' technical literature for equipment installed, assembled specifically for the project, excluding irrelevant matter. Mark each product data sheet to clearly identify specific products and component parts used in the installation, and data applicable to the installation.
  . Supplements to product data to illustrate relations of component parts. Include typed text as necessary.
- Certificates:
  . Certificates from authorities.
  . Copies of manufacturers' warranties.
  . Product certification.
  . Test certificates for each service installation and all equipment.
  . Test reports
  . Test, balancing and commissioning reports.
  . Control system testing and commissioning results.
- 7 day record of all trends at commissioning.
- Operation procedures:
  . Manufacturers' technical literature as appropriate.
  . Safe starting up, running-in, operating and shutting down procedures for systems installed. Include logical step-by-step sequence of instructions for each procedure.
  . Control sequences and flow diagrams for systems installed.
  . Legend for colour-codes services.
  . Schedules of fixed and variable equipment settings established during commissioning and maintenance.
- Maintenance procedures:

  - Detailed recommendations for periodic maintenance and procedures, including schedule of maintenance work including frequency and manufacturers' recommended tests.
  - Manufacturer's technical literature as appropriate. Register with manufacturer as necessary. Retain copies delivered with equipment.
  - Safe trouble-shooting, disassembly, repair and reassembly, cleaning, alignment and adjustment, balancing and checking procedures. Provide logical step-by-step sequence of instructions for each procedure.
  - Schedule of spares recommended to be held on site, being those items subject to wear or deterioration and which may involve the principal in extended deliveries when replacements are required. Include complete nomenclature and model numbers, and local sources of supply.
  - Schedule of normal consumable items, local sources of supply,and expected replacement intervals up to a running time of 40 000 hours. Include lubrication schedules for equipment.
  - Schedules for recording recommissioning data so that changes in the system over time can be identified.
  - Instructions for use of tools and testing equipment.
  - Emergency procedures, including telephone numbers for emergency services, and procedures for fault finding.
  - Safety data sheets (SDS).
  - Instructions and schedules conforming to AS 1851, AS/NZS 3666.2, AS/NZS 3666.3 and AS/NZS 3666.4.
- Maintenance records:
  - Prototype service records conforming to AS 1851 prepared to include project specific details.
  - Prototype periodic maintenance records and report to AS/NZS 3666.2, AS/NZS 3666.3 and AS/NZS 3666.4 as appropriate, prepared to include project specific details.
  - Submit, in binders which match the manuals, loose leaf log book pages designed for recording completion activities including operational and maintenance procedures, materials used, test results, comments for future maintenance actions and notes covering the condition of the installation. Include completed log book pages recording the operational and maintenance activities performed up to the time of practical completion.
  - Number of pages: The greater of 100 pages or enough pages for the maintenance period and a further 12 months.

Format – electronic copies

Printing: Except for drawings required in the **RECORD DRAWINGS** clause provide material that can be legibly printed on A4 size paper.

Scope: Provide the same material as documented for hardcopy in electronic format.

Quantity and format: Conform to **Submissions – electronic copies**.

Format – hard copy

General: A4 size loose leaf, in commercial quality, 4 ring binders with hard covers, each indexed, divided and titled. Include the following features:

- Cover: Identify each binder with typed or printed title *OPERATION AND MAINTENANCE MANUAL*, to spine. Identify title of project, volume number, volume subject matter, and date of issue.
- Dividers: Durable divider for each separate element, with typed description of system and major equipment components. Clearly print short titles under laminated plastic tabs.
- Drawings: Fold drawings to A4 size with title visible, insert in plastic sleeves (one per drawing) and accommodate them in the binders.
- Pagination: Number pages.
- Ring size: 50 mm maximum, with compressor bars.
- Text: Manufacturers' printed data, including associated diagrams, or typewritten, single-sided on bond paper, in clear concise English.

Number of copies: 3.

Date for submission

Date for draft submission: The earlier of the following:

- 2 weeks before the date for practical completion.

- Commencement of training on services equipment.

Date for final submission: Within 2 weeks after practical completion.

3.18 CLEANING

Final cleaning

General: Before the date for practical completion, clean throughout, including all exterior and interior surfaces except those totally and permanently concealed from view.

Labels: Remove all labels not required for maintenance.

3.19 PERIODIC MAINTENANCE OF SERVICES

General

Requirement: During the maintenance period, carry out periodic inspections and maintenance work as recommended by manufacturers of supplied equipment, and promptly rectify faults.

Emergencies: Attend emergency calls promptly.

Annual maintenance: Carry out recommended annual maintenance procedures before the end of the maintenance period.

Maintenance period: The greater of the defects liability period and the period documented in the **Maintenance requirements schedule**.

Maintenance program

General: Submit details of maintenance procedures and program, relating to installed plant and equipment, 6 weeks before the date for practical completion. Indicate dates of service visits. State contact telephone numbers of service operators and describe arrangements for emergency calls.

Maintenance records

General: Record in binders provided with the Operation and maintenance manuals.

Referenced documents: If referenced documents or technical worksections require that log books or records be submitted, include this material in the maintenance records.

Service visits: Record comments on the functioning of the systems, work carried out, items requiring corrective action, adjustments made and name of service operator. On completion of the visit, obtain the signature of the principal's designated representative on the record of the work undertaken.

Site control

General: Report to the principal’s designated representative on arriving at and before leaving the site.

3.20 POST-CONSTRUCTION MANDATORY INSPECTIONS AND MAINTENANCE

General

Requirement: For the duration of the defects liability period, provide inspections and maintenance of safety measures required by the following:

- AS 1851.
- Other statutory requirements applicable to the work.

Records: Provide mandatory records.

Certification: Certify that mandatory inspections and maintenance have been carried out and that the respective items conform to statutory requirements. Submit certification.

Annual inspection: Provide an annual inspection and maintenance immediately prior to the end of the defects liability period.

4 SELECTIONS

4.1 MAINTENANCE

Maintenance requirements schedule

Provision	Maintenance period (months)	Requirement
Mechanical	12 months	In accordance with mechanical documentation

Provision	Maintenance period (months)	Requirement
Landscape	12 months	In accordance with landscape documentation
Hydraulic/stormwater	12 months	In accordance with hydraulic documentation

0172B ENVIRONMENTAL MANAGEMENT

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide environmental management, as documented.

Management and control measures
Implementation: To management and control measures documented in **EXECUTION**.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):

- *General requirements*.
- [complete/delete]

1.3 INTERPRETATION

Abbreviations
General: For the purposes of this worksection the following abbreviations apply:

- EIA: Environmental impact assessment.
- EMP: Environmental management plan.

Definitions
General: For the purposes of this worksection the following definitions apply:

- Authorities: Any authority or agency covering statutory requirements relating to the project, including clearances for work in that particular area.
- Clearances: A formal certificate, approval or condition issued by an authority to allow work to be carried out in a particular area.
- Contamination of land: The presence of a substance in, on or under the land which is a designated hazardous material and/or is at a concentration above that which is normally found in that locality, such that there presents a risk of harm to human health or to the environment.
- Environment: The physical factors of the surroundings of human beings including the land, waters, atmosphere, climate, sound, odours, tastes, the biological factors of animals and plants and the social factor of aesthetics.
- Environmental audits: A review of environment management practices, in particular the evaluation of a site for environmental liability.
- Environmental impact assessment: A method for predicting environmental impacts of a proposed development including minimising identified impacts.
- Environmental management plan: A project or site specific plan describing the management of the environmental issues and considerations for the activity being undertaken. This applies to the design, construction and operation of the buildings, external works and infrastructure.
- Organic waste: Includes all food wastes, vegetative wastes from land clearing and pruning operations, biosolids produced from the treatment of liquid wastes, garden wastes and forestry waste (bark and saw dust) and paper and cardboard products.
- Pollution incident: An incident or set of circumstances during or as a consequence of which there is, or is likely to be a leak, spill or other escape of a substance as a result of which pollution has occurred, is occurring or is likely to occur.
- Weed: An invasive plant that degrades natural areas, reduces the sustainability or affects the health of people and animals.

1.4 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:

- Discovery of non-conforming items, e.g. contamination.
- Completed removal or rectification of non-conforming items.
- Discovery of unexpected finds.

1.5 SUBMISSIONS

Submissions program

Time for submissions: [complete/delete]

2 EXECUTION

2.1 ENVIRONMENTAL MANAGEMENT PLAN

Control measures

Project description: [complete/delete]

- Site location: [complete/delete]
- Construction activities: [complete/delete]
- Project schedule: [complete/delete]

EMP context: [complete/delete]

EMP objective and environmental policy: [complete/delete]

Assignment of responsibility for environmental controls: [complete/delete]

Conditions of approvals, licences and permits to meet statutory requirements: [complete/delete]

Environmental training plan and procedures: [complete/delete]

- Requirement: [complete/delete]
- Training program: Include a program to familiarise staff with the EMP and/or management controls, environmentally sensitive areas and responsibilities.

Environmental auditing: [complete/delete]

- Third party auditors: [complete/delete]
- Scope of work: [complete/delete]
- Audit program: [complete/delete]

Risk assessment: [complete/delete]

Control plans: [complete/delete]

Implementation and control measures for the following potential environmental impacts:

- Heritage: [complete/delete]
- Preservation of visual values: [complete/delete]

Locations of environmentally sensitive areas: [complete/delete]

Environmental controls for environmentally sensitive areas: [complete/delete]

Environmental control measures particular to the following phases of activity:

- Before construction and site establishment: [complete/delete]
- During construction: [complete/delete]
- After construction, including rehabilitation activities and maintenance of erosion and sedimentation controls: [complete/delete]

2.2 PROCEDURAL AND PERSONNEL

Legislative environmental control requirements

Development approval conditions: [complete/delete]

Environmental impact statement issues: [complete/delete]

Community liaison

General: Notify residents of construction activities which will affect access to, or disrupt the use of, their properties.

Notice: Minimum 5 working days, unless the work is of an urgent nature with safety implications.

Notification content:

- The nature of the work.
- The reason for it being undertaken.
- The expected duration.
- Changes to traffic arrangements and property access.
- The 24-hour contact number of the representative responsible.

Internal monitoring

Approval authority: [complete/delete]

Documentation: Provide descriptions of the following:

- Environmental monitoring: Procedures for implementation and recording.
- For all control measures to be implemented: Non-conformance control and corrective action procedures.

Records: Maintain records of results of environmental monitoring, including the effectiveness of any remedial action taken.

Internal monitoring personnel: Provide staff names and contact details.

Machinery and equipment: Provide details of proposed plant.

Review timing: Undertake reviews of the EMP or control measures at the following stages:

- When there is a change in the project, e.g. scope.
- Following significant environmental accidents.
- When improved performance is required to reduce specific environmental impact.
- At completion of environmental audits.
- At the end of the project.

Emergency response

Emergency response personnel: Provide staff names and contact details.

Response procedure: [complete/delete]

Response time: [complete/delete]

Penalty for failure to respond: [complete/delete]

Complaints

Reporting: Within 1 working day of receiving a complaint about any environmental issue, including pollution, submit a written report detailing the complaint and remedial action taken.

Register: Keep a register of all environmental complaints and action taken.

Reporting

Requirement: Compile the environmental management reports to record the progress of the following:

- Performance against statutory requirements.
- Performance against the EMP, environmental objective and policy, ecologically sustainable development outcomes and targets.
- Summary of monitoring, inspection and audits.
- Summary of reports required to meet the statutory requirements.
- Summary of environmental emergencies, incidents, non-conformance and complaints.
- Summary of corrective actions where required.

Reporting frequency: [complete/delete]

Unexpected finds

Requirement: If encountered, give notice and close off affected site area with barrier tapes and warning signs to prevent access. Unexpected finds include asbestos and other hazardous or volatile contaminants, archaeological finds and items of heritage value.

Further action: [complete/delete]

2.3 SOIL EROSION AND SEDIMENT CONTROL

Control measures

Staging of operations and sequence of works: [complete/delete]

Diversion of upstream water around the site: [complete/delete]

Provision of temporary drains and catch drains: [complete/delete]

Erosion control measures: [complete/delete]

- Location: [complete/delete]
- Use of mulch materials to protect disturbed or exposed areas where suitable: [complete/delete]
- Stockpile protection: Provide the following at the end of each working day:
  . Sandbags: Placed on downslope of stockpile to prevent movement.
  . Waterproof cover: Placed over stockpile material.
  . Sandbags, filter bags or fibre sausages: Locate to divert upslope flow of stormwater into grassed areas of the site and away from the stockpiled material.

Sediment control measures: [complete/delete]

- Location: [complete/delete]

Stormwater control:

- Diversion: [complete/delete]
- Dispersal: [complete/delete]
- Retention: [complete/delete]
- Contour ploughing or bunding to disturbed areas and long-term stockpiles: [complete/delete]

Restoration of disturbed areas in progress with the works: [complete/delete]

Maintenance of controls: Check control measures, minimum daily and following storms, and make sure they are in good working order. Replace barriers if they are torn, damaged or no longer anchored.

Areas: Include all site areas and access and haulage tracks, borrow pits, stockpile and storage areas and compound areas.

Sediment filters – general

Inspection: Inspect for displacement, undercutting, over-topping and soil build-up, after each rain event. Effect repairs immediately.

Removal: When the upslope areas have been permanently stabilised.

Filters at toe of a slope: Place filter 1500 to 2000 mm away from slope, to provide access for maintenance and to allow coarse sediment to drop out of suspension before reaching sediment filter.

Sediment filters - straw bales

Straw bale filters: Provide temporary structures made of straw bales (cereal straw) laid end to end across direction of stormwater flow in order to filter sediment.

- Location: [complete/delete]

Binding: Wire-bound or with string-tied bindings wrapped around the bale sides.

Installation:

- Trench: 100 mm deep trench, the width of a bale and the length of the proposed sediment filter.
- Placement: Lengthwise in the trench with ends tightly abutting and corners lapped.
- Fixing: Drive two 50 x 50 mm wooden stakes or metal star pickets through each bale. Make sure bales are packed closely and staked securely. Tightly wedge gaps with loose straw.

Backfilling: Compacted excavated soil to ground level on downhill side of barrier, and 100 mm above ground level on the uphill side of the bales.

Sediment filters – silt fence

Silt fence: Provide geotextile temporary barrier, supported on wire or mesh fencing for filtering sediment from stormwater flow conforming to the following:

- That will retain soil on site.
- Have openings large enough to permit drainage and prevent clogging.

Location: [complete/delete]

Contours: Locate fence line and posts along contours curving upstream at the sides to direct flow toward middle of the fence.

Installation:

- Trench: 100 mm wide x 200 mm deep along line of posts and upslope from barrier.

- Posts: 1200 mm long pre-drilled steel star picket posts at 3000 mm centres, driven 600 mm and fitted with plastic safety caps.
- Wire mesh: ≥ 14 gauge x ≤ 150 mm mesh spacing. Fasten wire mesh to upslope side of posts with 25 mm long heavy-duty wire staples and tie wire. Extend wire mesh 150 mm into trench.
- Filter: Geotextile to suit local soil conditions, cut from a continuous roll to minimise joints.
- Fixing: Wire ties to the uphill side of fence posts, extended 200 mm into the trench. Do not staple onto trees.
- Joints: 150 mm overlap at a support post, with both ends fastened to the post.

Fence height: 600 mm average.

Backfilling: Backfill trench over toe of geotextile and compact soil.

Sediment filters – straw bale and geotextile filters

Filters: Provide sediment filter comprising straw bales and geotextile conforming to the following:

- That will retain soil on site.
- Have openings large enough to permit drainage and prevent clogging.

Location: [complete/delete]

Binding: Wire-bound or with string-tied bindings wrapped around the bale sides.

Bale installation:

- Trench: 100 mm deep trench the width of a bale and the length of the proposed sediment filter.
- Placing: Lengthwise in the trench with ends tightly abutting and corners lapped.
- Fixing: Drive two 50 x 50 mm wooden stakes or metal star pickets through each bale. Make sure bales are packed closely and staked securely. Tightly wedge gaps with loose straw.

Geotextile installation:

- Geotextile selection: To suit local soil conditions cut from a continuous roll to minimise joints.
- Fixing: Staple geotextile to top of straw bale and extend down the uphill face of the bale into the trench. Stretch the geotextile and peg securely into the subgrade.
- Joints: 150 mm overlap at a support post, with both ends fastened to the post.

Backfilling: Compacted excavated soil to ground level on downhill side of barrier, and 100 mm above ground level on the uphill side of the bales against and over toe of the fabric.

2.4 WASTE MANAGEMENT

Control measures

Requirement: Establish major waste streams that will be generated during the contract including:

- Organic waste.
- Construction waste, including:
  - . Spoil.
  - . Demolition waste.
  - . Asphalt or bitumen.
  - . Concrete
  - . Metal.
  - . Paint materials and empty containers.
  - . Office waste.
  - . Kitchen waste.
  - . Sewage effluent.
  - . Hazardous materials.

Location of each waste stream: [complete/delete]

Disposal of organic waste: [complete/delete]

Disposal of construction waste: [complete/delete]

Method of transport between the site and point of re-use, recycling, stockpiling, treating or disposal: [complete/delete]

Identification: Submit details of location, labelling and protection of separate skips for the identified waste stream.

Disposal of materials

Spoil: Remove cleared and grubbed material from the site and dispose of legally.

Waste storage: [complete/delete]

Surplus material: [complete/delete]

Burial: Bury concrete and other inorganic fragments as follows:

- Location: Beyond built or paved areas.
- Depth: More than 600 mm from finished ground level to the top of the object.
- Compaction: Eliminate voids.

Mulch

Seed free aerial vegetative matter: Using a chipper, reduce to pieces not larger than 75 x 50 x 15 mm and stockpile for re-use as mulch.

Material not permitted: Leaf matter and tree loppings from privet, camphor laurel, coral tree, poplar, willow and noxious weeds.

Mulching cleared vegetation: Submit details of provisions.

2.5 GROUND CONTAMINATION

Control measures

Preliminary investigation: [complete/delete]

Detailed investigation: [complete/delete]

Ground contamination:

- Contaminant: [complete/delete]
- Acid sulphate soils: [complete/delete]

Site Remedial Action Plan (RAP): [complete/delete]

- Stockpile sites: Locate on previously cleared areas.

Site auditing and reporting procedures: [complete/delete]

Record maintenance procedures: [complete/delete]

2.6 SITE CONTROL AND PROTECTION MEASURES

Air quality control

Requirement: Protect adjoining owners, residents and the public against dust, dirt, water nuisance and injury. Use dust screens and watering to reduce dust nuisance.

Dewatering

Requirement: Keep earthworks free of water. Provide and maintain slopes, crowns and drains for excavations and embankments, to make sure there is free drainage. Construct, including placing of fill, masonry, concrete and services, on ground where free water has been removed. Prevent water flow over freshly laid work.

Dewatering system: [complete/delete]

Water disposal: Dispose off-site.

Dust control

Dust control measures: [complete/delete]

Lighting of fires

Prohibition: Do not light fires.

Noise control and vibration

Maximum noise level at the site boundary: [complete/delete]

Noise control measures: [complete/delete]

Monitoring: Measure vibration levels of the peak particle velocity to AS 2187.2.

Limits: Do not exceed the vibration or airblast overpressure recommended in AS 2187.2 Appendix J.

Vegetation and fauna

Wildlife to be protected: All native species.

Trees to be removed: Inspect to establish if nesting native fauna are present. If present, give notice.

Pruning: To AS 4373.

Water quality

Wash out: Prevent wash out from entering waterways or stormwater drains.

Cross connection: Make sure there are no cross connections between stormwater and the public sewerage system.

Vehicular and equipment contamination precautions

Covers: Use tarpaulins to prevent the dropping of materials on public roads.

Washing: Wash the underside of all vehicles leaving the site as follows:

- Mud: Do not carry onto other areas, including adjacent paved streets.
- Noxious plants: If those designated by the local authority are present on the site, make sure seeds are not carried onto other areas, including adjacent paved streets.

Wheel wash/shaker bay

Facilities: Provide the following:

- Shaker area size: [complete/delete]
- Surface: Crushed concrete or rock of between 100 mm and 200 mm approximate diameter.
- Services: High pressure hose water supply.
- Location: Locate the shaker bay and provide berms to drain to grassed areas of the site and allow infiltration to the subsurface.

0181 ADHESIVES, SEALANTS AND FASTENERS

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide adhesives, sealants and fasteners, as documented and as follows:

- Fitness for purpose: Capable of transmitting imposed loads, sufficient to make sure the rigidity of the assembly, or integrity of the joint.
- Finished surface: That will not cause discolouration.
- Compatibility: Compatible with the products to which they are applied.
- Sealant replacement: Capable of safe removal without compromising the application of the replacement sealant for future refurbishment.
- Movement: If an adhered or sealed joint is subject to movement, select a system certified to accommodate the projected movement under the conditions of service.
- Fasteners: Accredited for the particular use, capable of transmitting imposed loads and maintaining the rigidity of the assembly.

1.2 PRECEDENCE

General

Worksections and referenced documents:

- The requirements of other worksections of the specification override conflicting requirements of this worksection.
- The requirements of this worksection override conflicting requirements of its referenced documents.
- The requirements of the referenced documents are minimum requirements.

1.3 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.

1.4 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of prepared joints and penetrations for each sealant application included in the **Installed sealant tests schedule**.

1.5 SUBMISSIONS

Samples

Visible joint sealants: Submit colour samples.

Technical data

Sealants: Submit technical data sheets.

Tests

Compatibility testing: Submit adhesion and compatibility testing data demonstrating that adhesive, sealant or fastener is compatible with materials to be fixed and is suitable for the project conditions.

Warranties

Manufacturer's warranty: Submit the manufacturer's published product warranties.

2 PRODUCTS

2.1 ADHESIVES

Standards

Mastic adhesive: To AS 2329.

Polymer emulsion adhesive for timber: To AS 2754.2, not inferior to Type 3.

VOC limits

Indoor carpet adhesive: 50 g/litre.

Carpet pad adhesive: 50 g/litre.

Outdoor carpet adhesive: 150 g/litre.

Wood flooring adhesive: 100 g/litre.

Rubber flooring adhesive: 60 g/litre.

Sub-floor adhesive: 50 g/litre.

Ceramic tile adhesive: 65 g/litre.

Cove base adhesive: 50 g/litre.

Drywall and panel adhesive: 50 g/litre.

Multipurpose construction adhesive: 70 g/litre.

Structural glazing adhesive: 100 g/litre.

Tests

Compliance testing: To South Coast Air Quality Management District (AQMD) (California, U.S.) – Rule 1168.

High strength adhesive tape

General description: A foam of cross linked polyethylene or closed cell acrylic coated both sides with a high performance acrylic adhesive system, encased in release liners of paper or polyester.

Product classification: Select tape to suit substrate as follows:

- Firm high strength foam tapes: For high energy surfaces including most bare metals such as stainless steel and aluminium.
- Conformable high strength foam: For the following:
  . Medium energy surfaces including many plastics and paints, and bare metals.
  . Lower energy surfaces including many plastics, most paints and powder coatings, and bare metals.

Thickness: Select the tape to make sure a mismatch between surfaces does not exceed half the tape thickness under the applied lamination pressure.

2.2 SEALANTS

Standards

General: To ISO 11600.

External masonry joints

General: Provide sealant and bond breaking materials which are non-staining to masonry. Do not use bituminous materials with absorbent masonry units.

Bond breaking backing:

- Bond breaking materials: Non-adhesive to sealant, or faced with a non-adhering material.
- Foamed materials: Closed-cell or impregnated, not water-absorbing.

Lightweight building element joints

Joints subject to rapid changes of movement: Provide sealants that accommodate the movement of the contact materials.

Floor control joints

General: Provide trafficable sealants.

Bond breaking backing:

- Bond breaking materials: Non-adhesive to sealant, or faced with a non-adhering material.
- Foamed materials: Closed-cell or impregnated, not water-absorbing.

2.3 FASTENERS

General

Masonry anchors: Proprietary expansion or bonded type anchors conforming to **SELECTIONS, ANCHORS**.

Plain washers: To AS 1237.1.

- Provide washers to the heads and nuts of bolts, and the nuts of coach bolts.

Plugs: Proprietary purpose-made plastic.

Powder-actuated fasteners: To AS/NZS 1873.4.

Stainless steel fasteners: To ASTM A240/A240M.

Steel nails: To AS 2334.

- Length: At least 2.5 times the thickness of the member being secured, and at least 4 times the thickness if the member is plywood or building board less than 10 mm thick.

Unified hexagon bolts, screws and nuts: To AS/NZS 2465.

Fasteners in CCA treated timber: Epoxy coated or stainless steel.

Bolts

Coach bolts: To AS/NZS 1390.

Hexagon bolts Grades A and B: To AS 1110.1.

Hexagon bolts Grade C: To AS 1111.1.

Corrosion resistance

Atmospheric corrosivity category: To the *General requirements* worksection.

Steel products: Conform to the **Corrosion-resistance table** or provide proprietary products with metallic and/or organic coatings of equivalent corrosion-resistance.

Corrosion-resistance table – Atmospheric corrosivity categories A and B to AS/NZS 2312

Situation	Threaded fasteners and anchors		Powder actuated fasteners	
	Material	Minimum local metallic coating thickness (µm)	Material type	Minimum local metallic coating thickness (µm)
Internal	Electroplated zinc	4	Electroplated zinc	4
External	Electroplated zinc or Hot-dip galvanized	30	Stainless steel 316	

Corrosion-resistance table – Atmospheric corrosivity category C to AS/NZS 2312

Situation	Threaded fasteners and anchors		Powder actuated fasteners	
	Material	Minimum local metallic coating thickness (µm)	Material type	Minimum local metallic coating thickness (µm)
Internal	Electroplated zinc	12	Electroplated zinc	12
External	Hot-dip galvanized	50	Stainless steel 316	

Corrosion-resistance table – Atmospheric corrosivity categories D and F to AS/NZS 2312

Situation	Threaded fasteners and anchors		Powder actuated fasteners	
	Material	Minimum local metallic coating thickness (µm)	Material type	Minimum local metallic coating thickness (µm)
Internal	Electroplated zinc or Hot-dip galvanized	30	Stainless steel 316	
External	Stainless steel 316		Stainless steel 316	

Finishes

Electroplating:

- Metric thread: To AS 1897.
- Imperial thread: To AS 4397.

Galvanizing:
- Threaded fasteners: To AS 1214.
- Other fasteners: To AS/NZS 4680.

Mild steel fasteners: Galvanize if:
- Embedded in masonry.
- In external timbers.
- In contact with chemically treated timber other than CCA treated timber.

Epoxy coated:
- CCA Treated timber.

Nuts

Hexagon chamfered thin nuts Grades A and B: To AS 1112.4.

Hexagon nuts Grade C: To AS 1112.3.

Hexagon nuts Style 1 Grades A and B: To AS 1112.1.

Hexagon nuts Style 2 Grades A and B: To AS 1112.2.

Screws

Coach screws: To AS/NZS 1393.

Hexagon screws Grades A and B: To AS 1110.2.

Hexagon screws Grade C: To AS 1111.2.

Hexagon socket screws: To AS 1420 and AS/NZS 1421.

Machine screws: To AS/NZS 1427.

Self-drilling screws: To AS 3566.1.

Self-tapping screws:
- Crossed recessed countersunk (flat – common head style): To AS/NZS 4407.
- Crossed recessed pan: To AS/NZS 4406.
- Crossed recessed raised countersunk (oval): To AS/NZS 4408.
- Hexagon: To AS/NZS 4402.
- Hexagon flange: To AS/NZS 4410.
- Hexagon washer: To AS/NZS 4409.
- Slotted countersunk (flat – common head style): To AS/NZS 4404.
- Slotted pan: To AS/NZS 4403.
- Slotted raised countersunk (oval – common head style): To AS/NZS 4405.

Blind rivets

Description: Expanding end type with snap mandrel.

Type: Closed end for external application, open end for internal application.

End material:
- Aluminium base alloy for metallic-coated or prepainted steel.
- Stainless steel for stainless steel sheet.
- Copper for copper sheet.

Size:
- For sheet metal to sheet metal: 3 mm.
- For sheet metal to supports, brackets and rolled steel angles: 4.8 mm.

Performance

Loads: Provide fasteners capable of transmitting the loads imposed, and sufficient to make sure the rigidity of the assembly.

3 EXECUTION

3.1 ADHESIVES

Preparation

Substrates: Conform to the following:

- Remove any deposit or finish which may impair adhesion.
- If framed or discontinuous, provide support members in full lengths without splicing.
- If solid or continuous, remove excessive projections.
- If previously painted, remove cracked or flaking paint and lightly sand the surface.

Contact adhesive

Precautions: Do not use contact adhesive if:

- A substrate is polystyrene foam.
- A PVC substrate may allow plasticiser migration.
- The adhesive solvent can discolour the finished surface.
- Dispersal of the adhesive solvent is impaired.

Two-way method: Immediately after application, press firmly to transfer adhesive and then pull both surfaces apart. Allow to tack off and then reposition and press firmly together. Tap areas in contact with a hammer and padded block.

One-way method: Immediately after application, bring substrates together and maintain maximum surface contact for 24 hours by clamps, nails or screws as appropriate. If highly stressed, employ permanent mechanical fasteners.

High strength adhesive tape

Preparation:

- Non-porous surfaces: Clean with surface cleaning solvents such as isopropyl alcohol/water, wash down and allow to dry.
- Porous surfaces: Prime the surface with a contact adhesive compatible with the tape adhesive system.

Follow the recommendations of the manufacturer for application to the following: Copper, brass, plasticised vinyl and hydrophilic surfaces such as glass and ceramics in a high humidity environment.

Applied lamination pressure: Make sure the tape experiences 100 kPa.

Application temperature: Generally above 10°C, consult the manufacturer.

Completion: Do not apply loads to the assembly for 72 hours at 21°C.

3.2 JOINT SEALING

Joint preparation

Cleaning: Cut flush joint surface protrusions and rectify if required. Mechanically clean joint surfaces free of any deposit or finish which may impair adhesion of the sealant. Immediately before sealant application, remove loose particles from the joint, using oil-free compressed air.

Bond breaking: Install bond breaking backing material.

Taping: Protect the surface on each side of the joint using 50 mm wide masking tape or equivalent means. On completion of sealant application, remove the tape and remove any stains or marks from adjacent surfaces.

Primer: Apply the recommended primer to the surfaces in contact with sealant materials.

Sealant joint proportions

General weatherproofing joints (width:depth):

- 1:1 for joint widths less than 12 mm.
- 2:1 for joint widths greater than 12 mm.

Sealant application

General: Apply the sealant to dry joint surfaces using a pneumatic applicator gun. Make sure the sealant completely fills the joint to the required depth, provides good contact with the full depth of the sides of the joint and traps no air in the joint. Do not apply the sealant outside the recommended working time for the material or the primer.

Weather conditions
Two pack polyurethanes: Do not apply the sealant if ambient conditions are outside the following:

- Temperature: Less than 5°C or greater than 40°C.
- Humidity: To the manufacturer's recommendations.

Joint finish
General: Force the sealant into the joint and finish with a smooth, slightly concave surface using a tool designed for the purpose.

Excess sealant: Remove from adjoining surfaces using cleaning material nominated by the sealant manufacturer.

Protection
General: Protect the joint from inclement weather during the setting or curing period of the material.

Rectification
General: Cut out and remove damaged portion of joint sealant and reinstall so repaired area is indistinguishable from undamaged portion.

3.3 FASTENERS

General
Requirement: Install to the manufacturer's recommendations.

Fastening to wood and steel
Timber substrates: To AS 1720.1 Section 4.

Self drilling screws: To AS 3566.1 for timber and steel substrates.

Masonry anchors
Installation: To the manufacturer's recommendations.

0184P TERMIMESH TERMITE MANAGEMENT

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide TERMIMESH termite management materials and systems, as documented.
Objective: To achieve building protection.

1.2 COMPANY CONTACTS

TERMIMESH technical contacts
Website: www.termimesh.com.au.

1.3 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.

1.4 STANDARD

General
Termite management systems: To AS 3660.1.

1.5 MANUFACTURER'S DOCUMENTS

Technical manuals
Reference: TERMIMESH Technical Reference Manual.
Website: www.termimesh.com.au/architectsAndDesigners.cfm.

1.6 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the completed termite management systems.
Source: TERMIMESH approved and accredited applicator.

1.7 SUBMISSIONS

Installation certificate
Woven stainless steel management systems: Provide certification that:
- 725 Grade stainless steel has been used to the manufacturer's recommendations.
- Installation has been by approved by accredited technicians.

Completion: Provide record drawings identifying the locations of the installed system.

2 PRODUCTS

2.1 GENERAL

Product substitution
Other products: Conform to **PRODUCTS**, **GENERAL**, **Substitutions** in the *General requirements* worksection.

2.2 WOVEN STAINLESS STEEL MESH

Product
Mesh management system: TERMIMESH.
Standard: To AS 3660.1 Section 6.
Material: 725 grade stainless steel.
Parging: Termiparge.

Bonding: Termibond epoxy system.

Timber pole protection: TERMIMESH sock.

2.3 NON-CHEMICAL MANAGEMENT SYSTEMS

Concrete slab

Standard: To AS 3660.1 Section 4.

Services penetration management system type: TERMIMESH Termiflange.

Control joints: TERMIMESH stainless steel mesh.

Material: 725 grade stainless steel.

Termite cap and strip shields

Standard: To AS 3660.1 Section 5.

Material: 725 grade stainless steel.

3 EXECUTION

3.1 WOVEN STAINLESS STEEL MESH

Installation

Applicators: TERMIMESH personnel or TERMIMESH approved and accredited contractors.

Standard: To AS 3660.1 Section 6.

3.2 COMPLETION

Termite management system notice

General: Provide a durable notice permanently fixed in a prominent location to BCA B1.4(i)(ii) or BCA 3.1.3.2(b) and AS 3660.1 Appendix A.

Waste materials

Progressive cleaning: Remove waste building materials, which could attract termites, from the site.

Warranties

Residential construction: Conform to the following:

- Warranty form: TERMIMESH Pledge Residential Guarantee.
- Warranty period: 10 years on materials and 10 years on workmanship.
- Renewability: Renewable on a continuous basis without limit.

Non-residential construction: Conform to the following:

- Warranty form: TERMIMESH Pledge Non Residential Guarantee.
- Warranty period: 10 years on materials and 1 year on workmanship.
- Renewability: Renewable on a continuous basis without limit.

Completion inspection

Report: At the end of the defects liability period, inspect the termite management systems and submit a report on their efficacy and status.

4 SELECTIONS

4.1 TERMIMESH SYSTEMS

Whole of building protection

Extent of work: Refer to the TERMIMESH specification to form a complete termite management system.

The TERMIMESH complete termite management system specification includes but is not limited to:

- All slab penetrations and openings that may allow termite entry.
- All slab joints and any areas where slab repairs or trenching may occur.
- Retaining wall areas.
- Perimeter protection.
- Any other concealed entry points.

0185 TIMBER PRODUCTS, FINISHES AND TREATMENT

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide timber products with finishes and treatments as documented and as follows:

- For durability and fire-resistance.
- Carrying appropriate certification for the finishing applications.

1.2 PRECEDENCE

General

Worksections and referenced documents:

- The requirements of other worksections of the specification override conflicting requirements of this worksection.
- The requirements of this worksection overrides conflicting requirements of its referenced documents.
- The requirements of the referenced documents are minimum requirements.

1.3 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.
- *Termite management*.
- *Painting*.

1.4 STANDARDS

General

Preservative treatment: To the AS 1604 series.

1.5 INTERPRETATION

Definitions

General: For the purposes of this worksection the definitions given in AS/NZS 4491 and the following apply:

- Dry processed fibreboard: A panel manufactured by bonding lignocellulosic fibres (derived from wood or other materials) with a synthetic resin adhesive and curing under heat and/or pressure. The panels are manufactured with a forming moisture content of less than 20%.
- Groups of timbers: Terms employed for that purpose in relevant Australian standards.
- High pressure decorative laminates (HPDL):
  - . Panels consisting of core layers impregnated with phenolic and/or aminoplastic resins and a surface layer(s) impregnated with aminoplastic resins (mainly melamine resins).
  - . Sheets consisting of a decorative face and layers of fibrous sheet materials (e.g. paper) impregnated with thermosetting resins and bonded together under heat and pressure of at least 5 MPa.
- Particleboard: A panel manufactured under pressure and heat from wood particles and/or lignocellulosic material with the addition of an adhesive.
- Plywood types: To AS/NZS 4491.
- Softboard (Insulation board): Also known as Canite™, insulating board is available with a fine textured finish on one side or finished with 2 coats of matt white casein-kaolin paint. The reverse side is natural finish with a heavier texture.
- Standard trade common names: To AS/NZS 1148.

- Wet processed fibreboard (hardboard): A panel material manufactured from lignocellulosic fibres (derived from wood or other materials) with application of heat and/or pressure, the bond of which is derived from felting of the fibres and the panels are manufactured with forming moisture content greater than 20%.

1.6 SUBMISSIONS

Products

Rainforest species: Submit source certification.

Pressure preservative treatment: For timber required to be pressure treated, submit a certificate or other evidence showing that the timber has been treated.

Technical data

Treated timber: Submit Safety data sheets for preservative treated timber.

2 PRODUCTS

2.1 GENERAL

Storage and handling

General: Deliver timber products to site in unbroken wrapping or containers and store so that the moisture content is not adversely affected.

2.2 CERTIFICATION

Preservative treatment branding

Requirement: Branding details of preservative treatment as follows:

- Treatment number.
- Preservative code number.
- Hazard class.

Timber certification

Recognised product certification programs:

- Pine framing: Plantation Timber Certification.
- Hardwoods: Australian Timber Industry Certification (ATIC) Quality Scheme.
- Glued-laminated timber: Glued Laminated Timber Association of Australia (GLTAA) Product Certification System.
- Laminated veneer lumber: Engineered Wood Products Association of Australasia (EWPAA) Quality Control and Product Certification Scheme.
- Finger jointed structural timber: Plantation Timber Certification.

Timber panel products

Certification program: Brand panels under the authority of a recognised certification program applicable to the product. Locate the brand on faces or edges which will be concealed in the works.

Certification programs:

- Plywood and block board: Engineered Wood Products Association of Australia (EWPAA) Quality Control and Product Certification Scheme.
- Wet processed fibreboard, dry processed fibreboard, particle board and decorative overlay wood panels: Engineered Wood Products Association of Australia (EWPAA) Quality Control and Product Certification Scheme.

Plywood formaldehyde emission class to AS/NZS 2270: E_1 (1.0 mg/L)

2.3 DURABILITY

General

Requirement: Provide timbers with natural durability appropriate to the conditions of use, or preservative-treated timber of equivalent durability.

Natural durability class: To AS 5604.

Obtain durability: By chemical impregnation, natural durability or both.

Timber quality: Free of core wood (material within 50 mm of the tree's centre) and free of splits, checks, loose knots and cavities. Free of sapwood (lighter coloured wood found on the outer layer of the tree).

Lyctid susceptible timbers: Do not provide untreated timbers containing Lyctid susceptible sapwood.

Preservative treatment

Glued laminated timber products: To AS/NZS 1604.5 Table A1.

Laminated veneer lumber (LVL): To AS/NZS 1604.4 Table A1.

Plywood: To AS/NZS 1604.3 Table A1.

Reconstituted wood-based products: To AS/NZS 1604.2 Table A1.

Sawn and round timber: To AS 1604.1 Table D1.

Untreated sapwood: If used, place to the outside of joints or in locations exposed to higher levels of ventilation.

Moisture content

Protection: Protect timber and timber products stored on site from moisture and weather. For milled, prefinished, prefabricated and similar elements which are to be protected in the final structure, provide temporary weather protection until the permanent covering is in place.

Termite treatment

Requirement: To the *Termite management* worksection.

2.4 FINISHING

Surface finish

Hardwood: To AS 2796.1 Table B1.

Softwood: To AS 4785.1 Table B1.

Surface coating

Painting: To the *Painting* worksection and as follows:

- Coating system: [complete/delete]

Application: To the manufacturer's specification.

3 EXECUTION

3.1 JOINTS

General

Joints and connections: Use hot-dipped galvanized or stainless steel fasteners, composite bolts, nails or nailed metal connectors.

Timber-to-timber interfaces: Provide a seal coating of preservative formulation and include inside bolt holes and the end grain of the timber.

Avoid: Details that may trap water such as housed, checked or birdsmouth joints.

Fasteners: Follow manufacturer's instructions to prevent chemical treatments reacting with fasteners.

Fastener selection

Hardwood cladding: Bullet head and plain shank nails, if the cladding is painted and nails are punched and stopped.

Softwood cladding: Flat head and plain shank nails, if cladding is painted.

CCA treated softwood cladding: Galvanized, deformed shank (ring or annular) flat head nails.

Unpainted cladding/framing joints: Do not use machine driven T head nails.

3.2 SHRINKAGE RESTRAINT

General

Moisture content: Use finishes and end-grain sealants to minimise moisture content changes.

Fasteners: Align fasteners along member axis and use single fasteners at the joints.

Connections: Use connections that allow for movement.

Avoid shrinkage restraint: Use seasoned timber, especially if timber elements are integrated with steel and/or concrete construction.

Drill holes: 10% oversize in unseasoned timber.

Reduce movement and shrinkage: If timber is unseasoned, use species with similar shrinkage values.

Vertical movement: For unseasoned framing provide adequate clearance at the top of masonry veneer and face fixed members to reduce vertical movement.

3.3 FINISHING

Ploughing

General: Back plough boards liable to warp (e.g. if exposed externally on one face). Make the width, depth and distribution of ploughs appropriate to the dimensions of the board and degree of exposure.

Painting

Edges: Chamfer edges of work to receive paint or similar coatings.

Priming: For woodwork to be painted, prime hidden surfaces before assembly.

Working with treated timber

Safety: Handle preservative treated timber to NOHSC 2003 and the recommendations of NOHSC 3007.

4 SELECTIONS

4.1 PRODUCT SCHEDULES

Preservative treatment schedule

Timber product application	Preservative treatment
Timber wall framing	LOSP (light organic solvent preservative) treated to AS 1604

0191 SUNDRY ITEMS

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide sundry items, as documented and as follows:

- Undamaged and free of surface defects or distortions.
- Correctly located and aligned, plumb, level and straight.
- Connected to the nominated service(s), if required.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.

1.3 INSPECTION

Notice

Inspection: Give notice so inspection can be made of the following:

- Set-out of item locations before fixing.
- Completion of installation.

1.4 SUBMISSIONS

Manuals

Operation and maintenance manuals: Submit a maintenance manual and, if required, an operation manual with the technical specification and manufacturer's recommendations for the item to be installed.

Products

Sealant compatibility statements: Submit statements from all parties to the installation certifying the compatibility of sealants with items.

Labelling: Label each sample, giving the brand and product name, manufacturer's code reference, date of manufacture and intended building location.

Shop drawings

General: Submit shop drawings, to a scale that best describes the detail, showing the following information:

- Details of fabrication and components.
- Details of fabrication involving other trades or components.
- Information necessary for site assembly.
- Proposals for the break-up of large items as required for delivery to the site.
- Proposed method of joining the modules of large items.
- Fixing locations and types.

Warranties

Submit a manufacturer's and/or installer's warranty, naming the principal, clearly defining warranty period and conditions.

2 PRODUCTS

2.1 MARKING

Identification

General: Deliver materials to the site in the manufacturer's original sealed containers or packaging, legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Safety data sheets.

3 SELECTIONS

Appliances and fixtures schedule

Item	Manufacturer	Type	Supplied by	Installed by
Cooktop	Ilve 120cm Professional Cooktop HP1265-7D	Gas	builder	builder
Microwave with trim	To be decided	electric	proprietor	builder
Dishwasher	Hobart - PROFI AMX-V Slide through vapour capture with chemical dispenser kit	electric	builder	Builder
Rangehood	Refer mechanical drawings Qasair – 1200HL-2 with 600mm top flue Duct through the wall with twin flues DLE-2-a200, back draft wall vent 104 BD/WV-H-1 and wall vent covers 131 WVC-H-1		builder	Builder
Ovens	2 x Smeg SCA706X 70cm	electric	builder	Builder

Joinery fixtures schedule

Item	Location	No.	Type	Colour
Nappy change steps	Washroom 2	1	Grocare 01055	natural
Nappy change steps	Washroom 3	1	Grocare 01055	natural
Cutlery insert	Kitchen	2	injection moulded to suit drawer width	white
Pull-out bin	Kitchen	2	Hideaway Soft close 2 x 20L bucket door pull SCD220 D-W	White
Pull-out bin	Staff room	1	Hideaway Soft close 2 x 20L bucket door pull SCD220 D-W	White
Pull-out bin	Washroom 2	1	Hideaway Soft close 2 x 20L bucket door pull SCD220 D-W	White
Pull-out bin	Washroom 3	1	Hideaway Soft close 2 x 20L bucket door pull	White

			SCD220 D-W	
Trolley Store Bench Support brackets	Craft/Dining Area	3	Hafele Hebgo steel bracket 480mm 287.44.461	grey
Plywood bench support bracket	Kitchen/corridor	5	Hafele Hebgo steel bracket 280mm 287.44.434	grey
Desk Support legs	Staff Programming Room x 5 Admin Office x		Adils leg 802.179.77 Available from Ikea	White
Shelving	Store 1 Store 2 Store 3 Outdoor Store 1 Outdoor Store 2 Outdoor Store 3		Melamine shelves on with screwed on clips supported on powder coated steel shelf brackets to suit shelf depths shown on drawings with powder coated slotted steel wall strips as shown	White
Door/drawer handles	All joinery units	One per door/ drawer	138mm D-handle 10mm diameter Kethy S609 or equal	Satin stainless steel
Shelf brackets Shelf	Cot Room 1 Cot Room 2 Cot Room 3 Cot Room 4	8 4	Ekby Stodis bracket 170x170mm 201.728.92 available from Ikea with 200 x 500mm 19mm clear finished hoop pine AC plywood shelf with rounded edges	White Natural
Shelf brackets Shelf	Veranda 1 – two shelves Veranda 2 – two shelves	8 4	Ekby Stodis bracket 17x17cm 801.674.87 available from Ikea with 200 x 500mm 19mm clear finished hoop pine AC plywood shelf with rounded edges	Black Natural
Floating shelf support shelf	Washroom 2	2 1	Hafele 283.33.904 with 40mm thick laminate shelf 240x900mm	white

WC Privacy Panel schedule

Item	Location	No.	Type	Colour
Privacy panel	Washroom 1	3	Waterloo compact laminate with multi-purpose U-channel and pedestal mount 150mm afl. Coved end, 800wx800H	To be determined
Privacy panel	Washroom 2	3	Waterloo compact laminate with multi-purpose U-channel and pedestal mount 150mm afl. Coved end, 800wx800H	To be determined
Privacy panel	Washroom 3	3	Waterloo compact laminate with multi-purpose U-channel and pedestal	To be determined

			mount 150mm afl. Coved end, 800wx800H	

Miscellaneous Fixtures schedule

Item	Location	No.	Type	Colour
Paper Towel dispensers	Accessible WC x1, Kitchen basin x1	2	Initial stainless steel Available from Initial Hygiene	Stainless steel
Toilet roll holders	Washroom 1 x 3 Washroom 2 x 3 Washroom 3 x 3 Accessible WC x1 WC x1	11	Metlam toilet roll holder MI513 aluminium	Satin chrome
Soap Dispensers	Washroom 1 x 3, Washroom 2 x 4 Washroom 3 x 3, Accessible WC x1, WCx1 Kitchen basin x1	13	Initial stainless steel 1L Available from Initial Hygiene	Stainless steel
Braille Toilet Sign	Accessible WC on the wall adjacent to the door on the latch side, min.50mm from the frame. The tactile and Braille components of the signs should be positioned between 1200mm and 1600mm from the floor.	1	S256U-LH stainless Steel Braille Unisex Left 215mmX185mm, Unisex toilet sign Left hand supplied by Ozwashroom	Polished Stainless steel install in accordance with BCA requirements
Coat Hooks	Accessible WC x 4 Washroom 1 x 2 WC x 2	8	Bradley 9981 hat and coat hook	Satin stainless steel
Grab rails	Accessible WC	1 set	Handrail Industries 32mm concealed fix Type 136	Stainless steel
Shower curtain track	Accessible WC	1	Handrail Industries Altrack 900x900 A615	Anodised aluminium
Shower curtain	Accessible WC	2	Handrail Industries 1000Wx2000H M535	White weighted polyester
Shower Shelf	Accessible WC	1	Mizu Soothe metal shelf Available Reece	chrome
Mirror	Washroom 1 x 3 Washroom 2 x 3	6	450x300	Bevelled edge
Mirror	Washroom 3 x 2	2	300x300	Bevelled edge
Mirror	Washroom 1 x 1 Washroom 2 x 1 Accessible WC x 1	3	1000x400	Bevelled edge
Mirror	Washroom 3	1	900x400	Bevelled edge
Bathroom Cabinet	WC	1	Rifco Overlay Standard 600Hx450W, soft close	white satin sides
Clothesline	Drying area	1	Hills FD45603 Folding 2.2x1.2m with post kit	Midnight sky
Lockers	Staff lunchroom	8	Waterloo 300mm width 3 door locker with Ojmar digital lock	To be determined

Hooks	Pram store x 5	5	Zenith 15 / 30kg SureHook Black Small Garage U hook	
Broom Holder	Laundry/cleaner	1	5 Broom Magic Holder available Howards Storage World	White
Broom Holder	Broom cupboards Playroom 1 Playroom 2 Art/sink bottle prep area Corridor near kitchen	4	3 Broom Magic Holder available Howards Storage World Screw fixed to door	White

0193 BUILDING ACCESS SAFETY SYSTEMS

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide the building access safety system, as documented.

Roofing and cladding: Maintain the waterproofing integrity without damage or distortion. Maintain the structural integrity of the supporting elements.

1.2 DESIGN

General

Designer: RIS

Requirements

Responsibility: builder

Performance requirements: To AS/NZS 1891.2 Section 4.

Authority requirements: WHS requirements

Access: Provide a system for three workers at any one time, to access the following:

- Full extent of gutters.
- Roof mounted plant and equipment.
- Roof areas within 2.5 m of fall hazards not otherwise protected by parapets or guard rails.

Documentation

Manufacturers and suppliers documents related to this work section: roof plan, component sheets, quote

1.3 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.

1.4 STANDARDS

General

Industrial fall-arrest system: To AS/NZS 1891.1, AS/NZS 1891.2, AS/NZS 1891.3 and AS/NZS 1891.4.

Industrial rope access system: To AS/NZS 4488.1 and AS/NZS 4488.2.

1.5 INTERPRETATION

Definitions

General: For the purposes of this worksection the definitions given in AS/NZS 1891.1 and AS/NZS 5532 apply.

1.6 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Shop fabricated or assembled items ready for delivery to the site.
- Commencement of shop or site welding.
- All equipment attachments with concealed fixings, before they are covered.
- Site erected assemblies on completion of erection, before applying finishes.ddddddddddd
- Steel surfaces prepared for, and immediately before, site applied finishes.

Installation inspector: Registered height safety inspector or engineer.

1.7 SUBMISSIONS

Certification
General: Submit certification of installed system.

Documentation
User instructions: Testing information: [complete/delete]
Safe work method statement (SWMS) for the designed system:
Requirements for public protection
Manufacturer's and supplier's documents related to this worksection:
Maintenance requirements:

Instruction manual
General: Submit the manufacturer's instruction manuals.

Warranties
Requirement: Submit the manufacturer's published product warranties.

2 PRODUCTS

2.1 MARKING

Identification
General: Deliver fall protection assembly to the site in the manufacturer's original sealed packaging legibly marked to show the following:

- Manufacturer's identification.
- Installer's contact details.
- Intended location.
- Load rating and direction.
- Current inspection/service date.
- Batch number or serial number of the components.

2.2 FALL PROTECTION SYSTEMS

Access safety system
System: Anchorage devices, ladder access brackets, access cable strops, safety harness kit, signage

Anchors
Single point anchors: To AS/NZS 5532.

Warranties
General: For each type of building access safety system submit the manufacturer's warranty.

3 EXECUTION

3.1 INSTALLATION AND TESTING

General
Drilled-in anchors: Load test drilled-in anchors used in shear and not in axial tension (direct pull-out) before use.

Standards
Industrial fall arrest systems: To AS/NZS 1891.2.
Industrial rope access systems: to AS/NZS 4488.1.

Contractor
Installer: Registered Installer, approved by the manufacturer.

Labels and signage
General: To AS/NZS 1891.4 clause 2.2.9.

Proof load test for anchors
Standard: To AS/NZS 4488.2 clause 5.3.

Proof load test for horizontal lifeline and rail systems
Standard: To AS/NZS 1891.3 clause 3.1.

3.2 MAINTENANCE

General
Preventative and mandatory system maintenance: By an Accredited Height Safety Inspector/Certifier, in conformance with AS/NZS 1891.4 Section 9 and manufacturer's maintenance/recertification recommendations.

Check list for all inspections: To AS/NZS 1891.2 Supp 1 Table 8, and AS/NZS 1891.4 Section 9 and Appendices C and D.

The installer/competent person: To AS/NZS 1891.2 clause 1.2.1.

Periodic inspections
Standard: To AS/NZS 1891.2 clause 9.2.

Completion certificate:

- Provide inspection, testing and certification by an Accredited Installer and/or Accredited Height Safety Inspector:
  . Upon completion of the installation at the date for practical completion.
  . Upon the expiry of the defects liability period or 12 months after completion of the installation whichever is the lesser, and valid for a further 12 months period.
- Record the date of the next system inspection and period of validity and display the certificate at the access points of the work area or on the individual system components where provision is made.

Inspection after a fall or other event
Standard: To AS/NZS 1891.2 Supp 1 clause 9.3.

Proof testing of drilled-in anchorages
Standard: To AS/NZS 1891.2 Supp 1 clause 9.4.

On-going maintenance
Certificate: Submit the completion certificates and notify the proprietor of the requirement for continued interval testing.

0223 SERVICE TRENCHING

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide trenching for underground services, as documented.

Design
Steel shoring and trench lining systems: To AS 4744.1.

Hydraulic shoring and trench lining equipment: To AS 5047.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):

- *General requirements*.
- *Earthwork.*
- *Pavement base and subbase.*
- *Asphaltic concrete.*
- *Sprayed bituminous surfacing.*
- *Segmental pavers – mortar and adhesive bed.*
- *Segmental pavers – sand bed.*

1.3 STANDARDS

General
Earthworks: To AS 3798.

1.4 INTERPRETATION

Abbreviations
General: For the purposes of this worksection the following abbreviations apply:

- CBR value: California Bearing Ratio value.

1.5 INSPECTION

Notice
Inspection: Give notice so that inspection may be made at the following stages:

- Service trenches excavated before laying the service.
- Services laid in trenches and ready for backfilling.

1.6 TOLERANCES

General
Earthworks: To **Tolerances** in the *Earthwork* worksection.

1.7 SUBMISSIONS

General
Extent: Submit a plan of trench works noting the location and type of service.

Notice: Advise proposed duration of open excavation.

Construction: Submit details of proposed equipment and method of excavation.

Stability: If shuttering and/or bracing of the sides of a trench is required for safety and stability, provide proposals.

Hazards: Identify WHS hazards that may be encountered with deep trenches including toxic gases and liquids.

Boring: Submit proposals for the following:

- Limits on length.

- Existence of other services and method of protection.
- Pressure grouting to voids.
- The effect of pressure grouting on other services, ground heave and proposals for minimising such effects.
- Access to properties outside the site.
- Council permits.
- Service interruptions including a plan for minimising unintended interruptions.

Off-site disposal
Disposal location: Submit the locations and evidence of compliance with the relevant authorities for the disposal of material required to be removed from the site.

2 PRODUCTS

2.1 FILL MATERIALS

General
Requirement: Provide fill materials including borrow or imported fill to **Fill materials** and **Borrow or imported fill** in the *Earthwork* worksection.

3 EXECUTION

3.1 EXISTING SERVICES

Location
Requirement: Before commencing service trenching, locate and mark existing underground services in the areas which will be affected by the service trenching operations.

Utility services: Contact DIAL BEFORE YOU DIG to identify location of underground utility services pipes and cables.

Excavation
General: Do not excavate by machine within 1 m of existing underground services.

3.2 EXISTING SURFACES

Concrete and asphalt pavements
Method: Sawcut trench set out lines for the full depths of the bound pavement layers except where the set out line is located along expansion joints.

Removal of concrete and asphalt: Break out concrete or asphalt pavement material between the trench set out lines, remove and dispose of off-site.

Segmental paving units
Removal: Take up segmental paving units both full and cut by hand, between the trench set out lines, and neatly stack on wooden pallets.

Concrete edging: Break out, remove and dispose of off-site.

Concrete subbase: If present, sawcut along the trench set out lines.

Grass
Method: Neatly cut grass turf between trench set out lines into 300 mm squares. If the grass is suitable for re-use, take up and store the turf and water during the storage period, otherwise remove and dispose of it off-site.

Small plants, shrubs and trees
Storage: If required for re-planting, take up small plants and store. Wrap the root ball in a hessian or plastic bag with drain holes and water during the storage period.

Unsuitable vegetation: Remove and dispose of off-site.

3.3 EXCAVATING

Site preparation
As found site conditions: To **Geotechnical** in the *Earthwork* worksection.

Records of measurement: If Records of measurement are required, to **Records of measurement** in the *Earthwork* worksection.

Remove topsoil: To **Removal of topsoil** in the *Earthwork* worksection.

Excavation

General: Excavate for underground services in conformance with the following:

- To required lines and levels, with uniform grades.
- Straight between access chambers, inspection points and junctions.
- With stable sides.
- Width tolerance: ± 50 mm, unless constrained by adjacent structures.
- Excavation: To the *Earthwork* worksection **Excavation** and **Adjacent structures**.

Trench widths

General: Keep trench widths to the minimum consistent with the laying and bedding of the relevant service and construction of access chambers and pits.

Trench depths

General: As required by the relevant service and its bedding method.

Adjacent to footings: If excavation is necessary below the zone of influence of the underside of adjacent footings, give notice, and provide support for the footings as instructed.

Obstructions

General: Clear trenches of sharp projections. Cut back roots encountered in trenches to at least 600 mm clear of services. Remove other obstructions including stumps and boulders which may interfere with services or bedding.

Tree protection: To AS 4970.

Dewatering

General: Keep trenches free of water. Place bedding material, services and backfilling on firm ground free of surface water.

Pumping: Provide pump-out from adjacent sumps or install well points.

Adjacent subsidence: Provide recharge points to isolate the dewatering zone.

Excess excavation

General: If trench excavation exceeds the correct depth, reinstate to the correct depth and bearing value using compacted bedding material or sand stabilised with 1 part of cement to 20 parts of sand by volume.

Stockpiles

Excavated material for backfill: If required, segregate the earth and rock material and stockpile, for re-use in backfilling operations.

Locations: Do not stockpile excavated material against tree trunks, buildings, fences or obstruct the free flow of water along gutters where stockpiling is permitted along the line of the trench excavation.

Disposal: If stockpiling is not permitted, dispose of excavated material off-site.

Unsuitable material

Disposal: Remove unsuitable material from the bottom of the trench or at foundation level and dispose of off-site. Replace with backfill material to **Fill materials** to the *Earthwork* worksection.

Boring

Subcontractor: If under road boring is required instead of trenches, engage a suitably qualified subcontractor to do the work.

3.4 TRENCH BACKFILL

General

Timing: Backfill service trenches as soon as possible after laying and bedding the service, if possible on the same working day.

Marking services: Underground marking tape to AS/NZS 2648.1.

Place fill: To **Placing fill** in the *Earthwork* worksection.

Bedding, haunch, side and overlay zones

Installation and material: To the particular utility authority or utility service requirements. Secure pipes against floatation.

Overlay zone thickness: Maximum of 300 mm immediately over the utility service.

Topsoil areas: Complete the backfilling with at least 100 mm of topsoil.

Material in reactive clay areas: In sites classified M, M-D, H1, H1-D, H2, H2-D, E or E-D to AS 2870, re-use excavated site material at a moisture content within ± 1% of that of the adjoining in situ clay.

Selected material zone

Extent: The section of trench within the zone, if applicable.

Backfill material: Selected material free from stones larger than 100 mm maximum dimension and the fraction passing a 19 mm Australian Standard sieve to have a 4 day soaked CBR value, in conformance with AS 1289.6.1.2, and not less than that of the adjacent selected material zone.

Trees

General: Backfill at trees, for a minimum 300 mm thickness, around tree roots with a topsoil mixture, placed and compacted in layers of 150 mm minimum depth to a dry density equal to that of the surrounding soil.

Backfill level: Do not place backfill material above the original ground surface around tree trunks or over the root zone.

Watering: Thoroughly water immediately after backfilling the tree root zone.

Compaction

Control moisture within backfill: To **Fill moisture control** in the *Earthwork* worksection.

Layers: Compact all material in layers not exceeding 150 mm compacted thickness. Compact each layer to the relative compaction specified before the next layer is commenced.

Compaction: To **Compaction requirements for fill and subgrade** in the *Earthwork* worksection and AS 3798 Section 5.

Frequency of testing: To AS 3798 clause 8.7.

Precautions: If compacting adjacent to utility services, use compaction methods which do not cause damage or misalignment.

Density tests

Testing authority: Have density tests of pipe bedding and backfilling carried out by a Registered testing authority.

Test methods:

- Compaction control tests: To AS 1289.5.4.1 or AS 1289.5.7.1.
- Field dry density: AS 1289.5.3.2 or AS 1289.5.3.5.
- Standard maximum dry density: AS 1289.5.1.1.
- Dry density ratio: AS 1289.5.4.1.
- Density index: AS 1289.5.6.1.

3.5 SURFACE RESTORATION

Subbase and base

Material: Provide crushed rock, DGS20 or DGB20 material and configure in layers and depths to match existing and adjacent work.

Supply and installation: To the *Pavement base and subbase* worksection.

Compaction: Uniformly compact each layer of the subbase and base courses over the full area and depth within the trench to a relative compaction of 100% when tested in conformance with AS 1289.5.4.1.

Tests: Test for compaction at a minimum frequency of 1/ every second layer/50 m² of restoration surface area.

Pathways and paved areas generally

Materials: Provide material consistent with the surface existing before commencement of the works.

Subbase: 150 mm crushed stone DGB20 compacted to 100% relative compaction in conformance with AS 1289.5.4.1.

Lippage at patches: Match the surface level at any point along the patch's edge with the adjoining footpath surface within ± 5 mm.

Concrete surfaces

Construction: Conform to the following:

- Prime coat the cut edges of the existing surfaces with cement slurry. Lay and compact concrete so that the edges are flush and the centre is cambered 10 mm above the adjoining existing surfaces.
- Material: 25 MPa concrete
- Surface finish and pattern: Match existing adjoining work.
- Minimum thickness: 75 mm or the adjacent pavement thickness, whichever is thicker.
- Reinforcement and dowels: If required, provide steel reinforcement with dowels into the adjacent concrete.
- Expansion joints: 15 mm thick preformed jointing material of bituminous fibreboard placed where new concrete abuts existing concrete and in line with joints in existing concrete.
- Control joints:
  . Form control joints strictly in line with the control joints in existing concrete.
  . Around electricity supply poles: Terminate the concrete paving 200 mm from the pole and fill the resulting space with cold mix asphalt.

Curing: Cure by keeping continuously wet for 7 days.

Asphalt footpaths

Materials and installation: To the *Asphaltic concrete* or *Sprayed bituminous surfacing* worksections as appropriate.

Thickness: Match the adjoining footpath.

Finish: Compact to a smooth even surface.

Segmental paving units

Materials and installation: To *Segmental pavers – sand bed* or *Segmental pavers – mortar and adhesive bed* as appropriate and as follows:

- Laying: Re-lay to match the pattern and surface levels of the existing paving.
- Damaged paving units: Replace paving units which are unsuitable for relaying with new units of the same material, type, size and colour as the existing.

Landscaped areas

Comply with requirements of Remedial Action Plan.

In topsoil areas: Complete the backfilling with topsoil for at least the top 100mm generally, 300 min in playground area.

Planted areas: Overfill to allow for settlement.

0331B BRICK AND BLOCK CONSTRUCTION

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide brick and block construction, as documented.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.

1.3 STANDARDS

General
Materials and construction: To AS 3700.

1.4 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Set out.
- Unit type, colour and texture.
- Bottoms of cavities, after cleaning out.
- Bottoms of core holes, before grouting.
- Reinforcement type and diameter.
- Positioning of reinforcing before grouting.
- Control joints, ready for insertion of joint filler.
- Damp-proof courses, in position.
- Flashings, in position.
- Lintels, in position.
- Structural steelwork, including bolts and shelf angles, in position.

1.5 TOLERANCES

General
Requirement: To AS 3700 Table 12.1.

2 PRODUCTS

2.1 DURABILITY

General
Exposure environment: Marine
Exposure locations: To AS 3700 clause 5.4.

2.2 MATERIALS

Standard: To AS/NZS 4455.1 and AS/NZS 4455.3.
Salt attack resistance grade: To AS 3700 Table 5.1.
Minimum age of clay bricks: 7 days.

Mortar materials
Mortar class: To AS 3700 Table 5.1.
Cement: To AS 3972.
- Type: GP

White cement: With ≤ 1% iron salts content.

Lime: To AS 1672.1.

Sand: Fine aggregate with a low clay content and free from efflorescing salts, selected for colour and grading.

Water: Clean and free from any deleterious matter.

Admixtures: To AS 3700 clause 11.4.2.4.

Pigment: To BS EN 12878, and as follows:

- Integral pigment mix proportion: ≤ 10% by weight of cement.

Mix proportions: As documented in the **Masonry cement mortar mix proportions table** and **Cement (GP/GB) mortar mix proportions table**.

Masonry cement mortar mix proportions table (cement:lime:sand), by volume

Mortar class to AS 3700	Clay	Concrete	Calcium silicate	Water thickener
M3	1:0:4	1:0:4	n/a	Yes
M4	1:0:3	n/a	n/a	Yes

Cement (GP/GB) mortar mix proportions table (cement: lime:sand), by volume

Mortar class to AS 3700	Clay	Concrete	Calcium silicate	Water thickener
M2	1:2:9	n/a	n/a	No
M3	1:1:6	1:1:6	n/a	Optional
M3	1:0:5	1:0:5	1:0:5	Yes
M4	1:0.5:4.5	1:0.5:4.5	n/a	Optional
M4	1:0:4	1:0:4	1:0:4	Yes
M4	1:0-0.25:3	1:0-0.25:3	n/a	Optional

Grout

Standard: To AS 3700 clause 11.7.

Minimum characteristic compressive strength: 12 MPa.

2.3 BUILT-IN COMPONENTS

General

Durability class of built-in components: To AS 3700 Table 5.1.

Steel lintels

Angles and flats: To AS/NZS 3679.1.

Cold formed proprietary lintels: Designed to AS/NZS 4600.

Corrosion protection: To AS/NZS 2699.3.

Galvanizing: Do not cut after galvanizing.

Reinforcement

Standard: To AS/NZS 4671.

Corrosion protection: To AS 3700 clause 5.9.

Minimum cover: To AS 3700 Table 5.1.

Wall ties

Standard: To AS/NZS 2699.1.

Type: A

Corrosion protection: To AS/NZS 2699.1.

Duty classification rating:

- Masonry veneer: medium duty
- Normal cavity construction and at abutments: medium duty
- Cavities > 60 mm and < 200 mm wide: Heavy duty.

Connectors and accessories
Standard: To AS/NZS 2699.2.

Corrosion protection: To AS/NZS 2699.2.

Flashings and damp-proof courses
Standard: To AS/NZS 2904.

Slip joints
Standard: To AS 3700 clause 4.13.

3 EXECUTION

3.1 GENERAL

Mortar mixing
General: Measure volumes accurately to the documented proportions. Machine mix for at least six minutes.

Protection from contamination
General: Protect masonry materials and components from ground moisture and contamination.

Bond
Type: Stretcher bond generally.

Building in
Embedded items: Build in wall ties and accessories as the construction proceeds. If it is not practicable to obtain the required embedment wholly in the mortar joint in hollow masonry units, fill appropriate cores with grout or mortar.

Steel door frames: Fill the backs of jambs and heads solid with mortar as the work proceeds.

Clearance for timber frame shrinkage
General: In timber frame brick veneer construction, leave clearances between window frames and brick sill and between roof frames and the brick veneer as follows:

- Additional clearance: To accommodate additional shrinkage of unseasoned floor timbers.
- Single storey frames and ground floor windows (not for slab on ground): 10 mm.
- Two storey frames and upper floor windows: 20 mm.

Construction at different rates or times
Monolithic structural action: If two or more adjoining sections of masonry, including intersecting walls, are constructed at different rates or times, rake back or tie the intersections between those sections so that monolithic structural action is obtained in the completed work.

Joining to existing
General: Provide a control joint where joining to existing structures. Do not tooth new masonry into existing work unless approved by a professional engineer.

Mortar joints
Solid and cored units: Lay on a full bed of mortar. Fill perpends solid. Cut mortar flush.

Face-shell bedded hollow units: Fill perpends solid. Cut mortar flush.

Finish: Conform to the following:

- Externally: Tool to give a dense water-shedding finish.
- Internally: If wall is to be plastered, do not rake more than 10 mm to give a key.
- Thickness: 10 mm.

Cutting: Set out masonry with joints of uniform width and minimum cutting of masonry units.

Monolithic structural action
Header units: Except in stretcher bond facework, provide brick and block header units, to AS 3700 clause 4.11.2.

Spacing: 600 mm maximum.

Location: Provide header units in the following locations:

- At engaged piers.
- At engagement of diaphragms with the leaves in diaphragm walls.

- At intersections of flanges with shear walls.
- At intersections with supporting walls and buttresses.
- Between leaves in solid masonry construction.

Rate of construction
General: Regulate the rate of construction to eliminate joint deformation, slumping or instability.

Rods
Set out: Construct masonry to the following rods:
- 75 mm high units: 7 courses to 600 mm.
- 90 mm high units: 6 courses to 600 mm.
- 190 mm high units: 3 courses to 600 mm.

Protection
General: Cover the top surface of brickwork and blockwork to prevent the entry of rainwater and contaminants.

Single leaf and solid walls: Moisture protection to AS 3700 clause 4.7.4.

Temporary support
General: If the final stability of the masonry is dependent on construction of (structural) elements after the brickwork and blockwork is completed, provide proposals for temporary support or bracing.

3.2 FACEWORK

Cleaning
General: Clean progressively as the work proceeds to remove mortar smears, stains and discolouration. Do not erode joints if using pressure spraying.

Acid solution: Do not use.

Colour mixing
Distribution: In facework, distribute the colour range of units evenly to prevent colour concentrations and banding.

Below ground
Facework: Commence face brickwork at least 1 full course for blockwork, or 2 full courses for brickwork, below adjacent finished surface level.

Double face walls
Selection: Select face units for uniform width and double-face qualities.

Preferred face: Before starting, obtain approval of the preferred wall face, and favour that face should a compromise be unavoidable.

Perpends
General: If other than vertically aligned perpends in alternate courses are proposed, provide details.

Sills and thresholds
General: Solidly bed sills and thresholds and lay them with the top surfaces draining away from the building.

Minimum size of cut unit: Three quarters full width.

3.3 SUBFLOOR WORK

Access openings
General: In internal walls, leave door width openings beneath doorways to give access to underfloor areas.

Air vent locations
General: Provide air vents to give adequate cross ventilation to the space under suspended ground floors.

Cavity walls: Provide matching vents in the internal leaves located as near as practicable to the vents in the external leaves.

Location: Below damp-proof course to internal and external walls.

Air vent types
Brickwork: Select from the following:
- Concrete framed: Bronze wire mesh in concrete frames, 470 x 160 mm.

- Terracotta: Perforated, 230 x 160 mm.

3.4 CAVITY WORK

Cavity clearance
General: Keep cavities clear at all times.

Cavity fill
General: Fill the cavity with mortar to 1 course above adjacent finished (ground) level. Fall the top surface towards the outer leaf.

Cavity width
General: Provide minimum cavity widths in conformance with the following:

- Masonry veneer walls: 40 mm between the masonry leaf and the load bearing frame and 25 mm minimum between the masonry leaf and sheet bracing . Kitchen wall variable cavity width

Openings
Care: Do not close the cavity at the jambs of external openings.

Wall ties connectors and accessories
Protection: Install to prevent water passing across the cavity.

3.5 DAMP-PROOF COURSES

Location
General: Provide damp-proof courses as follows:

- Masonry veneer construction: In the bottom course of the outer leaf, continuous horizontally across the cavity. Fasten to the inner frame 75 mm above floor level.
- Walls adjoining infill floor slabs on membranes: In the course above the underside of the slab in internal walls and inner leaves of cavity walls. Project 40 mm and dress down over the membrane turned up against the wall.

Height: Not less than:

- 150 mm above the adjacent finished ground level.
- 75 mm above the finished paved or concrete area.
- 50 mm above the finished paved or concreted area and protected from the direct effect of the weather.

Installation
General: Lay in long lengths. Lap full width at angles and intersections and at least 150 mm at joints. Step as necessary, but not exceeding 2 courses per step for brickwork and 1 course per step for blockwork. Sandwich damp-proof courses between mortar.

Junctions: Preserve continuity of damp-proofing at junctions of damp-proof courses and waterproof membranes.

Lap sealing: Seal with a bituminous adhesive and sealing compound.

3.6 FLASHINGS

Location
General: Provide flashings as follows:

- Floors: Full width of outer leaf immediately above slab or shelf angle, continuous across cavity and up the inner face bedded in mortar, turned 30 mm into the inner leaf 2 courses above for brick and 1 course above for block. If the slab supports the outer skin and is not rebated, bed the flashing in a suitable sealant.
- Under sills: 30 mm into the outer leaf bed joint 1 course below the sill, extending up across the cavity and under the sill in the inner leaf or the frame for masonry veneer. Extend at least 150 mm beyond the reveals or each side of the opening.
- Over lintels to openings: Full width of outer leaf immediately above the lintel, continuous across cavity, turned 30 mm into the inner leaf 2 courses above for brick and 1 course above for block or turned up against the inner frame and fasten to it. Extend at least 150 mm beyond the lintels.
- At abutments with structural frames or supports: Vertical flash in the cavity using 150 mm wide material, wedged and grouted into a groove in the frame opposite the cavity.

- At jambs: Vertically flash jamb, extending 75 mm into the cavity, interleaved with the sill and head flashing at each end. Fix to jambs.
- At roof abutments with cavity walls: Cavity flash immediately above the roof and over-flash the roof apron flashing.

Installation

General: Sandwich flashings between mortar except where on lintels or shelf angles. Bed flashings, sills and copings in one operation to maximise adhesion.

Laps: If required, lap full width at angles and intersections and at least 150 mm at joints. Step as necessary, but not exceeding 2 courses per step for brickwork and 1 course per step for blockwork.

Lap sealing: Seal with a bituminous adhesive and sealing compound.

Pointing: Point up joints around flashings, filling voids.

Weepholes

Location: Provide weepholes to external leaves of cavity walls in the course immediately above flashings, and cavity fill, and at the bottoms of unfilled cavities.

Form: Open perpends.

Maximum spacing: 1200 mm.

3.7 WALL TIES

Location

General: Space wall ties in conformance with AS 3700 clause 4.10 or AS 4773.2, as appropriate, and at the following locations:

- Not more than 600 mm in each direction.
- Adjacent to vertical lateral supports.
- Adjacent to control joints.
- Around openings.

Installation

Fixing of masonry veneer ties:

- To timber frames: Screw fix to outer face of timber frames with fixings to AS 3566.1.
- To concrete: Masonry anchors.
- To steel frames: Screw fix to outer face of steel studs with fixings to AS 3566.1 .

3.8 CONTROL JOINTS

General

Location and spacing: Provide contraction joints, expansion joints or articulation joints to AS 3700 clause 4.8.

Control joint filling

Filler material: Provide compatible sealant and bond breaking backing materials which are non-staining to brickwork and blockwork. Do not use bituminous materials with absorbent masonry units.

- Bond breaking materials: Non-adhesive to sealant, or faced with a non-adhering material.
- Foamed materials: Closed-cell or impregnated, not water-absorbing.

Installation: Clean the joints thoroughly and insert an easily compressible backing material before sealing.

Sealant depth: Fill the joints with a gun-applied flexible sealant for a depth of at least two-thirds the joint width.

3.9 BRICKWORK BED JOINT REINFORCEMENT

Location

General: Locate as follows:

- In 2 bed joints below and above head and sill flashings to openings.
- In 2 bed joints below and above openings.
- In third bed joint above bottom of wall.
- In second bed joint below top of wall.

Maximum vertical intervals: 500 mm.

Installation

General: Lap 450 mm at splices. Fold and bend at corners so that the longitudinal wires are continuous. Stop 50 mm short of control joints. Extend 450 mm beyond each side of openings.

Reinforcement

Material: Galvanized welded wire mesh.

Width: Equal to the width of the leaf, less 15 mm cover from each exposed surface of the mortar joint.

3.10 REINFORCED AND GROUTED BLOCKWORK

Cleaning core holes

General: Provide purpose-made cleanout blocks or machine cut a cleaning hole at the base of each grouted core.

Location: Locate on the side of the wall which is to be rendered or otherwise concealed.

Cleaning: Rod cores to dislodge mortar fins protruding from the blocks and mortar droppings from reinforcement. Remove through the clean-out blocks.

Grouting

Commencement: Do not commence until grout spaces have been cleaned out and the mortar joints have attained sufficient strength to resist blow-outs.

Height of lift: Limit the height of individual lifts in any pour to make sure that the grout can be thoroughly compacted to fill all voids.

Compaction: Compact by vibration or by rodding.

Topping up: On the completion of the last lift, top up the grout after 10 min to 30 min, and vibrate or rod to mix with the previous pour.

3.11 LINTELS

Location

General: Provide 1 lintel to each wall leaf as documented in the **Lintel schedule**.

Installation

General: Do not cut on site. Keep lintels 10 mm clear of heads of frames.

Steel lintels: Pack mortar between any vertical component and supported masonry units. For angles, install the long leg vertical.

Minimum bearing each end:

- Span ≤ 1000 mm: 100 mm.
- Span > 1000 mm ≤ 3000 mm: 150 mm.
- Span > 3000 mm: To structural drawings.

Propping: Provide temporary props to lintels to prevent deflection or rotation.

- Minimum propping period: 7 days.

3.12 CONNECTORS AND ACCESSORIES

Slip joints

General: Provide slip joints to top of all unreinforced masonry walls supporting concrete slabs and other concrete elements.

Protection: Keep the slip joints in place and protect from displacement.

Flexible masonry ties

General: Provide stabilising ties at control joints and abutting structural elements, including columns, beams and slab soffits.

Locations and details: To structural drawings.

3.13 BAGGING

Preparation

General: Cut joints flush before bagging.

Dry bagging
Application: Apply laying mortar to the surface using a hessian bag or similar. Flush up irregularities, but leave a minimum amount of mortar on the surface.

4 SELECTIONS

4.1 SCHEDULES

Brick and block construction schedule

Property	A – Face brickwork	A – Reinforced Blockwork
Bricks and blocks: Name or type	Bowral Bricks - Gertrudis brown 230 x 110 x 76 mm	140mm concrete blocks
Bricks and blocks: Air vent units		
Bricks and blocks: Sill units and transition course between brickwork and Barestone cladding	Bowral bricks -Gertrudis brown 45 degree squint cut as shown on details	
Bricks and blocks: Threshold units		
Mortar: Colour	natural	natural
Unit mortar joints: Shape or profile	Concave, Ironed with a 12 mm diameter rod	Dry bagged finish to exposed faces
Built-in components: Weephole insect barriers	Standard Weepa	

0345P DULUX STEEL PROTECTIVE PAINT COATINGS

1 GENERAL

1.1 COMPANY CONTACTS

DuluxGroup/Dulux technical contacts
Architects and Specifiers' Hotline: 13 23 77.
Website: www.duluxprotectivecoatings.com.au/contact-us.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.
- Painting

1.3 STANDARDS

General
Surface preparation and coating: Conform to the recommendations of AS/NZS 2312.

Site testing of protective coatings
Test methods: To AS 3894.

1.4 MANUFACTURER'S DOCUMENTS

Technical manuals
Duspec Product Data Sheets, MSDS, paint system selection: www.duspec.com.au

1.5 INTERPRETATION

Abbreviations
General: For the purposes of this worksection the following abbreviations apply:
- ACA : Australasian Corrosion Association.
- DFT: Dry Film Thickness.
- ITP: Inspection and Test Plan.
- NACE : National Association of Corrosion Engineers (USA).
- µm: Micron (10^{-6}m).
- SDS: Safety Data Sheet.
- SSPC : The Society for Protective Coatings (USA).

Definitions
General: For the purposes of this worksection the definitions given in AS/NZS 2310 and the following apply:
- Coating contractor: The protective coatings application contractor conducting the on or off site coating application works.
- Coating manufacturer: Dulux Protective Coatings.
- ITP: A series of formal Inspection and Test Plans, prepared by the coating contractor to reflect the specific inspection and testing that will be carried out on the surface preparation, coating application and the record keeping tasks to be undertaken.
- SDS: The formal Material Safety Data Sheet, prepared in conformance with Worksafe Australia's requirements and distributed by the coating manufacturer to provide information on the safe handling, storage, personal protective equipment requirements, use and disposal of a coating product.

1.6 QUALITY ASSURANCE

General
Standard: Applicator Quality Assurance system to AS/NZS ISO 9001.

Applicator's quality assurance officer: Nominate a qualified NACE Certified Coating Inspector or a ACA Certified Coatings Technician under direction of a NACE inspector.

Records: Maintain records:

- Access: Have records available for inspection.

Verification: Nominate an independent NACE Certified Coating Inspector to carry out quality audits.

Defects: Provide written inspector reports.

1.7 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Items after fabrication before commencing surface cleaning and preparation.
- Surfaces after preparation before application of first coating.
- Coating stages:
  - . After application of primer or seal coats.
  - . After application of each subsequent coat.

1.8 SUBMISSIONS

Execution details

Detailing of structural steelwork: If design and fabrication features of the items to be coated may lead to difficulties, advise before commencing surface preparation.

Removal of deleterious materials: Submit advice on suitability of marking paints, and removal of materials deleterious to coating processes such as grease, oil and paint.

Repair of coating damage: If the protective coating is damaged, submit a repair coating proposal, based on the coating manufacturer's technical data sheet, that will make sure that the full corrosion protection ability of the system is reinstated.

Final coat reinstatement: If required due to variance, submit proposals for reinstatement of the visible final coating system to match the original coating system samples.

Maintenance paint coating systems

Existing systems: Itemise areas of corrosion, damage and other degradation.

Recoating systems: Supply coating systems for maintenance painting of previously coated items and structural elements, including surface preparation, as documented in the **Protective paint coating schedule**.

Quality

ITPs: Submit for each proposed coating system.

Quality supervisor: Submit the name and the experience record of the person nominated to oversee the implementation of the ITPs.

Records

General: Prepare and maintain records of all surface preparation and coating application works as follows:

- Standard: To AS 3894.10, AS 3894.11, AS 3894.12, AS 3894.13 and AS 3894.14.
- Reference the relevant parts of the ITPs, and record conformance.

Samples

Painting and coating colour: Submit a 400 x 400 mm sample of the finished product for each different coating system.

Retention: Retain half of each sample for comparison during coating application.

Subcontractors

Requirement: Submit proof of currency of the applicator's Environmental Operating Licence.

Warranties

General: Submit details of the proposed warranty terms, form and period. If separate warranties are offered by the manufacturer and the applicator, make sure they are interlocking.

2 PRODUCTS

2.1 GENERAL

Product substitution
Other products: Conform to **PRODUCTS**, **GENERAL**, **Substitutions** in the *General requirements* worksection.

General
Care: Handle, store, mix and apply all protective coatings in conformance with Dulux recommendations.

Original containers: Deliver coating products to site in the manufacturer's labelled and unopened containers.

Ambient temperature range for storage: 15°C to 25°C.

Use-by-date: Use products with limited shelf life before their use-by-date unless written authorisation from the coating manufacturer's technical services section is provided.

Proprietary products
Substitution: Dulux paint products and specified coatings systems have been selected for this project and unauthorised product substitution will jeopardise or void the Warranties.

Safety data sheets (SDS)
Requirement: Keep on site copies of all relevant Dulux SDS's and technical datasheets.

3 EXECUTION

3.1 GENERAL

General
Product warnings: Conform to the requirements and recommendations of Dulux Protective Coatings Product Data and SDS's.

Qualifications: All work is to be completed by suitably qualified professionals holding TAFE or other recognised qualifications.

3.2 PROTECTION

Surroundings
Protection: Prevent the release of abrasive, overspray or paint waste debris to air, ground or to any watercourse. Repair or clean affected surrounding areas.

Damage: Prevent damage to other assets, services or equipment.

Contamination
Coating contamination: Prevent contamination of coatings from abrasive or other foreign matter.

Surfaces: Prevent contamination of coated surfaces which are not yet dry from blasting dust, abrasive or surface preparation debris.

On site storage
General: Store in a cool shady place.

Sunlight: Protect coating materials from direct sunlight before mixing or adding the converter (catalyst).

Post application care
General: Provide protection to the coating against physical, chemical or atmospheric damage until all components are fully cured.

Care: Stack and handle all coated items using fabric slings or padded chains. Adopt soft packaging, carpet strips or other deformable materials between all coated items.

Water ponding: Stack coated items to prevent water ponding.

3.3 SURFACE PREPARATION

General
Defects: Remove all surface defects, including cracks, laminations, deep pitting, weld spatter slag, burrs, fins, sharp edges and other defects before the preparation of the surface to be coated.

Temporary welds: Grind flush temporary welds.

Site welding: Where possible avoid site welding.

Porous, skip or stitch welds: Not acceptable.

Edges: De-burr and round all edges to a 2 mm radius.

Surface contaminants: Remove surface contaminants such as oil, grease, dirt and loose particles, using an alkaline oil emulsifier/ degreaser to AS 1627.1.

Surface preparation: Prepare surfaces to the required finish to AS 1627.1, AS 1627.2, AS 1627.4, AS 1627.5, AS 1627.6 and AS 1627.9.

Surface cleaning: Remove spent abrasive from the surface by blowing with clean, dry air and/or by vacuum cleaning.

Bolts: Provide washers at heads and nuts at replacement bolts.

Surface preparation for atmospheric steel

General: Conform to the following requirements:

- Wash and degrease all surfaces to be coated in conformance with AS 1627.1 with a free-rinsing, alkaline detergent, such as Gibson F310B or Gamlen CA No. 1 in conformance with the manufacturer's written instructions and all safety warnings.
- Wash with fresh potable water and remove all soluble salts are in conformance with AS 3894.6 Methods A and D.
- Grind all sharp edges with a power tool to a minimum radius of 2 mm.
- Power tool clean welds to AS 1627.2 Class 2 to remove roughness. Remove filings, preferably by vacuum or compressed air.
- Abrasive blast clean all steel surfaces to be painted in conformance with AS 1627.4 to visual standard AS 1627.9 Class 2.5 (equivalent to ISO 8501-1, Sa 2.5: Very Thorough Blast-Cleaning). Use a non-metallic medium that will generate a surface profile of 35 to 65 µm, as tested to AS 3894.5 Method A.
- Commence application within 4 hours of abrasive blast cleaning or before surface becomes contaminated, otherwise repeat abrasive blasting step.
- Stripe coat welds, bolts, boltholes and all edges with primer before application of full primer coat nominated in **PROTECTIVE PAINT COATING SYSTEMS.**
- Before application, make sure that the surface is free of contaminants including oil, grease, dirt, dust, salt and any other deleterious materials that will interfere with coating performance.

Treatment of on-site welding

On-site welding: If on site welding is performed, adopt the following procedure:

- Remove weld spatter.
- Power tool clean welds to AS 1627.2 Class 2 to remove roughness. Remove filings, preferably by vacuum or compressed air.
- Prime welds immediately with the nominated primer before contamination can re-occur. Make sure that the primer overlaps the sound adjacent coating by between 25 mm and 50 mm.
- Apply intermediate and topcoats over the primed welds to match the surrounding coating system, overlapping the sound adjacent coating by between 25 mm and 50 mm.

Preparing galvanized and aluminium surfaces

Remove grease, oil and other solvent-soluble contaminants by wiping with mineral turpentine or white spirit. Finally wipe with a clean solvent. Allow to dry and proceed with the next operation immediately. Abrade surfaces to a medium coarse type finish to provide an adhesion key.

Preparing zinc primed surfaces

If present, remove zinc salts from zinc primers. Remove grease, oil and other solvent-soluble contaminants by wiping with mineral turpentine or white spirit. Finally wipe with a clean solvent. Allow to dry and proceed with the next operation immediately.

Shop priming

Dust off and apply a coat of primer, according to the technical specification.

Site coating

General: High pressure fresh water wash down all surfaces. Lightly sand down primer/intermediate coats, which have been shop applied, before site application of next coat.

3.4 PREPARATION ASSESSMENT

General

Conformance: All areas of any item must meet the required cleanliness standard.

Abrasive blast cleaning

Assessment: To AS 1627.4 and ISO 8501-1.

- Class 2.5.

Power tool cleaning

Assessment: To AS 1627.2 and ISO 8501-2.

- Class 2.

Hand tool cleaning

Visual assessment: To ISO 8501-2.

- Class 1.

Surface profile

General: To AS 3894.5.

Profile grade: To AS 3894.5 Method A.

Surface dust from abrasion

General: To AS 3894.6 Method C.

Chloride level testing

Test: To AS 3894.6 Method A.

Maximum allowable chloride levels: 50 mg/m^2.

Conformance: If this level is exceeded, rewash the affected surface area using fresh water until the chloride level is within acceptable limits. Pressure washing or steam cleaning is also acceptable before re-testing and re-abrasive blasting.

Timing of testing: Early in the blasting work so that removal procedures can be initiated before the blasting is completed.

Wet film thickness

Method of measurement: To AS 3894.3, Appendix C using an approved wet film gauge continuously during application.

Dry film thickness

Method of measurement: To AS 3894.3, clause 10.

Extent: All surfaces at the completion of each of the prime, intermediate and finish coats, in particular include areas of the structure which are difficult to paint, are masked by structure, or areas where double coating or light coating is likely due to the shape of the substrate.

Number of measurements: Perform a sufficient number of readings to make sure a representative account for the DFT compliance of the coated areas tested.

Deduction: If testing the DFT of coatings 150 µm and less, deduct the effect of the measured surface profile from all DFT readings.

Single readings: Single reading requirements are as follows:

- The average of 5 point readings for each 10 m^2 area of coating surface should not be outside the specified coating thickness range.
- No single point reading in any 10 m^2 should be less than 80% of the specified minimum coating thickness. However, where three readings are averaged to produce a point reading, an individual reading may be less than 80% of the minimum coating thickness.
- Check any single reading that is greater than 150% of the specified DFT with three additional readings within 50 mm of the original reading. If these three readings average not greater than 150% of the specified DFT, take the averaged readings as the point reading. If greater than 150%, reject the DFT in that area.

Rectification: Re-work areas rejected, using surface preparation and coatings in the same manner and order as the original work.

Defects including under thickness and over thickness: Mark with school grade chalk, adhesive inspection labels or masking tape. Do not use crayon, paint or spirit based ink pens.

3.5 MIXING

General

Mixing: Mix coatings thoroughly. All containers larger than 4 litres are to be mixed using powered agitators driven by air motors.

Multi-component coatings: Combine multi-component coatings as whole pack units. If partial mixing is proposed, submit details.

Thinners: If addition of thinners is proposed, conform to the Dulux Product Data Sheet for the specified product.

Colour consistency: If colour consistency is required, before the addition of the curing agent or converter and before coating application, pre-mix the components of coating products that have been tinted to make sure colour uniformity.

3.6 COATING APPLICATION

General

General: Conform to the Dulux Product Data Sheets and the Dulux specification.

Painting and coating colour: Verify all project finish colours with the retained samples.

Final surface preparation or coating application

Limits: If the following climatic/substrate conditions are present do not apply coating:

- The relative humidity is above 85%.
- The substrate temperature is less than 3°C above the dewpoint.
- The ambient air temperature is below 5°C or above 40°C.
- The substrate temperature is below 10°C or above 45°C.
- The surface to be coated is wet or damp.
- Where the full prime coat application cannot be carried out before the specified cleanliness of the surface deteriorates.
- For external or site applied coatings:
  - . The weather is clearly deteriorating or unfavourable for application or curing.
  - . High wind conditions.
- The surface preparation standard has not been achieved.
- The time between surface blast cleaning and the commencement of coating exceed 4 hours.
- Visual tarnishing or black spots develop on the surface of the metal.

Exception: Preliminary blast or other surface preparations may be performed in conditions that are outside the limits, provided the final surface preparation and all coating applications are undertaken under the limited conditions.

Prior coating: Before the spray application of each coating stripe coat by brush method all edges, welds, seams, rivets bolts and boltholes (including slots). Prime the underlying surfaces of replacement bolting, washers and nuts before installation.

Procedure: Conform to the order shown in **PROTECTIVE PAINT COATING SYSTEMS**.

Timing: Conform to the minimum and maximum recoat intervals and curing times.

Detail: Stripe coat all welds, bolt holes, corners and difficult to spray areas by brushing in with the prime coat and intermediate coat material before the full coating application.

Subsequent coats: Make sure that before any subsequent coating layer is applied, the surface condition of the preceding coat is complete and correct in all respects, including its DFT achievement, cleanliness, freedom from defects. These are detailed on the Dulux Protective Coating specification. Depending on the applicators chosen method additional coats may be required to achieve the nominated minimum DFT.

Conformance: To AS/NZS 2312 for the specified film thickness of individual coats.

Correction: Correct any defect in a coating layer before the subsequent coating layer is applied.

Protection

General: Perform all painting under cover and/or protected from rain, condensation, dew, excessive wind, overspray or wind-blown dust.

Period: Continue protection where any of these conditions exist before the coating has cured to a sufficient degree so as to be unaffected.

3.7 COATING REPAIR

Repair of coating damage

Preparation: Feather back by hand or machine sanding all leading edges of intact coating adjacent to the repair, to remove any sharp edges.

Surface contamination: Remove by dusting or blowing down before applying the first coat of paint.

Sequence: Apply the repair coating in the same sequence and manner as the original coating.

Areas damaged without exposing the primer: Wash with a proprietary detergent solution and rinse with fresh water, followed by abrading and ensuring that edges of sound paint are feathered. Then coat the area with the appropriate intermediate and finishing coat materials.

Areas damaged to the primer or steel surface: Blast clean to the original standard. Prepare at least 50 mm into the sound coating and to a further feathering zone of approximately 50 mm. Recoat with the specified system to restore the film thickness and integrity over the whole prepared surface including the feathered zone.

Aesthetic reinstatement: If required, repaint to a physical or discernible boundary line.

Defects: If corrosion pitting or areas of significant metal loss and defects are exposed by the blasting process, advise for inspection and have areas passed as being fit for service before proceeding with the coating system.

Timing: Apply the Dulux Protective Coating system within 4 hours of blast cleaning or in any case before visual tarnishing of the steel occurs.

Cleaning: Provide, at no additional cost, surface treatment as follows:

- Surfaces left longer than four hours: Re-blast cleaning before coating.
- Surfaces that develop visual tarnishing (red rust or black spots) at any time before coating: Wash down with fresh potable water then blast clean before coating. There are commercially available chloride reducing solutions that may assist.

3.8 COMPLETION

General

Joints: On completion, seal all joints and mating surfaces with a suitable polyurethane sealant.

4 SELECTIONS

4.1 PROTECTIVE PAINT COATING SYSTEMS

There are decorative finish options for architectural and structural steel. The most common coating types are:

COASTAL AS/NZS 2312 Category C, D and E: Steel protection and decoration for green buildings

Location	Primer	Second Coat	Third Coat	Duspec No.
Interior non-decorative	75 µm DULUX® Zincanode® 402	Nil	Nil	SI2770
Interior decorative	75 µm DULUX® Zincanode® 402	40 µm DULUX® Aquanamel® VOC < 75 g/L	Nil	DI0539 DD1282
Exterior non-decorative equivalent to AS/NZS 2312 IZS2	75 µm DULUX® Zincanode® 402	Nil	Nil	SI2770 If exposed this product will chalk
Exterior decorative equivalent to AS/NZS 2312 IZS2	75 µm DULUX® Zincanode® 402	100 µm–DULUX DUREBUILD STE	100 µm DULUX FERREKO #3:	

0382 LIGHT TIMBER FRAMING

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide light timber floor, wall and roof framing, as documented.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.
- *Adhesives, sealants and fasteners*.
- *Timber products, finishes and treatment*.

1.3 INTERPRETATION

Definitions
General: For the purposes of this worksection the definitions given in the AS 1684 series apply.

1.4 STANDARDS

General
Framing: To AS 1684.2, AS 1684.3 or AS 1684.4, as appropriate.
Design: To AS 1720.1.

1.5 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Prefabricated units before installation.
- Fabricated items before priming or water-repellent treatment.
- Bolts after final tightening.
- Timber work after erection but before it is covered.

1.6 TOLERANCES

Floors
Maximum deviation from a 3 m straightedge laid in any direction on the floor framing: 5 mm.

Walls
Requirement: Conform to the **Walls tolerances table**.

Walls tolerances table

Property	Permitted deviation
Generally: Verticality in 2 m	1:500
Generally: Flatness[1] in 2 m	3 mm
Features[2]: Verticality in 2 m	1:1000
Features[2]: Horizontality in 2 m	1:1000
1. Flatness: Measured under a straightedge laid in any direction on a surface.	2. Features: Conspicuous horizontal or vertical lines including external corners, parapets, reveals, heads, sills.

1.7 SUBMISSIONS

Certification
Requirement: Submit certification by a professional engineer of the design, documentation and erected work to AS 1684 and AS 1720.1. Include the following:

- Reactions: Provide location and magnitude of reactions to be accommodated by the support structure.
- Floor, wall and roof frame member sizes: A schedule of proposed member sizes, certified as meeting stated project requirements for spans, spacings, loadings and deflections.
- Species and stress grade.

Materials

Identification: Submit a supplier's certificate (which may be included on an invoice or delivery docket) verifying that the timber conforms to the documented requirements.

Inspection: Submit the inspection authority's certificate verifying that the timber conforms to the documented requirements.

Moisture content: Submit records of moisture content.

CCA treated timber: If proposed to be used, provide details.

Shop drawings

Requirement: Submit shop detail drawings certified by a professional engineer stating that the design has been carried out to AS 1684 and AS 1720.1 requirements for the configurations and loadings. Include the following:

- Prefabricated roof trusses:
  . Marking plans.
  . Truss plan layout.
  . Elevations, with the arrangement of members allowing for the accommodation of in-roof services and the size and section type of each member.
  . Camber of all elements.
  . The method of assembly, connection, lifting, holding down and bracing.
- Prefabricated wall frames:
  . Wall plan, showing all wall layouts.
  . Elevations showing the arrangement of members, and the size and section type of each member.
  . The method of assembly, connection, lifting, holding down and bracing.

Subcontractors

Prefabricated items: Submit the name and contact details of proposed manufacturers, suppliers and installers.

2 PRODUCTS

2.1 GENERAL

Storage and handling

General: Do not distort or damage timber or timber products.

Moisture content: Maintain the equilibrium moisture content of seasoned timber.

Protection from weather: Provide temporary protection for members until permanent covering is in place.

2.2 MARKING

Identification

Branding: Permanently mark structural timber under the authority of a recognised product certification program applicable to the product. Locate the brand mark on faces or edges which will be concealed in the works. For timbers not covered by the branding provisions of Australian standards or regulations for which branding is required, include the following data:

- Stress grade.
- Method of grading.
- If seasoned, the word, SEASONED or DRY, or an abbreviation of seasoned, such as SEAS or S.
- The certification mark of the product certification program.
- The applicable standard.

Trusses: Permanently mark each truss to show:

- Project identification.
- Manufacturer.
- Tag or number.
- Location.
- Support points.

2.3 TIMBER

Certification
Requirement: Certification, chain of custody and product labelling to the *Timber products, finishes and treatment* worksection.

Fascias and barge boards
Hardwood: To AS 2796.1.

Grade: [complete/delete]

Seasoned cypress pine: To AS 1810.

Grade: [complete/delete]

Softwood: To AS 4785.1.

Grade: [complete/delete]

Preservation treatment: To the *Timber products, finishes and treatment* worksection.

Fascia dimensions:

- Width x thickness (mm): [complete/delete]
- Profile: [complete/delete]

Barge board dimensions:

- Width x thickness (mm): [complete/delete]
- Profile: [complete/delete]

Trusses
Design: To AS 1720.1.

Camber: Camber bottom chord upward.

Overhangs: Free from spring or splits.

2.4 LAMINATED VENEER LUMBER AND GLUED LAMINATED TIMBER

Laminated veneer lumber
Standard: To AS/NZS 4357.0.

Glued laminated timber
Standard: To AS/NZS 1328.1.

2.5 STRUCTURALLY PLYWOOD

General
Standard: To AS/NZS 2269.0.

Bond: Type A to AS/NZS 2754.1 (Int).

Bracing
Unit type: [complete/delete]

Thickness (mm): [complete/delete]

Veneer
Veneer quality to visible surfaces: CD (minimum).

2.6 COMPONENTS

Nailplated joined beams
Standard: To AS 4446.

Type: Engineered beam made from stress-graded timber pieces joined together with nailplates.

Location: [complete/delete]

Proprietary product brand and code: [complete/delete]

Product type: [complete/delete]

Timber species: [complete/delete]

Stress grade: [complete/delete]

Section: [complete/delete]

Mild steel post bases

Minimum dimensions: Conform to AS 1684.2 Table 9.20(p) and AS 1684.3 Table 9.20(p), as appropriate.

Location: To timber posts supported off concrete slabs or footings.

Finish: Galvanize after fabrication.

Fasteners

General: Conform to the *Adhesives, sealants and fasteners* worksection.

Installation: Do not split or otherwise damage the timber.

Coating: Before placing bolts in contact with CCA treated timber, coat the shank of the bolt in a grease or bituminous coating.

Damp-proof course

Material: To AS/NZS 2904.

Type: [complete/delete]

Flashings

Material: To AS/NZS 2904.

Type: [complete/delete]

2.7 FINGER JOINTED STRUCTURAL TIMBER

General

Performance: To AS/NZS 8008 (Int).

Production: To AS 5068.

Stress grade: [complete/delete]

Service class: [complete/delete]

2.8 RECONSTITUTED STRUCTURAL TIMBER PRODUCTS

Wet-processed fibreboard (including hardboard)

Standard: To AS/NZS 1859.4.

Classification: [complete/delete]

Bending strength: [complete/delete]

Location: [complete/delete]

Dimensions (mm): [complete/delete]

Finish quality: [complete/delete]

Bracing unit type: [complete/delete]

Surface finish: [complete/delete]

Thickness (mm): [complete/delete]

Type: [complete/delete]

3 EXECUTION

3.1 FLOOR FRAMING

Bearers and joists

Levelling: Level bearers and joists by checking or by packing for the full width of the member with dense corrosion resistant material which is secured in place.

Maximum thickness of packing: 3 mm.

Spring: Lay bearers and joists to allow for straightening under loading.

Joints

Requirement: Locate joints only over supports:

- Minimum bearing of bearers: 50 mm.
- Minimum bearing of joists: 30 mm.

Fixing and restraint

Fixing: Secure bearers and joists to supports to provide restraint against lateral movement.

Deep joists: To AS 1684.2 clause 4.2.2.3.

Herringbone strutting dimensions: ≥ 38 x 38 mm.

Trimmers or blocking dimensions:

- Depth: Joist depth less 25 mm.
- Minimum thickness: ≥ 25 mm.

Engineered timber joists 200 mm deep or greater: Provide lateral restraint using blocking or seasoned rim board.

3.2 WALL FRAMING

Bracing

Bracing material: [complete/delete]

Additional support

Requirement: Provide additional support in the form of noggings, trimmers and studs for fixing lining, cladding, hardware, accessories, fixtures and fittings, as required.

Spacing of noggings: Maximum 1350 mm centres.

Vermin barriers

Requirement: Provide vermin barriers as follows:

- Brick veneer barrier: Close nail 10 mm galvanized steel wire mesh to the underside of the bottom plate of external stud walls, extending across the cavity for building into brickwork.

Damp-proof course

Requirement: Provide damp-proof courses under the bottom plate of stud walls built off slabs or masonry dwarf walls, as follows:

- External walls (not masonry veneer): Turn up at least 75 mm on the inside and tack. Project 10 mm beyond the external slab edge or dwarf wall and turn down at 45°.
- Walls of bathrooms, shower rooms and laundries: Turn up at least 150 mm on the wet side and tack to studs.

Installation: Lay in long lengths. Lap full width at angles and intersections and at least 150 mm at joints.

Junctions: Preserve continuity at junctions of damp-proof courses, sarkings and waterproof membranes.

Flashings

Location: Provide flashings to external openings to prevent the entry of moisture. Form trays at the ends of sill flashings.

Masonry veneer construction: Extend flashing across cavities and build into brickwork.

3.3 ROOF AND CEILING FRAMING

Wall plates

Fixing: Fix timber wall plates to masonry, with straps, bolts or both.

Fixing plates

Requirement: Provide 45 mm minimum thick timber fixing plates to transfer the design loads where timber joists, rafters or purlins bear on or into steel members. Bolt to the steel member at maximum 500 mm centres and at maximum 100 mm from the end of the fixing plate.

Beam framing

Ridge straps: Butt ends of rafters together at ridge, and strap each pair together with 900 mm long steel strap passing over the ridge, triple nail to each rafter.

Ridge strap material: [complete/delete]

Water tank or heater in roof space: Provide a support platform to AS/NZS 3500.4 clause 5.5.

Additional support: Provide a frame member behind every joint in fibre cement sheeting or lining.

Anti-ponding boards
Standard: To AS/NZS 4200.2.

Material: [complete/delete]

Trusses
Nailplated prefabricated roof trusses: To AS 4440.

Support: Support trusses on bottom chord at two points only, unless designed for additional support.

Plumb: The lesser of H/50 or 50 mm, where H is the height of the truss at point where plumb is being measured.

Vertical movement: Provide minimum vertical clearance of 10 mm plus ceiling batten depth over internal non-load bearing walls. Use bracing methods which allow for the design vertical movements.

3.4 COMPLETION

Tightening
Requirement: Tighten bolts, screws and other fixings so that joints and anchorages are secure at the date of practical completion.

0423P COLORBOND® AND ZINCALUME® IN ROOFING – PROFILED SHEET METAL

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide and install roof cladding made from COLORBOND® and ZINCALUME® steel and associated work as documented and which satisfies the product performance requirements.

1.2 PERFORMANCE

Ambient climatic conditions
Location exposure severity
Exposure severity category: marine

Roof access
Type: Normal roof maintenance. Access to roof panels, plant

1.3 COMPANY CONTACTS

Colorbond and Zincalume technical contacts
Website: www.bluescopesteel.com.au/our-company/contact-us

1.4 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):

- *General requirements*.

1.5 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:

- Roof supports.
- Parts of the roofing, sarking, vapour barrier, insulation and roof plumbing installation that will be covered up or concealed.

1.6 SUBMISSIONS

Samples
Requirement: Submit samples of the following, showing the range of variation available:

- Custom profiled flashings and cappings.
- Sealants.
- Sheet metal finishes showing the range of variation available.
- Trims and accessories with a colour finish.

Tests
Type tests: Submit results as follows:

- Metal roofing general tests: Roof sheeting and fastenings to AS 1562.1 for resistance to concentrated load and to wind pressure.

Warranties
Roofing materials: Submit the manufacturer's published product warranties.

Shop drawings
Valley Gutter: The difference between the roof pitches forming the valley gutter between the 32 degree pitch foyer roof and the adjoining 8 degree pitch roof over the dining and admin area. is outside the limitation for the "general method" for valley gutters in AS3500.3 clause 3.6 valley gutter. Submit shop drawings showing a design certified by a suitably qualified professional for this valley gutter

2 PRODUCTS

2.1 GENERAL

Product substitution
Other products: Conform to **PRODUCTS**, **GENERAL**, **Substitutions** in the *General requirements* worksection.

2.2 MARKING

Identification
General: Deliver materials to the site in BlueScope Steel original sealed containers or packaging, legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Safety data sheets.

2.3 COMPONENTS

Fasteners
Finish: Prefinished exposed fasteners with an oven baked polymer coating to match the roofing material.

Fastenings to timber battens: Provide fastenings just long enough to penetrate the thickness of the batten without piercing the underside.

Profiled fillers
Type: Purpose-made closed cell polyethylene foam profiled to match the roofing profile.

Location: Provide profiled fillers under flashings to the following:

- Ridges.
- Eaves.
- Lapped joints in roof sheeting.

Safety mesh
Standard: To AS/NZS 4389.

2.4 SHEET METAL ROOFING

Standards
Design, installation and materials: To AS 1562.1.

Roofing product -generally
Product brand: Lysaght

Profile: Longline 305

Product material type: COLORBOND® steel.

Thickness, Base Metal Thickness (BMT) (mm): 0.7mm

Colour: Shale Grey

Roofing product – verandas and lower rear roof
Product brand: Lysaght

Profile: Kliplok 406

Product material type: COLORBOND® steel.

Thickness, Base Metal Thickness (BMT) (mm): 0.48mm

Colour: Shale Grey

2.5 ROOF PLUMBING

General
Standard: To AS/NZS 3500.3.

General: Provide the flashings, cappings, gutters, rainwater heads, outlets and downpipes necessary to complete the roof system.

Materials
Metal rainwater goods: To AS/NZS 2179.1 or CodeMark certified (GM CM30033 Rev A).

Metal: Colorbond steel

PVC-U rainwater goods and accessories: To AS/NZS 3500.3.

Flashings and cappings
Standard: To AS/NZS 2904.

Material and colour: Match roof sheeting.

Rib notching: Match roof sheeting.

Ridge and barge cappings
Material and colour: Match roof sheeting.

Eaves gutters
Type: 200mm half round, segmented as detailed along curved roof sections

Material and colour: Colorbond steel Windspray

Fascias
Type: purpose made steel fascias

Material and colour: Colorbond steel Windspray

Valley gutters
Product: Colorbond steel to match roof

Downpipes
Material and colour: Colorbond steel Windspray

Profile: round

Size: as shown on drawings

Leaf screens/gutter guard
Material: stainless steel mesh

Location: All outlets and gutters.

2.6 SKYLIGHTS

Standard
General: To AS 4285.

Description
General: A proprietary skylight system including framing, fixing, trim, seals, accessories and flashings.

Description: [complete/delete]

Product: Velux Flat Roof skylight FCM 3434

Size (mm): 900x900

Light shaft: required

Ceiling diffuser: Ceiling Surround / frame**:** Aluminium ‘T’ section frame in white powder-coated finish.
Ceiling Diffuser**:** Opaque.

3 EXECUTION

3.1 STORAGE AND HANDLING

Sheet metal roofing

Storage: Store metal roofing materials away from uncured concrete and masonry, on a level base. Do not store materials in contact with other materials which may cause staining, denting or other surface damage.

Handling: Handle roofing materials as follows:

- Use gloves when handling precoated metal roofing material.
- Use soft soled shoes when fixing or working on roofs.
- Protect edges and surfaces from damage. Do not drag sheets across each other or over other materials.

3.2 INSTALLATION

Protection

General: Keep the roofing and rainwater system free of debris and loose material during construction, and leave them clean and unobstructed on completion. Repair damage to the roofing and rainwater system.

Touch up: If it is necessary to touch up minor damage to prepainted metal roofing, do not overspray onto undamaged surfaces.

Thermal movement

Requirement: Provide for thermal movement in the roof installation and the structure, including movement in joints and fastenings.

Pan type sheets

Removal: Install sheets so that individual sheets can be removed without damage.

Curved corrugated sheet

General: Form by rolling from material recommended for curving or bullnosing. Minimise crimping or creasing across the face of the sheet. Trim off crimped or creased edges and ends.

Metal separation

Requirement: Prevent direct contact between incompatible metals, and between green hardwood or chemically treated timber and aluminium or coated steel, by either of the following methods:

- Applying an anti-corrosion, low moisture transmission coating to contact surfaces.
- Inserting a separation layer.

Tolerances

Requirement: To AS 1562.1 clause 4.2.

3.3 SHEET METAL ROOFING

Roof sheet installation

Install in accordance with manufacturer's recommendations.

Fixings type, size, corrosion resistance class, and spacing: To the sheet metal roofing manufacturer's recommendation

Eaves: Treat ends of sheets as follows:

- Generally: Close off ribs at tops and bottoms of sheets by mechanical means or with purpose-made fillers or end caps.
- At gutters: Project sheets 50 mm into gutters.

Swarf: Remove swarf and other debris as soon as it is deposited.

Accessories: Provide material with the same finish as roofing sheets.

3.4 BUILDING ELEMENTS

Ridges and eaves

Sheet ends: Treat as follows:

- Project sheets 50 mm into gutters.

- Close off ribs at bottom of sheets using mechanical means or with purpose-made fillers or end caps.
- Turn pans of sheets up at tops and down into gutters by mechanical means.
- Provide pre-cut notched eaves flashing and birdproofing where necessary.
- Close off ridges with purpose-made ridge fillers of closed cell polyethylene foam.

Ridge and barge

Capping: Finish off along ridge and verge lines with purpose-made ridge capping or barge rolls.

3.5 ROOF PLUMBING

Jointing sheet metal rainwater goods

Butt joints: Make joints over a backing strip of the same material.

Soldered joints: Do not solder aluminium or aluminium/zinc-coated steel.

Sealing: Seal fasteners and mechanically fastened joints. Fill the holes of blind rivets with silicone sealant.

Jointing system: Aluminium blind rivets

Flashings

Installation: Flash roof junctions, upstands, abutments and projections through the roof. Preform to required shapes if possible. Notch, scribe, flute or dress down as necessary to follow the profile of adjacent surfaces. Mitre angles and lap joints 150 mm in running lengths. Provide matching expansion joints at 6 m maximum intervals.

Upstands: Flash projections above or through the roof with two part flashings, consisting of a base flashing and a cover flashing, with at least 100 mm vertical overlap. Provide for independent movement between the roof and the projection.

Large penetrations in low pitch roofs: Extend the base flashing over the roofing ribs to the ridge to prevent ponding behind the penetrating element.

Wall abutments: Where a roof abuts a wall, provide overflashing as follows:

- In masonry walls, planked cladding or concrete: Step in courses to the roof slope. Interleave with damp proof course, if any.
- Raking in masonry: Build into the full width of the outer leaf. Turn up within cavity, slope inward across the cavity and fix to or build into the inner leaf at least 75 mm above the roofing line.
- Raking in concrete: Turn 25 mm into joints or grooves, wedge at 200 mm centres with compatible material and point up.

Fixing to pipes: Solder or seal with neutral cured silicone rubber and either of the following:

- Secure with a clamping ring.
- Provide a proprietary flexible clamping shoe with attached metal surround flashing.

Gutters

General: Prefabricate box gutters. Form stop ends, downpipe nozzles, bends and returns. Dress downpipe nozzles into outlets. Provide overflows to prevent back-flooding.

Gutter and sump support: Provide framing and lining to support valley gutters, box gutters and sumps. Line the whole area under the gutters and sumps.

Support: Proprietary metallic-coated adjustable strap and channel system

Valley gutters: Profile to suit the valley boarding. Turn back both edges 180 x 6 mm radius. Nail or screw to the valley boarding at the top end to prevent the gutter creeping downwards.

Expansion joints in guttering longer than 30 m: Provide as follows:

- Type: proprietary elastic expanding adhesive fixed type

Downpipes

General: Prefabricate downpipes to the required section and shape where possible. Connect heads to gutter outlets and, if applicable, connect feet to rainwater drains.

Access cover: Provide a removable watertight access cover at the foot of each downpipe stack.

Downpipe support: Provide supports and fixings for downpipes.

3.6 SKYLIGHTS

Installation

Fixing: to the recommendations of the skylight manufacturer – Velux.

Fixing to timber: 30 mm minimum penetration.

3.7 COMPLETION

Cleaning

Remove: Excess debris, metal swarf, solder, sealants and unused materials.

Clean off: Exposed metal surfaces that interfere with uniform weathering or oxidisation.

Replace: Materials that have been damaged or deteriorated.

Roof plumbing: Clean out spoutings, gutters and rainwater pipes after completion of roof installation.

Maintenance manual

On completion: Submit a manual of recommendations from the roofing manufacturer or supplier for the maintenance of the roofing system including, frequency of inspection and recommended methods of access, inspection, cleaning, repair and replacement.

0431B CLADDING – COMBINED

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide lightweight external wall cladding and associated work, as documented.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.

1.3 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Framing, sarking, vapour barrier and insulation before they are covered up or concealed.

1.4 TOLERANCES

Permitted deviations
Metal sheet cladding: To AS 1562.1 clause 4.2.
Other sheet cladding: 5 mm from a 1.8 m straightedge.
Cladding panels: To manufacturer's recommendations.
Plank cladding: 5 mm from a 1.8 m straightedge.

2 PRODUCTS

2.1 HARDBOARD PLANKS

WEATHERTEX "PRIMELOK WEATHERBOARDS"

LOCATION: Where shown on Drawings and/or scheduled.
PROPRIETARY ITEM: "Primelok Weatherboards" by Weathertex Pty Ltd.

DESCRIPTION:
Material: Exterior Hardboard to AS/NZS 1859.4 - Wet Processed Fibreboard.
Profile: `Primelok Classic Smooth`.
Weathertex Thickness: 9.5 mm.
Product Code: 102332.
Framing Type: Timber framing.
Wall System: "Weathertex" Cavity System.
Fasteners: In accordance with the manufacturer`s recommendations.
Accessories: Provide metal corner treatments, cavity closers, joiners and the like, as recommended by the manufacturer, and as necessary to complete the installation.
Sustainable Forest Management Scheme: PEFC certified

2.2 SHEET METAL CLADDING

Standards
Design and installation: To AS 1562.1.
Metal cladding
Product: Colorbond steel
Profile: Mini-orb

Mass: BMT 0.48mm: 4.58kg/m2
Colour: Windspray

2.3 FIBRE CEMENT CLADDING

Fibre cement
Standard: To AS/NZS 2908.2.
Cladding, eaves and soffit linings: Type A Category 3 (modulus of rupture ≥ 7 MPa).
Compressed cladding: Type A Category 5 (modulus of rupture ≥ 18 MPa).
- Edges: Square.

Sheet cladding CEMINTEL EXPRESSWALL
General: The contractor shall furnish all materials, labour and equipment for the installation of the Cemintel ExpressWall System where indicated on the drawings and/or as specified. The ExpressWall system shall be installed in accordance with CSR guide NºFC126 Cemintel ExpressWall.
http://www.cemintel.com.au/Documents/Manual/53479%20FC126%20Comm%20Expreswall_A4.pdf

Cladding material shall be Cemintel CeminSeal BareStone Panel as manufactured by CSR.
CeminSeal BareStone Panel shall be 9mm compressed cellulose reinforced sheet, incorporating waterblock technology.

Eaves and soffit lining
Type: Cemintel SoffitLine™ System
Sheets: Single faced fibre cement.
Sheet thickness: 6 mm.
Joints:. Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape with base and top coat jointing system

2.4 STONE WALL PANELS

Type:
Eco Outdoor - Flinders

Split face veneer split on the front and sawn on the rear
Tiles 610x152mm
Thickness 20-50mm

Corners
Interlocking corner elements
Double corner tile 610x152mm
Thickness 20-50mm

2.5 COMPONENTS

Flashings
Standard: To AS/NZS 2904.
Expresswall Flashings- Flashings not supplied by CSR shall be designed and installed in accordance with SAA–HB39, 1997, Installation Code for Metal Roofing and Wall Cladding. Flashing to be colour matched to the panels.

3 EXECUTION

3.1 CONSTRUCTION GENERALLY

Substrates or framing
Requirement: Before fixing cladding, check the alignment of substrates or framing and adjust if necessary.

Fixing
Method: Nail to timber framing, screw to steel framing.

Accessories and trim
Requirement: Provide accessories and trim necessary to complete the installation.

Fixing eaves and soffit lining
Nailing: 150 mm centres to bearers at maximum 450 mm centres.

Metal separation
Requirement: Prevent direct contact between incompatible metals, and between green hardwood or chemically treated timber and aluminium or coated steel, by either:

- Applying an anti-corrosion, low moisture transmission coating to contact surfaces.
- Inserting a separation layer.

Proprietary systems or products
Product fixing: Fix proprietary systems to the manufacturer's recommendations.

3.2 HARDBOARD PLANKS –WEATHERTEX PRIMELOCK

Cladding installation
VAPOUR PERMEABLE SARKING: Install a vapour permeable sarking to AS/NZS 4200.1.

Location: Between the framing structure and the battens.

FINISH: Paint the weatherboards as specified following priming of all sawn edges with solvent-borne or latex tanning-resistant wood primer.

INSTALLATION: Install in accordance with the Manufacturer`s current instructions and recommendations.

Joints and edges: 200mm concealed joiner with Sikaflex-PRO or Fuller Super Seal HPR25 in gap

External corners: Weathertex aluminium joining pieces.

Internal corners: Weathertex Aluminium corner pieces.

3.3 SHEET METAL CLADDING – COLORBOND MINI-ORB

Swarf: Remove swarf and other debris as soon as it is deposited.

Accessories: Provide material with the same finish as cladding sheets.

Corner flashing
Requirement: Finish off at corners with purpose-made folded flashing strips.

Fixing: to manufacturer's recommendations. Fix to intermediate studs

3.4 FIBRE CEMENT CLADDING- CEMINTEL EXPRESSWALL

The contractor shall furnish all materials, labour and equipment for the installation of the Cemintel ExpressWall System where indicated on the drawings and as specified.

The ExpressWall system shall be installed in accordance with CSR guide NºFC126 Cemintel ExpressWall

Cladding material shall be CeminSeal BareStone Panel as manufactured by CSR.
CeminSeal BareStone Panel shall be 9mm compressed cellulose reinforced sheet, incorporating waterblock technology, manufactured i n accordance with AS/NZS 2908.2.

Expresswall Steel Framing
Cemintel ExpressWall steel framing system shall be Cemintel ExpressWall Top Hat of 1.15 BMT as supplied by CSR, and Intermediate Top Hat as manufactured by Rondo Building Services Pty Ltd.
Framing shall be installed in accordance with CSR installation guide NºFC126 Cemintel ExpressWall

Fixings
Screws for fixing ExpressPanel/BareStone Panel to top hats shall be ExpressWall Exposed Head Screws, *Class 3 finish or 302 grade stainless steel in accordance with CSR installation guide NºFC126 Cemintel ExpressWall™.

ExpressWall™ Weather Seal shall be used with all exposed head screws. *Exposed head screws shall be colour matched to the panels.

Accessories
Tapes, gaskets, sealants, backing strips and the like shall be as detailed in CSR guide NºFC126 Cemintel ExpressWall™.

Framing, fixing & joints.
All ExpressWall framing, fixing and joints shall be designed and installed to comply with the requirements for an Ultimate Design Wind Pressure of *2.0.kPa minimum subject to confirmation by the cladding supplier.

3.5 STONE WALL PANELS- ECO OUTDOOR

The contractor shall furnish all materials, labour and equipment for the installation of the Eco Outdoor wall panels including corner sections where indicated on the drawings .
Wall Panel type- Flinders

The stone wall panels shall be installed in accordance with Eco Outdoor installation recommendations and engineer's drawings.

jjjjPanels to be attached to waterproofed reinforced blockwork wall with Stoneclip support brackets in accordance with manufacturer's installation instructions.
http://www.stoneclip.com/images/engineers/THE_PROJECT_GUIDE.pdf

Stone to be cleaned and sealed after installation using products recommended by Ecooutdoor
http://www.ecooutdoor.com.au/assets/pdf/install/walling/Stone-Wall-Panels-Install.pdf

3.6 BIN STORE TIMBER CLADDING

Hardwood Palings 150mm x15mm and 100x15mm width paling lapped to match adjoining fence. Durability Class 2 palings

3.7 COMPLETION

Warranties
Warranty: Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and installer.

- Form: Against failure of materials and execution under normal environment and use conditions.
- Period: As offered by the supplier.

0451P AWS ALUMINIUM WINDOWS AND DOORS

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide AWS aluminium windows and doors, as documented.

1.2 COMPANY CONTACTS

AWS Architectural Window Systems technical contacts
Website: www.awsaustralia.com.au/blog/contact-us/.

1.3 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.
- *Door Hardware*

1.4 STANDARDS

General
Selection and installation: To AS 2047.
Building classification: Commercial BCA Class 9b
Glazing
Glass type and thickness: To AS 1288, if no glass type or thickness is nominated unless otherwise shown on window schedule drawing
Materials and installation: To AS 1288.
Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.
Terminology for work on glass: To AS/NZS 4668.

1.5 MANUFACTURER'S DOCUMENTS

Commercial: **Elevate Aluminium Systems** – www.elevatealuminium.com.au.
Specifiers' Guides and CAD drawings: Available at www.specifyaws.com.au.

1.6 INTERPRETATION

Abbreviations
General: For the purposes of this worksection the abbreviations given in AS 4145.1 Appendix D and the following abbreviations apply:
- AWA: Australian Window Association.

Definitions
General: For the purposes of this worksection the definitions given in AS 4145.1 Section 2 and the following definitions apply:
- Aluminium joinery: The collective term used for aluminium framed and glazed windows and doors.
- SHGC: Solar heat gain coefficient as defined by BCA and determined in conformance with NFRC 200.
- U-value: Total U-value as defined by BCA and determined in conformance with NFRC 100.

1.7 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Openings prepared to receive aluminium joinery.
- Fabricated aluminium joinery assemblies at the factory ready for delivery to the site.
- Fabricated aluminium joinery assemblies delivered to the site, before installation.

- Commencement of aluminium joinery installation.

1.8 SUBMISSIONS

Certification
Sealant compatibility: Submit a report from all parties to the installation certifying the compatibility of sealants and glazing systems to all substrates.

Manuals
AWS maintenance manual: Submit on completion.

Samples
Aluminium joinery: Submit the following:

- Accessory and hardware items documented descriptively or by performance (i.e. not specified as proprietary items) including locks, latches, handles, catches, sash operators, anchor brackets and attachments, masonry anchors and weather seals (pile or extruded).
- Colour samples of prefinished production material (e.g. anodised or organic coated extrusions and sheet) showing the limits of the range of variation in the selected colour.
- Sections proposed to be used for frames, sashes, louvres and slats.
- Label each sample, giving the series code reference and date of manufacture.

Glazing: Submit samples of glazing materials, each at least 200 x 200 mm, showing documented visual properties and the range of variation, if any, for each of the following types of glass or glazing plastics:

Hardware: Submit samples of generic hardware not documented as proprietary items as follows:

Shop drawings
General: Submit shop drawings to a scale that best describes the detail, showing the following:

- Full size sections of members.
- Hardware, fittings and accessories including fixing details.
- Junctions and trim to adjoining surfaces.
- Layout (sectional plan and elevation) of the window assembly.
- Lubrication requirements.
- Methods of assembly.
- Methods of installation, including fixing, caulking and flashing.
- Provision for vertical and horizontal expansion.
- Method of glazing, including the following:
  . Rebate depth.
  . Edge restraint.
  . Clearances and tolerances.
  . Glazing gaskets and sealant beads.

Certification: Submit an engineers' certificate confirming compliance with AS 2047.

Subcontractors
General: Submit names and contact details of proposed subcontractors endorsed by AWS Architectural Window Systems Pty Ltd.

Tests
Type tests: Submit results as follows:

- Windows and glazed doors: To AS 2047 and as documented in the **Windows and glazed door schedule**.

Warranties
Requirement: Submit AWS warranty.

2 PRODUCTS

2.1 GENERAL

Product substitution
Other products: Conform to **PRODUCTS**, **GENERAL**, **Substitutions** in the *General requirements* worksection.

Standards
Aluminium extrusions: To AS/NZS 1866.

2.2 MARKING

Identification
General: Deliver materials to the site in AWS original sealed packaging, legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Safety data sheets.

2.3 GLASS

Glass and glazing materials
Glass: Free from defects which detract from appearance or interfere with performance under normal conditions of use.

Glazing plastics: Free from surface abrasions, and warranted by the manufacturer for 10 years against yellowing or other colour change, loss of strength and impact resistance, and general deterioration.

Safety glasses
Standard: To AS/NZS 2208.

Certification: Required.

Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Type: Grade A to AS 1288.

Heat soaking
Requirement: All toughened glass products.

Standard: To EN 14179-1.

Unacceptable blemishes in heat-treated flat glass (including tinted and coated glass)
Standard: To AS/NZS 4667.

2.4 GLAZING MATERIALS

General
Glazing materials (including putty, glazing compounds, sealants, gaskets, glazing tapes, spacing strips, spacing tapes, spacers, setting blocks and compression wedges): Appropriate for the conditions of application and the required performance.

Jointing materials
Requirement: Provide jointing and pointing materials to manufacturer's recommendations which are compatible with each other and with the contact surfaces and non-staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

Elastomeric sealants
General: Provide elastomeric sealants as documented in the **Elastomeric sealant schedule**.

Sealing compound (polyurethane, polysulfide, acrylic): To ASTM C920 or ISO 11600.

Sealing compound (silicone): To ASTM C920 or ISO 11600.

Sealing compound (butyl): To ASTM C1311.

Priming
Application: Apply the manufacturer's recommended primer to the surfaces in contact with sealant materials.

Control joints
Depth of elastomeric sealant: One half the joint width or 6 mm, whichever is the greater.

Foamed materials (in compressible fillers and backing rods): Closed-cell or impregnated types which do not absorb water.

Bond breaking: Provide backing rods, and other back-up materials for sealants, which do not adhere to the sealant.

2.5 GLASS IDENTIFICATION

Safety glazing materials
Identification: To AS 1288.

Noise reducing glazed assemblies
Labelling: Label each panel with a legible non-permanent mark, stating and certifying the R_w rating, and identifying the testing authority. Remove when directed.

2.6 INSECT SCREENS

Fixed screens
General: Provide fixed screens to the window frames with a clipping device which permits removal for cleaning.

Aluminium framed screens
General: Provide proprietary aluminium screen sections with mesh fixing channel, mitred, staked and screwed at corners. Provide an extended frame section where necessary to adapt to window opening gear.

Mesh: Bead the mesh into the frame channel with a continuous resilient gasket, so that the mesh is taut and without distortion.

2.7 ALUMINIUM FRAME FINISHES

Anodised
Standard: To AS 1231.

Thickness: 25 microns.

Colour: Natural silver

2.8 ANCILLARY MATERIALS

Trims
Timber: Solid timber at least 19 mm thick, mitred at corners.

Extruded gaskets and seals
General: Provide seals as documented in the **Window and door seal schedule**.

Materials: Non-cellular (solid) elastopressive seals as follows:

- Flexible polyvinyl chloride (PVC-U): To BS 2571, 100% solids with high consistency, ultraviolet stabilised.
- Rubber products (neoprene, ethylene propylene diene monomer (EPDM) or silicone rubber): To BS 4255-1.

Flashings
General: Corrosion resistant, compatible with the other materials in the installation, and coated with a non-staining compound where necessary.

Standard: To AS/NZS 2904.

Nylon brush seals
General: Dense nylon bristles locked into galvanized steel strips and fixed in a groove in the edge of the door or in purpose-made anodised aluminium holders fixed to the door with double sided PVC-U foam tape.

Pile weather strips
Standard: To AAMA 701/702.

Materials: Polypropylene or equivalent pile and backing, low friction silicone treated, ultraviolet stabilised.

Finned type: A pile weather seal with a central polypropylene fin bonded into the centre of the backing rod and raised above the pile level.

Weather bars
General: Provide a weather bar under hinged external doors, locate under the centres of closed doors.

2.9 HARDWARE

Hardware documented generically
General: Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use, compatible with associated hardware, and fabricated with fixed parts firmly joined.

Locks and latches
Standard: To AS 4145.3.

Window catches: Provide 2 catches per sash to manually latched awning or hopper sashes over 1000 mm wide.

Sash balances
Requirement: Match the spring strength of the balances to the sash weight they support.

Sash operators
Requirement: Provide sash operators as documented.

2.10 KEYING

Contractor's keys
Master key systems: Do not use any key under a master key system.

Delivery of keys
Number of keys: To the **Number of keys table**.

Identification
Labelling: Supply each key with a purpose-made plastic or stamped metal label legibly marked to identify the key, attached to the key by a metal ring.

Key material
Pin tumbler locks: Nickel alloy, not brass.

Lever locks: Malleable cast iron or mild steel.

Keying system
Requirement: As documented in the **Key codes schedule**.

Coding of locks: If window locks are included in building key code groups, provide cylinder or pin tumbler locks coded accordingly.

Number of keys table

Code	Key type	Minimum number of keys
KA#	Locks keyed alike:	
	41 and over locks in code group	1 for every 5 locks or part thereof

3 EXECUTION

3.1 GLASS PROCESSING

General

Processing: Perform required processes on glass, including cutting, obscuring, silvering and bending. Form necessary holes, including for fixings, equipment, access openings and speaking holes. Process exposed glass edges to a finish not inferior to ground arrised.

3.2 INSTALLATION

Glazing

General: Install the glass as follows:

- Permanently fix in place each piece of glass to withstand the normal loadings and ambient conditions at its location without distortion or damage to glass and glazing materials.
- No transfer of building movements to the glass.
- Watertight and airtight for external glass.

Temporary marking: Use a method which does not harm the glass. Remove marking on completion.

Toughened glass: Do not cut, work, or permanently mark after toughening. Use installation methods which prevent the glass making direct contact with metals or other non-resilient materials.

Heat absorbing glass: In locations exposed to direct sunlight, provide wheel cut edges free from damage or blemishes, with minimum feather.

Windows and glazed doors

General: Install windows and glazed doors frames as follows:

- Plumb, level, straight and true within building tolerances.
- Fixed or anchored to the building structure in conformance with the wind action loading requirements.
- Isolated from any building loads, including loads caused by structural deflection or shortening.
- Allow for thermal movement.

Weatherproofing

Flashing and weatherings: Install flashings, weather bars, drips, storm moulds, caulking and pointing so that water is prevented from penetrating the building between the window frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

Fixing

Fasteners and fastener spacing: Conform to AWS Architectural Window Systems manuals available at their relevant website:

- Commercial: **Elevate Aluminium Systems**.

Fasteners: Conceal fasteners.

Packing: Pack behind fixing points with durable full width packing.

Prepared masonry openings: If fixing of timber windows to prepared anchorages needs fastening from the frame face, sink the fastener heads below the surface and fill the sinking flush with a material compatible with the surface finish.

Joints

General: Make accurately fitted tight joints so that fasteners and fixing devices such as pins, screws, adhesives and pressure indentations are visible on exposed surfaces.

Sealants: If priming is recommended, prime surfaces in contact with jointing materials. If frames are powder coated apply a neutral cure sealant.

Operation

General: Make sure moving parts operate freely and smoothly, without binding or sticking, at correct tensions or operating forces and are lubricated.

Protection

Removal: Remove temporary protection measures from the following:

- Contact mating surfaces before joining up.

- Exposed surfaces.

Repair of finish

Polyester or fluoropolymer coatings: Contact supplier for approval to apply touch up products, otherwise replace damaged material.

Trim

General: Provide mouldings, architraves, reveal linings, and other internal trim using materials and finishes matching the window frames. Install to make neat and clean junctions between frames and the adjoining building surfaces.

3.3 HARDWARE

Fasteners

Materials: Use materials compatible with the item being fixed and of sufficient strength, size and quality to perform their function.

- Concealed fixings: Provide a corrosion-resistant finish.
- Exposed fixings: Match exposed fixings to the material being fixed.

Support: Provide appropriate back support (for example lock stiles, blocking, wall noggings and backing plates) for hardware fixings.

- Hollow metal sections: Provide backing plates drilled and tapped for screw fixing, or provide rivet nuts with machine thread screws. Do not use self-tapping screws or pop rivets.

Proprietary window systems

Requirement: Provide the standard hardware and internal fixing points for personnel safety harness attachment, where required by and conforming with the governing regulations.

Operation

General: Make sure working parts are accurately fitted to smooth close bearings, without binding or sticking, free from rattle or excessive play, lubricated where appropriate.

Supply

Delivery: Deliver window hardware items, ready for installation, in individual complete sets for each window set, as follows:

- Clearly labelled with the intended location.
- In a separate dust and moisture proof package.
- Including the necessary templates, fixings and fixing instructions.

3.4 COMPLETION

Hardware

Adjustment: Leave the hardware with working parts in working order, and clean, undamaged, properly adjusted, and lubricated where appropriate.

Keys

Contractor’s keys: Immediately before the date for practical completion, replace cylinders to which the contractor has had key access during construction with new cylinders which exclude the contractor’s keys.

Keys: For locks keyed to differ and locks keyed alike, verify quantities against key records, and deliver to the contract administrator at practical completion.

Key codes: Submit the lock manufacturer’s record of the key coding system showing each lock type, number and type of key supplied, key number for re-ordering, and name of supplier.

Maintenance manual

Window and door assemblies: Submit the window and glazed door manufacturer’s published instructions for operation, care and maintenance.

Hardware: Submit the manufacturer’s published recommendations for use, care and maintenance.

Trade clean

Method: Clean with soft clean cloths and clean water, finishing with a clean squeegee. Do not use abrasive or alkaline materials.

Extent: All frames and glass surfaces inside and out.

Warranty

Aluminium joinery excluding hardware:

- Form: Against failure of materials and execution under normal environment and use conditions.
- Period: 7 years, conditional on compliance with the AWA Code of Conduct.

Hardware supplied by Vantage: external sliding door and window locks and operators. Hinged door hardware refer to door hardware schedule

4 SELECTIONS

4.1 SCREENS

Refer OPENINGS SCHEDULE DRAWING TD09 FOR WINDOW/DOOR TYPES AND GLAZING REQUIREMENTS

4.2 KEYING

Key codes schedule
All windows keyed alike

Door keying refer door hardware schedule

0453B DOORS AND ACCESS PANELS

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide doors, frames, doorsets, security screen doors and fire-resisting doorsets, as documented.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.
- *Door hardware*

1.3 INTERPRETATION

Definitions
General: For the purposes of this worksection the following definitions apply:
- Balanced construction: Flush door construction where the facings on one side of the core are nominally equal in thickness, grain direction, properties and arrangement to those on the other side of the core, such that uniformly distributed changes in moisture content will not cause warpage.
- Door frame: Includes jamb linings.
- Doorset: An assembly comprising a door or doors and supporting frame, guides and tracks including the hardware and accessories necessary for operation.
  . Fire-doorset: A doorset which retains its integrity, provides insulation and limits, if required, the transmittance of radiation in a fire.
  . Smoke-doorset: A doorset which restricts the passage of smoke.
- Flush door: A door leaf with two plane faces which entirely cover and conceal its structure. It includes doors with intermediate rail, cellular, blockboard, medium density fibreboard (MDF) and particleboard cores.
  . Solid core door: A flush door with a solid core continuous between stiles and rails or edge strips and fully bonded to the faces.
- Joinery door: A door leaf with either stiles and rails, or stiles, rails and muntins, framed together. A joinery door may also incorporate glazing bars.
  . Louvred door: A joinery door with spaces filled in with louvre blades.
  . Panelled door: A joinery door with spaces filled in with panels including glass.

1.4 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Door frames in place before building in to masonry.
- Door frames installed before fixing trim.

1.5 SUBMISSIONS

Tests
Common text

Type tests: Submit results, as follows:
- Fire-resisting and smoke doors: To AS 1905.1 and BCA Spec C3.4.
- Weighted sound reduction index (R_w): To AS/NZS ISO 717.1.

2 PRODUCTS

2.1 FRAMES

Steel frames

General: Continuously welded from metallic-coated steel sheet sections, including accessories such as buffers, strike plates, spreaders, mortar guards, switch boxes, fixing ties or brackets, and cavity flashing with provision for fixing documented hardware and electronic security assemblies, and prefinished with a protective coating.

Finish: Grind the welds smooth, cold galvanize the welded joints and shop prime.

Hardware and accessories: Provide 4 mm backplates and lugs for fixing hardware including hinges and closers. Screw fix the hinges into tapped holes in the backplates.

Base metal thickness:

- General: Minimum 1.1 mm.
- Fire-resisting doorsets: Minimum 1.5 mm.
- Security doorsets: Minimum 1.6 mm.

Metallic-coated steel sheet: To AS 1397.

- Coating class interior: ZF100.
- Coating class exterior: Z275

Timber frames

Hardwood: To AS 2796.1:

- Grade: Select.

Softwood: To AS 4785.1:

- Grade: Select.

Joints:

- Morticed head and through tenons.
- Trenched head:
  - Bare faced tenons on jambs.
  - Full let-in jambs.

2.2 DOORS

General

Doors: Proprietary products manufactured for interior or exterior applications and for the finish required.

Materials

Standards: Conform to the following:

- Wet processed fibreboard (including hardboard): To AS/NZS 1859.4.
- Plywood and blockboard for interior use: To AS/NZS 2270.
- Plywood and blockboard for exterior use: To AS/NZS 2271.
- Seasoned cypress pine: To AS 1810.
- Timber – hardwood: To AS 2796.1.
- Timber – softwood: To AS 4785.1.

Certification

Panel doors: Provide panels branded under the authority of a recognised certification program applicable to the product. Locate the brand on faces or edges which will be concealed in the works.

Joinery doors

General: Provide joinery doors, as documented.

Flush doors

General: Provide flush doors of balanced construction.

Cellular core and intermediate rail core flush doors:

- Provide a subframe of 25 mm minimum width timber around openings for louvres and glazing.

- Provide additional material to take hardware, fastenings and grooves.

Solid core: Solid flush doors as follows:

- Flush door with blockboard: Core plate of timber strips laid edge to edge, fully bonded to each other and to facings each side of no less than two sheets of timber veneer.
- Flush doors with particleboard: Core plate of particleboard fully bonded to facings each side of no less than two sheets of timber veneer.

Construction

Adhesives:

- Internal: To AS/NZS 2270.
- External: To AS/NZS 2271.

Door thickness:

- General: 35 mm.
- External doors and doors over 900 mm wide: 40 mm.

Cut outs: If openings are required in flush doors (e.g. for louvres or glazing), do not make cut outs closer than the width of the stiles at the edges of the doors.

Edge strips: Minimum thickness 10 mm. Increase overall thickness to greater than 15 mm to accommodate the full depth of the rebate in rebated doors. Apply to the external edges of door after the facings are bonded to the door framing/core and finish flush with outside surface of the facings.

Louvre grilles: Construct by inserting the louvre blades into a louvre frame, and fix the frame into the door.

Double doors

General: Bevel square edged doors as necessary to prevent binding between the leaves.

Rebated meeting stiles: If not double acting doors, provide rebated meeting stiles or fix equivalent metal T stop to one leaf. Form rebates to suit standard rebated hardware.

Tolerance

Squareness: The difference between the lengths of diagonals of a door: Maximum 3 mm.

Twist: The difference between perpendicular measurements taken from diagonal corners: Maximum 3 mm.

Nominal size (mm):

- Height: ± 2.
- Width: + 2, - 0.

2.3 DOORSETS

Cavity sliding doors

General: Proprietary product comprising steel and timber frame construction with rigid steel top, base and rear supporting members and incorporating the overhead door track, ball race type wheel carriages guides, stops, split jamb linings and removable pelmet.

Duct access panels

General: Proprietary products comprising metal-faced doors side hung to steel door frames, including hardware and accessories such as hinges and lock and installation lugs.

2.4 CS CAVITY SLIDERS PRODUCTS

CavitySliders™

General: Proprietary product comprising architectural grade extruded aluminium top track, back stud, bottom plate, and vertical split jambs and incorporating 2-wheel or 4-wheel fully enclosed carriages with fully ground bearings, guides, stops and timber jamb linings including closing jamb.

SofStop®: Extruded aluminium frame and track with timber jambs and soft close technology.

Minimalist finish allowing for a concealed door installation.

2.5 ANCILLARY MATERIALS

Trims

Timber: Solid timber at least 19 mm thick, mitred at corners.

Extruded gaskets and seals
General: As documented in the **Door seal schedule**.

Materials: Non-cellular (solid) elastopressive seals as follows:

- Flexible polyvinyl chloride (PVC): To BS 2571, 100% solids with high consistency, ultraviolet stabilised.
- Rubber products (neoprene, ethylene propylene diene monomer (EPDM) or silicone rubber): To BS 4255-1.

Flashings
General: Corrosion resistant, compatible with the other materials in the installation, and coated with a non-staining compound where necessary.

Standard: To AS/NZS 2904.

Jointing materials
General: Compatible with each other and with the contact surfaces and non-staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

Nylon brush seals
General: Dense nylon bristles locked into galvanized steel strips and fixed in a groove in the edge of the door or in purpose-made anodised aluminium holders fixed to the door with double sided PVC foam tape.

Pile weather strips
General: Polypropylene or equivalent pile and backing, low friction silicone treated, ultraviolet stabilised.

Standard: To AAMA 701/702.

Weather bars
General: Provide a weather bar under hinged external doors, locate under the centres of closed doors.

3 EXECUTION

3.1 FRAMES

General
Frames: Install the frames as follows:

- Plumb, level, straight and true.
- Fixed or anchored to the building structure.
- Isolated from any building loads, including loads caused by structural deflection or shortening.

Frame fixing
Brackets: Metallic-coated steel:

- Width: Minimum 25 mm.
- Thickness: Minimum 1.5 mm.

Depth of fixing for building into masonry:

- Brackets: Minimum 200 mm.
- Expansion anchors: Minimum 50 mm.
- Plugs: Minimum 50 mm.
- Rods: Minimum 60 mm.

Jamb fixing centres: Maximum 600 mm.

Joints
General: Make accurately fitted joints where fasteners, pins, screws, adhesives and pressure indentations are not visible on exposed surfaces.

Steel frames
Building into masonry: Attach galvanized steel rods to jambs, build in and grout up.

Fixing to masonry openings: Build in hairpin anchors and install locking bars, or use proprietary expansion anchors and screw twice through jambs at each fixing.

Fixing to stud frame openings: Attach galvanized steel brackets to jambs and screw twice to studs at each fixing.

Timber frames

Building into masonry: Screw galvanized steel brackets twice to jambs and build in.

Fixing to masonry openings: Build in seasoned timber plugs to masonry joints or use proprietary expansion anchors and screw twice through jambs at each fixing.

Fixing to stud frame openings: Back screw twice to jambs at each fixing.

Fixing to thresholds: Dowel external door frames to thresholds other than timber with 10 mm diameter brass dowels, 100 mm long.

Heads of fasteners: Conceal if possible, otherwise sink the head below the surface and fill the sinking flush with a material compatible with the surface finish.

Finishing

Trim: Provide mouldings, architraves, reveal linings, and other internal trim using materials and finishes matching the door frames to make neat and clean junctions between the frame and the adjoining building surfaces.

Seals

General: Provide the fixings, rebates, grooves, and clearances required for installation and operation of the seals. Allow seals unwound from coils to settle before use.

Weatherproofing

Flashings and weatherings: Install flashings, weather bars, drips, storm moulds, caulking and pointing to prevent water from penetrating the building between the door frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

3.2 DOORS

Priming

General: Prime timber door leaves on top and bottom edges before installation.

3.3 CS CAVITY SLIDERS

Installation

Requirement: Conform to CS Cavity Sliders installation recommendations and standard construction drawings.

3.4 COMPLETION

Operation

General: Make sure moving parts operate freely and smoothly, without binding or sticking, at correct tensions or operating forces and that they are lubricated where appropriate.

Protection

Temporary coating: On or before the date for practical completion, or before joining up to other surfaces, remove all traces of temporary coatings used as a means of protection.

Warranties

CS Cavity Sliders: Provide manufacturer's warranties as follows:

- Product: Cavity Sliders track system
- Period: 10 years
- Product: CaviLock.
- Period: 2 years
- Product: Door leaf
- Period: 5 years

4 SELECTIONS

4.1 DOOR TYPES SCHEDULE

Flush doors construction schedule

Property	A	B	C	D
Door type	Solid core	Solid Core, stable	Solid core	Solid core
Facing material	Hardboard, or Plywood	Hardboard, or Plywood	Hardboard, or Plywood	Hardboard, or Plywood
Panel: Type	Clear glass	Clear glass	-	-
Panel: Clear opening size (mm)	150x1550	720x700	-	-
Finish	paint	paint	paint	paint
Location	internal	internal	internal	external

CS CAVITY SLIDERS cavity sliding door schedule

Property	A
Product type	Sofstop
Location	Pantry
Stud size (H x W) (mm)	90mm
Leaf size (H x W) (mm)	850x2040
Jamb finish	timber
Door type	Solid core
Door thickness (mm)	35mm
Door finish	paint
Lining thickness (mm)	13mm
Optional features	Shadow line detail
Lock type	Cavilock CL400 with external key SCP

Door frames schedule

Location	Door type	Frame type
External	timber	steel
Internal	Timber	timber

Door seal schedule

Property	A
Product	Raven RP4
Function	Weather seal
Door	External timber doors Type D

0455 DOOR HARDWARE

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide door hardware, as documented.

Handing: Before supply, verify on site, the correct handing of hardware items.

Hardware specified generically: Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use, suitable for use with associated hardware, and fabricated with fixed parts firmly joined.

Operation: Make sure working parts are accurately fitted to smooth close bearings, without binding or sticking, free from rattle or excessive play, lubricated where appropriate.

Supply

Delivery: Deliver door hardware items, ready for installation, in individual complete sets for each door, as follows:

- Clearly labelled to show the intended location.
- In a separate dust and moisture proof package.
- Including the necessary templates, fixings and fixing instructions.

Replacement items

Door hardware: Match items being replaced with existing unless documented otherwise. Upgrade hinges as necessary to conform to **Hinges table A** and **Hinges table B**.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.
- Doors and access panels.
- AWS aluminium windows and doors

1.3 INTERPRETATION

Abbreviations

General: For the purposes of this worksection, the abbreviations given in AS 4145.1 Appendix D apply.

Definitions

General: For the purposes of this worksection, the general definitions given in AS 4145.1 Section 2 apply.

Lock function: For the purposes of this worksection, the general definitions given in AS 4145.1 Appendix E apply.

1.4 SUBMISSIONS

Door-by-door schedule

General: Submit a door-by-door hardware schedule.

Information sources: This worksection and the contract drawings.

Keys

Key codes: Submit the lock manufacturer's record of the key coding system showing each lock type, number and type of key supplied, key number for re-ordering, and name of supplier.

Keys: For locks keyed to differ and locks keyed alike, verify quantities against key records, and deliver to the contract administrator at practical completion.

Key control System
New works: Submit details of the proprietary key control security system proposed by the lock manufacturer for locks required to accept a group key (master, grandmaster).

Alterations and additions: Submit details to extend the existing key control security system for locks required to accept a group key.

Maintenance
Manual: Submit the manufacturer's published recommendations for use, care and maintenance of the hardware provided.

Record documents
Door hardware schedule: Submit an amended schedule, prepared by the door hardware supplier, showing changes to the contract door hardware schedule caused as follows:

- By the approval of a hardware sample.
- By the acceptance of an equivalent to a specified proprietary item.
- By a contract variation to a door hardware requirement.

Samples
Generic items: Submit samples of hardware items offered as meeting the description of items not specified as proprietary items.

2 PRODUCTS

2.1 LOCKS AND LATCHES

Standard
General: To AS 4145.2.

Padlocks
Standard: To AS 4145.4.

Lock and latch classification
Rating systems: To AS 4145.1 Section 3.

Performance requirements: To AS 4145.2 Section 3.

2.2 HINGES

Butt hinge sizes
Size for door types: Conform to tables as follows:

- Timber doors in timber or metal frames: **Hinge table A**.
- Aluminium framed doors in aluminium frames: **Hinge table B**.
- Cupboard doors: Not included in hinge tables.

Measurement: Length (l) is the dimension along the knuckles, not including hinge tips, if any, and width (w) is the dimension across both hinge leaves when opened flat.

Butt hinge materials
Timber doors in timber frames:

- Material: steel

Timber doors in steel frames:

- Material: stainless steel

Aluminium framed doors in aluminium frames:

- Material: [complete/delete]
- Product: [complete/delete]

Doors fitted with closers: Provide low friction ball bearing hinges.

2.3 HINGE TABLES

Solid core doors
Number of hinges: Provide hinges to solid core doors to **Hinges table A**. Determine the number of hinges required based on the nominated door leaf size and weight only. For other door leaf sizes or

for doors with applied finishes, use the weight of the door to determine the number of hinges required. For a door leaf over 80 kg, use pivot hinges.

Size of hinges: Determine the size of the hinge based on the door leaf thickness:

- 35 to 43 mm thick door: 100 x 75 mm butt hinges with a minimum thickness of 2.5 mm.
- 44 to 55 mm thick door: 100 x 100 mm butt hinges with a minimum thickness of 2.5 mm.
- > 55 mm thick door: Refer to the door by door hardware schedule.

Hinge pin: Supply fixed pins to hinges of doors opening out or designated as a security doors. For all other doors, provide loose pins.

Wide throw: If necessary, provide wide throw hinges to achieve the required door swings in the presence of obstacles such as nibs, deep reveals and architraves.

Hinge table A

Nominal door leaf size (H x W x T) (mm)	Door leaf weight (kg – approx.)	Number of hinges
2040 x 400 x 35	≤ 19	2
2040 x 600 x 35	≤ 29	2
2040 x 720 x 35	≤ 35	3
2040 x 820 x 35	≤ 39	3
2040 x 920 x 35	≤ 44	3
2040 x 1020 x 35	≤ 49	4
2040 x 720 x 40	≤ 37	3
2040 x 820 x 40	≤ 42	3
2040 x 920 x 40	≤ 48	3
2040 x 1020 x 40	≤ 52	4
2040 x 720 x 50	≤ 45	3
2040 x 820 x 50	≤ 50	3
2040 x 920 x 50	≤ 57	3
2040 x 1020 x 50	≤ 68	4
2400 x 720 x 40	≤ 50	4
2400 x 820 x 40	≤ 52	4
2400 x 920 x 40	≤ 55	4
2400 x 1020 x 40	≤ 60	4
2400 x 1220 x 50	≤ 72	5
2040 x 920 x 70	≤ 88	Pivot hinges

Aluminium doors

Application: Provide aluminium hinges for aluminium doors, or for doors of other materials in aluminium frames of a weight of 40 kg or less to **Hinge table B**.

Hinge table B

Nominal hinge size (L x W x T) (mm)	Door leaf weight (kg – approx.)	Knuckles (minimum)	Screws/hinge leaf (minimum)
100 x 70 x 3	≤ 30	3	3
100 x 80 x 3.5	≤ 50	5	4
130 x 50 x 3.4	≤ 75	Interfold	3

2.4 DOOR HANGING SYSTEMS

General

Requirement: Provide sliding door tracks as documented in the **Sliding track schedule**.

2.5 ANCILLARIES

Bolts
General: Provide bolts including barrel bolts, flush bolts and tower bolts with keepers, including lock plates, staples, ferrules or floor sockets.

Mortar guards
General: For steel door frame installations, provide mortar guards designed to allow the full extension of the lock tongue or similar devices and the correct operation of the locking mechanism.

Rebated doors
General: For mortice locks or latches to rebated doors, provide purpose-made rebated pattern items.

Strike plates
General: Use strike plates provided with the locks or latches. Do not provide universal strike plates.

2.6 DOOR CONTROLLERS

Standard
General: To AS 4145.5.

General
Performance: Provide door controllers, pivots, flow or overhead door closers, and automatic door operators, which are suitable for the door type, size, weight and swings required and the operating conditions, including wind and air conditioning pressure.

2.7 ELECTRONIC CONTROL DEVICES

General
Requirement: Provide electric strikes, electric locks, drop bolts, or similar devices to suit door construction and hardware.

Electromagnetic hold-open devices: To AS 1905.1 and AS 1670.1.

Fail-safe: Connect door control devices in a fail-safe mode to permit egress in the event of power failure.

Fail-secure: Connect door control devices in a fail-secure mode to prevent egress in the event of power failure.

Authorised products: Provide equipment listed in the ActivFire Register of Fire Protection Equipment.

Glass doors: Provide tumbler, drop bolts or magnetic holders.

Double leaf doors (solid frame): Provide an electric strike or lock on the fixed leaf, connected to the door frame by concealed flexible wiring.

Activation
Activation device: Provide keypads, card readers or other activation devices, and locate next to entry points.

External: Provide weatherproof (IP56) hoods or housings for external units.

Mounting height: 900 to 1100 mm from floor level and not less than 500 mm from internal corners.

2.8 KEYING

Temporary construction keys and cylinders
Requirement: Provide one of the following:

- Loan cylinder: Install for construction locks and replace at practical completion.
- Construction keyed master key cylinder: Keep up-to-date records of keys issued including recipient's name, company and contact details, date issued and date returned.

Delivery of keys
Great grandmaster, grandmaster and master keys: Arrange for the manufacturer or supplier to deliver direct to the principal.

Number of keys: To the **Number of keys table**.

Group keying
Keying system: Provide a group keying system as documented in the **Key codes schedule**.

Existing system: Obtain the details of existing group or master key systems to which a new system is required to be an extension.

Future extensions: Provide master and grandmaster group keying systems which are capable of accommodating future extensions.

Keying control security system: If cylinder or pin-tumbler locks accept a group key (e.g. master key, maison key) provide to those locks a proprietary keying control security system.

Stamping: Stamp keys and lock cylinders to show the key codes and/or door number as scheduled.

Identification

Labelling: Supply each key with a purpose-made plastic or stamped metal label legibly marked to identify the key, attached to the key by a metal ring.

Key material

Lever locks: Malleable cast iron or mild steel.

Pin tumbler locks: Nickel alloy, not brass.

Number of keys table

Key code	Key type	Minimum number of keys
GGMK	Great grandmaster keys	2
GMK	Grandmaster keys	2
MK	Master keys	2 per code group
KD	Locks keyed to differ	2 per lock
KA	Locks keyed alike:	
	2 locks in code group	4
	3 to 10 locks in code group	6
	11 to 40 locks in code group	10
	41 and over locks in code group	1 per 4 locks or part thereof

3 EXECUTION

3.1 INSTALLATION

Mounting height

Locks and latches: Centreline of the door knob or lever spindle above finished floor:

Locks

Cylinders: Fix vertically and with consistent key alignment.

Door stops

Fixing: Fix on the floor, skirting or wall, as appropriate, to prevent the door or door furniture striking the wall or other surface.

Fasteners

Materials: Provide materials compatible with the item being fixed, and of sufficient strength, size and quality to perform their function.

- Concealed fixings: Provide a corrosion resistant finish to concealed fixings.
- Exposed fixings: Match exposed fixings to the material being fixed.

Security: Locate exposed fixings to lock furniture on the inside faces of external doors and on the inside faces of internal doors to lockable rooms.

Support: Provide appropriate back support (for example lock stiles, blocking, wall noggings and backing plates) for hardware fixings.

- Hollow metal sections: Provide backing plates drilled and tapped for screw fixing, or provide rivet nuts with machine thread screws. Do not use self tapping screws or blind rivets.

Floor springs

General: Form a recess in the floor slab for the floor spring box and grout the box in place so that the cover plate is flush with the finished floor.

Hinges

Metal frames: Fix hinges using metal thread screws.

Timber doorsets: Install butt hinges in housings equal in depth to the thickness of the hinge leaf (except for hinges designed for mounting without housing), and fix with countersunk screws.

3.2 COMPLETION

Adjustment

General: Leave the hardware properly adjusted with working parts in working order, and clean, undamaged, properly adjusted, and lubricated where appropriate.

Automatic door operators: Maintain and adjust the system throughout the defects liability period.

Keys

Contractor's keys: Immediately before practical completion, replace or reset cylinders to which the contractor has had key access during construction to exclude the contractor's keys.

Product warranties

Warranty: Cover materials and workmanship in the form of interlocking warranties from the manufacturer or distributor and the installer.

4 SELECTIONS

4.1 DOOR-BY-DOOR SCHEDULE

LOCKS AND LATCHES SCHEDULE

MASTER KEYING For compatibility with Leichhardt Council Master Key System Cylinders and keys to all locks to be supplied by Hildebrandt Locksmiths PH: 9212 5211			
Type- Aluminium External Doors Lockwood lever SC finish Lever 70		**Plates**	**Locks**
		5800SC series round end	**3582 Series Short Backset Vestibule Mortise Locks**
Code	**Type**	**Catalogue No.**	**Details**
VS	Vestibule set	2801/70,2901/70	3582X-*SCNCYL
PL	Patio lock (turn to inside)	2805/70,2904/70	3584-TSC
Type- Timber Hinged Doors Lockwood lever SC finish Lever 70			
		2800SC series round end	**3570 Series Cylinder Mortise Locks**
Code	**Type**	**Catalogue No.**	**Details**
CO	Classroom and Office Locking Latch	2801/70SC,2905/70SC	3572M-SC
PV	Privacy Latch with indicating emergency release furniture	2814/70SC , 2904/70 SC	3574EA-SC
PVA	Privacy Latch with indicating emergency release furniture and disabled turn knob	2814/70SC , 2939/70 *SC	3574EA-SC
		1220 series rose	
PS	Passage Set	1221 SC	3574-SC
Timber In wall sliding doors			
Code	**Type**	**Details**	
CL	Sliding door lock	CS Cavilock CL400 with key outside, satin chrome	

OTHER HARDWARE

Code	Description and function	Type
WMS,	Wall mounted door stop	Lockwood 350 SC
FMS	Floor mounted door stop	Lockwood A250 SC
MDS	Magnetic door stop –door/wall mounted	Lockwood A310 Magnetic Door Stop SC
DC	Door controller	Lockwood 2615DASIL surface mounted, cam action hydraulic unit with slide rail arm configuration on push side , 2616-153 Cam action damper within slide rail , 2616-104SIL angle bracket, 2616-180SILdrop plate if required
IB	Indicator Bolt emergency release	Lockwood 801SC
DS1	Heavy duty door seal	Raven RP8 with RP98 threshold plate satin clear finish
DS2	Acoustic seal head and jamb	Raven RP10
DS3	Heavy duty automatic door bottom seal	Raven RP127 Si
BB1	Barrel bolt 75x31mm	Delf Barrel Bolt 8333SC Satin Chrome
BB2	Barrel bolt 100x31mm	Delf Barrel Bolt 8333SC Satin Chrome
FB	Flush Bolt 200mm	Lockwood L840
PH	Pull handle 700mm	1x Barben BAH-180/F/700/SSS/D/AL/DDA Offset 1/2set pull handle with bolt through button fixings (DDA compliant) centred 23mm from leading edge on external face of door
ML	Magnetic Latch	D & D Technologies MagnaLatch Vertical Pull Safety Gate Latch – Pet Security MLVPS2BGA

EXTERNAL DOORS

Door	Location	Type	Lock or latch	Key code	Handles	Mounting height	Stop or stay, hinges, door seals
D1	Outdoor Store 1	Timber Side hung	CO		Lever	1000mm	DS1
D2	Playroom 1	Aluminium side hung Double	PL	-	Lever	1000mm	wide throw hinges, DS2, DS3 , MDSx2, FB x2
D3	Washroom 1	Aluminium side hung	PL	-	Lever	1000mm	wide throw hinges, DS3 , MDS
D4	Playroom 2	Aluminium side hung Double	PL	-	Lever	1000mm	wide throw hinges, DS2, DS3 , MDSx2, FB x2
D5	Washroom 2	Aluminium side hung	PL	-	Lever	1000mm	wide throw hinges, DS3 , MDS
D6	Outdoor Store 2	Timber Side hung	CO		Lever	1000mm	DS1
D7	Dining/Craft	Aluminium side hung Double	PL	-	Lever	1000mm	wide throw hinges, DS2, DS3 , MDSx2, FB x2

D8	Entry	Aluminium side hung	VS	K1	Lever – only on internal face, PH pull handle external	1000mm	DC, DS2,DS3, FMS
D9	Pram Store	Timber	CO	K1	Lever	1000mm	BB2 X 2
D10	Playroom 3	Aluminium side hung Double	PL	-	Lever	1000mm	wide throw hinges, DS2, DS3 , MDSx2, FB x2
D11	Washroom 3	Aluminium side hung	PL	-	Lever	1000mm	wide throw hinges, DS3 , MDS
D12	Playroom 4	Aluminium side hung Double	PL	-	Lever	1000mm	wide throw hinges, DS2, DS3 , MDSx2, FB x2
D13	Playroom 4	Aluminium side hung	PL	-	Lever	1000mm	DS2, DS3 , MDS
D14	Outdoor Store 3	Timber Side hung	CO		Lever	1000mm	DS1
D15	Staff Lunchroom	Aluminium sliding	Internal snib		AWS Miro pull handles	1000mm	
D16	Laundry	Aluminium side hung	PL	-	Lever	1000mm	Wide throw hinges, DS2, DS3 , MDS

INTERNAL DOORS (no D19)

Door	**Location**	**Type**	**Lock or latch**	**Key code**	**Handles**	**Mounting height**	**Stop or stay, hinges, door seals**
D17	Playroom 1	Timber Half glazed side hung, stable	PS		lever	900	MDS2 to top section BB
D18	Store 1	Timber Side hung	PS		Lever	1000	FMS
D20	Laundry	Timber Side hung	PS		lever	1500	
D21	Playroom 2	Timber Half glazed side hung, stable	PS		lever	900	BB
D22	WC 1	Timber Side hung	PV		lever	1000	DMS
D23	Staff lunchroom	Timber Side hung	PS		lever	1000	
D24	Store 2	Timber Side hung	PS		Lever	1000	
D25	Pantry	Timber cavity sliding	CL	K1		1000	

D26	Director's Office	Timber Side hung	CO	K1	Lever	1000	
D27	Photocopy Store	Timber Side hung	PS		Lever	1000	
D28	Admin Office	Timber Side hung	CO	K1	Lever	1000	
D29	Staff Program	Timber Side hung	PS		Lever	1000	
D30	Acc. WC	Timber Side hung	PVA		Lever	1000	
D31	Meeting	Timber Side hung	PS		Lever	1000	
D32	Playroom 3	Timber Half glazed side hung, stable	PS		lever	900	MDS2 to top section BB
D33	Cot Room 1	Timber Side hung	PS		Lever	1000	
D34	Cot Room 2	Timber Side hung	PS		Lever	1000	
D35	Art/Bottle Prep	Timber Half glazed side hung, stable	PS		lever	900	MDS2 to top section BB
D36	Store 3	Timber Side hung	PS		Lever	1000	
D37	Art/Bottle Prep	Timber Half glazed side hung, stable	PS		lever	900	MDS2 to top section BB
D38	Cot Room 3	Timber Side hung	PS		Lever	1000	
D39	Cot Room 4	Timber Side hung	PS		Lever	1000	

INTERNAL GATES

G1	Washroom 2	Timber side hung	ML		Magnetic latch	Top of gate	
G2	Kitchen	Timber side hung	ML		Magnetic latch	Top of gate	
G3	Washroom 4	Timber side hung	ML		Magnetic latch	Top of gate	
G4	Washroom 4	Timber side hung	ML		Magnetic latch	Top of gate	

0457 EXTERNAL SCREENS

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide external screens, as documented and as follows:

- Plumb, level, straight and true within the building tolerances of the structural system.
- Undamaged and free of surface defects or distortions.
- Fixed or fastened to the building structure.
- Able to resist wind and other actions without vibration or permanent distortion.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.

1.3 STANDARDS

General

Aluminium framed sunscreens, awnings and shutters:

- Stress analysis of members: To AS/NZS 1664.1 or AS/NZS 1664.2.

Horizontal screen loadings: To AS/NZS 1170.1 Table 3.2.

Electrically operated external louvres and blinds:

- Drive motors: To AS/NZS 60335.2.97.

Access for maintenance: To AS 1657.

1.4 INTERPRETATION

Abbreviations

General: For the purposes of this worksection the following abbreviations apply:

- BMS: Building Management Systems.
- PVC-U: Unplasticised Polyvinylchloride.

Definitions

General: For the purposes of this worksection, the following definitions apply:

- Louvres - Continuous: Louvres that run continuously past, and are supported by, concealed framing or brackets.
- Louvres - Horizontal: Louvres that span between frame stiles, mullions or vertical supports.
- Louvres - Vertical: Louvres that span between frame heads and sills, or horizontal supports.
- Membrane: A thin and flexible sheet of fabric material.
- Screen: Includes sunscreens, trafficable sunscreens, external louvres and blinds, shutters, awnings and pergolas fixed to building facades or openings to control sunlight and/or provide privacy, to screen plant and equipment, or to provide an architectural feature. It applies to fixed, adjustable, operable and automatically controlled types.
- Shadecloth: A knitted or woven fabric designed for external use with a weave designed to provide a specified amount of shade.
- Tensioned membrane: A thin cloth or sheet that is held in a predetermined 2- or 3-dimensional shape under permanent tension. The shape and the tension are interrelated and designed to safely carry the permanent and imposed loads (such as those resulting from wind actions) in a predictable manner.

1.5 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Sample assembly.
- Fabricated screen assemblies at the factory ready for delivery to the site.
- Fabricated screen assemblies delivered to the site, before installation.
- Commencement of installation of screen assemblies.
- Completion of installation.

1.6 SUBMISSIONS

Maintenance manual

Requirement: At completion, submit the screen manufacturer's recommendations for operation, care and maintenance.

Samples

General: Submit samples of the following:

- Sections proposed for frame members, louvres, accessories, cover panels and trim.
- Joints made, using proposed techniques.
- Colour samples of prefinished production material (e.g. anodised or organic coated extrusions or sheet, glazing, infill panel material or fabric), each at least 200 x 200 mm, showing the limits of the range of variation in the selected colour, if any, for each component of the screens specified.
- Accessory and hardware items documented descriptively or by performance (i.e. not proprietary items). Include handles, operators, controls, switches, sensors, motors, fixing clips, anchor brackets and attachments, fixings, gaskets and weather seals.

Labelling: Label each sample, giving the brand and product name, manufacturer's code reference, date of manufacture and intended building location.

Sealant compatibility

Compatibility statements: Submit statements from all parties to the installation that certify the compatibility of sealants with screen components, finishes and all substrates.

Shop drawings

General: Submit shop drawings to a scale that best describes the detail, calculations and specifications conveying the following information:

- Layout of the screen assembly (sectional plans, vertical sections, and elevations of each building face where screens are to be installed).
- Full size sections of typical members including mullions, transoms, subheads, sills, subsills, louvres, infill panel material or fabric, beads, bearings, linkages, exposed fixings, sealant beads, glazing gaskets, splice plates, trays and cover strips, with notes specifying the proposed materials.
- Lubrication requirements for adjustable or operable screens.
- Method of assembly, including isometric or axonometric and exploded views of typical framing junctions, showing panel to panel joints (for modular systems).
- Method of installation, including the following:
  - . Location and magnitude of reactions to be accommodated by the support structure.
  - . Type and location of fasteners and other attachments to be cast or otherwise built into the building structure.
  - . Erection tolerances.
  - . Accurate locations and full size details of machined slots, keyholes and other penetrations in frame extrusions for lifting and installing the units.
  - . Junctions and trim to adjoining surfaces.
  - . Caulking and flashing.
  - . Locations of visible heads of fasteners.
- Provision for differential vertical or horizontal movements, including the following:
  - . Thermal expansion and contraction.
  - . Frame deflections.

- Details of motor and operating mechanism enclosures.
- Method of draining the assembly, including details showing the following:
  . Pressure equalised drained joints.
  . Location, number and size of weepholes.
- Connection points to rainwater or stormwater systems.
- Hardware, fittings and accessories including window cleaning restraints and visible heads of fasteners.
- Infill panel stiffening.
- Location and power requirements of motors, sensors and controls.
- Wiring diagrams of control systems and how they connect to BMS.
- Scale drawings and descriptions of prototype external screens.

Subcontractors

General: Submit names and contact details of the proposed manufacturers and, if the manufacturer is not the installer, the installers recommended by the manufacturers.

Warranties

Screens: At completion, submit the manufacturer's published product warranties.

2 PRODUCTS

2.1 MATERIALS GENERALLY

Structural steel

Design and materials: To AS 4100.

Welding: To the AS/NZS 1554 series.

Galvanizing: To AS/NZS 4680.

Cables

Requirement: Preload cables by cyclic loading to achieve a uniform modulus of elasticity and a linear stress/strain relationship within the working range. Use a swaging system to achieve a breaking strength of terminals not lower than the minimum design strength of the cable system.

Materials: Stainless steel type 316 or galvanized steel.

Fabric

Supply: Supply fabric by a single manufacturer as part of a single batch.

Inspection: Check each roll of material for flatness, faults in the woven fabric and the coatings, where present, by visual inspection in directional sunlight at a distance of 4 m and by passing the membrane over a uniformly illuminated surface.

Stitching: Use UV stabilised polyester thread with a minimum tensile strength of 180 N. Use lock type stitching with a twin needle machine.

Perimeter reinforcing: Reinforce the perimeter of each with UV stabilised polyester, coated with PVC and incorporating pockets for the tension cables.

2.2 METAL FINISHES

Surface preparation

Standard: To AS 1627 series.

Anodised

Standard: To AS 1231.

Thickness: ≥ 15 microns to 20 microns.

Hot-dip galvanizing

Coating mass/thickness minima: To AS/NZS 4680.

Powder coating

Standard for architectural coating applications: To AS 3715.

2.3 LOUVRE TYPE SCREENS

General
Requirement: Provide metal louvre blades mounted in a metal perimeter frame or subframe and able to withstand the permissible-stress-design wind pressure for that location without failure or permanent distortion of members, and without blade flutter.

Expansion joints
Requirement: Provide for expansion and contraction in continuous sections (e.g. continuous louvres, interlocking mullions) at spacings not exceeding those recommended by the manufacturer, or 6 m, whichever is the lesser.

Fixed metal louvres
Requirement: Provide metal louvre blades mounted in a metal perimeter frame or subframe, or on carrier frames, installed horizontally or vertically. Blades can be rolled or extruded metal, or extruded metal blades swaged together with cross bars to form self supporting panels.

2.4 RETRACTABLE AWNINGS

Folding arm awnings
Requirement: Provide a folding arm awning including weatherproof fabric fixed between a roller attached to the face of the building and a rail supported on pivoted, cantilevered arms.

Cassette: Provide a cassette to conceal and protect the awning when retracted.

Operation: Provide an operating mechanism that extends and retracts the awning while maintaining sufficient tension on the fabric to keep it taut throughout its range of movement.

3 EXECUTION

3.1 FABRICATION

Aluminium fabrication and construction
Standard: To AS/NZS 1664.1 or AS/NZS 1664.2.

Fasteners
Requirement: Provide fasteners of sufficient strength and quality to perform their required function.

Joints
Requirement: Make accurately fitted tight joints by methods such that neither fasteners nor fixing devices such as pressure indentations are visible on exposed faces. Where heads of fasteners are unavoidably visible, finish them to match the adjacent finished surface.

Protection
Corrosion protection: Provide protection against corrosion which may be caused in metals by products or processes normally employed on a building site or by normal atmospheric or other ambient conditions and by-products including rainwater, potable and non potable water, airborne salt and airborne pollution.

Durability: Provide materials resistant to exposure to weather and UV radiation so that their colour, surface finish, flexibility and water resistance are maintained.

Temporary measures: Do not use adhesive tape, film or paper, or applied coatings liable to bond to the substrate, when exposed to sunlight or weather, as temporary measures to protect screen components during the course of the works. If temporary measures are used, remove all traces, particularly from contact mating surfaces before joining up.

Operation
Requirement: Provide moving parts which operate freely and smoothly, without vibration, rattling, binding or sticking, and at correct tensions or operating forces. Lubricate if appropriate.

3.2 WELDING

General
Quality: Provide finished welds descaled and free of surface and internal cracks, slag inclusion and porosity. Provide continuous welding unless permanently concealed.

Restrictions: Do not weld as follows:

- On site.

- On finished surfaces.
- Next to a finished surface or glass, unless the adjacent surface is protected from damage.

3.3 EMBEDDED FIXINGS

General
Fixing: Fix screens to the building structure by one of the following methods, and as documented in the **Fastener fixing schedule**:

- Fasteners cast into the concrete of the building structure. Do not displace reinforcement, when locating embedded items.
- Chemical fixings, expanding bolt sockets.
- Bolting or welding to brackets or structural framing.

Submission: If other methods of fixing (e.g. preformed pockets or explosive tools) are proposed, submit details.

Standard for embedment
For concrete: To AS 3600.

For masonry: To AS 3700.

Fixing brackets
Requirement: Provide fasteners and other methods of attachment of the screens to the structure with the following characteristics:

- Three-way adjustment to accommodate fabrication and construction tolerances.
- Provision for building movements while fixing the screens in their correct positions.
- Adequacy for structural design actions.

Protection
Cast-in items: Prevent the entry of concrete slurry into bolt holes, channels, and other openings for the fasteners. Fill the openings using an easily removed water repellent material before casting in.

Placement
Tolerance:

- Maximum deviation from correct position: 13 mm.

Fastener channels embedded parallel or perpendicular to the edge of a concrete structural member:

- Minimum length of embedded anchor: 200 mm.
- Minimum distance from the concrete edge to the nearest part of the anchor: 100 mm.

3.4 INSTALLATION

Installation tolerance
Alignment:

- Maximum deviation of any member from its true alignment (plumb, level, or line of slope): 1:1000, up to a maximum of 10 mm in a continuous run of members in one direction.
- Maximum misalignment between adjoining members: 1 mm.

Position:

- Maximum deviation of any part from its true position: 10 mm

Marking
Requirement: Before the separate parts of the screens are delivered to the site, provide suitable and sufficient marks or other means for identifying each part, and for showing its correct location and orientation, when installed.

Reference lines and marks
Requirement: Provide on each floor, in agreed locations, accurate perimeter offset reference lines, plumb with corresponding lines on other floors, and height benchmarks.

Cleaning
Requirement: During erection, promptly remove foreign matter from the screens without damage to finishes. Do not use abrasive cleaners or acid.

3.5 COMPLETION

Cleaning
Method: Clean all visible surfaces with soft clean cloths and clean water or approved cleanser, finishing with a clean cloth. Do not use abrasive or alkaline materials.

4 SELECTIONS

4.1 EXTERNAL SCREENS

Louvre vertical screen schedule

Location	**Bin Store**
Product name	Klimat Fixed Ventilation Louvres with bird wire
Proprietary suite	SWG-50
Material	Powder coated aluminium
Colour	Ironstone

Louvre horizontal sunscreen schedule

Location	**Main Building North Elevation**
Product name	Highlight Industries louvre panel in painted steel frame as shown on drawings
Proprietary suite	SS203/60
Material	Powder coated aluminium
Colour	Ironstone

Staff veranda screen wall schedule

Location	**Staff Veranda between veranda and drying area**
Product name	Modwood
Description	Horizontal Mini Board 68x17mm screw fixed to 65x65 galvanised steel posts at 800mm centres approx. – gap between boards 15mm
Material	Composite timber
Colour	Jarrah

Retractable awning schedule

Location	**0-2 Playground – east elevation**
Product name	Helioshade Cassette awning
Cassette Colour	Precious Silver 9006
Dimensions	4.5m wide x4.0m projection
Awning fabric	Helioshade 100 Signature Collection Colour to be advised
Operation	Motorized operation by an electric motor concealed in the cassette with a remote control handpiece.
Accessories	Brackets for rafter mounting

0471 INSULATION AND PLIABLE MEMBRANES

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide thermal insulation and pliable membrane systems, as documented and as follows:

- Complete for their function.
- Conforming to the detail and location drawings.
- Firmly fixed in position.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.

1.3 INTERPRETATION

Definitions

General: For the purposes of this worksection the following definitions apply:

- FBS-1 (fibre-bio-soluble) mineral wool: Insulation composed of bio-soluble glass or rock fibres.
- Fibre batts: Flexible insulation supplied as factory cut pieces and composed of mineral wool (glass and rock fibre) or polyester fibre.
- Fire hazard properties: Terminology to BCA A2.4.
- Pliable building membrane: To AS/NZS 4200.1 and equivalent to sarking-type materials, as defined in the BCA.
- Thermal insulation terminology: To AS/NZS 4859.1.
- Vapour permeable (breathable) membrane: A flexible membrane material, normally used for secondary waterproofing that allows for the transmission of water vapour.

1.4 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the pliable membrane and insulation before they are covered up or concealed.

1.5 SUBMISSIONS

Certification

Requirement: Submit evidence of conformance to **INSULATION AND PLIABLE MEMBRANE**, **Insulation**.

Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Fire hazard properties

General: Submit evidence of conformance to **INSULATION AND PLIABLE MEMBRANE MATERIALS**, **Fire hazard properties**.

Materials

Thermal insulation properties: Submit evidence of conformance to AS/NZS 4859.1.

Warranties

Manufacturer's published product warranties: Submit on completion.

2 PRODUCTS

2.1 MARKING

Identification

General: Deliver materials to the site in the manufacturer's original sealed packaging, legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Safety data sheets.

2.2 INSULATION AND PLIABLE MEMBRANE MATERIALS

Fire hazard properties

Insulation: Fire hazard indices for all materials when tested in conformance with AS/NZS 1530.3:

- Spread of flame index: ≤ 9.
- Smoke developed index: ≤ 8 if spread of flame > 5.
- Materials with reflective facing: Test to AS/NZS 1530.3 and the recommendations of clause A6.

Pliable membranes: Flammability index < 5 when tested in conformance with AS 1530.2.

Insulation

Mineral wool blankets and cut pieces: To AS/NZS 4859.1 Section 8.

Polyester: To AS/NZS 4859.1 Section 7.

Reflective thermal insulation: To AS/NZS 4859.1 Section 9.

Pliable membranes

Standard: To AS/NZS 4200.1.

Vapour barrier:

- Vapour barrier classification: High.

Sarking membrane (other than walls and gables):

- Water barrier classification: High.

Vapour permeable (breathable) membrane:

- Vapour resistance when tested to AS/NZS 4200.1: 0.5 MN.s/g is

Fasteners and supports

General: Metallic-coated steel.

Mesh support to roof insulation

Metallic-coated steel wire netting: To AS 2423 Section 4.

- Size: 45 mm mesh x 1 mm diameter.

Welded safety mesh: To AS/NZS 4389.

3 EXECUTION

3.1 GENERAL

Bulk insulation

Installation: To AS 3999 and BCA J1.2.

General: Firmly butt together fibre blankets or batts, with no gaps except as follows:

- Access openings and vents: Do not obstruct.

- Light fittings: To AS/NZS 3000 clause 4.5.
- Electrical cables: To AS 3999 clause 2.6.

Glass Wool and Rock Wool insulation: Conform to the ICANZ *Industry Code of Practice for safe use of Glass Wool and Rock Wool insulation*.

Marking: Deliver mineral wool products to site in packaging labelled FBS-1 BIO-SOLUBLE INSULATION.

Pliable membrane

Installation: To AS/NZS 4200.2 and BCA J1.2 or BCA 3.12.1.1, as appropriate.

3.2 WALL INSULATION

Framed walls – bulk insulation

Product type: Fibre batts.

Installation: Friction fit between framing members. If other support is not provided, staple nylon twine to the framing and stretch tight.

Masonry veneer cavity walls

Vapour permeable (breathable) membrane

Application: Provide a vapour permeable membrane behind external facing material which does not provide permanent weatherproofing or which may be subject to condensation forming on the internal face, including the following:

- Boards fixed vertically or diagonally.
- Boards or planks fixed in exposed locations where wind driven rain can penetrate the joints.
- Unpainted or unsealed cladding.
- Masonry veneer.

Installation: Run the vapour permeable membrane horizontally on the outer face of external wall framing, over the flashing, from the bottom plate up. Pull taught over the framing and fix to framing members. Seal across the wall cavity at the top.

Horizontal laps: At least 150 mm wide, lapped to make sure water is shed to the outer face of the membrane.

End or vertical overlaps laps: At least 150 mm wide made over framing.

Openings: Run the vapour permeable membrane over the openings and leave covered until windows and doors are installed. Cut the membrane on a 45° diagonal from each corner of the opening, fold the flaps inside and fix to the inside frame of the opening. If the membrane is used to provide a continuous air tight layer, seal all joints with pressure sensitive adhesive tape.

Fixing: Install as follows:

- Timber frames: Metallic-coated clouts, 20 mm long 6 to 8 mm staples or punched multi-point metallic-coated steel brads.

3.3 ROOF INSULATION

General

Location: The whole of the roof area including skylight shaft walls, except the following:

- Eaves, overhangs, skylights, vents and openings.
- Roofs to outbuildings, garages, and semi-enclosed spaces such as verandahs, porches and carports.

Mesh support to roof insulation

Locations: Provide support to the following:

- Sarking, vapour barrier or reflective thermal insulation membranes laid over roof framing members which are spaced at more than 900 mm centres.
- Blanket type thermal insulation laid over roof framing members as sound insulation to metal roofing.

Installing wire netting: Lay over the roof framing providing sufficient slack or sag between members to suit the application.

Fixing wire netting: Staple to timber frame, wire to steel frame.

Installing welded safety mesh: To AS/NZS 4389.

Metal roofs – bulk insulation
Product: Fibre blankets or batts.

Installation:

- Batts: Fit tightly between framing members.
- Blanket for sound insulation: Install over the roof framing, reflective thermal insulation (if any), and mesh support, so that the blanket is in continuous contact with the underside of the metal roofing sheets.
- Combined blanket and reflective insulation: Lay facing reflective insulation face downwards over safety mesh.

Ceiling insulation – bulk insulation
Product type:

- Framed ceilings: Fibre batts.
- Suspended ceiling: Fibre blanket.

Application: Over ceiling lining.

Installation:

- Batts: Fit tightly between framing members.
- Blankets: Butt joint and lay over ceiling panels or lining.

3.4 SECTION J COMPLIANCE

Thermal Construction General

For compliance with Section J1.2 of the NCC 2014.

Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it –

(i) Abuts or overlaps adjoining insulation other than at supporting members such as studs, noggings, joists, furring
channels and the like where the insulation must butt against the member; and

(ii) Forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the
thermal barrier; and

(iii) Does not affect the safe or effective operation of a service or fitting.

Where required, reflective insulation must be installed with –

(iv) The necessary airspace to achieve the required R-value between a reflective side of the reflective insulation
and a building lining or cladding; and

(v) The reflective insulation closely fitted against any penetration, door or window opening; and

(vi) The reflective insulation adequately supported by framing members; and

(vii) Each adjoining sheet of roll membrane being –

(A) Overlapped not less than 50mm; or

(B) Taped together

Where required, bulk insulation must be installed so that –

(i) It maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling
or the like; and

(ii) In a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50mm

Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in **Specification J1.2 of the NCC.**

Where, for operational or safety reasons associated with exhaust fans, flues or recessed downlights, the area of required ceiling insulation is reduced, the loss of insulation must be compensated for by increasing the R-Value of the insulation in the remainder of the ceiling in accordance with Table J1.3b.

Table J1.3b Adjustment of Minimum R-Value for loss of Ceiling Insulation

Percentage of ceiling area uninsulated	Minimum *R-Value* of ceiling insulation *required* to satisfy J1.3(a)							
	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Adjusted minimum *R-Value* of ceiling insulation *required* to compensate for loss of ceiling area insulation							
0.5% to less than 1.0%	2.8	3.4	4.0	4.7	5.4	6.2	6.9	
1.0% to less than 1.5%	2.9	3.6	4.4	5.2	6.1	7.0		
1.5% to less than 2.0%	3.1	3.9	4.8	5.8	6.8			
2.0% to less than 2.5%	3.3	4.2	5.3	6.5				
2.5% to less than 3.0%	3.6	4.6	5.9					
3.0% to less than 4.0%	4.2	5.7	Not Permitted					
4.0% to less than 5.0%	5.0							
5.0% or more								

Note:
Where the minimum *R-Value* of ceiling insulation *required* to satisfy J1.3() is between the values stated, interpolation may be used to determine the adjusted minimum *R-Vale*.

3.5 COMPLETION

Warranties
Insulation and pliable membranes: Submit the manufacturer's published product warranties.

4 SELECTIONS

THERMAL NSULATION

Wall insulation

Property	**A**	**B**
Application	Framed walls with cladding	Masonry veneer cavity walls
Type/Product	Fletcher Pink Sonobatts	Fletcher Pink Sonobatts
Location	External walls	External walls
R-value	2.7	2.7
Thickness (mm)	90mm	90mm

Roof and ceiling insulation – roof generally

Property	**A**	**B**
Application	bulk insulation	bulk insulation
Type/Product	Fletcher R1.8 Permastop building blanket with insulation safety mesh	Fletcher R2.0 pink batts
Location	beneath roof sheet of internal space	on ceiling of internal space
R-value	R1.8	R2.0
Thickness (mm)	60mm	90mm

Roof and ceiling insulation- roof 34 degree pitch

Property	**A**	**B**
Application	bulk insulation	bulk insulation
Type/Product	Fletcher R1.8 Permastop building blanket with insulation safety mesh	Fletcher R2.5 pink batts HD
Location	beneath roof sheet of internal space	on ceiling of internal space
R-value	R1.8	R2.0

Property	**A**	**B**
Thickness (mm)	75mm	90mm

4.1 ACOUSTIC INSULATION

Exposed acoustic insulation panels

Property	**A**
Application	Internal
Type/Product	Autex Quietspace Panels
Location	Ceiling or wall mounted – playrooms, foyer, dining area
Weight	2300gsm
Thickness (mm)	25mm
Panel size	2410mm x 1205mm

4.2 PLIABLE MEMBRANES

Pliable membranes

Property	
Application	vapour permeable membrane
Product	Tyvek building wrap
Location	behind light weight cladding including bin store fixed to studwork

0511B LINING

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide internal lining systems, as documented.

Performance
Requirement: Provide lining system with a surface that is:

- Resistant to impacts expected in use.
- Resistant to moisture encountered under expected environmental conditions.
- Free of irregularities.
- A suitable substrate for the nominated final finish.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):

- *General requirements*.
- *Insulation for acoustic panels*

1.3 INTERPRETATION

Definitions
General: For the purposes of this worksection the definitions given in AS/NZS 4491 and the following apply:

- Fibre cement sheet linings: Treated cellulose fibre in a matrix of cement and sand autoclaved sheet, sealed on one side.

1.4 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:

- Substrate or framing before installation of linings.

1.5 TOLERANCES

Permitted deviations
Gypsum lining: To AS/NZS 2589 clause 4.2.2.

Other lining: 4 mm from a 1.8 m straightedge.

Substrates
Requirement: Plumb, level, in true alignment and to the lining manufacturer's recommendations.

Timber, steel framing and battened masonry: To AS/NZS 2589 clause 4.2.

1.6 SUBMISSIONS

Warranties
Requirement: Submit the following:

Lining materials: Submit the manufacturer's published product warranties.

2 PRODUCTS

2.1 GENERAL

Storage and handling
Requirement: Dry and undamaged lining stacked in pallets horizontally on a smooth, level surface. Prevent distortion or moisture ingress.

Handling: Do not drag sheets across each other or across other materials. Protect edges, corners and surface from damage.

2.2 MARKING

Identification

General: Deliver materials to the site in the manufacturer's original sealed packaging, legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Safety data sheets (SDS).

Certification

General: Label panels under the authority of a recognised certification program applicable to the product. Locate the label on faces or edges which will be concealed in the works.

2.3 MATERIALS AND COMPONENTS

Plasterboard

Standard: To AS/NZS 2588.

Fibre cement

Standard: To AS/NZS 2908.2.

Wall and ceiling linings: Type B category 2.

Minimum thickness: 4.5 mm.

Location: internal wall linings

Category: Type B Category 2

Thickness (mm): 6

Fasteners

Steel nails: Hot-dip galvanized.

Adhesives

For wallboards: Gunnable synthetic rubber/resin based mastic contact adhesive formulated for bonding flooring and wallboards to a variety of substrates.

Sealants

Fire-resistance rated sealant: Non-hardening sealant, conforming to the *Fire-stopping* worksection, compatible with the materials to be sealed and having a fire-resistance rating equal to that of the building element it seals.

Acoustic sealant: Non-hardening sealant compatible with the materials to be sealed.

3 EXECUTION

3.1 CONSTRUCTION GENERALLY

Conditions

Commencement: Do not commence lining work until the building or installation area is enclosed and weathertight, and all wet trades have been completed.

Substrates or framing

General: Before fixing linings, check and adjust the alignment of substrates or framing, if necessary.

Battens
General: Fix at each crossing with structural framing members, to solid walls or ceiling support. Provide wall plugs in solid substrates.

Ceiling linings
General: Do not install until the timber roof structure is fully loaded for at least 14 days.

Accessories and trim
General: Provide accessories and trim as necessary to complete the installation.

Adhesives
General: Provide adhesive types appropriate for the purpose, and apply them so they transmit the loads imposed without causing discolouration of the finished surfaces.

Aacoustic installations
Sealing: Apply sealant to the manufacturer's recommendations and as follows:
- Around services pipes and penetrations.
- Electrical outlets and recessed lights: Line back and sides of fixture with plasterboard and seal around fixture junction with sealant.
- Around perimeter of lining panels: Provide continuous runs of sealant.

3.2 PLASTERBOARD LINING

Supports
General: Install timber battens or proprietary cold-formed galvanized steel furring channels as follows:
- Where framing member spacing exceed the recommended spacing.
- Where direct fixing of plasterboard is not possible, due to the arrangement or alignment of the framing or substrate.
- Where the lining is the substrate for tiled finishes.
- Where required for penetrations for services, including mechanical grilles and lighting fixtures.

Transverse walls: Locate noggings as follows:
- At least 150 mm from the horizontal joint.
- Make sure noggings do not protrude beyond the face of studs.

Installation
Gypsum plasterboard and fibre reinforced gypsum lining: To AS/NZS 2589.

Level of finish and jointing: To AS/NZS 2589 clause 3.1.

Multiple sheet layers
Application: acoustic rated walls.

Joints: Fill and flush up all joints and fasteners in each layer and caulk up perimeters and penetrations before installing subsequent layers. Stagger all sheet joints by minimum 200 mm.

Joints
Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

Butt joints: Make joints over framing members or provide back blocking.

External corner joints: Make joints over metallic-coated steel corner beads.

Dry joints: Provide square edged sheet and finish with a PVC-U joining section.

Control joints: Provide purpose-made metallic-coated control joint beads at not more than 12 m centres in walls and ceilings and to coincide with structural control joints.

Wet areas: Install additional supports, flashings, trim and sealants as required.

Joints in tiled areas: Do not apply a topping coat after bedding perforated paper tape in bedding compound.

3.3 FIBRE CEMENT LINING

Supports
General: Install timber battens or proprietary cold-formed galvanized steel furring channels as follows:
- Where framing member spacing exceed the recommended spacing.
- Where direct fixing of fibre cement is not possible, due to the arrangement or alignment of the framing or substrate.

- Where the lining is the substrate for tiled finishes.
- Where required for penetrations for services, including mechanical grilles and lighting fixtures.

Installation

Joints and layout: Run sheets across the framing members. In flush jointed applications, stagger end joints in a brick pattern and locate them on framing members, away from the corners of large openings. Provide supports at edges and joints.

Fixing

Timber framed construction: Nail only or combine with adhesive.

Steel framed construction: Screw only or combine with adhesive.

Wall framing: Conform to the following:

- Do not fix to top and bottom plates or noggings.
- In tiled areas: Provide an extra row of noggings immediately above wall-to-floor flashings. Fix sheet at 150 mm centres to each stud and around the perimeter of the sheet.

Masonry wall construction: Conform to the following:

- Direct fixing: Adhesive fix to the masonry except where lining forms a substrate for tiled finish.
- Furring channels: Fix using screw and/or adhesive.

Ceilings: Fix using screw and/or adhesive to ceiling furring members. Do not fix sheets directly to the bottom chords of trusses.

- Ceiling battens: Fix at 600 mm maximum centres.

Wet areas: Do not use adhesive fixing alone.

Multiple sheet layers

Application: acoustic rated walls.

Joints: Fill and flush up all joints and fasteners in each layer and caulk up perimeters and penetrations before installing subsequent layers. Stagger all sheet joints by minimum 200 mm.

Joints

Joint width:

- Butt joints: 1 to 2 mm.
- Expressed joints: 10 mm maximum.

Joint backing for expressed joints: Black self-adhesive polyurethane tape.

Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

External corner joints: Make joints over metallic-coated steel corner beads.

Dry joints: Provide square edged sheet and finish with a PVC-U joining section.

Control joints: Provide control joints to coincide with structural control joints and as follows:

- Walls: ≤ 7.2 m centres.
- Ceilings: To divide into bays not larger than 10.8 x 7.2 m.
- Soffit linings: To divide into bays not larger than 4.2 x 4.2 m or 5.6 x 3.6 m.
- Control joint beads: Purpose-made metallic-coated.
- Support: Provide framing parallel to the joint on each side. Do not fix the lining to abutting building surfaces.

Wet areas: Provide additional supports, flashings, trim and sealants as required.

Joints in tiled areas: Bed perforated paper tape in bedding compound. Do not apply a topping coat.

- Control joints: Not more than 4.2 m centres and space to suit joints required in tiling.
- Internal corners: Reinforce with metallic-coated steel angles. In corners subject to continuous moisture, flash over the angle and under the sheeting with continuous bitumen coated aluminium flashing.

3.4 TRIM AND ACCESSORIES

General

Requirement: Provide trim such as beads, mouldings and stops to make neat junctions between lining components, finishes and adjacent surfaces.

Proprietary items: Provide complete with installation accessories.

Timber trim: Fix using full length so that trim is secure and without movement. Where nail or screw fixings are used, make sure fastener finishes sufficiently below face of trim so that stopping piece finishes flush with the face.

COMPLETION

General

Damaged or marked lining and components: Replace.

Exposed surfaces: Touch up shop applied finishes and restore damaged or marked areas.

Timber panels: If appearance is not uniform, replace panels.

Cleaning: Clean completed surfaces to remove irregularities and leave panels smooth and clean, to the manufacturer's recommendations. If required, sand with fine paper to remove irregularities and refinish panel surface.

- Debris and unused material: Remove from site.

Warranties

Requirement: At practical completion, submit warranties against defective materials and installation.

4 SELECTIONS

4.1 SHEET LINING

Ceiling/wall Joint type	Taped and set, with gap filled with cornice cement
Window /Door joints	Shadow groove

LOCATION	**Internal wall lining –external wall**	**Ceiling lining**
Playrooms, Cot Rooms- lightweight external walls	1x13mm Impactchek plus 1x13mm plasterboard to 1200mm afl, 2x 13mm plasterboard above	2 layers x10mm plasterboard
Playrooms, Cot Rooms- internal walls	1x13mm Impactchek and 1x13mm plasterboard to 1200mm afl, 1x 13mm plasterboard above	
Foyer/parent area – lightweight external walls	1x13mm Impactchek plus 1x13mm plasterboard to 1200mm afl, 2x 13mm plasterboard above	2 layers x 13mm plasterboard
Foyer/parent area – internal walls	1x13mm Impactchek to 1200mm afl, 13mm plasterboard above	
Dining/craft area- lightweight external walls	1x13mm Impactchek plus 1x13mm plasterboard to 1200mm afl, 2x 13mm plasterboard above	1 layer 16mm plasterboard
Dining/craft area – internal walls	1x13mm Impactchek to 1200mm afl, 13mm plasterboard above	
Staff programming room	2x16mm plasterboard – north and eastern walls only 1x13mm Impactchek to 1200mm afl, 13mm plasterboard above	1 layer 16mm plasterboard
Administration	2x16mm plasterboard – north and eastern walls only 1x13mm Impactchek to 1200mm afl, 13mm plasterboard above	1 layer 13mm plasterboard
Director's Office Meeting Room	1x13mm Impactchek to 1200mm afl, 13mm plasterboard above	1 layer 13mm plasterboard

Photocopy	1x13mm Impactchek to 1200mm afl, 13mm plasterboard above	1 layer 10mm plasterboard
Kitchen	6mm fibre cement	1 layer 10mm plasterboard
Staff lunchroom	1x13mm plasterboard	1 layer 13mm plasterboard
Store rooms Corridors Outdoor storerooms	1x13mm Impactchek to 1200mm afl, 13mm plasterboard above	1 layer 10mm plasterboard
Washrooms	6mm fibre cement	1 layer 13mm plasterboard
Laundry WCs	6mm fibre cement	1 layer 10mm plasterboard

0551B JOINERY

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide joinery, as documented.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.
- 0191 Sundry Items

1.3 STANDARDS

1.4 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Shop fabricated or assembled items ready for delivery to the site.
- Openings prepared to receive assemblies.
- Site erected assemblies on completion of erection, before covering up by cladding and encasing.
- Surfaces prepared for, and immediately before, site applied finishes.
- Completion of installation.

1.5 TOLERANCES

General
Requirement: Fabricate and install joinery items to substrates undamaged, plumb, level, straight and free of distortion and to the **Tolerances table.**

Tolerances table

Property	Tolerance
Plumb and level	1:800
Offsets in flush adjoining surfaces	0.5 mm
Offsets in revealed adjoining surfaces	2 mm
Alignment of adjoining doors	0.5 mm
Difference in scribe thickness for joinery items centred between walls	2 mm
Doors centred in openings	0
Joints in finished surfaces	0

1.6 SUBMISSIONS

Installation of proprietary items
General: Submit the manufacturer's standard drawings and details showing:
- Methods of construction.
- Assembly and fixing, with dimensions and tolerances.

Maintenance manual
General: Submit manufacturer's published recommendations for service use.

Subcontractors
General: Submit names and contact details of proposed suppliers and installers.

2 PRODUCTS

2.1 DELIVERY AND STORAGE

General
Requirement: Deliver joinery units to site in unbroken wrapping or containers and store so that its moisture content is not adversely affected. Do not store in areas of wet plaster. Keep storage time to a minimum by delivering items only when required for installation.

2.2 JOINERY MATERIALS AND COMPONENTS

Visible work
Clear finished timber and veneer: Make sure all visible surfaces are free of branding, crayon or chalk marks and of blemishes caused by handling.

Plywood
Interior use generally: To AS/NZS 2270.

Interior use, exposed to moisture: To AS/NZS 2271.

Visible surface with a clear finish: Veneer quality A.

Other visible surfaces: Veneer quality B.

Particleboard
Standard: To AS/NZS 1859.1.

- Classification: HMR MDF

Melamine overlaid particleboard: Particleboard overlaid on both sides with low pressure melamine.

Dry-processed fibreboard (including medium density fibreboard)
Standard: To AS/NZS 1859.2.

Melamine overlaid medium density fibreboard: Medium density fibreboard (STD MDF) overlaid on both sides with low pressure melamine.

Decorative overlaid wood panels
Standard: To AS/NZS 1859.3.

Splashbacks
Stainless steel: Type 304, fine linished finish.

2.3 JOINERY ITEMS

General
Refer to documents as follows:

- Drawings: Joinery units and their location, indicative construction details, scribes and trims, materials, dimensions and thicknesses, and finishes.
- Drawings: Confirm on site all dimensions noted, after the completion of partitions.
- Finishes schedules or drawings: Finishes selections.
- Specification: Joinery hardware fittings and systems.

2.4 JOINERY ASSEMBLIES

Standard
General: To AS/NZS 4386.1.

Plinths
Material: Select from the following:

- Exterior general purpose plywood for kitchen, washrooms 2&3 and laundry benches.
- High moisture resistant particleboard.
- High moisture resistant medium density fibreboard.

Thickness: 16 mm.

Fabrication: Form up with front and back members and full height cross members at not more than 900 mm centres.

Finish: High-pressure decorative laminated sheet.

- Colour: Black

- Fasteners: Conceal with finish.

Installation: Scribe to floor and secure to wall to provide level platform for carcasses.

Carcasses

Material: Select from the following:

- Overlaid high moisture resistant particleboard.
- Overlaid high moisture resistant medium density fibreboard.

Thickness: 16 mm.

Joints: Select from the following:

- Proprietary mechanical connections.
- Dowels and glue.
- Screws and glue.
- Proprietary joining plates and glue.

Adjustable shelves: Support on proprietary pins in holes bored at equal centres vertically.

- Spacing: 32 mm.

Finish: High-pressure decorative laminated sheet

Fasteners: Conceal with finish.

Installation: Secure to walls at not more than 600 mm centres.

Drawer fronts and doors

Material: Select from the following:

- Melamine overlaid high moisture resistant particleboard.
- Melamine overlaid high moisture resistant medium density fibreboard.

Thickness: 16 mm.

Door size: Not exceeding 1.5 m^2on face, with 2400 mm maximum height and 900 mm maximum width.

Drawer fronts: Rout for drawer bottoms.

Finish: [complete/delete]

Colour: [complete/delete]

Drawer backs and sides

Material: PVC film wrapped particleboard.

Thickness: 12 mm.

Colour: white

Installation: Mitre corners leaving outer skin of foil intact, finish with butt joints, glue to form carcass and screw to drawer front. Rout for drawer bottoms.

Drawer bottoms

Material: PVC film laminated hardboard.

Thickness: 3 mm.

Drawer and door hardware

Hinge types: Concealed metal hinges with the following features:

- Adjustable for height, side and depth location of door.
- Self closing action.
- Nickel plated.

Piano hinges: Chrome plated steel, extending full height of doors.

Slides: Metal runners and plastic rollers with the following features:

- 30 kg loading capacity.
- Closure retention.
- White thermoset powder coating or nickel plated.
- Full extension and self closing action

Pulls: 138mm D-handle 10mm diameter Kethy S609 or equal, satin stainless steel

Catches -child-proof safety catches – Tot-lok magnetic catches on playroom art bench sink cupboards and full height cupboards in laundry

2.5 WORKING SURFACES

Laminated benchtops

Material: high moisture resistant particleboard

Finish: High-pressure decorative laminated sheet.

- Colour: to be determined

Exposed edges: Extend laminate over shaped nosing, finishing more than 50 mm back on underside. Splay outside corners at 45°.

Balance underside: Extend laminate to the undersides of benchtops.

Installation: Scribe to walls. Fix to carcass at least twice per 600 mm length of benchtop.

Joint sealing: Fill joint with sealant matching finish and clamp with proprietary mechanical connectors.

3 EXECUTION

3.1 JOINERY

General

Joints: Provide materials in single lengths whenever possible. If joints are necessary, make them over supports.

Framing: Frame and trim where necessary for openings, including those required by other trades.

Concealed surfaces: Prime surfaces concealed by substrates.

Deficiencies: Examine joinery units for completeness and remedy deficiencies.

Substrate: Damp clean and vacuum substrate surfaces that will be permanently concealed.

Acclimatisation

General: Acclimatise the joinery items by stacking in the in-service conditions with air circulation to all surfaces after the following are complete:

- Air conditioning operational.
- Lighting operational.
- Site drainage and stormwater works are complete.
- Space fully enclosed and secure.
- Wet work complete and dry.

Accessories and trim

General: Provide accessories and trim necessary to complete the installation.

Fasteners

Visibility: Do not provide visible fasteners except in the following locations:

- Inside cupboards and drawer units.
- Inside open units, in which case provide proprietary caps to conceal fixings.

Visible fasteners: Where fasteners are unavoidable on visible joinery faces, sink the heads below the surface and fill the sinking flush with a material compatible with the surface finish. In surfaces which are to have clear or tinted finish provide matching wood plugs showing face (not end) grain. In surfaces which are to have melamine finish provide proprietary screws and caps finished to match.

Fix joinery units to substrates as follows:

- Floor mounted units: 600 mm centres maximum.
- Wall mounted units: To each nogging and/or stud stiffener.

Fasteners: Screws with washers into timber or steel framing, or masonry anchors.

Adhesives

General: Provide adhesives to transmit the loads imposed and for the rigidity of the assembly, without causing discolouration of finished surfaces.

Finishing
Junctions with structure: Scribe, plinths, benchtops, splashbacks, ends of cupboards, kickboards and returns to follow the line of structure.

Joints: Scribe internal and mitre external joints.

Edge strips: Finish exposed edges of sheets with edge strips which match sheet faces.

Matching: For surfaces which are to have clear or tinted finish, arrange adjacent pieces to match the grain and colour.

Hygiene requirements: To all food handling areas and voids at the backs of units to all areas, seal all carcass junctions with walls and floors, and to cable and pipe entries, with silicone beads for vermin proofing. Apply water resistant sealants around all plumbing fixtures and ensure the sealants are fit for purpose.

Benchtops
Installation: Fix to carcass at least twice per 600 mm length of benchtop.

Joint sealing: Fill joints with sealant matching the finish colour and clamp with proprietary mechanical connectors.

Edge sealing: Seal to walls and carcasses with a sealant, which matches the finish colour.

Splashbacks
Glass: Fix with non-acidic silicone adhesive. Apply at the rate recommended by the manufacturer.

Installation: Clean the back of the glass panel and apply walnuts of adhesive together with double sided adhesive tape for temporary support, and affix directly to the substrate.

Labelling
General: Permanently mark each unit of furniture with the manufacturer's name, on an interior surface.

3.2 TIMBER STAIRS

Set out
General: Set out stair rod to give uniform risers and uniform treads respectively in each flight.

Fabrication
Closed strings: Trench for treads and risers.

Cut strings: Profile for treads and risers. Mitre riser ends.

Treads: Arris nosings to a pencil round. Return nosings at cut strings. Groove for riser tongue in closed rise stair. Set rise 19 mm back from nosing.

Nosing strip: To BCA D2.13.

Top tread: Flush with finished floor, otherwise to match stair treads. Provide similar tread section as nosing to floor edges around stairwell.

Risers: Tongue to tread. Mitre to string in cut string stairs.

Installation
General: Glue joints in internal work. In closed rise stairs wedge treads and risers to strings. Plant 2 glue blocks behind each tread to riser junction. Trim floors to carry ends of stairs and around stair well.

Stair bolts (to open rise close string stairs): 8 mm diameter mild steel, one at each end and one at centre of flight, transversely between strings. Draw strings tight against ends of treads.

Fascia: Of depth sufficient to overlap 19 mm below ceiling, fixed to floor joists hard up under nosing.

Trim: Provide beads and mouldings as necessary, including a scotia or similar planted under the tread nosing against the risers and cut strings, a bead between wall strings and wall, and a bead behind the fascia over the ceiling finish.

3.3 TRIM

General
Requirement: Provide trim such as beads, mouldings, stops and skirtings to make neat junctions between lining components, finishes and adjacent surfaces.

Fixing
To masonry walls: Wall plugs at 600 mm centres maximum.

To stud walls: Nail to plate or framing at 600 mm centres maximum.

3.4 COMPLETION

Protection
Timber treads: Provide full timber or plywood casing.

Cleaning
Temporary coatings: On or before completion of the works, or before joining up to other surfaces, remove all traces of temporary protective coatings.

Requirement: Remove all dust, marks and rubbish from all surfaces and internal spaces. Clean and polish all self finished surfaces such as anodised and powder coated metals, sanitary ware, glass, tiles and laminates.

4 SELECTIONS

4.1 TRIM

Trim schedule

Property	**T1**
Skirtings: Timber species or group	timber
Skirtings: Grade	HW
Skirtings: Size (h x t) (mm)	100x19
Skirtings: Profile	Bull nosed
Skirtings: Finish	For Paint finish
Sill boards: Timber species or group	timber
Sill boards: Grade	HW
Sill boards: Size ((mm)	19mm thick length to suit
Sill boards: Profile	Pencil round external edge
Sill boards: Finish	For Paint finish

0552B METALWORK - FABRICATED

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide metal fixtures that are:

- Undamaged, plumb, level and straight.
- Free of surface defects or distortions.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.
- [complete/delete]

1.3 STANDARDS

General

Access for maintenance: To AS 1657.

Tactile indicators: To AS/NZS 1428.4.1.

1.4 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Shop fabricated or assembled items ready for delivery to the site.
- Commencement of shop or site welding.
- Site erected assemblies on completion of erection, before covering up by cladding and encasing.
- Steel surfaces prepared for, and immediately before, site applied finishes.

1.5 SUBMISSIONS

Installation of proprietary items

General: Submit the manufacturer’s standard drawings and details showing:

- Methods of construction.
- Assembly and fixing, with dimensions and tolerances.

Maintenance manual

General: Submit manufacturer’s published recommendations for service use.

Materials

Manufacturer’s data: Submit manufacturer's published product data including standard drawings and details.

Stainless steel: For each batch of stainless steel supplied to the works, submit the certificate of compliance or test certificate specified in the applicable standard.

Shop drawings

General: Confirm on site all dimensions and submit shop drawings showing the following information:

- Details of fabrication and components.
- Details of fabrication involving other trades or components.
- Information necessary for site assembly.
- Proposals for the break-up of large items as required for delivery to the site.
- Proposed method of joining the modules of large items.

Shop drawing certification

General: Engage a Professional Engineer and submit certification for the design and installation of: [complete/delete]

Subcontractors
General: Submit names and contact details of proposed suppliers and installers.

2 PRODUCTS

2.1 MATERIALS AND COMPONENTS

Metals and components
Performance: Provide metals in sections of strength and stiffness suited to their required function, finish and method of fabrication.

3 EXECUTION

3.1 CONSTRUCTION GENERALLY

Aluminium structures
Standard: To AS/NZS 1664.1 or AS/NZS 1664.2.

Metals
Performance: Provide metals so that they transmit the loads imposed and ensure the rigidity of the assembly without causing deflection or distortion of finished surfaces.

Incompatible metals: Separate using concealed layers of suitable materials in appropriate thicknesses.

Fasteners
Performance: Provide non-galvanic corrosion fasteners.

Materials: Provide fasteners in materials of mechanical strength and corrosion resistance at least equal to that of the lowest resistant metal joined.

To copper and copper alloys: Provide copper or copper-alloy fixing devices only.

To aluminium and aluminium alloys: Provide aluminium alloy or non-magnetic stainless steel fixing devices only.

To stainless steel: Provide appropriate stainless steel materials only.

Fabrication
Workshop: Fabricate and pre-assemble items in the workshop wherever practicable.

Edges and surfaces: Keep clean, neat and free from burrs and indentations. Remove sharp edges without excessive radiusing.

Tube bends: Form bends in tube without visibly deforming the cross section.

Colour finished work: Match colours of sheets, extrusions and heads of fasteners.

Thermal movement: Accommodate thermal movement in joints and fastenings.

Tolerances: ± 2 mm from design dimensions.

Joints
General: Fit joints to an accuracy appropriate to the class of work. Finish visible joints made by welding, brazing or soldering using grinding, buffing or other methods appropriate to the class of work, before further treatment.

Self-finished metals: Free of surface colour variations, after jointing.

Joints: Fit accurately to a fine hairline.

Marking
General: Provide suitable and sufficient marks or other means for identifying each member of site-erected assemblies, and for their correct setting out, location, erection and connection. Mark bolted connections to show the bolting category. Do not mark stainless steel by notching.

Splicing
General: Provide structural members in single lengths.

3.2 WELDING AND BRAZING

General
Quality: Provide finished welds which are free of surface and internal cracks, slag inclusion, and porosity.

Site welds: Avoid site welding wherever possible. If required locate site welds in positions for down hand welding.

Butt weld quality level: Not inferior to the appropriate level recommended in AS 1665 Appendix A.

Brazing

General: Ensure brazed joints have sufficient lap to provide a mechanically sound joint. Do not use butt joints relying on the filler metal fillet only.

Filler metal: [complete/delete]

3.3 STAINLESS STEEL FABRICATION

Welding stainless steel

Certification of welders: To AS 1796.

Riveting

General: Riveting may be used only to join stainless steel sheet or strip less than 1 mm thick. Drill (not punch) the rivet hole, and drive the rivet cold. On completion, clean and passivate the riveted assembly.

Soldering

General: Do not solder stainless steel.

3.4 CUSTOM-BUILT STEEL STAIRS

Fabrication

Method: Welding.

Joints: Produce smooth unbroken surfaces at joints. Scribe the joints between posts and rails. Make end-to-end joints over an internal sleeve.

Bends: Make changes of direction in rails by evenly curved pipe bends.

Free ends: Seal the free ends of pipes with fabricated or purpose-made end caps.

Nosing strip: To BCA D2.13.

Fixing to structure

General: Provide fabricated predrilled or purpose-made brackets or post bases, and attach the piping to the building structure with fixings, including bolts into masonry anchors, and coach screws or bolts into timber, of metal compatible with the piping.

Galvanizing

General: If possible, complete fabrication before galvanizing; otherwise apply a zinc-rich primer to affected joint surfaces.

3.5 PROPRIETARY STAIR SYSTEMS

General

Materials, design and construction: To AS 1657.

Nosing strip: To BCA D2.13.

Straight flight stair assembly: A proprietary system, pre assembled and fixed in place, comprising the following:

- Stair flights with treads and risers.
- Top landing.
- Balustrade to stair flight and landing.

Circular stairs: A proprietary system, mechanically assembled and fixed in place, comprising the following:

- A central steel tube column.
- Prefabricated metal treads sleeved over and cantilevered from the column.
- Top landing.
- Balustrade and handrail to stair and landing.
- Spacers, fixings and accessories necessary to complete the system.

3.6 PIPE RAIL BALUSTRADES

Fabrication

Method: Welding.

Joints: Produce smooth unbroken surfaces at joints. Scribe the joints between posts and rails. Make end-to-end joints over an internal sleeve.

Bends: Make changes of direction in rails by evenly curved pipe bends.

Free ends: Seal the free ends of pipes with fabricated or purpose-made end caps.

Fixing to structure

General: Provide fabricated predrilled or purpose-made brackets or post bases, and attach the piping to the building structure with fixings, including bolts into masonry anchors, and coach screws or bolts into timber, of metal compatible with the piping.

Galvanizing

General: If possible, complete fabrication before galvanizing; otherwise apply a zinc-rich primer to affected joint surfaces

3.7 COMPLETION

Cleaning

Temporary coatings: On or before completion of the works, or before joining up to other surfaces, remove all traces of temporary coatings used as a means of protection.

0573 EXTINGUISHERS AND FIRE BLANKETS

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide fire extinguishers and fire blankets, as documented.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.

1.3 AUTHORISED PRODUCTS

General
General: Provide equipment listed in the ActivFire Register of Fire Protection Equipment.

2 PRODUCTS

2.1 EXTINGUISHERS

Standards
General: Provide portable fire extinguishers and location signs as follows:
- General requirements: AS/NZS 1841.1.
- Water: AS/NZS 1841.2.
- Wet chemical: AS/NZS 1841.3.
- Foam: AS/NZS 1841.4.
- Powder: AS/NZS 1841.5.
- Carbon dioxide: AS/NZS 1841.6.
- Non-rechargeable: To AS/NZS 1841.8.

Selection and location: To AS 2444

Certification: Required.

Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Fire extinguishers schedule-

Property	FE1	FE2
Location	Playroom1,2,3,4 and main corridor	kitchen
Number	1 in each location	1
Unit type	1 x 4.5kg ABE Dry Powder	1 x 7 litre Wet Chemical

2.2 BLANKETS

Fire blankets
General: To AS/NZS 3504.

Certification: Required.

Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Selection and location: To AS 2444.

Fire blankets schedule

Location	Number	Size
Kitchen	1	1.2x1.8m

3 EXECUTION

3.1 COMPLETION

Maintenance

Fire extinguishers: To AS 1851.

Fire blankets: To AS 1851.

0581B SIGNS AND DISPLAY

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide signage systems, as documented and as follows:

- Appropriately secured.
- Located within a clear line of vision.
- To contrast with the background.
- With clean, well defined edges or arises, and free from blemishes.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.

1.3 STANDARDS

Signs

Safety signs - design and use: To AS 1319.

Signs and graphics for disability access: AS 1428.1 and AS 1428.2.

2 PRODUCTS

2.1 MATERIALS

Materials standards

Aluminium:

- Plate for engraving: Alloy and temper designation 6063-0.
- For casting: To AS 1874.

Stainless steel: Surface finish designation 4 (general purpose polished).

Plastics:

- PVC-U sheet: Semi-rigid sheet.
- Rigid cellular polystyrene: To AS 1366.3, class VH for cut-out shapes.

Photoluminiscent exit signs: To BCA E4.8 (b).

3 EXECUTION

3.1 WORKMANSHIP

Production

General: Form graphics items accurately with clean, well defined edges or arises, free from blemishes.

Engraving to two layer plastic laminate: Engrave lettering to expose the lower laminate.

Engraved and filled: Lettering precision cut and filled colouring material. Clean faces of all filling material.

Casting: Produce shapes free of pits, scale, blow holes or other defects, hand or machine finished if necessary.

Laser cut: Individual vinyl letters with self adhesive backing.

Printed lettering: Lettering and graphic images screen/digitally printed on:

- Film with self adhesive backing.
- Acrylic sheet.

- Aluminium plate.
- Stainless steel plate.

Large format digital printing: Lettering and graphic images screen printed film with self adhesive backing.

Signwriting: Lettering and graphic images hand painted direct to the background by a tradesman with recognised qualifications and demonstrated experience.

Fabricated: Three dimensional, formed as follows:

- Laser cutting from solid material and hand finished as necessary.
- Moulding: Individual plastic hollow three dimensional characters and shapes formed by:
  . Injection moulding.
  . Vacuum forming.
- Built-up individual shapes by fabricating the faces and edges from separate pieces neatly and securely joined.

Installation

General: Install signage level and plumb, securely mounted, with concealed theft-resistant fixings. Fix self adhesive signs free of bubbles and creases.

4 SELECTIONS

4.1 STATUTORY SIGNS

Braille and tactile exit signage-buildings required to be accessible

Position	To BCA Spec D3.6 for every door in BCA E4.5
Message	Exit (and) Level (followed by the floor level number)
Letter height (minimum)	BCA Spec D3.6
Sign type	
Compliance	BCA E4.5, BCA D3.6 and BCA Spec D3.6

Fire hose reels and fire hydrants

Position	Cupboard door or adjacent the FHR
Message	FIRE HOSE REEL (and/or) FIRE HYDRANT
Letter height (minimum)	External cabinets: 75 mm Internal cabinets: 50 mm
Sign type	White adhesive backed vinyl
Compliance	AS 2441 AS 2419.1 BCA E1.3 and BCA E1.4

Fire hose reel location sign

Position	Above or adjacent the FHR if located in a recess or obscure location
Message	To AS 2441 Figure 10.1
Letter height (minimum)	16 mm
Sign type	Adhesive backed vinyl
Compliance	AS 2441

Fire brigade booster assembly – Notice of pressure

Position	Adjacent or within the cabinet or recess
Message	(Boost pressure and test pressure in kilopascals)

Letter height (minimum)	25 mm
Sign type	
Compliance	AS 2419.1 clause 7.10.1

Fire brigade relay pumps

Position	At each pump location
Message	FIRE BRIGADE RELAY PUMP
Letter height (minimum)	75 mm
Sign type	
Compliance	AS 2419.1 clause 7.7

Boosters in series with pumps

Position	Adjacent the pressure gauge
Message	WARNING-THIS BOOSTER IS CONNECTED IN SERIES (RELAY) WITH THE FIXED ON-SITE FIRE PUMPS WHICH MAY BE RUNNING. THIS GAUGE SHOWS THE TRUE BOOST PRESSURE AT THE FIXED ON-SITE PUMP DISCHARGE
Letter height (minimum)	25 mm
Sign type	
Compliance	AS 2419.1 clause 7.6

Portable fire extinguishers – location signs

Position	As nominated in AS 2444 clause 3.2 at every installed extinguisher nominated BCA Table E1.6
Message	Prescribed graphic
Letter height (minimum)	16 mm
Sign type	Computer generated adhesive backed vinyl graphic
Compliance	BCA E1.6 AS 2444 clause 3.3 Fire Brigade

Fire blankets

Position	As nominated in AS 2444 clause 6.4 at every blanket location
Message	Prescribed graphic
Letter height (minimum)	
Sign type	Computer generated adhesive backed vinyl graphic
Compliance	BCA E1.6 AS 2444 clauses 6.3, 6.4 and Fig 6.1 Fire Brigade

Unisex accessible sanitary facilities

Position	To BCA Spec D3.6
Message	Braille and tactile signage incorporating the international symbol of access. Indicate suitability for left or right handed use.

Symbol size	AS 1428.2 clause 16, Table 1.
Letter height (minimum)	Braille: BCA Spec D3.6 Raised characters: Sans serif type font 20 mm.
Sign type	
Compliance	AS 1428.1 BCA D3.6

Ambulant sanitary facilities

Position	To BCA Spec D3.6
Message	Braille and tactile signage incorporating the male/ female ambulant symbol.
Symbol size	AS 1428.2 clause 16, Table 1.
Letter height (minimum)	Braille: BCA Spec D3.6 Raised characters: Sans serif type font 20 mm.
Sign type	
Compliance	AS 1428.1 BCA D3.6

Main switchboard - main entry

Position	Each entry that may be used by emergency services or at fire indicator panel
Message	Indicate location of main switchboard. Incorporate the term Main Switchboard into notice
Letter height (minimum)	
Sign type	
Compliance	AS/NZS 3000 clause 2.9.2.4

Main switchboard - room or enclosure

Position	The room or enclosure containing the main switchboard.
Message	MAIN SWITCHBOARD
Letter height (minimum)	
Sign type	
Compliance	AS/NZS 3000 clause 2.9.2.4

0621 WATERPROOFING – WET AREAS

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide wet area waterproofing systems as documented which:
- Are graded to floor wastes to dispose of water without ponding.
- Prevent moisture entering the substrate or adjacent areas.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.

1.3 STANDARDS

Wet areas
Standard: To AS 3740.

1.4 INTERPRETATION

Definitions
General: For the purposes of this worksection the definitions given in AS 3740 and the following apply:
- Bond breaker: A system preventing a membrane bonding to the substrate, bedding or lining.
- Membranes: Impervious barriers to liquid water which may be:
  . Installed below floor finishes.
  . Installed behind the wall sheeting or render and termed External.
  . Installed to the face of the wall sheeting or render and termed Internal.
  . Applied in liquid or gel form and air cured to form a seamless film.
  . Applied in sheet form with joints lapped and sealed.
- Shower tray: An internal or external liquid or sheet membrane system used to waterproof the floor and the wall/floor junctions of a shower area.
- Substrate: The surface to which a material or product is applied.
- Waterproof (WP): The property of a material that does not allow moisture to penetrate through it.
- Waterproofing systems: Combinations of membranes, flashings, drainage and accessories which form waterproof barriers and which may be:
  . Loose-laid.
  . Bonded to substrates.
- Water resistant (WR): The property of a material that restricts moisture movement and will not degrade under conditions of moisture.
- Wet area: An area within a building supplied with a floor waste.

1.5 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Substrate preparation completed.
- Secondary layers preparation completed.
- Before membranes are covered up or concealed.

1.6 SUBMISSIONS

Products documentation
General: Submit copies of product manufacturers:
- Product technical data sheets.
- Safety data sheets (SDS).
- Type tests certificates verifying conformance to AS/NZS 4858.

2 PRODUCTS

2.1 PRODUCTS

Membranes
Standard: To AS/NZS 4858.

Membrane systems
Requirement: Provide a proprietary membrane systems certified as suitable for the intended wet area waterproofing.

Certificate: a current BRANZ Appraisal Certificate

Water stop angles
Material: Rigid, corrosion resistant angles compatible with the waterproof membrane system.

Bond breakers
Requirement: Compatible with the flexibility class of the membrane to be used.

Material: Purpose made bond breaker tapes and closed cell foam backing rods or fillets of sealant.

Flashings
Requirement: Flexible waterproof flashings compatible with the waterproof membrane system.

Liquid membrane reinforcement
Requirement: Flexible fabric compatible with the waterproof membrane system.

Sealants
Requirement: Waterproof, flexible, mould-resistant and compatible with host materials.

Adhesives
Requirement: Waterproof and compatible with host materials.

3 EXECUTION

3.1 PREPARATION

Substrates
General: Make sure substrates are as follows:
- Clean and free of any deposit or finish which may impair adhesion of membranes.
- If walls are plastered, remove loose sand.
- If walls or floors are framed or discontinuous, support members are in full lengths without splicing.
- If floors are solid or continuous:
  - . Excessive projections are removed.
  - . Voids and hollows greater than 10 mm with abrupt edges are filled with a cement:sand mix not stronger than the substrate nor weaker than the bedding.
  - . Depressions less than 10 mm are filled with a latex modified cementitious product with feathering eliminated by scabbling the edges.
  - . Cracks in substrates wider than 1.5 mm are filled with a filler compatible with the membrane system.

External corners: Round or arris edges.

Moisture content
Concrete substrates: Cure for at least 21 days.

Moisture content: Verify that the moisture content of the substrate is compatible with the water vapour transmission rate of the membrane system by testing to AS 1884 Appendix A.

Falls
Substrate: If the membrane is directly under the floor finish, make sure the fall in the substrate conforms to the fall documented for the finish.

Sheet substrate fastening
Requirement: Fasten or adequately fix to the supporting structure.

Control joints
Finishes: Align control joints in finishes and bedding with control joints or changes in materials in the substrate.

Water stop angles
Requirement: Provide water stop angles at door thresholds and shower enclosures to support the waterproof membrane at junctions between waterproofed and non-waterproofed areas.

Sizing: Size the vertical leg of the water stop angle to conform to the requirements of AS 3740.

Corners: Cut the horizontal leg and bend the vertical leg at corners instead of forming vertical joints between separate lengths of angle.

Fixing: Fix water stop angles to the substrate with compatible sealant or adhesive and corrosion-resistant countersunk or wafer head screws.

Priming
General: If required by the membrane manufacturer, prime the substrates with a primer compatible with the membrane system.

Bond breakers
Requirement: After the priming of surfaces, provide bond breakers at all wall/floor, hob/wall junctions and at control joints where the membrane is bonded to the substrate.

Sealant fillet bond breakers:

- Application: Form a triangular fillet or cove of sealant to internal corners within the period recommended by the membrane manufacturer after the application of the primer.
- Widths: 5 mm x 5 mm to vertical corners. 6 mm x 6 mm to 9 mm x 9 mm to horizontal corners.

Backing rod bond breakers: Retain in position with continuous length of tape pressed firmly in place against the surfaces on each side of the rod.

3.2 APPLICATION

Protection
General: Protect membrane from damage during installation and for the period after installation until the membrane achieves its service characteristics that resist damage.

Extent of waterproofing
Waterproof or water resistant surfaces: To the requirements of BCA F1.7.

Sheet membrane joints
Bituminous sheet membranes:

- Side laps at least 75 mm.
- End laps at least 100 mm.

Synthetic rubber membranes:

- Factory-vulcanized laps at least 40 mm.
- Field side laps at least 50 mm for side laps.
- Field end-laps at least 100 mm for end laps.

PVC membranes:

- Factory welded laps at least 30 mm.
- Field–welded laps at least 75 mm.

Vertical membrane terminations
Upstands: At least 150 mm above the finished tile level of the floor or 25 mm above the maximum retained water level, whichever is the greater.

Anchoring: Secure sheet membranes along the top edge.

Edge protection: Protect edges of the membrane.

Flashings

Junctions between waterproof surfaces: Provide a bond breaker at internal corners behind flashings.

Junctions between waterproof surfaces and other surfaces: Provide a bead of sealant at the following junctions:

- Waterproof and water-resistant surfaces.
- Water-resistant and water-resistant surfaces.
- Water-resistant and non water-resistant surfaces.

Perimeter flashings: Provide continuous flashings to the full perimeter of waterproof areas at wall/floor junctions and to water stop angles.

Vertical flashings: Provide vertical corner flashings continuous across wall/wall junctions to at least 1800 mm above finished floor level.

Vertical liquid applied flashings:

- Return legs at least 40 mm on each wall.
- Overlap the vertical termination of the floor waterproofing membrane at least 20 mm.

Vertical sheet flashings:

- Return legs at least 50 mm on each wall.
- Overlap shower tray upstands at least 50 mm.
- Do not penetrate flashing with wall lining fasteners.

Reinforcement: At coves, corners and wall/floor junctions with gaps greater than 3 mm reinforce liquid applied membranes with reinforcement fabric tape recommended by the membrane manufacturer. Fold the tape in half lengthways and imbed it in the first flashing coat of membrane with one half of the tape on each side of the corner or joint. Apply a second coat of liquid membrane to seal the fabric.

Door jambs and architraves

Requirement: If the bottom of doorjambs and architraves do not finish above the floor tiling, waterproof their surfaces below tile level to provide a continuous seal between the perimeter flashing to the wall/floor junction and the water stop angle.

Drainage connections

Floor wastes: Provide floor wastes of sufficient height to accommodate the thickness of floor finishes and bedding at the outlet position. Position drainage flange to drain at membrane level. Turn membrane down 50 mm minimum into the floor waste drainage flanges, and adhere to form a waterproof connection.

Floor wastes in shower trays: Provide drainage of the tile bed and a waterproof connection between the tray and the drain.

Preformed drainage channels:

- With continuous drainage flanges: Provide a continuous waterproof connection between the membrane and the channel.
- Without drainage flanges: Provide continuous waterproofing under the channel and terminate the membrane at a floor waste with a recessed drainage flange.

Unenclosed showers

Requirement: Extend membrane at least 1500 mm into the room from the shower rose outlet on the wall.

Taps and spouts

Requirement: Waterproof penetrations for taps and spouts with proprietary flange systems or a sealant.

Provision for servicing: Install taps in a manner that allows tap washers or ceramic discs to be serviced without damaging the waterproofing seal.

Membrane horizontal penetrations

Sleeves: Provide a flexible flange for all penetrations, bonded to the penetration and to the membrane.

Membrane vertical penetrations

Pipes, ducts, and vents: Provide separate sleeves for all pipes, ducts, and vents and have fixed to the substrate.

Curing of liquid applied systems
General: To the manufacturer's instructions.

Curing: Allow membrane to fully cure before tiling.

Overlaying finishes on membranes
Requirement: Protect waterproof membranes with compatible water-resistant surface materials that do not cause damage to the membrane.

Suitable materials: Conform to AS 3740.

Bonded or partially bonded systems: If the topping or bedding mortar is required to be bonded to the membrane, provide sufficient control joints in the topping or bedding mortar to reduce the movement over the membrane.

3.3 FLOOD TEST

General
Application: Perform a flood test before the installation of surface finishes.

Moisture measurement method: Conform to AS 1884 Appendix A.

Set-up:

- Measure the wall/floor junction of adjacent spaces and the floor soffit below for dryness.
- Record the result for each area.
- Dam the doorway(s) and seal floor wastes and drainage outlets to allow 50 mm water level.
- Fill space with clean water and leave overnight.

Evaluation:

- Make a visual inspection of the wall/floor junction of adjacent spaces and of the floor soffit below for obvious water or moisture.
- Test the same areas for dryness and compare the results to the measurements taken before flooding.

Compliance:

- Evidence of water from the visual test: Failure.
- No visual evidence of water: Proceed with moisture measurements.
- Test results indicating an increase in moisture before and after flooding: Failure.

Records:

- Submit records of all flood tests.

3.4 COMPLETION

Protection
General: Keep traffic off membrane surfaces until bonding has set or for 24 hours after laying, whichever period is the longer.

Reinstatement: Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

Warranties
Waterproofing: Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and the applicator.

- Form: Against failure of materials and execution under normal environment and use conditions.
- Period: As offered by the supplier.

4 SELECTIONS

4.1 SYSTEMS

Liquid membrane systems

Seamless wet area membranes	**A**	**B**	**C**
Proprietary system			
Material type			

Seamless wet area membranes	**A**	**B**	**C**
CSIRO moving joint test			
Tensile stress at break (MPa)			
Tensile strain (elongation at the break) %			
Priming			
Number of coats			
Reinforcement			
Base layer			
Top layer			
Method of application			
Application rate/coat (l/m^2)			
Dry film thickness (total) (mm)			
Water stop angles			
Bond breakers			

Sheet membrane systems

Single layer system	**A**	**B**	**C**
Proprietary system			
Sheet type			
Sheet thickness (mm)			
Base weight (kg/m^2)			
CSIRO moving joint test			
Tensile stress at break (MPa)			
Tensile strain (elongation at the break) %			
Priming			
Bonding agent			
Method of applying			
Water stop angles			
Bond breakers			

0631B CERAMIC TILING

Worksection application

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide tiling systems to walls, floors and other substrates as documented and as follows:

- Consistent in colour and finish.
- Firmly bonded to substrates for the expected life of the installation.
- Set out with joints accurately aligned in both directions and wall tiling joints level and plumb.
- To direct all water flowing from supply points to drainage outlets without leakage to the substrate or adjacent areas.

Common text: As documented

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):

- *General requirements*.

1.3 STANDARDS

Tiling
General: Conform to the documented recommendations of those parts of AS 3958.1 which are referenced in this worksection.

1.4 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:

- Substrate immediately before tiling.
- Control joints before sealing and grouting.
- Grout and sealant colours before application.

1.5 TOLERANCES

Completed tiling
Standard: To AS 3958.1 clause 5.4.6.

1.6 SUBMISSIONS

Tests
Type tests: Submit results, as follows:

- Type test slip resistance of tiles to AS 4586.

2 PRODUCTS

2.1 MARKING

Identification
General: Deliver materials to the site in the manufacturer's original sealed containers legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.

- Dimensions and quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern.
- Handling and installation instructions.

2.2 TILES AND ACCESSORIES

Tiles

Standard: To AS ISO 13006.

Coves, nosings and skirtings: Provide matching stop-end and internal and external angle tiles moulded for that purpose.

Exposed edges: Purpose-made border tiles with the exposed edge (whether round, square or cushion) glazed to match the tile face. If such tiles are not available, mitre tiles on external corners.

2.3 ADHESIVES

General

Standard: To AS ISO 13007.1.

Type

General: Provide adhesives compatible with the materials and surfaces to be adhered, and as documented in the **Wall tiling schedule** and to the **Floor tiling schedule.**

Prohibited uses: Do not provide the following combinations:

- Cement-based adhesives on wood, metal, painted or glazed surfaces, gypsum-based plaster.
- Organic solvent-based adhesives on painted surfaces.
- Organic PVC-based adhesives and organic natural rubber latex adhesives in damp or wet conditions.
- PVA (polyvinyl acetate) based adhesives in wet areas or externally.

2.4 MORTAR

Materials

Cement type to AS 3972 : GP.

- White cement: Iron salts content not more than 1%.
- Off-white cement: Iron salts content not more than 2.5%.

Lime: To AS 1672.1.

Sand: Fine aggregate with a low clay content selected for grading, sharp and free from efflorescing salts.

Measurement of volume: Measure binders and sand by volume using buckets or boxes. Do not allow sand to bulk by absorption of water.

Bedding mortar

Mix proportion (cement:sand), by volume: Select proportions from the range 1:3 to 1:4 for satisfactory adhesion. Provide minimum water.

Terracotta tiles: Use proprietary polymer modified mortar.

Mixing: To AS 3958.1 clause 2.15.

Water

General: Clean and free from any deleterious matter.

2.5 GROUT

Type

Cement based proprietary grout: Mix with water. Fine sand may be added as a filler in wider joints.

Terracotta tiles: Use proprietary polymer modified grout.

General purpose cement based grout: Mix with fine sand. Provide minimum water consistent with workability.

Mix proportions (cement:sand), by volume:

- For joints < 3 mm: 1: 2.
- For joints ≥ 3 mm: 1:3.

Pigments
Pigments for coloured grout: Provide colourfast fillers compatible with the grout material. For cement-based grouts, provide lime-proof natural or synthetic metallic oxides compatible with cement.

2.6 CONTROL JOINTS

Control joint materials
General: As documented in the **Control joint schedule**.

Control joint strip: A proprietary expansion joint consisting of a neoprene filler sandwiched between plates with lugs or ribs for mechanical keying. Set flush with the finished surface.

Proprietary slide plate divider strip: An arrangement of interlocking metal plates grouted into pockets formed in the concrete joint edges.

Sealant: One-part self-levelling non-hardening mould resistant, silicone or polyurethane sealant applied over a backing rod. Finish flush with the finished surface.

- Floors: Trafficable, shore hardness greater than 35.

Backing rod: Compressible closed cell polyethylene foam with a bond-breaking surface.

3 EXECUTION

3.1 SUBSTRATES

Drying and shrinkage
General: Before tiling, allow at least the following times to elapse (for initial drying out and shrinkage) for these substrates:

- Concrete slabs: 42 days.
- Concrete blockwork: 28 days.
- Toppings on slabs and rendering on brick or blockwork: A further 21 days.
- Rendering on swimming pool shell: A further 28 days minimum.

3.2 PREPARATION

Standard
Preparation: To AS 3958.1 Section 4.

Ambient temperature
General: If the ambient temperature is less than 5°C or greater than 35°C, do not lay tiles.

Substrates without wet area membranes
General: Conform to the following:

- Clean off of any deposit or finish which may impair adhesion or location of tiles.
- If framed or discontinuous, support members are in full lengths without splicing.
- If solid or continuous:
  . Remove excessive projections.
  . Fill voids and hollows greater than 10 mm with abrupt edges with a cement:sand mix not stronger than the substrate or weaker than the bedding.
  . Fill depressions less than 10 mm with a latex modified cementitious product and eliminate feathering by scabbling the edges.

Absorbent substrates: If suction is excessive, control it by dampening but avoid over-wetting and do not apply mortar bedding to substrates showing surface moisture.

Dense concrete: If not sufficiently rough to provide a mechanical key, roughen by scabbling or the like to remove 3 mm of the surface and expose the aggregate; then apply a bonding treatment.

Substrates with wet area membranes
General: Make sure substrates are as follows:

- Clean and free of any deposit or finish which may impair adhesion or location of tiles.
- Compatible with all components of the floor system.

3.3 TILING GENERALLY

Sequence

General: floor tiles and coving tiles first

Cutting and laying

Cutting: Cut tiles neatly to fit around fixtures and fittings and at margins where necessary. Drill holes without damaging tile faces. Cut recesses for fittings such as soap holders. Rub edges smooth without chipping.

Laying: Return tiles into sills, reveals and openings. Butt up to returns, frames, fittings, and other finishes. Strike and point up beds where exposed. Remove tile spacers before grouting.

Variations

General: Distribute variations in hue, colour, or pattern uniformly, by mixing tiles or tile batches before laying.

Protection

Floor tiles: Keep traffic off floor tiles until the bedding has set and attained its working strength.

Cleaning: Keep the work clean as it proceeds and protect finished work from damage.

Floor finish dividers

General: Finish tiled floors at junctions with differing floor finishes with a corrosion-resistant metal dividing strip fixed to the substrate. If changes of floor finish occur at doorways, make the junction directly below the closed door.

Bath ventilation

General: Ventilate the space below fully enclosed baths with at least 2 vermin proof ventilating tiles.

3.4 SETTING OUT

Tile joints

Joint widths: Set out tiles to give uniform joint widths within the following limits:

- Floors:
  - . Vitrified: 3 to 5 mm.
- Walls:
  - . Dry pressed tile: 1.5 mm.
  - . Extruded tile: 6 mm.

Joint alignment: Set out tiling with joints accurately aligned in both directions and wall tiling joints level and plumb.

Joint position: Set out tiles from the centre of the floor or wall to be tiled.

Margins

General: Provide whole or purpose-made tiles at margins where practicable, otherwise, set out to give equal margins of cut tiles. If margins less than half a tile width are unavoidable, locate the cut tiles where they are least conspicuous.

Fixtures

General: If possible position tiles so that holes for fixtures and other penetrations occur at the intersection of horizontal and vertical joints or on the centre lines of tiles. Continue tiling fully behind fixtures which are not built in to the tiling surface. Before tiling ensure that fixtures interrupting the tile surfaces are accurately positioned in their designed or optimum locations relative to the tile layout.

3.5 FALLS AND LEVELS

Grading

General: Grade floor tiling to even and correct falls to floor wastes and elsewhere as required. Make level junctions with walls. Where falls are not required, lay level.

Fall, general: 1:100 minimum.

Fall, in shower areas: 1:60 minimum.

Change of finish: Maintain finished floor level across changes of floor finish including carpet.

3.6 BEDDING

Standard

Cement mortar: To AS 3958.1 clause 5.5.

Adhesive: To AS 3958.1 clause 5.6.

Preparation of tiles

Adhesive bedding: Fix tiles dry; do not soak.

Mortar bedding: Soak porous tiles in water for half an hour and then drain until the surface water has disappeared.

Terracotta tiles: Use pre-sealed tiles or apply a breathable sealer and lay dry. If a final sealed finish is selected, use a compatible laying sealer.

Bedding

General: Use bedding methods and materials which are appropriate to the tile, the substrate, the conditions of service, and which leave the tile firmly and solidly bedded in the bedding material and adhered to the substrate. Form falls integral with the substrate.

Thin adhesive beds

General: Provide only if the substrate deviation is less than 3 mm when tested with a 3 m straight edge. Cover the entire tile back with adhesive when the tile is bedded.

Thickness: 1.5 to 3 mm.

Thick adhesive beds

General: Provide on substrates with deviations up to 6 mm when tested with a 3 m straight edge, and with tiles having deep keys or frogs.

Nominal thickness: 6 mm.

Adhesive bedding application

General: Apply adhesive by notched trowel to walls and floors and direct to tiles if required, to provide evenly distributed coverage after laying as follows:

- wall and floors: > 90%.
- Wet areas and bench tops: 100%.

Pattern of distribution of adhesive: To the recommendations of AS 3958.1 clause 5.6.4.3. Verify by examining one tile in ten as work proceeds.

Wall tile spacers: Do not use spacer types that inhibit the distribution of adhesive.

Curing: Allow the adhesive to cure for the period nominated by the manufacturer before grouting or allowing foot traffic.

Mortar beds

For floor tiles: Either lightly dust the screeded bed surface with dry cement and trowel level until the cement is damp, or spread a thin slurry of neat cement, or cement-based thin bed adhesive, on to the tile back. Do not use mortar after initial set has occurred.

- Nominal thickness: 20 to 40 mm.

Thick reinforced beds: Place mortar bed in two layers, and incorporate the mesh reinforcement in the first layer.

3.7 CONTROL OF MOVEMENT

General

Requirement: Provide control joints carried through the tile and the bedding to the recommendations of AS 3958.1 clause 5.4.5 and as follows:

- Floor location:
  - . Over structural control joints.
  - . To divide complex room plans into rectangles.
  - . Around the perimeter of the floor.
  - . At junctions between different substrates.
  - . To divide large tiled areas into bays.
  - . At abutments with the building structural frame and over supporting walls or beams where flexing of the substrate is anticipated.

- Wall location:
  . Over structural control joints.
  . At junctions with different substrate materials when the tiling is continuous.
  . At vertical corners in shower compartments.
- Depth of joint: Right through to the substrate.
- Sealant width: 6 to 25 mm.
- Depth of elastomeric sealant: One half the joint width, or 6 mm, whichever is the greater.

3.8 GROUTED AND SEALANT JOINTS

Grouted joints

General: Commence grouting as soon as practicable after bedding has set. Clean out joints as necessary before grouting.

Face grouting: Fill the joints solid and tool flush. Clean off surplus grout. Wash down when the grout has set. When grout is dry, polish the tiled surface with grout film remover and a clean cloth.

Edges of tiles: Grout exposed edge joints.

Epoxy grouted joints: Make sure tile edge surfaces are free of extraneous matter such as cement films or wax, before grouting.

Sealant joints

General: Provide joints filled with sealant and finished flush with the tile surface as follows:

- Where tiling is cut around sanitary fixtures.
- At internal corners of walls in showers.
- Around fixtures interrupting the tile surface, for example pipes, brackets, bolts and nibs.
- At junctions with elements such as window and door frames and built-in cupboards.

Material: Anti-fungal modified silicone.

Width: 5 mm.

Depth: Equal to the tile thickness.

3.9 JOINT ACCESSORIES

Floor finish dividers

General: Finish tiled floors at junctions with differing floor finishes with a corrosion-resistant metal dividing strip fixed to the substrate using mechanical fixings, with top edge flush with the finished floor. Where changes of floor finish occur at doorways, make the junction directly below the closed door. Grout up underneath to provide continuous support.

Type: Ribbed brass strip, 1 mm thick, silver

Stepping: Less than 5 mm.

Adjustments

Requirement: Check that the height of the floor finish divider is sufficient for the topping and tile thickness. Adjust as required with a matching flat bar adhesive fixed to the divider angle.

Weather bars

General: Provide a corrosion-resistant metal weather bar under hinged external doors. Locate under the centres of closed doors.

3.10 COMPLETION

Spare tiles

General: Supply spare matching tiles and accessories of each type for future replacement purposes. Store the spare materials on site.

Quantity: At least 1% of the quantity installed.

Cleaning

General: Clean tiled surfaces using an appropriate tile cleaning agent, and polish.

Operation and maintenance manuals

General: Submit a manual describing care and maintenance of the tiling, including procedures for maintaining the slip-resistance grading stating the expected life of the slip-resistance grade.

4 SELECTIONS

4.1 SCHEDULES

Ceramic tile schedule

Location	Floor	Wall/splashback	Skirting
Washrooms, laundry, WC1, Acc.WC	Glennon Tiles Bauhaus modular 100x100x7.5 Colour 911S	300x300 gloss white	Glennon Tiles Bauhaus modular 100x100 cove Colour 911S
Kitchen	-	300x300 gloss white	
Art sinks, bottle preparation	-	75x150 gloss white	
Door threshold Tile Generally	Glennon Tiles 200x200 Exfoliated Granite Colour 3357NS		
Veranda Edge Tile Laundry Door threshold tiles	Glennon Tiles 300x300 Exfoliated Granite Colour 3357NS		
Front Entry Porch	Glennon Tiles 300x300 Exfoliated Granite Colour 3357NS		

Grout schedule

Location	Grout	Colour
Wall tiles	Davco Epoxy Grout - three part Colourgrout	white
Floor and skirting	Davco Epoxy Grout - three part Slate and Quarry grout	grey

0651B RESILIENT FINISHES

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide resilient floor finishes to substrates, as documented.

1.2 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.

1.3 STANDARDS

General
Installation: To AS 1884.

1.4 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Substrate immediately before fixing resilient finishes or underlay.
- Completed underlay, if any.
- Finished surface before applying sealers or polishes (if any).
- Completed installation.

1.5 SUBMISSIONS

Materials and components
Manufacturer's data: Submit the manufacturer's product data for each type of finish, and the manufacturer's recommendations for its application in the project including, if relevant, the following:
- Thickness and width of sheet or size of tile.
- Adhesive and jointing method.
- Resistance to wear, indentation, chemicals, light and fire.
- Flexibility and bending strength.

Subcontractors
General: Submit names and contact details of proposed suppliers and installers.

Substrate acceptance
Applicator: Submit the installer's certification of the acceptability of the flooring substrate before commencing installation.

Tests
Common text

Type tests: Submit results, as follows:
- Manufacturer's type tests showing that materials conform to cited standards.
- Fire hazard properties: Submit evidence of conformance to **PRODUCTS**, **GENERAL**, **Critical radiant flux** and **Smoke development rate**.
- Slip resistance of resilient finishes to AS 4586.

Common text

Other tests: Submit results, as follows:
- Site slip resistance test of completed installations.
- Moisture content test.

Common text

Warranties
Requirement: For each type of resilient finish specified, submit the manufacturer and installer's warranty of the material, workmanship and application.

2 PRODUCTS

2.1 GENERAL

Critical radiant flux
Standard: To AS ISO 9239.1.

Floor finishes: Conform to the values of critical radiant flux as documented.

Smoke development rate
Standard: To AS ISO 9239.1.

Floor finishes in non-sprinklered buildings: 750 percent-minutes.

2.2 MARKING

Identification
General: Deliver materials to the site in the manufacturer's original sealed packaging legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Materials safety data sheets.

2.3 UNDERLAYS

Cementitious
General: Polymer modified cementitious self smoothing and levelling compound.

Thickness: 3 mm minimum.

2.4 SHEETS AND TILES

Edges of sheets
General: Make sure edges are firm, unchipped and machine-cut accurately to size and square to the face

Polyvinyl chloride (PVC)
Resilient floor covering, homogeneous and heterogeneous: To BS EN ISO 10581.

Resilient floor covering, jute or polyester felt backing: To BS EN 650.

Resilient floor covering, with foam layer: To BS EN 651.

Adhesives
General: To the resilient finishes manufacturer's recommendations.

3 EXECUTION

3.1 SUBCONTRACTORS

General
Requirement: Use specialist installers recommended by the materials manufacturers.

3.2 PREPARATION

Substrates

General: To AS 1884 Section 3.

Tolerance: To the **Substrate tolerance table**.

Substrate tolerance table

Property	Length of straightedge laid in any direction	Max. deviation under the straightedge
Planeness	2 m	4 mm
Smoothness	150 mm	1 mm
Projections	50 mm	0.5 mm

Concrete substrates

Surface pH: Maximum 10 when tested to AS 1884 Appendix B and compatible with the adhesive.

Moisture content: Do not commence installation unless the moisture content of the concrete has been tested to AS 1884 Appendix A and the values in clause A3.1.2 or A3.1.3 have been obtained.

Surface treatments: Mechanically remove the following surface treatments:

- Sealers and hardeners.
- Curing compounds.
- Waterproofing additives.
- Surface coatings and contamination.

Concrete substrate correction: Remove projections and fill voids and hollows with a levelling compound compatible with the adhesive. Allow filling or levelling compound to dry to manufacturer's recommendations.

Cleaning: Remove loose materials or dust.

Working environment

General: Do not start work before the building is enclosed, wet work is complete and dry, overhead work is complete and good lighting is available. Protect adjoining surfaces.

3.3 SHEET INSTALLATION

Sheet set out

General: Set out sheets to give the minimum number of joints. Position joints away from areas of high stress. Run sheet joints parallel with the long sides of floor areas, vertically on non-horizontal surfaces.

Junctions

General: Scribe neatly up to returns, edges, fixtures and fittings. Finish flush with adjoining surfaces.

Rolling

General: If rolling is required, roll the finish in multiple directions before the adhesive sets.

Change of finish

General: Maintain finished floor level across changes of floor finish including carpet.

Cleaning

General: Keep the surface clean as the work proceeds.

3.4 SHEETING

Welded joints

Heat welding: After fixing, groove the seams using a grooving tool and weld the joints with matching filler rod, using a hot air welding gun. When the weld rod has cooled, trim off flush.

Use only Forbo ETERNAL welding rod

3.5 JOINTS AND ACCESSORIES

Junctions

General: Finish junctions tapered to with adjoining surfaces. Where changes of floor finish occur at doorways locate the joint on the centreline of the closed door leaf.

Accessories
General: Provide purpose-made matching moulded accessories for nosings, coves, skirtings, edge cover strips and finishes at junctions, margins, and angles, if available. Otherwise, form accessories from the sheet material. Provide solid backing for radiused coves and nosings.

Accessories schedule

Accessory type	Location

Edge strips
General: Provide edge cover strips at junctions with different floor finishes and to exposed edges.

Metal cover strip: Extruded tapered strip 25 mm wide, of the same thickness as the sheet or tile. Fix with matching screws to timber bases or to masonry anchors in concrete bases, at 200 mm maximum centres.

Material: silver aluminium

Control joints
Location: Provide control joints as follows:

- Over structural control joints.
- At junctions between different substrates.

Depth of joint: Right through to the substrate.

Sealant width: 6 to 25 mm.

Depth of elastomeric sealant: One half the joint width, or 6 mm, whichever is the greater.

Control joint materials – sheet flooring
Proprietary slide plate divider strip: An arrangement of interlocking metal plates grouted into pockets formed in the concrete joint edges to finish flush with the flooring surface.

Coved skirtings
Site formed coving: Carry the flooring material up over a profiled coving section to form the skirting and mitre and weld all joints. Make sure the radius of the coving section conforms to the requirements of the supplier for the sheeting material and thickness.

Location: kitchen and pantry

3.6 COMPLETION

Protection of sheet materials
General: Keep traffic off floors until bonding has set or for 24 hours after laying, whichever period is the longer. Do not allow water in contact with the finish for 7 days.

Cleaning
General: Clean the finished surface. Buff and polish. Before the date for practical completion, mop and leave the finished surface clean and undamaged on completion.

Maintenance manual
General: Submit manufacturer's published use, care and maintenance requirements for each type of finish.

Spare materials
General: Supply spare matching resilient finishes and accessories of each type for future replacement purposes. Store the spare materials on site where directed.

Quantity: At least 1% of the quantity installed.

5 SELECTIONS

5.1 PRODUCT SCHEDULES

Sheet schedule

Property	**RF1**	**RF2**	**RF3**
Location	Generally	Playrooms 3 & 4	Kitchen, Pantry
Type	Vinyl (PVC)	Cushion backed vinyl,	Safety vinyl
Selection	Forbo Eternal Wood	Forbo Eternal Decibel	Forbo Surestep Wood
Colour	Elegant Oak	Elegant Oak	Elegant Oak
Skirting	timber	timber	Coved vinyl

0652B CARPETS

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide carpet to substrates as documented and as follows:

- To remain secure and consistently smooth for the warranted life of the carpet under normal use conditions.
- To form the pattern required.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- *General requirements*.

1.3 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Each batch of material upon delivery.
- Substrate immediately before fixing underlay.
- Fixings, edge strips, and underlay installed ready to lay carpet.
- Completed carpet after cleaning and before covering for protection.

1.4 SUBMISSIONS

Maintenance manuals

Contents: Submit maintenance manuals with the following:

- A technical specification of the carpet installation.
- The manufacturer's recommendations for use, care and maintenance of the carpet conforming to AS/NZS 3733.
- The names and addresses of the suppliers and manufacturers of each component.

Marking and labelling

Carpet classifications: Deliver carpet labelled with the documented classification.

Warranties

General: Submit the manufacturers product warranties.

2 PRODUCTS

2.1 GENERAL

Fire Hazard Properties

Testing: To AS ISO 9239.1.

Critical radiant flux: To the values documented for the carpet system.

Smoke development rate maximum: 750 percent-minutes for floor finishes in non-sprinklered buildings.

2.2 MARKING

Identification

General: Deliver materials to the site in the manufacturer's original sealed packaging legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.

- Product type.
- Quantity.
- Product reference code and batch number.
- Classification category or grading.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Safety data sheets.

2.3 CARPET

Tolerances
Requirement: To AS/NZS 1385.

Batching
Requirement: Provide from one manufacturing batch and dye lot for carpet laid in a single area and of a single specified type, quality, colour and design.

Anti-microbial treatment
Requirement: Non-metallic, colourless, odourless, positively charged polymer applied during manufacturing to form a molecularly bonded surface to resist bacteria and mould growth.

Insect resistance
Requirement: Provide carpets and underlays composed entirely of materials either inherently resistant to insect attack or treated against insect attack by moth and carpet beetle, by application of insecticide to the yarn during the dyeing or scouring process.

Insect resist agents for wool: Conform to the recommended application levels published by the Woolmark Company for Level 4 protection.

Electrical resistance
Surface or bulk resistance: Provide carpet conforming to AS 2834 clause 2.1.2 when tested to AS 4155.6.

Stain and soil resistance
Requirement: Provide one or more of the following:

- Fluoro-treatments: Fluorochemical soil and liquid repelling chemical treatment applied during manufacturing.
- Stain blockers: Colourless acid-based dye stainblocker applied to dyed fibres.

VOC limits
Maximum total VOC emission: 500 µg/m^2/h.

Compliance: To the Environmental Classification Scheme (ECS) operated by the Carpet Institute of Australia Limited (CIAL).

2.4 UNDERLAYS

General
Installation: To AS/NZS 2455.1.

Fibre cement underlay
Thickness: 5 mm minimum.

Wet processed fibreboard (hardboard) underlay
Standard: To AS/NZS 1859.4.

Classification: General purpose medium board, manufactured specifically as flooring underlay.

Thickness: 5.5 mm.

Soft underlay
Standard: To AS 4288.

2.5 ADHESIVES AND TAPES

Adhesives
General: Compatible with the floor covering material, and suitable for bonding it to the subfloor.

Type: permanent stick

Hot-melt adhesive tapes

General: Commercial grade glass fibre and cotton thermoplastic adhesive coated tape 60 mm wide on a 90 mm wide metal foil base and backed with silicone-coated release paper.

2.6 ACCESSORIES

Preformed gripper strips

General: Commercial grade plywood carpet gripper strip with 3 rows of corrosion-resistant angled pins of length appropriate to the carpet type.

Size (minimum): 33 mm wide x 7 mm thick.

Location: At edges, except where edge strips are used. Provide double gripper strips to edges where recommended.

Edge strips

Type: Heavy duty edge strip appropriate to the floor covering type (tackless or adhesive fixed), capable where necessary of accommodating different levels of adjacent floor finishes.

Form: Metal moulding or extrusion, with vinyl inserts.

Colour: silver

Location: At exposed edges of the carpet, and at junctions with differing floor finishes or finishes of a different thickness. Where edge strips occur at doorways, locate the junctions directly below the closed door.

3 EXECUTION

3.1 PREPARATION

Substrates

General: Conform to the **Substrate tolerance table** and as follows:

- To AS/NZS 2455.1 or AS/NZS 2455.2, as appropriate.
- Clean and free of any deposit or finish which may impair adhesion or location and functioning of control joints.
- Free of any imperfections, including ridges, indentations and projections which may adversely affect the installed carpet.

Substrate tolerance table

Property	Length of straightedge laid in any direction	Max. deviation under the straightedge
Flatness Class B	3 m	6 mm
Smoothness	150 mm	1 mm

Concrete substrate correction: Remove projections, grind as necessary and fill voids and hollows with a levelling compound compatible with the adhesive to achieve the required tolerance.

Moisture content: Do not commence installation unless:

- Concrete: The moisture content of the concrete has been tested to AS/NZS 2455.1 Appendix B and the values in AS/NZS 2455.1 clause 2.4.2 (c) have been obtained.

Storage and handling

Requirement: Store in a clean, dry, well ventilated environment.

Working environment

General: Do not start work before the building is enclosed, wet work is complete and dry, overhead work is complete and good lighting is available. Protect adjoining surfaces.

3.2 LAYING CARPET

General

Installation: To AS/NZS 2455.1.

Setting out

General: Lay the carpet in continuous lengths without cross joins in the body of the area. If unavoidable cross joints occur at doorways, locate the joints directly below the closed doors.

Joints in underlay: Make sure joints in underlay do not coincide with carpet joints. Do not carry underlay over carpet grippers or edge strips.

Partition layout: Confirm that permanent partitions have been installed before starting carpet laying.

Seaming methods

Woven carpet: Machine or hand sew. Do not provide glued taped seams unless selvages are woven to suit and recommended by manufacturer.

Tufted carpet: Seam with hot-melt adhesive tape.

Seam sealing: Apply appropriate seam sealer to each cut edge.

Carpet installation

Stretching: To AS/NZS 2455.1 clause 3.4

Gripper system: To AS/NZS 2455.1 clause 3.5.

Direct-stick system: To AS/NZS 2455.1 clause 3.6.

Double-bond system: To AS/NZS 2455.1 clause 3.7.

Pre-applied underlay adhesive system: To AS/NZS 2455.1 clause 3.8.

Hook and loop system: To AS/NZS 2455.1 clause 3.9.

Cutting laid carpet

Method: If penetrations through laid carpet are necessary for electrical, telephone or other outlets, cut the carpet either by cross cutting or by cutting rectangular or circular openings.

Cutting holes in concrete floors: Protect the carpet and remove concrete particles and dust on completion. Replace the cut carpet over the opening without any signs of fraying or other damage, and fix with a peel-up adhesive, or resew.

3.3 COMPLETION

Cleaning

Requirement: Progressively clean the work. Remove waste, excess materials and adhesive.

Final cleaning: When the installation is complete, clean the carpet as necessary to remove extraneous matter, marks and soiling and to lift the pile where appropriate.

Protection

Requirement: Provide fabric drop sheets. Do not use plastic sheeting. If wheeled traffic is to follow carpet installation, protect with hardboard sheets butted and fixed with adhesive tape.

4 SELECTIONS

4.1 SCHEDULES

Carpet and laying schedule

LOCATION	**Meeting room, Cot rooms 1- 4, Staff programming room, part Staff lunchroom**
Carpet type	Broadloom
Product- Colour and pattern	To be advised
Pile: Composition	100% wool
Pile: Finish	Loop pile
ACCS Grade	Commercial heavy duty
Critical radiant flux	Not less than 2.2
Fixing method	Permanent stick
Seaming method	Hand sewn

0671P DULUX PAINTING

1 GENERAL

1.1 RESPONSIBILITIES

General
Requirement: Provide DuluxGroup/Dulux coating systems to substrates, as documented.

Performance
Requirement: Provide coating systems as follows:
- Consistent in colour, gloss level, texture and dry film thickness.
- Free of runs, sags, blisters, or other discontinuities.
- Paint systems which are fully opaque or at the documented level of opacity.
- Clear finishes at the level of transparency consistent with the product.
- Fully adhered.
- Resistant to environmental degradation within the manufacturer's stated life span.

1.2 COMPANY CONTACTS

DuluxGroup/Dulux technical contacts
Architects and Specifiers' Hotline (Paint, Acratex, Protective Coatings): 13 23 77.
Powder Coatings Technical Advice Hotline: 13 24 99.
Website: www.dulux.com.au/contact-us/architects-and-specifiers

1.3 CROSS REFERENCES

General
Requirement: Conform to the following worksection(s):
- *General requirements*.
- Cladding
- 0671p DULUX painting

1.4 STANDARDS

Painting
General: To the recommendations of those parts of AS/NZS 2311 referenced in this worksection.

1.5 MANUFACTURER'S DOCUMENTS

Technical manuals
Product Guide: www.dulux.com.au/specifier/product/product-selector
Duspec Product Data Sheets, SDS, paint system selection: www.dulux.com.au/specifier/duspec

1.6 INTERPRETATION

Abbreviations
General: For the purposes of this worksection the following abbreviations apply:
- ASU: Acrylic sealer undercoat multipurpose combo product.
- DFT: Dry film thickness.
- OFC: Off form concrete.
- PDS: Product data sheet.
- PRN: Paint reference number.
- PSU: Primer sealer undercoat multipurpose combo product.
- WFT: Wet film thickness.

Definitions
General: For the purposes of this worksection the definitions in AS/NZS 2310 and the following apply:
- Adhesion: The sum total of forces of attachment between a dry film and its substrate.

- Gloss unit: Numerical value for the amount of specular reflection relative to that of a standard surface under the same geometric conditions.
- Levels of gloss finish: When the specular direction is 60 degrees, a surface with the following specular gloss reading are defined as follows:
  . Full gloss finish between 50 and 85 gloss units.
  . Semi-gloss between 20 and 50 gloss units.
  . Low gloss between 5 and 20 gloss units (also known as low sheen).
  . Flat finish less than 5 gloss units (also known as matt).

1.7 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Painting stages:
  . Completion of surface preparation.
  . After application of final coat.
- Clear finishing stages:
  . Before surface preparation of timber.
  . Completion of surface preparation.
  . After application of final coat.

1.8 SUBMISSIONS

Paint
General: Dulux coatings systems have been selected for this project. Submit the following details at least 3 weeks before the paint is required:
- Paint brand name and product range quality statement.
- Safety data sheets (SDS) showing the health and safety precautions to be taken during application.
- The published recommendations for maintenance.

Warranties
Requirement: Submit the coating manufacturer's warranties as follows:
Material warranty: Submit the manufacturer's material warranty as follows:
- Extent: Paintwork generally.
- Terms: Paint systems are suitable for their intended use.
- Warranty period: As defined by the manufacturer.
- Terms: Submit the performance criteria as defined by the manufacturer.
- Measure: As defined by the manufacturer.
- Warranty period: As defined by the manufacturer.

Timing: Before the application of the paint system.

2 PRODUCTS

2.1 GENERAL

Product substitution
Other products: Conform to **PRODUCTS**, **GENERAL**, **Substitutions** in the *General requirements* worksection.

Storage and handling
General: Store materials not in use in tightly covered containers in well-ventilated areas with temperatures maintained at the manufacturer's recommendations.
Delivery: Deliver paints to the site in the manufacturer's labelled and unopened containers.

2.2 MARKING

Identification

General: Deliver materials to the site in the manufacturer's original sealed containers or packaging, legibly marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Safety data sheets.

2.3 PAINTS

Combinations

General: Do not combine paints from different manufacturers in a paint system. Dulux paint products and coating systems have been selected and specified for this project. Any unauthorised product substitution will void the warranties.

Clear timber finish systems: Provide only the combinations of putty, stain and sealer recommended by the manufacturer of the top coats.

Tinting

General: Provide only products which are colour tinted by the manufacturer or supplier.

Toxic ingredients

General: To the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) No.4 Appendix I Uniform Paint Standard.

Standards

Paint types: Conform to the Australian Standard referenced in the **OCP/Dulux paint type reference table**.

DuluxGroup/Dulux paint type reference table legend

Key:

ASU = Acrylic Sealer/Undercoat.

NE = No Equivalent.

PSU = Primer/Sealer/Undercoat.

Low VOC products are noted in the Table.

^ Use is discouraged in favour of water based paints because of environmental concerns.

These paints have either limited availability or low requirement in the Building Industry.

DuluxGroup/Dulux paint type reference table

Paint type	**DuluxGroup/Dulux material description**	**Dulux PDS No.**	**AS/NZS 2311 PRN (Table 4.2)**	**Standard**
Full gloss solvent-borne: exterior	Dulux Super Enamel Full Gloss	DD0145	B5a	AS 3730.6
Full gloss waterborne interior/exterior trim (alt B9b)	Dulux Aquanamel Gloss (low VOC)	DD1282	B42	NE
Flat latex: interior ceilings	Dulux White Ceiling Paint *eco choice* (low VOC)	DD1403	B6c	AS 3730.1
Low gloss latex:	Dulux	DD0053	B7a	AS 3730.8

Paint type	DuluxGroup/Dulux material description	Dulux PDS No.	AS/NZS 2311 PRN (Table 4.2)	Standard
exterior	Weathershield Low Sheen Acrylic (low VOC)			
Low gloss latex: interior	Dulux Wash & Wear 101 Adv Low Sheen Acrylic (low VOC) Dulux Wash & Wear Kitchen & Bathroom Low Sheen (low VOC) (Mouldshield ® + Anti-Bacterial)	DD1096 DD1516	B7b	AS 3730.3
Semi-gloss latex: interior	Dulux Wash & Wear 101 Adv Semi Gloss Acrylic (low VOC) Dulux Wash & Wear Kitchen & Bathroom Low Sheen (low VOC) (Mouldshield ® + Anti-Bacterial)	DD1097 DD1516	B8b	AS 3730.2
Interior clear latex varnish, water-based, one-pack	Intergrain Ultraclear Interior Satin (low VOC) Intergrain Ultraclear Interior Gloss (low VOC) Cabot's Cabothane Water Based (gloss or satin) (low VOC)	DW0762 DW0761 DW1491 DW1490	B19a	AS 3730.27
High Build Recoatable two-pack, solvent-borne gloss polyurethane	Dulux Weathermax HBR	DI1156	B29c	NE
Clear coatings (waterborne) for timber, interior	Intergrain Ultraclear Interior (gloss or satin) (low VOC) Cabot's Crystal Clear (gloss or satin)	DW0762 DW0761 DW0677 DW0678	B39b	NE
Clear or colourless coatings (waterborne) for timber, interior floors	Intergrain Enviropro Endure 1 Pack (matt, satin or gloss) (low VOC) Intergrain Enviropro Endure 2 Pack (gloss, satin or matt) Feast Watson EnviroMax 2 Pack (gloss, semi-gloss	DW1420 DW1419 DW1418 DW1421 DW1422 DW1423 DW1312 DW1190 DW1038	B39c	AS 3730.27

Paint type	DuluxGroup/Dulux material description	Dulux PDS No.	AS/NZS 2311 PRN (Table 4.2)	Standard
	or low sheen)			
Gloss pigmented polyurethane	Dulux Luxathane R Dulux Weathermax HBR	DD1137 DI1156	B44	AS/NZS 3750.6
Powder coatings for non-ferrous metals	Dulux Powder coat Range		B45a	AS 3715
Powder coatings for ferrous metals	Dulux Powder coat Range (www.duluxpowders.com.au)		B45b	AS 4506

Low VOC compliance reference table

Green Star Office v3 Product Type	VOC Limits MAX g/litre	DULUX Products compared to the GBCA specification	VOC g/litre Untinted
COMPLIANCE CRITERIA – GBCA specifications (obtain latest figures).			
Walls and ceilings - interior semi-gloss	16	Dulux Professional Enviro$_2$ Interior Semi-Gloss	< 1
Walls and ceilings - interior semi-gloss	16	Dulux Wash & Wear 101 Advanced Semi Gloss Dulux Wash & Wear Kitchen & Bathroom Semi Gloss	< 5 < 5
Walls and ceilings - interior low sheen	16	Dulux Professional Enviro$_2$ Interior Low Sheen	< 1
Walls and ceilings - interior low sheen	16	Dulux Wash & Wear 101 Advanced Low Sheen Dulux Wash & Wear Kitchen & Bathroom Low Sheen	< 5 < 5
Walls and ceilings - interior flat-washable	16	Dulux Professional Enviro$_2$ Interior Flat	< 1
Walls and ceilings - interior flat-washable	16	Dulux Wash & Wear 101 Advanced Flat	< 5
Ceilings - interior flat	14	Dulux Professional Enviro$_2$ Interior Flat	< 1
Ceilings - interior flat	14	Dulux White Ceiling Paint *eco choice*	< 5
Trim - interior gloss	75	Dulux Aquanamel Gloss	< 74
Trim - exterior gloss	75	Dulux Weathershield Gloss Acrylic	< 65
Trim - interior semi-gloss	75	Dulux Aquanamel Semi Gloss	< 74
Trim - exterior semi gloss	75	Dulux Weathershield Semi Gloss Acrylic	< 60
Trim - exterior low sheen	75	Dulux Weathershield Low Sheen Acrylic	< 55

Green Star Office v3 Product Type	VOC Limits MAX g/litre	DULUX Products compared to the GBCA specification	VOC g/litre Untinted
Timber primer	30	Dulux Professional Enviro$_2$ Acrylic Sealer Undercoat (ASU)	< 1
Timber primer	30	Dulux Acrylic Sealer Undercoat *eco choice* Dulux Professional Enviro$_2$ Acrylic Sealer Undercoat (ASU)	< 5 < 1
Binding primer	30	Dulux Professional EnvirO2 Water Based Sealer Binder	< 5
Latex primer for galvanized iron and zincalume	60	Dulux Galvanised Iron Primer	< 40
Latex primer for galvanized iron and zincalume	60	Dulux Quit Rust Galvanised Iron Primer	< 60
Interior latex undercoat	65	Dulux Professional Enviro$_2$ Acrylic Sealer Undercoat (ASU)	< 1
Interior latex undercoat	65	Dulux Acrylic Sealer Undercoat *eco choice*	< 5
Exterior latex undercoat	65	Dulux One Step Acrylic Primer Sealer Undercoat (PSU)	< 60
Interior sealer	65	Dulux Professional Enviro$_2$ Acrylic Sealer Undercoat (ASU)	< 1
Interior sealer	65	Dulux Luxafloor Eco2 (clear)	< 10
One and two pack performance coatings for floors	140	Dulux Luxafloor Eco2 Feast Watson EnviroMax Clear timber finish	< 10 < 100

3 EXECUTION

3.1 PREPARATION

Standards

General: To AS/NZS 2311 Sections 3.

Order of work

Other trades: Before painting, complete the work of other trades as far as practicable within the area to be painted, except for the installation of fittings, floor sanding and laying flooring materials.

Clear finishes: Complete clear timber finishes before commencing opaque paint finishes in the same area.

Protection

General: Before painting, clean the area and protect it from dust contamination. Use drop sheets and masking agents to protect surfaces, including finished surfaces and adjacent finishes, during painting.

Fixtures and furniture: Remove door furniture, switch plates, light fittings and other fixtures before painting, and conform to the following:

- Labelling and storage: Attach labels or mark fixtures using a non-permanent method, identifying location and refixing instructions, if required. Store and protect against damage.
- Reinstate: Refix undamaged fixture in the original location on completion of painting.

Difficult to remove fixtures: Where removal is impractical or difficult, apply surface protection before substrate preparation and painting.

Wet paint warning

Notices: Place in a conspicuous location and do not remove until the paint is dry.

Substrate preparation – Generally

General: Prepare substrates to receive the painting systems in conformance with AS/NZS 2311 and the paint maufacturer's recommendations.

Cleaning: Clean down the substrate surface. Do not cause damage to the substrate or the surroundings.

Filling: Fill cracks and holes with fillers, sealants, putties or grouting cements as appropriate for the finishing system and substrate, and sand smooth.

- Clear finish: Provide filler tinted to match the substrate.

Clear timber finish systems: Prepare the surface so that its attributes will show through the clear finish without blemishes, using methods including the following:

- Removal of bruises.
- Removal of discolourations, including staining by oil, grease and nailheads.
- Bleaching where necessary to match the timber colour sample.
- Puttying.
- Fine sanding, with the last abrasive no coarser than 220 grit, so that there are no scratches across the grain.

Treated surfaces: Where surfaces have been treated with preservatives or fire retardants, make sure coating is compatible with the treatment and does not adversely affect its performance.

Iron and steel: Remove weld spatter, slag, burrs, or any other objectionable surface irregularities and radius all edges to a minimum of 2 mm. Degrease by solvent or alkaline cleaning.

Iron and steel blast cleaning: To AS 1627.9 and to the class specified in the specified protective treatment. Provide a surface roughness or profile appropriate for the specified treatment. Where steelwork to be abrasive cleaned includes irregular shapes allow for special equipment to achieve required abrasive cleaning.

Structural steel: All exposed fixings including bolts, screws and the like, are to be painted to match adjacent steelwork paint system.

Concrete and masonry: Before application to very smooth concrete, brick or masonry, either acid etch, mechanically grind or abrasive track blast the surface as appropriate to provide a suitable key for the subsequently applied coating and to remove laitance. Remove loose friable matter before filling surface discontinuities.

Set plaster surfaces: Do not apply solvent borne paint or other impervious coatings if the moisture content at the surface, tested with a moisture meter, exceeds 12%.

Surface preparation info table

Duspec Info Sheet	Substrate group	Substrate title
PTI022	Timber	Dressed timber
PFM056	Ferrous metals (mild steel, cast iron)	External mild steel – commercial/industrial preparation
PFM005	Ferrous metals (mild steel, cast iron)	Ferrous metals – minor domestic
PFM009	Ferrous metals (mild Steel, cast iron)	Ferrous metals industrial – power tool cleaning
PFC013	Fibre cement sheet (7.5 mm, 9 mm primed, 6 – 9 mm Villaboard)	Fibre cement sheet

Duspec Info Sheet	Substrate group	Substrate title
PFM069	Ferrous metals (mild steel, cast iron)	Internal mild steel – commercial/industrial prep Class2 Abrasive Blast Clean
PPL008	Plaster products	Plaster products
PTI026	Timber	Plyboard marine
PTI023	Timber	Rough sawn timber
PTI003	Timber	Timber
PTI024	Timber	Timber flooring
PTI025	Timber	Timber joinery/furniture
PFC027	Fibre cement sheet (7.5 mm, 9 mm Primed, 6 – 9 mm with recessed edges)	Fibre cement sheet (7.5 mm, 9 mm with recessed edges)
PZC012	Zinc-coated steel (galvanized iron, galvanized steel)	Zinc coated steel galvanized steel
PZS070	Zinc coated steel (zincalume, zincanneal, zincseal)	Zincanneal

3.2 PAINTING

Standard
General: To AS/NZS 2311 Section 6.

Light levels
General: During preparation of surfaces, painting and inspection, maintain light levels such that the luminance (photometric brightness) of the surface is equal to the specified permanent artificial illumination conditions or 400 lux, whichever is the greater.

Substrate moisture content
Requirement: Use a moisture meter to demonstrate that the moisture content of the substrate is at or below the recommended maximum level for the type of paint and the substrate material.

Paint application
General: Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Apply subsequent coats after the manufacturer's recommended drying period has elapsed.

Painting conditions
General: Unless the paint is recommended for such conditions, do not paint under the following conditions:

- Dusty conditions.
- Relative humidity: > 85%.
- Surface temperature: < 10°C or > 35°C.

Priming before fixing
General: Apply one coat of wood primer, and 2 coats to end grain, to the back of the following before fixing in position:

- External fascia boards.
- Timber door and window frames.
- Bottoms of external doors.
- Associated trims and glazing beads.
- Timber board cladding.

Spraying
General: If the paint application is by spraying, use conventional or airless equipment which conforms to the following:

- Satisfactorily atomises paint being applied.

- Does not require paint to be thinned beyond the maximum amount recommended by the manufacturer.
- Does not introduce oil, water or other contaminants into the applied paint.

Paint with known health hazards: Provide personal protection, masking, ventilating and screening facilities to AS/NZS 4114.1 and AS/NZS 4114.2.

Sanding

Clear finishes: Sand the sealer using abrasives no coarser than 320 grit without cutting through the colour. Take special care with round surfaces and edges.

Repair

Requirement: Clean off marks, paint spots and stains progressively and restore damaged surfaces to their original condition.

Maintenance painting: To AS/NZS 2311 Section 8.

Repair of galvanizing

Cleaning: For galvanized surfaces which have been subsequently welded, power tool grind to remove all surface contaminants, including rust and weld splatter. Prime affected area immediately after cleaning.

Primer: Type 2 organic zinc-rich coating for the protection of steel to AS/NZS 3750.9.

Tinting

General: Tint each coat of an opaque coating system so that each has a noticeably different tint from the preceding coat where possible, except for top coats in systems with more than one top coat.

Services

General: Paint all new services and equipment, including those in plant rooms, if not embedded, except chromium, anodised aluminium, GRP, PVC-U, stainless steel, non-metallic flexible materials and normally lubricated machined surfaces.

Proprietary items: Repaint only if damaged.

Windows

Operation: Make sure opening windows function correctly before and after painting.

Doors

Drying: Maintain door leaf in the open position during drying. Do not allow door hardware or accessories to damage the door finish during the drying process.

Exclusions

Exclude the following surfaces from paint systems (unless specifically requested):

- Flexible duct connections, rubber hoses and mountings and other non metallic flexible fittings.
- Wire rope and machined surfaces.
- Metals plated or specially finished for appearance, bronze, brass, copper and stainless steel (except as specified in the *Pipe identification* clause of the *Services* worksections).
- Aluminium frames.
- Prefinished aluminium frames to windows and doors, and trim.
- Metal floor duct covers.
- Raised access floors.
- Floors.
- Fair faced brickwork, blockwork, stonework, artificial stone and exposed aggregates.
- Sprayed vermiculite.
- Floors, paving, roads unless otherwise specified.
- Timber roof structure.
- Concealed timber roof structure.
- Timber ceiling and eaves lining.
- Exterior timber sheeting.
- Exterior timber stairs and decking.
- Plastic finishes generally
- Inside of service ducts, heat exchangers, pipes and valves.

- Shower seats, store shelving, work benches.
- Those parts of timber fixtures, such as insides of cupboards, not visible when doors are closed, unless otherwise specified. Insides of bathroom cabinets are not excluded and shall be painted.
- Self finished surface such as glass and plastic laminates.
- Door hardware, including hinges.

3.3 COMPLETION

General

Protection and masking: Remove masking and protection coverings before paint has dried.

Cleaning: On completion of painting, remove splatters by washing, scraping or other methods which do not scratch or damage adjacent finished surfaces.

Reinstatement: Repair, replace or refinish any damage, including works of other trades. Touch up new damaged decorative paintwork or misses only with the paint batch used in the original application.

Removed fixtures: Refix in original location, make sure they are properly fitted and in proper working order.

Disposal of paint and waste materials.

Requirement: Conform to requirements of the local government authority.

4 SELECTIONS

4.1 PAINTING SCHEDULES GENERALLY

Paint system schedules

Requirement: Apply paint systems as documented in the **Interior painting schedule** and the **Exterior painting schedule**.

General: Apply the paint system nominated for each substrate to the referenced manufacturer's Product Data Sheets (PDS) and Spec Sheets and include:

- The number and order of coats.
- The paint type for each coat.

Additional coats: Apply if necessary to:

- prepare porous or reactive substrates with prime or seal coats consistent with the manufacturer's recommendations;
- achieve the total film thickness or texture specified; or
- achieve a satisfactory opacity, in the specified or required colour.

Painting systems

Standards: The scheduled DuluxGroup/Dulux paint systems override AS/NZS 2311 as follows:

- New unpainted interior surfaces: To AS/NZS 2311 Table 5.1.
- New unpainted exterior surfaces: To AS/NZS 2311 Table 5.2.
- Standard: To AS/NZS 2311 clause 5.2. Provide the following final coats:
  - . High build textured or membrane finishes for concrete and masonry: B38 using products conforming to the AS 4548 series.
  - . Two-pack gloss pigmented polyurethane: B44.
  - . Two-pack epoxy: B29.
  - . Two-pack water based epoxy: B29A.

Paint Reference Number (PRN): The number in brackets against the individual product refers to the Paint Ref. No. (PRN) listed in the **DuluxGroup/Dulux paint type reference table** (See **PRODUCTS**) and AS/NZS 2311 Appendix D.

4.2 INTERIOR PAINTING SCHEDULE

Flat and matt latex: Interior

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Plasterboard (ceilings) (low VOC system)	Dulux Acrylic Sealer Undercoat *eco choice* (B16)	Dulux White Ceiling Paint *eco choice* (B6c)	Dulux White Ceiling Paint *eco choice* (B6c)	SD 0010
Fibre cement products (low VOC system)	Dulux Acrylic Sealer Undercoat *eco choice* (B16)	Dulux Wash & Wear 101 Adv Flat (B6b)	Dulux Wash & Wear 101 Adv Flat (B6b)	SD 3174

Low gloss latex - Interior

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Plasterboard (low VOC system)	Dulux Acrylic Sealer Undercoat *eco choice* (B16)	Dulux Wash & Wear 101 Adv Low Sheen (B7b)	Dulux Wash & Wear 101 Adv Low Sheen (B7b)	SD 0002

Semi-gloss latex (mould resistant): Interior

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Plasterboard (low VOC system)	Dulux Acrylic Sealer Undercoat *eco choice* (B16)	Dulux Wash & Wear Kitchen & Bathroom Semi Gloss (B8b)	Dulux Wash & Wear Kitchen & Bathroom Semi Gloss (B8b)	SD 4848
Fibre cement products (low VOC system)	Dulux Acrylic Sealer Undercoat *eco choice* (B16)	Dulux Wash & Wear Kitchen & Bathroom Semi Gloss (B8b)	Dulux Wash & Wear Kitchen & Bathroom Semi Gloss (B8b)	SD 4512

Full gloss water based enamel: Interior

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Timber and veneers (low VOC system)	Dulux Acrylic Sealer Undercoat *eco choice* (B17a)	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	SD 2291
Zinc-coated metals (incl. HD galvanized steel, zincalume, Galvabond, zincanneal, zincseal, zinc-primed steel) (low VOC system)	Dulux Quit Rust All Metal Primer (water based) (B12a)	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	SD 5029
Shop primed or red oxide primed (ROZP) ferrous metal (low VOC system)	Dulux Quit Rust All Metal Primer (water based) (B11a)	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	SD 4603
Non-ferrous metals (incl. aluminium, brass, copper, tin plate) (low VOC system)	Dulux Quit Rust All Metal Primer (water based) (B17a)	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	SD 5030

Clear coat single pack polyurethane - Interior

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Timber and timber veneer (low VOC water based system)	Intergrain Ultraclear (B39b) Gloss or Satin Apply 10.8 m^2/litre	Intergrain Ultraclear (B39b) Gloss or Satin Apply 10.8 m^2/litre		SW 3925 (gloss) or SW 3927 (satin)

Clear single pack polyurethane - Interior (timber floors)

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Timber (floors) (low VOC water based system)	Intergrain Enviropro Endure 1 (B39c) Gloss, Satin or Matt	Intergrain Enviropro Endure 1 (B39c) Gloss, Satin or Matt	Intergrain Enviropro Endure 1 (B39c) Gloss, Satin or Matt	SW4012 (gloss) or SW4014 (satin) or SW4016 (matt)

4.3 EXTERIOR PAINTING SCHEDULES

Low gloss latex – Exterior

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Weatherboard - hardboard cladding (Weathertex)	Dulux Weathershield Low Sheen Acrylic (B7a)	Dulux Weathershield Low Sheen Acrylic (B7a)	Dulux Weathershield Low Sheen Acrylic (B7a)	SD 0035
Timber and veneers	Dulux Weathershield Low Sheen Acrylic (B7a)	Dulux Weathershield Low Sheen Acrylic (B7a)	Dulux Weathershield Low Sheen Acrylic (B7a)	SD 0035
Fibre cement products	Dulux Weathershield Low Sheen Acrylic (B7a)	Dulux Weathershield Low Sheen Acrylic (B7a)	Dulux Weathershield Low Sheen Acrylic (B7a)	SD 1333

Gloss latex – exterior

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Timber and veneers	Dulux Weathershield Gloss Acrylic (B9a)	Dulux Weathershield Gloss Acrylic (B9a)	Dulux Weathershield Gloss Acrylic (B9a)	SD 0037

Full gloss, solvent borne – Exterior

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Timber and primed hardboard veneers	Dulux 1 Step Oil Based PSU (solvent based) (B17)	Dulux Super Enamel High Gloss (B5)	Dulux Super Enamel High Gloss (B5)	SD 0039
Zinc-coated metals (incl. HD Galvanized steel, zincalume,	Dulux Quit Rust All Metal Primer (B11) (B12A) # Apply 2 coats #	Dulux Super Enamel High Gloss (B5)	Dulux Super Enamel High Gloss (B5)	SD 0381

Substrate	1st coat	2nd coat	3rd coat	Manufacturer's Spec Sheet Ref
Galvabond, zincanneal, zincseal, zinc-primed steel)				
Shop primed or red oxide primed (ROZP) ferrous metal.	Spot Prime with Dulux Quit Rust All Metal Primer (B11)	Dulux Super Enamel High Gloss (B5)	Dulux Super Enamel High Gloss (B5)	SD 5069
Non-ferrous metals (incl. aluminium, brass, copper, tin plate)	Dulux PrepLock Water Based Stain Blocker (B17A)	Dulux Super Enamel High Gloss (B5)	Dulux Super Enamel High Gloss (B5)	SD 3451
Plastics (solvent resistant types e.g. FRP, PVC-U)	Dulux Dulux PrepLock Water Based Stain Blocker (B17A)	Dulux Super Enamel High Gloss (B5)	Dulux Super Enamel High Gloss (B5)	SD 0385
Plastics (solvent sensitive types, e.g. polystyrene)	Dulux Dulux PrepLock Water Based Stain Blocker (B17A)	Don't use Solvent Based, Use Water Based Paints	Don't use Solvent Based, Use Water Based Paints	N/A

PAINTING SCHEDULES – Final coat shown

Interior painting schedule –paint finish Low VOC

Room/Item	Manufacturer and paint type	Paint type	Colour
Walls- Generally	Dulux Wash & Wear 101 Adv Low Sheen (B7b)	Low sheen washable acrylic	To be selected Allow for 5 colours
Ceilings -generally	Dulux White Ceiling Paint *eco choice* (B6c)	Ceiling White Flat acrylic	White
Walls Wet Areas	Dulux Wash & Wear Kitchen & Bathroom Semi Gloss (B8b)	Semi gloss Mould resistant washable acrylic	TBA
Ceilings – Wet Areas/Kitchen	Dulux Wash & Wear Kitchen & Bathroom Ceiling	Flat Mould resistant washable acrylic	White
Timber windows/Doors	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	Gloss Acrylic enamel	To be selected Allow for 5 colours
Timber trim, architraves, skirtings,	Dulux Aquanamel Gloss Acrylic (B42) & (B9)	Gloss Acrylic enamel	To be selected Allow for 5 colours
Plywood benches and shelves	Intergrain Ultraclear (B39b) Satin	Clear coat single pack polyurethane	Clear

Room/Item	Manufacturer and paint type	Paint type	Colour
Plywood steps and platform Playroom 2	Intergrain Enviropro Endure 1 (B39c) Satin	Clear single pack polyurethane - Interior (timber floors)	Clear

Exterior painting schedule –paint finish Low VOC

Item	Manufacturer and paint type	Paint type	Colour
Weatherboard -hardboard cladding (Weathertex)	Dulux Weathershield Low Sheen Acrylic (B7a)	Low gloss latex	Equal to Haymes Paint - Florida Everglade 2971
Fibre cement soffits	Dulux Weathershield Low Sheen Acrylic (B7a)	Low gloss latex	White
Plywood shelves	Intergrain Ultraclear (B39b) Satin	Clear coat single pack polyurethane	Clear
Timber Doors	Dulux Weathershield Gloss Acrylic (B9a)	Gloss latex	Equal to Haymes Paint - Autumn Leaf 2133
Bin Store Cladding	Cabots Garden Furniture oil	Water based oil	New Natural to match adjoining fence
Steel columns	Refer Dulux protective coating section		Ironstone
Exposed structural steel	Refer Dulux protective coating section		Ironstone
Stone Cladding	Refer Cladding Section		Clear

0811S SANITARY FIXTURES AND TAPWARE

6 GENERAL

6.1 RESPONSIBILITIES

General
Requirement: Provide sanitary fixtures as documented.

6.2 STANDARDS

General
Design for access and mobility: AS 1428.1, AS 1428.2 and AS 1428.3.

Authorised products
Standard: Listed in the WaterMark Product Database, unless otherwise required by the Network Utility Operator.

Labelling
Water efficiency labelling: Provide only products conforming to and labelled to the Water Efficiency Labelling Scheme (WELS).

7 SELECTIONS

Sanitary fixtures and toilet seats to be white, tapware to be chrome finish, generally ceramic disk

LOCATION	Fixture	Description	Tapware	Type – TC thermostatically controlled
Generally	Floor waste	100mm Square Chrome finished brass with leak control equal to Ram Harbic waste outlet	-	
Generally	Chrome basin wastes and trap	Mizu Bottle Trap 40mm Round Bottle Trap or equal	-	
Washroom 1	Child's basin x3 WCx3 Shower x1	Studio Bagna – Aqua Luna 45 one tap hole with chrome waste and trap Enware IFO Sign Junior Toilet	Enware-Oras Vega Basin Mixer Cistern tap Grohe BauFlow shower mixer Grohe BauContemporary shower on rail	TC COLD TC
Washroom 2	Child's basin x3 WC x3 Staff basin x1	Studio Bagna – Aqua Luna 45 one tap hole with chrome waste and trap Enware IFO Sign Junior Toilet Marquis Torino 5 wall mounted 600mm wide vanity unit Gloss white with finger pulls and ceramic top	Enware-Oras Vega Basin Mixer Cistern tap Grohe BauFlow basin mixer	TC COLD TC
Washroom 3	Child's basin x3 Staff basin x1 WCx3 Baby Bath x1	Studio Bagna – Aqua Luna 45 one tap hole with chrome waste and trap Enware IFO Sign Junior Toilet BRITEX Stainless Steel. Baby Bath BB1- 650mm L x 490mm Wide x 215mm Deep	Enware-Oras Vega Basin Mixer Cistern tap Hansa Mix Neu retractable spray sink mixer	TC COLD TC

WC 1 staff	WC x1 Basin x1	Caroma Stirling wall faced closed coupled WC suite Paco Jaanson Flo, one tap hole Wall Hung (460 x 370mm) KER3140	Cistern tap Enware-Oras Vega Basin Mixer	
WC 1 Accessible	Basin WC Shower	Caroma Opal 720 RHS one tap hole Caroma Care 400 Toilet Suite - Caravelle Care Single Flap Seat, White - Backrest Curved Arm Included	Enware-Oras Vega Basin Mixer with Accessible Extended Lever Cistern tap Grohe BauFlow shower mixer Nikles Pure 105 Eco Overhead Shower	TC Cold TC
Kitchen	Basin Sinks	Integral stainless steel as shown on drawings Integral stainless steel as shown on drawings	Enware-Oras Vega Basin Mixer with Accessible Extended Lever Hansgrohe Talis Variac S multi-function sink mixer	
Playroom 1	Art Sink	Raymor Arabian, RH drainer, 10239, 1 taphole	RAM Park Horizontal Swivel Sink Mixer Gooseneck PKLHSSMCP	TC
Playroom 2	Art Sink	Raymor Arabian, RH drainer, 10239, 1 taphole	RAM Park Horizontal Swivel Sink Mixer Gooseneck PKLHSSMCP	TC
Playroom 3	Art Sink Bottle preparation sink	Raymor Arabian, RH drainer, 10239, 1 taphole Raymor Arabian, RH drainer, 10239, 1 taphole	RAM Park Horizontal Swivel Sink Mixer Gooseneck PKLHSSMCP	TC
Dining	Art Sink x 2	Ikea DOMSJÖ 990.018.16 Single bowl sink, white with Atlant sink strainer	RAM Park Horizontal Swivel Sink Mixer Gooseneck PKLHSSMCP	TC
Laundry	Tub Cleaners sink	Clark 45L flushline tub 1 taphole BRITEX Cleaner's Sink - 600x500x250mm Deep. 46L bowl capacity. with stainless steel bucket grate, wall brackets, and 50mm waste outlet - Product Code CS	Ram Dorset Laundry set Ram Dorset washing machine taps Ram Dorset Laundry set	
Staff room	Sink	Raymor Arabian, LH drainer, 10240, 1 taphole	Zip HydroTap G4 AIO BCHA 100/75 Mains HT1773	
Veranda 1	Drinking fountain x 2	Wall mounted stainless steel RBA8901-100		cold
Veranda	Drinking fountain x 1	Wall mounted stainless steel RBA8901-100		cold
3-5 Playground	External tap	Hose cock on standpipe	Brass quarter turn	cold
2-3 Playground	External tap	Hose cock on standpipe	Brass quarter turn	cold
0-2	External tap	Hose cock on standpipe	Brass quarter turn	cold

Playground				
3-5 Playground	Water pump	Water Pump with Reservoir PN 444 http://www.playworks.com.au/		cold
2-3 Playground	Water pump	Water Pump with Reservoir PN 444 http://www.playworks.com.au/		cold