

## 0456P BREEZWAY LOUVRE WINDOWS

### Branded worksection

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### Worksection abstract

This branded worksection *Template* is applicable to BREEZWAY Altair louvre window systems consisting of proprietary products, supplied as complete systems or components fabricated and assembled by specialist firms to their standard designs. Components include glass, metal or timber louvre blades, hardware and associated screens and grilles, as well as installation accessories, such as fixings, flashings, sealants, joint sealing and weather-stripping, necessary for the satisfactory functioning of the whole system.

Electrical switches and wiring are excluded from this worksection.

### Guidance text

All text within these boxes is provided as guidance for developing this worksection and should not form part of the final specification. This *Guidance* text may be hidden or deleted from the document using the NATSPEC Toolbar or the hidden text *Hide* and *Delete* functions of your word processing system. For additional information visit FAQs at [www.natspec.com.au](http://www.natspec.com.au).

### Optional style text

Text in this font (blue with a grey background) covers items specified less frequently. It is provided for incorporation into *Normal* style text where it is applicable to a project.

### Related material located elsewhere in NATSPEC

If a listed worksection is not part of your subscription package and you wish to purchase it, contact NATSPEC.

Related material may be found in other worksections. See for example:

- *0432 Curtain walls*, if the project contains windows and window-and-spandrel assemblies in addition to louvred windows.
- *0451 Windows and glazed doors*, if the project contains windows other than louvre windows.
- *0451p ALSPEC aluminium windows and doors*, for integrated framing systems.
- *0461 Glazing* for types of glass.
- *0462 Structural silicone glazing*, for adhesive fixed glazing.
- *0463 Glass blockwork*, if the project contains glass blockwork in addition to louvred windows.
- *0524 Partitions – glazed*, for glazed internal partitions.

### Material not provided by Breezway

This branded worksection *Template* includes generic material which may not be provided by Breezway, including:

Insect screens. The opening angle of Altair louvres can be restricted to prevent interference between the clips and screens in narrow frames. Breezway does not supply insect screens. Easyscreen and Innoscreen frames are compatible with insect screens.

Security window grilles. Breezway supplies security bars but not security window grilles, however, Easyscreen and Innoscreen frames are both compatible with security screens from most of the major suppliers.

### Documenting this and related work

You may document this and related work as follows:

- Schedule windows on drawings to your office documentation policy.
- See NATSPEC TECHnote PRO 006 for glass types used in buildings.
- Bushfire protection: Depending on the level of construction to AS 3959, the windows should satisfy the construction requirements of AS 3959 and the NCC. See AS 3959 clause 3.7 for bushfire shutters and NATSPEC TECHnote DES 018 for information on bushfire protection.
- For smoke and heat venting, see AS 2665 which is cited in the NCC.
- Electrical and BMS interface: Document in *0902 Electrical design and install*.
- For information on the Window Energy Rating Scheme (WERS) see [www.wers.net](http://www.wers.net).
- For information on the Australian Window Association (AWA) Accreditation Program, see [www.awa.org.au](http://www.awa.org.au).

The *Normal* style text of this worksection may refer to items as being documented elsewhere in the contract documentation. Make sure they are documented.

Search [acumen.architecture.com.au](http://acumen.architecture.com.au), the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- Guarantees and warranties.
- Protection of openable windows.

Search [www.environmentdesignguide.com.au](http://www.environmentdesignguide.com.au), the Australian Institute of Architect's environmental advisory subscription service for notes on the following:

- BCA Section J and Commercial building façade design.
- Daylighting of buildings.
- Revisiting energy efficiency in commercial buildings.

### Specifying ESD

The following may be specified by retaining default text:

- Louvre assemblies for natural ventilation.
- Window seals to minimise air leakage when louvres shut. Altair weatherstrips are required between the top louvre blade and head weatherstrip insert, and between the bottom louvre blade and sill weatherstrip insert, for both water penetration resistance and air filtration minimisation.

The following may be specified using included options:

- Thermal performance to reduce heating/cooling load by specifying the required Total system U-Value, Total system SHGC, frame material (e.g. metal has higher conductivity than timber).
- Glass and frame selection with an acceptable Visible transmittance for natural lighting.
- High performance glass, e.g. low-e.

The following may be specified by including additional text:

- Australian Window Association (AWA) Window Energy Rating Scheme (WERS) – certified product performance data.
- Re-use of salvaged louvres.
- Recycled material content, e.g. aluminium frames.

Refer to the NATSPEC TECHreport TR 01 on specifying ESD.

## 1 GENERAL

Breezway is the leading Australian manufacturer of high performance, energy rated, Altair Louvre Windows. Fully compliant with AS 2047, Altair Louvres are designed to open twice as wide as other window types to provide maximum light and ventilation into sustainable buildings. Altair Louvres are cyclone rated and automation is available with the award winning Altair Powerlouvre louvre window system. Extra strength and safety can also be provided to windows at height when using the Stronghold System.

### 1.1 RESPONSIBILITIES

#### General

Requirement: Provide Breezway Altair louvre window systems, as documented.

*Documented* is defined in 0171 *General requirements* as meaning contained in the contract documents.

### 1.2 COMPANY CONTACTS

#### Breezway Pty Ltd technical contacts

Website: [www.breezway.com.au](http://www.breezway.com.au)

### 1.3 CROSS REFERENCES

#### General

Requirement: Conform to the following:

- 0171 *General requirements*.

0171 *General requirements* contains umbrella requirements for all building and services worksections.

List the worksections cross referenced by this worksection. 0171 *General requirements* references the 018 *Common requirements* subgroup of worksections. It is not necessary to repeat them here. However, you may also wish to direct the contractor to other worksections where there may be work that is closely associated with this work.

NATSPEC uses generic worksection titles, whether or not there are branded equivalents. If you use a branded worksection, change the cross reference here.

## 1.4 STANDARDS

### General

Selection and installation: To AS 2047.

AS 2047 does not cover fixed louvres.

**Building classification:** [complete/delete]

To use AS 2047, the building class needs to be nominated as follows:

- Housing: BCA Class 1 and 10.
- Residential: BCA Class 2, 3 and 4.
- Commercial: BCA Class 5, 6, 7, 8 and 9.

### Glazing

Glass type and thickness: To AS 1288, if no glass type or thickness is nominated.

For glass type and thickness refer to AS 1288 Table 4.1 and to AS/NZS 4667.

Glass thickness may be governed by human safety and other requirements – see AS 1288 Sections 5. The commonly available thicknesses of various glasses are shown on the wind pressure figures of AS 1288 Section 4.

Nominate a thickness if:

- The glass is to be thicker than required by AS 1288 or applicable regulations.
- There are unusual conditions requiring detailed calculations for which the designer should be responsible.

In other cases, the determination of thickness is usually within the competence of the glazing contractor.

Where thickness is determined by wind loading, the design wind pressure needs to be known in order to interpret the figures and tables of glass sizes and thicknesses in AS 1288.

Design wind pressure: To AS/NZS 1170.2 or AS 4055 as appropriate.

Materials and installation: To AS 1288.

AS 1288 clause 5.12 requires Grade A safety glass for louvres to be toughened monolithic glass. Note exemption for louvre lengths < 300 mm, which permits laminated glass.

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.

The standard specifies requirements for the following:

- Cut sizes of flat, clear ordinary annealed and tinted heat-absorbing glass with glossy, apparently plane and smooth surface, which are used for general and architectural glazing or similar.
- Cut sizes of flat, clear ordinary annealed and tinted heat-absorbing processing glass used for Grade A safety requirements.
- Cut sizes of ordinary annealed, patterned and wired glass used in decorative and general glazing applications.
- Cut sizes of wired glass used for Grade B safety and general glazing applications.
- Processed toughened glass. Laminated glass is not compatible with Altair louvre windows.

## 1.5 MANUFACTURER'S DOCUMENTS

### Technical manuals

Design manual: [www.breezway.com.au](http://www.breezway.com.au)

Product selection guide: [www.breezway.com.au/product-selection-guide](http://www.breezway.com.au/product-selection-guide)

CAD drawings and BIM models: [www.breezway.com.au/frame-types/cad-drawings-bim-models](http://www.breezway.com.au/frame-types/cad-drawings-bim-models)

## 1.6 INTERPRETATION

### Abbreviations

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

- AWA: Australian Window Association.
- WERS: Window Energy Rating Scheme.

Edit the **Abbreviations** subclause to suit the project or delete, if not required. List alphabetically.

### Definitions

General: For the purposes of this worksection, the definitions given in AS/NZS 4668 and the following apply:

- Louvres - horizontal: Louvres that span horizontally between frame stiles, mullions or vertical supports.

- Total system SHGC: Solar heat gain coefficient as defined by the NCC and tested in conformance with NFRC 200.
- Total system U-Value: Thermal transmittance as defined by the NCC and tested in conformance with NFRC 100.

Edit the **Definitions** subclause to suit the project or delete if not required. List alphabetically.

## 1.7 SUBMISSIONS

### Certification

Conformance: Submit evidence that the louvre windows conform to AS 2047.

Louvre window assemblies other than for housing may conform to AS 2047 clause 8.2 Labelling or AS 2047 clause 8.3 Certificate.

### Operation and maintenance manuals

General: Submit the louvre window manufacturer's published instructions for operation, care and maintenance.

### Products and materials

Type tests: Submit results as follows:

Breezway products have been tested in NATA certified testing facilities, including tests to AS 2047 for cyclonic wind up to 8.8 kPa ultimate limit state wind pressure and up to 620 Pa water penetration resistance, and tests to AS 5203 for fall prevention.

- Performance requirements, as documented.
- Protection of openable windows.

Type tests are carried out off-site. However, submission of evidence of a successful type test may be called up here for requirements specified in **SELECTIONS** or **PRODUCTS**, if there are no **SELECTIONS**.

Evidence of delivery: Submit delivery docket as evidence of delivery of [complete/delete]

If evidence of delivery to site is required, consider including this *Optional* style text by changing to *Normal* style text.

### Samples

General: Submit samples of louvre window system components as follows:

- Manufacturer's standard hardware and accessories, including louvre holders and operators, locks, latches, handles, catches, anchor brackets and attachments, masonry anchors and weather seals (pile or extruded).
- Colour samples of prefinished production materials, showing the limits of the range of variation in the documented colour.
- Frame member profiles and louvre materials.
- Frame member joining techniques.

Glazing: Submit samples of glazing materials, each at least 200 x 200 mm, showing specified visual properties and the range of variation, if any, for each of the following types of glass:

- Tinted or coloured glass.
- Patterned or obscured glass or glazing plastics.

Edit as required.

Labelling: Label each sample, giving the series code reference and date of manufacture.

Edit as required.

### Shop drawings

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

- Frame member profiles.
- Hardware, fittings and accessories including fixing details.

Breezway provides standard type proprietary hardware. Altair louvres cannot be fitted with non-standard locks. Document hardware in the **SELECTIONS**.

- 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, joint sealing and flashing.
- Provision for vertical and horizontal expansion.

### Subcontractors

General: Submit names and contact details of proposed manufacturers and installers.

Evidence of experience: [complete/delete]

Delete if supplier/installer details are not required.

### Warranties

General: Submit warranties, as documented.

Describe the requirements of warranties in **PRODUCTS** or **EXECUTION**, as appropriate, and list the submissions required here.

## 1.8 INSPECTION

### Notice

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

- Openings prepared to receive windows (if windows are to be installed in prepared openings).
- Fabricated window assemblies at the factory ready for delivery to the site.
- Fabricated window assemblies delivered to the site, before installation.
- Commencement of window installation.

Amend to suit the project adding critical stage inspections required.

Hold points, if required, should be inserted here.

## 2 PRODUCTS

### 2.1 GENERAL

#### Product substitution

Other products: Conform to **PRODUCTS, GENERAL, Substitutions** in *0171 General requirements*.

The *0171 General requirements* clause sets out the submissions required if the contractor proposes alternative products. Refer also to NATSPEC TECHnote GEN 006 for more information on proprietary specification.

#### Storage and handling

Storage: Store in a clean, dry area and unaffected by weather, to the manufacturer's recommendations. Protect from building materials and loose debris such as wet plaster, mortar, paint and welding splatter.

#### Protection of openable windows

Fall prevention: To BCA D2.24 and BCA 3.9.2.6 and BCA 3.9.2.7.

Testing: To AS 5203.

Windows supplied as a complete sets with security grilles and tested to AS 5041 are not required to be tested to AS 5203.

#### Marking

Louvre window assemblies: To AS 2047 Section 8.

Louvre window assemblies other than for housing may conform to AS 2047 clause 8.2 Labelling or AS 2047 clause 8.3 Certificate.

#### Product identification

General: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.

Edit the list to suit the project or delete if not required.

## 2.2 BLADES

### Material

Type: [complete/delete]

Select from Glass, Aluminium or Timber blades available from Breezway. If documented in **SELECTIONS**, delete this text.

Glass type: [complete/delete]

Select from Annealed or Toughened glass blades available from Breezway. Toughened glass blades are available in clear, clear low e, grey, green, satina and satinlite to match other windows. Consult Breezway for the availability of additional glass types and tints. If more than one glass type is used, document in **SELECTIONS**.

### Safety glass

Standard: To AS/NZS 2208.

AS/NZS 2208 includes toughened, laminated, wired, and organic-coated glass, and safety glazing plastics. See AS 1288 Section 5 for the required grade (A or B) for each application.

Certification: Required.

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

### Heat soaking

Requirement: All toughened and heat strengthened glass products.

Standard: To EN 14179-1.

Heat soaking is a process that reduces the risk of breakage during service from impurities such as nickel sulfide inclusions in the glass. The process puts the glass through a heat cycle to encourage the glass to break under test if it is at risk of inclusions. Heat soaked thermally toughened soda lime silica glass is defined in EN 14179-1 and specifies the heat soak process, along with requirements for tolerances, flatness, edgework and fragmentation.

## 2.3 GLASS IDENTIFICATION

### Safety glazing materials

Identification: Identify each piece or panel, to AS 1288.

Identification: See AS 1288 clause 5.23.

## 2.4 GLAZING MATERIALS

If windows and glazed doors are selected as complete proprietary items, delete this clause.

### General

Requirement: 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 required performance.

### Jointing materials

Requirement: Provide jointing and pointing materials to manufacturer's recommendations that are compatible with each other and the contact surfaces and non-staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

### Elastomeric sealants

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.

### Primer

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

## 2.5 ALTAIR LOUVRE WINDOW SYSTEMS

Altair louvre window systems have been designed to be compatible with most timber and aluminium windows so it will match neatly with various other brand windows and doors in the building.

### Easyscreen louvre system

Description: Aluminium framing system designed for use with Altair louvres with external screening.

Optional sub-framing and fixed lite bays available.

Compatible with Breezway's Powerlouvre and Stronghold options, handles, keylocks and security bars.

BAL-A29 Bushfire compliant with metal mesh screens.

Frame depth: 131 mm.

Screen position: Outside.

### **Innoscreen louvre system**

Description: Aluminium framing system designed for use with Altair louvres with internal screening.

Optional sub-framing and fixed lite bays available.

Compatible with Breezway's Powerlouvre window and Stronghold options. Provides safe screen installation and cleaning for multi-level buildings.

Frame depth: 131 mm.

Screen position: Inside.

Application: Sporting halls and aged care facilities.

### **SL2 louvre system**

Description: Aluminium framing system designed for use with Altair louvres in narrow framing applications.

Suits narrow frame applications or installation into masonry construction. Screens and/or Powerlouvre options are not available. Locate above or next to doors on internal walls to help ventilate the building.

Frame depth: 52 mm.

### **Dualair™ secondary glazed louvre window system**

Description: Secondary glazed component system for commercial applications.

This system combines the performance benefits of secondary glazing with the ventilation benefits of Altair louvre windows.

For use with Alspec 150 mm commercial framing systems. Dualair™ provides outstanding thermal performance with high water penetration resistance. The pressure equalising design allows for water penetration resistance performance of 600 Pa at a window size of 2658 mm (h) x 1041 mm (w). Ideal for projects with High R<sub>w</sub> or low U-Value ratings. Compatible with the Powerlouvre window and Stronghold system.

### **Altair louvre gallery sets**

Description: Fully integrated louvre window system or component system for use with other manufacturer's frames.

For use with frames by other manufacturers, for example ALSPEC, G. JAMES and AWS.

## **2.6 ALTAIR LOUVRE WINDOW OPTIONS**

### **Powerlouvre**

Description: Automated operation control system for use with Altair louvre systems with concealed motor.

Motor and gearbox are concealed in the louvre head section, for use with Easyscreen and Innoscreen systems, or Altair component system. Suitable for out-of-reach locations or floor-to-ceiling feature windows. Control is possible via wall switches, remote control systems or integration into building management systems.

Electrical switches and wiring are not normally provided by Breezway, and should be included as work by the electrical subcontractor in *0902 Electrical design and install*.

### **Stronghold**

Description: Mechanical restraint system tested to AS 5203 for use within the Altair louvre system.

Designed for increased strength and safety for louvre window systems and compliant with fall prevention standards.

Blade retention system: Blades are retained in Stronghold clips by an acetal pin that passes through the clips, bearing and blade to mechanically retain the blade within the clip. Once installed, the pins cannot be removed without tools. Pins are visible on the inside/underside of the clips.

Blades can be toughened heat soaked glass or aluminium: 152 mm or 102 mm high.

Available as an option for use with the Easyscreen, Innoscreen and SL2 window systems or for installation into other manufacturer's framing systems.

## **2.7 INSECT SCREENS**

Insect screens are usually installed to the external face of frame. Make sure the louvre assembly is located so that when fully opened the louvre blades are clear of the insect screens and security grille, or document an appropriate restricted opening to prevent interference between the clips and the screen.

**Fixed screens**

General: Fixed screens fitted to the window frames with a clipping device that permits removal for cleaning.

**Retractable screens**

General: Proprietary retractable insect screen comprising aluminium frame and fibreglass mesh, fitted between the guide channels incorporated in the frame, and a retraction system including tension spring, nylon bearings, positive self-locking device, and plastic sealing strip at sill.

**Aluminium framed screens**

General: Aluminium extruded or folded box frame 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 free of distortion.

**2.8 SECURITY WINDOW GRILLES****General**

General: Provide proprietary metal security grilles, or operable screen and frame, fixed to the building structure with tamper resistant fastenings.

Security window grilles: To AS 5039.

AS 5039 acknowledges that the security window grilles described are not intruder proof. See the foreword to this standard. The dynamic impact, knifeshear, jemmy, pull and shear tests scheduled for compliance in AS 5039, Table 1 are described in AS 5041.

**Altair louvre security bar system**

Description: Slotted extruded aluminium security jambs with horizontal aluminium bars.

Application: Fixed louvre gallery set for 152 mm blades.

Breezway offers security bar systems, security screens are supplied by others. Breezway security bars are compatible with operable louvre galleries but not with fixed galleries. In the Easyscreen Window System, the security bars have a D shaped profile. In the Altair component system for other manufacturer's frames, the security bars have either a D shaped profile or a round profile. Altair louvre gallery sets snap into Altair security jambs.

**2.9 ALUMINIUM FRAME FINISHES**

Altair components are available in three different surface finishes: Anodised and standard or high performance powder coating. Powder coatings are polyester coatings from leading powder suppliers applied up to a thickness of 50 µm. Delete finish not required.

**Powder coatings**

Service condition category to AS 3715: [complete/delete]

AS 3715 clause 1.4 describes service condition categories for powder coated aluminium architectural applications based on the severity of the environment. Select from the following atmospheric environments:

- Category 3 – Exterior mild to moderate.
- Category 4 – Tropical.
- Category 5 – Exterior severe.

Categories 1 and 2, applicable to interior environments, are not included in this standard. See also NATSPEC TECHnote DES 010 on atmospheric corrosivity categories for ferrous products.

Coating performance: [complete/delete]

Select from Standard or High performance.

Colour: [complete/delete]

Consult the manufacturer's colour charts.

Gloss level: [complete/delete]

Gloss level: e.g. Texture, Matt, Satin or Gloss. Not all gloss levels are available across the colour ranges. Most powder coat colours and gloss levels from the Interpon and Dulux ranges are possible.

**Anodised**

Standard: To AS 1231.

Thickness:



- 25 microns generally.
- Security bars: 15 microns.

Breezway supplies anodising to 25 microns for all aluminium extrusions except the Altair security bars which are anodised to 15 microns to achieve colour matching.

Colour: [complete/delete]

Select from the manufacturer's available colour range.

### Fasteners

Requirement: [complete/delete]

Comply with the louvre window manufacturer's recommendations and AS 2047 (for residential and commercial building) and AS 4055 (for houses) for fastener requirements.

Allow for the following requirements to suit fixing substrate:

- For aluminium – use aluminium or 300 series stainless steel fasteners.
- For galvanized steel – use hot-dipped galvanized steel or 300 series stainless steel fasteners.
- For stainless steel – use 300 series stainless steel fasteners.

Size and type: To suit louvre window unit size and wind loading conditions.

### 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.

### Extruded gaskets and seals

General: Provide seals, as documented.

Type: Non-cellular (solid) elastopressive seals.

Location or function: [complete/delete]

Material:

- Rubber products (neoprene, ethylene propylene diene monomer (EPDM) or silicone rubber): To BS 4255-1.
- Flexible polyvinyl chloride (PVC): To BS 2571, E type compounds, colour fastness grade B.

### Altair weatherstrips

Description: Altair component weatherstrips.

Required for compliance with AS 2047 water penetration resistance requirements. Altair weatherstrips, complete with seals, must be used in the head and sill for glass, aluminium and timber louvres to gain the manufacturer's performance warranty. They do not require notching to accommodate the louvre gallery.

### Altair louvre keylock

Description: Metal louvre keylock that locks Altair louvres in the closed position.

Low profile design, metal construction and mechanisms housed internally result in a strong, highly durable lock. The folding key design allows easy locking and unlocking even when situated right beside deep jambs or reveals.

Finish: Brushed chrome.

## 3 EXECUTION

### 3.1 PRE-INSTALLATION

#### General

Timber reveals: Prime all surfaces of timber reveals which are to be painted before fixing to aluminium frames.

### 3.2 INSTALLATION

#### Altair louvre window systems

Requirements: Install to the manufacturer's recommendations.

#### 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 glazing.

Temporary marking: Use a method which does not damage 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: Provide wheel cut edges without damage or blemishes and with minimum feather in locations exposed to direct sunlight.

### Louvre windows

General: Install louvre windows 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, joint sealant and pointing to prevent water penetrating the building between the window frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

### Fixing

General: Do not penetrate metal flashings with fixings.

Packing: Pack behind fixing points with durable full width packing.

Fastener spacing (nominal): 600 mm and maximum 150 mm from reveal ends.

Fasteners: Conceal fasteners.

### Joints

Requirement: Make accurately fitted tight joints so that fasteners and fixing devices such as pins, screws, adhesives and pressure indentations are not 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.

Temporary measures: [complete/delete]

State a particular method here, or delete to leave the choice of method to the contractor. See AS 2047 Appendix E (Informative) for information on on-site care.

### Trim

General: Provide mouldings, architraves, reveal linings, and other internal trims using materials and finishes matching the window frames. Make neat and clean junctions between frames and the adjoining building surfaces.

## 3.3 SECURITY WINDOW GRILLES

### General

Installation: To AS 5040.

### 3.4 COMPLETION

#### Repair of finish

Polyester or fluoropolymer coatings: Contact supplier for approval to apply touch up products, otherwise replace damaged material.

#### Cleaning

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.

#### Warranties

Louvre window assemblies: Provide Breezway's published product warranties.

Use only where warranties extending beyond the defects liability period are available for the particular system. Insert the required warranty period and terms, which should be negotiated beforehand. If the warranty is in the form of separate material and installation warranties, require the signatures of both manufacturer and installer.

Altair louvre systems are designed to meet the requirements of AS 2047. Refer to Breezway Louvre Windows Design Manual for maximum variations for non-cyclonic and cyclonic wind classifications and water penetration. Exceeding these constraints will void any Warranty.

For residential or commercial building classes, or for housing outside the limitations of AS 4055 consult Breezway with specific project requirements to determine the relevant performance warranty constraints.

Breezway offers a warranty against defects for a period of 7 years (3 years on electrical components).

The form(s) required should be provided as part of the contract documentation.

Warranty: Provide a warranty on [complete/delete]

- Form of warranty: [complete/delete]

- Minimum period: [complete/delete]

If documenting warranties change this *Optional* style text to *Normal* style text.

Form of warranty: e.g. Against failure of materials and operation under normal environment and use conditions.

Minimum period: e.g. As offered by the manufacturer.

## 4 SELECTIONS

**Schedules** are a way of documenting a selection of proprietary or generic products or systems by their properties. Indicate their locations here and/or on the drawings. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

### 4.1 PERFORMANCE

#### Louvre window performance schedule

Property	A	B	C
Total system U-Value (W/m <sup>2</sup> .K)			
Total system SHGC			
Weighted sound reduction index (R <sub>w</sub> and R <sub>w</sub> + C <sub>tr</sub> )			
Visible transmittance (T <sub>vis</sub> )			
Reflectance (%)			
WERS Energy rating%: Heating			
WERS Energy rating%: Cooling			
AWA Compliance Certificate			
Water penetration resistance (Pa)			

Property	A	B	C
Fire-resistance level (FRL)			
Bushfire protection (BAL)			
Ultimate limit state (ULS) wind pressure (Pa)			
Serviceability limit state (SLS) wind pressure (Pa)			
Openable (free) area (m <sup>2</sup> )			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Total system U-Value (W/m<sup>2</sup>.K): Insert the thermal transmittance value used for determining NCC conformance, and calculated to BCA Spec J1.5a. These should be obtained from tests to NFRC 100. Select the product to fulfil design and compliance requirements. See NATSPEC TECHnote DES 015 on NCC energy efficiency.

Total system SHGC: Insert the solar heat gain coefficient value used for determining NCC compliance. These should be obtained from tests to NFRC 200. Select the product to fulfil design and compliance requirements.

Weighted sound reduction index: State the required rating to AS/NZS ISO 717.1. It is advisable to obtain the advice of an acoustic consultant on the selection of a R<sub>w</sub> or R<sub>w</sub> + C<sub>tr</sub> rating for sound transmission reduction. Refer to NATSPEC TECHnote DES 032 for information on airborne sound insulation. The NCC cites AS/NZS ISO 717.1 for testing of construction required to have a certain R<sub>w</sub> rating.

Visible transmittance (T<sub>vis</sub>): The visible light passing directly through the glass. The higher the T<sub>vis</sub>, the more daylight.

Reflectance %: A maximum value is often a council requirement. Refer to the NCC Glazing calculator [www.abcb.gov.au](http://www.abcb.gov.au). Delete if this requirement is more appropriately covered in **Glass schedule**.

WERS Energy rating: Star rating system operated by the Australian Window Association.

AWA Certificate of Compliance: Insert Required or Not required. The AWA Compliance Certificate will cover only those products that conform to AS 2047.

Water penetration resistance: e.g. 150 Pa.

Fire-resistance level (FRL): State the required level to AS 1530.4, delete or state Not applicable. See NATSPEC TECHnote DES 020 on fire behaviour of building materials and assemblies.

Bush fire protection: Fit screens and seals to AS 3959.

Ultimate and serviceability design wind pressure: Nominate the design wind pressures for the project to AS/NZS 1170.2 (for residential and commercial building) or AS 4055 (for housing, Class 1 and 10a buildings). AS 2047 Appendix A includes an informative guide to design wind pressure.

Openable area: State the openable area in m<sup>2</sup> to achieve NCC requirements for natural ventilation.

## 4.2 BREEZWAY LOUVRE WINDOW SYSTEMS

### Altair louvre window system schedule

Property	A	B	C
Product name			
Frame size			
Frame finish			
Frame colour			
Stronghold system			
Restricted opening			
Blade height and width (mm)			
Blade material			
Blade finish			
Number of bays			
Gallery clip size			
Gallery colour			

Property	A	B	C
Operator type			
Handle type			
Handle and clip colour			
Left or right handed			
Reveal/Flashing type and size			
Handle position/Additional handles			
Security bar system			
Keylock			
Offset mullions			
Couplers and cover plates			
Bay configuration			
Subframing			
Insect screen: Frame material			
Insect screen: Frame finish			
Insect screen: Mesh type			
Glazing			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product name: Select from Easyscreen, Innoscreen or SL2.

Frame finish: Select from Powder coat or Anodised.

Stronghold system: Required/Not required. Not available for timber blades. Compliance with fall prevention requirements is available using the Stronghold system and/or restricted openings.

Restricted opening: Required/Not required. Document the size, e.g. 80 mm or 100 mm.

Blade height and width (mm): Select height from 102 mm and 152 mm

Blade material: Select from Glass, Aluminium, Timber. See *Guidance* on glazing below.

Blade finish: Select from Powder coat, Anodised, Paint, Clear finish, No applied finish. Coordinate paint finishes using paint type designation from *0671 Painting*.

Operator type: Select from Powerlouvre, Manual or Fixed.

Handle type: Select from Standard, Low profile, Ring handle. or delete.

Handle and clip colour: Select from the manufacturer's range.

Security bar system: Yes/no.

Key lock: Yes/no.

Insect screen:

- Frame material: Aluminium, Timber or PVC-U.
- Frame finish: Powder coat, Anodised, Paint, Clear finish, No applied finish.
- Mesh type: e.g. Coated aluminium, Fibreglass, Corrosion resistant steel or Bronze. AS 3959 calls for screens of aluminium, corrosion resistant steel or bronze with a maximum aperture size of 2 mm to areas of medium bush fire attack category and excludes aluminium mesh in areas of high category. Fibreglass mesh is excluded in all bush fire areas.

Glazing: Document the glazing type and thickness in this schedule or **GLAZING, Glass schedule**. Documenting glazing in this schedule is suitable for projects where the same glass is used for each window or glazed door type. It can be documented by description, e.g. 6.38 mm clear laminated glass, or by reference to a designated glass type in the **Glass schedule**. The latter approach may be more appropriate for projects with a large number of glazing types, or glazing that requires more detailed specification.

Refer to the *Guidance* for **Glass schedules** and the NATSPEC TECHnote PRO 006 for guidance on glass types.

## Dualair™ secondary glazed louvre window schedule

Property	A	B	C
Primary frame			
Blade quantity			
Window width (including primary frame jamb)			
Inner gallery operator type			
Stronghold system			
Restricted opening			
Handle type			
Handle and clip colour			
Handle side			
Blade material			
Blade finish			
Keylock			
Insect screen: Frame material			
Insect screen: Frame finish			
Insect screen: Mesh type			
Glazing			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Primary frame: Select from Alspec McArthur EVO 150 mm or Hunter EVO Acoustic.

Blade quantity: Determines system's height.

Window width: Include Alspec jambs.

Inner gallery operator type: Powerlouvre or Manual.

Stronghold system: Required/Not required. Compliance with fall prevention requirements is available using the Stronghold option and restricted openings.

Restricted opening: Required/Not required.

Handle type: If the inner gallery is manually operated, select from Standard, Low profile, Ring. or delete.

Blade material: e.g. Glass, Aluminium. See *Guidance* on glazing below.

Blade finish: e.g. Powder coat, Anodised, Paint, Clear finish, No applied finish. Coordinate paint finishes using paint type designation from *0671 Painting*.

Keylock: Yes/No.

Insect screen:

- Frame material: Aluminium, Timber or PVC-U.
- Frame finish: Powder coat, Anodised, Paint, Clear finish, No applied finish.
- Mesh type: e.g. Coated aluminium, Fibreglass, Corrosion resistant steel or Bronze. AS 3959 calls for screens of aluminium, corrosion resistant steel or bronze with a maximum aperture size of 2 mm to areas of medium bush fire attack category and excludes aluminium mesh in areas of high category. Fibreglass mesh is excluded in all bush fire areas.

Glazing: Document the glazing type and thickness in this schedule or the **GLAZING, Glass schedule**. Documenting glazing in this schedule is suitable for projects where the same glass is used for each window or glazed door type. It can be documented by description, e.g. 6 mm clear toughened glass, or by reference to a designated glass type in the **Glass schedule**. The latter approach may be more appropriate for projects with a large number of glazing types, or glazing that requires more detailed specification.

Refer to the *Guidance* for **Glass schedules** and the NATSPEC TECHnote PRO 006 for guidance on glass types.

### 4.3 SCREENS

#### Screen schedule

Property	A	B	C
Product name			
Generic description			
Frame material			
Frame finish			
Mesh type			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product name: Delete if the selection is by generic performance.

Generic description: e.g. Flyscreen, Fire protection screen, Fall prevention screen. See the **Security window grille schedule** for security grilles. See BCA D2.24 and BCA 3.9.2.6 and BCA 3.9.2.7 for openable windows requiring fall prevention devices, screens and barriers.

Frame material: e.g. Aluminium, Timber or PVC-U.

Frame finish: e.g. Powder coat, Anodised, Paint, Clear finish, No applied finish. Coordinate paint finishes using paint type designation from *0671 Painting*.

Mesh type: e.g. Coated aluminium, Fibreglass, Corrosion resistant steel or Bronze. AS 3959 call for screens of aluminium, corrosion resistant steel or bronze with a maximum aperture size of 2 mm to areas of medium bush fire attack category and excludes aluminium mesh in areas of high category. Fibreglass mesh is excluded in all bush fire areas.

### 4.4 SECURITY WINDOW GRILLES

#### Security window grille schedule

Property	A	B	C
Product name			
Generic description			
Material			
Finish			
Hinge: Material			
Hinge: Fixing			
Hardware			

A, B, C: These designate each instance or type or location of the item scheduled.

Coordinate codes in the **Schedule** with those that appear on drawings.

Product name: Delete if the selection is by generic performance.

Generic description: AS 5039 clause 5.2 describes the three window screen security classification types as follows.

- Type I prevents an arm from passing through.
- Type II allows an arm but prevents bodily entry.
- Type III prevents insects passing through.

Material: Steel, Stainless steel or Aluminium.

Finish: See AS 5039 clause 6.2 for corrosion protection finishes.

Hinges:

Material: e.g. Aluminium, Stainless steel or Steel.

Fixing: Rivets or fastening devices. See AS 5039 clauses 6.7, and 6.8.

Hardware: See AS 5039 clause 6.5. If the manufacturer's standard lock and hardware are not acceptable, nominate hardware to comply. Coordinate with your hardware schedule.

### 4.5 GLAZING

#### Glass schedule

Property	A	B	C
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Property	A	B	C
Glass type			
Body tint colour			
Surface coating			
Surface coating: Colour			
Reflective coating: Colour			
Reflective coating: % reflectance			
Surface pattern			
Surface processing			
Surface processing: Pattern			
Surface processing: Colour			
Edge processing			
Number of edges processed			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

This schedule can be used for projects where a large number of different glass types are used, or the glazing requires more detailed specification than it is appropriate to include in the **Louvre window schedule**. If this schedule is used, coordinate it with the **Louvre window schedule** so that each glass type is associated with the relevant louvre window.

Glass type: Refer to NATSPEC TECHnote PRO 006 for guidance on glass types.

Body tint colour: e.g. Grey, Bronze, Green, Blue. Consult the manufacturer for colours available. Do not use body tinted wired (cast or polished) in locations exposed to the sun; fracture may result.

Surface coating: Describe by coating function, e.g. Solar control, Low emission, Self-cleaning, Decorative or by coating type, e.g. pyrolitic hard coating, vacuum sputtered or ceramic. Coatings are best described by the manufacturer's brand name.

- Self cleaning: Glass incorporating a coating which dissolves dirt (photoactiv) and sheds water (hydrophilic) using natural UV light and rain.

Surface coating: Colour: e.g. Grey, Bronze, Green, Blue. Consult the manufacturer for colours available.

Reflective coating: Colour: e.g. silver, gold, bronze. Consult the manufacturer for colours available. Reflective coatings may be available on either clear or body tinted float. Consult manufacturer.

Reflective coating: % reflectance: Consult the manufacturer for reflectances available. Delete if this requirement is more appropriately covered in the **Louvre window performance schedule**.

The manufacturer's brand name is often the best way to identify tinted, reflective, and patterned glasses.

Surface pattern: For patterned glass only. Proprietary patterns are best described by the manufacturer's brand name. Patterns include diffuse reflection (picture glass).

Surface processing: e.g. Screen printing with ceramic paint fused to the surface, Sandblasting, Acid etching.

Surface processing: Pattern: Proprietary patterns are best described by the manufacturer's brand name.

Surface processing: Colour: Applicable to screen printed patterns only.

Edge processing: Maximum width varies with thickness. Wired glass is restricted to rough arrised edges. Consult with processor. Common edge types and typical applications for each edge type are:

- None (clean cut, no processing).
- Flat ground: Silicone structural glazing with exposed edges.
- Flat polished: Silicone structural glazing where edge condition is critical for aesthetic purposes.
- Ground pencil edge: Mirrors, decorative furniture glass.
- Polished pencil edge: Mirrors, decorative furniture glass.
- Ground mitre: Silicone structural glazing.
- Bevelled: Mirrors, decorative furniture glass.
- Seamed edges: Normal edge treatment for heat-treated glass.



Refer also to NATSPEC TECHnote PRO 006 for more information on this topic.

Number of edges processed: e.g. 1 long, 2 long, All.

#### REFERENCED DOCUMENTS

**The following documents are incorporated into this worksection by reference:**

AS 1231	2000	Aluminium and aluminium alloys - Anodic oxidation coatings
AS 1288	2006	Glass in buildings - Selection and installation
AS 2047	2014	Windows and external glazed doors in buildings
AS/NZS 2208	1996	Safety glazing materials in buildings
AS/NZS 2904	1995	Damp-proof courses and flashings
AS 3715	2002	Metal finishing - Thermoset powder coating for architectural applications of aluminium and aluminium alloys
AS/NZS 4667	2000	Quality requirements for cut-to-size and processed glass
AS/NZS 4668	2000	Glossary of terms used in the glass and glazing industry
AS 5039	2008	Security screen doors and security window grilles
AS 5040	2003	Installation of security screen doors and window grilles
AS 5203	2016	Protection of openable windows/ fall prevention – Test sequence and compliance method
BCA 3.9.2.6	2019	Acceptable construction - Safe movement and access - Barriers and handrails - Protection of openable windows - bedrooms
BCA 3.9.2.7	2019	Acceptable construction - Safe movement and access - Barriers and handrails - Protection of openable windows - rooms other than bedrooms
BCA D2.24	2019	Access and egress - Construction of exits - Protection of openable windows
BS 2571	1990	Specification for general-purpose flexible PVC compounds for moulding and extrusion
BS 4255		Rubber used in preformed gaskets for weather exclusion from buildings
BS 4255-1	1986	Specification for non-cellular gaskets
ASTM C920	2018	Standard Specification for Elastomeric Joint Sealants
ASTM C1311	2014	Standard Specification for Solvent Release Sealants
NFRC 100	2017	Procedure for determining fenestration product U-factors
NFRC 200	2017	Procedure for determining fenestration product solar heat gain coefficient and visible transmittance at normal incidence
EN 14179		Glass in buildings - Heat soaking thermally toughened soda lime silicate safety glass
EN 14179-1	2016	Definition and description
ISO 11600	2002	Building construction - Jointing products - Classification and requirements for sealants

**The following documents are mentioned only in the Guidance text:**

AS ISO 717		Acoustics - Rating of sound insulation in buildings and of building elements
AS/NZS ISO 717.1	2004	Airborne sound insulation
AS/NZS 1170		Structural design actions
AS/NZS 1170.2	2011	Wind actions
AS 1530		Methods for fire tests on building materials, components and structures
AS 1530.4	2014	Fire-resistance tests for elements of construction
AS 2665	2001	Smoke/heat venting systems- Design, installation and commissioning
AS 3959	2018	Construction of buildings in bushfire prone areas
AS 4055	2012	Wind loads for housing
AS 5041	2003	Methods of test - Security screen doors and window grilles
BCA Section J	2019	Energy efficiency
BCA J1.5a	2019	Energy efficiency - Calculation of U-Value and solar admittance
NATSPEC DES 010	2015	Atmospheric corrosivity categories for ferrous products
NATSPEC DES 015	2007	NCC - BCA Volume One Energy efficiency provisions
NATSPEC DES 018	2008	Bushfire protection
NATSPEC DES 020	2018	Fire behaviour of building materials and assemblies
NATSPEC DES 032	2014	Airborne sound insulation
NATSPEC GEN 006	2007	Product specifying and substitution
NATSPEC GEN 024	2015	Using NATSPEC selections schedules
NATSPEC PRO 006	2013	Glass types used in buildings
NATSPEC TR 01	2018	Specifying ESD