



## BRANZ Appraised

Appraisal No. 877 [2014]

## CLEARVUE ROOFING SYSTEM

Appraisal No. 877 [2014]



### BRANZ Appraisals

Technical Assessments of products for building and construction.



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## Product

- 1.1 The ClearVue Roofing System is an exterior roofing system for use as porches or verandas over decks or patios or free standing, clear roofing structures.

## Scope

- 2.1 The ClearVue Roofing System is for the construction of open-sided, porch or veranda-type roof structures attached to buildings that are Risk Group SH as defined by NZBC Acceptable Solution C/AS1 and other attached or detached roof structures not subject to fire Group Number requirements.
- 2.2 The ClearVue Roofing System is designed for use in NZS 3604 Wind Zones up to and including Extra High, and with a minimum roof pitch of 3° and maximum roof pitch of 30°.

## Building Regulations

### New Zealand Building Code (NZBC)

- 3.1 **In the opinion of BRANZ, the ClearVue Roofing System if designed, installed, used and maintained in accordance with the statements and conditions of this Appraisal will meet the following provisions of the NZBC:**

**Clause B1 STRUCTURE:** Performance B1.3.3, B1.3.2 and B1.3.4 for the relevant physical conditions of B1.3.3 being self-weight, snow, wind, and impact [i.e. B1.3.3 (a), (g), (h), and (j)]. The ClearVue Roofing System meets these requirements. See paragraphs 8.1 - 8.5.

**Clause B2 DURABILITY:** Performance B2.3.1 (b) 15 years. The ClearVue Roofing System meets these requirements. See paragraph 9.1.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. The ClearVue Roofing System meets this requirement and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

## Technical Specification

- 4.1 Components of the ClearVue Roofing System are supplied by PSP Limited include:
- **ClearVue Sheets** - The sizes given below are stocked as standard lengths, however lengths up to 6 m are available on indent.
    - 6 mm thick acrylic panels, clear or grey in colour with dimensions of either 3700 mm x 586 mm or 5100 mm x 586 mm.
    - 8 mm thick acrylic panels, clear or grey in colour with dimensions of either 3700 mm x 736 mm or 5100 mm x 736 mm.
  - **Aluminium Extrusions** - The sizes given below are stocked as standard lengths, however lengths up to 6 m are available on indent.
    - ClearVue Glazing Bottom Rail - in 3.7 m and 5.1 m lengths.
    - ClearVue Glazing Cover Rail - in 3.7 m and 5.1 m lengths.
    - ClearVue Glazing Middle Rail - in 3.7 m and 5.1 m lengths.
    - ClearVue F Profile - for 6 mm thick panels in 3.7 m and 5.1 m lengths.
    - ClearVue F Profile - for 8 mm thick panels in 3.7 m and 5.1 m lengths.
    - ClearVue Span Bar - in 3.7 m and 5.1 m lengths.
  - **Aluminium Components**
    - ClearVue Glazing Spanbar End Cap - for 6 mm and 8 mm thick panels.
    - ClearVue Glazing Spanbar Bottom Split End Cap.
    - ClearVue Glazing Spanbar Top Split End Cap - for 6 mm thick panels.
    - ClearVue Glazing Spanbar Top Split End Cap - for 8 mm thick panels.
    - ClearVue Glazing End Cap - for 6 mm thick panels.
    - ClearVue Glazing End Cap - for 8 mm thick panels.
  - **Other Components**
    - ClearVue Glazing Gasket - in 15 m and 21 m lengths.
    - ClearVue Span Bar U Bracket - 3 mm thick, grade 316 stainless steel.
    - ClearVue Span Bar Rafter Angle Bracket - 3 mm thick, grade 316 stainless steel.
    - ClearVue Foam Flashing Tape - 20 mm x 15 mm white, self-adhesive foam tape.
    - Butyl Rubber Tape.
    - Assorted grade 316 stainless steel fixings.
- 4.2 Components of the ClearVue Roofing System supplied by others are:
- **Flashings**
    - Flashings are folded from aluminium or galvanised steel. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 for material selection durability requirements if not otherwise specified.

## Packaging, Handling and Storage

- 5.1 Prior to installation the ClearVue sheets should be covered and stored horizontally on a flat surface. Stacking the panels vertically is not recommended. Other components of the system should be stored in a clean, dry area until installation.

## Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the ClearVue Roofing System. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, installation, use and maintenance contained within the Technical Literature and within the scope of this Appraisal must be followed.

## Design Information

### General

- 7.1 The ClearVue Roofing System can be constructed with either 6 mm thick or 8 mm thick sheets. The 6 mm thick sheets are for use with a maximum ClearVue Glazing Rail or Spanbar spacing of 600 mm, and the 8 mm sheets with a maximum spacing of 750 mm.
- 7.2 The minimum roof slope for the ClearVue Roofing System is 3°, and the maximum roof pitch is 30°.
- 7.3 There are three methods of installing the system. Option one is to use the ClearVue Spanbar, which is an aluminium rafter extrusion with an integrated clamping rail for the ClearVue Sheets. Option two is to use ClearVue Glazing Rails installed on top of, and parallel with, timber rafters. Option three is to use ClearVue Glazing Rails installed on top of, and perpendicular to, timber purlins. Option three allows for the rafter spacing beneath the purlins to be different to the spacing of the ClearVue Glazing Rails.
- 7.4 Timber members used in the construction of the ClearVue Roofing System must be minimum H3.2 treated timber. ClearVue aluminium extrusions must be separated from treated timber by the butyl rubber tape or with a DPC.
- 7.5 Flashing profiles and intersection details must be to a specific weathertightness design where not detailed in the Technical Literature.

### Structure

- 8.1 Tables 1, 2 and 3 are span tables giving the maximum allowable spans for the different configurations of the ClearVue Roofing System. They include spans for NZS 3604 Wind Zones up to and including Extra High, and snow loading up to 1.0 kPa.
- 8.2 In Tables 2 and 3 the purlins are 90 x 45 mm, MSG 8 on their flat. The fixing of the purlins to the rafters is one 14 g self-drilling type 17 screw 100 mm long. These fixings must meet the durability requirements of NZS 3604 Section 4.
- 8.3 The Spanbar brackets have been assessed as suitable for use up to the spans and in the Wind Zones given in Table 1, below.
- 8.4 Timber rafters may be connected to supporting framing using the connection details given in NZS 3604 Table 10.1 for rafters with the same loaded dimension.
- 8.5 Connection to the building and any additional structure required to support the ClearVue Roofing System should be in accordance with NZS 3604 or may require specific structural engineering design. This is outside the scope of this Appraisal.

### Impact Resistance

- 8.6 The ClearVue sheets have adequate resistance to impact.

### Durability

- 9.1 The components of the ClearVue Roofing System are expected to have a serviceable life of at least 15 years provided they are designed, used, installed and maintained in accordance with this Appraisal and the Technical Literature.

### Maintenance

- 10.1 The ClearVue Roofing System will not normally require maintenance. However, if damage occurs to any of the components of the system then replacement can be simply carried out to ensure the ongoing integrity. Dirt, lichen, moss and other such material should be cleaned from the roofing.
- 10.2 Precautions, when maintenance is being carried out, should be in accordance with the relevant Health and Safety requirements.

### Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to the ClearVue Roofing System from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

**Table 1: Maximum Allowable Spans - Rafter Configurations**

Rafter Type	Acrylic Thickness [mm]	Max Rafter Spacing [mm]	Maximum Span (m)				
			Wind Zone from NZS 3604:2011				
			Extra High	Very High	High	Medium	Low
Aluminium Span Bar	6.0	600	4.5	4.9	5.6	6.0	6.0
Aluminium Span Bar	8.0	750	4.0	4.4	5.0	5.4	5.4
90 x 45 Timber MSG 8	6.0	600	1.9	2.1	2.4	2.6	2.6
90 x 45 Timber MSG 8	8.0	750	1.7	1.9	2.1	2.3	2.3
140 x 45 Timber MSG 8	6.0	600	3.0	3.3	3.7	4.0	4.0
140 x 45 Timber MSG 8	8.0	750	2.6	2.9	3.3	3.6	3.6
190 x 45 Timber MSG 8	6.0	600	4.0	4.4	5.0	5.4	5.4
190 x 45 Timber MSG 8	8.0	750	3.6	3.9	4.5	4.8	4.8
240 x 45 Timber MSG 8	6.0	600	5.1	5.6	6.3	6.8	6.8
240 x 45 Timber MSG 8	8.0	750	4.5	5.0	5.7	6.1	6.1

**Table 2: Maximum Allowable Spans - Rafter and Purlin Configurations with 6 mm ClearVue Sheet**

Rafter Type	Max Rafter Spacing [mm]	Maximum Rafter Span and Purlin Spacing (m)					
		Wind Zone from NZS 3604:2011					
			Extra High	Very High	High	Medium	Low
140 x 45 Timber MSG 8	600	Max Rafter Span [m]	3.0	3.3	3.7	4.0	4.0
		Max Purlin Spacing [m]	1.0	1.2	1.3	1.4	1.4
190 x 45 Timber MSG 8	600	Max Rafter Span [m]	4.0	4.4	5.0	5.4	5.4
		Max Purlin Spacing [m]	1.0	1.2	1.3	1.4	1.4
240 x 45 Timber MSG 8	600	Max Rafter Span [m]	5.1	5.6	6.3	6.8	6.8
		Max Purlin Spacing [m]	1.0	1.2	1.3	1.4	1.4
140 x 45 Timber MSG 8	750	Max Rafter Span [m]	2.6	2.9	3.3	3.6	3.6
		Max Purlin Spacing [m]	1.0	1.2	1.3	1.4	1.4
190 x 45 Timber MSG 8	750	Max Rafter Span [m]	3.6	3.9	4.5	4.8	4.8
		Max Purlin Spacing [m]	1.0	1.2	1.3	1.4	1.4
240 x 45 Timber MSG 8	750	Max Rafter Span [m]	4.5	5.0	5.7	6.1	6.1
		Max Purlin Spacing [m]	1.0	1.2	1.3	1.4	1.4
140 x 45 Timber MSG 8	900	Max Rafter Span [m]	2.4	2.7	3.0	3.3	3.3
		Max Purlin Spacing [m]	1.0	1.2	1.3	1.4	1.4
190 x 45 Timber MSG 8	900	Max Rafter Span [m]	3.3	3.6	4.1	4.4	4.4
		Max Purlin Spacing [m]	1.0	1.2	1.3	1.4	1.4
240 x 45 Timber MSG 8	900	Max Rafter Span [m]	4.1	4.6	5.2	5.6	5.6
		Max Purlin Spacing [m]	1.0	1.2	1.3	1.4	1.4



**Table 3: Maximum Allowable Spans - Rafter and Purlin Configurations with 8 mm ClearVue Sheet**

Rafter Type	Max Rafter Spacing [mm]	Maximum Rafter Span and Purlin Spacing [m]					
			Wind Zone from NZS 3604:2011				
			Extra High	Very High	High	Medium	Low
140 x 45 Timber MSG 8	600	Max Rafter Span [m]	3.0	3.3	3.7	4.0	4.0
		Max Purlin Spacing [m]	0.8	1.0	1.3	1.4	1.4
190 x 45 Timber MSG 8	600	Max Rafter Span [m]	4.0	4.4	5.0	5.4	5.4
		Max Purlin Spacing [m]	0.8	1.0	1.3	1.4	1.4
240 x 45 Timber MSG 8	600	Max Rafter Span [m]	5.1	5.6	6.3	6.8	6.8
		Max Purlin Spacing [m]	0.8	1.0	1.3	1.4	1.4
140 x 45 Timber MSG 8	750	Max Rafter Span [m]	2.6	2.9	3.3	3.6	3.6
		Max Purlin Spacing [m]	0.8	1.0	1.3	1.4	1.4
190 x 45 Timber MSG 8	750	Max Rafter Span [m]	3.6	3.9	4.5	4.8	4.8
		Max Purlin Spacing [m]	0.8	1.0	1.3	1.4	1.4
240 x 45 Timber MSG 8	750	Max Rafter Span [m]	4.5	5.0	5.7	6.1	6.1
		Max Purlin Spacing [m]	0.8	1.0	1.3	1.4	1.4
140 x 45 Timber MSG 8	900	Max Rafter Span [m]	2.4	2.7	3.0	3.3	3.3
		Max Purlin Spacing [m]	0.8	1.0	1.3	1.4	1.4
190 x 45 Timber MSG 8	900	Max Rafter Span [m]	3.3	3.6	4.1	4.4	4.4
		Max Purlin Spacing [m]	0.8	1.0	1.3	1.4	1.4
240 x 45 Timber MSG 8	900	Max Rafter Span [m]	4.1	4.6	5.2	5.6	5.6
		Max Purlin Spacing [m]	0.8	1.0	1.3	1.4	1.4

### External Moisture

- 12.1 The ClearVue Roofing System is for use over open areas. There is no weathertightness requirement for such roof systems but the ClearVue Roofing System provides an adequate weathertightness seal at glazing supports.
- 12.2 The weathertightness of structural connections to the building shall be in accordance with NZBC Acceptable Solution E2/AS1 paragraph 7.2.2. A weathertight seal of the roofing to the building should be made. Where flashings that flash under [behind] the wall cladding are used they shall be in accordance with NZBC Acceptable Solution E2/AS1 for the connection to the building. Other details are the responsibility of the designer. PSP provide details for the connection of the flashing to the roofing system.

### Water Supplies

- 13.1 The ClearVue Roofing System has not been assessed for roofs used for the collection of potable water.

## Installation Information

### Installation Skill Level Requirement

- 14.1 Installation of the ClearVue Roofing System can be carried out by any competent building contractor or home handyperson.

### Roof Installation

- 15.1 The ClearVue Roofing System must be installed in accordance with the Technical Literature.
- 15.2 ClearVue sheets will expand and contract up to 5 mm per metre depending on the temperature. This must be allowed for when calculating the panel length.

### Health and Safety

- 16.1 Care should be taken as different components of the ClearVue Roofing System may have sharp edges, especially if they have been cut. Suitable precautions should also be taken if working at heights, working with treated timber, or working with power tools.
- 16.2 At all times reliance must never be placed on the ClearVue sheets supporting loads generated by workers on a roof. These loads must always be supported with planks and the like and directly transferred to the supporting purlins, rafters and structure.

## Basis of Appraisal

The following is a summary of the technical investigations carried out.

### Tests

- 17.1 Structural testing of the ClearVue Roofing System was carried out by BRANZ to determine the wind face loading, span properties and impact resistance of the system.

### Other BRANZ Investigations

- 18.1 Structural and Durability assessments have been provided by BRANZ technical experts.
- 18.2 Observations have been made by BRANZ to assess the practicability of installation, and to examine completed installations.
- 18.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

### Quality

- 19.1 The manufacture of the components of the ClearVue Roofing System has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ undertakes an ongoing review of product quality on an inwards goods basis.
- 19.2 The quality of the components of the ClearVue Roofing System supplied is the responsibility of PSP Limited.
- 19.3 Architect/designers are responsible for the design of the ClearVue Roofing System.
- 19.4 The roof installer is responsible for the quality of construction of the ClearVue Roofing System in accordance with the Technical Literature.
- 19.5 Building owners are responsible for the maintenance of the ClearVue Roofing System.

### Sources of Information

- NZS 3604:2011 Timber-framed buildings.
- Acceptable Solutions and Verification Methods for New Zealand Building Code Clause E2 External Moisture, Ministry of Business, Innovation and Employment, Third Edition, February 2005 (Amendment 6, 14 February 2014).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



In the opinion of BRANZ, **ClearVue Roofing System** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **PSP Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

### Conditions of Appraisal

1. This Appraisal:
  - a) relates only to the product as described herein;
  - b) must be read, considered and used in full together with the Technical Literature;
  - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
  - d) is copyright of BRANZ.
2. **PSP Limited**:
  - a) continues to have the product reviewed by BRANZ;
  - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
  - c) abides by the BRANZ Appraisals Services Terms and Conditions.
  - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
  - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
  - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
  - c) any guarantee or warranty offered by **PSP Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **PSP Limited** or any third party.

For BRANZ



**Chelydra Percy**

Chief Executive

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21 November 2014