



BRANZ Appraised

Appraisal No. 969 [2023]

VELUX ROOF WINDOWS

Appraisal No. 969 [2023]

This Appraisal replaces BRANZ
Appraisal No. 969 [2017]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Velux Roof Windows are for use on roofs with a roof pitch between 15° and 60° to provide natural light into interior spaces within buildings. Velux Roof Windows can also be used to provide ventilation.

Scope

- 2.1 Velux Roof Windows (GGU and GGL series) have been appraised for use on buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and maximum floor plan area; and,
 - with roof structures designed and constructed to meet the requirements of the NZBC; and,
 - with masonry tile, pressed metal tile, and profiled metal roof cladding systems complying with NZBC Acceptable Solution E2/AS1; and,
 - with a roof pitch between 15° and 60°; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.2 Velux Roof Windows must be installed in accordance with the Technical Literature supplied by Velux New Zealand Ltd.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Velux Roof Windows, if designed, used, installed, and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC.

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.3. Velux Roof Windows meet the requirements for loads arising from snow, wind, impact [i.e. B1.3.3 (g), (h) and (j)]. See Paragraphs 8.1-8.3.

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years. Velux Roof Windows meet this requirement. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Velux Roof Windows meet these requirements. See Paragraph 12.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1 and F2.3.3 (a). Velux Roof Windows meet these requirements. See Paragraph 7.3.

Clause G4 VENTILATION: Performance G4.3.1 and G4.3.3. Velux Roof Windows contribute to meeting these requirements. See Paragraph 14.1.

Clause G7 NATURAL LIGHT: Performance G7.3.1 and G7.3.2. Velux Roof Windows contribute to meeting these requirements. See Paragraph 15.1.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 and H1.3.2E. Velux Roof Windows contribute to meeting these requirements. See Paragraph 16.1.

Technical Specification

4.1 Velux Roof Windows [GGU and GGL series] are a range of opening roof windows manufactured from preservative treated softwood frames and sashes. The interior faces are either finished with a clear water-based lacquer, semi-gloss paint (Timber finish – GGL Series) or encapsulated in a white 3 mm thick polyurethane (Everfinish – GGU Series). External cappings are 'grey friars' coloured PVDF lacquered aluminium.

4.2 The Velux Roof Window models covered by this Appraisal are:

- Roof Window - Everfinish GGU:
 - Size code range CK02-SK08, dimension range 550 x 780 mm-1,140 x 1,400 mm.
- Roof Window - Timber finish GGL:
 - Size code range CK04-SK06, dimension range 550 x 980 mm-1,140 x 1,180 mm.

Glazing

4.3 Velux Roof Windows are factory glazed using sealed double-glazed insulated glazing units (IGU's). The IGU's for all units are provided in one type signified by the number '76' contained within the product code on the packaging and on the IGU itself and on the spacer bar between the glazing panes. Refer to Velux New Zealand Ltd for advice or confirmation of glazing if necessary.

4.4 Type 76 units comprise a 4 mm thick toughened outer pane with a low emissivity (Low-E) coating, a 14 mm argon-filled cavity and a 6 mm thick inner pane of laminated toughened safety glass.

4.5 Glazing units carry CE marking to show compliance with BS EN 1279-5.

Flashings

4.6 EDW, EDL and EKW Flashings are a range of Kynar 500 painted aluminium flashings designed for use with Velux Roof Windows [GGU and GGL series].

Handling and Storage

- 5.1 Handling and storage of all components of Velux Roof Windows is under the control of the roof window installer. Components must be kept dry and under cover at all times. Care must be taken to avoid surface damage to the window components and flashings during the installation process.

Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
- Technical Manual - Velux Skylights and Roof Windows - New Zealand - Product: Roof Windows - April 2020.
- 6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

- 7.1 Velux Roof Windows are appraised for use on roofs of new and existing buildings with a roof pitch of between 15° and 60°. Installation of Velux Roof Windows on roofs of other pitches is outside the scope of this Appraisal and must be specifically designed in all instances.
- 7.2 Velux Roof Windows are suitable for most existing timber-framed roofs. For such installations, it is important that the roof structure is checked by a suitably qualified person for structural adequacy and suitability of the existing roof cladding.
- 7.3 Velux Roof Windows with '76' type glazing meet the safety glass requirements of NZS 4223.4 and may be installed at heights 5 m or more above floor level, see Paragraph 4.4. Refer to Velux New Zealand Ltd for advice or confirmation of type if necessary.
- 7.4 When installed on new roofs, whenever possible, the installation should be carried out concurrently with the roof cladding installation.

Structure

Wind

- 8.1 Velux Roof Windows are suitable for use in NZS 3604 Wind Zones up to, and including, Extra High.

Snow

- 8.2 Velux Roof Windows are suitable for use in areas where buildings are designed for a 1 kPa snow loading.

Point Loads

- 8.3 Velux Roof Windows have been assessed for point loads from AS/NZS 1170 for situations where supports should be placed over the surface when access is necessary.

Durability

Serviceable Life

- 9.1 Velux Roof Windows are expected to have a serviceable life of at least 15 years, provided they are maintained in accordance with this Appraisal and the Technical Literature.
- 9.2 On exposure to the weather, the coil coated aluminium may gradually lose the original surface finish. A faster reduction in both surface finish and overall serviceable life can be anticipated in severe industrial, geothermal and marine exposures.

Maintenance

- 10.1 The external surface of the glazing on roof windows can be cleaned from inside the building by pivoting the window through 180° and locking the window temporarily in this position.
- 10.2 The glazing and external surfaces of the Velux Roof Windows can be cleaned using a mild, non-abrasive glass cleaner along with a soft brush or other non-abrasive applicator to maintain the surface appearance.
- 10.3 Interior surfaces of Velux Roof Window [GGL] with pre-finished wood frames need to be inspected annually. As with any finished surface, it is subject to peeling, cracking or fading and will need to be re-finished/re-painted periodically. To re-finish/re-paint the roof window interior wood surfaces, prepare the roof window by removing the factory finish.
- 10.4 Keep all leaves clear from around roof windows. Ensure all exposed fasteners are secure. Inspect roofing and flashing for excessive wear or scratches on the roofing finish. Scratches in the cladding finish may be fixed with touch-up paint available through Velux New Zealand Ltd. Damaged claddings or flashings should be replaced as soon as they are detected.
- 10.5 The internal workings of the manual and the Integra electric operators are considered maintenance free over the lifetime of the roof window. Mechanisms are pre-lubricated and need no additional lubrication. The chains and hinges should be checked and lubricated as required.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to Velux Roof Windows from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and NZBC Acceptable Solution C/AS1, and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 12.1 Velux Roof Windows, when installed in accordance with this Appraisal and the Technical Literature, will prevent the penetration of moisture that could cause undue dampness or damage to building elements.

Internal Moisture

- 13.1 Experience with double-glazed roof windows has shown that in normal domestic or similar applications, the windows do not pose a significant risk of condensation when correctly installed.

Ventilation

- 14.1 Velux Roof Windows which contain an openable aperture will contribute to the compliance of a building with NZBC Clause G4. Consideration must be given to the 'net openable area' required for a particular space by the designer. NZBC Acceptable Solution G4/AS1 provides guidance on required ventilation.

Natural Light

- 15.1 Velux Roof Windows all contain transparent apertures which can contribute to the compliance of a building with NZBC Clause G7. Consideration of the amount of illuminance provided by the roof window for a particular space will depend on a wide range of factors unique to each installation e.g. room size, position, sun orientation, angle, etc. The use of Velux Roof Windows to supplement natural light from other sources is an Alternative Solution to NZBC Clause G7.

Energy Efficiency

Velux Schedule Method

- 16.1 The Velux Schedule Method may be used as an alternative solution to the Schedule Method contained in the NZBC Acceptable Solution H1/AS1 for housing, and other buildings up to 300 m² in floor area. The Velux Schedule Method requires that:
- the sum of the vertical glazing area and the Velux product area [Velux skylights, roof windows and sun tunnels] is 30% or less of the total wall area; and
 - the combined glazing area on the east, south, and west facing walls is 30% or less of the combined total area of these walls; and
 - the Velux product area is no more than 1.5 m² or 1.5% of the total roof area [whichever is greater]; and
 - the opaque door area is no more than 6 m² or 6% of the total wall area [whichever is greater]; and
 - the roof, wall, floor, window and door glazing R-values are in accordance with section 2.1.2 of NZBC Acceptable Solution H1/AS1.

Calculation and Modelling Methods

- 16.2 Alternatively, designers can use the calculation methods contained in NZBC Acceptable Solutions H1/AS1 or H1/AS2, or the modelling methods contained in NZBC Verification Methods H1/VM1 or H1/VM2. Contact Velux New Zealand Ltd for the relevant product R-values.

Installation Information

Installation Skill Level Requirement

- 17.1 The installation of Velux Roof Windows must be completed by installers trained by Velux New Zealand Ltd, or by competent, experienced tradespersons with an understanding of roof window installation and weathertightness details.

System Installation

- 18.1 Installation must be completed in accordance with instructions given in the Velux Roof Windows Technical Literature and this Appraisal.

Health and Safety

- 19.1 There are no particular health and safety issues relating to the installation or use of Velux Roof Windows. Installers must however observe safe working practices for working on roofs and at heights.

Basis of Appraisal

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

Tests

- 20.1 Velux Roof Windows have been subjected to dynamic weather resistance testing by a National Association of Testing Authorities [NATA] registered laboratory in Australia.

Investigations

- 21.1 Velux Roof Windows have been assessed for resistance to impact loads, snow loads and resistance to wind pressures [non-cyclonic regions]. These assessments have been reviewed by BRANZ and were found to be satisfactory.
- 21.2 An assessment was made of the durability of Velux Roof Windows by BRANZ experts.
- 21.3 The window units have been assessed for thermal resistance by BRANZ experts.
- 21.4 Site inspections have been carried out by BRANZ to assess fitness for purpose and the practicability of installation, and to assess in service performance.
- 21.5 Weathertightness detailing of the Velux Roof Windows has been assessed by BRANZ and found to be satisfactory. Instructions for installation of units and associated flashing components for different roof types have also been reviewed and found to be satisfactory.
- 21.6 The Technical Literature for Velux Roof Windows has been examined by BRANZ and found to be



satisfactory.

Quality

- 22.1 The manufacture of Velux Roof Windows 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 has taken note of British Board of Agrément [BBA] Certificate No. 08/4608 Product Sheet 1 which covers quality aspects associated with Velux Roof Windows. BRANZ has also taken note of ETA Denmark European Technical Assessment ETA-13/0764 of 14/10/2015 which covers Velux Flashings.
- 22.2 The quality of materials, components and accessories supplied to the market is the responsibility of Velux New Zealand Ltd.
- 22.3 Quality of installation on-site of Velux Roof Window components and accessories is the responsibility of the installer.
- 22.4 Designers are responsible for building design, and specification of natural lighting and ventilation systems.
- 22.5 Building owners are responsible for any required maintenance of Velux Roof Windows in accordance with the advice of Velux New Zealand Ltd.

Sources of Information

- AS 4285:1995 Skylights.
- AS/NZS 1170.0:2002 Structural design actions - Permanent, imposed and other actions.
- BS EN 1279-5:2005 Glass in building. Insulating glass units. Evaluation of conformity.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4218:2009 Thermal Insulation - Housing and small buildings.
- NZS 4223.4:2016 Code of practice for glazing in buildings - Dead, wind and snow loading.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



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In the opinion of BRANZ, **Velux Roof Windows** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Velux New Zealand Ltd**, 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. **Velux New Zealand Ltd:**
 - 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 **Velux New Zealand Ltd**.
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 **Velux New Zealand Ltd** or any third party.

For BRANZ

Claire Falck
Chief Executive
Date of Issue:
21 August 2023