



BRANZ Appraised

Appraisal No. 543 [2007]

HOMERIT PREMIUM SERIES PVC-U WINDOWS AND DOORS



Appraisal No. 543 (2007)

Amended 21 October 2013

BRANZ Appraisals

Technical Assessments of products for building and construction.

Homerit
PVC-U WINDOWS & DOORS

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BRANZ

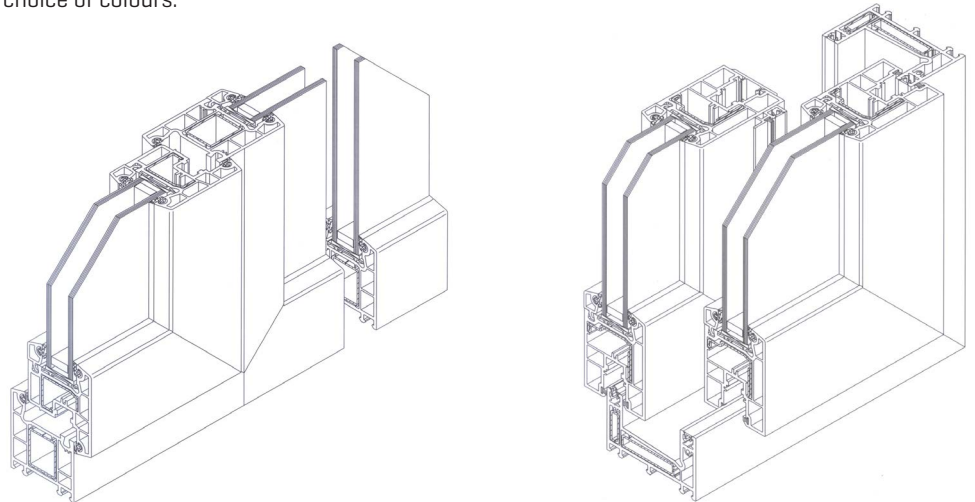
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Product

- 1.1 Homerit Premium Series PVC-U Windows and Doors are a range of single and double glazed window and door joinery units for use in residential and commercial buildings. The joinery units are available with fixed glazing or opening sashes. The opening sash window styles include Awning, Casement, Tilt and turn, and Sliding. Door styles include Hinged, French, Sliding, Tilt-and-turn and Tilt-and-slide.
- 1.2 The frames are supplied as white PVC-U or laminated at the point of manufacture with foil in a choice of colours.



Scope

- 2.1 Homerit Premium Series PVC-U Windows and Doors have been appraised for use as window and door joinery within the following scope:
 - designed and manufactured in accordance with NZS 4211 for weather-tightness and structural design; and
 - as an alternative to the windows and doors specified in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10; and,
 - in buildings situated in NZS 3604 and NZS 4211 defined building wind zones up to and including, High; and,
 - with Acceptable Solution claddings on buildings within the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - with weather-tightness of the building envelope in accordance with NZBC Acceptable Solution E2/AS1.



- 2.2 Homerit Premium Series PVC-U Casement Windows have been appraised for use as window joinery within the following scope:
- designed and manufactured in accordance with NZS 4211 for weather-tightness and structural design; and
 - as an alternative to the windows specified in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10; and,
 - in buildings situated in NZS 3604 and NZS 4211 defined building wind zones up to and including, Extra High; and,
 - with Acceptable Solution claddings on buildings within the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - with weather-tightness of the building envelope in accordance with NZBC Acceptable Solution E2/AS1.
- 2.3 Homerit Premium Series PVC-U Windows and Doors have also been appraised for compliance with NZS 4211 where they are outside the scope of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.1 [as the product is PVC-U, not aluminium] and/or the building is outside the scope limitations of NZBC Acceptable Solution E2/AS1 Paragraph 1.1 but is within the wind exposure limitations of NZS 4211. The building weather-tightness design and installation of the window and door joinery in these situations is subject to specific design and is outside the scope of this Appraisal.
- 2.4 Homerit Premium Series PVC-U Windows and Doors may be installed by builders and installers with experience of window and door installation following the NZ Investment and Trading Ltd installation instructions. Glazing on site must be completed by competent glaziers, following the glass specifications and instructions of NZ Investment and Trading Ltd.
- 2.5 Homerit Premium Series PVC-U Windows and Doors in sizes above those tested have also been appraised for compliance with NZS 4211 where the proprietary VEKA window system engineering design system, or a design engineer, is able to verify strength and deflection requirements are within the limitations of the applicable wind zone.

Building Regulations

New Zealand Building Code [NZBC]

- 3.1 In the opinion of BRANZ, Homerit Premium Series PVC-U Windows and Doors, if used, designed, 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 B1.3.4. Homerit Premium Series PVC-U Windows and Doors meet the requirements arising for loads from self-weight, wind and impact, i.e. B1.3.3(a), (h) and (j). See Paragraphs 9.1 to 9.3.
- Clause B2 DURABILITY:** Performance B2.3.1 (b), 15 years for the windows and doors and B2.3.1 (c), 5 years for the hardware. Homerit Premium Series PVC-U Windows and Doors meet these requirements. See paragraphs 10.1 to 10.4.
- Clause E2 EXTERNAL MOISTURE:** Performance E2.3.2. Homerit Premium Series PVC-U Windows and Doors meet this requirement. See Paragraphs 16.1 to 16.4.
- Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.2 and F2.3.3 (a). Homerit Premium Series PVC-U Windows and Doors meet these requirements. See Paragraph 14.1.
- Clause F4 SAFETY FROM FALLING:** F4.3.1. Homerit Premium Series PVC-U Windows and Doors meet this requirement. See Paragraph 15.1.
- Clause G4 VENTILATION:** Performance G4.3.1 and G4.3.3. Homerit Premium Series PVC-U Windows and Doors meet these requirements. See Paragraph 17.1.
- Clause G7 NATURAL LIGHT:** Performance G7.3.1 and G7.3.2. Homerit Premium Series PVC-U Windows and Doors meet these requirements. See Paragraph 18.1.
- Clause H1 ENERGY EFFICIENCY:** Performance H1.3.1 and H1.3.2. Homerit Premium Series PVC-U Windows and Doors contribute to meeting these requirements. See Paragraph 19.1



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

Technical Specification

- 4.1 Homerit Premium Series PVC-U Windows and Doors frames and sashes are fabricated in a variety of extruded PVC-U profiles using a 58 mm platform width with internal steel core profiles for additional rigidity. The finished profiles are of different cross sectional designs, both in sizing and format to allow for differing strength and design purposes. The 'S' [severe climate] formulation only is used to extrude PVC-U profile for the New Zealand market.
- 4.2 Coloured PVDF acrylic foils can be used to give a variety of coloured finishes to the profiles. These foils are laminated onto the surface when the PVC-U profile is manufactured. Colour stability testing has been assessed by BRANZ for the following colours: Mahogany, Golden Oak, Rustic Oak, Natural Oak, Dark Oak, White, Choco Brown, Charcoal Grey, Dark Brown, and Dark Green. Other colours in the available range have not been assessed and are outside the scope of this Appraisal.
- 4.3 Seals and gaskets used in the Homerit PVC-U Window and Door system are extruded EPDM gaskets.
- 4.4 Each joinery unit is assembled from PVC-U profiles selected according to the window or door sizing. Window and door accessories include fasteners, safety stays, friction stays, sash locks, and door hardware.
- 4.5 Each joinery unit bears the brand name, a rating showing the appropriate NZS 4211 wind zone, and an indication of air leakage level.
- 4.6 Timber reveals are attached to PVC-U frames in New Zealand prior to dispatch for installation. H3.1 treated timber reveals meet the 15 year durability performance requirements of NZS 3602.
- 4.7 For single glazing, the glazing must be selected in accordance with the requirements of NZS 4223, Part 3.
- 4.8 For double glazing, the glazing must be selected in accordance with the requirements of NZS 4223, Part 3 and AS/NZS 4666. In addition, insulated glass units must meet the performance requirements of IGU Standard EN 1279 Parts 1 to 6, and meet the thermal performance requirements of NZS 4218.

Handling and Storage

- 5.1 Glazed or unglazed frames should be transported with clean resilient packaging to minimise racking and prevent surface damage to the frames. Particular care should be taken to avoid damaging woodgrain finishes. For long distance transport, cardboard wrapping and spacers are recommended.
- 5.2 Once on site, frames must be carried securely, avoiding any heavy impact. Storage must be on edge, under cover and supported.
- 5.3 PVC-U has a high resistance to weather, corrosion, and most other materials commonly found on a building site.
- 5.4 Cement, plaster and sand do not affect PVC-U chemically, but could scratch the surface during handling if care is not taken. Drainage channels and glazing rebates must be kept clean to avoid blockages and fitting difficulties.
- 5.5 Tar and bituminous products must be kept off the surface of PVC-U to avoid staining. Solvent based products must not be allowed to come into contact with the surface of the PVC-U.

Technical Literature

- 6.1 Refer to the Appraisals listings on the BRANZ website for details of the current Technical Literature for Homerit Premium Series PVC-U Windows and Doors. The Technical Literature must be read in conjunction with this Appraisal. 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 Design of the PVC-U joinery units is carried out to meet the requirements of NZS 4211 and NZS 4223, Part 3.
- 7.2 The joinery must only be installed in buildings where there is a suitable means of attaching the joinery reveal to the wall frame opening and where a weather-tight joint can be practicably designed, made and sustained between the joinery unit and the wall cladding.
- 7.3 Where combinations of fixed lights and opening sashes are required, the height of the window will depend on the maximum allowable mullion height for the wind exposure and the mullion spacing selected. The joinery can be of any width [except where restricted by Paragraph 7.4], provided the width of any light is within the maximum allowable transom length and the maximum allowable sash width. In all cases, the glass installed must meet the structural requirements for the wind exposure selected.
- 7.4 Homerit Premium Series PVC-U Windows and Doors have been tested for compliance with NZS 4211. The following window and door types are restricted to the sizes listed below:

	Max width (mm)	Max height (mm)
Window Sash		
Top-hung	1108	1145
Casement	735	1470
Door Sash		
Tilt & Turn	850	2000
Tilt & Slide	1190	2000

For casement windows see Wind Zones Paragraph 9.2.

Note: The above restricted window and door types can be used at sizes up to 10% longer or 15% greater in total area only where profile strength and glass specification are subject to specific design. Windows and doors beyond this size allowance are also subject to specific design.

- 7.5 From a design point of view, it is recommended that NZ Investment and Trading Ltd be consulted for design information and recommendations on window size, configuration, and glass requirements.
- 7.6 Designers will need to obtain the approval of proprietary cladding system manufacturers when incorporating Homerit Premium Series PVC-U Windows and Doors into their building designs.

Joinery Security

- 8.1 The design of the PVC-U joinery units is such that when closed, sashes cannot be readily opened from the outside by, for example, the insertion of a thin blade.

Structure

- 9.1 Opening sashes meet the torsional strength requirements of NZS 4211, Paragraph 11.

Wind Zones

- 9.2 The joinery is suitable for use in all Wind Zones of NZS 3604 and NZS 4211, up to and including High, with the exception of Homerit Casement Windows only, which have been assessed as suitable for use in all Wind Zones of NZS 3604 and NZS 4211, up to and including Extra High.

Ease of Operation

- 9.3 Sashes fitted with Homerit Windows hardware meet the opening force requirements of NZS 4211, Paragraph 7 and can be opened without difficulty.



Durability

Serviceable Life

- 10.1 The Homerit white PVC-U joinery profiles and associated EPDM gaskets and seals are expected to remain serviceable under New Zealand conditions of use for a period of at least 15 years, if installed and maintained in accordance within the specifications of NZ Investment and Trading Ltd. Over time, some loss of gloss, and some colour fade may affect the surface appearance of the PVC-U profile.
- 10.2 Coloured PVDF acrylic foils laminated onto the PVC-U profiles can also be expected to remain serviceable for at least 15 years. Over time, some loss of gloss and some colour fade may affect the surface appearance of the foil.
- 10.3 During the life of the joinery, components such as hardware fittings and seals may need to be replaced due to environmental exposure and damage.
- 10.4 Glazing installed in Homerit Premium Series PVC-U Windows and Doors is subject to the performance requirements of NZS 4223. Double glazing is also subject to the performance requirements of NZS 4223 and additionally AS/NZS 4666 and must also meet the IGU standard EN 1279, Parts 1 to 6. Glazing installed to the above requirements is expected to have a serviceable life of at least 15 years.

Maintenance

- 11.1 Homerit Premium Series PVC-U Windows and Doors must be regularly cleaned (at least annually) using warm water containing a mild household detergent to remove any grime, dirt and organic growth that may have accumulated and to maximise the life and appearance of the joinery. If proprietary cleaners are used on the glass, care must be taken to ensure that deposits do not discolour or damage the PVC-U surface or window seals. Organic solvents, particularly Acetone and Toluene based solvents, and similar products must not be used for cleaning as they could damage the surface of the PVC-U profiles. NZ Investment and Trading Ltd should be consulted first to ascertain suitability before any solvent based product is used for cleaning.
- 11.2 Hardware should be periodically lubricated to minimise wear and to ensure smooth operation. Hardware can be readily replaced by NZ Investment and Trading Ltd if necessary.
- 11.3 Drainage channels should be cleaned periodically and kept clear of any blockages.
- 11.4 Care must be taken to avoid damage or discolouration of the PVC-U profiles when stripping paint from adjacent timber, for example, by means of a blowlamp or paint stripper.
- 11.5 PVC-U should not need painting at any time. Should painting be contemplated for any reason, only specialised paint may be used. The advice of NZ Investment and Trading Ltd must be sought before any painting is undertaken.
- 11.6 Re-glazing if required, must be undertaken by glazing tradespersons following NZ Investment and Trading Ltd installation instructions.

Movement to Place of Safety

- 12.1 Where Homerit Premium Series PVC-U Doors are used on escape routes, the relevant provisions of NZBC Clause C4 must be met. This may be achieved, for example, by meeting the relevant requirements of NZBC Acceptable Solutions C/AS1 – C/AS7, Part 3 for access, door fastenings, locking devices, direction of opening, degree and width of opening, hardware, and provision of vision panels.

Control of Internal Fire and Smoke Spread

- 13.1 Homerit Premium Series PVC-U Windows and Doors are not suitable for use as fire rated windows or where fire doors or smoke control doors are required by the NZBC.
- 13.2 Risk Group SH buildings have no surface finish requirements [Group Number]. Window components and individual doorsets in other Risk Groups are also exempt from the surface finish requirements. Refer to NZBC Acceptable Solutions C/AS2 – C/AS6, Paragraph 4.17.6 d) and 4.17.6 g).



Hazardous Building Materials

- 14.1 A world-wide, long history of use of PVC-U has demonstrated that it can be considered stable and non-hazardous. Other materials used in the fabrication of Homerit Premium Series PVC-U Windows and Doors, EPDM gaskets and seals, and conventional door and window hardware also demonstrate a long and non-hazardous history of use.

Human Impact Safety Requirements

- 14.2 Where it is specified by the designer, glazing must be supplied to comply with NZBC Acceptable Solution F2/AS1, Paragraph 1.0.

Safety

Safety from Falling

- 15.1 Where it is specified by the designer, Homerit Premium Series PVC-U Windows and Doors are supplied to comply with NZBC Acceptable Solution F4/AS1, Paragraph 2.0.

External Moisture

General

- 16.1 Homerit Premium Series PVC-U Windows and Doors, when installed in accordance with the Technical Literature and installation detailing, perform similarly to and are an Alternative Solution to the windows and doors specified in NZBC Acceptable Solution E2/AS1. Homerit Premium Series PVC-U Windows and Doors, when correctly installed, prevent the penetration of moisture that could cause undue dampness or damage to building elements.
- 16.2 Buildings outside the scope of NZBC Acceptable Solution E2/AS1 must be the subject of specific weather-tightness design for the joinery installation details. The designer must develop these joinery installation details to meet their own requirements and the performance requirements of the NZBC. These details have not been assessed and are outside the scope of this Appraisal.
- 16.3 All window and door joinery must be installed using flexible flashing tapes and air-seals in accordance with NZBC Acceptable Solution E2/AS1, Paragraphs 9.1.5 and 9.1.6, or when used outside the scope of NZBC Acceptable Solution E2/AS1, specific weather-tightness design details must also follow these principles.

Air and Water Leakage

- 16.4 Homerit Premium Series PVC-U Windows and Doors comply with the air and water leakage requirements of NZS 4211, section 8 and 9. Air leakage rates for the joinery can reach the NZS 4211 air-conditioning rating. Water leakage ratings allow for their installation in NZS 3604 defined Wind Zones up to and including High with the exception of casement windows as noted in Paragraph 9.2.

Ventilation

- 17.1 If the joinery is installed in sufficient quantity or size with opening sashes to provide a net openable area of not less than 5% of the room floor area, and if they are located in exterior walls that enclose occupied spaces, they can be used to meet the ventilation performance requirements of the NZBC.

Natural Light

- 18.1 The joinery can be used to meet the performance requirements of the NZBC for natural light providing a sufficient number of joinery units are installed with an acceptable glazing area's transmittance value, and they are located correctly within exterior walls, along with acceptable interior surface reflectance's. NZBC Acceptable Solution G7/AS1 provides guidance for meeting the area, glazing transmittance value, location, and surface reflective requirements.

Energy Efficiency

- 19.1 Where Homerit Premium Series PVC-U Windows and Doors are supplied with double glazing units, and installed in accordance with this Appraisal, the joinery units will assist in meeting the performance requirements of NZBC H1.3.1 and H1.3.2.

Installation Information

Installation Skill Level Requirements

20.1 Installation of Homerit Premium Series PVC-U Windows and Doors must be carried out by builders and installers with experience of window and door installation in accordance with the instructions given in the Technical Literature and this Appraisal. Glazing on site must be completed by competent glaziers, following the glass specifications and fitting instructions of NZ Investment and Trading Ltd.

Joinery Installation

- 21.1 NZ Investment and Trading Ltd provides Technical Literature covering the installation details for the Homerit Premium Series PVC-U Windows and Doors. Information must also be obtained from either NZBC Acceptable Solution E2/AS1 and/or the building project contract documents.
- 21.2 The framed opening size must be large enough to give approximately 5 – 7.5 mm clearance all round between the wall frame and reveal liner. Installation of joinery may be carried out before or after the fixing of the cladding depending on the type of cladding and sealing or flashing system being used.
- 21.3 Sills must be set true and level and jambs plumb before fixing the joinery permanently in place. Packing must be provided between the joinery reveal and framing or substrate at the point of fixing to set the joinery frame in correct alignment. There must be no vertical or lateral pressures transmitted to the joinery frames from the building structure, cladding or packers. All packers must be in a sound condition suitable for supporting the appropriate mechanical fastener or fixing.
- 21.4 The installation of the joinery and associated flashings must be in accordance with the details provided in NZBC Acceptable Solution E2/AS1 or details of a specific design.
- 21.5 Appropriately specified windows and doors must be installed where required to comply with the requirements of Safety from Falling and Human Impact Safety.

Basis of Appraisal

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

Tests

- 22.1 Testing has been carried out on the joinery and meets the requirements of NZS 4211.
- This testing covered positive and negative deflection, operating force (static and moving), air infiltration (positive and negative), water penetration, ultimate strength, and torsional strength.
 - Test reports were reviewed by BRANZ experts and found to be satisfactory, subject to certain size limitations for some listed window and door types. [See Paragraphs 7.4 and 9.2.]
- 22.2 NZBC E2/VM1 testing to assess the weathertightness of the junction between the window and doors and typical cladding types has been conducted by BRANZ.
- 22.3 Opinions on the durability of the joinery components and a weather-tightness opinion have been given by BRANZ experts.
- 22.4 Site inspections have been carried out by BRANZ to assess the practicability of installation of the PVC-U joinery systems, and to examine completed installations for use and ease of operation.



Quality

- 23.1 The manufacture of the Homerit PVC-U profiles is certified to ISO 9001: 2000 by OQS Certification and Evaluation Ltd.
- 23.2 The manufacturer of the Homerit Premium Series PVC-U Windows and Doors has been examined by BRANZ including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 23.3 The quality control processes of NZ Investment and Trading Ltd in New Zealand have been assessed by BRANZ and found to be satisfactory.
- 23.4 NZ Investment and Trading Ltd is responsible for both the design and quality of the fabricated joinery supplied.
- 23.5 Building designers are responsible for the design of the building, and for the incorporation of the joinery into their design in accordance with this Appraisal.
- 23.6 Installers and glaziers are responsible for the quality of installation in accordance with the installation instructions of NZ Investment Trading Ltd.
- 23.7 Building owners are responsible for the maintenance of the joinery in accordance with this Appraisal.

Sources of Information

- NZS 3604: 2011 Timber-framed buildings.
- NZS 4211: 2008 Specification for performance of windows.
- NZS 4223: Part 3: 1999 Glazing in Buildings.
- AS/NZS 4666: 2000 Insulating Glass Units.
- IGU Standard EN 1279
- NZS 4218: 2004 Energy efficiency.
- NZS 3602: 2003 Timber and Wood-based Products for Use in Buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 [Amendment 5, 1 August 2011].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.





Amendments

Amendment No.1, dated 1 April 2008.

Paragraph 22.2 of this Appraisal has been amended to reflect New Zealand fabrication of Window and Doors units.

Amendment No.2, dated 10 June 2009.

This Appraisal has been amended to reflect installation by builders and competent window and door installers.

Amendment No.3, dated 24 February 2010.

This Appraisal has been amended to change the product name.

Amendment No. 4, dated 31 January 2012.

This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011, NZS 4211: 2008 and NZBC Acceptable Solution E2/AS1 Third Edition, Amendment 5.

Amendment No. 5, dated 9 August 2013.

This Appraisal has been amended to update clause changes as required by the introduction of NZBC Fire Clauses C1 – C6 Protection from Fire and A3 Building Importance Levels.

Amendment No. 6, dated 21 October 2013.

This Appraisal has been amended to correct reference Paragraph NZBC Acceptable Solution F4/AS1.





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28 February 2007

HOMERIT PREMIUM SERIES
PVC-U WINDOWS AND DOORS



In the opinion of BRANZ, **Homerit Premium Series PVC-U Windows and Doors** 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 **NZ Investment and Trading 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. **NZ Investment and Trading 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 **NZ Investment and Trading 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 **NZ Investment and Trading Ltd** or any third party.

For BRANZ

Peter Robertson

Chief Executive

Date of Issue:

28 February 2007