



BRANZ Appraised

Appraisal No. 517 [2019]

PROTECTOWALL® DPM MEMBRANE

Appraisal No. 517 [2019]

This Appraisal replaces BRANZ
Appraisal No. 517 [2013].



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 ProtectoWall® is a self adhesive damp-proof membrane [DPM], designed to be applied to the exterior face of basement retaining walls to prevent water vapour penetrating to the interior face in spaces where moisture may cause damage.
- 1.2 The product is supplied as self-adhering, cold-applied, polymer-rubber modified bitumen sheets in roll form.

Scope

- 2.1 ProtectoWall® has been appraised as a damp-proof membrane behind concrete masonry basement walls and under floor slabs complying with NZS 4229.
- 2.2 ProtectoWall® has also been appraised for use as a damp-proof membrane on buildings subject to specific design within the following scope:
 - where the design of the building will be the responsibility of the building designer; and,
 - with clean, sound, continuous substrates of insitu or precast concrete complying with NZS 3101 and AS/NZS 1170 or concrete masonry complying with NZS 4230 and 4210; and,
 - where the membrane is adequately protected against damage during backfilling and in service; and,
 - where subsoil drainage and free draining granular backfill has been placed behind basement walls.
- 2.3 The product must be installed by Marshall Innovations Limited Approved and Trained Installers.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 **In the opinion of BRANZ, ProtectoWall® if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:**
 - Clause B2 DURABILITY:** Performance B2.3.1 [a] not less than 50 years. ProtectoWall® meets this requirement. See Paragraph 10.1.
 - Clause E2 EXTERNAL MOISTURE:** Performance E2.3.3. ProtectoWall® meets this requirement. See Paragraphs 12.1 – 12.3.
 - Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. ProtectoWall® meets this requirement and will not present a health hazard to people.

Technical Specification

- 4.1 Materials supplied by Marshall Innovations Limited are as follows:
- **ProtectoWall®** - A self-adhering sheet waterproofing membrane system consisting of a tough fabric reinforcement laminated between two layers of SBS (styrene-butadiene-styrene) modified rubberized asphalt. ProtectoWall® is tacky on both sides of the membrane providing adhesion to the substrate and an adhesive face to hold the protection board in place. The membrane is 1.5 mm thick, and supplied in rolls 900 mm wide x 15 m long.
 - **Protecto Wrap #100 Primer** - A high-tack SBS rubber based primer for use on all surfaces (prior to the application of the membrane). Supplied in 1, 4 and 20 litre cans.
 - **Protecto Universal Water Based Primer** - A high tack water based primer for interior and exterior use on horizontal and vertical surfaces over polystyrene and ICF systems. Supplied in 4 and 20 litre cans.
 - **Protecto Wrap Detail Tape** - A conformable sheet membrane used for detailing around protrusions and footings. Supplied in 150 mm wide x 15 m long rolls.
 - **JS 160H Mastic** - A rubberized, adhesive, liquid membrane used to seal all terminations, around all penetrations in the membrane and over all mechanical fastenings. Supplied in 310 ml tubes.
 - **Pro-Drain 8** - A drainage/protection board used to protect the DPM from backfill material. Available in 1.2 m x 2.1 m sheets.

Handling and Storage

- 5.1 Handling and storage of all materials whether on or off site is under the control of the installer. Dry storage must be provided for all products and the membranes must be protected from sunlight and UV radiation. Rolls of membrane must be stored on end.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the ProtectoWall® membrane. 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

Substrate Design

- 7.1 Substrate design must be in accordance with the NZBC to a relevant standard, such as NZS 3101 for concrete and NZS 4210, NZS 4230 or NZS 4229 for concrete masonry.
- 7.2 The substrate must have a surface finish that is smooth, clean and free from defects or irregularities which may damage the membrane.

Control Joints

- 8.1 Where control or construction joints are formed in the substrate, Marshall Innovations Limited must be consulted for use of the membranes over these joints.

Backfilling and Drainage

- 9.1 The membrane must be protected against damage by the placement of a protection material between the membrane and the granular fill.
- 9.2 The minimum requirement for backfilling is that a granular, free-draining material is used with the top of the backfill capped with an impervious clay fill that may be covered with topsoil if required. The impervious capping and topsoil must slope at a minimum of 1:30 fall away from the wall.
- 9.3 A minimum 100 mm diameter subsoil perforated drainage pipe must be installed at the bottom of the wall. The pipe must be covered with a geotextile filter fabric, be laid at a minimum 1:200 fall and discharge to a drainage outlet. Provision for cleaning the pipe must also be provided.



Durability

Serviceable Life

- 10.1 ProtectoWall® is a suitable DPM material (modified bitumen sheet), therefore it is expected to have a serviceable life of at least 50 years provided it is installed and maintained in accordance with the Technical Literature and this Appraisal and is continually protected from sunlight and UV radiation.

Maintenance

- 11.1 Annual inspections must be made of the membrane top edge seal and protection, the backfill capping, and the drainage pipe to ensure all are functioning as originally designed.
- 11.2 If required, the drainage pipe must be cleared to remove any sediment or silt build-up. The slope of the backfill capping must be maintained at all times.

External Moisture

- 12.1 ProtectoWall® membrane, when installed in accordance with this Appraisal and the Technical Literature, will prevent water vapour from penetrating to the interior face of basement retaining walls in spaces where moisture may cause damage. The membrane has a vapour flow resistance of not less than 90 MN s/g.
- 12.2 The membrane self-adheres, and can be used to form sealed joints and to seal penetrations. The top edge of the membrane must be sealed to the wall as set out in the Technical Literature, and must be protected.
- 12.3 Building designers must ensure junctions with other membranes, such as at the floor/wall junction, form a waterproof joint. Junctions have not been assessed and are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

- 13.1 Installation of the ProtectoWall® membrane must be completed by Marshall Innovations Limited Trained and Approved Installers.

System Installation

Substrate Preparation

- 14.1 All surfaces must be checked to ensure they are dry, clean, smooth and free from sharp edges, loose or foreign materials, oil, grease or other deleterious material that may affect adhesion or may damage the membrane.

Priming

- 14.2 Prior to application of the membrane all prepared surfaces must be primed with Protecto Wrap #100 primer at a rate of 5 m² per litre, and must be touch dry before proceeding.

Membrane Installation

- 14.3 Starting at the top of the wall, the membrane must be installed in accordance with the Technical Literature. Sheet edges must be overlapped a minimum of 50 mm as marked on the sheets. End laps must be a minimum of 100 mm. Where a horizontal joint is unavoidable, care must be taken to ensure the joint is lapped with the upper sheet over the lower sheet. Internal and external corners must be detailed using Protecto Wrap Detail Tape as detailed in the Technical Literature.

Backfilling

- 14.4 Protection material must be installed before backfilling. Backfilling must commence immediately after the membrane is installed to ensure the membrane is not left exposed to sunlight or UV radiation.

Inspections

- 14.5 The Technical Literature must be referred to during the inspection of membrane installations by building consent authorities and territorial authorities.



Health and Safety

15.1 Safe use and handling procedures for the membrane system are provided in the Technical Literature.

Basis of Appraisal

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

Tests

16.1 The following testing of ProtectoWall® has been undertaken:

- Bursting strength, peel strength, tensile strength and elongation.
- Water absorption.
- Breaking strength, elongation, water resistance, low temperature flexibility, water vapour transmission, lap joint strength, crack bridging.
- Water resistance of Jiffy Seal 140/60.
- Fungus and micro-organism resistance, seam breaking strength, breaking strength, dimensional stability, waterproofness.
- Self sealability test on Jiffy Seal products.

Test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

17.1 A durability opinion has been given by BRANZ technical experts.

17.2 Practicability of installation has been assessed by BRANZ and found to be satisfactory.

17.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

18.1 The manufacture of the membrane and primer 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.

18.2 The quality of materials supplied to the market is the responsibility of Marshall Innovations Limited.

18.3 Quality of installation on site is the responsibility of the installer.

18.4 Designers are responsible for the building design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of Marshall Innovations Limited.

18.5 Building owners are responsible for the maintenance of the membrane systems in accordance with the instructions of Marshall Innovations Limited.

Sources of Information

- NZS 3101: 2006 Concrete structures standard.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4210: 2001 Masonry construction: Materials and workmanship.
- NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230: 2004 Design of reinforced concrete masonry structures.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



BRANZ Appraised
Appraisal No. 517 [2019]

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Appraisal No. 517 [2019]
14 June 2019

PROTECTOWALL® DPM
MEMBRANE



In the opinion of BRANZ, **ProtectoWall® DPM Membrane** 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 **Marshall Innovations 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. **Marshall Innovations 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 **Marshall Innovations 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 **Marshall Innovations Limited** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

14 June 2019



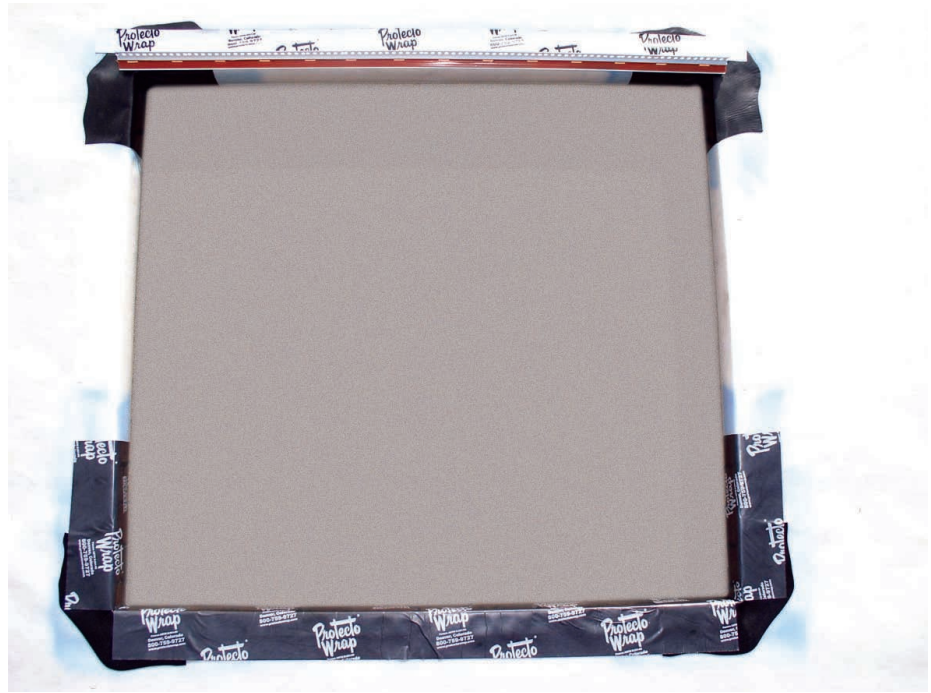
BRANZ Appraised

Appraisal No. 444 [2017]

PROTECTO SILL WINDOW SEALING SYSTEM

Appraisal No. 444 [2017]

This Appraisal replaces BRANZ
Appraisal No. 444 [2011]



BRANZ Appraisals

Technical Assessments of
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Product

- 1.1 The Protecto Sill Window Sealing System comprises Protecto Wrap Detail Tape, Protecto Wrap Sill Tape and Protecto Tak spray-on adhesive primer. The system is used around timber framed joinery openings as a secondary weather resistant barrier.
- 1.2 The system is installed into and around the framed joinery opening over the building wrap and exposed timber frame to cover both the face and edge of the opening framing. Protecto Wrap Sill Tape is also used at joinery heads to seal flashing upstands to the building wrap.

Scope

- 2.1 The Protecto Sill Window Sealing System has been appraised as a flexible flashing system for use around window and door joinery openings for buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - with wall cladding systems complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal that specifies a flexible flashing system; and,
 - with wall wraps compatible with the flashing tape; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.2 The Protecto Sill Window Sealing System has also been appraised as a flexible flashing system for use around window and door joinery openings for steel framed buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, with regards to building height and floor plan; and,
 - constructed with steel framing complying with the NZBC; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - with wall wraps compatible with the flashing tape and steel frame cladding systems; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the Protecto Sill Window Sealing System, 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 B2 DURABILITY: Performance B2.3.1 [b], 15 years and B2.3.2. The Protecto Sill Window Sealing System meets these requirements. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The Protecto Sill Window Sealing System contributes to meeting this requirement. See Paragraphs 7.1 - 7.4 and 11.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The Protecto Sill Window Sealing System meets this requirement and will not present a health hazard to people.

Technical Specification

4.1 System components and accessories supplied by Marshall Innovations Limited are:

- **Protecto Wrap Detail Tape** is a black, self-adhering, un-reinforced, conformable, modified SBS [styrene-butadiene-styrene] rubberised asphalt membrane tape. The tape is covered on one side by a silicone release paper and on the other side by a protective removable film. The tape is 1.0 mm thick and is supplied in rolls 150 mm wide and 15 m long.
- **Protecto Wrap Sill Tape** is a polyethylene backed, modified SBS rubberised asphalt adhesive membrane tape. The adhesive surface of the tape is covered with a silicone release paper. The tape is 0.5 mm thick and is supplied in rolls of 200, 150 and 50 mm wide and 30 m long.
- **Protecto Tak** is a solvent based spray-on adhesive primer, coloured blue. It is supplied in 369 g cans.

Handling and Storage

5.1 Handling and storage of all materials supplied by Marshall Innovations Limited, whether on or off site, is under the control of the installer. The Protecto Sill Window Sealing System components must be protected from damage and weather. Rolls must be stored under cover, in clean, dry conditions away from direct exposure to sunlight.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Protecto Sill Window Sealing System. 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 The Protecto Sill Window Sealing System meets the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.5 [b]. Refer to the Technical Literature for details of the underlays that are compatible with the system. The installation method for the Protecto Sill Window Sealing System is an alternative solution to the installation method shown within NZBC Acceptable Solution E2/AS1, Figure 72.
- 7.2 The use of flexible flashing systems around window and door joinery openings is critical to assist the overall weathertightness performance of window and door joinery installations.
- 7.3 The Protecto Sill Window Sealing System is designed to prevent air leakage and water penetration around window and door openings at framing junctions (e.g. at the sill trimmer and opening stud junction), and to keep any water that gets past the cladding, or through the joinery, from direct contact with the framing.
- 7.4 The Protecto Sill Window Sealing System is not designed to overcome poor detailing and workmanship of the window or door joinery installation. The system must not be considered in isolation, but be considered as part of the wall cladding system. The Protecto Sill Window Sealing System is designed to be used in conjunction with air seals and joinery flashing systems, not as a substitute.
- 7.5 When the Protecto Sill Window Sealing System is used in conjunction with LOSP [light organic solvent preservative] treated timber, the solvent from the timber treatment must be allowed to evaporate [generally at least one week] prior to the installation of the system.

Durability

- 8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement, and the ability to detect failure of the Protecto Sill Window Sealing System both during normal use and maintenance of the building.

Serviceable Life

- 8.2 Provided it is not exposed to the weather or ultra-violet light for a total of more than 90 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, the Protecto Sill Window Sealing System is expected to have a serviceable life equal to that of the cladding.

Maintenance

- 9.1 No maintenance is required for the Protecto Sill Window Sealing System. Regular checks, at least annually, must be made of the junctions between the joinery and wall cladding to ensure that they are maintained weathertight and that the primary means of weather resistance for the junction e.g. flashing, sealant, etc continues to perform its function, to ensure that water will not penetrate the cladding.

Prevention of Fire Occurring

- 10.1 Separation or protection must be provided to the Protecto Sill Window Sealing System from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 11.1 Where a cladding manufacturer specifies the use of generic flashing tapes around window and door joinery openings at framing junctions as part of their system, or they specify the use of flexible flashing tapes that comply with NZBC E2/AS1, Paragraph 9.1.5 [b], the Protecto Sill Window Sealing System may be used.

Installation Information

Installation Skill Level Requirements

- 12.1 Installation must always be carried out in accordance with the Protecto Sill Window Sealing System Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

General

- 13.1 The selected building underlay must be installed in accordance with the manufacturer's instructions, and must completely cover the joinery opening. The wrap is then cut on a 45° angle away from each corner of the opening so the flaps can be folded into the opening and secured to the interior face of the timber framing.
- 13.2 Before the Protecto Tak adhesive primer is applied, the substrate surfaces must be clean, dry and free from any surface contaminants such as dust and grease that may cause loss of adhesion. The Protecto Tak adhesive primer must be sprayed onto the wrap and exposed timber frame along the entire length of the sill trimmer, the inside and front face of the opening studs and into the top corners of the joinery opening.
- 13.3 A 300 mm length of Protecto Wrap Detail Tape is installed around all four corners of the opening, keeping the tape flush with the interior face of the opening and ensuring the exposed timber framing is covered. After removing the protective film, the tape that overhangs the front of the opening is 'moulded' onto the face of the building wrap to create an airtight seal at the framing junction.
- 13.4 The Protecto Wrap Sill Tape is cut in individual lengths to suit the opening of the sill. The Protecto Wrap Sill Tape is installed flush with the interior face of the opening and is applied along the entire length of the sill. The overhanging tape is folded onto the face of the building underlay.
- 13.5 Two 300 mm lengths of Protecto Wrap Sill Tape are cut for the jambs. The tape is installed flush with the interior face of the opening and tight into the sill/jamb junction. The overhanging tape is folded onto the face of the building underlay.
- 13.6 Protecto Wrap Sill Tape must not be stretched. To avoid wastage, the tape can be lapped 100 mm minimum onto itself without reducing the performance of the Protecto Sill system.
- 13.7 If Protecto Sill is exposed to the weather or UV light for more than 90 days, then it must be replaced with new material.

Installation Temperature

- 13.8 The Protecto Sill Window Sealing System must not be installed at temperatures of less than 10°C.

Inspections

- 13.9 The Technical Literature must be referred to during the inspection of Protecto Sill Window Sealing System installations.

Basis of Appraisal

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

Tests

- 14.1 Cyclic and static water pressure leakage tests in accordance with AS/NZS 4284 were carried out by BRANZ on cladding systems incorporating the Protecto Sill system. The test results were reviewed by BRANZ experts and found to be satisfactory.
- 14.2 The adhesion of Protecto Wrap Sill Tape and Protecto Wrap Detail Tape to black bituminous Kraft building paper complying with the requirements of NZBC Acceptable Solution E2/AS1, Table 23 and selected other synthetic wall underlays have been tested by BRANZ and found to be satisfactory.
- 14.3 Tests have been carried out on Protecto Wrap Sill Tape in accordance with ICC Evaluation Service Criteria for Flashing Materials, AC148. The results have been reviewed by BRANZ experts and found to be satisfactory.

Other Investigations

- 15.1 An assessment was made of the durability of the Protecto Sill Window Sealing System by BRANZ technical experts.
- 15.2 Site inspections were carried out by BRANZ to examine the practicability of installation.
- 15.3 The Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

- 16.1 The manufacture of the Protecto Sill Window Sealing System has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory.
- 16.2 Overseas certifications have been reviewed by BRANZ and found to be satisfactory.
- 16.3 The quality of supply to the market is the responsibility of Marshall Innovations Limited.
- 16.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and building wraps in accordance with the instructions of the designer.
- 16.5 The quality of installation, handling and storage on site is the responsibility of the installer in accordance with the instructions of Marshall Innovations Limited.

Sources of Information

- ICC Evaluation Service, Inc, AC148 Acceptable Criteria for Flexible Flashing Materials, July 2001.
- NZS 3604: 2011 Timber-framed buildings.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 [Amendment 7, 01 January 2017].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



BRANZ Appraised
Appraisal No. 444 [2017]

BRANZ Appraisal
Appraisal No. 444 [2017]
28 February 2017

PROTECTO SILL WINDOW
SEALING SYSTEM



In the opinion of BRANZ, **Protecto Sill Window Sealing 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 **Marshall Innovations 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.
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 - 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 **Marshall Innovations 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 **Marshall Innovations Limited** or any third party.

For BRANZ

Cheydra Percy

Chief Executive

Date of Issue:

28 February 2017