



BRANZ Appraised

Appraisal No.457 [2010]

BRANZ Appraisals
Technical Assessments of products
for building and construction

BRANZ
APPRAISAL
No. 457 (2010)

This Appraisal replaces BRANZ
Appraisal No. 457 (2005) issued
1 April 2005

VENTCLAD
VENTILATED CAVITY
SYSTEM

PBS Investments Ltd

P O Box 302 202
North Harbour
Auckland

Tel: 09 477 0960
Fax: 09 477 0961



BRANZ

BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand
Tel: +64 4 237 1170
Fax: +64 4 237 1171
www.branz.co.nz



Product

1.1 The VentClad Ventilated Cavity System is a cavity-based, flush-finished, monolithic plaster wall cladding. It is designed to be used as an external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

1.2 The VentClad Ventilated Cavity System consists of Eterpan fibre cement sheet fixed over timber battens to form a cavity. The cladding is finished with a jointing and trowel applied plaster finish system.

1.3 The system incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall framing with a nominal 20 mm cavity. The cavity allows for any occasional ingress of water that may get past the external skin to drain to the exterior of the building, and any remaining moisture to dry by evaporation.



Scope

2.1 The VentClad Ventilated Cavity System has been appraised as an external wall cladding 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,
- on buildings situated in NZS 3604 Building Wind Zones up to, and including, 'Very High'; and,
- detached and located 1 metre or more from the relevant boundary.

2.2 The VentClad Ventilated Cavity System is appraised for use with jointing and textured finish systems that comply with NZBC Acceptable Solution E2/AS1, Paragraph 9.7.10.2 and are covered by a valid BRANZ Appraisal for use as a jointing and textured finish system for the VentClad Ventilated Cavity System. One such system is included in this Appraisal. Refer to Paragraph 4.3.

2.3 The VentClad Ventilated Cavity System must only be installed on vertical surfaces (except for tops of sills and balustrades, which must have a minimum 10° slope and be waterproofed in accordance with the Technical Literature).

2.4 The system is appraised for use with aluminium window and door joinery that is installed with horizontal heads and sills and vertical jambs, in the plane of the wall. (Note: The Appraisal of the VentClad Ventilated Cavity System relies on the joinery meeting the requirements of NZS 4211 for the relevant Building Wind Zone.)

2.5 The cladding system must be installed in accordance with the details set out in the VentClad Ventilated Cavity System Technical Literature, refer to Paragraph 6.1.

2.6 Installation of components and accessories supplied by the jointing and trowel applied plaster finish system manufacturer must be carried out only by the jointing and trowel applied plaster finish system manufacturer's approved applicators.

(Note: The VentClad Ventilated Cavity System can be used to provide structural bracing and fire resistance rated construction, but these aspects have not been assessed by this Appraisal and are therefore outside its scope.)

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the VentClad Ventilated Cavity 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 B1 STRUCTURE: Performance B1.3.1, B1.3.2, and B1.3.4. The VentClad Ventilated Cavity System meets the requirements for loads arising from self-weight, earthquake, wind, impact and creep [i.e. B1.3.3 (a), (f), (h) (j) and (q)]. See Paragraphs 11.1 – 11.3.

Clause B2 DURABILITY: Performance B2.3.1 (b), not less than 15 years, B2.3.1 (c) and B2.3.2. The VentClad Ventilated Cavity System meets this requirement. See Paragraph 12.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The VentClad Ventilated Cavity System meets this requirement. See Paragraphs 16.1 – 16.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The VentClad Ventilated Cavity 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 System components and accessories for the VentClad Ventilated Cavity System supplied by PBS Investments Ltd are:

Eterpan Sheet

- Eterpan sheet is 7.5 mm thick, 1200 mm wide and either 2400, 2700 or 3000 mm long, and is manufactured from a cellulose cement formulation. The boards are formed, cut to length and then cured by high-pressure autoclaving. They are produced in flat, smooth surfaced sheet material form. After autoclaving, tapered rebates are created along both long edges of the sheet. The sheets are manufactured to conform to the requirements of AS/NZS 2908.2.

Accessories

- VentClad vented battens - 50 mm wide x 20 mm thick or 70 mm wide x 20 mm thick timber, with 20 mm wide x 5 mm deep machined grooves at 100 mm centres on both faces, treated to Hazard Class H3.1.
- Horizontal flashing – uPVC, available in 3000 mm lengths.
- Vertical control joint – 6 mm flexible control joint, uPVC, available in 3000 mm lengths.
- Window and door joinery head flashings – uPVC, available in 5000 mm lengths.
- Vermin flashing/cavity vent strip – uPVC, available in 5000 mm lengths.
- Head flashing – uPVC, available in 5000 mm lengths.
- Inter-floor movement joint flashing – 0.9 mm thick aluminium.

4.2 Accessories used with VentClad Ventilated Cavity System that are supplied by the cladding installer are:

- Building wrap – wrap complying with NZBC Acceptable Solution E2/AS1, Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall wraps.
- Building wrap support – polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the building wrap in place and preventing bulging of the bulk insulation into the drainage cavity. (*Note: mesh and wire galvanising must comply with AS/NZS 4534.*)

- Window and door trim cavity air seal – air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal suitable for use around window, door and other wall penetration openings.
- Flexible sill, head and jamb flashing tape – flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- Flexible sealant – sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.
- Eterpan sheet fixings – there are three different types for use in different situations. These are:
 - 60 x 2.8 mm grade 316 stainless steel ring-shanked, flat head nails.
 - 60 mm 10 gauge countersunk stainless steel screws.
 - 25 mm 8 gauge countersunk head stainless steel screws.
- Cavity batten fixings - 40 mm panel pins.
- Batten strap - galvanised mild steel fixing strap 25 mm wide.
- Waterproof membrane tapes – tapes covered by a valid BRANZ Appraisal for use as waterproofing membranes over tops of plastered balustrades, fixing blocks and the like.

Trowel Applied Plaster Finish System

4.3 The Uniplast flush finished jointing and trowel applied plaster finish system has been tested to BRANZ EM4 for use with the VentClad Ventilated Cavity System.

4.4 System components and accessories supplied by Uniplast Ltd for the Uniplast flush finished jointing and trowel applied plaster finish system are:

Primer

- Uniplast UV Primer Sealer is a milky white, water based latex primer. It is used to seal the face of the Eterpan fibre cement sheets and sheet joints prior to plastering. Uniplast UV Primer Sealer is supplied in 20 litre pails.

Plasters

- Uniplast Jointing Compound is a pre-mixed acrylic modified cement plaster. It is trowel applied to the joints of Eterpan sheets and is used as the bedding compound for the joint reinforcing mesh. Uniplast Jointing Compound is supplied in 25 kg bags.
- Uniplast Mesh Coat is a Portland cement-based plaster comprising sand, hydrated lime and mineral additives. It is trowel applied to the entire sheet surface to approximately 1.5 mm thick. Uniplast Mesh Coat is supplied in 25 kg bags.
- Uniplast Sponge Finishing Compound is a Portland cement-based plaster comprising sand, hydrated lime and mineral additives. It is trowel applied to the entire sheet surface to approximately 1.0 mm thick. Uniplast Sponge Finishing Compound is supplied in 20 kg bags.

Accessories

- Reinforcing mesh - alkali resistant fibreglass mesh with a nominal mesh size of 4 mm x 4 mm and an approximate weight of 160 g/m². The mesh is supplied in rolls 65 mm and 200 mm wide.
- External corners - PVC slim line angles, available in 2400 mm lengths.

Paint System Specification

4.5 Dulux Acraprime water-based acrylic primer is used as a sealer coat on the Uniplast System. Dulux Acrashield is used as a finishing coat. The paint colour selected must have a light reflectance value (LRV) of 40% minimum regardless of gloss value.

Handling and Storage

5.1 Handling and storage of all materials supplied by PBS Investments Ltd or the building contractor, whether on site or off site, is under the control of the building contractor. Eterpan sheets must be stacked flat, off the ground and supported on a level platform. They must be kept dry at all times either by storing under cover or by providing waterproof covers to the stack. Care must be taken to avoid damage to edges, ends and surfaces. The sheets must always be carried on edge. uPVC flashings and profiles must be protected from direct sunlight and physical damage, and should be stored flat and under cover.

5.2 Cavity battens and other accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

5.3 Handling and storage of all materials supplied by the jointing and textured finish system manufacturer or the approved applicator, whether on site or off site, is under the control of the approved applicator. Dry storage must be provided on site for the fibreglass mesh and bags of plaster mix. Bags of plaster must be used within the designated shelf life from the date of manufacture.

Technical Literature

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

Design Information

Cavity Battens

7.1 The VentClad Ventilated Cavity System incorporates full-width horizontal battens. This system has been specifically tested to ensure compliance with the ventilation, drainage and drying requirements of NZBC Clause E2.

Framing

Timber Treatment

8.1 Timber wall framing behind the VentClad Ventilated Cavity System must be treated as required by NZS 3602.

Timber Framing

8.2 Studs must be provided at maximum 600 mm centres. Nogs must be fitted flush between the studs at 800 mm or 1200 mm centres.

8.3 Timber wall framing behind cavity battens where sheets are joined must be nominal 50 mm thickness (i.e. 45 mm minimum finished thickness).

8.4 Timber framing must comply with NZS 3604 or be to a specific design using NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604.

8.5 Timber wall framing and cavity battens must have a maximum moisture content of 24% at the time of the cladding application. (Note: If Eterpan sheets are fixed to framing with a moisture content of greater than 24% problems can occur at a later date due to excessive timber shrinkage.)

Eterpan Sheet Set Out

8.6 Eterpan sheets must be installed vertically. All vertical Eterpan sheet edges must be supported and fixed through the cavity battens to the wall framing. Horizontal sheet edges must be supported by horizontal VentClad battens as described in the Technical Literature. At the base of the wall, the sheets must hang 50 mm below the supporting framing.

8.7 Additional framing may be required at soffits, internal and external corners and window and door openings for the support and fixing of sheet edges.

General

9.1 Punchings in the cavity vermin flashing provide a ventilation opening area of at least 1000 mm² per lineal metre of wall in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3(b).

9.2 At ground level, the bottom edge of Eterpan fibre cement sheets must be kept clear of paved surfaces, such as footpaths, by a minimum of 100 mm and unpaved surfaces by 175 mm in accordance with NZBC Acceptable Solution E2/AS1, Table 18. The ground clearances to finished floor levels as set out in NZS 3604 must be adhered to.

9.3 At balcony, deck or low pitched roof/wall junctions, the bottom edge of the VentClad Ventilated Cavity System must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.6.

9.4 Unlined gables and walls must incorporate a rigid sheathing or air barrier that meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. Where rigid sheathings are used, the Eterpan sheet fixing length must be increased by a minimum of the thickness of the sheathing.

9.5 Where the VentClad Ventilated Cavity System abuts other cladding systems, the designer must detail the junction to meet their own requirements and the performance requirements of the NZBC. These details are outside the scope of this Appraisal.

Control Joints

10.1 Control joints must be constructed in accordance with the Technical Literature, and be provided as follows:

- Vertical control joints – at maximum 5.4 m centres; aligned with any control joint in the structural framing; where the system abuts different cladding types, or where the system covers different structural materials.
- Horizontal control joints – at inter-storey floor levels and at maximum 5.4 m centres.

(Note: Horizontal and vertical control joints must be located over structural supports. The design of vertical control joints where the system abuts different cladding types is outside the scope of this Appraisal and is the responsibility of the designer – see Paragraph 9.5.)

10.2 Inter-storey junctions must be constructed in accordance with the Technical Literature. Inter-storey drained joints must be provided for walls over 2 storeys in height in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4(b).

Structure

Mass

11.1 The mass of the VentClad Ventilated Cavity System is approximately 13 kg/m² at equilibrium moisture content, therefore it is considered a light wall cladding in terms of NZS 3604.

Impact Resistance

11.2 The VentClad Ventilated Cavity System has good resistance to hard body impacts likely to be encountered in normal residential use. The likelihood of impact damage to the system when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers should be considered for vulnerable areas.

Wind Zones

11.3 The VentClad Ventilated Cavity System is suitable for use in all Building Wind Zones of NZS 3604 up to, and including, Very High.

Durability

Serviceable Life

12.1 VentClad Ventilated Cavity System installations are expected to have a serviceable life of at least 50 years provided that the jointing and trowel applied plaster finish system is maintained in accordance with this Appraisal to ensure the Eterpan fibre cement sheets remain dry in service. For the VentClad Ventilated Cavity System to meet the durability requirements of the NZBC, it must be finished within three months of installation of the Eterpan sheets.

Maintenance

13.1 Regular maintenance is essential for VentClad Ventilated Cavity System installations to continue to meet the NZBC durability performance provision and to maximise their serviceable life.

13.2 Annual inspections must be made to ensure that all aspects of the cladding system, including the jointing and trowel applied plaster finish system, flashings and any sealed joints remain in a weatherproof condition. Any cracks, damaged areas or areas showing signs of deterioration which would allow water ingress, must be repaired immediately. Sealant, paint coatings, trowel applied plaster finish system, flashings or the fibre cement sheets must be repaired in accordance with the relevant manufacturer's instructions.

13.3 Regular cleaning (at least annually) of the paint coating is recommended to remove grime, dirt and organic growth, to maximise the life and appearance of the coating.

13.4 Recoating of the paint system will be necessary throughout the life of the cladding system. The interval between recoats depends on the colour, orientation, coating formulation and the quality of the application, and will be at approximately 5-10 yearly intervals in accordance with the paint manufacturer's instructions.

13.5 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the cladding. *(Note: Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the VentClad Ventilated Cavity System.)*

Control of External Fire Spread

14.1 The VentClad Ventilated Cavity System, when finished with the Uniplast jointing and trowel applied plaster finish system is considered to meet the performance requirements of NZBC Clause C3.3.5 for use as an external wall cladding when restricted to:

- Single storey buildings 1 m or more from the relevant boundary for all purpose groups; or,
- Buildings with a building height less than 7 metres, 1 m or more from the relevant boundary, for all purpose groups other than SC and SD; or,
- Buildings containing purpose group SH, with a building height less than 10 m and located more than 1 m or more from the relevant boundary.
- Fully sprinklered buildings with a building height of less than 25 m, 1 m or more from the relevant boundary for all purpose groups other than SC, SD, SA and SR.

(Note: The building heights referenced in Paragraph 14.1 above are as defined in the Definitions Section of the Fire Safety Clauses of the NZBC. The scope of this Appraisal limits building heights to 10 m from ground to eaves in accordance with the limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1(a).)

Outbreak of Fire

15.1 The VentClad Ventilated Cavity System must be separated from chimneys and flues in accordance with the requirements of NZBC Acceptable Solution C/AS1 Part 9 for the protection of combustible materials.

External Moisture

16.1 The VentClad Ventilated Cavity System, when installed and maintained 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.

16.2 The cavity must be sealed off from the roof and sub-floor spaces to meet compliance with NZBC Clause E2.3.5.

16.3 The VentClad Ventilated Cavity System allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet compliance with NZBC Clause E2.3.6.

16.4 The details given in the Technical Literature for weather sealing are based on the design principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.

16.5 The use of the VentClad Ventilated Cavity System where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirement for joints, penetrations and junctions to remain weather resistant.

Internal Moisture

Water Vapour

17.1 The VentClad Ventilated Cavity System is not a barrier to the passage of water vapour, and when installed in accordance with this Appraisal will not create or increase the risk of moisture damage resulting from condensation.

Installation Information

Installation Skill Level Requirements

18.1 Installation of Eterpan sheets and accessories supplied by PBS Investments Ltd and the building contractor must be completed by tradespersons with an understanding of cavity construction and fibre cement sheet installation, in accordance with instructions given within the VentClad Ventilated Cavity System Technical Literature and this Appraisal.

18.2 Installation of components and accessories supplied by the trowel applied plaster finish system manufacturer must be completed by applicators approved by the trowel applied plaster finish system manufacturer.

System Installation

Building Wrap and Flexible Sill and Jamb Tape

19.1 The selected building wrap and flexible sill and jamb tape systems must be installed by the building contractor in accordance with the wrap and tape manufacturers' instructions prior to the installation of the cavity battens. Particular attention must be paid to the installation of the building wrap and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed timber wall framing in the opening is protected.

Cavity Battens

19.2 VentClad ventilated cavity battens must be installed vertically over the building wrap to the wall studs at maximum 600 mm centres, and horizontally over dwangs at 800 mm or 1200 mm centres. The battens are fixed in place with 40 mm panel pins.

Aluminium Joinery Installation

19.3 Aluminium joinery and associated head flashings must be installed by the building contractor in accordance with the Technical Literature. A nominal 10 mm gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.

Eterpan Fibre Cement Sheet Installation

19.4 Eterpan fibre cement sheets may be cut by scoring and snapping, hand guillotine, hand or power saw. Site edge recessing of cut sheets may be carried out using a tool specifically designed for that use, or by running an angle grinder down the edge of the sheet at an acute angle to the face. A minimum sheet edge thickness of 5 mm must be maintained. Holes and cut-outs may be formed by drilling a number of holes around the perimeter of the opening required and tapping out the centre with a hammer, or by using a hole saw. When power tools are used for cutting, grinding or forming holes, safety measures as set out in the Technical Literature must be undertaken because of the amount of dust generated.

19.5 Sheets must be dry prior to installation. It is not necessary for sheet edges to be pre-painted with a seal coat prior to fixing, as required by NZBC Acceptable Solution E2/AS1, Paragraph 9.7.3.

19.6 Prior to fixing sheets, a check must be made to ensure all sheet joints will be supported by framing. Sheets must be fixed through the cavity battens to the timber framing with 60 x 2.8 mm flat head, stainless steel ring shank nails.

19.7 Sheet edges at flush finished vertical and horizontal joints must be close butted together. Vertical control joints must be fixed so that an 8 mm gap is left between the sheets to allow for the fitting of a uPVC vertical control joint extrusion.

19.8 Sheets must not be fixed to inter-storey joists or blocking, and must have a 9 mm gap between sheet edges at this point to allow for shrinkage of the framing. This gap must be flashed with an inter-floor movement joint flashing to prevent moisture entry, and be covered with an architectural shape fixed to the upper sheet only.

19.9 Horizontal or vertical sheet joints, with the exception of vertical control joints, must not occur at window and door openings. Vertical sheet joints adjacent to openings must be a minimum of 200 mm from the jamb line of the opening.

Eterpan Sheet Fixings

19.10 Eterpan sheets must be fixed through the cavity battens to the wall framing at maximum 150 mm centres along sheet edges and in the body of the sheet along studs. The fixings are at 200 mm centres along dwangs. The fixings must be positioned a minimum of 12 mm from all sheet edges, and a minimum of 100 mm vertically and 50 mm horizontally from sheet corners. The fastener heads must not break the sheet surface.

Jointing and Trowel Applied Plaster Finish System

19.11 Uniplast components and accessories must be installed by Uniplast Ltd's approved applicators. Application of the jointing and trowel applied plaster finish system must be carried out at an ambient temperature of between 10°C and 30°C.

Finishing

19.12 The paint coating manufacturer's instructions must be followed at all times for application of the paint finish. The plaster must be completely dry before commencing painting.

Inspection

19.13 The Technical Literature must be referred to during the inspection of VentClad Ventilated Cavity System installations.

Health and Safety

20.1 Safe use and handling procedures for the components that make up the VentClad Ventilated Cavity System are provided in the relevant manufacturer's Technical Literature.

20.2 Cutting of Eterpan sheets must be carried out in well ventilated areas, and a dust mask and eye protection must be worn. When power tools are used for cutting, grinding or forming holes, safety measures as set out in the Technical Literature must be undertaken because of the amount of dust generated.

Basis of Appraisal

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

Tests

21.1 The following testing has been completed by BRANZ:

- The Uniplast jointing and trowel applied plaster finish system has been tested to BRANZ EM4 over 7.5 mm Eterpan sheet.
- Testing was carried out to determine the face load pressure resistance of Eterpan sheet.
- Testing was carried out to determine the performance of Eterpan fibre cement sheet under hard body impact.

21.2 Testing has been carried out by Window Engineering Consultants to BRANZ Draft E2/VM1 testing protocol. The testing was observed by a BRANZ technical expert. The results have been reviewed by BRANZ and found to be satisfactory. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of Acceptable Solution E2/AS1 for drained cavity claddings.

Other Investigations

22.1 Structural, durability and weathertightness opinions have been given by BRANZ technical experts.

22.2 Site inspections have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.

22.3 The manufacturer's Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

23.1 The manufacture of Eterpan fibre cement sheet by Eternit Guangzhou Co. Ltd has been assessed by BRANZ, including the methods for quality control. Details regarding the quality and composition of the materials used were obtained and found to be satisfactory.

23.2 The quality of materials, components and accessories supplied by PBS Investments Ltd are the responsibility of PBS Investments Ltd. The quality control system of PBS Investments Ltd has been assessed by BRANZ and found to be satisfactory.

23.3 The manufacture of the Uniplast jointing and trowel applied plaster coating system by Uniplast Ltd has been assessed by BRANZ, including the methods for quality control. Details regarding the quality and composition of the materials used were obtained and found to be satisfactory.

23.4 Quality of installation on site of components and accessories supplied by PBS Investments Ltd and the building contractor is the responsibility of the installer.

23.5 Quality of installation on site of the Uniplast jointing and trowel applied plaster finish system is the responsibility of the Uniplast Ltd approved applicator.

23.6 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and joinery, building wraps, flashing tapes, airseals, joinery head flashings, cavity battens and Eterpan fibre cement sheets in accordance with the instructions of PBS Investments Ltd.

23.7 Building owners are responsible for the maintenance of the VentClad Ventilated Cavity System in accordance with the instructions of PBS Investments Ltd.

Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2908.2: 2000 Cellulose-cement products - flat sheet.
- AS/NZS 4534: 2006 Zinc and zinc/aluminium-alloy coatings on steel wire.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3603: 1993 Timber structures standard.
- NZS 3604: 1999 Timber framed buildings.
- NZS 4211: 2008 Specification for performance of windows.
- BRANZ Evaluation Method No. 4 (2004) Test procedure for coating and jointing systems for flush finished fibre cement sheet cladding, June 2005.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005.
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition May 2007.
- The Building Regulations 1992, up to, and including August 2008 Amendment.



BRANZ

In the opinion of BRANZ, VentClad Ventilated Cavity 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 PBS Investments 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. **PBS Investments 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 **PBS Investments 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 **PBS Investments Ltd** or any third party.

For BRANZ

P Burghout
Chief Executive

Date of issue: 13 July 2010