



BRANZ Appraised
Appraisal No.467 [2005]

BRANZ Appraisals

**Technical Assessments of products
for building and construction**

**BRANZ
APPRAISAL
No. 467 (2005)**

Amended 30 August 2013

**TITAN® & EXOTEC®
FAÇADE PANEL
RAINSCREEN**

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Product

- 1.1 Titan® & ExoTec® Façade Panel Rainscreen is a negative expressed joint cladding system for specific design buildings of timber frame and timber frame infill construction.
- 1.2 The system consists of a rigid air barrier (RAB), timber battens to form a cavity, weather seal tapes, horizontal joint socket and Titan® and ExoTec® façade panels. The Titan® and ExoTec® façade panels are finished with a latex paint 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 façade panels from the rigid air barrier 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 Titan® & ExoTec® Façade Panel Rainscreen has been appraised as an external wall cladding system for buildings within the following scope:
 - Importance Level I to V buildings as defined in AS/NZS 1170, except that housing and communal residential buildings that fall within the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 are excluded; and,
 - constructed with timber framing, or timber frame infill complying with the NZBC; and,
 - subjected to maximum wind pressures for structural and weathertightness design of 1.0 kPa Serviceability Limit State (SLS) and 1.5 kPa Ultimate Limit State (ULS) where studs are at maximum 600 mm centres, and 3.0 kPa SLS and 4.5 kPa ULS where studs are at maximum 400 mm centres; and,
 - where the maximum seismic displacement under serviceability conditions is 10 mm; and,
 - where the cavity is drained and ventilated at every 10 m maximum; and,
 - with a rigid air barrier installed at the back of the cavity.
- 2.2 All buildings incorporating Titan® & ExoTec® Façade Panel Rainscreen must be subject to specific engineering and weathertightness design. Building designers are responsible for the frame design and for the incorporation of the Titan® & ExoTec® Façade Panel Rainscreen into their design in accordance with the instructions of James Hardie Building Products.
- 2.3 Titan® & ExoTec® Façade Panel Rainscreen must only be installed to vertical flat surfaces.
- 2.4 Window and door joinery installations in the Titan® & ExoTec® Façade Panel Rainscreen system must be subject to specific weathertightness design. Building designers are responsible for verifying the performance of the joinery installation details. (*The Appraisal of Titan® & ExoTec® Façade Panel Rainscreen relies on the joinery being the subject of specific engineering design with regards to wind load and deflection for the design wind pressure.*)
- 2.5 The system must be installed using detailing as set out in the Technical Literature.

(Note: The Titan® & Exotec® Façade Panel Rainscreen 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 outside its scope.)

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Titan® & Exotec® Façade Panel Rainscreen 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. Titan® & Exotec® Façade Panel Rainscreen meets the requirements for loads arising from self-weight, earthquake, wind, human impact and creep [i.e. B1.3.3 (a), (f), (h), (j) and (q)]. See Paragraphs 9.1 – 9.6.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years. Titan® & ExoTec® Façade Panel Rainscreen meets this requirement. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Titan® & Exotec® Façade Panel Rainscreen meets this requirement. See Paragraphs 14.1 – 14.6.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Titan® & Exotec® Façade Panel Rainscreen 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 Titan® & Exotec® Façade Panel Rainscreen which are supplied by James Hardie New Zealand Ltd are:

Fibre Cement Sheets

- Titan® façade panels are medium density fibre cement produced with a smooth face and are sealed with an acrylic primer on the front and back face and all four edges. The sheets are 9 mm thick and are available 1190 mm wide by 2400, 2700 and 3000 mm long.
- ExoTec® façade panels are high density compressed fibre cement produced with a smooth face and are sealed with an acrylic primer on the front and back face and all four edges. The sheets are 9 mm thick and are available 1190 mm wide by 1800, 2400 and 3000 mm long.
- RAB sheets are produced with a smooth face and are sealed with an acrylic primer on the front face and all four edges. The sheets are 5.5 mm thick and are available 1200 mm wide by 2400 and 3000 mm long.
- The Titan® & Exotec® façade panels and RAB sheets are manufactured from cellulose fibre cement. The sheets are formed, cut to length and then cured by high-pressure autoclaving. They are manufactured to meet the requirements of AS/NZS 2908.2.

Accessories

- Cavity batten packer – 3 mm thick by 40 mm wide fibre cement manufactured to meet the requirements of AS/NZS 2908.2. The packers are available in 1200 mm lengths.
- Aluminium socket – manufactured from Grade 5005 aluminium alloy. It is extruded 1.2 mm thick by 82 mm wide with a 9 mm wide T-lip located 45 mm down from the top edge. The socket is available in 2400 and 3000 mm lengths.

- Inseal® 3259 Tape – black, compressible, medium density PVC (Polyvinyl Chloride) closed-cell foam. The foam is coated on one face with pressure sensitive acrylic adhesive. The other face is covered by a silicone release paper. The tape is 1.5 mm thick and is supplied in rolls 50 and 80 mm wide and 50 m long.
 - Inseal® 3109/Butyl Tape – 1 mm thick black Butyl rubber membrane with 6 x 9 mm Inseal® 3109 adhered along each edge of one face with an acrylic adhesive. Inseal® 3109 is compressible, black, low density PVC foam. The tape is supplied in rolls 50 and 80 mm wide and 12 m long.
 - Cavity vent strip – uPVC, available in 2700 mm lengths.
- 4.2** Accessories used with Titan® & Exotec® Rainscreen which are supplied by the building contractor are:
- Cavity battens – nominal 50 mm wide by 25 mm thick (minimum finished size of 45 mm wide by 18 mm thick) timber treated to Hazard Class H3.1.
 - Timber packers – nominal 50 mm wide by 25 mm thick (minimum finished size of 45 mm wide by 18 mm thick) timber treated to Hazard Class H3.1.
 - Joinery flashings – folded from aluminium or galvanised steel to specific weathertightness design to suit the window or door trim opening. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 for durability requirements.
 - Horizontal drained joint flashing – folded from aluminium or galvanised steel to specific weathertightness design. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 for durability requirements.
 - Flexible sealant – sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.
 - RAB sheet fixings – 40 x 2.8 mm hot-dip galvanised flat head Hardiflex nails.
 - Cavity batten fixings – 40 x 2.8 mm hot-dip galvanised flat head Hardiflex nails.
 - Titan® façade panel fixings – 65 x 10g Grade 316 stainless steel wood screws, or 60 x 3.15 mm hot-dip galvanised or Grade 316 stainless steel, ring shank Hardiflex nails. (Note: The screw head must be minimum 9 mm diameter.)
 - ExoTec® façade panel fixings - 65 x 10g Grade 316 stainless steel wood screws. (Note: The screw head must be minimum 9 mm diameter.)

Paint System Specification

4.3 All exposed façade panel surfaces (including panel edges) must be finished with a latex exterior paint system complying with any of Parts 7, 8, 9 or 10 of AS 3730. Proprietary paint systems, including fillers have not been assessed, and are outside the scope of this Appraisal.

Handling and Storage

5.1 Handling and storage of all materials supplied by James Hardie New Zealand Ltd and the building contractor, whether on or off site, is under the control of the building contractor. The Titan® and Exotec® façade panels and RAB 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 providing waterproof covers to the stack. Care must be taken to avoid damage to edges, ends and surfaces. Sheets must always be carried on edge.

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.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Titan® & Exotec® Façade Panel Rainscreen. 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

Framing

Timber Treatment

7.1 Timber wall framing behind the Titan® & Exotec® Façade Panel Rainscreen system must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

7.2 Timber framing must be minimum No. 1 framing grade in accordance with NZS 3631. The building designer is responsible for the framing design using wind pressures calculated in accordance with AS/NZS 1170 considering local factors. Some guidance is given within the Technical Literature.

7.3 Nominal 75 mm wide studs must be provided at all vertical RAB sheet and façade panel edges. (*This can also be achieved by nailing two nominal 50 mm wide studs together.*)

7.4 Timber framing must have a maximum moisture content of 24% at the time of the RAB sheet application. (*If RAB sheets are fixed to framing with a moisture content of greater than 24% problems may occur at a later date due to excessive timber shrinkage.*)

Fibre Cement Sheet Setout

7.5 All vertical and horizontal RAB sheet edges must be supported and fixed directly to the wall framing. At the base of the wall, the RAB sheet must hang 8 mm below the supporting framing.

7.6 All vertical Titan® & Exotec® façade panel edges must be supported and fixed through the cavity battens to the wall framing. At the base of the wall, the Titan® and Exotec® panels must hang 50 mm below the supporting framing.

General

8.1 Punchings in the cavity vent strip provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall.

8.2 At ground level, the bottom edge of the Titan® & Exotec® Façade Panel Rainscreen system 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 Table 18 must be adhered to at all times.

8.3 The rainscreen must be drained every 10 m maximum. Horizontal Titan® & Exotec® façade panel joints at intermediate floor levels, or sheet joints between floor levels may be formed using the aluminium socket to create a negative expressed non-drained joint.

8.4 The aluminium socket must not be allowed to come into contact with treated timber battens that contain copper (e.g. CCA, copper azole or ACQ). The socket must be separated from the battens by the fibre cement packer.

8.5 Where the system abuts other cladding systems, the building designer must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included in the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Structure

Mass

9.1 The mass of the Titan® & Exotec® Façade Panel Rainscreen system is approximately 22 kg/m² at equilibrium moisture content.

Impact Resistance

9.2 The system will resist human impact loads likely to be encountered. The likelihood of damage to the system from other soft and hard body impacts should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers provided for vulnerable areas.

Wind Loading

9.3 The system is suitable for use when subjected to maximum wind pressures of 1.0 kPa Serviceability Limit State (SLS) and 1.5 kPa Ultimate Limit State (ULS) where studs are at 600 mm centres, and 3.0 kPa SLS and 4.5 kPa ULS where studs are at 400 mm centres.

Seismic Loading

9.4 The system is suitable for use where the maximum seismic displacement is 10 mm under serviceability conditions.

RAB Sheet Fixing

9.5 The RAB sheets must be fixed to the wall framing (studs and nogs) at maximum 300 mm centres. The fixings must be installed a minimum of 12 mm from the edge of the sheet.

Titan® & Exotec® Façade Panel Fixing

9.6 Titan® & Exotec® façade panels must be fixed through the cavity battens to the wall framing at maximum centres as specified in Table 1. The fixings must be installed a minimum of 18 mm from the edge of the sheet.

Table 1: Titan® & Exotec® Façade Panel Fixing Centres

Façade Panel	Maximum Stud Spacing (mm)	Fixing Type	Maximum Fixing Centres to Edge of Sheet (mm)	Maximum Fixing Centres to Body of Sheet (mm)
Titan®	600	60 x 3.15 mm Hardiflex nail	200	250
Titan® and ExoTec®	600	65 x 10g wood screw	200	300
Titan®	400	60 x 3.15 mm Hardiflex nail	150	150
Titan® and Exotec®	400	65 x 10g wood screw	200	200

Durability

Serviceable Life

10.1 Provided the Inseal® 3259 tape and Inseal® 3109 foam component of the Inseal® 3109/Butyl Tape is not exposed to the weather or ultra-violet (UV) light for a total of more than 30 days; and provided the system is maintained in accordance with this Appraisal, and the Titan® & Exotec® façade panels and fixings are continuously protected by a weathertight coating and remain dry in service, Titan® & Exotec® Façade Panel Rainscreen is expected to have a serviceable life of at least 15 years. If the Inseal® 3259 tape or Inseal® 3109 foam component of the Inseal® 3109/Butyl Tape is exposed to the weather or UV light for a total of more than 30 days, then it must be replaced with new material.

10.2 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres, and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of the Titan® & ExoTec® Façade Panel Rainscreen in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604 Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

11.1 Regular maintenance is essential for Titan® & Exotec® Façade Panel Rainscreen installations to continue to meet the NZBC durability performance provision and to maximise the serviceable life of the system.

11.2 Annual inspections must be made to ensure that all aspects of the cladding system, including the paint coating system, flashings, weather seal tapes and any sealed joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately. Sealant, paint coatings and the like must be repaired in accordance with the sealant or paint coating manufacturer's instructions.

11.3 Regular cleaning (at least annually) of the paint coating surface is required to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Paint systems must be recoated at approximately 5-10 yearly intervals in accordance with the paint manufacturer's instructions.

11.4 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the system. *(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 Titan® & Exotec® Façade Panel Rainscreen system.)*

Control of External Fire Spread

12.1 Titan® & Exotec® Façade Panels are a non combustible material. When Titan® & Exotec® Façade Panels are finished with a paint coating of not more than 1.0 mm in thickness, the exterior surface finishes requirements of NZBC Acceptable Solution C/AS1 Table 5 and NZBC Acceptable Solutions C/AS2 – C/AS6 Paragraph 5.8.1 do not apply in accordance with NZBC Acceptable Solution C/AS1 Paragraph 5.4 and NZBC Acceptable Solutions C/AS2 – C/AS6 Paragraph 5.8.2 a).

Prevention of Fire Occurring

13.1 Titan® & Exotec® Façade Panels are considered a non-combustible material and need not be separated from heat sources such as fire places, heating appliances, flues and chimneys. However, when used in conjunction with, or attached to heat sensitive materials, the heat sensitive material must be separated from fireplaces, heating appliances, flues and chimneys in accordance with the requirements of Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1.

External Moisture

14.1 The Titan® & Exotec® Façade Panel Rainscreen system has been tested in accordance with the requirements of AS/NZS 4284 up to 4.5 kPa ULS (refer to Paragraph 2.1). This test method is designed to verify the performance of commercial building facades. *(Titan® & Exotec® Façade Panel Rainscreen has not been tested in accordance with the requirements of the housing and communal residential building test method, NZBC Verification Method E2/VM1.)*

14.2 Titan® & Exotec® Façade Panel Rainscreen, when installed in accordance with this Appraisal and the Technical Literature, prevents the penetration of moisture that could cause undue dampness or damage to building elements.

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

14.4 Titan® & Exotec® Façade Panel Rainscreen allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with NZBC Clause E2.3.6.

14.5 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. 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.

14.6 The use of Titan® & Exotec® Façade Panel Rainscreen where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirement for junctions and penetrations to remain weather resistant.

Installation Information

Installation Skill Level Requirements

15.1 Installation of Titan® & Exotec® Façade Panel Rainscreen components and accessories supplied by James Hardie New Zealand Ltd and the building contractor must be completed by tradespersons with an understanding of cavity construction and fibre cement installation, in accordance with the instructions given within the Titan® & Exotec® Façade Panel Rainscreen Technical Literature, the building designers documentation and this Appraisal.

System Installation

Rigid Air Barrier (RAB)

16.1 RAB sheets may be cut on site by power saw. 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.

16.2 RAB sheets must be dry prior to installation. Before the sheets are installed, cut edges and any penetrations in the sheet must be sealed with an acrylic primer.

16.3 At the base of the wall, the RAB sheet must hang minimum 8 mm below the supporting framing. The RAB sheets must be fixed directly to the wall framing at maximum 300 mm centres with 40 x 2.8 mm hot-dip galvanised flat head Hardiflex nails. The nails must not be closer than 12 mm from the edge of the sheet.

16.4 Vertical joints in the RAB must be installed with a 2 mm gap between the sheets over nominal 75 mm wide studs. A minimum 10 mm gap must be left at all horizontal RAB sheet joints. The horizontal gap between the sheets must be flashed with 80 x 1.5 mm Inseal® 3259 Tape, 1.0 mm thick by 80 mm wide Butyl rubber or 0.55 mm thick galvanised steel or aluminium. Joints in the RAB sheets do not need to be in line with joints in the façade panels.

16.5 Penetrations through the air barrier must be sealed against the RAB sheets to ensure the integrity of the air barrier is retained.

Inseal® 3259 Tape

16.6 Prior to the installation of the cavity battens, all vertical joints in the RAB sheets and at internal and external corners must be covered with Inseal® 3259 Tape. The tape is applied directly from the roll leaving the release liner in place to prevent stretching of the tape. The tape is applied directly to the RAB sheet by pressing firmly along the entire tape to obtain maximum benefit of the pressure sensitive adhesive and to ensure a continuous seal. The release liner is removed only when the cavity battens are ready to be installed.

16.7 Inseal® 3259 Tape installed over vertical RAB sheet joints must always be covered by a cavity batten.

Cavity Battens

16.8 Cavity battens must be installed over the RAB sheets to the wall framing. The battens must be fixed in place with 40 x 2.8 mm hot-dip galvanised flat-head Hardiflex nails at maximum 400 mm centres.

16.9 Double battens must be installed behind all vertical Titan® & Exotec® façade panel joints. At horizontal aluminium socket joints, 125 mm long vertical timber packers must be installed at 100 mm centres along the line of the joint to support the aluminium socket.

Inseal® 3109/Butyl Flashing Tape and Cavity Batten Packer

16.10 Before installation of the façade panels, Inseal® 3109/Butyl Tape must be installed behind the vertical panel joints to weatherproof the negative expressed joint. Before fixing in place, the tape must be unrolled, cut to length and allowed to 'relax'. The tape is temporarily fixed in position over the cavity battens by stapling to the battens through the outside edge of the Butyl membrane.

16.11 Cavity batten packers must be fixed to the face of all cavity battens and timber packers that do not have Inseal® 3109/Butyl Tape installed over them.

Aluminium Socket

16.12 The aluminium socket must be adhered to the back face of the façade panel. This should be completed on the ground prior to the panel's installation. The socket is installed with the T-lip positioned against the top edge of the façade panel and is adhered to the panel with two continuous beads of sealant.

Titan® and ExoTec® Façade Panel Installation

16.13 Titan® & Exotec® façade panels may be cut on site by power saw. 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.

16.14 Titan® & Exotec® façade panels must be dry prior to installation. Before the panels are installed, cut edges, any damaged pre-primed factory edges and any penetrations in the panel must be sealed with an acrylic primer.

16.15 The bottom row of façade panels must overhang the bottom plate by a minimum of 50 mm. Vertical negative expressed joints are formed over the Inseal® 3109/Butyl Tape by leaving a 10 mm gap between the sheet edges. Horizontal negative expressed joints are formed by leaving a 10 mm gap between horizontal façade panel edges over the aluminium socket.

16.16 Horizontal drained joints are formed by the installation of a Z flashing which bridges the cavity and allows for cavity drainage. A 10 mm gap must be maintained between the top of the Z flashing and the underside of the façade panel above.

16.17 Titan® façade panel fixing must be carried out using 65 x 10g wood screws or 60 x 3.15 mm hot-dip galvanised or stainless steel, ring shank Hardiflex nails. ExoTec® façade panel fixing must be carried out using 65 x 10g wood screws. The fixings must not be closer than 18 mm from the edge of the panel and at vertical panel joints must penetrate through the outer edge of the Inseal® 3109/Butyl Tape beyond the line of the foam seal.

16.18 Nail fixings must be driven flush with the panel surface. Screw fixings must be countersunk 1.5-2.0 mm below the panel surface.

Joinery Installation

16.19 Window and door joinery and associated flashings, air seals etc must be installed by the building contractor in accordance with the building designer's details.

Inspections

16.20 The Technical Literature must be referred to during the inspection of Titan® & Exotec® Façade Panel Rainscreen installations.

Finishing

16.21 Titan® & Exotec® façade panels must be coated within 3 months of fixing.

16.22 Countersunk screw fixings must be filled with an exterior grade epoxy filling compound recommended for use with the selected paint system. The stopping of screw fixings is for aesthetic purposes only. The quality of finish on the Titan® & Exotec® façade panels is dependant on the quality of finishing materials used, and applicator workmanship.

16.23 The paint coating manufacturer's instructions must be followed at all times for application of the paint finish. Titan® & Exotec® façade panels must be clean and dry before commencing painting.

Health and Safety

17.1 Cutting of the RAB sheets and Titan® & Exotec® façade panels must be carried out in well ventilated areas, and a dust mask and eye protection must be worn.

17.2 When power tools are used for cutting, grinding or forming holes, health and safety measures as set out in the Technical Literature must be undertaken because of the amount of dust generated.

17.3 Safe use and handling procedures for the RAB sheets, Titan® & Exotec® façade panels and the components that make up the cladding system are provided in the relevant manufacturer's Technical Literature.

Basis of Appraisal

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

Tests

18.1 BRANZ expert opinion on NZBC E2 code compliance for Titan® & Exotec® Façade Panel Rainscreen was based on testing and/or evaluation of all details within the scope of this Appraisal. The Titan® & Exotec® Façade Panel Rainscreen system was tested by BRANZ to AS/NZS 4284 with a design wind pressure of 1.1 kPa Serviceability Limit State. The testing was completed in two stages; the first being the static AS/NZS 4284 test, the second being the dynamic AS/NZS 4284 test. The testing assessed the performance of the foundation detail, window head, jamb and sill details, vertical negative expressed joint, horizontal negative expressed joints, horizontal drained joint and internal and external corners. 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 requirements of the New Zealand Building Code External Moisture Clause E2, when used within the scope of this Appraisal.

18.2 Titan® & Exotec® Façade Panel Rainscreen has been tested by an IANZ accredited laboratory in accordance with AS/NZS 4284 with a design wind pressure of 3.3 kPa Serviceability Limit State. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

18.3 Testing has been carried out by James Hardie Building Products to determine the performance of the Titan® & Exotec® Façade Panel Rainscreen system under negative suction pressure. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

19.1 Structural and durability opinions have been given by BRANZ technical experts.

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

19.3 The Technical Literature for Titan® & Exotec® Rainscreen has been examined by BRANZ and found to be satisfactory.

Quality

20.1 The manufacture of RAB sheets and Titan® façade panels by James Hardie New Zealand Ltd has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

20.2 The manufacture of ExoTec® façade panels by James Hardie Australia Pty Ltd has not been assessed by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

20.3 The quality of materials, components and accessories supplied by James Hardie New Zealand Ltd is the responsibility of James Hardie New Zealand Ltd. The quality control system of James Hardie New Zealand Ltd has been assessed and registered as meeting the requirements of ISO 9001: 2008.

20.4 The quality of materials, components and accessories supplied by James Hardie Australia Pty Ltd is the responsibility of James Hardie Australia Pty Ltd. The quality control system of James Hardie Australia Pty Ltd has been assessed and registered as meeting the requirements of ISO 9001: 2008.

20.5 Quality on site is the responsibility of the installer.

20.6 Designers are responsible for the building design, including weathertightness design of penetrations, and building contractors are responsible for the quality of installation of the Titan® & Exotec® Façade Panel Rainscreen components and accessories in accordance with the instructions of James Hardie New Zealand Ltd.

20.7 Building owners are responsible for the maintenance of Titan® & Exotec® Façade Panel Rainscreen in accordance with the instructions of James Hardie New Zealand Ltd.

Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- AS 3730 Guide to the properties of paints for buildings.
- AS/NZS 2908.2: 2000 Cellulose-cement products - Flat sheet.
- AS/NZS 4284: 1995 Testing of building facades.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 3631: 1988 New Zealand timber grading rules.
- 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.



BRANZ

In the opinion of BRANZ, Titan® & Exotec® Façade Panel Rainscreen 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 the Appraisal Holder, James Hardie New Zealand, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

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. The Appraisal Holder:
 - 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.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ makes no representation 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 the Appraisal Holder.
5. 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.

For BRANZ

P Robertson
Chief Executive

Amendment No. 1, dated 31 January 2012.

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

Amendment No. 2, dated 30 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 and to change the name of the Appraisal Holder.

Date of issue: 5 May 2005