BRANZ Appraised
Appraisal No.477 [2007]

BRANZ Appraisals

Technical Assessments of products for building and construction

BRANZ APPRAISAL No. 477 (2007)

Amended 30 August 2013

LITEROCK CAVITY PLUS SOLID RENDER SYSTEM

Rockcote Resene Ltd
P O Box 8313
Riccarton
Christchurch

Tel: 03 338 6328
Fax: 03 338 6819
Web: www.rockcote.co.nz

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

WFTAO

Product

1.1 The LiteRock Cavity Plus Solid Render System is a 12 mm thick exterior light weight solid render system with Rockcote finish coatings. It is designed to be used as an external cladding system for residential and light commercial type buildings where domestic construction techniques are used.

1.2 The system consists of 4.5 mm thick Hardibacker® or Eterpan fibre cement sheets fixed over timber battens to form the cavity. The coating system consists of Rockcote Render (coarse) scratch coat, followed by a fibreglass mesh reinforced LiteRock Solid Render coat, which is levelled with Rockcote PM100 Quick Render. The base renders are then sealed with Rockcote Polymer Render followed by the application of a Rockcote Texture and Rockcote Armour or Resene X200 paint to give the final textured finish and appearance.

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.

Scope

2.1 The LiteRock Cavity Plus Solid Render System has been appraised as an external wall cladding system 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,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.2 The LiteRock Cavity Plus Solid Render System must only be installed to vertical surfaces (except for tops of parapets, sills and balustrades, which must have a minimum 15° slope and be waterproofed in accordance with the Technical Literature).

2.3 The system is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *(The Appraisal of the LiteRock Cavity Plus Solid Render System relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone.)*

2.4 Installation of components and accessories supplied by Rockcote Resene Ltd and registered applicators must be carried out only by Rockcote Resene registered applicators.

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the LiteRock Cavity Plus Solid Render System 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 B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. The LiteRock Cavity Plus Solid Render System meets the requirements for loads arising from self-weight, wind, impact and creep, [i.e. B1.3.3 (a), (h), (j) and (q)]. See Paragraphs 10.1 – 10.4.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years and B2.3.1 (c), 5 years. The LiteRock Cavity Plus Solid Render System meets these requirements. See Paragraph 11.1 and 11.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The LiteRock Cavity Plus Solid Render System meets this requirement. See Paragraphs 15.1 – 15.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The LiteRock Cavity Plus Solid Render 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 supplied by Rockcote Resene Ltd are as follows:

Plasters

- Rockcote PM100 Quick Render is a dry mix, cement-based, polymer-modified plaster supplied in 25 kg bags and mixed on site with clean water. It is used as a scratch/key coat prior to the application of the LiteRock Solid Render and is trowel-applied using a 4-6 mm notched tiling trowel.
- LiteRock Solid Render is a grey, polymer-modified Portland cement-based dry-mix plaster containing recycled polystyrene grind and is supplied in 20 litre triple lined paper bags. It is trowel applied to a thickness of not less than 8-10 mm followed by the embedment of fibreglass mesh reinforcement in the outer surface.
- Rockcote PM100 Quick Render is a trowel-applied, acrylic-modified Portland cement-based dry mix plaster supplied in 25 kg bags. It is trowel applied in a 2 mm thick layer as a levelling coat and floated flat.
- Rockcote Mineral Textures are ready mixed, tintable, mineral-filled, polymer-based, high-build finishing plasters with in pail and dry film preservatives, supplied in 15 litre pails. They are spray or trowel applied to an approximate thickness of 1.0, 2.0 or 3.0 mm. The selected Rockcote Texture colour must have a minimum light reflectance value (LRV) of 40%.

Primer, Plaster Modifier and Finishes

- Rockcote Render Prime is a water-borne acrylic, polymer dispersion, tintable coating supplied in 15 litre pails. It is brush or roller-applied as a primer between the Rockcote Render levelling coat and Rockcote Textures.
- Multistop bedding compound – used as a uPVC primer when mixed with diluted Acrylbond resin or water.
- Rockcote Acrylbond is a water-based co-polymer resin supplied in 4 and 15 litre pails used as a plaster modifier.
- Rockcote Premium Armour is a water-borne 100% acrylic-based protective finish for use over Rockcote Mineral Textures. It is supplied in 4 and 15 litre pails and is brush or roller applied. The protective finish coat must have a minimum LRV of 40%.
- Resene X200 is an acrylic waterproofing membrane for use as a protective finish over Rockcote Textures. It is supplied in 4 and 10 litre pails and is brush, roller or spray applied. The protective finish coat must have a minimum LRV of 40%.

Accessories

- Reinforcing mesh – an alkali-resistant fibreglass with a nominal mesh size of approximately 5.0 x 4.0 mm and an approximate weight of 160 g/m^2.
- Rockcote Sticky Mesh – alkali-resistant fibreglass, 150 mm wide corner pieces.
- uPVC components – sill and jamb flashings, corner beads, starter strips, horizontal control joint, vertical control joint, head flashing stop ends and sill/jamb corner soakers.

4.2 Accessories used with the system which are supplied by the Rockcote Resene Ltd registered applicator are:

- uPVC component fixings – 30 x 2.5 mm hot-dip galvanised steel flat head nails.
- Waterproof membrane tapes – tapes covered by a valid BRANZ Appraisal for use as waterproof membranes over the tops of plastered balustrades, fixing blocks and the like.
- Flexible sealant – Silaflex MS, or 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.

4.3 Accessories used with the system which are supplied by the building contractor are:

- Flexible wall underlay – building paper complying with NZBC Acceptable Solution E2/AS1 Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlays.
- Flexible building underlay support – polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible building underlay in place and preventing bulging of the bulk insulation into the drainage cavity. (Note: mesh and wire galvanising must comply with AS/NZS 4534.)
- Rigid wall underlay – Plywood or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1 Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barrier systems.
- Flexible sill and jamb tapes – 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.
- 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.
- Cavity batten fixings – 30 x 2.5 mm hot-dipped galvanised flat head nails.
- Fibre cement sheet substrate – 4.5 mm Hardibacker® (James Hardie New Zealand Ltd) or 4.5 mm Eterpan (Progressive Building Systems).
- uPVC components – vent strip.
- Fibre cement sheet fixings – 60 x 3.15 mm hot-dip galvanised flat head nails.

(Note: Hot-dip galvanising must comply with AS/NZS 4680.)

- Joinery head flashings – as supplied by the joinery manufacturer or contractor.
- Parapet flashing - folded from aluminium or galvanised steel. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 for durability requirements.

- 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 for use around window, door and other wall penetration openings.

Handling and Storage

5.1 Handling and storage of all materials supplied by Rockcote Resene Ltd or their registered applicators, whether on or off site is under the control of Rockcote Resene Ltd's registered applicators. Dry storage must be provided for the fibreglass mesh and bags and pails of plaster mix. uPVC flashings and profiles must be protected from direct sunlight and physical damage, and should be stored flat and under cover. Liquid components must be stored in frost-free conditions.

5.2 Handling and storage of all materials supplied by the building contractor, whether on or off the site is under the control of the building contractor. Materials must be handled and stored in accordance with the relevant manufacturer's instructions.

5.3 Bags and pails of plaster mix 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 LiteRock Cavity Plus Solid Render 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

Framing

Timber Treatment

7.1 Timber wall framing behind the LiteRock Cavity Plus Solid Render System must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

7.2 Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with 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. In all cases studs must be at maximum 600 mm centres. Dwangs must be fitted flush between the studs at maximum 800 mm centres.

7.3 Timber framing must have a maximum moisture content of 17% at the time of the cladding installation.

7.4 Wall framing behind cavity battens where fibre cement sheets are joined must be nominal 50 mm thickness (i.e. minimum 45 mm finished thickness).

Fibre Cement Sheets, Battens and Spacers

7.5 All vertical fibre cement sheet edges must be supported and fixed through the cavity battens to framing. Horizontal sheet edges must be supported at fixing locations with cavity spacers 100 mm long maximum in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.2 (f). At the base of the wall sheets must hang 50 mm below the supporting framing.

7.6 Additional battens and framing will be required at soffits and at internal and external corners for the support and fixing of sheet edges.

General

8.1 Punchings in the cavity vent strip must provide a minimum ventilation opening area of 1000 mm^2 per lineal metre of wall in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3(b).

8.2 The ground clearance to finished floor levels as set out in NZS 3604 must be adhered to at all times. At ground level paved surfaces, such as footpaths, must be kept clear of the bottom edge of the cladding system by a minimum of 100 mm, and unpaved surfaces by 175 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Table 18.

8.3 At balcony, deck or roof/wall junctions, the bottom edge of the cladding 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 the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.

8.4 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including Very High. Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the fixing lengths must be increased by a minimum of the thickness of the underlay.

8.5 Where penetrations through the LiteRock Cavity Plus Solid Render System are wider than the cavity batten spacing, allowance must be made for airflow between adjacent cavities. A minimum 10 mm gap must be left between the bottom of the vertical cavity batten and the flashing to the opening.

8.6 Where the system abuts other cladding systems, designers must detail the junction to meet their own requirements and the requirements of the NZBC. The Technical Literature provides some guidance. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Control Joints

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

- Horizontal control joints - at maximum 5 m centres and at all inter-storey floor levels.
- Vertical control joints – at maximum 5.4 m centres; aligned with any control joint in structural framing; where building frame movement is likely; or where the system abuts other construction.

(Note: 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 8.6.)

Inter-storey Junctions

9.2 Inter-storey drained joints must be constructed in accordance with the Technical Literature. Inter-storey drained joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 metres in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4(b).

Structure

Mass

10.1 The mass of the LiteRock Cavity Plus Solid Render System is approximately 20 kg/m^2 (including 4.5 mm fibre cement sheeting) therefore it is considered a light wall cladding in terms of NZS 3604. The mass of the Literock Render System alone (12 mm thick) is approximately 13 kg/m^2.

Impact Resistance

10.2 The system has adequate resistance to impact loads likely to be encountered in normal residential use. Where a greater level of impact protection is required a heavier grade of reinforcing mesh or two layers of mesh may be used. The likelihood of impact damage to the system when used in light commercial type situations should be considered at the design stage, and appropriate protection such as the installation of barriers or bollards should be provided for vulnerable areas.

Wind Zones

10.3 The system is suitable for use in all Wind Zones of NZS 3604 up to, and including, 'Very High'.

Fibre Cement Sheet Fixing

10.4 Fibre cement sheets must be fixed through the cavity battens and cavity spacers to the wall framing at maximum centres specified in Table 1.

Table 1: Fibre Cement Sheet Fixing Centres

NZS 3604 Wind Zone	Fibre Cement Sheet	Maximum Fixing Centres for Sheet Edges and Body of Sheet (mm)
Low/Medium/High/ Very High	Hardibacker®	200
	Eterpan	150

Durability

Serviceable Life

11.1 The LiteRock Cavity Plus Solid Render System meets code compliance with NZBC Clause B2.3.1 (b), 15 years for the cavity system and plaster finish, and code compliance with NZBC Clause B2.3.1 (c), 5 years for the protective finishing coat.

11.2 The LiteRock Cavity Plus Solid Render System is expected to have a serviceable life of at least 30 years provided it is maintained in accordance with this Appraisal, and the fibre cement sheets, fixings and plasters are continuously protected by a weathertight paint system such as Rockcote Premium Armour or Resene X200 and remain dry in service.

11.3 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 LiteRock Cavity Plus Solid Render System 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

12.1 Regular maintenance is essential to ensure the performance requirements of the NZBC are continually met and to ensure the maximum serviceability of the system. The system must be maintained in accordance with the Rockcote Resene Ltd 'My Home' Maintenance Guide.

12.2 Annual inspections must be made to ensure that all aspects of the cladding system, including the finish coating system, plaster, 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, finish coatings and the like must be repaired in accordance with the sealant or finish coating manufacturer's instructions. Refer to Rockcote Resene Ltd 'My Home' Maintenance Guide.

12.3 Although Rockcote Premium Armour and Resene X200 are designed as protective finishes over the system, regular cleaning (at least annually) is still recommended to remove any grime, dirt and organic growth that may have accumulated, and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent. The protective finish must be recoated at approximately 7-10 yearly intervals in accordance with Rockcote Resene Ltd's instructions.

12.4 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 ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the system.)*

Control of External Fire Spread

13.1 The LiteRock Cavity Plus Solid Render System using **Rockcote PM100 Quick Render Scratch coat, Literock Solid Render with mineral texture finish, Rockcote Render Prime and Rockcote Premium Armour protective finishing coat** has a peak heat release rate of less than 100 kW/m^2 and a total heat released of less than 25 MJ/m^2. In accordance with NZBC Acceptable Solution C/AS1 Table 5.1 the system is suitable for use on buildings with a SH Risk Group classification, at any distance to the relevant boundary. Refer to NZBC Acceptable Solutions C/AS2 – C/AS6 Paragraph 5.8.1 for the specific exterior surface finishes requirements for other building Risk Groups.

13.2 The LiteRock Cavity Plus Solid Render System using any other Rockcote Texture and surface finish is suitable for use on buildings with an SH Risk Group classification, a building height of ≤ 10 m and at a distance of ≥ 1.0 m to the relevant boundary. Refer to NZBC Acceptable Solutions C/AS2 – C/AS6 Paragraph 5.8.1 for the specific exterior surface finishes requirements for other building Risk Groups.

(Note: The scope of this Appraisal limits building heights to 10 m in accordance with the limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1(a). The building heights referenced in Paragraph 12.1 above are as defined in the Definitions Sections of NZBC Clauses C1 - C6 Protection from Fire.)

Prevention of Fire Occurring

14.1 Separation or protection must be provided to the LiteRock Cavity Plus Solid Render 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

15.1 The LiteRock Cavity Plus Solid Render System, 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.

15.2 The cavity must be sealed off from the roof and sub-floor space to meet compliance with NZBC E2.3.5.
15.3 The LiteRock Cavity Plus Solid Render 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.
15.4 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.
15.5 The use of the LiteRock Cavity Plus Solid Render System where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirement for junctions, penetrations, etc to remain weather resistant.

Installation Information

Installation Skill Level Requirement

16.1 Installation and finishing of components and accessories supplied by Rockcote Resene Ltd and its registered applicators must be completed by the registered applicator.
16.2 Installation of the accessories supplied by the building contractor must be completed by tradespersons with an understanding of cavity wall construction and fibre cement sheet installation, in accordance with the instructions given within the LiteRock Cavity Plus Solid Render System Technical Literature and this Appraisal.

System Installation

Building Underlay and Flexible Sill and Jamb Tape Installation

17.1 The selected building underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the LiteRock Cavity Plus Solid Render System. Flexible building underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75mm minimum at horizontal joints and 150mm minimum over studs at vertical joints. Generic rigid sheathing materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems shall be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the building underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.
17.2 Where studs are at greater than 450 mm centres and a flexible wall underlay is being used, a building underlay support must be installed over the underlay at maximum 300 mm centres horizontally.

Aluminium Joinery Installation

17.3 Aluminium joinery and associated head flashings must be installed in accordance with the Technical Literature. A 7.5-10 mm nominal 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.

Fibre Cement Sheets

17.4 The fibre cement sheets must be installed by the building contractor in accordance with the relevant manufacturers Technical Literature, except where varied by the LiteRock Cavity Plus Solid Render System Technical Literature and this Appraisal.

LiteRock Cavity Plus Solid Render System

17.5 Components and accessories supplied by Rockcote Resene Ltd and the registered applicator must be installed in accordance with the Technical Literature by the registered applicator.
17.6 The LiteRock Cavity Plus Solid Render System must only be applied when the air and substrate temperature is within the range of +8ºC to +30ºC.

Inspections

17.7 The Technical Literature must be referred to during the inspection of LiteRock Cavity Plus Solid Render System installations.

Finishing

17.8 The paint coating manufacturers instructions must be followed at all times for application of the paint finish. The plaster must be completely dry before commencing painting.

Health and Safety

18.1 Safe use and handling procedures for the components that make up the LiteRock Cavity Plus Solid Render System are provided in the relevant manufacturers' Technical Literature.

Basis of Appraisal

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

Tests

19.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for the LiteRock Cavity Plus Solid Render System was based on testing and evaluation of all details within the scope and as stated within this Appraisal. The LiteRock Cavity Plus Solid Render System was tested to E2/VM1 (as contained within NZBC Clause E2, Amendment 4). The testing assessed the performance of the foundation detail, window head, jamb and sill details, vertical and horizontal control joints, internal and external corners and balustrade to wall junction with a plastered cap. 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.
- Uniform wind face load tests to simulate wind pressures on Hardibacker® and Eterpan fibre cement sheet were carried out by BRANZ and the results were used in assessing the LiteRock Cavity Plus Solid Render System
- Tests to determine the bond strength of the LiteRock Solid Render System to fibre cement were carried out by BRANZ.
- Cone calorimeter testing of the LiteRock Cavity Plus Solid Render System. The testing was carried out in accordance with AS/NZS 3837.

Other Investigations

20.1 Structural and durability opinions have been provided by BRANZ technical experts.

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

20.3 The Technical Literature for the LiteRock Cavity Plus Solid Render System has been examined by BRANZ and found to be satisfactory.

Quality

21.1 The manufacture of the plasters 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.

21.2 The quality management system of the LiteRock Solid Render manufacturer, Fulton Hogan Ltd, has been assessed and registered as meeting the requirements of ISO 9001: 2000 by Telarc, Registration Number 440.

21.3 The quality management system of the Rockcote Premium Armour and Resene X200 paint manufacturer, Resene Paints Ltd, has been assessed and registered as meeting the requirements of ISO 9001: 2008.

21.4 The quality of materials, components and accessories supplied by Rockcote Resene Ltd is the responsibility of Rockcote Resene Ltd.

21.5 Quality on site is the responsibility of the Rockcote Resene Ltd registered applicators.

21.6 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, air seals, cavity battens, fibre cement sheets and joinery head flashings in accordance with the instructions of Rockcote Resene Ltd.

21.7 Sub trades are responsible for installation of penetrations, flashings etc that are relevant to their trade in accordance with the LiteRock Cavity Plus Solid Render System Technical Literature.

21.8 Building owners are responsible for the maintenance of the LiteRock Cavity Plus Solid Render System in accordance with the instructions of Rockcote Resene Ltd.

Sources of Information

- AS/NZS 1170: 2002 Structural design actions – General principles.
- AS/NZS 3837: 1998 Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter.
- AS/NZS 4680: 2006 Hot-dip galvanised (zinc) coatings on fabricated ferrous articles.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3603: 1993 Timber Structures Standard.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4211: 2008 Specification for the performance of windows.
- 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.

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.

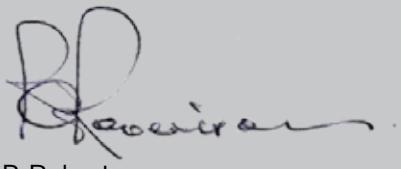
BRANZ

In the opinion of BRANZ, Literock Cavity Plus Solid Render 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 the Appraisal Holder, Rockcote Resene Ltd, 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

Date of issue: 13 April 2007