BRANZ Appraised
Appraisal No. 649 [2020]

EZPANEL CAVITY SYSTEM

Appraisal No. 649 (2020)

This Appraisal replaces BRANZ Appraisal No. 649 [2009]

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 The EZpanel Cavity System is a cavity-based external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used. The system consists of autoclaved aerated concrete (AAC) panels (EZpanels) fixed over polystyrene battens to form a 20 or 40 mm cavity, or timber batten blocks to form a 40 mm cavity.

1.2 The EZpanel Cavity System is finished with either a cement-based option or an acrylic-based option. The cement-based option consists of a base coat of MLC plaster followed by either a cement-based finishing plaster or an acrylic-based finishing plaster. The acrylic-based option consists of a flanking coat of MLC plaster followed by a mesh coat of Powaflex acrylic plaster and an acrylic-based finishing plaster. Both base coat options are finished with an acrylic exterior 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 cladding from the external wall framing with a nominal 20 mm or 40 mm drained cavity.

Scope

2.1 The EZpanel Cavity 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 Extra High.

2.2 The EZpanel Cavity System has also been appraised for weathertightness and structural wind loading when used 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,
- constructed with timber and steel framing subject to specific engineering design; and,
- situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5 kPa.

2.3 The EZpanel Cavity System must only be installed on vertical surfaces *(except for tops of parapets, 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 vertical jambs and horizontal heads and sills. *(The Appraisal of the EZpanel Cavity System relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone or wind pressure.)*

2.5 Installation of components and accessories supplied by Specialized Construction Products Ltd, its certified distributors and approved applicators must be carried out only by Specialized Construction Products Ltd approved applicators.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, the EZpanel Cavity 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 EZpanel 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 10.1 - 10.5.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years, B2.3.1 (c), 5 years, and B2.3.2. The EZpanel Cavity System meets these requirements. See Paragraphs 11.1 - 11.3.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The EZpanel Cavity System meets this requirement. See Paragraphs 17.1 - 17.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The EZpanel Cavity System meets this requirement and will not present a health hazard to people.

Technical Specification

4.1 System components and accessories supplied by Specialized Construction Products Ltd are as follows:

EZpanel

- EZpanel panels are 50 mm thick, manufactured from AAC with an approximate density of 690 kg/m^3. EZpanel panels are supplied in lengths of 2.2 m long x 600 mm wide.

Cavity Battens

- Cavity battens are manufactured from ultra high density (Class UHD) EPS with a density of no less than 28 kg/m^3. The battens are 50 mm wide by 21 mm thick or 50 mm wide by 41 mm thick and are supplied in 1200 mm lengths.

Cavity Batten Blocks

- Cavity batten blocks are 200 mm long x 40 mm thick x 40 mm wide timber treated to Hazard Class H3.2 CCA. The blocks are cut with a 15° slope on the top edge.

Base Coat Plasters

- **EZpanel Base Coat** is a polymer modified, Portland cement-based plaster supplied in 20 kg bags and is mixed on site with clean water. It is applied as the base coat around window and door joinery penetrations in a minimum 2-3 mm layer followed by the embedment of fibreglass mesh reinforcement in the outer surface.
- **Powaflex** is a fibre-reinforced acrylic plaster supplied in 20 kg bags that is mixed on site with clean water. It is applied in a minimum 2-3 mm layer followed by the embedment of fibreglass mesh reinforcement in the outer surface.

Finishing Plasters

- **Fine Mesh Coat** is a polymer modified, Portland cement-based plaster supplied in 20 kg bags and is mixed on site with clean water. It is used to achieve a heavy stucco texture finish when sprayed through a hopper gun or a sagola gun.
- **Spanish Finish** is a polymer modified, Portland cement-based finishing plaster supplied in 20 kg bags and is mixed on site with clean water. It is trowel applied in various thicknesses over the mesh coat to achieve an undulating style finish.
- **Float Finish** is a polymer modified, Portland cement-based finishing plaster supplied in 20 kg bags and is mixed on site with clean water. It is trowel applied in two coats (1-2 mm per layer) over the mesh coat and is polished flat to achieve a fine granular finish.
- **Coarse Texture** is a coarse mesh coat. A polymer-modified, cement-based plaster which can be sprayed through a sagola gun to achieve a finely spiked texture finish.

- **Granopor Fine 1.0 mm Acrylic Texture** is a ready to use, synthetic resin-based render which is polished flat to achieve a fine granular finish. It is supplied in 30 kg pails.
- **Granopor Top 1.5 mm Acrylic Texture** is a ready to use, synthetic resin-based render which is polished flat to achieve a fine granular finish or spray applied to achieve a fine stippled appearance. It is supplied in 30 kg pails.

Accessories

- **Reinforcing mesh** - alkali-resistant fibreglass mesh with a nominal mesh size of 4 mm square and a weight of 150 g/m^2 for use in domestic and light commercial situations.
- **uPVC components** - base bead, EZpanel sill/jamb flashing, head flashing, edge bead, high backed U-Channel, flat 70 mm U-Channel, 20 x 20 L-Bead, 50 x 20 L-Bead, 8 mm control joint and corner socket.
- **EZpanel fixings (timber frame with EPS battens)** - 100 mm long (for 20 mm cavity) and 120 mm long (for 40 mm cavity) AS 3566 Corrosion Class 4 wood screws with a head diameter of 14 mm and a shank diameter of 5.1 mm in NZS 3604 defined Exposure Zones B and C and Grade 304 Stainless Steel in Exposure Zone D.
- **EZpanel fixings (timber frame with cavity batten blocks)** - 75 mm long AS 3566 Corrosion Class 4 wood screws with a head diameter of 14 mm and a shank diameter of 5.3 mm in NZS 3604 defined Exposure Zones B and C and Grade 304 Stainless Steel in Exposure Zone D.
- **EZpanel fixings (steel frame with EPS battens)** - 100 mm long (for 20 mm cavity) and 120 mm long (for 40 mm cavity) AS 3566 Corrosion Class 4 self-drilling screws with a head diameter of 14 mm and a shank diameter of 5.1 mm in NZS 3604 defined Exposure Zones B and C and Grade 304 Stainless Steel in Exposure Zone D. Refer to Paragraph 7.8 for foundation support requirements.
- **EZpanel Adhesive** - AAC compatible adhesive for temporarily bonding EZpanel panel joints during construction and for adhering uPVC components to the EZpanel panels as and where required.

Plastershield

- Plastershield is a 100% acrylic-based exterior paint formulated for use over Specialized Construction Products Ltd cement-based and acrylic-based finishing plasters. It is supplied in 10 litre and 20 litre pails.

4.2 Accessories used with the system which are supplied by the Specialized Construction Products Ltd approved applicators are:

- **Cavity batten fixings** - 30 x 2.5 mm hot-dip galvanised steel flat head nails for timber frame, or construction adhesive for temporary fixing to building underlay over timber or steel frame.
- **Cavity batten block fixings** - 75 x 3.15 mm hot-dip galvanised ring shank flat head nails. *(Note: the hot-dip galvanising must comply with AS 3566.2.)*
- **Waterproof membrane tapes** - tapes covered by a valid BRANZ Appraisal for use as waterproof membranes over the tops of plastered parapets, balustrades, fixing blocks and the like.
- **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.

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 openings.
- **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.

Paint System Specification

4.4 At least two coats of a 100% acrylic-based exterior paint must be used over the finishing plasters to make the system weathertight and give the desired finish colour to exterior walls. Specialized Construction Products Ltd allows the use of other acrylic exterior paint systems over the finishing plasters. An acrylic exterior paint system complying with any of Parts 7, 8, 9 or 10 of AS 3730 may be used. Paint colours must have a light reflectance value of 25% minimum regardless of gloss value. Proprietary paint systems not supplied by Specialized Construction Products Ltd have not been assessed and are therefore outside the scope of this Appraisal.

Handling and Storage

5.1 Handling and storage of all materials supplied by Specialized Construction Products Ltd or the approved applicators, whether on or off site, are under the control of Specialized Construction Products Ltd approved applicators. Dry storage must be provided on site for the EZpanel panels, fibreglass mesh and bags of plaster. EPS battens, 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 site, are under the control of the building contractor. Materials must be handled and stored in accordance with the relevant manufacturer's instructions.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the EZpanel Cavity 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. Reference can also be made to the BRANZ Texture Coated Claddings Good Practice Guide for general design and installation information.

Design Information

Framing

Timber Treatment

7.1 Timber wall framing behind the EZpanel Cavity 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 For specifically designed timber framed buildings situated in Wind Zones above NZS 3604 defined Extra High, there must be a minimum timber framing size of 90 x 45 mm, and a minimum timber grade of MSG8.

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

Steel Framing

7.5 Steel framing must be to a specific design meeting the requirements of the NZBC.

7.6 The minimum framing specification is 'C' section studs and nogs of overall section size of 75 mm web and 32 mm flange. Steel thickness must be a minimum 0.75 mm.

7.7 In all cases, studs must be at maximum 600 mm centres. Dwangs must be fitted flush between the studs at maximum 800 mm centres.

EZpanel Setout

7.8 EZpanels are installed horizontally. Vertical panel edges may be jointed on-stud or off-stud. Horizontal EZpanel panel edges do not require edge fixing, but where 41 mm EPS cavity battens are used with steel framed construction, the bottom row of EZpanels must be fully supported on a rebated foundation. Vertical panel joints must be staggered for each row. The EZpanels must be supported at fixing locations with vertical cavity battens or 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, the EZpanel panels must hang 50 mm below the supporting framing.

General

8.1 When the EZpanel Cavity System is used for specifically designed buildings up to design differential 2.5 kPa ULS wind pressure, only the weathertightness aspects of the cladding, maximum framing centres and EZpanel fixing centres are within the scope of this Appraisal. All other aspects of the building need to be specifically designed and are outside the scope of this Appraisal.

8.2 Punchings in the base bead and head flashing provide a minimum ventilation opening area of 1,000 mm^2 per lineal metre of wall in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3(b).

8.3 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. *(Note: A detail showing EZpanel carried into the ground is included in the Technical Literature. This detail is outside the scope of this Appraisal and approval for its use is by specific design.)*

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

8.5 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, and rigid underlays for buildings in the Extra High Wind Zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure. 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.

8.6 Where penetrations through the EZpanel Cavity 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.

8.7 Where the system abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance 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.

Electrical Cables

8.8 PVC sheathed electrical cables must be prevented from direct contact with EPS cavity battens. When cables must penetrate the EPS cavity battens for exterior electrical connections, the cable must be directly supported by passing through an electrical conduit. There is no separation requirement for PVC sheathed electrical cables passing through EZpanel panels.

Control Joints

9.1 Control joints where EZpanel panels are used must be constructed in accordance with the Technical Literature and be provided as follows:

- **Horizontal control joints** - at maximum 6.0 m centres and at inter-storey floor levels.
- **Vertical control joints** - at maximum 8.0 m centres; aligned with any control joint in the structural framing, or where the system abuts different cladding types.

(Note: Horizontal and vertical control joints must be located over structural supports. The Technical Literature provides some guidance for the design of vertical control joints where the system abuts different cladding types. Details not included within the Technical Literature are outside the scope of this Appraisal and are the responsibility of the designer - see Paragraph 8.7.)

Inter-storey Junctions

9.2 Inter-storey drained joints must be constructed in accordance with the Technical Literature. Inter-storey joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 m 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 EZpanel Cavity System is approximately 34.5 kg/m^2, therefore it is considered a medium wall cladding in terms of NZS 3604.

Impact Resistance

10.2 The system has adequate resistance to impact loads 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

10.3 The EZpanel Cavity System is suitable for use in all Wind Zones of NZS 3604, up to, and including 'Extra High' where buildings are designed to meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 1.1, or up to design differential 2.5 kPa ULS wind pressure when the buildings are specifically designed.

EZpanel Fixing (EPS Cavity Battens)

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

Table 1: EZpanel fixing centres

Wind Zone / Wind Pressure	Fixing Centres (mm) to studs[1]
NZS 3604 Wind Zones up to and including Extra High and specific design wind pressures up to design differential 2.5 kPa ULS with studs at maximum 600 mm centres	300

1. Fixings to be positioned 150 mm in from the panel edge giving an overall fixing layout of 300 mm vertical centres.

Cavity Batten Block and EZpanel Fixing

10.5 Cavity batten blocks must be fixed to the timber framing with two 75 x 3.15 mm hot-dip galvanised ring shank flat head nails, spaced 100 to 140 mm apart from each other. The cavity batten blocks must be fixed to the studs at maximum 600 mm horizontal centres (stud centres), and at maximum 600 mm vertical centres (at all horizontal joints between EZpanel panels). Additional cavity batten blocks may be required at corners and around openings. EZpanel panels must be fixed to the cavity batten blocks with 75 mm long wood screws with a head diameter of 14 mm and a shank diameter of 5.3 mm. The screws must be positioned 50 mm minimum from the edge of the panel and the fixing heads must finish 5 mm below the surface of the panel. The cavity batten block and EZpanel fixing centres as detailed in this paragraph are suitable for NZS 3604 Wind Zones up to and including Extra High and specific design wind pressures up to design differential 2.5 kPa ULS.

Durability

11.1 The EZpanel Cavity System meets the performance requirements of NZBC Clause B2.3.1 (b), 15 years for the cladding system and plaster finish, and the performance requirements of NZBC Clause B2.3.1 (c), 5 years for the exterior paint system.

Serviceable Life

11.2 The EZpanel Cavity System is expected to have a serviceable life of at least 30 years provided the system is maintained in accordance with this Appraisal, and the EZpanel panels, fixings and plaster are continuously protected by a weathertight coating 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 EZpanel panels 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.

12.2 Regular cleaning (at least annually) of the paint coating is required to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent. Paint systems must be recoated at approximately 5-8 yearly intervals in accordance with the paint manufacturer's instructions.

12.3 Annual inspections must be made to ensure that all aspects of the cladding system, including the coating system, plasters, flashings and any sealed joints remain in a weatherproof condition. Any cracks, damaged areas or areas showing signs of deterioration which could allow water ingress, must be repaired immediately. The EZpanel Cavity System must be repaired in accordance with the instructions of Specialized Construction Products Ltd.

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 minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the EZpanel Cavity System.)*

Prevention of Fire Occurring

13.1 The EZpanel panels are considered a non-combustible material and need not be separated from heat sources such as fireplaces, 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 heat sources such as fire places, heating appliances, flues and chimneys in accordance with the requirements of Part 7 of NZBC Acceptable Solutions C/AS1 and C/AS2 and NZBC Verification Method C/VM1.

Fire Affecting Areas Beyond the Fire Source

Vertical Fire Spread

14.1 This Appraisal only covers buildings 10 m or less in height. NZBC Functional Requirement C3.2 identifies that external vertical fire spread to upper floors only needs be considered for buildings with a building height greater than 10 m. Control of external vertical fire spread is therefore outside the scope of this Appraisal.

Horizontal Fire Spread

14.2 The EZpanel panels and plaster finishes have a peak heat release rate of less than 100 kw/m^2 and a total heat released of less than 25 MJ/m^2. Testing was carried out as per Paragraph 5.4 of NZBC Acceptable Solution C/AS1 and Paragraph 5.8.1 of NZBC Acceptable Solution C/AS2, achieving a Type A performance. The EZpanel Cavity System can therefore be used within 1 m of the relevant boundary.

14.3 Refer to NZBC Acceptable Solutions C/AS1 and C/AS2 and Verification Method C/VM2 for fire resistance rating and control of external fire spread requirements for external walls.

Fire Resistance Rating of External Walls

15.1 EZpanel Cavity System can be used for load-bearing and non-load-bearing walls to provide two-way passive fire protection. Fire Resistance Ratings (FRRs) of up to 120/120/120 can be achieved with the system. Construction details are contained in the Technical Literature and must be strictly followed to obtain the required FRR.

Movement to Place of Safety

Structural Stability during Fire

16.1 In order to satisfy the requirements of NZBC C6 Structural Stability, designers must ensure that elements with a FRR are structurally supported by elements with at least the equivalent FRR.

External Moisture

17.1 The EZpanel Cavity 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.

17.2 The cavity must be sealed off from the roof and sub-floor space to meet the performance requirements of Clause E2.3.5.

17.3 The EZpanel Cavity System allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet the performance requirements of Clause E2.3.6.

17.4 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.

17.5 The use of the EZpanel Cavity 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.

Internal Moisture

18.1 The EZpanel Cavity System alone does not meet NZBC Acceptable Solution E3/AS1, Paragraph 1.1.1 (a). Buildings must be constructed with an adequate combination of thermal resistance and ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

Water Vapour

18.2 The EZpanel Cavity System is not a barrier to the passage of water vapour, and when correctly installed will not create or increase the risk of moisture damage resulting from condensation. Refer to Paragraph 18.3 below for specific requirements for steel framed buildings.

18.3 When the EZpanel Cavity System is installed over a steel frame, an expanded polystyrene thermal break must be installed over the building underlay over each steel member to provide a thermal break in accordance with the requirements of NZBC Acceptable Solution E3/AS1, Paragraph 1.1.4 (d). The cavity battens and the rest of the EZpanel Cavity System are then installed over top of the thermal break in accordance with the Technical Literature and this Appraisal.

Installation Information

Installation Skill Level Requirements

19.1 All design and building work must be carried out in accordance with the EZpanel Cavity System Technical Literature and this Appraisal. All building work must be undertaken by Specialized Construction Products Ltd Approved Applicators. Where the work involves Restricted Building Work this must also be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant License class.

System Installation

Building Underlay and Flexible Sill and Jamb Tape Installation

20.1 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 EZpanel Cavity System. Flexible building underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75 mm minimum at horizontal joints and 150 mm 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.

20.2 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

20.3 Aluminium joinery must be installed by the building contractor 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. The joinery must be spaced 22-23 mm off of the wall frame to allow the EZpanel Cavity System flashings to be installed.

The EZpanel Cavity System

20.4 The system must be installed in accordance with the Technical Literature by Specialized Construction Products Ltd approved applicators.

20.5 The EZpanel Cavity System plaster system must only be applied when the air and substrate temperature is within the range of +5°C to +30°C.

Inspections

20.6 The Technical Literature must be referred to during the inspection of EZpanel Cavity System installations.

Finishing

20.7 The paint manufacturers' instructions must be followed at all times for application of the paint finish. The plaster must be cured for a minimum of 2-3 days and must be dry before commencing painting.

Health and Safety

21.1 Cutting of EZpanel Cavity System panels must be carried out in well ventilated areas, and a dust mask and eye protection must be worn.

21.2 When power tools are used for cutting, grinding or forming holes, health and safety measures must be observed because of the amount of dust generated.

21.3 Safe use and handling procedures for the components that make up the EZpanel Cavity 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

22.1 The following testing has been undertaken by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for the EZpanel Cavity System was based on evaluation of all details within the scope and as stated within this Appraisal and testing of the Caviteclad Wall Cladding System to E2/VM1 (as contained within NZBC Clause E2, Amendment 5). The testing assessed the performance of the foundation detail, window head, jamb and sill details, meter box head, jamb and sill details, vertical and horizontal control joints, internal and external corners and balustrade to wall junction with a plastered cap. The EZpanel Cavity System follows the same flashing and weathertightness design principles as the Caviteclad Wall Cladding System. 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.
- Wind face load and fastener pull through testing for the EZpanel Cavity System. BRANZ determined design wind suction pressures, and by comparing these pressures with the NZS 3604 design wind speeds and AS/NZS 1170 pressure coefficients, the fixing requirements were determined for timber and steel framed walls.
- In-plane shear testing of the EZpanel Cavity System to determine the system's ability to resist its self-weight.
- A racking test was completed to examine the performance of the EZpanel Cavity System when the system was subjected to both serviceability level and ultimate level seismic racking deflections, taken to be ±8 mm and ±36 mm respectively. The plaster system did not crack or show signs of damage for the entire test program.
- Durability testing of the EZpanel panels to verify the durability of the system. The testing included compressive strength, length change during moisture movement, corrosion protection of steel reinforcement and mineralogy by x-ray diffraction crystallography.
- Cone calorimeter testing to determine the peak rate of heat release and total heat release. The results were used to provide an assessment of the EZpanel Cavity System. The testing was carried out in accordance with ISO 5660.
- Fire resistance testing of EZpanel loadbearing timber framed wall systems was carried out in accordance with AS 1530.4.

Other Investigations

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

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

23.3 The Technical Literature for the EZpanel Cavity System has been examined by BRANZ and found to be satisfactory.

Quality

24.1 The manufacture of the plasters has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

24.2 The manufacture of the EZpanel panels has been examined by an agent of BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

24.3 The quality of materials, components and accessories supplied by Specialized Construction Products Ltd is the responsibility of Specialized Construction Products Ltd.

24.4 Quality on site is the responsibility of the Specialized Construction Products Ltd approved applicators.

24.5 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 and air seals in accordance with the instructions of Specialized Construction Products Ltd.

24.6 Building owners are responsible for the maintenance of the EZpanel Cavity System installations in accordance with the instructions of Specialized Construction Products Ltd.

Sources of Information

- AS 1530.4: 2014 Methods for fire tests on building materials, components and structures. Fire-resistance tests for elements of construction.
- AS 3566.2: 2002 Self-drilling screws for the building and construction industries.
- AS 3730: 2006 Guide to the properties of paints for buildings.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 4534: 2006 Zinc and zinc/aluminium-alloy coatings on steel wire.
- BRANZ Good Practice Guide: Texture-coated Claddings, 3rd Edition, May 2018.
- ISO 5660.1: 2002 Heat release rate (cone calorimeter method).
- 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 performance of windows.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

BRANZ

In the opinion of BRANZ, the EZpanel 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 Specialized Construction Products 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. Specialized Construction Products 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 Specialized Construction Products Ltd.

   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.
4. BRANZ provides no certification, guarantee, indemnity or warranty, to Specialized Construction Products Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
27 May 2020