



BRANZ Appraised

Appraisal No. 1252 [2023]

PXR RESIDENTIAL CAVITY RAIL SYSTEM

Appraisal No. 1252 [2023]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 The PXR Residential Cavity Rail System is an express jointed, cavity-based cladding system that incorporates an aluminium rail support system to achieve a 20 mm cavity depth. The cavity is drained and vented at every horizontal junction/joint. It is designed to be used as an external cladding system for residential and light commercial type buildings.
- 1.2 The PXR Residential Cavity Rail System features fibre cement panels referred to as Swisspearl and Shera Board, or wood fibre laminate panels referred to as Parklex Prodema. Panels are fastened to aluminium rail supports with either an adhesive fixing system, or a combination of adhesive fixing and mechanical fasteners, dependent on the installation height above ground level.
- 1.3 The cavity 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 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

Timber Framing

- 2.1 The PXR Residential Cavity Rail System has been appraised for use as an external wall cladding for timber-framed buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 for timber framed buildings; and,
 - constructed with timber framing complying with the NZBC; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High; and,
 - with a building height of ≤ 10 m and at a distance of ≥ 1 m to the relevant boundary.

Steel Framing

- 2.2 The PXR Residential Cavity Rail System has been appraised for use as an external wall cladding for steel-framed buildings within the following scope:
 - the scope limitations of NASH Building Envelope Solutions Paragraph 1.1 for steel-framed buildings; and,
 - with a risk score of 0-20, calculated in accordance with NASH Building Envelope Solutions; and,
 - situated in NASH Standard Part 2 Wind Zones up to, and including, Extra High; and,
 - with a building height of ≤ 10 m and at a distance of ≥ 1 m to the relevant boundary.

Specific Design

- 2.3 The PXR Residential Cavity Rail System has also been appraised for use as an external wall cladding for buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 for timber-framed buildings or NASH Building Envelope Solutions, Paragraph 1.1 for steel-framed buildings with regard to building height and floor plan area; and,
 - constructed with framing or infill framing subject to specific design complying with the NZBC; and,
 - situated in specific design wind pressures up to a maximum design differential ultimate limit state [ULS] of 2.5 kPa.

General

- 2.4 The PXR Residential Cavity Rail System must only be installed on flat, vertical surfaces.
- 2.5 The PXR Residential Cavity Rail System is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *[Note: The Appraisal of the PXR Residential Cavity Rail System relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone.]*
- 2.6 Building designers are responsible for the incorporation of the PXR Residential Cavity Rail System into their design in accordance with the instructions of CLAD Solutions Limited, using the details given in the Technical Literature, and for designing all details not covered by this Appraisal.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the PXR Residential Cavity Rail 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 PXR Residential Cavity Rail System meets the requirements for loads arising from self-weight, earthquake, wind and impact [i.e. B1.3.3 (a), (f), (h) and (j)]. See Paragraphs 8.1–8.3.

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years and B2.3.2. The PXR Residential Cavity Rail System meets these requirements. See Paragraphs 9.1–9.3.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The PXR Residential Cavity Rail System meets this requirement. See Paragraphs 13.1–13.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The PXR Residential Cavity Rail System meets this requirement.

Technical Specification

- 4.1 The PXR Residential Cavity Rail System includes two prefinished panel options. These include:
- **Swisspearl** – a high-density [$\sim 1,750 \text{ kg/m}^3$] pigmented, fibre cement panel with a factory-applied pigmented acrylic top finish available in various colours and surface finishes. Swisspearl panels are 1,250 mm wide, 2,510 or 3,050 mm long and 8 mm thick.
 - **Parklex Prodema** – a wood-fibre laminate panel available in a range of wood veneer finishes. Parklex Prodema has a wood-fibre core impregnated with thermosetting resin which forms a 'high-pressure laminate' [HPL] panel. Parklex Prodema is available in 2,440 x 1,220 x 8 mm sheets.

4.2 The PXR Residential Cavity Rail System also includes an uncoated panel option:

- **Shera Board** – a medium-density (~1,350 kg/m³), pre-sanded, uncoated fibre cement panel, suitable for coating with an acrylic paint system. Shera Board cladding panels are 1,200 mm wide, 2,400 or 3,000 mm long and 9 mm thick. *[Note: Substitution of alternative fibre cement panel products as a replacement for Shera Board is not permitted by CLAD Solutions Limited and is outside the scope of this Appraisal. The performance of the PXR Residential Cavity Rail System relies on the specifications established for Shera Board and performance of substitute products is not considered by this Appraisal.]*

Accessories

4.3 Accessories used with the PXR Residential Cavity Rail System which are supplied by CLAD Solutions Limited are:

- **Rigid wall underlay** – medium density fibre cement sheet, complying with NZBC Acceptable Solution E2/AS1, Table 23, which must be supplied by CLAD Solutions Limited. *[Note: Substitution of alternative rigid wall underlay products as a replacement for the CLAD Solutions Limited-sourced rigid wall underlay is not permitted by CLAD Solutions Limited and is outside the scope of this Appraisal. Performance of substitute products within the PXR Residential Cavity Rail System has not been considered for this Appraisal.]*
- **PXR Support Rails** – a range of various extruded aluminium profile sections manufactured in 6000 series aluminium. Profiles include horizontal and vertical runners, internal and external corner profiles, and soaker flashings for horizontal profile joints. All profiles are factory anodized or mill finished.
- **SikaTack® Panel-50 Adhesive System** – the SikaTack® Panel-50 Adhesive System is used for the fixing of Swisspearl, Parklex Prodema and Shera Board cladding panels to PXR support rails and includes the following components for use, in accordance with the detail provided in the technical literature:
 - Sika® Aktivator-205.
 - Sika® Primer-210.
 - SikaTack® Panel Fixing Tape.
 - SikaTack® Panel-50 Adhesive.

[Note: Substitution of alternative adhesive products as a replacement for the SikaTack® Panel-50 Adhesive System is not permitted by CLAD Solutions Limited and is outside the scope of this Appraisal. Performance of substitute products within the PXR Residential Cavity Rail System has not been considered for this Appraisal.]

- **Fasteners:**
 - **Support Rail Fasteners for timber framing** – 10 g x 40 mm minimum, T17 pan head stainless steel screws to achieve a minimum fastening embedment depth of 32 mm into timber framing.
 - **Support Rail Fasteners for steel framing** – 10 g x 38 mm or 50 mm pan head stainless steel screws to achieve a minimum fastening embedment depth of 3 threads into steel framing.
 - **Panel Fasteners/Large Flange Rivet (fail-safe)** – 6-10 aluminium pop rivets, clearance holed to accommodate panel and substrate movement. Panel fasteners can be powder coated on request.
- **Flexible sill and jamb tapes** – Pro Clima Tescon Extoseal Sill Tape – 150 mm and 200 mm x 20 m. A flexible flashing tape for use around framed joinery openings as a secondary weather resistant barrier.
- **Flexible flashing tape** – Pro Clima Tescon Extora Sealing Tape – 60 mm and 100 mm x 30 m. A flexible sealing tape for overflashing of horizontal support rails.
- **Self-Adhesive Underlay** – Pro Clima Solitex Extasana Adhero® Self-Adhesive underlay. A self-adhesive underlay intended to be placed over the entire exterior surface of the rigid wall underlay, as an alternative to flexible sealing tape placed over sheet joints.

- 4.4 Accessories used with the PXR Residential Cavity Rail System which are supplied by the building contractor are:
- **Flexible wall underlay** – synthetic wall underlay complying with NZBC Acceptable Solution E2/AS1 Table 23, or breather-type membranes covered by a valid BRANZ Appraisal or CodeMark for use as a wall underlay.
 - **Flexible wall underlay support** – 19 mm wide polypropylene tape to support flexible underlay between studs.
 - **Thermal break** – thermal break with a minimum R-value of 0.25 m²K/W and a minimum thickness of 10 mm, in accordance with NZBC Clause E3 Paragraph E3.3.1, and NASH Building Envelope Solutions Section 11.
 - **Window head flashings** – aluminium head flashings to suit the selected window joinery suite.

Shera Board Paint System Specification

- 4.5 Paint systems are not supplied by CLAD Solutions Limited, and have not been assessed, and are therefore outside the scope of this Appraisal.
- 4.6 All cut edges of Shera Board panels are to be sealed on-site with a primer suitable for the selected proprietary acrylic paint system.
- 4.7 All exposed faces, including top edges at sills and bottom edges of Shera Board panels must be finished with an acrylic exterior paint system complying with AS 3730.

Handling and Storage

- 5.1 Handling and storage of all materials supplied by CLAD Solutions Limited, or the contractor, whether on-site or off-site, is under the control of the building contractor. The PXR Residential Cavity Rail System panels are packed on pallets and must be kept dry during transport. The panels must be horizontally stacked on a flat surface and must always be sufficiently supported so that they do not sag. They must be kept dry at all times either by storing under cover or providing covers to the stack, so they are stored in a dry ventilated space. Care must be taken to avoid damage to edges, ends and surfaces. Panels must always be lifted from a stack by two people and then be carried on edge.
- 5.2 Accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
- PXR Residential Cavity Rail System Technical Manual, July 2023.
 - PXR Residential Cavity Rail System – Steel Framing Details, July 2023.
- 6.2 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

Timber Framing

- 7.1 Timber wall framing behind the PXR Residential Cavity Rail System must be treated as required by NZBC Acceptable Solution B2/AS1.
- 7.2 Studs must be provided at a maximum 600 mm centres and should be considered at the design stage to ensure support to all cladding panel joints. Nogs, where required, must be fitted flush between the studs.
- 7.3 Timber framing must comply with NZS 3604, or be to a specific design using AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604.
- 7.4 Timber framing must have a maximum moisture content of 24% at the time of the cladding system application. *[Note: If the cladding system is installed 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 comply with NASH Standard Part Two for buildings or parts of buildings within the scope limitations of NASH Standard Part Two. Buildings or parts of buildings outside the scope of NASH Standard Part Two must be to a specific design. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NASH Standard Part Two.
- 7.6 The minimum framing specification is 'C' section studs and dwangs of overall section size of 92 mm web and 35 mm flange. Steel thickness must be minimum 0.75 mm and a minimum grade G2.
- 7.7 In all cases, studs must be at maximum 600 mm centres, with dwangs fitted flush between the studs at maximum 1,350 mm centres.

Wall Underlay

- 7.8 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped. A flexible or rigid wall underlay is required for buildings in Wind Zones up to, and including, Very High, and a rigid wall underlay is required 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.
- 7.9 The rigid wall underlay be installed in accordance with the Technical Literature. Rigid wall underlays can be installed to provide a degree of wind and earthquake bracing. The use of rigid wall underlay to provide bracing has not been considered and is outside the scope of this Appraisal.

PXR Support Rails

- 7.10 The PXR Support Rail components, when installed in accordance with the Technical Literature, form a 20 mm wide drained and ventilated cavity behind the cladding panels, using vertical and horizontal aluminium rail profiles.
- 7.11 Horizontal rails are installed in continuous lengths to provide ventilation and drainage at every horizontal sheet joint.
- 7.12 Vertical rails are installed discontinuously, in sections between the horizontal rails and located at vertical sheet joints. Vertical rails feature a central recess which is fitted with the PXR pocket filler – an aluminium finishing trim profile.
- 7.13 Intermediate support to the body of panels is provided using Z rails mounted vertically at 600 mm maximum centres.
- 7.14 The horizontal rails and Z rails feature punchings that ensure a ventilation opening area of at least 1,000 mm² per lineal metre of wall, in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3 b).
- 7.15 All horizontally mounted support rail profiles are overflashed from the wall underlay over the top edge of the profiles with a layer of flexible flashing tape.
- 7.16 All PXR Support Rail components shall be fixed to supporting timber framing with a minimum of 10 g x 40 mm T17 pan head stainless steel screws at 250 mm maximum centres, ensuring a minimum fastening embedment depth into timber framing of 32 mm.
- 7.17 All PXR Support Rail components shall be fixed to supporting steel framing with a minimum of 38 mm or 50 mm 10 g pan head stainless steel screws at 250 mm maximum centres, ensuring a minimum fastening embedment depth into steel framing of 3 threads.

Cladding Panels

- 7.18 Cladding panels can be adhesive-fixed to the PXR Support Rails, solely using the SikaTack® Panel-50 Adhesive System, to a maximum installed height above ground level of 7 m.
- 7.19 Cladding panels with an installed height above ground level greater than 7 m must be fitted with panel fasteners, referred to as 'Fail-safe Large Flange Rivets', in addition to adhesive fixing. Four fasteners are required per cladding panel, located to each corner of the panel as detailed in the Technical Literature. Panel fasteners must be installed in accordance with the details contained within the Technical Literature.

Paint Selection

- 7.20 Shera Board panels must be finished with an acrylic exterior paint system complying with AS 3730.

General

- 7.21 At ground level, the bottom edge of the PXR Residential Cavity Rail 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 or NASH Building Envelope Solutions, Table 18.
- 7.22 At balconies, decks or low-pitched roof/wall junctions, the bottom edge of the PXR Residential Cavity Rail System must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing, by a minimum of 35 mm, in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.6 or NASH Building Envelope Solutions, Paragraph 9.1.3.
- 7.23 Where the PXR Residential Cavity Rail System abuts other cladding systems, the designer must detail the junction to meet their own requirements and the performance requirements of the NZBC. These details are outside the scope of this Appraisal.

Inter-storey Junctions

- 7.24 Inter-storey drained joints must be provided to limit continuous cavities to the lesser of either 2-storeys or 7 m in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, or NASH Building Envelope Solutions, Paragraph 9.1.9.4 b].

Structure

Wind Zones

- 8.1 The PXR Residential Cavity Rail System is suitable for use on buildings situated in NZS 3604 and NASH Standard Part 2 Wind Zones up to, and including, Extra High, or maximum design differential ULS of 2.5 kPa.
- 8.2 Studs must be provided to ensure support to all vertical rail profiles. Where design wind pressures are less than 1.9 kPa, studs must be provided at 600 mm maximum centres. Where the design wind pressures are 1.9 kPa or greater, studs shall be at a maximum of 400 mm centres.

Impact Resistance

- 8.3 The PXR Residential Cavity Rail System has good resistance to hard and soft body impacts likely to be encountered in normal residential use. The likelihood of impact damage to the cladding 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 provided for vulnerable areas.

Durability

Serviceable Life

- 9.1 The PXR Residential Cavity Rail System is expected to have a serviceable life of at least 15 years, provided the cladding system is maintained in accordance with this Appraisal to ensure the cladding panels, adhesive and underlying support rails remain in good serviceable condition. Installations of Shera Board cladding panels, as part of the PXR Residential Cavity Rail System, must be painted within 3 months of installation.
- 9.2 The SikaTack® Panel-50 Adhesive System and the PXR Support Rails are expected to have a serviceable life of at least equal to that of the cladding panels.
- 9.3 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 the PXR Residential Cavity Rail 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

- 10.1 Regular maintenance is essential for the PXR Residential Cavity Rail System to continue to meet the NZBC durability performance provisions and to maximise its serviceable life.
- 10.2 Annual inspections must be made to ensure that all aspects of the cladding system, including any applied or factory coating systems, flashings and sealed joints remain in a weatherproof condition. Adhesive joints between cladding panels and the aluminium rails should be checked for any signs of de-bonding. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately. Sealant and paint coatings must be repaired in accordance with the sealant or paint coating manufacturer's instructions.
- 10.3 All exterior surfaces require an annual clean – a thorough soft wash with soapy water. Caustic based preparations should not be used. Paint systems must be recoated at approximately 7-15 year intervals in accordance with the paint manufacturer's instructions.
- 10.4 Minimum ground clearances as set out in this Appraisal must be maintained at all times during the life of the cladding. *[Note: Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long-term durability of the PXR Residential Cavity Rail System.]*

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to PXR Residential Cavity Rail System from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

Control of External Fire Spread

Vertical Fire Spread

- 12.1 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

- 12.2 The Shera Board cladding panel has a peak heat release rate of less than 100 kW/m² and a total heat released of less than 25 MJ/m². 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 Shera Board cladding panel can therefore be used within 1 m of the relevant boundary.
- 12.3 The Swisspearl cladding panels Largo Carat Elfenbein [product code: 7099], Azurit [7041], Planea Blue [P 413] and Nobilis Blue [N 411], have a peak heat release rate of less than 100 kW/m² and a total heat released of less than 25 MJ/m². 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 Swisspearl cladding panels Largo Carat Elfenbein [product code: 7099], Azurit [7041], Planea Blue [P 413] and Nobilis Blue [N 411] can therefore be used within 1 m of the relevant boundary.
- 12.4 The PXR Residential Cavity Rail System using any other cladding panel not specified in Paragraph 12.2 or 12.3 has not been assessed for a peak heat release or total heat released rating.
- 12.5 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.

External Moisture

- 13.1 The PXR Residential Cavity Rail System, when installed in accordance with this Appraisal and the Technical Literature, will prevent the penetration of moisture that could cause undue dampness or damage to building elements.
- 13.2 The cavity must be sealed off from the roof and sub-floor space to meet code compliance with NZBC Clause E2.3.5.
- 13.3 The PXR Residential Cavity Rail System 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.
- 13.4 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.
- 13.5 The use of PXR Residential Cavity Rail System 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 Requirement

- 14.1 Installation and finishing of the PXR Residential Cavity Rail System must be completed by, or under the supervision of, a Licensed Building Practitioner with the relevant License Class, in accordance with instructions given within the Technical Literature and this Appraisal.
- 14.2 The PXR Residential Cavity Rail System Quality Assurance Check Sheet must be completed during construction for every installation of the PXR Residential Cavity Rail System.

System Installation

Framing

- 15.1 Studs must be provided at a maximum 600 mm centres to ensure support to all cladding panel joints and to provide support to all vertical rail profiles. Where design wind pressures are less than 1.9 kPa, studs must be provided at 600 mm maximum centres. Where the design wind pressures are 1.9 kPa or greater, studs shall be at a maximum of 400 mm centres.
- 15.2 Timber framing must have a maximum moisture content of 24% at the time of the cladding system application. *[Note: If the cladding system is installed to framing with a moisture content of greater than 24%, problems may occur at a later date due to excessive timber shrinkage.]*

Wall Underlay

- 15.3 The selected building underlay must be installed by the building contractor, in accordance with the underlay and tape manufacturer's instructions, prior to the installation of the rest of the PXR Residential Cavity Rail 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. Rigid wall underlay (where used), must be installed in accordance with NZBC Acceptable Solution E2/AS1 or NASH Building Envelope Solutions, and in accordance with the instructions of CLAD Solutions Limited. 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.
- 15.4 Prior to cladding installation, all pipes and penetrations must be sealed as per NZBC Acceptable Solution E2/AS1 Paragraph 9.1.9.3 or NASH Building Envelope Solutions Paragraph 9.1.10.3.

PXR Support Rails

- 15.5 The PXR Support Rail components, when installed in accordance with the Technical Literature, form a 20 mm wide drained and ventilated cavity behind the cladding panels, using vertical and horizontal aluminium rail profiles.
- 15.6 Welded horizontal rail corner sections [ref. HRWE] shall be installed first, at the external corners of the building, followed by the internal corners [ref. HRWI]. It is vital that the corner sections are installed level and true.
- 15.7 Horizontal rail profiles [ref. HR] are fitted between the corner sections ensuring a 3 mm expansion gap at the end of each installed length. Horizontal rails must be installed straight and level and can be packed out from the wall to a maximum of 10 mm to account for deflections in the substrate.
- 15.8 Intermediate support to the body of panels is provided using Z rails [ref. ZR20], mounted vertically at 600 mm maximum centres or as required to suit the design wind pressure.
- 15.9 All horizontal support rail profiles are overflashed from the wall underlay over the top edge of the profiles with a layer of flexible flashing tape.

Cladding Panels

- 15.10 Cladding panels must be set out with close attention given to the dimensional tolerances given in the Technical Literature. Failure to adhere to these may compromise the weathertightness performance of the cladding system and will result in an installation which is of low visual quality.
- 15.11 Adhesive fixing of the cladding panels is to be carried out strictly in accordance with the instructions given by Sika AG, with particular attention paid to requirements for skin-time, tack-free time and peel adhesion tests which are to be carried out by the installer with the results noted on the daily installation record.
- 15.12 Recommendations for weather conditions for adhesive installation as stated by Sika AG in the Technical Literature must be observed at all times during cladding installation. Failure to observe these may result in reduced performance of the adhesive joint.
- 15.13 Panel Fasteners or Fail-safe Large Flange Rivets shall be installed, when required, in locations within the body of the cladding panels, in accordance with the instructions of CLAD Solutions Limited. Clearance holes drilled into the cladding panel shall be oversized as per dimensions given in the Technical Literature.

Aluminium Joinery Installation

- 15.14 Aluminium joinery and associated head and sill flashings must be installed by the building contractor in accordance with the Technical Literature. The framed window opening should be sized to allow a 10 mm nominal gap between the joinery reveals and the wall framing to allow for final positioning of the window to suit the cladding layout. The joinery air seal can be installed after the joinery has been secured in place.

Inspections

- 15.15 The Technical Literature must be referred to during the inspection of PXR Residential Cavity Rail System installations. The PXR Residential Cavity Rail System Quality Assurance Check Sheet must be completed during construction for every installation of the PXR Residential Cavity Rail System.

Finishing

- 15.16 The coating manufacturer's instructions must be followed at all times for application of paint finishes on Shera Board cladding panels. It must be ensured that all surfaces are clean and dry before commencing painting.

Health and Safety

- 16.1 Cutting of PXR Residential Cavity Rail System components must be carried out in well ventilated areas, and a dust mask and eye protection must be worn.
- 16.2 When power tools are used for cutting, grinding or forming holes, health and safety measures as set out in the Technical Literature must be observed with regard to the amount of dust generated.
- 16.3 Safe use and handling procedures for 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

- 17.1 Testing has been carried out by an accredited laboratory to NZBC E2/VM1 requirements (as contained within NZBC Clause E2, Third Edition, Amendment 5) and AS/NZS 4284 requirements. The results have been reviewed by BRANZ and found to be satisfactory. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of NZBC Acceptable Solution E2/AS1 for drained cavity claddings.
- 17.2 Structural testing has been carried out by BRANZ to assess the installation of the PXR Residential Cavity Rail System on steel framing.

Investigations

- 18.1 Structural, durability and weathertightness opinions have been given by BRANZ technical experts.
- 18.2 Site inspections have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.
- 18.3 The manufacturer's Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 19.1 The manufacture of PXR Residential Cavity Rail System components has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 19.2 The quality management systems for the manufacture of Shera Board, Swisspearl, Parklex Prodema and Sika have been assessed and registered as meeting the requirements of ISO 9001.
- 19.3 The manufacturer of Shera Board has a CE Declaration of Performance for the product to the requirements of EN 12467 based upon testing that has been examined by BRANZ. Their factory production control is monitored by the notified body, in this case SGS & TÜV SÜD PSB Singapore.
- 19.4 The quality of materials, components and accessories supplied by CLAD Solutions Limited are the responsibility of CLAD Solutions Limited. The quality control system of CLAD Solutions Limited has been assessed by BRANZ and found to be satisfactory.
- 19.5 Quality of installation on-site of components and accessories supplied by CLAD Solutions Limited and the building contractor is the responsibility of the installer.
- 19.6 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and joinery, building underlay, flashing tapes, air seals, joinery head flashings and cladding panels, in accordance with the instructions of CLAD Solutions Limited.
- 19.7 Building owners are responsible for the maintenance of the cladding system in accordance with the instructions of cladding manufacturer and designer.



Sources of Information

- AS 3730-2006 Guide to the properties of paints for buildings.
- AS/NZS 1170 Structural design actions.
- AS/NZS 2908.2:2000 Cellulose-cement products – Flat sheet.
- 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.



In the opinion of BRANZ, **PXR Residential Cavity Rail 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 **CLAD Solutions Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **CLAD Solutions Limited:**
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions;
 - d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **CLAD Solutions Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **CLAD Solutions Limited** or any third party.

For BRANZ


Claire Falck
Chief Executive
Date of Issue:
29 August 2023