



BRANZ Appraised

Appraisal No. 650 [2014]

VERTILINE VERTICAL SHIPLAP WEATHERBOARD CAVITY SYSTEM

Appraisal No. 650 [2014]

This Appraisal replaces BRANZ
Appraisal No. 650 [2009].

Amended 13 October 2017



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 The VertiLine Vertical Shiplap Weatherboard Cavity System is a cavity-based shiplap timber weatherboard external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.
- 1.2 The system consists of vertically fixed Herman Pacific Limited shiplap weatherboards, ventilated cavity battens, flashings and accessories and is finished with a premium penetrating oil stain or an exterior paint system to Herman Pacific Limited specifications.
- 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 frame with a minimum 18 mm drained cavity.

Scope

- 2.1 The VertiLine Vertical Shiplap Weatherboard Cavity System incorporating stain finished weatherboards and paint finished DuraLarch and Ashin-Dura weatherboards has been appraised as an external wall cladding system for buildings within the following scope:
 - the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; 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.
- 2.2 The VertiLine Vertical Shiplap Weatherboard Cavity System incorporating stain finished weatherboards 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 with regards to building height and floor plan area; and,
 - constructed with timber 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 VertiLine Vertical Shiplap Weatherboard Cavity System incorporating paint finished cedar weatherboards has been appraised as an external wall cladding system for buildings within the following scope:
- the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; 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 Medium when dwangs or structural Vertibat cavity battens are at maximum 480 mm centres, and NZS 3604 Wind Zones up to, and including Very High when dwangs or structural Vertibat cavity battens are at maximum 400 mm centres.
- 2.4 The VertiLine Vertical Shiplap Weatherboard Cavity System must only be installed vertically on vertical, flat surfaces.
- 2.5 The VertiLine Vertical Shiplap Weatherboard Cavity 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 VertiLine Vertical Shiplap Weatherboard Cavity System relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone or wind pressure.]*

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the VertiLine Vertical Shiplap Weatherboard 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 for the relevant physical conditions of B1.3.3 being self-weight, wind, impact and creep [i.e. B1.3.3 (a), (h), (j) and (q)]. The VertiLine Vertical Shiplap Weatherboard Cavity System meets these requirements. See Paragraphs 9.1 - 9.5.
- Clause B2 DURABILITY:** Performance B2.3.1 (b), 15 years and B2.3.2. The VertiLine Vertical Shiplap Weatherboard Cavity System meets these requirements. See Paragraphs 10.1 and 10.2.
- Clause E2 EXTERNAL MOISTURE:** Performance E2.3.2. The VertiLine Vertical Shiplap Weatherboard Cavity System meets this requirement. See Paragraphs 14.1 - 14.5.
- Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. The VertiLine Vertical Shiplap Weatherboard Cavity System meets this requirement and will not present a health hazard to people.

Technical Specification

- 4.1 System components and accessories supplied by Herman Pacific Limited are as follows:

Hermipac Shiplap Weatherboards

- Hermipac shiplap weatherboards are manufactured from Canadian Coastal Western Red Cedar. Selected weatherboards are also manufactured from DuraLarch and Ashin-Dura.
- The weatherboard lap and rebate profiles are in accordance with NZS 3617 and BRANZ Bulletin 411. The weatherboards are minimum 18.5 mm thick and are available in a range of widths and face profiles. They are supplied in random lengths. Lengths outside of the general specification may be available by special contract.
- Cedar and DuraLarch weatherboards are supplied unfinished for site finishing with stain or paint prior to installation, or prefinished using the flood coat application method by Machinecoat NZ Limited. Ashin-Dura weatherboards are treated to Hazard Class H3.1 and must be paint finished only. They are supplied primed, or prefinished by Machinecoat NZ Limited. Refer to the Appraisals listing on the BRANZ website for details of the Herman Pacific shiplap weatherboard profiles covered by this Appraisal. *[Note: This Appraisal is only valid when weatherboards with profiles as listed are supplied by Herman Pacific Limited.]*

Accessories

- **Hempac external corner mouldings** - 40 x 40 mm, 42 x 42 mm and the Hempac 'Smart Corner' series of profiled external corner moulds supplied in lengths 1.8 m and longer.
- **Hempac internal corner mould** - 18.5 x 18.5 mm through to 39 x 39 mm and the Hempac 'Smart Corner' series, supplied in 1.8 m and longer.
- **Hempac cover boards** - 18 mm thick boards in widths of 69 and 90 mm. The cover boards are supplied in lengths 1.8 m and longer.
- **Hempac eaves moulding** - 40 x 27 mm, 26 x 15 mm and 30 x 18 mm bevelled profile, supplied in 1.8 m and longer.

[Note: All timber accessories are manufactured from Canadian Coastal Western Red Cedar or Siberian Larch heartwood.]

- **Hempac J Mould Flashing** - an extruded aluminium J-shaped flashing to cap the ends of the weatherboards at window and door jambs. The J Mould is available 20 and 29.5 mm wide with a 70 mm return and is supplied in 2.4 and 3.0 m lengths.
- **Hempac aluminium cavity closure** - an extruded aluminium cavity closure available 20 and 40 mm wide. The cavity closure is supplied in 2.4 and 3.0 m lengths.
- **Vertibat cavity battens** - 45 x 20 mm [V1], 45 x 40 mm [V3], 45 x 45 mm [V5], 70 x 20 mm [V2], 70 x 40 mm [V4] or 70 x 45 mm [V6] Radiata pine batten treated to Hazard Class H3.1 or H3.2. The top and bottom edges are bevelled with a slope. The front and back face of the batten is grooved with 20 mm wide x 5 mm deep rebates at 100 mm centres. The grooves are offset on each face.
- **Vertibat cavity batten fixings** (for 40 or 45 mm thick battens when fixed to studs only) - 12 gauge x 65 mm long Grade 304 or 316 stainless steel screws (for 40 mm battens) and 12 gauge x 75 mm long Grade 304 or 316 stainless steel screws (for 45 mm battens).
- **Hempac stain finished shiplap weatherboard fixings** (for Vertibat and Cavibat battens fixed to dwangs) - silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Hempac Crown Head, Rose Head or Flat Head nails. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the wall frame.
- **Hempac stain finished shiplap weatherboard fixings** (for 40 or 45 mm Vertibat battens fixed to studs only) - silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Hempac Crown Head, Rose Head or Flat Head nails. The nail shank must be minimum 2.8 mm diameter and the length must allow minimum 30 mm penetration of the Vertibat cavity batten.
- **Hempac paint finished shiplap weatherboard fixings** (for Vertibat and Cavibat battens fixed to dwangs) - Grade 316 stainless steel annular grooved jolt head nails. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the wall frame.
- **Hempac paint finished shiplap weatherboard fixings** (for 40 or 45 mm Vertibat battens fixed to studs only) - Grade 316 stainless steel annular grooved jolt head nails. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the Vertibat cavity batten.
- **Hempac clinch nails** - 27 x 2.0, 40 x 2.0 or 50 x 2.0 mm Grade 316 stainless steel annular grooved nails with an off-set flat head.
- **Hempac cover board fixings** - 50 x 2.8 mm silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Hempac Crown Head, Rose Head or Flat Head nails.

4.2 Accessories used with the VertiLine Vertical Shiplap Weatherboard Cavity 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 wall underlay support** - polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible wall 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 flashing tape** - flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- **Window and door trim cavity air seal** - air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self-expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal suitable for use around window, door and other wall penetration openings.
- **Cavibat cavity battens** - manufactured from extruded polypropylene. The battens are cut after extruding to a finished size of approximately 45 mm wide by 18 mm thick. The battens are coloured green and are supplied in 1200 mm long lengths. Cavibat cavity battens are covered by BRANZ Appraisal No. 524 [2012].
- **Cavibat fixings** - 40 x 2.5 mm flat head hot-dip galvanised nails or stainless steel finishing brads used to temporarily fix the battens in place until the cladding is installed.
- **Vertibat cavity batten fixings [20 mm thick batten]** - 40 x 2.5 mm flat head hot-dipped galvanised nails or 50 x 2.87 mm hot-dipped galvanised gun nails to temporarily fix the battens in place prior to installation of the cladding.
- **Vertibat cavity batten fixings [40 or 45 mm thick battens when fixed to dwangs]** - 60 x 2.8 mm flat head hot-dipped galvanised nails or 60 x 2.87 mm hot-dipped galvanised gun nails to temporarily fix the battens in place prior to installation of the cladding.
- **Cavity vent strip** - uPVC, aluminium or stainless steel, punched with 3-5 mm diameter holes or slots complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3.
- **Flashings** - including external corner flashing, internal corner flashing, horizontal inter-storey joint flashing, balustrade and parapet saddle flashing and balustrade and parapet cap flashings. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 and Table 21 for durability and material compatibility requirements.
- **Aluminium joinery head flashings** - as supplied by the joinery manufacturer or contractor.
- **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.

Finishing System Specification - Stain Finish

- 4.3 Prior to the installation of stain finished weatherboards, the back, face, ends and edges of the Hermpac shiplap weatherboards not supplied prefinished must be sealed with an exterior grade oil-based penetrating stain. At least two coats of an exterior grade quality oil-based penetrating stain must be used over the front face of the Hermpac shiplap weatherboards to protect the weatherboards and give the desired finish colour to the exterior walls. The stain must be recommended for use as a wall cladding stain by the manufacturer and must be applied in accordance with the manufacturer's instructions. Proprietary stain systems have not been assessed, and are therefore outside the scope of this Appraisal. *[Note: Herman Pacific Limited recommends the use of oil based stains manufactured by Resene and WoodX.]*

Finishing System Specification - Paint Finish

- 4.4 Prior to the installation of paint finished weatherboards that are supplied unprimed, the back, face, ends and edges of the Hermpac shiplap weatherboards must be primed in accordance with the Technical Literature for the relevant timber type. All exposed edges, including top edges at sills and all bottom edges of Hermpac shiplap weatherboards and accessories not supplied prefinished, must be finished with at least two coats of an exterior grade acrylic latex paint complying with any of Parts 7, 8, 9 or 10 of AS 3730 to protect the weatherboards and give the desired finish colour to the exterior walls. The paint must be recommended for use as a wall cladding paint for the selected timber by the manufacturer and must be applied in accordance with the manufacturer's instructions. Proprietary paint systems have not been assessed, and are therefore outside the scope of this Appraisal. *[Note: For Hermpac shiplap weatherboards, Herman Pacific Limited recommends using paint with a colour that has a Light Reflectance Value (LRV) of greater than or equal to 40%.]*

Handling and Storage

- 5.1 Handling and storage of all materials supplied by Herman Pacific Limited or the building contractor, whether on site or off-site, is under the control of the building contractor. Hermpac vertical shiplap weatherboards must be stacked flat and true, clear of the ground by a minimum of 150 mm and supported on dry and clean timber bearers at maximum 900 mm centres. They must be kept dry at all times either by storing within an enclosed building or when stored externally an additional secondary cover to the plastic wrapping is required. Care must be taken to avoid damage to edges, ends and the weatherboard surfaces.
- 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 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the VertiLine Vertical Shiplap Weatherboard 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.

Design Information

Framing

Timber Treatment

- 7.1 Timber wall framing behind the VertiLine Vertical Shiplap Weatherboard 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. Where Vertibat or Cavibat cavity battens are fixed to dwangs, the dwangs must be fitted flush between the studs at maximum 480 mm centres. Where 40 or 45 mm thick Vertibat cavity battens are fixed to studs only, dwangs must be fitted flush between the studs at maximum 800 mm centres.
- 7.3 Additional framing may be required at soffits, internal and external corners and window and door openings for the support and fixing of cavity battens and the VertiLine Vertical Shiplap Weatherboard Cavity System.
- 7.4 Timber wall framing behind where weatherboards are joined over a cavity batten must be nominal 50 mm thickness [i.e. 45 mm minimum finished thickness].
- 7.5 Timber wall framing must have a maximum moisture content of 24% at the time of the cladding application. *[Note: If Hermpac shiplap weatherboards are fixed to framing with a moisture content of greater than 24% problems may occur at a later date due to excessive timber shrinkage.]*

General

- 8.1 When the VertiLine Vertical Shiplap Weatherboard Cavity System is used for specifically designed buildings up to 2.5 kPa design differential ULS wind pressure, only the weathertightness aspects of the cladding and maximum framing 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 cavity vent strip must provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall in accordance with the requirements of NZBC Acceptable System E2/AS1, Paragraph 9.1.8.3 [b]. *[Note: Vertibat cavity battens can be used to provide vermin proofing at the bottom of the cavity. Cavibat cavity battens do not provide vermin proofing to the bottom of the drained cavity and an additional cavity vent strip must be used.]*

- 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 System E2/AS1, Table 18.
- 8.4 At balcony, deck or roof/wall junctions, the bottom edge of the VertiLine Vertical Shiplap Weatherboard Cavity System must be kept above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable System 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 weatherboard fixing lengths must be increased by a minimum of the thickness of the underlay.
- 8.6 Where the system abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Inter-storey Junctions

- 8.7 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

- 9.1 The mass of the VertiLine Vertical Shiplap Weatherboard Cavity System is less than 30 kg/m². The system is therefore considered a lightweight cladding in terms of NZS 3604.

Impact Resistance

- 9.2 The VertiLine Vertical Shiplap Weatherboard Cavity System has good 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

- 9.3 The VertiLine Cavity System incorporating stain finished weatherboards 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 System E2/AS1, Paragraph 1.1, or up to 2.5 kPa design differential ULS wind pressure where buildings are specifically designed.
- 9.4 The VertiLine Vertical Shiplap Weatherboard Cavity System incorporating paint finished DuraLarch and Ashin-Dura weatherboards 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 System E2/AS1, Paragraph 1.1.
- 9.5 The VertiLine Vertical Shiplap Weatherboard Cavity System incorporating paint finished cedar weatherboards is suitable for use in NZS 3604 Wind Zones up to, and including Medium when dwangs or structural Vertibat cavity battens are at maximum 480 mm centres, and NZS 3604 Wind Zones up to, and including Very High when dwangs or structural Vertibat cavity battens are at maximum 400 mm centres.

Durability

Serviceable Life

- 10.1 VertiLine Vertical Shiplap Weatherboard Cavity System installations are expected to have a serviceable life of at least 20 years provided the system is maintained in accordance with this Appraisal and the Hermpac shiplap weatherboards are continuously protected by a stain or paint finish. *[Note: For stain finished weatherboards, this opinion only covers serviceability with regards to structural and weathertightness performance. It does not cover appearance, which may deteriorate significantly, especially when proper and regular maintenance is not carried out.]*
- 10.2 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of weatherboards in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604, Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

- 11.1 Regular maintenance is essential to ensure the performance requirements of the NZBC are continually met and to ensure the maximum serviceability of the system.
- 11.2 Regular cleaning (at least annually) of the stain or 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.
- 11.3 Recoating of the stain finish will be necessary throughout the life of the cladding system. Restaining must be carried out every 2-3 years or in accordance with the stain manufacturer's instructions. Restaining will be required more frequently on exposed northern and western facing walls. When restaining, care must be taken to ensure bottom edges and shiplap edges are well covered and penetrated with the stain.
- 11.4 Recoating of the paint finish will be necessary throughout the life of the cladding system. Repainting must be carried out every 7-10 years or in accordance with the paint manufacturer's instructions. When repainting, care must be taken to ensure bottom edges and shiplap edges are well covered with the paint.
- 11.5 Annual inspections must be made to ensure that all aspects of the cladding system, including flashings and joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately. Sealant, stain or paint coatings, flashings or the weatherboards must be repaired in accordance with the relevant manufacturer's instructions.
- 11.6 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. *[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 VertiLine Vertical Shiplap Weatherboard Cavity System.]*

Control of External Fire Spread

- 12.1 The VertiLine Vertical Shiplap Weatherboard Cavity System 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

- 13.1 Separation or protection must be provided to the VertiLine Vertical Shiplap Weatherboard Cavity 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

- 14.1 The VertiLine Vertical Shiplap Weatherboard Cavity 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.
- 14.2 The cavity must be sealed off from the roof and sub-floor space to meet code compliance with NZBC Clause E2.3.5.
- 14.3 The VertiLine Vertical Shiplap Weatherboard Cavity System allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with Clause E2.3.6.
- 14.4 The details given in the Technical Literature for weather sealing are based on the 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.
- 14.5 The VertiLine Vertical Shiplap Weatherboard Cavity System, where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirements for junctions, penetrations, etc to remain weather resistant.

Internal Moisture

- 15.1 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

- 15.2 The VertiLine Vertical Shiplap Weatherboard Cavity System is not a barrier to the passage of water vapour, and when installed in accordance with this Appraisal will not create a risk of moisture damage resulting from condensation.

Installation Information

Installation Skill Level Requirements

- 16.1 Installation must always be carried out in accordance with the VertiLine Vertical Shiplap Weatherboard Cavity System Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

VertiLine Vertical Shiplap Weatherboard Cavity System Installation

Wall Underlay and Flexible Sill and Jamb Tape Installation

- 17.1 The selected wall 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 VertiLine Vertical Shiplap Weatherboard Cavity System. Flexible wall 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 wall underlay materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems must be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the wall 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.

Vertibat Cavity Batten Installation (to Dwangs)

17.2 Vertibat cavity battens must be installed horizontally over the wall underlay to the wall framing [dwangs] at maximum 480 mm centres. [Refer to Paragraph 9.5 for the maximum dwang spacings for paint finished cedar weatherboards.] The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The cavity battens must be fixed in place with 40 x 2.5 mm flat head hot-dipped galvanised nails or 50 x 2.87 mm hot-dipped galvanised gun nails [for 20 mm thick battens], or 60 x 2.8 mm flat head hot-dipped galvanised nails or 60 x 2.87 mm hot-dipped galvanised gun nails [for 40 mm thick battens] to temporarily fix the battens in place prior to installation of the cladding.

Vertibat Cavity Batten Installation (to Studs)

17.3 40 or 45 mm thick Vertibat cavity battens must be installed horizontally over the wall underlay to the wall framing [studs] at maximum 480 mm centres. [Refer to Paragraph 9.5 for the maximum Vertibat cavity batten spacings for paint finished cedar weatherboards.] The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The cavity battens must be fixed in place with one 12 gauge x 65 mm long Grade 304 or 316 stainless steel screw at each stud crossing [maximum 600 mm centres] for 40 mm thick battens or one 12 gauge x 75 mm long grade 304 or 316 stainless steel screw at each stud crossing for 45 mm thick battens.

Cavibat Cavity Batten Installation

17.4 The Cavibat cavity battens must be installed horizontally over the wall underlay to the wall framing [dwangs] at maximum 480 mm centres. [Refer to Paragraph 9.5 for the maximum Vertibat cavity batten spacings for paint finished cedar weatherboards.] The cavity battens must be fixed in place with 40 x 2.5 mm hot-dip galvanised flat head nails or galvanised or stainless steel finishing brads at 400 mm centres. Refer to BRANZ Appraisal Number 524 [2012] for further information.

VertiLine Vertical Shiplap Weatherboard Cavity System Installation

- 17.5 Hermpac shiplap weatherboards may be cut on site by power or hand saw. Holes and cut-outs may be formed by using a hole saw.
- 17.6 Hermpac shiplap weatherboards must be dry prior to installation.
- 17.7 Before stain finished Hermpac shiplap weatherboards are installed, the back, face and edges must be sealed with an exterior grade oil-based penetrating stain. During installation, cut ends must be sealed with an exterior grade oil-based penetrating stain.
- 17.8 Before paint finished Hermpac shiplap weatherboards are installed, the back, face and edges must be primed with an exterior grade primer. During the installation of paint finished Hermpac shiplap weatherboards, cut ends must be sealed with two coats of an exterior grade alkyd timber primer.
- 17.9 Before the weatherboards are installed, the corner detail must be prepared to suit the selected option, e.g. external box corner, external corner moulding etc. The necessary flashings must be installed before commencing weatherboard fixing and the cavity closure must be installed continuously around the bottom of the cavity.
- 17.10 Hermpac shiplap weatherboards must be installed starting at the corner of the wall section being clad. The first weatherboard must be installed plumb to assist with the installation of subsequent weatherboards. The weatherboards must overhang the bottom plate by a minimum of 50 mm. The weatherboards should be installed with the lap facing away from the prevailing winds.
- 17.11 Immediately prior to installing the weatherboards over the internal and external corner flashings, a continuous bead of sealant must be applied to the face of the flashing along the fixing line.
- 17.12 Hermpac shiplap weatherboards must be overlapped a minimum of 25 mm with an expansion gap of 2 mm at the overlap. In NZS 3604 Wind Zones up to and including Very High, it is recommended that the top of the weatherboard lap is restrained using the Hermpac clinch nail at every cavity batten. Hermpac clinch nails must be used to restrain the top of the weatherboard lap in the Extra High Wind Zone and specific design wind pressures up to a maximum design differential ultimate limit state [ULS] of 2.5 kPa.

- 17.13 Hermpac shiplap weatherboards must be pre-drilled with a hole slightly smaller than that of the nail. Fix each weatherboard with one nail per board at every cavity batten. Fixing of stain finished weatherboards must be carried out using silicon bronze or Grade 304 or 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails. Fixing of paint finished weatherboards must be carried out using Grade 316 stainless steel annular grooved jolt head nails. The nail shank must be minimum 3.15 mm diameter [2.8 mm diameter for stain finished weatherboards fixed to 40 or 45 mm Vertibat battens fixed to studs only] and the length must allow minimum 30 mm penetration of the wall frame [for Vertibat and Cavibat battens fixed to dwangs] and minimum 30 mm penetration of the batten [for 40 or 45 mm thick Vertibat battens fixed to studs only]. The fixing must be located 30-35 mm in from the weatherboard lap and a minimum of 32 mm from the end of the board. and Crown Head, Rose Head or Flat Head nails must finish flush onto the surface of the weatherboard, not into or below the surface. The nail must be installed with a slight upslope to reduce capillary draw. Jolt head nails must be punched a maximum of 2 mm beneath the surface of the board.
- 17.14 Fix weatherboards in full lengths where possible. Where joints are unavoidable, scarf the weatherboard at 30° over a cavity batten and fix with one fixing through the overlapping board.

Aluminium Joinery Installation

- 17.15 Aluminium joinery and associated head flashings 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.

Finishing

- 17.16 The stain manufacturer's instructions must be followed at all times for application of the stain finish.
- 17.17 To prevent swelling of the weatherboard around punched fixings, the fixing must be filled immediately, or alternatively the weatherboard and the head of the fixing must be primed with a premium alkyd timber primer.
- 17.18 The paint coating manufacturer's instructions must be followed at all times for the application of the paint finish. Hermpac shiplap weatherboards must be painted as soon as practicable following fixing and must be clean and dry before commencing. If the Hermpac shiplap weatherboards are exposed to the weather for more than 2 months they must be reprimed with one coat of primer prior to the application of the finishing coats. Allow the recommended drying time between coats and follow the temperature limitations for application.

Inspection

- 17.19 The Technical Literature must be referred to during the inspection of VertiLine Cavity System installations.

Health and Safety

- 18.1 Cutting of Hermpac shiplap weatherboards must be carried out in well ventilated areas and dust masks, eye and hearing protection must be worn.
- 18.2 Safe use and handling procedures for the components that make up the VertiLine Vertical Shiplap Weatherboard 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

19.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for the VertiLine Vertical Shiplap Weatherboard Cavity System is based on testing and evaluation of all details within the scope and as stated within this Appraisal. The VertiLine Vertical Shiplap Weatherboard Cavity System was tested to NZBC E2/VM1. The testing assessed the performance of the Vertibat and Cavibat cavity battens, foundation detail, window head, jamb and sill details, meter box head, jamb and sill details, vertical joints, internal and external corners and balustrade to wall junction. 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 cavity-based weatherboard claddings.
- Fastener pull through testing. BRANZ determined design wind suction pressures, and by comparing these pressures with AS/NZS 1170 pressure coefficients, the fixing requirements were determined for timber framed walls.

Other Investigations

- 20.1 Structural and durability opinions have been provided by BRANZ technical experts.
- 20.2 The performance of timber weatherboard wall cladding products in New Zealand has been considered, including the structural and durability performance, and non-hazardous nature.
- 20.3 Site visits have been carried out by BRANZ to assess the practicability of installation.
- 20.4 The Technical Literature for the VertiLine Vertical Shiplap Weatherboard Cavity System has been examined by BRANZ and found to be satisfactory.

Quality

- 21.1 The manufacture of Hermpac shiplap weatherboards 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.
- 21.2 The quality of materials, components and accessories supplied by Herman Pacific Limited is the responsibility of Herman Pacific Limited.
- 21.3 Quality of installation on site of components and accessories supplied by Herman Pacific Limited and the building contractor is the responsibility of the installer.
- 21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and joinery, wall underlays, flashing tapes, air seals, cavity battens and the VertiLine Vertical Shiplap Weatherboard Cavity System in accordance with the instructions of Herman Pacific Limited.
- 21.5 Building owners are responsible for the maintenance of the VertiLine Vertical Shiplap Weatherboard Cavity System in accordance with the instructions of Herman Pacific Limited.

Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 4534:2006 Zinc and zinc/aluminium-alloy coatings on steel wire.
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3603:1993 Timber Structures Standard.
- NZS 3604:2011 Timber-framed buildings.
- NZS 3617:1979 Specification for profiles of weatherboards, fascia boards and flooring.
- NZS 4211:2008 Specification for performance of windows.
- BRANZ Bulletin Number 411, April 2001, Recommended Timber Cladding Profiles.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 (Amendment 7, 01 January 2017).
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 13 October 2017.

This Appraisal has been amended to update the system name, to include Dura-Larch and Ashin-Dura as alternative timber types for selected Hermpac Shiplap weatherboards, and to include paint as an alternative finish.



In the opinion of BRANZ, the **Vertiline Vertical Shiplap Weatherboard 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 **Herman Pacific 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. **Herman Pacific 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 **Herman Pacific 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 **Herman Pacific Limited** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

16 September 2014