



BRANZ Appraised
Appraisal No. 1203 [2021]

NZSIP SMART PANEL BUILDING SYSTEM



Appraisal No. 1203 [2021]

BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 NZSIP Smart Panel Building System is a house building system based on structural insulated panels (SIPs) which are used for walls and roofs. The design and construction of the remainder of the building structure, comprising foundation, ground and upper floor, interior walls and roof framing, are conventional. Wall and roof cladding are conventional and fixed to timber battens or purlins attached to the panels. Joinery and internal finishing are also conventional.
- 1.2 NZSIP Smart Panels are manufactured of Strandboard® facings with a factory foamed polyurethane insulation (PUR) core. The panels are 115, 165 or 215 mm thick, nominally 1,205 mm wide, with standard lengths up to 3.6 m. Panels can also be manufactured to varying lengths and widths depending on their design location.

Scope

- 2.1 The NZSIP Smart Panel Building System has been appraised for use in single unit [detached] housing, which meets the scope of Clause 1.1.2 of NZS 3604 with the following limitations:
 - buildings must be single or two-storeys, with a height restriction of up to 10 m; and,
 - detached housing 1 m or more from the relevant boundary; and,
 - the ground floor construction platform must comprise a concrete slab-on-ground constructed in accordance with NZS 3604, or a suspended timber-framed floor constructed in accordance with NZS 3604; and,
 - the first [upper] floor is a suspended timber floor constructed in accordance with NZS 3604; and,
 - the first floor live load does not exceed 1.5 kPa; and,
 - where roof framing construction comprises of trusses or rafters which meet the provisions of NZS 3604; and/or,
 - where the roof is constructed using NZSIP Smart Panels supported on beams, these must be subject to specific engineering design [SED]; and,
 - with a roof pitch between 3° and 30°; and,
 - roof and wall claddings must comply with NZBC Acceptable Solution E2/AS1 or a current BRANZ Appraised system.



- 2.2 This Appraisal covers the assembly of the external walls and roof using the NZSIP Smart Panel Building System with the following connections:
- Wall panel to concrete slab foundation or light timber frame ground floor, bottom plate fixing.
 - Wall panel to first floor panel bottom and top plate fixing.
 - Roof panel to wall and supporting structures.
 - Wall batten and roof purlin attachment.
- 2.3 The use of NZSIP Smart Panel Building System wall and ceiling panels in the following situations have not been assessed and are outside the scope of this Appraisal.
- Sauna rooms and the like, where they may be exposed to sustained high humidity (greater than 85% relative humidity [RH]) or liquid water.
 - Where temperatures are in excess of 35°C over large areas for prolonged periods (e.g. ceiling heating installations) or in excess of 50°C in localised areas (e.g. the area adjacent to a fuel burning appliance), refer to Paragraph 11.1.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the NZSIP Smart Panel Building 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. NZSIP Smart Panel Building System meets the requirements for loads arising from self-weight, imposed gravity loads, earthquake, snow, wind and creep [i.e. B1.3.3 (a), (b), (f), (g), (h) and (q)]. See Paragraphs 8.1-8.10.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years. NZSIP Smart Panel Building System meets this requirement. See Paragraphs 9.1-9.3.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. NZSIP Smart Panel Building System contributes to meeting this requirement. See Paragraphs 13.1-13.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. NZSIP Smart Panel Building System meets this requirement. See Paragraphs 16.1-16.3.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 (a) and H1.3.2 E. NZSIP Smart Panel Building System contributes to meeting these requirements. See Paragraphs 17.1-17.5.

Technical Specification

- 4.1 The following components and accessories used with the NZSIP Smart Panel Building System are manufactured and supplied by NZSIP Limited:

NZSIP Smart Panels

- These are factory-foamed sandwich panels consisting of Laminex New Zealand's Strandboard® facings, nominally 12 mm thick, with a foamed PUR insulation core. The panels are manufactured with integral Cam-Locks to facilitate connection to adjacent panels. The panels are manufactured in a variety of widths, lengths and shapes dependent on the panel location.
- Standard wall panels are 115 or 165 mm thick, 1,205 mm wide by 2.4, 2.7 and 3 m high.
- Standard roof panels are 115, 165 or 215 mm thick, 1,205 mm wide by 2.4, 2.7, 3 and 3.6 m long.
- The panels are manufactured with embedded framing at locations as required by the building SED. The timber framing is LVL, treated to meet the requirements of H1.2 and with a stress grade dependent on location and SED. Embedded framing is used as supports for load bearing elements at openings such as window and doors. Header panels and solid lintel panels are used at openings.

Other Components

- **Bottom plates** - sized to suit the wall panel size and are solid timber SG8 or LVL8, treated to H1.2. For 115 mm thick NZSIP Smart Panel walls, the bottom plate is 90 x 45 mm and for 165 mm thick NZSIP Smart Panel walls, the bottom plate is 140 x 45 mm. The bottom plate may include a H1.2 treated plywood strip to raise the Strandboard® edges off the floor. For details refer to the Technical Literature.
 - **Top plates** - LVL8 or LVL11, dependent on location and SED. Top plates are continuous lengths that sit into the recess in the NZSIP Smart Panel walls.
 - **Roof wedge infill** - an LVL or solid timber shaped wedge section, manufactured to suit the roof pitch, used where the top plate is supporting a NZSIP Smart Panel roof.
 - **Wall panel splines** - panel in panel splines that are used to accommodate small dimensional errors during construction and are installed one at each wall. The spline is manufactured as a reduced thickness NZSIP Smart Panel, measuring 140 mm wide, with the overall thickness sized to suit the wall panel thickness, 90 mm for a 115 mm NZSIP Smart Panel wall or 140 mm for a 165 mm NZSIP Smart Panel wall. The gap between adjacent wall panels can be adjusted from 0 to 50 mm as required.
 - **NZSIP Smart Panel fixings** - a range of standard nails and screws used with the NZSIP Smart Panel Building System, see the Technical Literature for full details.
- 4.2 A range of proprietary products are used for connecting the NZSIP Smart Panel Building System wall and roof panels to each other and the rest of the structure. These may be supplied by either NZSIP Limited or the installer, see the Technical Literature for full details.
- 4.3 The following components used with the NZSIP Smart Panel Building System are supplied by the registered installer or NZSIP Limited. For details refer to the Technical Literature:
- **Flexible roof and wall underlays** - these must comply with NZBC Acceptable Solution E2/AS1, Table 23 or breather-type membranes covered by a valid BRANZ Appraisal for use as roof or wall underlays.
 - **Sealing tape** - compatible with roof and wall underlays and the Strandboard® substrate.
 - **Cavity battens** - wall cavity battens are solid timber SG8 45 x 45 mm H3.1.
 - **Roof purlins** - roof purlins are solid timber SG8 70 x 45 mm H1.2.
- 4.4 The remaining materials and components required to construct housing are supplied by the building contractor. These are in accordance with the contract documents and are building project specific. These have not been assessed by BRANZ and are outside of the scope of this Appraisal.

Handling and Storage

- 5.1 NZSIP Smart Panel Building System wall and roof panels are trucked to the site and are normally craned into position. If it is necessary to store the wall and roof panels on-site, care should be taken to ensure they are stacked flat, kept dry and that proper air circulation can occur around the stack.
- 5.2 To minimise storage and handling on-site, and to maximise construction efficiency, NZSIP Smart Panel Building System wall and roof panels transported from the factory are stacked and packaged to coincide with the approximate order of erection. NZSIP Smart Panel Building System wall and roof panels must always be handled carefully to avoid physical damage.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature. The Technical Literature documents 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

General

- 7.1 The NZSIP Smart Panel Building System, when specifically designed and constructed in accordance with the Technical Literature, will meet the requirements of NZBC Clause B1 Structure. The NZSIP Smart Panel Building System is intended for buildings up to two-storeys, with a maximum height of 10 m and shall in all cases be subject to SED by a chartered professional engineer.
- 7.2 Standard structural connection details are given in the Technical Literature. Connections that do not conform to these details must be the subject of SED.
- 7.3 The NZSIP Smart Panel Building System provides a robust and stable substrate for the application of a wide variety of cladding and lining systems. The selection of exterior cladding and interior lining systems is the responsibility of the designer. Cladding and lining systems for use over the NZSIP Smart Panel Building System have not been assessed by BRANZ and are outside the scope of this Appraisal.
- 7.4 Structural cavity battens are 45 x 45 mm H3.1. Refer to Paragraph 8.8 for the selection of fixing type and spacing and cavity batten spacing for different Wind Zones.
- 7.5 Conventional roof trusses are subject to SED.
- 7.6 Roof purlins are 70 x 45 mm solid timber S68 H1.2 fixed to the roof panels using Fortress 8 g x 75 mm CSK square drive stainless steel screws.
- 7.7 The internal habitable spaces of NZSIP Smart Panel Building System are finished with a gypsum plasterboard fitted over a batten.
- 7.8 The selection of internal linings must consider the area use e.g. where impervious linings are required in wet areas.
- 7.9 Other buildings can also be built subject to a specific design. This aspect has not been assessed and is outside the scope of this Appraisal. NZSIP Limited must be consulted for design and construction information relating to this use.

Structure

General

- 8.1 The structural design of the system is based on the action of a configuration of connected NZSIP Smart Panel wall and roof panels with the ground and first floors.
- 8.2 The stiffness and strength of NZSIP Smart Panel walls and lintels are adequate to resist gravity, wind and earthquake loads to the same level as conventional timber framing with similar deflections.

Imposed Loads

- 8.3 The maximum first floor live load is 1.5 kPa. All other live loads are those prescribed by AS/NZS 1170 for NZS 3604 applications.

Wall Bracing Resistance

- 8.4 The in-plane rigidity of a NZSIP Smart Panel Building System wall panel is high, and the wind and earthquake bracing resistance it provides is limited by the connections. Sliding is prevented by connections at the floor. Overturning is prevented by panel end hold down straps. Connections to the floor are by screws, nails and floor framing anchors.
- 8.5 The Technical Literature provides bracing resistance values for the NZSIP Smart Panel Building System wall panel configurations in order to satisfy the requirements for earthquake and wind bracing which are determined from the tables in Section 5 of NZS 3604.

Wind Loads

- 8.6 Housing built with NZSIP Smart Panel Building System wall and roof panels, in accordance with the provisions of the Technical Literature and this Appraisal, is suitable for use in all NZS 3604 Wind Zones up to, and including, Extra High. This is provided all other components, e.g. the cladding, roof coverings, roof framing and connections are rated for the relevant Wind Zone.



Lintels

- 8.7 Guidance for the selection of lintel and lintel connections can be obtained from NZS 3604, Section 8.6. Where the design requires a lintel outside of NZS 3604, this requires SED.

Cavity Battens

- 8.8 The selection of fastener, fastener spacing and cavity batten spacing can be selected for different Wind Zones using the tables included in the Technical Literature.

Roof Purlins

- 8.9 Roof purlins are fixed using Fortress 8 g x 75 mm CSK square drive stainless steel screws. The fixing spacing and purlin spacing can be selected for different Wind Zones using the tables included in the Technical Literature.

Service Penetrations

- 8.10 Penetration details for piping and electrical cabling are provided in the Technical Literature. All other penetrations are outside the scope of this Appraisal and NZSIP Limited must be consulted for advice.

Durability

- 9.1 The durability is dependent on the NZSIP Smart Panel Building System wall and roof panels and the connections remaining dry in service. It is also dependent on the NZSIP Smart Panel Building System wall and roof panels not being exposed to sustained high humidities, liquid water or high temperatures.
- 9.2 The exterior cladding system, including joints, openings and perimeter junctions, must be maintained to ensure adequate protection is continually provided against water ingress. The internal linings, floor coverings and finishing, including joints, openings and the perimeters must be maintained to provide protection from internal moisture. The cladding manufacturer's installation and maintenance instructions, together with the details in the Technical Literature must be followed.
- 9.3 When a cladding is installed in accordance with the requirements of NZBC Acceptable Solution E2/AS1, the NZSIP Smart Panel Building System will meet the robustness intent of NZS 3602.

Maintenance

- 10.1 Regular inspections [at least annually] of the external cladding system and the internal linings and finishes must be made, and any damage or deterioration repaired. External cladding protective coating systems must be cleaned and reapplied as necessary to maintain a weathertight surface. This work must be carried out in accordance with the relevant coating manufacturers' instructions. The Technical Literature contains details of how NZSIP Smart Panel Building System wall and roof panels must be maintained.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to the NZSIP Smart Panel Building 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.

Fire Affecting Areas Beyond the Fire Source

Control of Internal Fire and Smoke Spread

- 12.1 The NZSIP Smart Panel Building System core consists of a PUR foam [combustible insulant], therefore, the interior surface finish must achieve a Group Number of not more than 3 for the completed system as per NZBC Acceptable Solution C/AS1, Section 4.3. The NZSIP Smart Panel Building System will need to be enclosed by an interior lining material selected to meet this requirement.
- 12.2 The PUR foam used in the NZSIP Smart Panel Building System has been tested for compliance with the flame propagation criteria as specified in AS 1366.

External Moisture

- 13.1 The NZSIP Smart Panel Building System panels must be protected against the effects of external moisture by the building's external envelope. The external wall and roof cladding system, including all joints, must be maintained in a weathertight condition. Subfloors must be maintained weathertight and ventilated in accordance with NZS 3604, Section 6.14.
- 13.2 Wall cavities must not vent into the roof or underfloor spaces.
- 13.3 Roof and wall cladding systems for use over NZSIP Smart Panel Building System have not been assessed by BRANZ and are outside the scope of the Appraisal.

Internal Moisture

- 14.1 The NZSIP Smart Panel Building System will create an air tight, energy efficient building envelope. Due to the inherent airtightness of the NZSIP Smart Panel Building System, it is necessary for the designer to manage adequate air changes and suitable moisture control management to maximise energy savings, occupant comfort and building durability.
- 14.2 Wet areas are spaces where sanitary fixtures and sanitary appliances are located such as bathrooms, toilets, laundries and kitchens. There are two general categories of wet areas as follows:
 - a) **Water Splash** – These are areas subject to intermittent splashing of water such as around baths, vanities, tubs and sinks.
 - b) **Shower Areas** – These are areas subject to frequent and heavy water splash such as enclosed showers, unenclosed shower zones and showers over baths.
- 14.3 Both the above wet area categories must be finished with surfaces and joints that are impervious and easily cleaned. In addition, shower areas must be waterproofed. This can be achieved using proprietary rigid shower lining systems, flexible vinyl shower wall finish, or tiling. Tiled shower areas must include a wet area waterproofing membrane system under the tiles.

Ventilation

- 15.1 The typical NZSIP Smart Panel Building System construction creates an air tight, energy efficient building envelope. Due to the inherent airtightness of the NZSIP Smart Panel Building System, some permanent ventilation, not reliant on window openings, must be provided in wet areas, such as kitchens, bathrooms and laundries. The Technical Literature contains details for how this may be achieved. Vented windows, wall or ceiling mounted extract fans, or similar fittings are recommended in all building wet areas. Extract fans for moisture laden air must be vented externally.
- 15.2 Natural ventilation must also be provided with the minimum area of openable window as 5% of the floor area in each room.

Hazardous Building Materials

- 16.1 NZSIP Smart Panel Building System will not present a health hazard to people.
- 16.2 The degree of health hazard caused by any vapour release will depend on the total amount of vapour released from all sources in the building including flooring and furniture, the ventilation rate and the degree of encapsulation provided by surface finishes, such as coatings and carpets. The permanent ventilation required and recommended to control moisture levels will also avoid any accumulation of vapour released, refer to Paragraphs 14.1-14.3.
- 16.3 The rigid PUR foam cores of the panels are formed during the panel manufacturing process at the NZSIP Limited plant. Concentrations of the precursor materials in the finished product will be low, and in-service, any reactant residues or blowing agent will be separated from occupied areas by an inner Strandboard® skin and a cavity behind the lining.

Energy Efficiency

Building Thermal Envelope

- 17.1 The NZSIP Smart Panel Building System can be used in housing applications to contribute to meeting the thermal insulation requirements of NZBC H1. The performance provisions of NZBC H1.3.1 [a] will be met by calculating the Building Performance Index [BPI], ensuring this does not exceed 1.55.
- 17.2 The continuous nature of the NZSIP Smart Panel Building System will provide a consistent contribution to the total construction thermal resistance [R-value] ensuring a minimum variation in the actual R-value achieved in construction.

Alternative Solution

- 17.3 The 2009 version of NZS 4218 may be used as an Alternative Solution to provide compliance with the performance provision of NZBC H1.3.1 [a]. This must be read in conjunction with NZBC Acceptable Solution H1/AS1. The schedule, calculation or modelling method can be used to determine the total construction R-value. Refer to NZS 4218, Figure 1 Decision Flowchart for guidance on the selection of the most suitable method.

BPI

- 17.4 The BPI can be calculated using the BRANZ Annual Loss Factor [ALF] tool. NZBC Verification Method H1/VM1, Paragraph 1.2.1 states that compliance with NZBC Clause H1.3.2 E satisfies NZBC Clause H1.3.1 [a]. The BPI must not exceed 1.55.

Determining the R-value of the NZSIP Smart Panel Buildings System

- 17.5 The R-value of building elements may be verified by using NZS 4214. The BRANZ House Insulation Guide provides the R-values of common building elements and is based on calculations from NZS 4214. NZSIP Smart Panels are manufactured using materials with the following thermal conductivities.
- In-panel timber framing: 0.13 W/mK
 - Strandboard®: 0.13 W/mK
 - PUR foam: 0.021 W/mK

[Note: The PUR foam thermal conductivity given is for new foams, no allowance has been made for time related effect on this performance. It is suggested that with regards to the PUR foam, the thermal conductivity used for calculation purposes be set at 0.023 W/mK to allow for the time dependent effects on the foam. To determine the installed [i.e. construction] R-value, an assumed value of 4% has been allowed to account for thermal bridging].

Table 1: NZSIP Smart Panel Building System [in-panel] R-values, accounting for thermal bridges

Panel thickness [mm]	Location	Stated R-Value
115	Wall	4
115	Roof	4
165	Wall	6
165	Roof	6
215	Roof	8

Installation Information

Installation Skill Level Requirements

- 18.1 All design and building work must be carried out in accordance with the NZSIP Smart Panel Building System Technical Literature and this Appraisal. All building work must be undertaken by NZSIP Limited registered installers. 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.



General

- 19.1 NZSIP Smart Panel Building System wall and roof panels must be constructed in accordance with the non-specific design information contained within the Technical Literature. The following is a summary of important aspects.
- 19.2 NZSIP Smart Panel Building System wall and roof panels must be inspected for water damage before, during and after installation and damaged panels must be repaired or replaced.
- 19.3 NZSIP Smart panels are delivered in weatherproof, clear wrapped pallets numbered to show specific panel location. Site-stored panels must be kept dry and covered. Panels must be stored off the ground, in an area that is not susceptible to flooding.
- 19.4 Particular care must be taken that the foundations and building platform are level and square and that perimeter dimensions are accurate. This is important as NZSIP Smart Panel Building System panels are accurately manufactured.
- 19.5 NZSIP Smart Panels timber and wood-based components must have a moisture content of not more than 18% at the time of enclosure.
- 19.6 Bottom plates are installed using the techniques shown in the Technical Literature.
- 19.7 Refer to the NZSIP Smart Panel Building System Technical Literature for wall set up and fixing. The wall panels are fixed to the base plate with 50 x 2.8 mm annular groove nails at 100 mm centres.
- 19.8 Foam sealant is applied to the junction between adjacent panels before tightening panel joints together with the Cam-Locks.
- 19.9 Smart wall panels include an adjustment spline panel, one per wall length, to assist in managing any unforeseen variation in foundation and bottom plate dimensions.
- 19.10 LVL top plates are fitted into the slot along top of each wall and fixed with 50 mm x 2.8 ring annular groove nails at 100 mm centres.
- 19.11 Use temporary plastic wrap to protect the top plate prior to installation of the roof. Careful planning during the panel installation stage should be undertaken to eliminate the risk of damage to the structure due to wind and rain.
- 19.12 First floor framing may be fixed to NZSIP Smart Panel Building System walls with joist hangers or supported by the NZSIP Smart Panel Building System wall with beam pockets and support posts.
- 19.13 Install the solid timber wedge shape at the interface between the roof panel and the top plate. Wedges are manufactured to suit the roof pitch to provide a landing for the roof panels. The panel screws are fixed through both the roof panel and wedge and into the top plate.
- 19.14 Conventional roof trusses or rafters must be restrained against uplift by using purlin cleats secured to the top plate as appropriate to the building's Wind Zone.
- 19.15 Roof and wall cladding should be installed as soon as practicable. Where NZSIP Smart Panel Building System wall and roof panels are exposed for longer than 90 days, waterproof covers such as tarpaulins must be provided to keep them dry.

Services

- 20.1 Wiring may be fed through the interior wall lining cavity or through ducts or fixed to the inside surface of the lined NZSIP Smart Panel Building System wall and roof panels through conduit.
- 20.2 Plumbing and pipework is run through the foundation platform, where possible up behind or in fitted joinery, or within the wall panel lining cavity. Plumbing and pipework must not be run inside the NZSIP Smart Panel Building System panels.

Joinery

- 21.1 Exterior windows and doors are conventional. They are fitted and fastened into openings with all required seals and flashings in accordance with the details in NZBC Acceptable Solution E2/AS1 and the relevant manufacturer's instructions.

Health and Safety

- 22.1 Suitable protective masks must be worn to prevent inhalation of dust resulting from cutting or working with the NZSIP Smart Panel Building System panels.



Basis of Appraisal

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

Tests and Analysis

- 23.1 Tests have been carried out by Scion and reviewed by BRANZ, to establish the characteristic strength and stiffness of the NZSIP Smart Panel Building System wall and roof panels.
- 23.2 Analysis was carried out by BRANZ to establish the characteristic strength of the NZSIP Smart Panel Building System wall panel to roof panel connections and wall panel to floor connections.
- 23.3 Tests were carried out by BRANZ to establish the durability of NZSIP Smart Panel Building System wall, floor and ceiling panels.

Calculations

- 24.1 Calculations to justify the structural adequacy of the NZSIP Smart Panel Building System, have been examined by BRANZ and found to be satisfactory.

Other Investigations

- 25.1 The satisfactory performance of SIP systems similar to the NZSIP Smart Panel Building System wall and roof panels in north America over a period of 20 years has been recognised by BRANZ.
- 25.2 Site inspections at various stages of construction, to assess installation methods and to examine completed installations of the NZSIP Smart Panel Building System, have been made by BRANZ.
- 25.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 26.1 Details of materials and components used, and methods adopted for quality control have been obtained by BRANZ and found to be satisfactory.
- 26.2 The manufacture of NZSIP Smart Panel Building System wall and roof panels by NZSIP Limited has been assessed by BRANZ.
- 26.3 The quality of materials, components and accessories supplied by NZSIP Limited is the responsibility of NZSIP Limited.
- 26.4 Quality on-site is the responsibility of NZSIP Limited's registered installer.
- 26.5 NZSIP Limited is responsible for the building design, and the registered installer is responsible for the quality of installation of NZSIP Smart Panel Building System wall and roof panels, interior joinery and the foundation.
- 26.6 The roof and wall cladding manufacturer and/or installer is responsible for the quality of installation of the roof and wall claddings, the building wraps, flashing tapes, air seals, joinery head flashing and cavity battens in accordance with the manufacturer's instructions and NZBC Acceptable Solution E2/AS1.
- 26.7 Building owners are responsible for the maintenance of NZSIP Smart Panel Building System wall and roof panels and their connections in accordance with the instructions of NZSIP Limited and the building envelope in accordance with the requirements of the selected cladding manufacturer.



Sources of Information

- AS1366.1:1992 Rigid cellular plastics sheets for thermal insulation, Part 1: Rigid cellular polyurethane [RC/PUR]
- AS/NZS 1170:2002 Structural design actions.
- BRANZ House Insulation Guide, Fifth Edition 2014.
- NZS 3602:2003 Timber and wood-based products for use in buildings.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4214:2006 Methods of determining the total thermal resistance of parts of buildings.
- NZS 4218:2009 Thermal insulation - Housing and small buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



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NZSIP SMART PANEL BUILDING
SYSTEM



In the opinion of BRANZ, **NZSIP Smart Panel Building 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 **New Zealand Structural Insulated Panels [NZSIP] 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. **New Zealand Structural Insulated Panels [NZSIP] 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 **New Zealand Structural Insulated Panels [NZSIP] 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 **New Zealand Structural Insulated Panels [NZSIP] Limited** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

21 December 2021