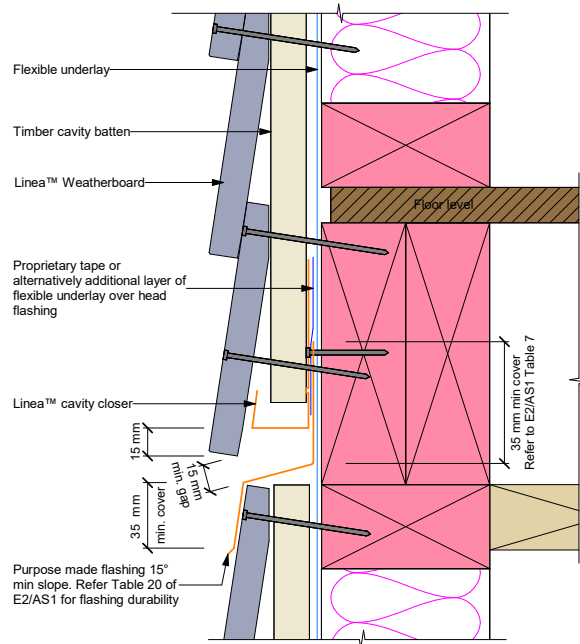


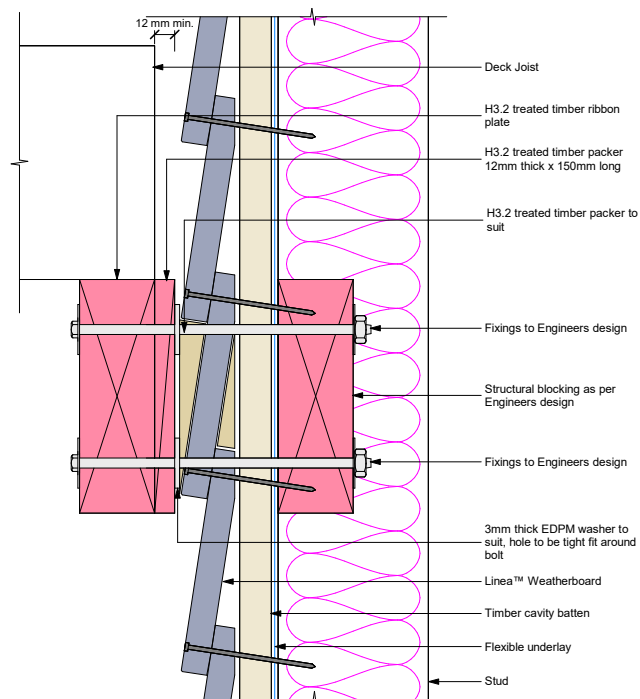
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Figure 27: Drained flashing joint at floor level



Note:
This detail is required to limit cavities to a maximum of 2 stories
or 7 metres. Refer E2/AS1 clause 9.1.9.4.

Figure 28: Timber deck junction



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Figure 29: One piece apron flashing joint

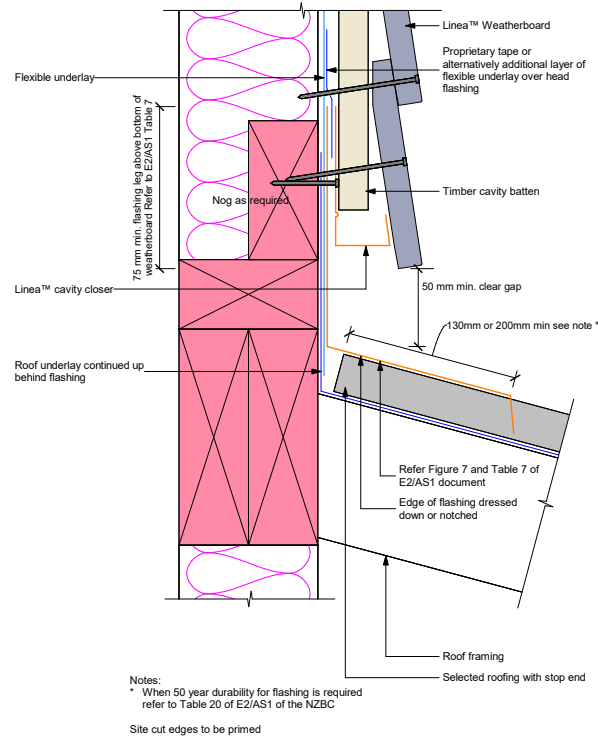
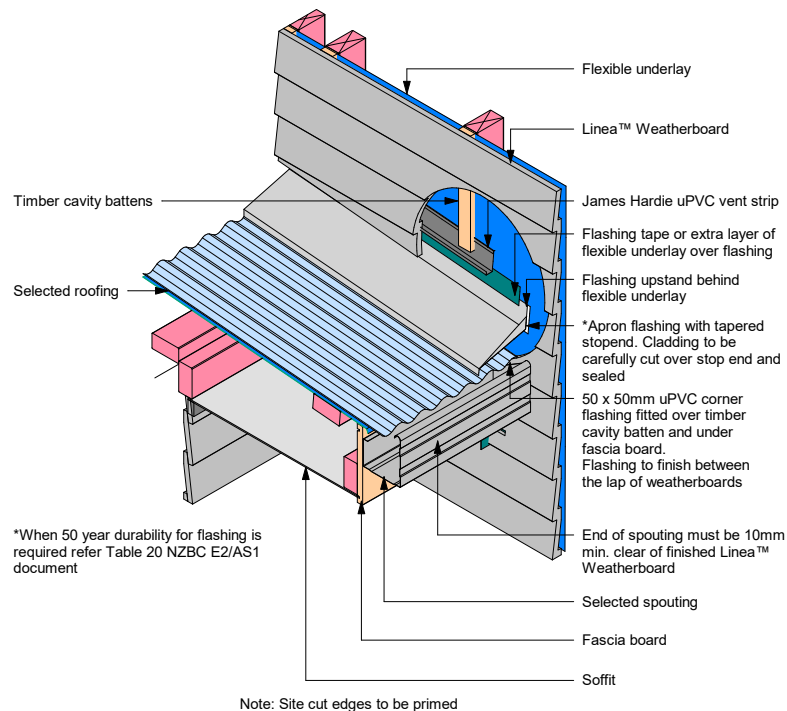


Figure 30: Roof to wall junction detail



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Figure 31: Parapet flashing

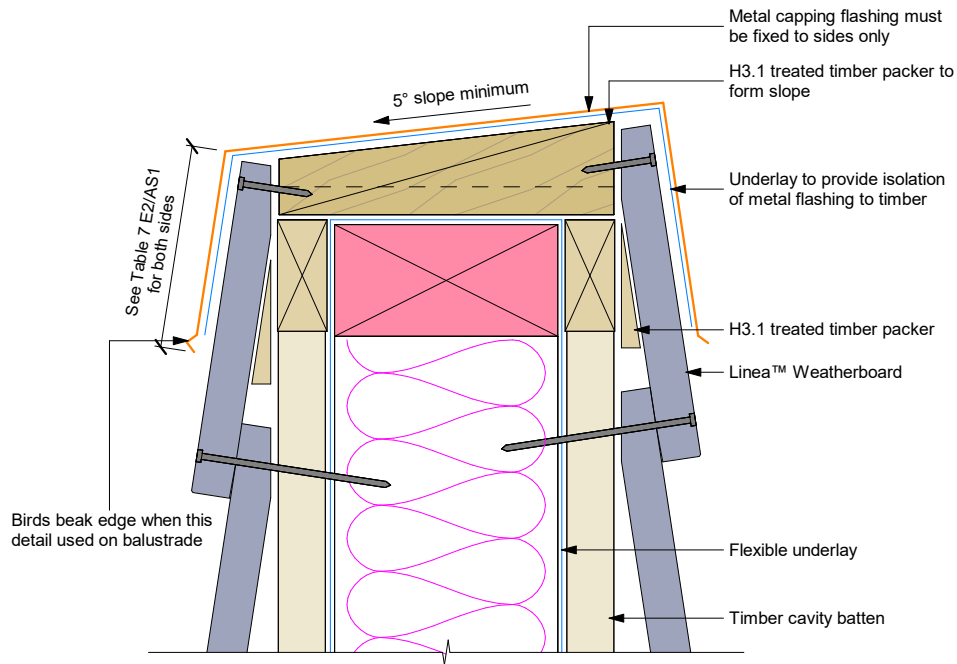
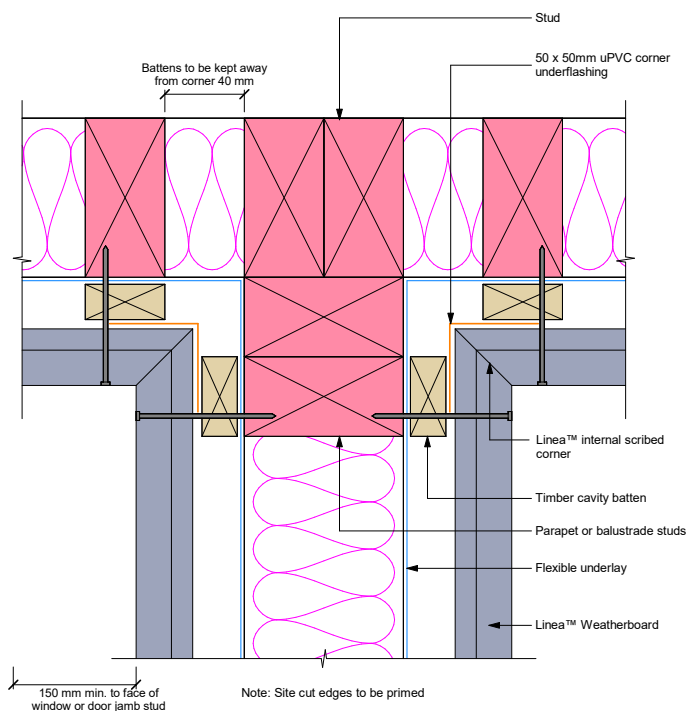
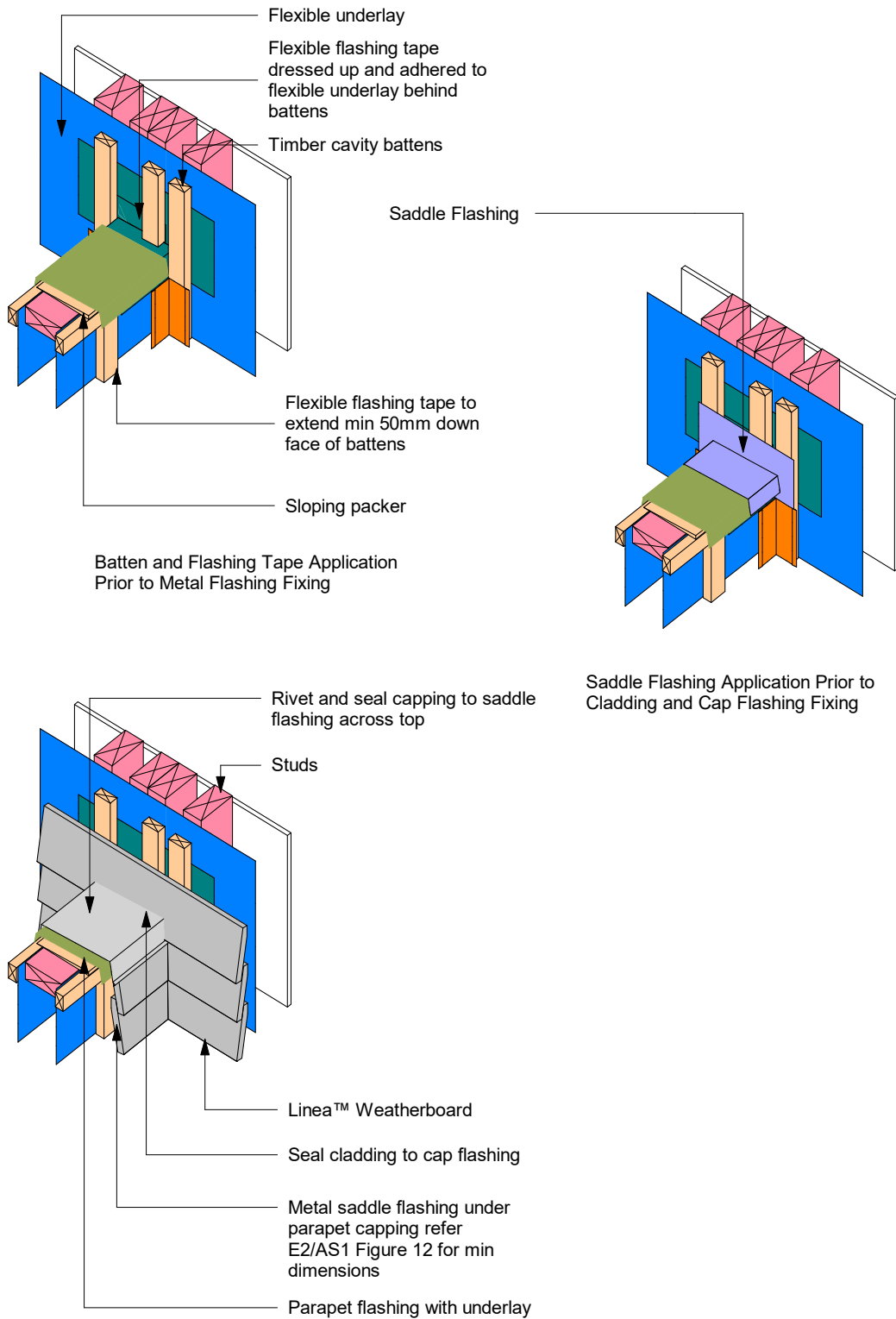


Figure 32: Enclosed deck balustrade to wall



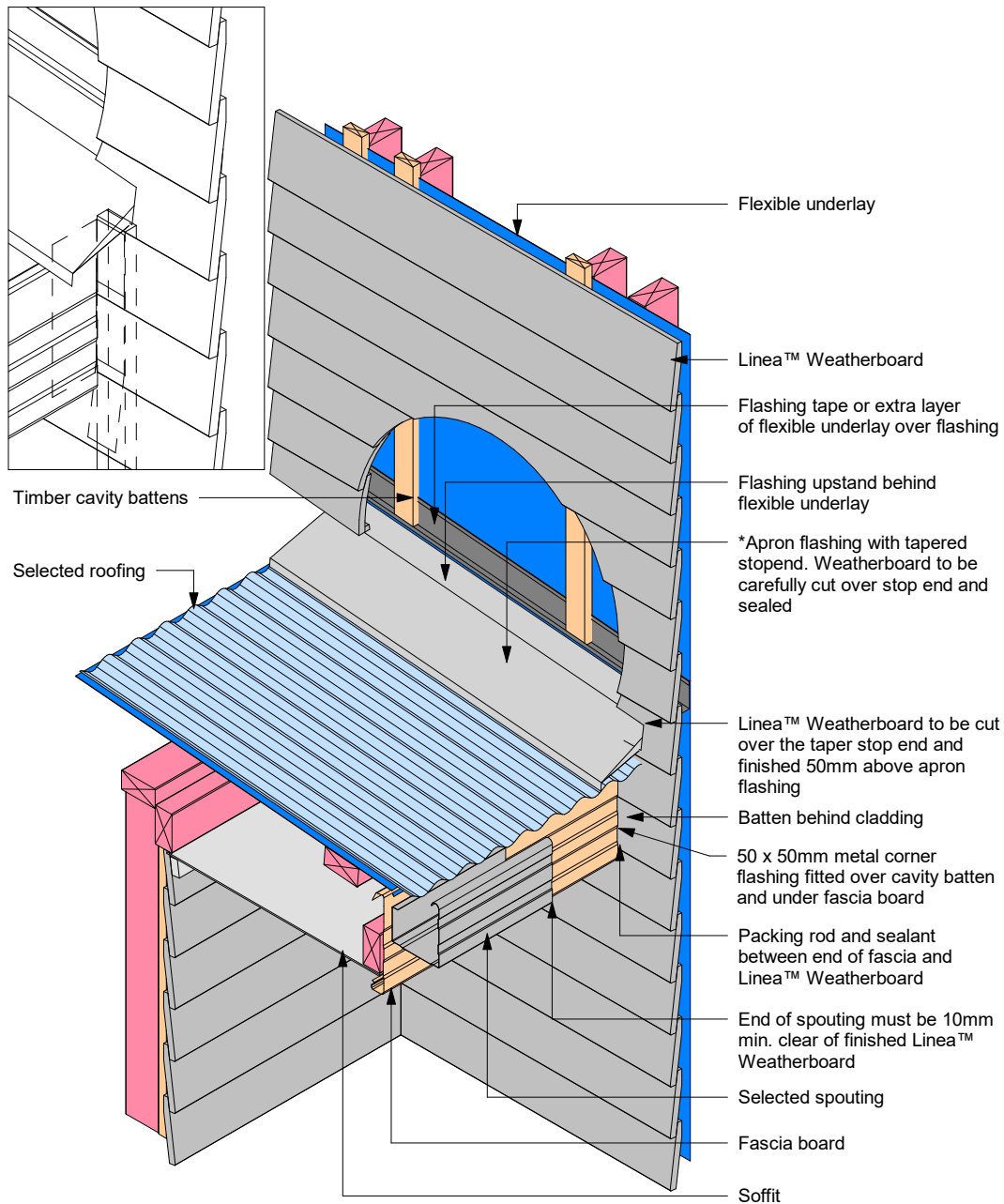
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Figure 33: Enclosed balustrade to wall



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Figure 34: Junction Linea™ Weatherboard and fascia board

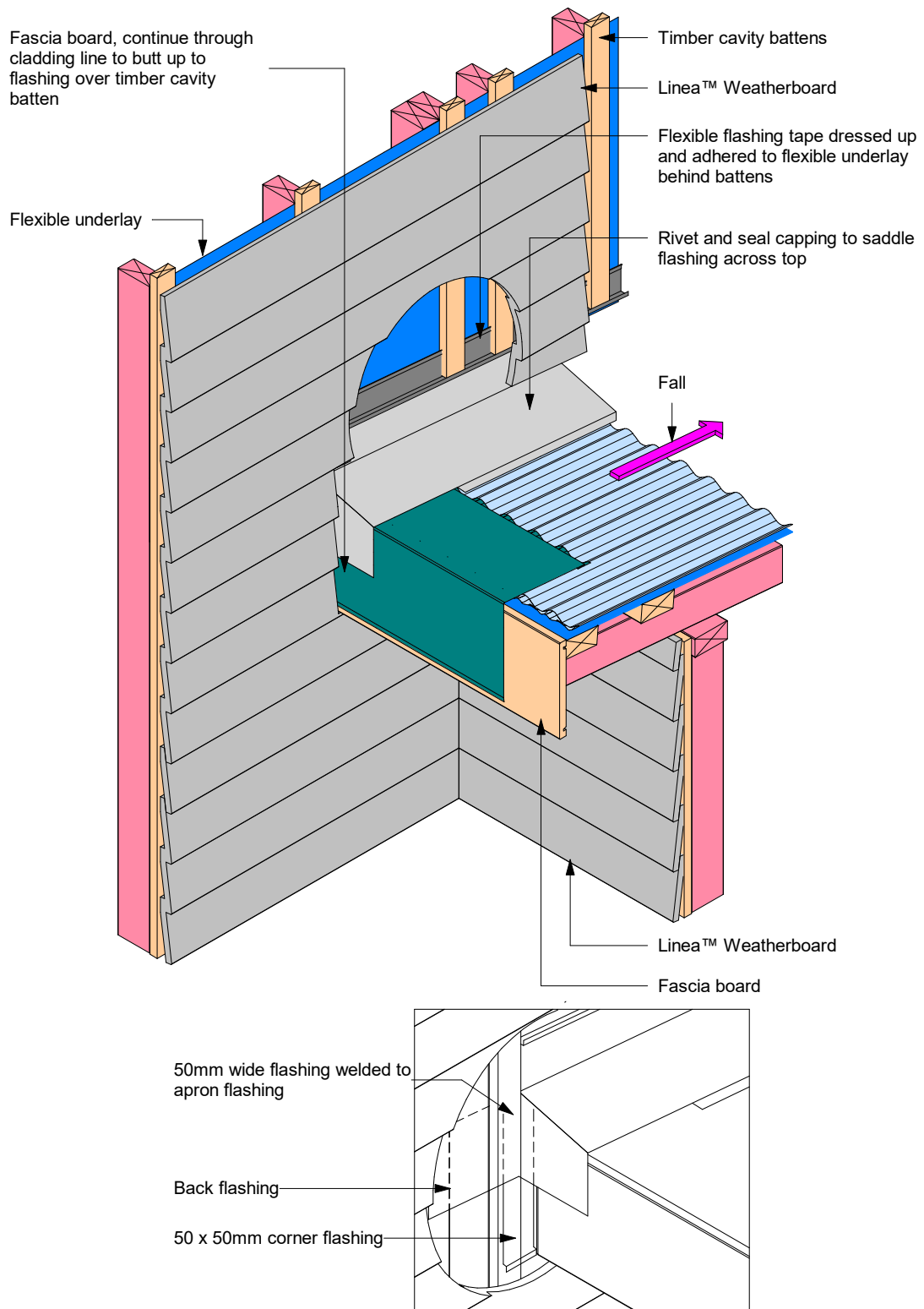


*When 50 year durability for flashing is required refer Table 20 NZBC E2/AS1 document

Note: Site cut edges to be primed

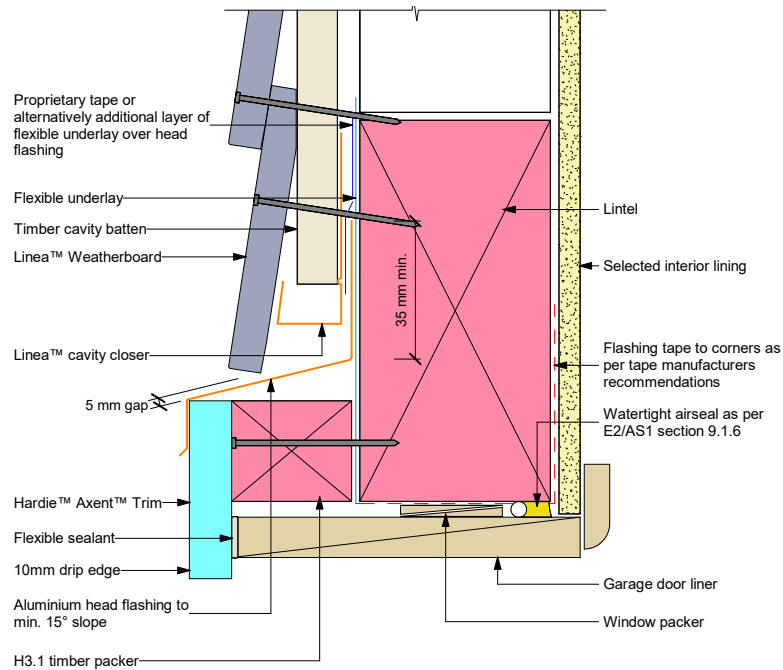
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Figure 35: Enclosed roof to wall intersection



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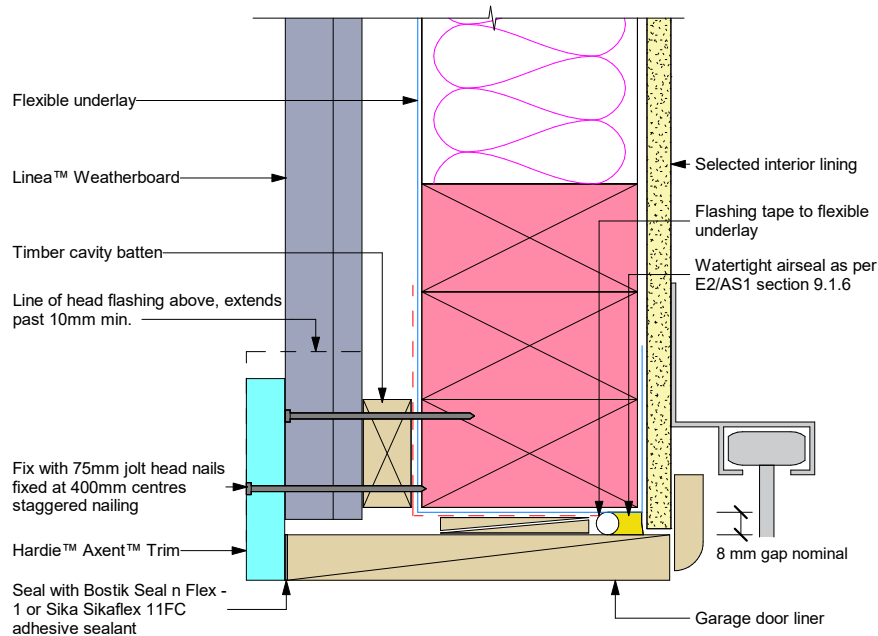
Figure 36: Garage door head



Note:

- Sealant must be applied between head flashing and liner in VH and EH wind zones and SED wind pressures
- Site cut edges to be primed

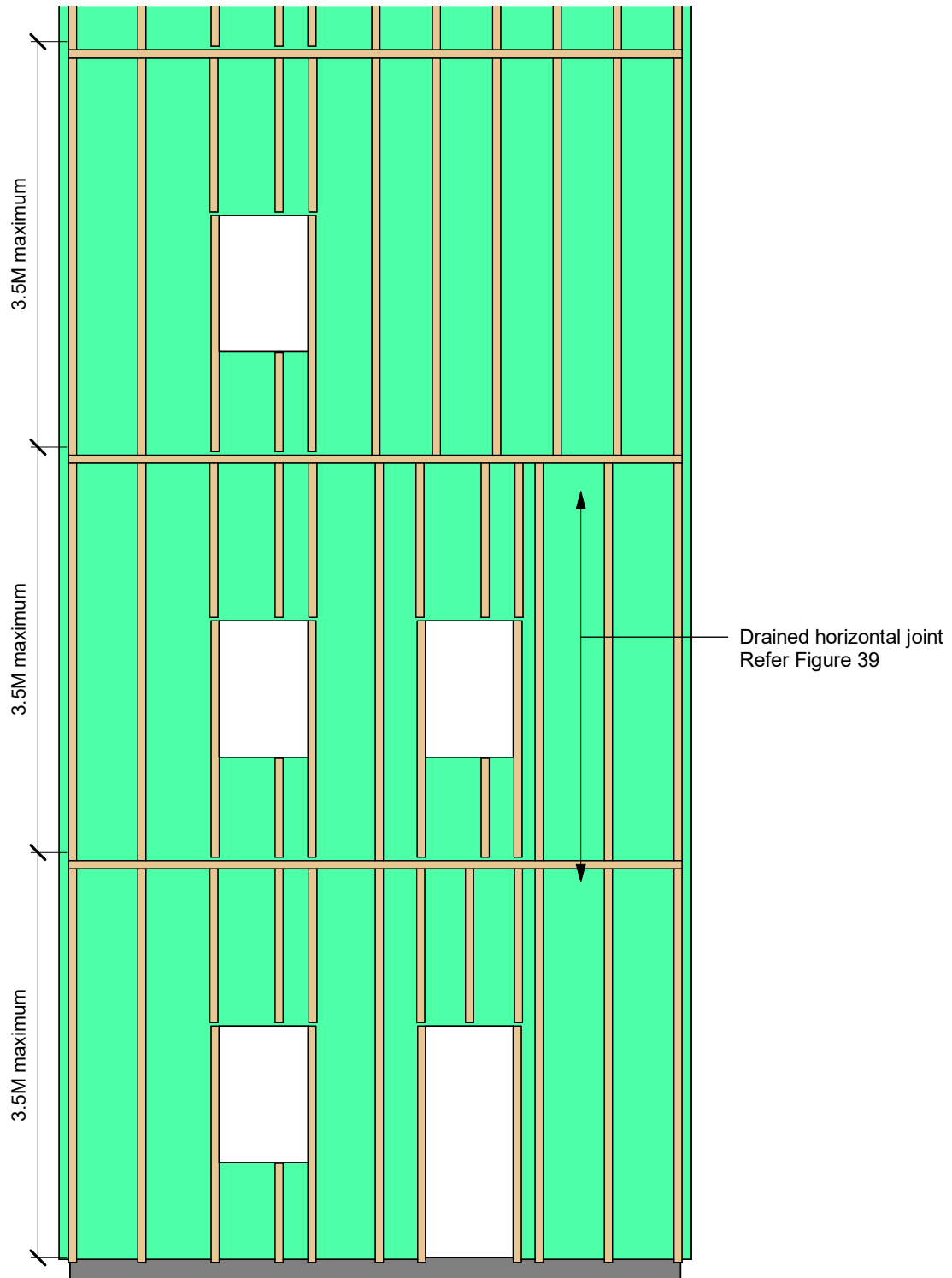
Figure 37: Garage door jamb



Note: Site cut edges to be primed

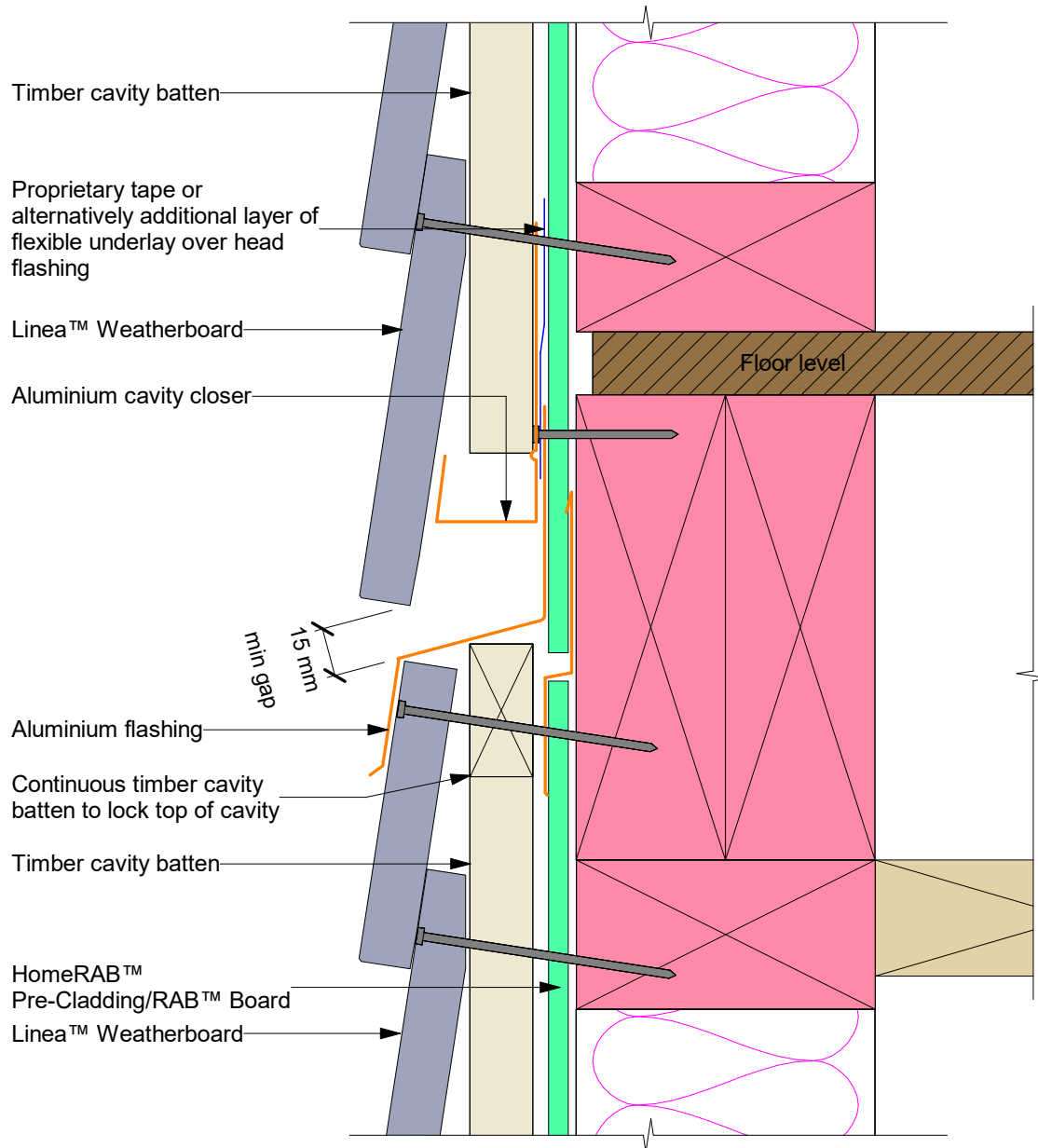
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Figure 38: Framing setout building height over 10m



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Figure 39: Intertenancy vertical fire separation



Product Warranty

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James Hardie New Zealand Limited ("James Hardie") warrants for a period of 25 years from the date of purchase that the Linea™ Weatherboard (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 15 years from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

CONDITIONS OF WARRANTY:

The warranty is strictly subject to the following conditions:

- a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation.
- b) This warranty is not transferable.
- c) The Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice.
- d) The project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("The NZBC"), regulations and standards.
- e) The claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product.
- f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces).
- g) All warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law.
- h) If meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

Disclaimer: The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. James Hardie has tested the performance of Linea™ Weatherboard when installed in accordance with the appropriate Linea™ Weatherboard (cavity or direct fixed) technical specifications, in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (e.g. quality of workmanship and design) James Hardie shall not be liable for the recommendations made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards, as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant James Hardie installation manual are suitable for the intended project and that specific design is conducted where appropriate.

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Certificate no: CMNZ30018

Version: O

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Renewal Date: 03/07/2025

1. Certificate Holder Details



James Hardie New Zealand Limited

Trading as James Hardie

1 O'Rorke Road, Penrose, Auckland 1061

TechnicalTeam@jameshardie.co.nz

Tel: 0800 808 868,

www.jameshardie.co.nz

2. Product Certification Body

Global-Mark Pty Ltd

Trading as Global-Mark

57 Willis Street, Wellington, 6011

customer.service@global-mark.co.nz

+64 9 889 0622

www.global-mark.co.nz

Complaints: The complaints process for this certificate can be found here:

www.global-mark.co.nz/complaints

Global-Mark Managing Director.

Herve Michoux

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Product Certificate

Linea™ Weatherboard by James Hardie Direct Fixed and Cavity Cladding systems

3. Description of Building Method or Product

Linea™ Weatherboard is a 16 mm thick bevelback fibre cement weatherboard, which is designed to be used as part of an external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

Linea™ Weatherboard Direct Fixed Cladding system consists of Linea™ Weatherboards applied direct to the external wall framing over a flexible underlay.

Linea™ Weatherboard Cavity Cladding system consists of Linea™ Weatherboards fixed over timber battens to form the cavity.

Both cladding methods (referenced as the system) incorporate secondary protection behind all internal and external corners, flashings for window, door and meter box penetrations as well as air seals to all wall penetrations.

4. Intended use of Building Method or Product

The system is designed to be used as part of an external cladding system on timber framed building

5. New Zealand Building Code Provisions

The System if designed, used, installed and maintained in accordance with the conditions of this Certificate will comply with or contribute to compliance with the following performance provisions of the NZ Building Code:

Clause B1 STRUCTURE:	Performance B1.3.1, B1.3.2 and B1.3.4, for the relevant physical conditions of B1.3.3 (a), (f), (h), (j) & (q)
Clause B2 DURABILITY:	Performance B2.3.1(b) 15 years and B2.3.2(a)
Clause C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE:	Performance C3.5 and C3.7
Clause E2 EXTERNAL MOISTURE:	Performance E2.3.2, E2.3.5, E2.3.6 and E2.3.7
Clause F2 HAZARDOUS BUILDING MATERIALS:	Performance F2.3.1

6. Conditions and Limitations of Use

1. The systems (respectively) are certified:
 - a. as a direct fixed external wall cladding for buildings:



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- i. within the scope limitations of the New Zealand Building Code (NZBC) Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, Paragraph 1.1, and
 - ii. with a risk score of 0-12, calculated in accordance with the NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, Table 2, and
 - iii. situated in NZS 3604:2011 Wind Zones up to, and including Very High, or
 - b. as a cavity fixed external wall cladding for buildings:
 - i. within the scope limitations of the NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, Paragraph 1.1, and
 - ii. with a risk score of up to 20, calculated in accordance with the NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, Table 2, and
 - iii. situated in NZS 3604:2011 Wind Zones up to, and including Extra High, or
 - c. as a cavity fixed external wall cladding for buildings specifically engineering designed (SED):
 - i. up to 25m in height, and
 - ii. with an inter-storey drift of span/180 maximum, and
 - iii. the design ultimate limit state (ULS) differential wind pressure does not exceed 3.2 kPa, and
 - iv. with the stud spacing no more than 600mm centres, and
 - d. located:
 - i. in all exposure zones (except microclimates) as defined in NZS 3604:2011 section 4.2, and
 - ii. located anywhere in relation to the relevant boundary for building within the scope of:
 - C/AS1, Second edition, 2 November 2023 paragraph 1.1.1 or
 - C/AS2, amendment 3, 2 November 2023 paragraph 1.1.1.
2. The system shall be specified, installed, inspected and maintained in accordance with the following sets of documents collectively referenced as the Applicable Technical Specification to the extent that their scope covers that for this Certificate:
 - a. For direct fixed external wall cladding application:
 - i. James Hardie Linea™ Weatherboard Direct Fix Technical Specification (June 2023);
 - ii. Fire & Acoustic Design Manual (September 2024) by James Hardie section 4:16 Control of External Fire Spread, figures No's. 2 to 11, 14 to 18 and 21 to 26, specifically details JHETGL30 and JHETGL60. These details have only been assessed and certified with respect to external fire spread via Linea™ Weatherboard. For walls located within 1.0m of a relevant boundary, Linea™ Weatherboard may be used as an external façade/cladding attached to the exterior of fire rated wall systems as depicted within the Fire and Acoustic Design Manual (November 2020). Fire Resistance rating performance of the wall assembly falls outside the scope of this certificate;
 - iii. BRANZ Appraisal No 446 (2020) Linea™ Weatherboard Direct Fixed Cladding.



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Product Certificate

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- b. For cavity fixed external wall cladding applications:
 - i. James Hardie Linea™ Weatherboard Cavity Fix Technical Specification (June 2023);
 - ii. Fire & Acoustic Design Manual (September 2024) by James Hardie section 4:16 Control of External Fire Spread, figures No's. 2 to 11, 14 to 18 and 21 to 26, specifically details JHETGL30 and JHETGL60. These details have only been assessed and certified with respect to external fire spread via Linea™ Weatherboard. For walls located within 1.0m of a relevant boundary, Linea™ Weatherboard may be used as an external façade/cladding attached to the exterior of fire rated wall systems as depicted within the Fire and Acoustic Design Manual (November 2020). Fire Resistance rating performance of the wall assembly falls outside the scope of this certificate;
 - iii. BRANZ Appraisal No 447 (2020) Linea™ Weatherboard Cavity Cladding.

(Note: Provisions within the documents above related to the use of the systems with steel-frame construction are outside the scope of this certification).


3. In wind zones greater than Very High a rigid air barrier which complies with Table 23 of E2/AS1 3rd Edition, amendment 10, 5 November 2020 shall be used. In Buildings exceeding 10 m in height RAB™ Board must be used including horizontal control joints in accordance with the requirements of the CodeMark certificate for RAB™ Board. (Refer to GM-CM30130).
4. The system is certified for use:
 - a. with the ancillary components as described in this certificate, and
 - b. with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. Only joinery compliant with the requirements of NZS 4211:2008 including amendment 1 for the relevant Wind Zone or wind pressure shall be used or have a current CodeMark
5. The weatherboards must only be installed horizontally on vertical surfaces.
6. All exposed faces, including top edges at sills and all bottom edges of Linea™ Weatherboard and fibre cement ancillary components must be finished with a latex exterior paint system complying with any of Parts 7, 8, 9, or 10 of AS 3730.
7. E2.3.5 and E2.3.6 compliance is limited to cavities created between the internal surface of the panels and the underlay or RAB™ Board's.

7. Health and Safety Information

Standard industry safety practices and manufacturer safety requirements as detailed in the technical literature including the applicable SDS must be observed at all times. Please refer to James Hardie SDS Fibre Cement Products June 2022

8. Basis for Certification

The certification decision is based on independent technical review(s) of test report(s), engineering opinion(s) and other documented evidence(s), factory audit(s) and site review(s)

Code Clause	Compliance pathway	Evidence
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B1 STRUCTURE	Informed by NZS3604:2011 and comparison with E2/AS1	001, 002, 003, 004, 022 and 023
B2 DURABILITY	Informed by based on expert judgement	001, 002, 003, 004, 022 and 023
C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE	Informed by expert judgement and testing to NFPA 285	001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 022, 023 and 024
E2 EXTERNAL MOISTURE	Informed by expert judgement and testing to AS/NZS4284	001, 002, 003, 004, 014, 015, 016, 017, 018, 019, 020, 021, 022 and 023
F2 HAZARDOUS BUILDING MATERIALS	Informed by expert judgement	001, 002, 003, 004, 022, 023 and 025

9. Supporting Documentation for Certification

Rev	Author	Description	Date and/or Revision
001	GLOBAL-MARK	Codemark Certification GM-CM30130 HomeRAB™ Pre-Cladding and RAB™ Board by JAMES HARDIE	Rev B
002	BRANZ	LINEA™ - WEATHERBOARD CAVITY CLADDING - Appraisal No. 447 [2020]	02 September 2020
003	BRANZ	LINEA™ - WEATHERBOARD DIRECT FIXED CLADDING - Appraisal No. 446 [2020]	02 September 2020
004*	BRANZ	BRANZ Appraisals Means of Compliance - Basis of Appraisal - LINEA™ WEATHERBOARD DIRECT FIXED AND CAVITY CLADDING - Appraisal No 446 and 447 (2020)	TV10686-001 21/08/2020
005*	BRANZ	Fire Assessment Report based Cone calorimeter test.	FH3182 21 November 2002
006*	BRANZ	Fire Assessment Report based Cone calorimeter test.	FH 2976 15 May 2001
007*	BRANZ	Fire Assessment Report based Cone calorimeter test (BRANZ Project No. FC10254-001).	FSR 4206 Issue2 7 November 2018



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008*	BRANZ	Fire technical Opinion: Technical opinion based on NFPA 285 Compliance with NZBC C/AS2, clause 5.8.2 (b) and C/VM2 Part A (a).	FC12172-001 1 November 2019
009*	BRANZ	Fire Assessment Report Review of James Hardie Fire and Acoustic Manual	FAR 4620 – 04 November 2016
010*	BRANZ	Fire technical Opinion: Fire resistance of James Hardie Wall Systems with Service Penetrations	FC12040-004 -03 december2019
011*	BRANZ	Technical Assessment “Fire Resistance of External Wall and Soffit” _Various JH Products	FAR 2597- 5th October 2005
012*	Intertek B&C	JH cavity fix wall assembly fire test as per NFPA 285	J6706.01-121-24 - 20th August 2019
013*	Intertek B&C	JH cavity fix wall assembly fire test as per NFPA 285	J6707.01-121-24 - 21st August 2019
014*	Clarkson Consulting Services	JH NZ_RAB_Weathertightness Assessment_200626_R1.5	26 June 2020
015*	James Hardie Building Product	Weathertightness Testing of Residential Façade Fibre Cement Cladding System On Cavity Battens to the requirement of Verification Method E2/VM1	TS061-05, dated 15 February 2006
016*	James Hardie Building Product	TESTING OF A TITAN RESIDENTIAL FIBRE CEMENT CLAD FAÇADE FOR COMPLIANCE WITH THE REQUIREMENTS OF AS/NZS 4284:1985 “TESTING OF BUILDING FACADES”	TS010-06, dated 14 November 2006
017*	James Hardie Technical Support group	Weathertightness (E2/VM1)	TS003-13, dated 4 December 2013
018*	James Hardie Technical Support group	Weathertightness (E2/VM1)	TS022-13, dated 12 November 2013
019*	James Hardie Technical Support group	Weathertightness (E2/VM1)	TS033-13, dated 8 January 2014



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020*	James Hardie Technical Support group	Weathertightness & Façade System (E2/VM1)	TS009-15, dated 14 October 2015
021*	James Hardie Technical Support group	Testing of James Hardie NZ ExoTec Façade panel top hat rainscreen façade system in accordance with AS/NZS 4284:2008	FT-R1005, dated May 2017
022	James Hardie New Zealand Limited	James Hardie Linea™ Weatherboard Direct Fix Technical Specification	June 2023
023	James Hardie New Zealand Limited	James Hardie Linea™ Weatherboard Cavity Fix Technical Specification	June 2023
024	James Hardie New Zealand Limited	James Hardie Fire & Acoustic Design Manual. Section 4:16 Control of External Fire Spread, figures No's. 2 to 11, 14 to 18 and 21 to 26, specifically details JHETGL30 and JHETGL60	September 2024
025	James Hardie New Zealand Limited	LQA8N – Safety data sheet – James Hardie Fibre Cement Sheet Products	Version No.: 2.0 ISSUED Date: 22/06/2022

* These documents were provided commercial in confidence and are not publicly available

10. Supporting Information About Description (Optional)

Linea™ Weatherboard cladding is finished with a latex paint system

Linea™ Weatherboards are bevel-back profile weatherboards with tongue and groove at each end for jointing. The weatherboards are pre-primed with an acrylic primer on the front face and edges.

Linea™ Weatherboards are 16 mm thick and are available 150mm and 180 mm wide. The boards are supplied 4200 mm long.

Linea™ Weatherboards are manufactured from a reduced density cellulose fibre cement formulation. The boards are formed, cut to length and then cured by high-pressure autoclaving. After autoclaving, a revel profile is machined on the back face of the weatherboard, the bottom of the board is chamfered and the tongue and grove are machined on the ends. Linea™ Weatherboards are manufactured to meet the requirements of AS/NZS 2908.2.

James Hardie supplies the following ancillary components:



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- Hardie™ Axent™ Trim - a 19mm thick fibre cement trim manufactured from a reduced density cellulose fibre cement formulation. Hardie™ Axent™ Trim is pre-primed with an acrylic primer on the front face and both edges and is available in sizes of 70 mm and 89mm wide by 3000 mm long.
- External and internal corner mouldings - chromate treated aluminium external box corner, 90° internal corner 'W' mould and 135° internal corner 'W' mould. The mouldings are available in 2,700 mm and 4,000 mm lengths.
- Corner soakers - 90° soakers are available for 150 mm and 180 mm Linea™ Weatherboards. The soakers are available in chromate treated aluminium, copper and stainless steel.
- Cavity vent strip - uPVC, available in 3,000 mm lengths.
- Rigid wall underlay – HomeRAB™ Pre-Cladding, RAB™ Board or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barrier systems.

Other components not supplied by James Hardie must meet the following requirements

- Flexible wall underlay – building paper complying with NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, Table 23, or breather-type membranes covered by a valid CodeMark certificate for use as wall underlays.
- Flexible building underlay support – polypropylene strap at 300 mm centres fixed horizontally and drawn taut, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible building underlay in place and preventing bulging of the bulk insulation into the drainage cavity. (Note: Mesh and wire galvanising must comply with AS/NZS 4534. Additional vertical battens may also be installed to provide support.)
- Flexible sill, head and jamb flashing tape - flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- Cavity battens - nominal 50 mm wide by 25 mm thick (minimum finished size of 45 mm wide by 18 mm thick) timber treated to Hazard Class H3.1.
- Cavity batten fixings - 40 x 2.8 mm flathead hot-dip galvanised nails.
- Joinery sill and head flashings - folded from aluminium or galvanised steel to suit the window or door trim opening. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, Table 20 for durability requirements.
- Planted sill and scribes - timber treated to Hazard Class H3.1, pre-primed before installation.
- Window and door trim cavity air seal - air seals complying with NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, 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.
- Flexible sealant - sealant complying with NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.
- Linea™ Weatherboard fixings



This certificate is issued by an independent certification body accredited by JAS-ANZ, the product certification body appointed by the Chief Executive of the Ministry of Business, Innovation and Employment under the Building Act 2004. This certificate may only be reproduced in its entirety. It is advised to check that this certificate is currently valid and not withdrawn or suspended by referring to the Register of Product Certificates on the Building Performance website <http://www.building.govt.nz>. The purpose of construction site audits is to confirm the practicability of installing the product; and to confirm the appropriateness and accuracy of installation instructions. In issuing this certificate, Global-Mark has relied on the independent expert and/or laboratory advice or reports. In placing the CodeMark mark on the product/system, the certificate holder makes a declaration of compliance with the certification standard(s) and confirms that the product is identical to the product certified herein.

Certificate no: CMNZ30018

Version: O

Original issue date: 26/05/2020

Version date: 23/10/2024

Renewal Date: 03/07/2025

Product Certificate

Linea™ Weatherboard by James Hardie

Direct Fixed and Cavity Cladding systems



- Direct fix cladding method: 40 x 2.8 mm flathead hot-dip galvanised Hardie™ Flex nails or stainless-steel ring shank Hardie™ Flex nails (for concealed nailing), and 60 x 3.15 mm jolthead hot-dip galvanised nails or stainless-steel ring shank nails (for face nailing).
- Cavity cladding method - 60 x 3.15 mm flathead hot-dip galvanised Hardie™ Flex nails or stainless steel ring shank Hardie™ Flex nails (for concealed nailing in NZS 3604 Wind Zones up to, and including, Very High), 75 x 3.15 mm jolthead hot-dip galvanised nails or stainless steel ring shank nails (for face nailing in NZS 3604 Wind Zones up to, and including, Very High), and 90 x 3.55 mm jolthead hot-dip galvanised nails or stainless steel ring shank nails (for face nailing in the NZS 3604 Extra High Wind Zone and specific design wind pressures up to a maximum design differential ULS of 3.2 kPa).
- Hardie™ Axent™ Trim fixings - 60 x 3.15 mm or 75 x 3.15 mm hot-dip galvanised jolthead nails and stainless-steel ring shank jolthead nails.

(Note: Stainless steel fixings must be Grade 316 and hot-dip galvanising must comply with AS/NZS 4680).

- Flashings - balustrade and parapet cap flashings and inter-storey joint flashings. Refer to NZS 3604 Section 4, and NZBC Acceptable Solution E2/AS1, 3rd Edition, amendment 10, 5 November 2020, Table 20 for durability requirements.
- Aluminium joinery head flashing - as supplied by the joinery manufacturer or the contractor

11. Supporting Information About Intended Use (Optional)

Nil

12. Supporting Information About Conditions and Limitations of Use (Optional)

Linea™ Weatherboard Cavity Cladding can be used to provide fire resistance rated construction, but this aspect has not been assessed and is outside the scope of this certificate

All CodeMark certificates that are current must be registered with MBIE. MBIE maintains a register of valid product certificates. [Please find the register here.](#)

If the certificate is not listed on this register or it appears as (SUSPENDED), it is not a valid CodeMark certificate and does not have to be accepted by a building consent authority as establishing compliance with the New Zealand Building Code.

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BUILDING PRODUCTS INFORMATION SHEET (BPIS) CORRUGATE



CLASS 1

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PRODUCT NAME

Metalcraft Roofing - **Corrugate**

PRODUCT LINE

N/A

PRODUCT DESCRIPTION AND ITS INTENDED USE

Metalcraft Roofing's Corrugate profile is a roofing and wall cladding profile manufactured using steel sourced from New Zealand Steel which is roll formed and then installed with screw fasteners fixed into structural supports. It can be formed from a variety of substrates to meet durability, formability, and aesthetic requirements.

INTENDED USE

Metalcraft Roofing's Corrugate profile can be used as a roofing or cladding component for residential and commercial applications only. Installation is suitable for timber and or steel structures.

Metalcraft Roofing's Corrugate profile can be used with various Metalcraft COLORSTEEL® flashings, gutters and fascias. They are ordered typically along with the required fixings, underlay and sealants.

MATERIAL OPTIONS:

COLORSTEEL® MAXAM™ (Also available with COLORSTEEL® MAXAM™ DRIDEX®)
0.40mm and 0.55mm BMT G550.
0.55mm BMT or 0.75mm BMT G300 for flashings.

COLORSTEEL® ALTIMATE®
0.90mm Aluminium 5052 H36 for roll-forming.
0.90mm Aluminium 5005 H34 for flashings.

ZINCALUME®
0.40mm and 0.55mm BMT G550.
0.55mm BMT or 0.75mm BMT G300 for flashings.

GALVSTEEL®
0.40mm and 0.55mm BMT Z450.
0.55mm BMT G300 for flashings.

For more information on COLORSTEEL®
refer www.colorsteel.co.nz

For more information GALVSTEEL® & ZINCALUME®
refer www.nzsteel.co.nz

Above thicknesses are the nominal base metal thickness rather than the total coated thickness.

BPIS INCLUSION / EXCLUSION

This BPIS includes Metalcraft Roofing's Corrugate profile and associated flashings and other items manufactured by Metalcraft Roofing. Metalcraft Roofing do supply fasteners, underlay and other products as part of the roofing supply, however demonstration of compliance of these items are not the responsibility of Metalcraft Roofing. Please refer to: Other products supplied by Metalcraft roofing for a list of those items and links to manufacturers.

PRODUCT IDENTIFIER

CORRUGATE

Minimum Pitch: 8 degrees.
Width: Cover = 760mm Sheet = 851mm.
Applications: Commercial and residential.
Orientation: Roofs and horizontal and vertical wall cladding.



All dimensions are nominal.

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RELEVANT BUILDING CODE CLAUSES:

B1 STRUCTURE

B1.3.3 (a, b, c, g, h, j)

B2 DURABILITY

B2.3.1 (b)(i)

C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE

C3.4 (a), C3.7 (a)

E2 EXTERNAL MOISTURE

E2.3.1, E2.3.2

F2 HAZARDOUS BUILDING MATERIALS

F2.3.1

G12 WATER SUPPLIES

G12.3.1

STATEMENT ON HOW THE BUILDING PRODUCT IS EXPECTED TO CONTRIBUTE TO COMPLIANCE:

Metalcraft Roofing's Corrugate profile and associated flashings used in combination with fasteners, underlays and translucent sheeting accredited by NZMRM as complying to their products performance standards, will contribute to meeting the following performance requirements of the NZ Building Code.

B1.3.3 (a, b, c, g, h, j)

The NZMRM has on behalf of its industry members conducted testing and analysis on the Corrugate profile, in accordance with procedures described in NZMRM -Metal Roofing and Wall Cladding Code of Practice.

Fixing patterns and spans of Metalcraft Corrugate can be in accordance with E2/AS1 or the NZMRM Code of Practice.

Loadspan and fixing patterns are available for download from either: NZMRM Code of Practice: www.metalroofing.org.nz or www.metalcraftgroup.co.nz

B2.3.1 (b)(i)

Metalcraft Corrugate and associated flashings are manufactured from steel from NZ Steel:

COLORSTEEL® MAXAM™ (Also available with COLORSTEEL® MAXAM™ DRIDEX®)

Steel substrate may be either G300 or G550 consistent with AS 1397. Metallic coating is Metallic coating is AM 150 consistent with AS 1397:2021. MAXAM® is a Product Type 6 consistent with AS/NZS 2728:2013 and therefore is consistent with the NZ Building Code for use in environments as described in Acceptable Solution E2/AS1 Table 20. Tolerances are consistent with the requirements of AS/NZS 1365:1996.

COLORSTEEL® MAXAM™ DRIDEX® is a Type 6 product in accordance with AS/NZS 2728:2013 and therefore is consistent with the NZ Building Code for use in environments as described in Acceptable Solution E2/AS1 Table 20.

COLORSTEEL® ALTIMATE®

Aluminium substrate is in accordance with AS/NZS 1734:1997 covering chemical composition, mechanical properties, and allowable tolerances on dimensions. Altimate® is a Type 6 product in accordance with AS/NZS 2728:2013 and therefore is consistent with the NZ Building Code for use in environments as described in Acceptable Solution E2/AS1 Table 20.

Above information as cited by COLORSTEEL® www.colorsteel.co.nz

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ZINCALUME®

Non-factory painted steel substrate may be either G300 or G550 consistent with AZ150 consistent with E2/AS1 Table 20.

GALVSTEEL®

Non-factory painted Galvanised steel Z450 to AS 1397 consistent with E2/AS1 Table 20.

Selection of correct product must be suitable for their end-use, location and environment as per Acceptable Solution E2/AS1 Table 20.

Refer also to COLORSTEEL® Environmental Categories, Warranty & Product Maintenance recommendations.

Contact with corrosive and incompatible materials, prolonged exposure to damp or corrosive internal environments, or excessive periods of wet stacking must be avoided as per table 20 E2/AS1.

Fixings of Corrugate to be in accordance with E2/AS1 and NZMRM Code of Practice and be compatible with the base material of the Corrugate profile.

C3.4 (a), C3.7 (a)

Metalcraft Roofing's Corrugate profile is manufactured from COLORSTEEL®

COLORSTEEL® MAXAM™ is rated as a Group 1-S material and has an average specific extinction area of 56.0 m²/kg, a peak heat release rate of 3.6 kW/m² and total heat released of 0.3 MJ/kg when tested in accordance with ISO 5660:2002 Part 1 and Part 2.

COLORSTEEL® Altimate® is rated as a Group 1-S material and has an average specific extinction area of 50.9 m²/kg, a peak heat release rate of 6.5 kW/m², and total heat released of 0.8 MJ/m² when tested in accordance with ISO 5660:2002 Part 1 and Part 2.

Dridex® is rated as a Group 1-S material under the New Zealand Building Code Clause C3.4(a).

Above information as cited by COLORSTEEL® <https://www.colorsteel.co.nz/>

Zincalume® -Group 1 - S Average specific extinction area of 3.8m²/kg
Galvsteel® -Group 1 - S Average specific extinction area of 2.6m²/kg

Above information as cited by New Zealand Steel <https://www.nzsteel.co.nz/products/zincalume/>

E2.3.1, E2.3.2

Flashing details should be in accordance with Metalcraft Roofing's Corrugate installation details, NZMRM Code of Practice, E2/AS1.

Metalcraft Roofing's Corrugate profile can be laid on pitches equal to or greater than those cited in E2/AS1 and the NZMRM Code of practice.

Alternative details complying with the "4 D's" (Deflection, Draining Drying and Durability) will also comply with the performance requirements of NZ Building Code.

Metalcraft Roofing's Corrugate profile laid to a minimum pitch of 8° as per E2/AS1 and NZMRM Code of Practice.

When used with an absorbent underlay complying with NZS 2295:2006, Metalcraft Roofing's Corrugate profile will contribute to compliance with the NZ Building Code.

F2.3.1

COLORSTEEL® MAXAM™, ALTIMATE®, ZINCALUME® and GALVSTEEL® will meet the performance requirements of F2, 2.3.1.

G12.3.1

COLORSTEEL® and ZINCALUME® Rainwater collected from roofs clad with products made from ZINCALUME® coated steel and COLORSTEEL® prepainted steel, will comply with the provisions of NZBC G12.3.1, provided the water is not contaminated from other sources.

Claimed by NZ Steel -Source:

<https://www.nzsteel.co.nz/products/zincalume/features/#:~:text=Rainwater%20collected%20from%20roofs%20clad,not%20contaminated%20from%20other%20sources.>

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LIMITATIONS ON THE USE OF THE BUILDING PRODUCT:

- Metalcraft Roofing's Corrugate profile can be used on SED projects if within the scope of NZMRM Code of Practice for flashing cover dimensions and suitability of use and where the design loads are within the products performance. Refer to Metalcraft Roofing's Installation Details and Loadspan and Fixing tables for product limitations. Fixings of Corrugate into SED projects outside the scope of NZMRM Code of Practice will require sign off from a professional engineer.
- Thermal breaks required when steel framed structures are used on insulated and lined buildings.
- Direct fixed limitation of use as per E2/AS1. Vertically laid Corrugate up to a risk matrix score of 20.
- When installed as vertical cladding over a cavity then alternative details complying with the "4 D's" (Deflection, Draining, Drying and Durability) will also comply with the performance requirements of NZ Building Code.
- To be used in situations where there are no dissimilar metals or compatibility issues as per NZMRM Code of Practice and Table 20 E2/AS1.
- When installed as a roof cladding, laid to a minimum pitch of profile.
- The use of DRIDEX® is permitted and compliance is as per Codemark Certificate, available to download on: www.colorsteel.co.nz

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DESIGN REQUIREMENTS THAT WOULD SUPPORT THE APPROPRIATE USE OF THE BUILDING PRODUCT

- Buildings that comply with NZS 3604:2011 and building height up to three storeys or 10 m.
- For SED building height may go above 10m, to max performance of the Corrugate profile and in design wind speeds as covered by NZMRM Code of Practice.
- Buildings designed in accordance with NSZ 1170:2:2002.
- Timber framed construction in accordance with NZS 3604:2011.
- Steel framed structures in accordance with NASH Standard Part 1:2016 Design Criteria - Alternative Solution and NASH Standard Part 2:2019 Light Steel Framed Buildings.
- Design and installation as per E2/AS1, NZS 3604:2011 and NZMRM Code of Practice.
- Alternative details complying with the "4 D's" (Deflection, Draining, Drying and Durability) will also comply with the performance requirements of NZ Building Code.
- Designer or Architect must evaluate the requirement of internal moisture and if roof ventilation is required.
- Design and installation is as per the relevant NZ Building Code Clauses, NZS 3604:2011, NZMRM Code of Practice and alternative details complying with the "4 D's" (Deflection, Draining, Drying and Durability) will also comply with the performance requirements of NZ Building Code. Bevelback profile is outside the scope of E2/AS1, however this document can still be referenced and used when evaluating compliance with NZ Building Code.
- The risk matrix in E2/AS1 only addresses direct fixed vertically laid cladding. E2/AS1 states a drained cavity assists drying by allowing water which occasionally penetrates the wall cladding system to drain to the exterior of the building, and any remaining moisture to dry by evaporation. Table 3- Note 6 of E2/AS1 also states direct fix vertical corrugated steel is included as cavity construction. Even though E2/AS1 Table 3 Note 6 states that the corrugate profile is included as a cavity construction and can be used up to a risk matrix of 20, Metalcraft Roofing recommends all its cladding profiles are installed over a drained and vented cavity as it further assists in creating better air circulation than that achieved by direct fixed alone and also provides an additional layer of defence. Compliance of the cavity battens are by others. If treated timber battens are used then Metalcraft require a DPC separation layer.

BUILDING PRODUCTS INFORMATION SHEET (BPIS) CORRUGATE



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INSTALLATION REQUIREMENTS

Installation should be carried out by a suitably qualified practitioner. Installation of Corrugate should be in accordance with NZMRM Code of Practice. www.metalroofing.org.nz

MAINTENANCE REQUIREMENTS

Maintenance must be carried out in accordance with the COLORSTEEL® Environmental Categories, Warranty & Product Maintenance recommendations brochure. This can be downloaded from:

www.colorsteel.co.nz
www.metalcraftgroup.co.nz

IS THE BUILDING PRODUCT/BUILDING
PRODUCT LINE SUBJECT TO A WARNING
OR BAN UNDER SECTION 26 OF THE
BUILDING ACT 2004:

NO

Metalcraft Roofing's Corrugate profile is not subject to a warning or ban under the Building Act 2004.

SUPPORTING INFORMATION

The following documents can support demonstration of compliance of Metalcraft Roofing's Corrugate profile with the NZ Building Code.

Building Act 2004
www.legislation.govt.nz

NZBC relevant clauses and acceptable solutions
NZS 3604:2011
www.building.govt.nz

Cited standards
www.standards.govt.nz

NZMRM Code of Practice
www.metalroofing.org.nz

Metalcraft Roofing's Corrugate Information Brochure
Metalcraft Roofing's Corrugate Installation Details.
COLORSTEEL® Environmental Categories, Warranty & Product Maintenance recommendations brochure.
NZMRM Installation Guide.
Metalcraft Roofing's Corrugate Loadspan and Fixing Tables.
Metalcraft Eco Choice Certification

Download from:
www.metalcraftgroup.co.nz

COLORSTEEL® Product and Technical Information.
www.colorsteel.co.nz

New Zealand Steel's Quality management system conforming to ISO 9001:2015 and assessed by Telarc.

New Zealand's Steel's Environmental Management system conforming to ISO 14001:2015
www.nzsteel.co.nz

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PLACE OF METALCRAFT CORRUGATE MANUFACTURE

NEW ZEALAND

Metalcraft Corrugate is manufactured from the following Metalcraft Roofing branches and available nationwide from all Metalcraft Roofing branches.

METALCRAFT ROOFING -AUCKLAND EAST TAMAKI
24-26 Trugood Drive East Tamaki, Auckland
09 273 2820
orders.akl@metalcraftroofing.co.nz

METALCRAFT ROOFING - AUCKLAND HOBSONVILLE
25 -27 Westpoint Drive, Hobsonville, Auckland
09 444 1813
orders.ns@metalcraftroofing.co.nz

METALCRAFT ROOFING -WHANGAREI
42-44 Rewa Rewa Road, Whangarei
09 470 0870
sales.whangarei@metalcraftroofing.co.nz

METALCRAFT ROOFING -HAMILTON
9 Earthmover Cres, Burbush, Hamilton
07 849 3807
sales.hamilton@metalcraftroofing.co.nz

METALCRAFT ROOFING -TAURANGA
42 Poturi St, Tauriko, Tauranga
07 575 7032
sales.tauranga@metalcraftroofing.co.nz

METALCRAFT ROOFING -PALMERSTON NORTH
76 Malden Street, Palmerston North
06 358 9149
sales.palmerston@metalcraftroofing.co.nz

METALCRAFT ROOFING -NEW PLYMOUTH
218 De Havilland Drive, Bell Block, New Plymouth
06 755 2113
sales.newplymouth@metalcraftroofing.co.nz

METALCRAFT ROOFING -HASTINGS
1454A Omaha Road, Hastings
06 873 9020
sales.hastings@metalcraftroofing.co.nz

METALCRAFT ROOFING -WELLINGTON
201 Gracefield Rd, Seaview, Lower Hutt
04 566 2253
orders.wgtn@metalcraftroofing.co.nz

METALCRAFT ROOFING -CHRISTCHURCH
85 Columbia Ave, Hornby, Christchurch
03 349 7350
sales.christchurch@metalcraftroofing.co.nz

METALCRAFT ROOFING -CROMWELL
20 McNulty Road, Cromwell
03 445 4180
sales.cromwell@metalcraftroofing.co.nz

OTHER METALCRAFT BRANCHES THAT CAN SUPPLY CORRUGATE

METALCRAFT ROOFING -ROTORUA
15 Monokia Street, Rotorua
07 350 1138
sales.rotorua@metalcraftroofing.co.nz

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LEGAL ENTITIES:

STEEL BUILDING PRODUCTS CENTRAL LIMITED

NZBN: 9429032296389
Level 1, 30 Highbrook Drive, East Tamaki Auckland

TRADING NAME / ADDRESS FOR SERVICE:

Metalcraft Roofing - Hamilton
Metalcraft Roofing - New Plymouth

STEEL BUILDING PRODUCTS NORTHERN LIMITED

NZBN: 9429032461398
Level 1, 30 Highbrook Drive, East Tamaki Auckland

TRADING NAME / ADDRESS FOR SERVICE:

Metalcraft Roofing - East Tamaki
Metalcraft Roofing - Whangarei

STEEL BUILDING PRODUCTS SOUTHERN LIMITED

NZBN: 9429036306183
Level 1, 30 Highbrook Drive, East Tamaki Auckland

TRADING NAME / ADDRESS FOR SERVICE:

Metalcraft Roofing - Hastings
Metalcraft Roofing - Palmerston North
Metalcraft Roofing - Wellington

STEEL BUILDING PRODUCTS SOUTH ISLAND LIMITED

NZBN: 9429032296303
Level 1, 30 Highbrook Drive, East Tamaki Auckland

TRADING NAME / ADDRESS FOR SERVICE:

Metalcraft Roofing - Cromwell
Metalcraft Roofing - Christchurch

METAL LINE ROOFING LIMITED

NZBN: 9429031709583
Level 1, 30 Highbrook Drive, East Tamaki Auckland

TRADING NAME / ADDRESS FOR SERVICE:

Metalcraft Roofing - Hobsonville
Metalcraft Roofing - Rotorua
Metalcraft Roofing - Tauranga

DISCLAIMER

This Building Product Information Sheet must be read in conjunction with all cited documents.

Metalcraft Roofing states that the product will, if installed in accordance with the technical data, specifications, and advice prescribed by Metalcraft Roofing comply with the relevant provisions of the building code and satisfy our obligation to meet S14G of the Building Act 2004.

It remains the responsibility of all other professional parties to ensure they satisfy their own obligation of the Building Act 2004.

As part of Metalcraft Roofing's policy of continued improvement, final specifications may vary from those contained in this publication. The company reserves the right at any time and without notice to change the design, materials or features and withdraw products from the market without incurring any liability whatsoever.



CORRUGATE STEEL SOURCED FROM

COLORSTEEL® GALVSTEEL® ZINCALUME®

Metalcraft Roofing's Corrugate is manufactured from steel from New Zealand Steel:

New Zealand steel Ltd, 131 Mission Bush Road Glenbrook 2681,
Auckland New Zealand
www.nzsteel.co.nz

OTHER PRODUCTS SUPPLIED BY METALCRAFT ROOFING

Metalcraft Roofing also sell other products to complement the installation of Corrugate.

Please note the correct selection of these products for the project application is the responsibility of the architect/designer.

All products where demonstration of performance is required to satisfy the NZ Building Code is the responsibility of the product manufacturer or importer of the following items: Metalcraft take on no responsibility whatsoever

Please liaise with the following companies for information:

SEALANTS, WASHERS, AQUASEALS, AQUADAPT, RIVETS, FASTENERS, TOUCH UP PAINTS, LITTLE GRIPPERS.

Key Supplier:
Konnect Fastening Systems®

www.konnectfasteningsystems.co.nz

UNDERLAY

Metalcraft Roofing can supply various underlays, please note Key Suppliers include:

Thermakraft - www.thermakraft.co.nz

DriSpace - www.drispace.co.nz

ProClima - www.proclima.co.nz

MILL FINISH ALUMINIUM

Wakefield Metals - www.wakefieldmetals.co.nz

TRANSLUCENT SHEETING

Key Supplier:
Alsynite - www.alsynite.co.nz

Other supplier:

Ampelite - www.ampelite.co.nz

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Metalcraft Roofing are members of the Roofing Association, New Zealand and the New Zealand Metal Roofing Manufacturers Incorporated.

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DOCUMENT CONTROL

[illegible]

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BRANZ Appraised

Appraisal No. 238 [2023]

PINK® BATTS® INSULATION

Appraisal No. 238 [2023]

This Appraisal replaces BRANZ
Appraisal No. 238 [2018]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



Tasman Insulation NZ Ltd [T/A Comfortech Building Solutions]

PO Box 12 069

Penrose

Auckland

Tel: 09 579 2139

Fax: 09 571 3482

Freephone: 0800 746 522

Web: www.pinkbatts.co.nz



BRANZ

BRANZ

1222 Moonshine Rd,

RD1, Porirua 5381

Private Bag 50 908

Porirua 5240,

New Zealand

Tel: 04 237 1170

branz.co.nz



Product

- 1.1 Pink® Batts® Insulation is a range of resin-bonded, fibrous glasswool thermal insulating material for use in walls, ceilings and roofs of buildings. Pink® Batts® Insulation is pre-cut to suit a range of framing spacings.

Scope

- 2.1 Pink® Batts® Insulation has been appraised as a thermal insulation material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings.

Building Regulations

New Zealand Building Code [NZBC]

- 3.1 In the opinion of BRANZ, Pink® Batts® Insulation, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 [a] not less than 50 years and B2.3.1 [b] 15 years. Pink® Batts® Insulation meets these requirements. See Paragraph 8.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.1. Pink® Batts® Insulation will contribute to meeting this requirement. See Paragraphs 13.1 and 13.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Pink® Batts® Insulation meets this requirement.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 [a] and H1.3.2 E. Pink® Batts® Insulation will contribute to meeting these requirements. See Paragraphs 14.1 and 14.2.

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Technical Specification

- 4.1 Pink® Batts® Insulation is a resin-bonded, fibrous, glasswool insulation, manufactured from recycled and/or virgin glass and cured urea extended phenolic resin.
- 4.2 Pink® Batts® Insulation is manufactured in a range of sizes to suit framing centres and cavity depths. Building Insulation Blanket (BIB) is supplied in rolls for commercial applications. Pink® Batts® Insulation is available as set out in Table 1.

Table 1: Pink® Batts® Insulation Product Table.

R-value	Length [mm]	Width [mm]	Nominal Thickness [mm]	Density [kg/m³]
Roof - Thermal Insulation				
1.8	1,220	432	95	8.3
2.2	1,220	432	115	8.2
2.6	1,220	432	140	7.0
2.6	1,220	432	110	10.5
3.0	1,220	432	160	8.2
3.2	1,220	432	170	6.9
3.6	1,220	432	180	7.2
4.0	1,220	432	195	8.1
4.5	1,220	460	210	8.5
5.0	1,220	432	220	9.5
5.0	1,220	460	225	9.5
6.0	1,220	432	235	13
6.0	1,220	460	245	11.7
7.0	1,220	432	260	15.8
7.0	1,220	460	275	12.6
7.0 ¹	1,220	460	275	12.6
Roof - Building Insulation Blanket				
1.2	24,000	1,200	50	12
1.8	20,000	1,200	75	12
2.4	16,000	1,200	95	12
2.6	14,000	1,200	105	12
3.2	12,000	1,200	125	12
3.6	10,000	1,200	140	12.5
Roof - Pink® Batts® Retrofit Insulation				
2.9	1,220	432	150	7.7
3.3	1,220	432	175	7.1
Wall - Masonry Insulation				
1.0	1,220	580	40	14
1.2	1,220	580	50	12.8
70 mm Wall Range - Thermal Insulation				
2.2	1,140	560	70	30

90 mm Wall Range - Thermal Insulation				
1.8	1,140	560	90	9.1
2.2	1,140	560	90	11.0
2.4	1,140	560	90	14.2
2.6	1,140	560	90	18.0
2.6 ¹	1,140	560	90	18.0
2.8	1,140	560	90	25.2
2.8 ¹	1,140	560	90	25.5
90 mm Narrow Wall Range - Thermal Insulation				
2.2	1,140	360	90	11.0
2.6	1,140	360	90	18.0
2.8	1,140	360	90	25.2
90 mm Steel Wall Range - Thermal Insulation				
2.2	1,220	610	90	11.0
2.6	1,220	610	90	18.0
140 mm Wall Range - Thermal Insulation				
3.2	1,140	560	140	9.6
3.6	1,140	560	140	12.4
4.0	1,140	560	140	17.6
4.3	1,140	560	140	28
140 mm Narrow Wall Range - Thermal Insulation				
3.2	1,140	360	140	9.6
4.0	1,140	360	140	17.6
4.3	1,140	360	140	28

¹Pink® Batts® Wall range R2.6 and R2.8 and Roof Insulation R7.0 are manufactured by Owens Corning Canada.

All Pink® Batts® Insulation products covered by this Appraisal and manufactured in New Zealand have the Environmental Choice licence.

- 4.3 Pink® Batts® Insulation is pink in colour and is baled in polythene bags with labelling in compliance with AS/NZS 4859.1.
- 4.4 Accessories used with Pink® Batts® Insulation, which are supplied by the insulation installer, are wire netting, plastic strapping and fixings.

Handling and Storage

- 5.1 Pink® Batts® Insulation must be stored under cover and in dry conditions. Heavy objects must not be stacked on the bales. The bales must be stored in an orientation that avoids excessive compression of the product.
- 5.2 In general, insulation products are sensitive to the length of time they are stored under compression packaging. Product that does not recover to its nominal thickness may not achieve the stated thermal resistance [R-value].

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Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Pink® Batts® Thermal Solutions: Product Guide, September 2023.
- Pink® Batts® Ceiling Insulation Installation Product and Installation Guide, June 2023.
- Pink® Batts® Wall Insulation Product and Installation Guide, June 2023.
- Pink® Superbatts® Thermal Solutions: Installation Guide, April 2023.
- Pink® Batts® Building Insulation Blanket [BIB] – Product data sheet, Feb22/1080RevD, February 2022.
- Pink® Batts® Building Insulation Blanket [BIB] – Installation instructions, Feb22/1081/RevD, February 2022.

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

General

- 7.1 Pink® Batts® Insulation is intended for use as thermal insulation to meet the requirements of the NZBC. Pink® Batts® Insulation can be used to meet the minimum schedule method R-values of the NZBC Verification Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS2. Greater construction R-values can be achieved where specific design is used. For construction R-values, refer to the BRANZ House Insulation Guide. Product R-values and dimensions are given in Table 1.
- 7.2 The R-value of Pink® Batts® Insulation has been determined by testing to AS/NZS 4859.1, which is an acceptable method in NZBC Acceptable Solution H1/AS1.
- 7.3 Pink® Batts® Insulation is designed to be friction-fitted between wall, ceiling or roof framing. It can also be laid directly on a ceiling lining, over ceiling battens or over joists/truss chords. In other horizontal situations, the insulation must be adequately supported by galvanised wire netting or some other suitable durable material.
- 7.4 When insulation is installed in a double layer over new or existing insulation, the possibility of compression of the bottom layer must be avoided, or reduction of R-values for the bottom layer of the formed system must be taken into account.
- 7.5 For new and existing buildings, the R4.5, R5.0, R6.0 and R7.0 Pink® Superbatts® ceiling products are designed to be notched around timber framing and to form a uniform layer above the timber framing, between and on the top of the truss chords.
- 7.6 At the roof perimeter, Pink® Batts® insulation is designed to be compressed at the roof perimeter rather than cut. To achieve the required construction R-value of R3.3 at the ceiling perimeter, a minimum product R-value of R3.5 and a minimum 115 mm height is required at the midpoint of the top plate to the underside of the insulation guard, to accommodate the compressed insulation. The Pink® Superbatts® range all exceed this product R-value requirement under compression with a 115 mm heel. If the roof slope is less than 20 degrees and the height is less than 115 mm, a raised heel will be required.
- 7.7 Where the insulation is installed in exterior walls, the nominal thickness of the insulation material must be selected to provide a snug close fit which touches all sides of the insulation cavity between the wall underlay and the interior wall lining.
- 7.8 Where the insulation is retrofitted in external walls without a wall underlay, and with direct-fixed claddings, the insulation must be at least 20 mm thinner than the framing to allow a gap of at least 20 mm between the insulation and the wall cladding. Horizontal straps must be stapled into the sides of the wall studs at 300 mm centres maximum as support before the insulation is installed. Refer also to NZS 4246, Section 5.4.2.

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- 7.9 When the insulation is installed in a wall with a drained cavity, it is recommended that specific wall products with a controlled nominal thickness be used. Where the stud spacings are greater than 450 mm, an intermediate means of restraining the insulation from bulging into the cavity must be installed in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.
- 7.10 Building Insulation Blanket is designed specifically for commercial roof and commercial wall applications. In residential applications, installation must be completed in accordance with NZS 4246.
- 7.11 The building envelope must be constructed to ensure the insulation remains dry during installation and throughout the life of the building.
- 7.12 The clearance requirements for heating appliances and downlights must be met, and reference made to the manufacturer's instructions and NZS 4246. See Paragraphs 10.1-10.3.

Durability

Serviceable Life

- 8.1 Where the building is maintained so that the provisions of NZBC Clauses E2 and E3 are met, and where the insulation is not crushed or exposed to conditions that will diminish its thermal performance [e.g. moisture], Pink® Batts® Insulation can be expected to have a serviceable life of at least 50 years.

Maintenance

- 9.1 Insulation that has become damp must be removed and the cause of dampness repaired. Cavities must be clean and dry before fitting new insulation of an equivalent thermal rating. NZS 4246 gives guidance on thermal insulation maintenance due to water damage.

Prevention of Fire Occurring

- 10.1 Pink® Batts® Insulation is classified a non-combustible material and need not be separated from heat sources such as fireplaces, flues and chimneys. However, when used in conjunction with, or attached to heat sensitive materials, the heat sensitive material must be separated or protected from heat sources. 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.

Downlights

- 10.2 Recessed luminaires shall be of the specified luminaire types and installed in accordance with NZBC Verification Method C/VM1 and NZBC Acceptable Solution C/AS1, Section 7.4.
- 10.3 Insulation materials must maintain a clearance of 100 mm to undefined recessed luminaires in existing buildings.

Fire Affecting Areas Beyond the Fire Source

- 10.2 Pink® Batts® Insulation products are classified non-combustible when tested to AS 1530.1 and can be assigned a Group Number of 1-S. When used in an occupied space, Pink® Batts® Insulation is not required to be enclosed by an internal lining. Refer to the relevant NZBC Acceptable Solution C/AS1 or C/AS2 for specific internal surface finish requirements.

External Moisture

- 11.1 The total building envelope must be weathertight and comply with the requirements of NZBC Clause E2 to ensure that the insulation remains dry in use.
- 11.2 The moisture content of the construction materials at the time of installing and enclosing the insulation must meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 10.2 a), or a lower moisture content if required by the lining manufacturer.

Internal Moisture

- 12.1 Buildings must provide an adequate combination of thermal resistance, ventilation and space temperature to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate. This does not apply to Communal Non-residential, Commercial, Industrial, Outbuildings or Ancillary buildings.
- 12.2 Roofs and walls of housing complying with the Schedule Method for Compliance with NZBC Clause H1.3.2 E will have adequate thermal resistance. Other buildings may require more thermal insulation to satisfy the requirements of NZBC Acceptable Solution E3/AS1 than that to satisfy the energy efficiency provisions alone.

Energy Efficiency

- 13.1 Pink® Batts® Insulation will contribute to meeting the requirements of NZBC Clause H1, Performance H1.3.1 [a] and H1.3.2 E, by compliance with NZBC Verification Methods H1/VM1, H1/VM2, NZBC Acceptable Solutions H1/AS1 or H1/AS2. Refer to Paragraphs 7.1–7.8.
- 13.2 Pink® Batts® Insulation R-values have been determined by testing to AS/NZS 4859.1 and are given in Table 1.

Installation Information

Installation Skill Level Requirement

- 14.1 All design and building work must be carried out in accordance with the Pink® Batts® Insulation Technical Literature and this Appraisal. All building work must be undertaken by competent and experienced tradespersons conversant with Pink® Batts® Insulation.

General

- 15.1 Installation of Pink® Batts® Insulation must be in accordance with the Technical Literature and this Appraisal. NZS 4246 should be used as a guide for installing insulation in residential buildings.
- 15.2 The product must be installed only when the building is enclosed and when the construction materials have achieved the required maximum moisture content or less.
- 15.3 Pink® Batts® Insulation must be released from the packaging and allowed to re-loft prior to installation. The time to loft will depend upon the length of time the product has been packaged and stored.
- 15.4 Pink® Batts® Insulation is supplied in segment and blanket form [see Table 1] to suit framing layouts. The product is able to be cut to suit wall cavities and when fitted between roof or ceiling framing. The insulation must be neatly friction-fitted between framing members so that the potential for gaps and convective heat loss is reduced. In wall cavities, the insulation must be neatly friction-fitted between framing members to prevent sagging. In ceiling or roofs, the insulation may be fitted between framing members or fitted over framing members and butted tightly. The insulation must extend to the external wall top plate. The insulation must not be folded or compressed. A close even fit provides the most efficient thermal performance. Whenever possible, the insulation should be fitted beneath wiring or plumbing.
- 15.5 The clearance requirements for heating appliances and downlights must be followed. Refer also to NZS 4246.

Inspections

- 15.6 The Technical Literature, this Appraisal and NZS 4246 must be referred to during the inspection of Pink® Batts® Insulation installations.

Health and Safety

- 16.1 Refer to the Technical Literature and NZS 4246 for guidance on health and safety requirements such as personal protective clothing and installation hazard assessment.

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Basis of Appraisal

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

Tests

- 17.1 Thermal resistance testing of Pink® Batts Insulation in accordance with AS/NZS 4859.1 has been completed. The results have been reviewed by BRANZ technical experts.
- 17.2 Tests have been carried out in accordance with AS 1530.1. Pink® Batts® Insulation is not deemed combustible according to the test criteria. The results have been reviewed by BRANZ technical experts.

Other Investigations

- 18.1 An assessment of the durability of Pink® Batts® Insulation has been made by BRANZ technical experts.
- 18.2 The manufacturer's Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

- 19.1 The manufacture of Pink® Batts® Insulation has been examined by BRANZ, including methods adopted for quality control. Details of the manufacturing processes, and quality and composition of the raw materials used were obtained and found to be satisfactory.
- 19.2 The range of Pink® Batts® Insulation products have been assessed for their environmental impact by the New Zealand Ecolabelling Trust and comply with the requirements of the Environmental Choice Specification, Licence No. 2504017 - Thermal [resistive type] Building Insulants. The products that have the Environmental Choice licence are noted in Table 1.
- 19.3 Tasman Insulation New Zealand Ltd [t/a Comfortech Building Solutions] is responsible for the quality of the product supplied.
- 19.4 Quality of installation of the product on-site is the responsibility of the installer.
- 19.5 Quality of maintenance of the building to ensure the insulation material remains dry is the responsibility of the building owner.

Sources of Information

- AS 1530.1:1994 Combustibility test for materials.
- AS/NZS 4859.1:2018 Thermal insulation materials for buildings.
- BRANZ House Insulation Guide [Sixth Edition], 2022.
- NZS 4246:2016 Energy efficiency - Installing bulk thermal insulation in residential buildings.
- Ministry of Business, Innovation and Employment Record of Amendments - Acceptable Solutions, Verification Methods and Handbooks.
- The Building Regulations 1992.

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In the opinion of BRANZ, **Pink® Batts® Insulation** 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 **Tasman Insulation New Zealand Ltd [t/a Comfortech Building Solutions]**, 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. **Tasman Insulation New Zealand Ltd [t/a Comfortech Building Solutions]**:
 - 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 **Tasman Insulation New Zealand Ltd [t/a Comfortech Building Solutions]**.
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 **Tasman Insulation New Zealand Ltd [t/a Comfortech Building Solutions]** or any third party.

For BRANZ



Claire Falck
Chief Executive
Date of Issue:
30 October 2023

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Pink® Batts®

Ceiling Insulation

Product and Installation Guide

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Product Specifications

PRODUCT GLASS WOOL RANGE	Product Code	Size (mm)	Nominal Stabilised Thickness (mm)	Nominal Total Area Per Bale (m²)	Approx. Coverage Per Bale* (m²)	Eco Choice Aotearoa	Environmental Product Declaration	BRANZ Appraisal Number
ROOF – CEILING THERMAL INSULATION								
R1.8 Pink® Batts® Classic	7110118	1220 x 432	95	13.7	14.4	✓	✓	238
R2.2 Pink® Batts® Classic	7110122	1220 x 432	115	12.6	13.3	✓	✓	238
R2.6 Pink® Batts® Classic	7110126	1220 x 432	140	10.5	11.1	✓	✓	238
R2.6 Pink® Batts® R2.6C 110mm†	7160266	1220 x 432	110	9.5	10	✓	✓	238
R3.0 Pink® Batts® R3.0C 160mm†	7160265	1220 x 432	160	8.4	8.9	✓	✓	238
R3.2 Pink® Batts® Classic	7110132	1220 x 432	170	8.4	8.8	✓	✓	238
R3.6 Pink® Batts® Classic	7110136	1220 x 432	180	7.4	7.7	✓	✓	238
R4.0 Pink® Batts® Ultra®	7110140	1220 x 432	195	6.3	6.6	✓	✓	238
R4.5 Pink® Superbatts®	7113145	1220 x 460	210	5.6	5.5	✓	✓	238
R5.0 Pink® Superbatts®	7113150	1220 x 460	225	4.5	4.4	✓	✓	238
R6.0 Pink® Superbatts®	7113160	1220 x 460	245	3.9	3.8	✓	✓	238
R7.0 Pink® Superbatts®	7113170	1220 x 460	275	3.4	3.3	✓	✓	238
ROOF – CEILING THERMAL RETROFIT INSULATION								
R2.9 Pink® Batts®	7110129	1220 x 432	150	9.5	10	✓	✓	238
R3.3 Pink® Batts®	7110133	1220 x 432	175	8.4	8.8	✓	✓	238

At Comfortech® our ambition is to create a more sustainable and comfortable future by enabling all Kiwis to live and work in warmer, healthier and more energy-efficient buildings. We're meeting this commitment with our new Pink® Superbatts® range which have been designed specifically to meet the new H1 building code changes for insulation.

To find out more about our vision for better performing New Zealand homes, visit our H1 Hub at www.comfortech.co.nz

Our Pink® Superbatts® are at least 25mm wider than our standard Pink® Batts® ceiling range

NOTE: The Pink® Superbatts® range is at least 25mm wider than standard Pink® Batts®.

† For use in a two-layer ceiling solution with a Pink® Superbatts®

* Coverage relates to standard structures (ie with framing allowance) therefore actual coverage may vary.



Pink® Batts® Ceiling Insulation

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Application

Pink® Batts® ceiling insulation is a lightweight flexible glass wool insulation product designed to:

- Thermally insulate ceilings in new homes, be retrofitted into existing homes without insulation, or over existing insulation for better performance
- Fit easily into standard ceiling constructions, or be easily cut to fit in non-standard constructions
- Meet the requirements of the New Zealand Building Code (NZBC) for different designs and environments

Features and Benefits

- High R-values – R-values up to R7.0 to assist in keeping homes above 18°C as per the World Health Organisation's recommendation for a healthy and comfortable home
- Easy to install – lightweight, flexible and simple design makes the installation fast and easy
- Internationally certified for Indoor Air Quality – gives assurance that products meet strict chemical emissions limits
- Non-combustible – will not easily burn in the event of a fire
- Made from over 80% recycled glass – making sustainable use of waste
- Designed for New Zealand building conditions



Pink® Batts® Ceiling Insulation

Product and Installation Guide

Environment

Pink® Batts® insulation is a sustainable and energy efficient product.

- Manufactured using over 80% recycled glass, making sustainable use of waste
- Manufactured in New Zealand, reducing shipping distances
- Recyclable packaging

Green Star NZ Credits

Green Star is a comprehensive environmental rating system for buildings; materials with certain attributes can receive points that contribute to the overall score of a rated home.

New Zealand Green Building Council (NZGBC) does not test or certify products; they rely on the work done by third party certification bodies and eco labels like Eco Choice Aotearoa. Further information is available at nzgbc.org.nz.

Eco Choice Aotearoa

Pink® Batts® ceiling insulation products have Eco Choice Aotearoa Accreditation (refer to Product Specifications on page 1 for accredited products)

Independently assessed for:

- **Waste Minimisation:** Recycled content, and recycling of process waste
- **Energy Management:** Effective energy management policies and procedures
- **Manufacturing Process:** Not manufactured using blowing agents with a Global Warming Potential (GWP) or Ozone Depleting Potential (ODP)
- **Product Characteristics:** Durability and performance



While only BRANZ appraised products are eligible for Eco Choice Aotearoa, all Pink® Batts® thermal insulation products are manufactured in the same environmentally considerate way.

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1 (Beca Carter Hollings & Ferner Ltd, Energy Economics of Fibreglass Insulation, 2005)

Pink® Batts® Ceiling Insulation

Product and Installation Guide

Health and Safety

Product Safety

Pink® Batts® insulation is a non-hazardous, safe product.

- IARC (International Agency for Research on Cancer) classifies the glass wool formulation used to manufacture Pink® Batts® products as Group 3: 'Not classifiable as to its carcinogenicity to humans'. This is the same classification as caffeine, tea, hair colouring, chlorinated drinking water and saccharin
- Pink® Batts® insulation is bio-soluble. In the unlikely event any fibres are inhaled into the lungs they will dissolve in the body fluids and be cleared from the body

Indoor Air Quality

- Pink® Batts® insulation is certified under the GREENGUARD Certification Program. Being certified for indoor air quality gives an assurance that products meet strict chemical emissions limits (including minimal levels of VOCs and formaldehyde), to help create healthier indoor environments

General Health

- Pink® Batts® insulation will assist in meeting the World Health Organisation recommendation for houses to be maintained at a minimum temperature of 18°C to provide a healthy and comfortable home

2 Howden-Chapman, P. et al. "Effect of insulating existing houses on health inequality: cluster randomised study in the community" British Medical Journal, 2007, p334:460

Technical Data

Properties	Result	Test/Method/Standard	Test Results
Combustibility	Non-Combustible ✓	AS/NZS 1530.1:1994	Group Number 1S
Early Fire Hazards	✓	AS/NZS 1530.3:1993 - Ignitability (Range 0-20) - Spread of Flame Index (Range 0-10) - Heat Evolved Index (Range 0-10) - Smoke Developed Index (Range 0-10)	= 0 = 0 = 0 = 0-1
R-value	Various* ✓	AS/NZS 4859.1:2018	
Corrosion	Non-Corrosive N/A	AS/NZS 4859.1:2018-Glass wool exempt	
Moisture Absorption	Non-Hygroscopic N/A	AS/NZS 4859.1:2018-Glass wool exempt	
Vermin Resistance	No Food Source ✓	AS/NZS 4859.1:2018-Glass wool exempt	

* Stated thicknesses are values at which stated R-values are achieved and are likely to be minimum values. See table on page 1.

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Pink® Batts® Ceiling Insulation

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Acoustic Properties

Pink® Batts® insulation will assist with noise control, however penetrations in ceilings and walls will transmit sound readily. Superior noise control can be achieved by using Pink® Batts® insulation products in conjunction with good acoustic design.

New Zealand Building Code (NZBC) and Limitations

Pink® Batts® ceiling insulation when used, installed and maintained in accordance with the requirements outlined in this datasheet, will meet or contribute to meeting the following provisions of the NZBC:

NZBC Clause B2: Durability

Meets the requirement NZBC B2.3.1 a) 50 years and NZBC B2.3.1 b) 15 years

NZBC Clause E3: Internal Moisture

Contributes to meeting these requirements

NZBC Clause F2: Hazardous Building Materials

Meets this requirement and will not present a health hazard to people

NZBC Clause H1: Energy Efficiency

Contributes to meeting this requirement

Limitations

To meet the provisions of the NZBC as outlined in this datasheet, Pink® Batts® ceiling insulation MUST be:

- Installed and maintained in a dry protected environment
- Installed in a building where the provisions of NZBC E2 and E3 are met
- Installed to the requirements of NZS 4246:2016: Energy Efficiency-Installing bulk thermal Insulation in Residential Buildings

Pink® Batts® ceiling insulation should NOT be crushed, folded or compressed.

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Installation Instructions

Correct installation with no compression, gaps or folds is critical to ensure Pink® Batts® ceiling insulation performance is not compromised.

Safety

Each installation is unique so prior to installation check for all hazards that may cause injury:

- Carry out any required repair work before starting installation
- Ensure there's adequate lighting to identify any hazards
- Treat all electrical cables as live, being careful not to cut or expose cables and wires
- Beware of sharp objects (protruding nails, splinters etc.), pests (bees and wasps), loose boards and pipe work
- Avoid installing during the warmest part of the day. The roof cavity temperature can increase to uncomfortable levels roof temperature
- Do not stand on ceiling lining or ceiling battens

Note: Seek professional advice if you are unsure how best to isolate the hazard or have a professional installer carry out the work on your behalf.

We recommend PinkFit® professional installers. PinkFit® are a nationwide network of professional installers who guarantee that their completed installation will meet the requirements of NZS 4246:2016.

For your local PinkFit® installer call **0800 746 534** or visit pinkbatts.co.nz/installing-pink-batts/



Pink® Batts® Ceiling Insulation

Product and Installation Guide

Installation

Any slight irritation to exposed skin caused by the fibres in glass wool, or through their inhalation, is harmless and temporary.

However for your comfort while installing, it's recommended you wear:

- Loose fitting work clothes which cover the arms and legs
- Covered shoes
- Dust mask
- Safety glasses

For safety while installing, it's recommended you use:

- Cut resistant gloves (if knife is used)
- Kneepads (for retrofitting)

For an efficient installation, the following tools are recommended:

- Stable working platform (for new build)
- Kneeling board or planks (for retrofitting)
- Knife
- Tape measure
- Install rod for tight spaces
- Head torch (for retrofitting)


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For retrofitting, take into consideration:

- Using planks laid across joists to walk and work on
- Leveling and refitting any existing insulation if required with correct clearances
- Removing any damp insulation
- Starting installation at the point furthest away from the ceiling access hole

To ensure Pink® Batts® ceiling insulation performance isn't compromised, confirm the correct product and R-value is used in ceiling applications.

- Ensure the product is installed dry
- Friction fit product between framing, ensuring there are NO gaps, folds or compression of the product to achieve optimal performance
- If cutting is required, cut oversize by 5-10mm to ensure a good friction fit
- Ensure that Pink® Batts® ceiling segments are firmly butted against each other
- For retrofitting, install over timber where insulation already exists or where appropriate. Any open air pockets beside joist/truss cord ends at the roof perimeter to be blocked off with insulation off-cuts
- Fit Pink® Batts® insulation beneath electrical wiring and plumbing work. Minimise tucks
- Install to the outer edge of the top plate covering at least 50% of it while ensuring minimal overflow to the eaves
- Maintain a 25mm gap clearance between the Pink® Batts® insulation and any roofing material. If required, to maintain 25mm clearance, trim insulation or use a thinner product around the perimeter
- Insulate access hole cover and secure in place with strapping or glue Remove excess material

 **Tip:** To verify Building Code Compliance, staple a product label at an easy to find location away from any hot items such as down lights or water cylinders e.g. on truss/rafter above ceiling access hole and hot water cupboard.

 **Note:** Pink® Batts® and Pink® Superbatts® ceiling insulation should not be installed in a roof space where foil has been installed as a roof underlay. Refer to NZS 4246:2016 for full details.

Pink® Batts® Ceiling Insulation

Product and Installation Guide

Clearances

Follow the clearances specified by the manufacturer; if they are not known then:

Recessed Luminaire

- CA rated recessed luminaires - None required, can close abut however, do not install insulation on top of the recessed luminaire
- IC rated recessed luminaires - None required, insulation can be installed over the top of the recessed luminaire
- Unmarked - Minimum 100mm

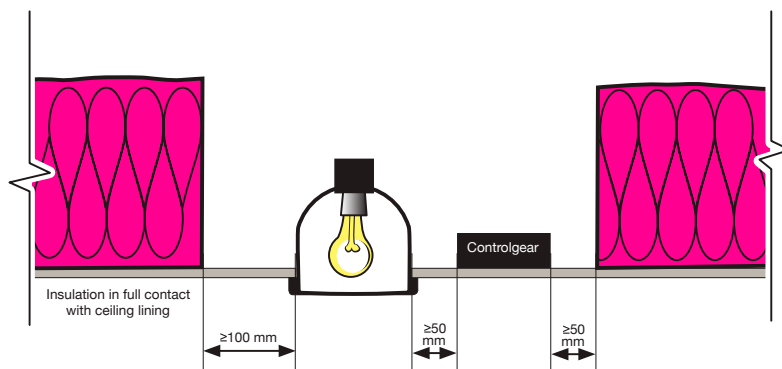
Surface Mounted Luminaire - Minimum clearance 200mm; however it does not apply if the insulation is permanently shielded.

Controlgear

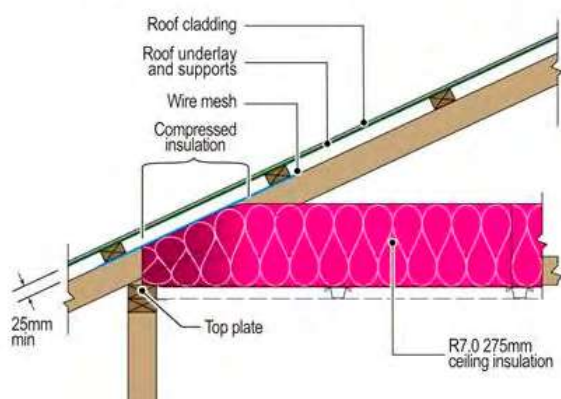
- If possible place it on top of the insulation and leave a minimum clearance of 50mm between controlgear and luminaire
- If not possible to place it on top of the insulation and leave 50mm from the insulation to the controlgear

Controlgear **shall not sink** into the insulation.

- Built in appliances - Minimum 50mm
- Enclosures containing electrical equipment - Minimum 50mm
- Fan/heat/light unit - Minimum 100mm
- Ventilation systems - Minimum 50mm
- Unducted mechanical fan units - Minimum 200mm
- Unducted passive vents that remain functional - Minimum 200mm
- Metal chimney and flues - Minimum 75mm
- Brick chimney - Minimum 50mm
- Roof underlay - Minimum 25mm



Unmarked luminaire and controlgear not placed on top of Pink® Batts® ceiling products.



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Note: Pink® Batts® ceiling insulation can be installed from below when the ceiling is to be lined or replaced

Joist cover with insulation can be achieved either with two separate layers of insulation or cutting a single thick layer of insulation such that it spills over the top when tightly fitted.

***Caution:** Electrical cables and equipment partially or completely surrounded with bulk thermal insulation may overheat and fail. This applies to wiring installed prior to 1989.

For information on how to install Pink® Superbatts® ceiling insulation, please refer to the Pink® Superbatts® Installation Guide.

Pink® Batts® Ceiling Insulation

Product and Installation Guide

Storage and Maintenance

Pink® Batts® and Pink® Superbatts® insulation should be protected from damage and weather. Store undercover in clean, dry conditions. The installed product should remain dry at all times. If the product becomes wet or damp, the source of dampness (e.g. leak in building) should be repaired and any wet or damp insulation should be removed and replaced with new insulation of an equivalent R-value.

Disposal of bags

Recyclable LLDPE bags are used for packaging of Pink® Batts® and Pink® Superbatts® insulation. For further details download the relevant product data sheet from pinkbatts.co.nz



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Wall Insulation

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Product Specifications

PRODUCT GLASS WOOL RANGE	Product Code	Size (mm)	Nominal Stabilised Thickness (mm)	Nominal Total Area Per Bale (m²)	Approx. Coverage Per Bale* (m²)	Eco Choice Aotearoa	Environmental Product Declaration	BRANZ Appraisal Number
WALL – ACOUSTIC INSULATION								
Pink® Batts® Silencer® 100mm^	7317001	1140 x 560	100	12.8	14.4	-	✓	x
Pink® Batts® Silencer® 75mm^	7317003	1140 x 560	75	16.6	18.8	-	✓	x
WALL – THERMAL INSULATION								
MASONRY								
R1.0 Pink® Batts®	7160110	1220 x 580	40	21.2	-	✓	✓	238
R1.2 Pink® Batts®	7160134	1220 x 580	50	17	-	✓	✓	238
70mm WALL RANGE								
R.2.2 Pink® Batts® Classic	7160248	1140 x 560	70	6.4	7.5	✓	✓	238
90mm WALL RANGE								
R1.8 Pink® Batts® Classic - Wall	7127118	1140 x 560	90	16.6	19.6	✓	✓	238
R2.2 Pink® Batts® Classic - Wall	7127122	1140 x 560	90	13.4	15.8	✓	✓	238
R2.2 Pink® Batts® Steel - Wall	7160214	1220 x 610	90	15.6	15.6	✓	✓	238
R2.2 Pink® Batts® - Narrow Wall	7160243	1140 x 360	90	9	11.2	✓	✓	238
R2.4 Pink® Batts® Classic - Wall	7127124	1140 x 560	90	10.2	12.1	✓	✓	238
R2.6 Pink® Batts® Ultra® - Wall	7127126	1140 x 560	90	9.6	11.3	✓	✓	238
R2.6 Pink® Batts® Ultra® - Wall†	718226	1140 x 560	90	9.6	11.3			238
R2.6 Pink® Batts® Ultra® Steel - Wall	7160215	1220 x 610	90	9.7	9.7	✓	✓	238
R2.6 Pink® Batts® Ultra® - Narrow Wall	7160244	1140 x 360	90	7.4	9.2	✓	✓	238
R2.8 Pink® Batts® Ultra® - Wall	7127128	1140 x 560	90	6.4	7.5	✓	✓	238
R2.8 Pink® Batts® Ultra® - Wall†	718228	1140 x 560	90	6.4	7.5			238
R2.8 Pink® Batts® Ultra® - Narrow Wall	7160247	1140 x 360	90	4.5	5.6	✓	✓	238

† Manufactured in Canada

* Coverage relates to standard structures (ie with framing allowance) therefore actual coverage may vary.

** Pink® Batts® HandyPack and Polyester products are not GREENGUARD certified, do not have a Lifetime Warranty. Products are not BRANZ appraised.

^ Product does not have Lifetime Warranty

Pink® Batts® Wall Insulation

Product and Installation Guide

Product Specifications

PRODUCT GLASS WOOL RANGE	Product Code	Size (mm)	Nominal Stabilised Thickness (mm)	Nominal Total Area Per Bale (m²)	Approx. Coverage Per Bale* (m²)	Eco Choice Aotearoa	Environmental Product Declaration	BRANZ Appraisal Number
140mm WALL RANGE								
R3.2 Pink® Batts® Ultra® - Wall	7127132	1140 x 560	140	9.6	11.3	✓	✓	238
R3.2 Pink® Batts® Ultra® - Narrow Wall	7160245	1140 x 360	140	7	8.6	✓	✓	238
R3.6 Pink® Batts® Ultra® - Wall	7127136	1140 x 560	140	7	8.3	✓	✓	238
R4.0 Pink® Batts® Ultra® - Wall	7127140	1140 x 560	140	5.1	6	✓	✓	238
R4.0 Pink® Batts® Ultra® - Narrow Wall	7160246	1140 x 360	140	4.1	5	✓	✓	238
R4.3 Pink® Batts® Ultra® - Wall	7127143	1140 x 560	140	3.2	3.8	✓	✓	238

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* Coverage relates to standard structures (ie with framing allowance) therefore actual coverage may vary.
 ** Pink® Batts® HandyPack and Polyester products are not GREENGUARD certified, do not have a Lifetime Warranty. Products are not BRANZ appraised.
 ^ Product does not have Lifetime Warranty

Pink® Batts® Wall Insulation

Product and Installation Guide

Application

Pink® Batts® wall insulation is a lightweight flexible glass wool insulation product designed to:

- Thermally insulate timber and steel framed walls
- Fit easily into standard wall constructions, or be easily cut to fit in non-standard constructions
- Meet the requirements of the New Zealand Building Code (NZBC) for different designs and environments

Features and Benefits

- High R-values – R-values up to R4.3 to assist in keeping homes above 18°C as per the World Health Organization's recommendation for a healthy and comfortable home
- Easy to install – lightweight, flexible and simple design makes the installation fast and easy
- Internationally certified for Indoor Air Quality – gives assurance that products meet strict chemical emissions limits
- Non-combustible – will not easily burn in the event of a fire
- Made from recycled glass making sustainable use of waste

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Pink® Batts® Wall Insulation

Product and Installation Guide

Environment

Pink® Batts® insulation is a sustainable and energy efficient product.

- Manufactured using recycled glass, making sustainable use of waste
- Energy used during the manufacture of Pink® Batts® products is offset by the energy saved by a home fully insulated with Pink® Batts® products within 3-15 months¹

Green Star NZ Credits

Green Star is a comprehensive environmental rating system for buildings; materials with certain attributes can receive points that contribute to the overall score of a rated home.

New Zealand Green Building Council (NZGBC) does not test or certify products; they rely on the work done by third party certification bodies and eco labels like Eco Choice Aotearoa. Further information is available at nzgbc.org.nz.

Eco Choice Aotearoa

All NZ-made Pink® Batts® Wall insulation products have Eco Choice Aotearoa Accreditation (refer to the Product Specifications)

Independently assessed for:

- **Waste Minimisation:** Recycled content, and recycling of process waste
- **Energy Management:** Effective energy management policies and procedures
- **Manufacturing Process:** Not manufactured using blowing agents with a Global Warming Potential (GWP) or Ozone Depleting Potential (ODP)
- **Product Characteristics:** Durability and performance



While only BRANZ appraised products are eligible for Eco Choice Aotearoa, all Pink® Batts® thermal insulation products are manufactured in the same environmentally considerate way.

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¹ (Beca Carter Hollings & Ferner Ltd, Energy Economics of Fibreglass Insulation, 2005)

Pink® Batts® Wall Insulation

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Health and Safety

Product Safety

Pink® Batts® insulation is a non-hazardous, safe product.

- IARC (International Agency for Research on Cancer) classifies the glass wool formulation used to manufacture Pink® Batts® products as Group 3: 'Not classifiable as to its carcinogenicity to humans'. This is the same classification as caffeine, tea, hair colouring, chlorinated drinking water and saccharin
- Pink® Batts® insulation is bio-soluble. In the unlikely event any fibres are inhaled into the lungs they will dissolve in the body fluids and be cleared from the body

Indoor Air Quality

- Pink® Batts® insulation is certified under the GREENGUARD Certification Program. Being certified for indoor air quality gives an assurance that products meet strict chemical emissions limits (including minimal levels of VOCs and formaldehyde), to help create healthier indoor environments

General Health

- Pink® Batts® insulation will assist in meeting the World Health Organisation recommendation for houses to be maintained at a minimum temperature of 18°C to provide a healthy and comfortable home
- A Wellington School of Medicine study found insulated houses resulted in families with fewer sick days and the economic benefit was double the initial cost of the insulation²

2 Howden-Chapman, P. et al. "Effect of insulating existing houses on health inequality: cluster randomised study in the community" British Medical Journal, 2007, p334:460

Technical Data

Properties	Result	Test/Method/Standard	Test Results
Combustibility	Non-Combustible ✓	AS/NZS 1530.1:1994	Group Number 1S
Early Fire Hazards	✓	AS/NZS 1530.3:1993 - Ignitability (Range 0-20) - Spread of Flame Index (Range 0-10) - Heat Evolved Index (Range 0-10) - Smoke Developed Index (Range 0-10)	= 0 = 0 = 0 = 0-1
R-value	Various* ✓	AS/NZS 4859.1:2018	
Corrosion	Non-Corrosive N/A	AS/NZS 4859.1:2018-Glass wool exempt	
Moisture Absorption	Non-Hygroscopic N/A	AS/NZS 4859.1:2018-Glass wool exempt	
Vermin Resistance	No Food Source ✓	AS/NZS 4859.1:2018-Glass wool exempt	

* Stated thicknesses are values at which stated R-values are achieved and are likely to be minimum values. See table on Page 1.

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Pink® Batts® Wall Insulation

Product and Installation Guide

New Zealand Building Code (NZBC) and Limitations

Pink® Batts® wall insulation when used, installed and maintained in accordance with the requirements outlined in this datasheet, will meet or contribute to meeting the following provisions of the NZBC:

NZBC Clause B2: Durability

Meets the requirement NZBC B2.3.1 a) 50 years and NZBC B2.3.1 b) 15 years

NZBC Clause E3: Internal Moisture

Contributes to meeting these requirements

NZBC Clause F2: Hazardous Building Materials

Meets this requirement and will not present a health hazard to people

NZBC Clause H1: Energy Efficiency

Contributes to meeting this requirement

Limitations

To meet the provisions of the NZBC as outlined in this datasheet, Pink® Batts® wall insulation MUST be:

- Installed and maintained in a dry protected environment
- Installed in a building where the provisions of NZBC E2 and E3 are met
- Installed to the requirements of NZS 4246:2016: Energy Efficiency-Installing bulk thermal Insulation in Residential Buildings

Pink® Batts® wall insulation should NOT be crushed, folded or compressed.

Acoustic Properties

Pink® Batts® insulation will assist with noise control, however penetrations in walls will transmit sound readily. Superior noise control can be achieved by using Pink® Batts® insulation products in conjunction with good acoustic design.

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Installation Instructions

Correct installation with no compression, gaps or folds is critical to ensure Pink® Batts® wall insulation performance is not compromised.

Safety

Each installation is unique so prior to installation check for all hazards that may cause injury:

- Carry out any required repair work before starting installation
- Ensure there's adequate lighting to identify any hazards

- Treat all electrical cables as live, being careful not to cut or expose cables and wires
- Beware of other sharp objects (protruding nails, splinters etc.), pests (bees and wasps), loose boards and pipe work

Note: Seek professional advice if you are unsure how best to isolate the hazard or have a professional installer carry out the work on your behalf.

We recommend PinkFit® professional installers. PinkFit® are a nationwide network of professional installers who guarantee that their completed installation will meet the requirements of NZS 4246:2016

For your local PinkFit® installer call **0800 746 534** or visit pinkbatts.co.nz/installing-pink-batts/



Pink® Batts® Wall Insulation

Product and Installation Guide

Installation:

Any slight irritation to exposed skin caused by the fibres in glass wool, or through their inhalation, is harmless and temporary.

However for your comfort while installing, it's recommended you wear:

- Loose fitting work clothes which cover the arms and legs
- Covered shoes
- Dust mask
- Safety glasses

For safety while installing, it's recommended you use:

- Cut resistant gloves (if knife is used)

For an efficient installation, the following tools are recommended:

- Stable working platform
- Knife
- Tape measure

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To ensure Pink® Batts® wall insulation performance isn't compromised, use only wall products for installing in wall applications.

- Ensure the product and all cavities are dry
- If cutting is required, cut oversize by 5 mm to ensure a good friction fit
- Ensure there are no gaps, folds or compression of the product to achieve optimal performance
- Fill gaps around windows and doors with off-cuts
- Follow the manufacturer's instructions for minimum clearances from hot inbuilt appliances. If they are unknown, refer to NZS 4246:2016
- Do not cover vents. Insulate around vents to allow unhindered ventilation
- Fit Pink® Batts® insulation tight and close around electrical cables and pipes. It's important to minimise compression, gaps and folds in the insulation. For electrical cables and small diameter pipes, partially cut insulation and place around the cables and pipes
- In new construction, it is recommended that Pink® Batts® insulation is installed once the cladding system is completely installed.

Retrofitting insulation in external walls without wall underlay/or in poor condition

a) Direct Fixed Cladding

- Use insulation that is at least 20mm thinner than the framing width - if the frame is 90mm we recommend to use Pink® Batts® Classic R2.2 70mm OR
- Fit inserts of an absorbent wall underlay and use the whole framing cavity.

b) Drained Cavity

- The insulation can be the same thickness as the frame.
- The use of horizontal strapping is recommended or fit inserts of an absorbent wall underlay.


Unlined. Walls in Roof Cavities

- Pink® Batts® Wall should be secured in place by using horizontal strapping (max spacing of 300mm)

Pink® Batts® Masonry Wall Insulation

- It is recommended that an absorbent building paper or a waterproof membrane is placed between the insulation and the concrete. This is not intended to replace the DPC which must still be fixed between strapping and masonry.

CAUTION: Electrical cables and equipment installed prior 1989 may overheat and fail when partially or completely covered with bulk thermal insulation

 **Tip:** To verify Building Code Compliance, staple a product label and installer information at an easy to find location away from any hot items such as downlights or water cylinders. An alternative is to supply the information to the building owner or authorised person.

Refer to NZS 4246:2016 for further information related to the correct installation of insulation and clearances.

Pink® Batts® Wall Insulation

Product and Installation Guide

Storage and Maintenance

Pink® Batts® insulation should be protected from damage and weather. Store undercover in clean, dry conditions. The installed product should remain dry at all times. If the product becomes wet or damp, the source of dampness (e.g. leak in building) should be repaired and any wet or damp insulation should be removed and replaced with new insulation of an equivalent R-value.

Disposal of bags

Recyclable LLDPE bags are used for packaging of Pink® Batts® insulation. For further details download the relevant product data sheet from pinkbatts.co.nz



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FOR

PROTECTO WRAP

PROTECTO TAPE

(EIFS TAPE)

PROTECTO TAPE SPECIFICATION (EIFS TAPE)

PRODUCT DESCRIPTION

Protecto Tape is a self adhering, conformable, modified SBS (styrene-butadiene-styrene) rubberized asphalt tape. Protecto Tape has a fabric top that provides a base to which most plaster or texture coat finishing systems are able to be applied, creating a monolithic finish.

Protecto Tape can be used as a waterproofing membrane under conventional metal or timber parapet caps and also as a flashing for behind cladding junctions. Protecto Tape when used in conjunction with Protecto Wrap Detail Tape can be used to form saddle flashings or any awkward flashing requirement.

Protecto Tape is 1.0mm thick and available in 75mm, 150mm, 300mm and 400mm wide by 30m long rolls.

Accessories used in conjunction with Protecto Tape

- Protecto Tak – a light blue spray on primer/adhesive available in a 369gm can and used to prepare the surface for the application of the tapes. Can be use on a wide range of substrates including polystyrene, wall underlay, fibre cement and timber.
- #100 Primer – a solvent based primer/adhesive available in 1lt, 4lt and 20lt containers. #100 primer is applied by brush or roller and is used to prepare concrete and steel for the application of the tapes.
- Protecto Wrap Detail Tape – a highly conformable tape that can be stretched and moulded. Used to detail awkward areas before the application of the Protecto Tape.
- JS160H mastic – an asphalt mastic available in 310ml cartridges. Used at Protecto Tape junctions, terminations and penetrations.

FEATURES /BENEFITS

- Adaptable to fit most flashing requirements.
- Zero waste as tapes can be overlapped.
- Wide range of widths available.
- Can be used as a sealing bandage over fixing blocks on external walls.
- Will self seal around mechanical fasteners as long as no pilot holes are drilled.
- Can be directly plastered or rendered.
- Fast and easy to install.

STORAGE

Store all materials in a dry place at temperatures between 10°C and 32°C. Do not store in direct sunlight. Do not remove membrane from the carton until ready for use and always replace in the carton for storage.

Handling and storage of the materials, whether on-site or off-site is the responsibility of the installer.

DURABILITY

On the basis that the exposure to the weather does not exceed 90 days, Protecto Tape can be expected to have a serviceable life of at least 15 years.

When used as a waterproofing tape over the joins in RAB board the exposure can be 90 days.

SAFETY PRECAUTIONS

The materials must be kept away from direct exposure to heat and flames. Extra precautions must be taken when using the #100 primer and JS160H mastic in areas where there is insufficient ventilation. Do not breathe the fumes. Avoid contact with skin. Wear eye and face protection.

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SURFACE PREPARATION

The surface to receive Protecto Tape must be clean, dry and free of any foreign matter that may adversely affect adhesion.

Allow treated timber to breathe for a minimum of 7 days before installation of Protecto Tape.

When using Protecto Tape with a given plaster or finishing system, it is advisable to confirm its suitability with the manufacturer.

Protecto Tape must be separated from sources of heat.

The use of Protecto Wrap is not designed to overcome poor detailing and workmanship.

Do not install Protecto Tape in temperatures lower than 7°C.

PRIMERS

PRIMERS (General)

The recommended primer/adhesive must be applied to all substrates before the installation of Protecto Tape. Failure to apply the correct primer/adhesive could result in tape to substrate delamination.

Ensure nail holes are filled and allowed to dry for a min. of 24 hours before applying the primer. This is particularly important when using solvent based fillers.

When using the #100 primer allow the application to cure for approx. 30 minutes before installing the tape. Primer should be touch dry when cured. The time required will depend on the air temperature.

PRIMER (Selection)

POLYSTYRENE

Use Protecto Tak spray on primer/adhesive. A light spray is all that is required. When using Protecto Tak it is necessary to keep the spray nozzle at least 150mm away from the polystyrene surface to avoid spray penetration.

WALL UNDERLAY

Use Protecto Tak spray on primer/adhesive.

Ensure wall underlay is securely fastened.

FIBRE CEMENT SHEETING

Use either Protecto Tak spray on primer/adhesive or Protecto Wrap #100 primer.

Remove excess dust from the sheet surface before applying the primer.

TIMBER

Use either Protecto

Tak spray on primer/adhesive or Protecto Wrap #100 primer.

Ensure timber has been allowed to breathe for a minimum of 7 days prior to the application.

MASONRY

Use Protecto Wrap #100 primer.

Fill voids and grind any sharp protrusions. Surfaces must be clean and dry.

STEEL

Use Protecto Wrap #100 primer.

Ensure that the surface is free of any rust, flaky paint or any material that will affect adhesion.

INSTALLATION OF PROTECTO TAPE

PRIMING

Ensure surfaces are clean, dry and free of any sharp protrusions. Apply the correct substrate primer and allow to cure where required.

DETAILING

Use Protecto Wrap Detail Tape (JS 500) in areas such as the hand rail to wall junctions, steps in the parapet or handrail, around penetrations or in any area that requires a flexible tape to create a flashing or seal. Stretch and mould the Detail Tape into position and press firmly onto the substrate.

- Ensure the correct primer is applied before installing the Detail Tape.
- The Detail Tape should be long enough to allow the Protecto Tape to overlap by a minimum of 100mm.
- The Detail Tape should be covered as much as possible with Protecto Tape.

PROTECTO TAPE INSTALLATION

- Select the most suitable roll width for the application and cut to the length.
- Shape the tape to fit; ensuring it will cover any areas that have been detailed.
- Roll up the cut length of Protecto Tape with the backing paper to the outside of the roll.
- Peel back approximately 50mm of the backing paper.

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- Position the tape on the substrate and press firmly into place.
- Continue unrolling the Protecto Tape and removing the backing paper while smoothing the tape onto the substrate.
- Firmly press or roll along the top then sides of the installed Protecto Tape to ensure maximum adhesion.
- Seal all junctions, protrusions and overlaps with JS160H mastic.

Protecto Tape must extend a minimum of 50mm down each side of a parapet or hand rail.

When applying long runs of tape, tear off and discard short lengths of the backing paper as it is removed. This will assist the installation procedure.

JOINING THE TAPE

Protecto tape must be lapped a minimum of 100 mm for all joints. JS160 H Mastic must be used.

- Trowel JS160H mastic to fully cover the 100mm lap on the installed tape.
- Remove a section of the backing paper from the overlapping tape.
- With the minimum of 100mm overlap, lay the second piece of Tape into the mastic and out onto the substrate.
- Continue removing the backing paper and rolling the tape firmly into place.
- Remove excess mastic and smooth the remainder into the overlap edge.

All installed tape must be firmly pressed or rolled to maximize adhesion.

REPAIRS

Should air become trapped under the membrane at any stage of installation, puncture the bubble and expel any trapped air. Press and roll the punctured area to attach the tape to the substrate, and then apply a bead of JS160 H mastic over the puncture and trowel smooth.

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NOTES

Protecto Tape is not UV

stable and must be covered. If the tape is exposed for longer than 90 days it must be replaced.

When rendering or plastering over Protecto Tape you must bed in a fibre glass mesh coat. This mesh coat must extend a minimum of 100mm past all edges of the Protecto Tape.

When installing a metal cap flashing over Protecto Tape a 5mm packer must be used under the flashing to stop the metal contacting the tape.

The membrane may discolour some sealants – It is recommended that the compatibility of sealants with the tape be checked with the sealant manufacturer before application.

Handrails must not be top fixed through the Protecto Tape.

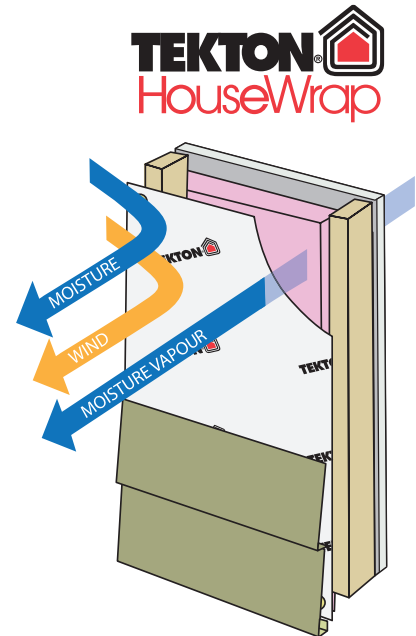
***The building industry typically uses bitumen containing sill wraps for doors and windows. The NZBC code dictates that a sealant conforming to ISO 11600 Group F Class 25LM is to be used as the window Joint sealant. Sealants that conform to the ISO standard are NOT compatible with bitumen containing sill wraps and degradation of the sealant may occur. Even sill wraps that have a polyethylene protective film are considered as incompatible as long-term isolation of the materials is not guaranteed.**

In order to ensure a long-term seal that will meet NZBC requirements an impervious aluminium tape Danko TD830 has to be applied to the sill Tapes to provide a barrier between the tapes and the Bostik Seal n Flex1.

WARRANTY

The products are warranted to be free of defect in manufacture for a period of 15 years. This warranty is limited to the replacement of the Protecto Wrap products only.

TEKTON



Tekton Wall Underlay is non-absorbent, breathable, fire retardant, flexible wall underlay.

Smart enough to shut down water and air infiltration whilst allowing internal moisture vapour the ability to escape, delivering the optimal balance between holdout and breathability.

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BENEFITS

- Is breather type coated, spun-bonded polypropylene
- Can be left exposed for 60 days
- Superior water holdout. Taking the industry to a new level for water resistance.
- Optimal surfactant resistance. Wash your building with confidence.
- Fire retardant with the Highest Fire rating of all papers in NZ. It has a 0 rating on the Flammability Index.
- A leader in tear strength
- Suitable for all wind zones including extra high when used with RAB Systems
- Can be used with no internal wall linings, ie: gable ends.
- Increases your building's energy efficiency
- Used for residential and commercial applications
- Will not support the growth of mould
- Contains more than 23% recycled content
- Forms part of the Marshall Weatherization System



TEKTON SPECIFICATION

PRODUCT DESCRIPTION

Tekton Wall Underlay is a synthetic breather-type Wall Underlay for use as a wall underlay and air barrier under direct and non-direct fixed wall cladding on timber and steel framed buildings. The product is a coated spun-bonded polypropylene, and is approximately 0.6mm thick. Tekton Wall Underlay is supplied in rolls 2740mm x 37m and 1370mm x 37m.

FEATURES /BENEFITS

- Tekton Wall Underlay can be used in all wind zones up to and including very high and extra high with RAB Systems.
- Tekton Wall Underlay is fire retardant with a zero flammability index and can be used without restriction on all buildings, however must be separated from fireplaces, heating appliances, flues and chimneys in accordance with the NZ Building Code.
- Tekton Wall Underlay can be installed as an air barrier to walls that are not lined, such as gable ends.
- Tekton Wall Underlay has superior water hold out - keeping framing drier while permanent cladding is installed.
- Tekton Wall Underlay has 50 year durability.
- Tekton Wall Underlay can be left exposed for up to 60 days.
- Tekton Wall Underlay has optimal surfactant resistance (will not lose integrity if exposed to most soaps, detergents and cleaning chemicals).
- Tekton Wall Underlay is Branz appraised # 548 (2013)
- Tekton Wall Underlay can be used as a non-rigid backing material for stucco plaster and as a slip layer over rigid backing for stucco plaster.
- Tekton Wall Underlay is compatible with metal cavity battens.

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APPLICATION RANGE

TIMBER FRAMED BUILDINGS

- With absorbent wall claddings directly fixed to the framing.
- With absorbent and non-absorbent wall claddings installed over an 18mm minimum drained cavity.
- With masonry veneer.
- In building wind zones up to and including very high.

STEEL FRAMED BUILDINGS

- With absorbent and non-absorbent wall claddings installed over an 18mm minimum drained cavity.
- With masonry veneer.
- In building wind zones up to and including very high.

Tekton Wall Underlay can also be used on buildings subject to specific weathertightness design.

STORAGE

Tekton Wall Underlay must be stored on its end in a clean and dry environment. It is the responsibility of the installer to protect the roll from damage and weather.

SURFACE PREPARATION

Studs must be provided at a maximum of 600mm centres. Nogs must be fitted flush between the studs at a maximum of 1200mm centres. The framing must be free from any sharp protrusions that may damage the wall underlay.

INSTALLATION

PLACEMENT

- The branded side of the wall underlay must face away from the framing.
- The wall underlay must run horizontally.
- The wall underlay must extend from the upper side of the top plate to the underside of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs.
- Horizontal laps must be no less than 75mm with the direction of the lap ensuring that water is shed to the outside.
- End laps must be made over framing and be no less than 150mm wide.

It is preferable to tape all joins.

APPLICATION

- Position the roll of Tekton Wall Underlay against the framing with a short length of wall underlay free of the roll.
- Align the guide marks printed on the Tekton Wall Underlay with visible studs and nail /staple to the framing

Fix the wall underlay into place using 6-8mm zinc/stainless plated staples, hot dip galvanised large head clouts or proprietary wall underlay fixings.

- Unroll the wall underlay across the framing and fix to all framing members at a maximum of 300mm centres.
- Keep the wall underlay straight and taut over the framing.
- The wall underlay should be run over any openings and these should be left covered until the windows and doors are ready to be installed. To form the openings cut the wall underlay at a 45 degree diagonal in from each corner. Fold and staple the wall underlay to the inside of the framed opening. Excess wall underlay can be trimmed.

- All openings must be detailed using a Branz appraised flexible flashing system like Super-Stick, Protecto One Piece Sill Tape or the Protecto Sill System.
- Where cavity battens are installed at greater than 450 mm centres, the wall underlay must be supported between the battens to prevent the wall underlay bulging into the cavity space when insulation is installed.
- Tekton Wall Underlay can be added as a second layer over head flashings as per E2/AS1 or the headflashing can be sealed to the wall underlay using Protecto Head Flashing Tape.
- Any damaged areas of the wall underlay must be repaired by overlapping with new material and taping, or by taping small tears.

When fixing wall underlay in windy conditions, care must be taken due to the large sail area created by the roll widths.

WARRANTY

Tekton Wall Underlay meets the durability requirements of NZBC B2.3.1(a), 50 years and B2.3.1(b), 15 years. Tekton Wall Underlay is warranted to be free of defect in manufacture. This warranty is limited to replacement of the Tekton Wall Underlay material. Marshall Innovations NZ/AUS Ltd (the distributor) is not liable for incorrect installation or any accidental or wilful damage to the product.

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BRANZ Appraised

Appraisal No. 548 [2024]

TEKTON® BUILDING WRAP

Appraisal No. 548 [2024]

This Appraisal replaces BRANZ Appraisal No. 548 [2019]



BRANZ Appraisals

Technical Assessments of products for building and construction.



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Product

- 1.1 Tekton® Building Wrap is a synthetic breather-type flexible wall underlay and air barrier for use under direct and non-direct fixed wall cladding on timber and steel-framed buildings. The product is manufactured of coated spun-bonded polypropylene.

Scope

- 2.1 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on timber-framed buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
 - with absorbent wall claddings directly fixed to framing; and,
 - with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
 - with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
 - situated in NZS 3604 Wind Zones up to, and including, Very High.
- 2.2 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on steel-framed buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
 - with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
 - with masonry veneer subject to specific design; and,
 - situated in NZS 3604 Wind Zones up to, and including, Very High.
- 2.3 Tekton® Building Wrap has been appraised for use as a flexible wall underlay over rigid wall underlay on timber and steel-framed buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and floor plan area; and,
 - with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
 - with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber-framed buildings or specific design for steel-framed buildings; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.4 Tekton® Building Wrap has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Tekton® Building Wrap into their design in accordance with the declared properties and the instructions of Marshall Innovations Limited.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Tekton® Building Wrap, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.2. Tekton® Building Wrap meets these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Tekton® Building Wrap will contribute to meeting this requirement. See Paragraphs 12.1–12.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Tekton® Building Wrap meets this requirement.

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Technical Specification

- 4.1 Tekton® Building Wrap is a 100 g/m² light grey sheet polypropylene membrane material approximately 0.6 mm thick.
- 4.2 The product is supplied in rolls 1.37 m x 37 m and 2.743 m x 37 m. The product is printed with the Tekton® logo repeated along the length of the roll. The rolls are wrapped with an instruction sticker.

Accessories

- 4.3 Accessories used with Tekton® Building Wrap which are supplied by the installer are:
- **Fixings** – staples, clouts, screws or proprietary wrap fixings, or other temporary fixings to attach the wall wrap to the framing.
 - **Wall underlay support** – polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to support the wall wrap in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Handling and Storage

- 5.1 Handling and storage of the product, whether on-site or off-site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
- Tekton Specification MW Tekton 10/2014.
- 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 and Steel Framing

- 7.1 Studs must be provided at maximum 600 mm centres. Dwangs must be fitted flush between the studs at maximum 1,200 mm centres.

General

- 7.2 Tekton® Building Wrap is intended for use as an alternative to conventional building papers which are fixed over timber and steel-framed walls in order to limit the entry of wind into building cavities, and to act as a secondary barrier to wind-driven rain.
- 7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the building weathertight and some wetting of the underlying structure is always possible before the building is closed in. Hence, the building must be closed-in and made weatherproof before moisture sensitive materials such as wall or ceiling linings and insulation materials are installed.

- 7.4 Tekton® Building Wrap must not be exposed to the weather or ultraviolet (UV) light for a total of more than 60 days before being covered by the wall cladding.
- 7.5 Tekton® Building Wrap is suitable for use under wall claddings as a wall underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23, except that it must not be used with non-absorbent wall claddings such as vinyl or metal-based sidings or weatherboards in direct fixed installations. Tekton® is suitable for use under cavity-based wall claddings as a non-absorbent synthetic wall underlay in accordance with NZS 2295, Table 2.4 on steel-framed buildings. Refer to Table 1.
- 7.6 Tekton® Building Wrap is also suitable for use as an air barrier to walls that are not lined, such as attic spaces at gable ends, as called up in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.4 c]. Refer to Table 1.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Wall Wrap Properties	Property Performance Requirement	Actual Property Performance
Absorbency	$\geq 100 \text{ g/m}^2$	Classified as non-absorbent [See Paragraph 7.5]
Vapour Resistance	$\leq 7 \text{ MN s/g}$	Pass
Water Resistance	$\geq 20 \text{ mm}$	Pass
pH of Extract	≥ 5.5 and ≤ 8	9.78 [Note 1]
Shrinkage	$\leq 0.5\%$	Pass
Mechanical	Edge tear and tensile strength	Edge tear: Machine direction = 228 N Cross direction = 186 N Tensile strength: Machine direction = 4.4 kN/m Cross direction = 3.9 kN/m
Air Barrier	Air resistance: $\geq 0.1 \text{ MN s/m}^3$	Pass

Note 1: Further testing of Tekton® Building Wrap was completed to determine the effect of the high pH level on the wall underlay and materials it is likely to come into contact with during its serviceable life. The testing confirmed that the high pH had no adverse effects on the wall underlay performance, or the performance of other materials.

- 7.7 In cavity installations where the cavity battens are installed at greater than 450 mm centres, the wall underlay must be supported between the battens to prevent the wall underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Stucco Plaster

- 7.8 Tekton® Building Wrap is suitable for use as a non-rigid backing material for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.1. The wall underlay must be supported with 75 mm galvanised mesh or plastic tape or wire at 150 mm centres run across the cavity battens to limit deflection to a maximum of 5 mm.
- 7.9 Tekton® Building Wrap may also be used as a slip layer over rigid backings for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.3.1 b].

Structure

- 8.1 Tekton® Building Wrap is suitable for use in all Wind Zones of NZS 3604 up to, and including, Very High when used as a flexible building underlay, and all Wind Zones of NZS 3604 up to, and including, Extra High when used as an overlay for rigid building underlay.

Durability

- 9.1 Tekton® Building Wrap meets code compliance with NZBC Clause B2.3.1 (a) not less than 50 years for building wraps used where the cladding durability requirement or expected serviceable life is not less than 50 years, and code compliance with NZBC Clause B2.3.1 (b), 15 years for building wraps used where the cladding durability requirement is 15 years.

Serviceable Life

- 9.2 Provided it is not exposed to the weather or ultraviolet (UV) light for a total of more than 60 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, Tekton® Building Wrap is expected to have a serviceable life equal to that of the cladding.

Control of Internal Fire and Smoke Spread

- 10.1 Tekton® Building Wrap has an AS 1530 Part 2 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solution C/AS2, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to the Tekton® Building Wrap from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 12.1 Tekton® Building Wrap must be used behind claddings that meet the requirements of the NZBC, e.g. such as those covered by NZBC Acceptable Solution E2/AS1, or claddings covered by a valid BRANZ Appraisal.
- 12.2 Tekton® Building Wrap, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding systems compliance with NZBC Clause E2.
- 12.3 When used as an air barrier, particular care must be taken to ensure an air tight barrier is achieved, and weather sealing at all openings and penetrations through the cladding meets the requirements of the NZBC.

Installation Information

Installation Skill Level Requirement

- 13.1 Installation must always be carried out in accordance with the Tekton® Building Wrap Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

Wrap Installation

- 14.1 Tekton® Building Wrap must be fixed to all framing members at maximum 300 mm centres with hot-dip galvanised, large-head clouts 20 mm long, zinc plated 6-8 mm staples, self-drilling screws, or proprietary wrap fixings. The membrane must be pulled taut over the framing before fixing.
- 14.2 Tekton® Building Wrap must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 75 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.
- 14.3 The wall underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the membrane by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut membrane must be folded inside the opening and stapled to the penetration framing. Excess wall underlay may be cut off flush with the internal face of the wall frame.

- 14.4 Tekton® Building Wrap can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3.
- 14.5 When fixing the product in windy conditions, care must be taken due to the large sail area created by wide roll widths.
- 14.6 Any damaged areas of Tekton® Building Wrap, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

Inspections

- 14.7 The Technical Literature must be referred to during the inspection of Tekton® Building Wrap installations.

Basis of Appraisal

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

Tests

- 15.1 The following tests have been carried out on Tekton® Building Wrap by Scion: folding strength of paper in accordance with AS/NZS 1301.423; edge tear resistance and tensile strength in accordance with AS/NZS 4200.1 and air resistance in accordance with BS 6538-3.
- 15.2 The following tests have been carried out on Tekton® Building Wrap by BRANZ: absorbency in accordance with AS/NZS 4201.6, vapour transmission in accordance with ASTM E 96B, shrinkage in accordance with AS/NZS 4201.3, water barrier in accordance with AS/NZS 4201.4 and pH of extract in accordance with AS/NZS 1301.421. A range of these tests were completed before and after Tekton® Building Wrap was exposed to UV light.
- 15.3 The flammability index of Tekton® Building Wrap has been evaluated in accordance with AS 1530.2.

Other Investigations

- 16.1 A durability opinion was given by BRANZ technical experts.
- 16.2 Site inspections were carried out by BRANZ to assess methods used for the installation of Tekton® Building Wrap, and to examine completed installations.
- 16.3 The marketer's Technical Literature, including installation instructions, have been examined by BRANZ and found to be satisfactory.

Quality

- 17.1 The manufacture of Tekton® Building Wrap 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. BRANZ has taken note of product certification by ICC-ES and CCMC covering quality aspects associated with the product.
- 17.2 The quality of supply to the market is the responsibility of Marshall Innovations Limited.
- 17.3 Building designers are responsible for the design of the building, and for the incorporation of the wall wrap into their design in accordance with the instructions of Marshall Innovations Limited.
- 17.4 Quality of installation is the responsibility of the installer, in accordance with the instructions of Marshall Innovations Limited.

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Sources of Information

- AS 1530.2-1993 Test for flammability of materials.
- AS/NZS 1301.421s: 1998 Determination of the pH value of aqueous extracts of paper, board and pulp – cold extraction method.
- AS/NZS 4200.1:1994 Pliable building membranes and underlays – materials.
- AS/NZS 4201.1:1994 Pliable building membranes and underlays – Methods of test – Resistance to dry delamination.
- AS/NZS 4201.2:1994 Pliable building membranes and underlays – Methods of test – Resistance to wet delamination.
- AS/NZS 4201.3:1994 Pliable building membranes and underlays – Methods of test – Shrinkage.
- AS/NZS 4201.4:1994 Pliable building membranes and underlays – Methods of test – Resistance to water penetration.
- AS/NZS 4201.6:1994 Pliable building membranes and underlays – Methods of test – Surface water absorbency.
- BS 6538.3:1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295:2006 Pliable, permeable building underlays.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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In the opinion of BRANZ, **Tekton® Building Wrap** 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 **Marshall Innovations 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. **Marshall Innovations 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 quality of work;
 - 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 **Marshall Innovations 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 **Marshall Innovations Limited** or any third party.

For BRANZ



Claire Falck

Chief Executive

Date of Issue: 03 July 2024

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Kapiti Coast District Council
06/03/2025



BRANZ Appraised

Appraisal No. 444 [2022]

PROTECTO SILL WINDOW SEALING SYSTEM

Appraisal No. 444 [2022]

This Appraisal replaces BRANZ
Appraisal No. 444 [2017]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 The Protecto Sill Window Sealing System comprises of Protecto Wrap Detail Tape, Protecto Wrap Sill Tape and Protecto Tak spray-on adhesive primer. The system is used around framed joinery openings as a secondary weather-resistant barrier.
- 1.2 The system is installed into and around the framed joinery opening, over the building wrap and exposed frame to cover both the face and edge of the opening framing. Protecto Wrap Sill Tape is also used at joinery heads to seal flashing upstands to the building wrap.

Scope

- 2.1 The Protecto Sill Window Sealing System has been appraised as a flexible flashing system for use around window and door joinery openings for timber-framed buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - with wall cladding systems complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal that specifies a flexible flashing system; and,
 - with wall wraps compatible with the flashing tape; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.2 The Protecto Sill Window Sealing System has also been appraised as a flexible flashing system for use around window and door joinery openings for steel-framed buildings within the following scope:
 - constructed with steel framing in accordance with the scope limitations of NASH Building Envelope Solutions, Paragraph 1.1 with regard to building height and floor plan; and,
 - with a risk score of 0-20, calculated in accordance with NASH Building Envelope Solutions, Table 2; and,
 - with wall wraps compatible with the flashing tape and steel frame cladding systems; and,
 - situated in NASH Standard Part Two Wind Zones up to, and including, Extra High.

BC250084
Further Information Received
10/04/2025

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Protecto Sill Window Sealing System, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 [b] 15 years and B2.3.2. Protecto Sill Window Sealing System meets these requirements. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Protecto Sill Window Sealing System contributes to meeting this requirement. See Paragraphs 7.1-7.4 and 11.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Protecto Sill Window Sealing System meets this requirement.

Technical Specification

- 4.1 System components and accessories supplied by Marshall Innovations Limited are:

- **Protecto Wrap Detail Tape** is a black, self-adhering, unreinforced, conformable, modified styrene-butadiene-styrene [SBS] rubberised, asphalt membrane tape. The tape is covered on one side by a silicone release paper and on the other side by a protective removable film. The tape is 1 mm thick and is supplied in rolls 150 mm wide and 15 m long.
- **Protecto Wrap Sill Tape** is a polyethylene backed, modified SBS rubberised, asphalt adhesive membrane tape. The adhesive surface of the tape is covered with a silicone release paper. The tape is 0.5 mm thick and is supplied in rolls of 200, 150 and 50 mm wide and 30 m long.
- **Protecto Tak** is a solvent-based spray-on adhesive primer, coloured blue. It is supplied in 369 g cans.

Handling and Storage

- 5.1 Handling and storage of all materials supplied by Marshall Innovations Limited, whether on-site or off-site, is under the control of the installer. The Protecto Sill Window Sealing System components must be protected from damage and weather. Rolls must be stored under cover, in clean, dry conditions away from direct exposure to sunlight.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Protecto Sill Window Sealing 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

General

- 7.1 The Protecto Sill Window Sealing System meets the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.5 b). Refer to the Technical Literature for details of the underlays that are compatible with the system. The installation method for the Protecto Sill Window Sealing System is an Alternative Solution to the installation method shown within NZBC Acceptable Solution E2/AS1, Figure 72.
- 7.2 The use of flexible flashing systems around window and door joinery openings is critical to assist the overall weathertightness performance of window and door joinery installations.
- 7.3 The Protecto Sill Window Sealing System is designed to prevent air leakage and water penetration around window and door openings at framing junctions [e.g. at the sill trimmer and opening stud junction], and to keep any water that gets past the cladding, or through the joinery, from direct contact with the framing.

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- 7.4 The Protecto Sill Window Sealing System is not designed to overcome poor detailing and workmanship of the window or door joinery installation. The system must not be considered in isolation, but be considered as part of the wall cladding system. The Protecto Sill Window Sealing System is designed to be used in conjunction with air seals and joinery flashing systems, not as a substitute.
- 7.5 When the Protecto Sill Window Sealing System is used in conjunction with light organic solvent preservative [LOSP] treated timber, the solvent from the timber treatment must be allowed to evaporate [generally at least one week] prior to the installation of the system.

Durability

- 8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement, and the ability to detect failure of the Protecto Sill Window Sealing System both during normal use and maintenance of the building.

Serviceable Life

- 8.2 Provided it is not exposed to the weather or ultraviolet [UV] light for a total of more than 90 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather-resistant, the Protecto Sill Window Sealing System is expected to have a serviceable life equal to that of the cladding.

Maintenance

- 9.1 No maintenance is required for the Protecto Sill Window Sealing System. Regular checks, at least annually, must be made of the junctions between the joinery and wall cladding to ensure that they are maintained weathertight and that the primary means of weather resistance for the junction e.g. flashing, sealant, etc. continues to perform its function, to ensure that water will not penetrate the cladding.

Prevention of Fire Occurring

- 10.1 Separation or protection must be provided to the Protecto Sill Window Sealing 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.

External Moisture

- 11.1 Where a cladding manufacturer specifies the use of generic flashing tapes around window and door joinery openings at framing junctions as part of their system, or they specify the use of flexible flashing tapes that comply with NZBC E2/AS1, Paragraph 9.1.5 b), the Protecto Sill Window Sealing System may be used.

Installation Information

Installation Skill Level Requirements

- 12.1 All design and building work must be carried out in accordance with the Protecto Sill Window Sealing System Technical Literature and this Appraisal by competent and experienced tradespersons conversant with the Protecto Sill Window Sealing System. Where the work involves Restricted Building Work [RBW], this must be completed by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant License Class.

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General

- 13.1 The selected building underlay must be installed in accordance with the manufacturer's instructions, and must completely cover the joinery opening. The wrap is then cut on a 45° angle away from each corner of the opening so the flaps can be folded into the opening and secured to the interior face of the framing.
- 13.2 Before the Protecto Tak adhesive primer is applied, the substrate surfaces must be clean, dry and free from any surface contaminants such as dust and grease that may cause loss of adhesion. The Protecto Tak adhesive primer must be sprayed onto the wrap and exposed frame along the entire length of the sill trimmer, the inside and front face of the opening studs and into the top corners of the joinery opening.
- 13.3 A 300 mm length of Protecto Wrap Detail Tape is installed around all four corners of the opening, keeping the tape flush with the interior face of the opening and ensuring the exposed framing is covered. After removing the protective film, the tape that overhangs the front of the opening is 'moulded' onto the face of the building wrap to create an airtight seal at the framing junction.
- 13.4 The Protecto Wrap Sill Tape is cut in individual lengths to suit the opening of the sill. The Protecto Wrap Sill Tape is installed flush with the interior face of the opening and is applied along the entire length of the sill. The overhanging tape is folded onto the face of the building underlay.
- 13.5 Two 300 mm lengths of Protecto Wrap Sill Tape are cut for the jambs. The tape is installed flush with the interior face of the opening and tight into the sill/jamb junction. The overhanging tape is folded onto the face of the building underlay.
- 13.6 Protecto Wrap Sill Tape must not be stretched. To avoid wastage, the tape can be lapped 100 mm minimum onto itself without reducing the performance of the Protecto Sill Window Sealing System.
- 13.7 If Protecto Wrap Sill Tape is exposed to the weather or UV light for more than 90 days, then it must be replaced with new material.

Installation Temperature

- 13.8 The Protecto Sill Window Sealing System must not be installed at temperatures of less than 10°C.

Inspections

- 13.9 The Technical Literature must be referred to during the inspection of Protecto Sill Window Sealing System installations.

Basis of Appraisal

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

Tests

- 14.1 Cyclic and static water pressure leakage tests in accordance with AS/NZS 4284 were carried out by BRANZ on cladding systems incorporating the Protecto Sill Window Sealing System. The test results were reviewed by BRANZ experts and found to be satisfactory.
- 14.2 The adhesion of Protecto Wrap Sill Tape and Protecto Wrap Detail Tape to black bituminous kraft building paper complying with the requirements of NZBC Acceptable Solution E2/AS1, Table 23 and selected other synthetic wall underlays have been tested by BRANZ and found to be satisfactory.
- 14.3 Tests have been carried out on Protecto Wrap Sill Tape in accordance with ICC Evaluation Service Criteria for Flashing Materials, AC148. The results have been reviewed by BRANZ experts and found to be satisfactory.

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Other Investigations

- 15.1 An assessment was made of the durability of the Protecto Sill Window Sealing System by BRANZ technical experts.
- 15.2 Site inspections were carried out by BRANZ to examine the practicability of installation.
- 15.3 The Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

- 16.1 The manufacture of the Protecto Sill Window Sealing System has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory.
- 16.2 Overseas certifications have been reviewed by BRANZ and found to be satisfactory.
- 16.3 The quality of supply to the market is the responsibility of Marshall Innovations Limited.
- 16.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and building wraps in accordance with the instructions of the designer.
- 16.5 The quality of installation, handling and storage on-site is the responsibility of the installer, in accordance with the instructions of Marshall Innovations Limited.

Sources of Information

- ICC Evaluation Service, Inc, AC148 Acceptable Criteria for Flexible Flashing Materials, July 2001.
- NASH Building Envelope Solutions: 2019 Light steel-framed buildings.
- NASH Standard Part Two: 2019 Light steel-framed buildings.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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In the opinion of BRANZ, **Protecto Sill Window Sealing 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 **Marshall Innovations 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. **Marshall Innovations 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 **Marshall Innovations 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 **Marshall Innovations Limited** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

14 June 2022

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curve[®] TWIST[®]

The New Era of Rainwater Harvesting

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ISO 9001
ISO 14001

BUREAU VERITAS
Certification



MADE USING
BEST ENVIRONMENTAL
PRACTICE™

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EVERY DROP COUNTS

With rising water usage costs, growing pressure on infrastructure and environmental concerns, it is becoming increasingly important to capture and utilise the free rainwater that falls on your roof.

As established experts in rainwater solutions, Marley brings you Curve and Twist, ushering in The New Era of Rainwater Harvesting.

These innovative, streamlined products help to filter and capture free rainwater and have been specifically designed and manufactured in New Zealand for New Zealand conditions.

Water is our most precious natural resource, and a regular clean supply, whether in urban or rural areas, can no longer be taken for granted.

Easily installed, you can put both Curve and Twist onto the same downpipe/s to really maximise clean water capture.

And when integrated as part of a Marley spouting and downpipe system they carry the same Marley 15 year guarantee.



15 YEAR GUARANTEE



U.V RESISTANT



WILL NOT RUST



100% RECYCLABLE



MADE IN NZ



SAFE FOR DRINKING



LOW MAINTENANCE

 **MARLEY**

by aliaxis

CURVE®

The new Marley Curve® is a leaf diverter that combines sleek, sophisticated design with innovative filtering technology for cleaner water. Its unique screen design draws rainwater in while preventing leaf matter and other debris from entering your water tank or stormwater system.

Many New Zealanders are dependent on roof water for drinking and cleaning. This number increases over the summer months with many people holidaying in locations with a tank only water supply.

The Marley Curve significantly curbs the amount of solid matter that can flow into the tank. This reduces the subsequent build-up of sediment which affects the quality of potable water. It can also reduce the strain on in-line water filters and pumps and thus the cost of maintaining them.

Leaf diversion is also important in areas where rainwater flows straight from the roof into the stormwater system. Removing debris lowers the risk of drain blockage and the potential for backflow/overflow.

Available in six colours to match the Marley Stratus Design Series, Curve integrates easily into the Marley RP80® downpipe system and carries the same Marley 15 year guarantee.

Marley Curve – drawing water in, keeping leaves out

- ✓ Filters leaves and debris for cleaner water
- ✓ Cleaner water into your tank improves water quality and reduces maintenance
- ✓ Reduces chance of your drains blocking
- ✓ Quick release upper body for easy maintenance
- ✓ Streamlined design with unique screen
- ✓ Can capture over 99% of water with a clean screen*

**Water in,
leaves out**

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Innovative screen

The unique design draws water through to maximise capture



Self-cleaning

Low maintenance option for filtering leaves and debris



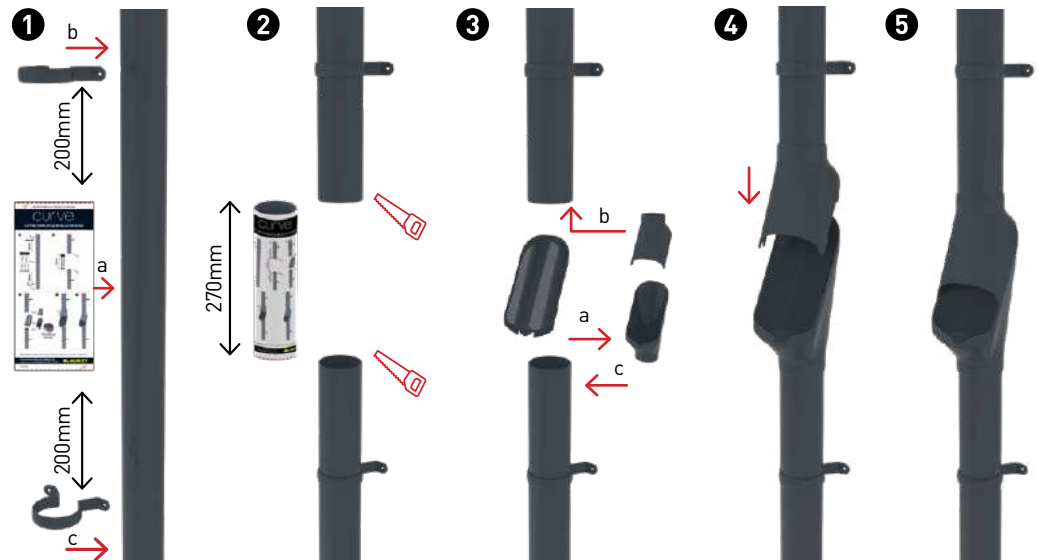
Easy installation

No glue required. Installation guide supplied

*Based on a flow rate of up to 1.6 l/s under controlled test conditions. Actual performance will vary depending on the particular environment, installation parameters, climatic conditions, and presence of leaf matter and other debris.

Easy Installation

Curve can perform anywhere on the downpipe and can be easily installed in a few simple steps.



Hints and Tips

Curve is designed for the Marley RP80® 80mm round downpipe system. Adaptors are available separately for the Marley RP65® 65mm round downpipe system. Curve is not recommended for rectangular or metal downpipe systems.

For best performance install Curve as high as possible on the downpipe.

If your downpipe system is connecting to a retention tank, the tank inlet must be lower than the Curve.

The screen face of the Curve should be perpendicular to the spouting, i.e. on the front face of the downpipe.

Ensure the filter screen is sitting properly in the lower housing and that the screen tab is over the lip of the housing.

Regularly check the screen to ensure there are no debris caught on it blocking water flow.

Routinely rinse the screen. Slide the top housing up the downpipe to allow removal of the screen from the bottom housing for maintenance.

Consideration should be given as to where the leaf debris will be discharged. If possible, avoid positioning Curve above pathways and decks.

Colour Choice



WHITE

IRONSAND®

GREY FRIARS®

BLACK

COPPER

TITANIUM

Actual colours may vary slightly from those shown.

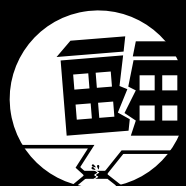
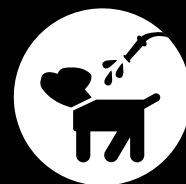
STRATUS®
DESIGN SERIES



TWIST®

The new Marley Twist® is a compact rainwater diverter that turns your downpipe into a free source of water. Quick connect any standard garden hose, "twist" to the on position and enjoy the benefits.

Residential collection of free rainwater in smaller tanks is increasingly popular in New Zealand, particularly in urban residential areas. Rather than letting rainwater flow away into the storm water system, Twist can be used to divert rainwater to a storage tank for a multitude of purposes.



In rural settings Twist can also be used to divert water to drinking troughs for animals close to the house or out buildings. Twist includes an easy clean removable leaf filter to keep large matter out of the collection tank.

Available in six colours to match the Marley Stratus Design Series, Twist integrates easily into the Marley RP80® downpipe system and carries the same Marley 15 year guarantee.

Marley Twist – water when you need it

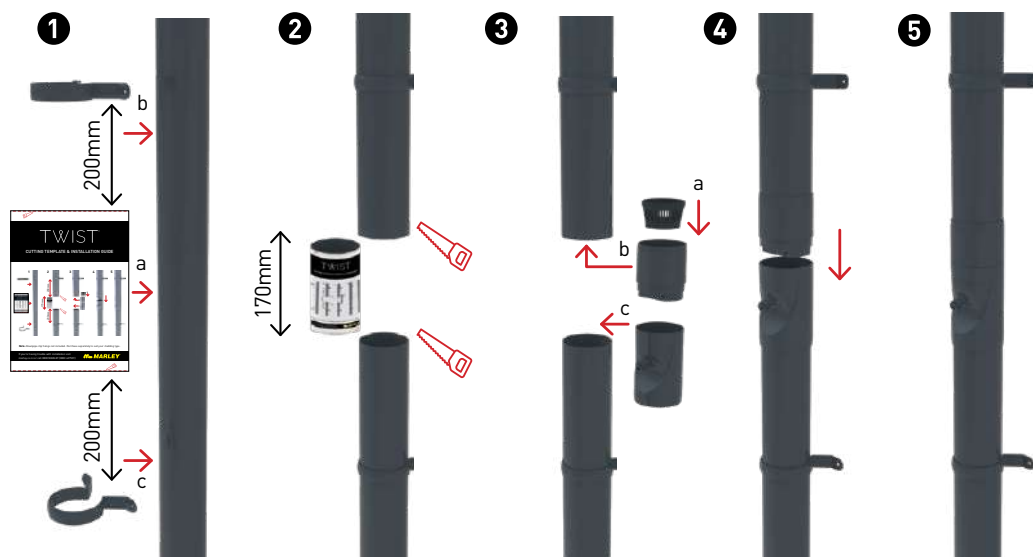
- ✓ Provides access to free rainwater from your downpipes
- ✓ Quick connects to a collection tank via standard hose fittings
- ✓ Great source of water for the garden, to top up the pool, or for emergency supply
- ✓ Positive impact on the environment through reduced mains water usage
- ✓ Can fill a 300 litre tank in an hour*

**Eco friendly,
conserves
water**

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Easy Installation

Twist can perform anywhere on the downpipe and can be easily installed in a few simple steps.



Hints and Tips

If Twist is being connected to a tank:

- Install Twist anywhere on the downpipe that is easily accessible for turning it on and off.
- If using the direct to tank connection make sure Twist is installed above the tank inlet point.

Regularly check the Twist filter to ensure that there are no debris blocking water flow.

Routinely wash the filter. Slide the top unit up the pipe to allow removal of the filter from the bottom unit for cleaning.

Replacement filters are available if required.

Twist is designed for the Marley RP80® 80mm downpipe system. Adaptors are available to connect to other downpipe sizes.

Colour Choice



WHITE

IRONSAND®

GREY FRIARS®

BLACK

COPPER

TITANIUM

Actual colours may vary slightly from those shown.

*Based on simulating light to heavy rainfall under controlled test conditions.
Actual performance will vary depending on the particular environment,
climatic conditions and presence of leaf matter and other debris.

STRATUS®
DESIGN SERIES



Convenient water access

Easy, twist on-off control
and direct connection to
standard hose fittings



Leaf filter

Easy clean filtration of
leaves and debris



Easy installation

No glue required.
Installation guide
supplied



Simple water collection

Effortlessly connects to
a small tank

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Sustainable Manufacturing

Marley is committed to creating environmentally sustainable processes and products and was the first plastics manufacturer in New Zealand to achieve ISO14001 registration. We are also Best Environmental Practice certified for our entire range of manufactured uPVC systems. This means we get our raw materials from sustainable and responsible sources, continuously work on our manufacturing processes to reduce our environmental footprint and accept our products back at the end of their useful life for recycling.



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DISCLAIMER

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Curve® Design Registration: Aus 201713189 / 201713190; NZ 422381. Aus Patent Application No. 2017225002; New Zealand Patent No. 743448.

Twist® Design Registration: Aus 201713152; NZ 422524. New Zealand Patent No. 743446.

OUR PARTNERS



REGISTERED MASTER BUILDERS
**ASSOCIATE
MEMBER**



For more information: **0800 MARLEY (0800 627539)** | www.marley.co.nz

 **MARLEY**
by **aliaxis**



Apply this template to your downpipe as a cutting guide.

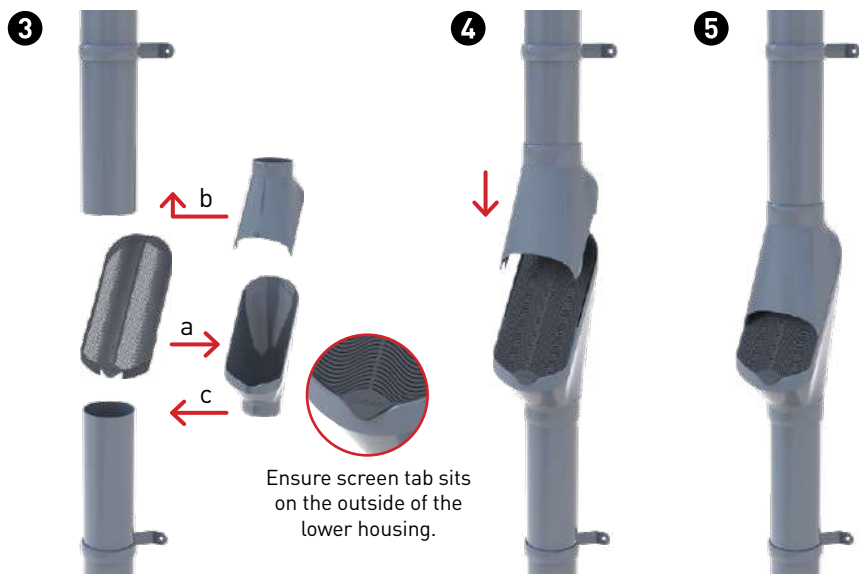
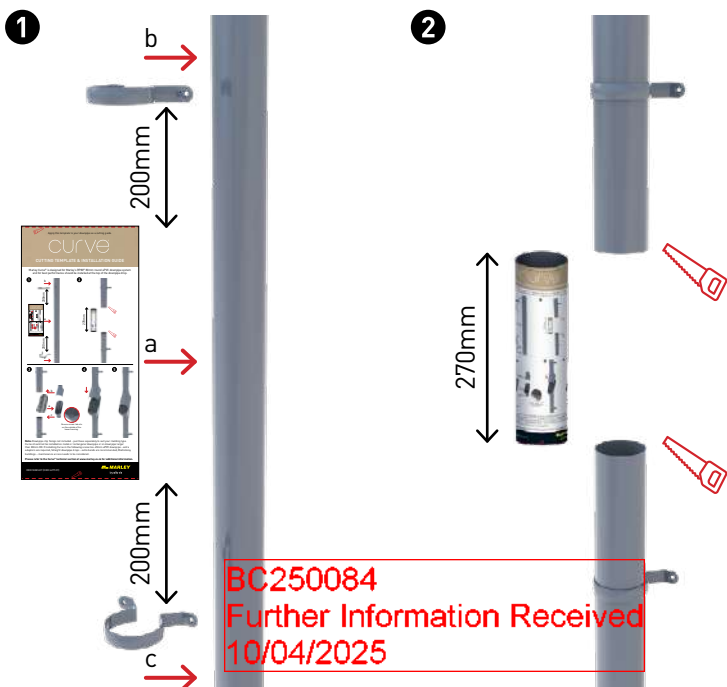
495

NO GLUE
REQUIRED

curve

CUTTING TEMPLATE & INSTALLATION GUIDE

Marley Curve® is designed for Marley's RP80® 80mm round uPVC downpipe system and for best performance should be installed at the top of the downpipe drop.



Note: Downpipe clip fixings not included - purchase separately to suit your cladding type. Curve should not be installed on metal or rectangular downpipe or on downpipe larger than 80mm OD. If installing Curve in the following scenarios: 65mm uPVC downpipe - extra adaptors are required; Straight downpipe drops - extra bends are recommended; Multistorey buildings - maintenance access needs to be considered.

Please refer to the Curve® technical section at www.marley.co.nz for additional information.

0800 MARLEY (0800 627539)

MARLEY

by aliaxis



Marley Rainwater Systems Maintenance Schedule



Safety

When carrying out maintenance please take all appropriate safety precautions. If your spouting is at height or difficult to access, we recommend you consult a professional installation or maintenance company.

Performance Checks

The following should be checked to ensure water and debris does not collect and put excessive weight on the system:

Brackets: Brackets need to be a maximum of 500mm apart to ensure the spouting is adequately supported. This spacing should be reduced to 300mm in high wind zones.

Fall: Spouting should fall (i.e. be angled down) towards the outlets. Fall should be 0.5mm per 1m of spouting.

Blockages: Regularly clear the inside of the spouting of leaves, silt, or other debris to reduce the risk of blockage and overflow. The use of a Marley outlet strainer (RWST) is recommended to prevent large debris from entering the downpipe. Adding a self-shedding Marley Curve leaf diverter to each downpipe will help clear leaf and debris build up from the rainwater system.

Note: In the event of a blockage all Marley spouting systems have a high front face and maintain a 10mm gap between the back face of the gutter and the fascia board. This means water is able to safely overflow the back face of the spouting without entering the internal envelope of the building.

Expansion joiners: Expansion joiners contain a rubber seal that creates a watertight join between the two sliding parts of the fitting. Over time the lubricated seal may dry out which reduces its effectiveness. This can be resolved by unclipping the two parts of the joiner, cleaning the seal and applying a silicone-based lubricant before reassembling.

Appearance

Washing: To maintain appearance the exterior of the spouting and downpipes should be washed at least once a year. Use warm soapy water and a soft bristled brush or cloth then simply rinse off with clean water.

Scratches and marks: Minor surface scratches or marks become less noticeable as the system weathers. They are best left as they do not affect the long-term durability of the system. Rough handling of the components before and during the installation should be avoided to avoid marking the surface. If scratches are obvious and visible from two metres away then the affected spouting, downpipe or fitting should be replaced.

Painting

Marley has a range of pre-coloured rainwater systems available. See Stratus Design Series® at www.marley.co.nz. If painting Marley white uPVC systems, please take note of the following guidelines:

- › Use only light colours. The use of dark paints in exposed areas may result in excessive thermal movement of the rainwater system that can lead to leaks.
- › Do not use solvent-based paints or cleaners as these can damage the uPVC.
- › Paint only after installation to avoid reducing the efficacy of system joins.
- › Do not paint the inside of the spouting or downpipes.
- › Before painting thoroughly scrub the system components with water and detergent then dry.
- › Apply one coat of acrylic undercoat, followed by one coat of acrylic topcoat. Apply a second coat if necessary.

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Note: Marley does not recommend the use of touch-up paint on Stratus Design Series® coloured systems. Touch-up paints have different weathering characteristics to uPVC. Over time the paint will fade at a different rate to the system, and this may result in a poor aesthetic appearance.

Product Guarantee

Marley New Zealand Limited guarantees the purchaser of Marley spouting or downpipe products against defects in material and manufacture for a period of 15 years from the original date of purchase. For Marley's comprehensive Guarantee document please visit www.marley.co.nz

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MANUREWA, AUCKLAND

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T 0800 MARLEY (627 539)
E info@marley.co.nz
W www.marley.co.nz

MARLEY GUARANTEE

Marley New Zealand Limited guarantees the purchaser of Marley spouting or downpipe products against defects in material and manufacture for a period of 15 years from the original date of purchase.

Marley New Zealand Limited (Marley) guarantees the purchaser of Marley spouting or downpipe products (Products) against defects in material and manufacture (Guarantee) for a period of 15 years from the original date of purchase (Guaranteed Period).

Conditions: This Guarantee is subject to the following conditions:

- The Products must be used only as external spouting and downpipes and are not suitable for use as a concealed system.
- The Products must be used and installed strictly according to the then current Marley published installation instructions as at the original date of purchase.
- If the Products are to be used in any application not covered by the then current Marley literature as at the original date of purchase, written confirmation of suitability must be obtained from Marley and a copy provided to Marley with any claim made under this Guarantee.
- Only Marley fittings and uPVC solvent cement (MCS) should be used in conjunction with the Products to ensure the integrity of the completed system.
- The Products must be maintained in accordance with the then current maintenance program available in Marley's Rainwater literature at the original date of purchase.

Failure to meet all the conditions set out above will deem this Guarantee invalid.

Exclusions: This Guarantee does not apply to:

- Any colour fading of the Products, including any colour fading caused by environmental conditions. Over time the Products will weather, as is customary with all exterior pigmented finishes. The rate at which fading occurs will be dependent on the environmental conditions the Product is exposed to, including UV levels, pollution and building orientation.
- Any Products modified, repaired or interfered with in any way other than by Marley or a Marley authorised person.
- Any Products purchased for the purposes of a business under the Consumer Guarantees Act 1993.
- Any defects in the Products caused by or resulting from causes not attributable to faulty material or manufacture, including defects caused by or resulting from any act or omission by the purchaser including misuse, neglect, incorrect installation or accidental damage.

Procedure

- Subject to the conditions and exclusions above, if during the Guaranteed Period you consider that our Guarantee has not been fulfilled, do not attempt repairs or replacement.
- Contact Marley with your claim in writing, with proof of purchase and evidence of the original purchase date. Marley will then recommend an appropriate course of action.

Scope of the guarantee

- Subject to the conditions and exclusions above and provided that any claim is made within the Guaranteed Period, if any Products supplied breach this Guarantee, we will, at our option, provide replacement Product or refund the Product's original purchase price.
- This Guarantee is given to "consumers" as defined in, and who have the rights under, the Consumer Guarantees Act 1993 and should be read with the statutory consumer guarantees contained in that Act. This Guarantee is not intended to exclude, restrict or modify a consumer's rights under the Consumer Guarantees Act 1993.
- There may be some colour variation between existing Product and new Product supplied for replacement. Marley do not guarantee that any replacement Product will be an exact colour match to the original Product.
- Nothing expressed or implied in this Guarantee will confer any liability on Marley for any indirect, consequential or special loss or damage directly or indirectly resulting from any breach of this Guarantee.

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Maintenance Recommendations

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TRANSFORMING YOUR ENVIRONMENT





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Made to stand the test of time

To maximise the life of your roofing and cladding, regular washing and maintenance is recommended. It is also required to maintain your warranty.

The following maintenance practices will help to ensure the long term performance, durability and aesthetic appeal of COLORSTEEL®.

Helping your roofing and cladding last longer

All roofing and cladding products are subject to the cumulative effects of weather, dust and other deposits.

Regular washing of roofing and cladding products increases the durability by reducing attack from airborne salts and pollutants.

Normal rain washing will remove most accumulated atmospheric contaminants from the top side of roofs.

Wall cladding requires manual washing every 3 to 12 months (depending on the local environment), to prevent build up of dirt, debris or other material that is not otherwise removed by rain washing.

Areas that do not receive adequate rain washing (known as unwashed areas) require more extensive manual washing. These areas include soffits, wall cladding under eaves, undersides of gutters, fascias, sheltered areas of garage doors, unwashed roof areas, and other high risk areas like around flues, under television aerials and solar panels or in sites prone to mould, lichen, bird droppings or debris. It is a requirement of your warranty to ensure that areas that do not receive adequate rain washing are maintained and washed.

External objects such as walkways and platforms, air conditioning units, solar hot water and solar photovoltaic systems all have the potential to create areas on the roof that are sheltered from the rain (unwashed areas) and, as such, additional maintenance of the roof area is required as highlighted in the table.

For the underside of roofs, such high risk areas exist for any roof that is not fully enclosed by four walls such as open sheds, awnings etc.

Washing your roofing and cladding

Roofing and cladding products should be manually washed by either water and a sponge or a soft nylon-bristled brush or by water blasting at pressures of no more than 2900 psi.

When correctly installed and maintained, our products will meet or exceed New Zealand Building Code B2: Durability

The New Zealand Building Code B2 requirement of 15 years durability for non-structural roofs and exterior walls will be met, or exceeded if New Zealand Steel Limited’s roofing and cladding products are maintained according to the recommendations specified in this brochure.

About the code

The New Zealand Building Code durability requirement does not include aesthetic appearance. It requires a durability of 15 years minimum (with maintenance) for non-structural roofing, including valleys, and wall cladding products. This means no moisture penetration due to product failure.

New Zealand Steel Limited’s roofing and cladding products are designed to exceed the requirements of New Zealand Building Code B2: Durability. Continued maintenance and over-painting will greatly extend the ultimate life of all roofing and cladding products.

For more information

The maintenance information contained in this document is only intended as a guide and is not a warranty or professional advice and should not be construed as such. For more detailed information, please refer to our **Environmental Categories & Warranty Guide**.

Please also refer to manufacturers recommendation for proprietary building products such as composite systems. Where a product is to be used in aggressive internal or heavy industrial environments, please contact New Zealand Steel Limited for advice.

MAINTENANCE RECOMMENDATIONS¹

		Environmental Categories				
		MILD	MODERATE	SEVERE	VERY SEVERE	EXTREMELY SEVERE
MAXAM™	ROOF	Rain washing ²	Rain washing ²	Rain washing ²	Rain washing ²	Not recommended
	WALL CLADDING	Manual washing every year	Manual washing every year	Manual washing every 6 months	Manual washing every 3 months	Not recommended
	UNWASHED & HIGH RISK AREAS	Manual washing every 6 months	Manual washing every 6 months	Manual washing every 3 months	Manual washing every month	Not recommended
ALTIMATE®	ROOF	Rain washing ²	Rain washing ²	Rain washing ²	Rain washing ²	Rain washing ²
	WALL CLADDING	Manual washing every year	Manual washing every year	Manual washing every 6 months	Manual washing every 3 months	Manual washing every 3 months
	UNWASHED & HIGH RISK AREAS	Manual washing every 6 months	Manual washing every 6 months	Manual washing every 3 months	Manual washing every month	Manual washing every month

^{1.} The recommendations provided in this table apply to the standard provisions of the New Zealand Building Code, Section B2: Durability.

^{2.} If lichen or fungal growth occurs, further maintenance will be required. For identification and recommendations for removal of lichen or fungus, refer to the Removal of Lichen brochure.

^{3.} In industrial environments the type of pollution generated may alter the recommendations contained in this bulletin. Please contact New Zealand Steel Limited for advice.




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Environmental Categories & Warranty Guide

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Made to stand the test of time

In New Zealand we can face some harsh environmental conditions. To maximise the life of your COLORSTEEL® products and maintain the warranty, some simple maintenance is required. The following maintenance practices will help to ensure the long-term performance, durability and aesthetic appeal of your COLORSTEEL®.

Helping your steel roofing & cladding last longer

All roofing and cladding products are subject to the cumulative effects of weather. Regular washing of steel products increases their durability by limiting attack from airborne salts, pollutants and other build up. Normal rain washing will remove most contaminants from roofs.

Wall cladding requires manual washing to prevent build-up of contaminants that aren't removed by rain washing.

Other areas that do not receive adequate rain washing (known as unwashed areas) require more extensive manual washing. These areas include soffits, undersides of gutters, fascias, and sheltered areas of garage doors as well as any external objects such as air conditioning units, television aerials, flues and solar panels.

Washing your steel roofing & cladding

Roofing and wall cladding products may be manually washed by either water and a sponge, a soft nylon-bristled brush or by water blasting at pressures of no more than 2900 psi.

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Special Environments

In New Zealand there are areas where local conditions create an increased likelihood of corrosion. Special consideration should be given to material selection in these areas. If you think your project may experience one of the following environments, please contact New Zealand Steel, or your supplier, for advice about the best COLORSTEEL® product to use.

GEOTHERMAL AREAS

Sulphuric compounds associated with geothermal activity creates a corrosive environment. Variations in natural activity or draw-off from steam bores plus the effects of weather conditions make the high-risk areas hard to define.

HIGH HUMIDITY INTERNAL ENVIRONMENTS

Processing plants and enclosed swimming pools can create an environment with high humidity which requires special consideration for material selection and maintenance.

HARSH INTERNAL ENVIRONMENTS

Some commercial or agricultural applications may create internal environments in which the build-up of pollutants or fumes is a potential source of corrosion. Sheds for intensive animal farming can create a particularly aggressive internal environment.

INDUSTRIAL ENVIRONMENTS

Environments close to corrosive industrial emissions that may be subject to heavy fallout require extra consideration.

New Zealand has a wide range of environmental conditions.

This chart is intended as a guide only. Design, position and other factors can influence which product is recommended. Please contact COLORSTEEL® or your supplier for further advice on the best COLORSTEEL® product to use. Warranty queries can be sent to warranty@colorsteel.co.nz

- Eligible for a warranty.
- Not eligible for a warranty.
- ¹ Against perforation as a result of corrosion.
- ² Covering the paint surface against flaking, peeling and excessive fade.

MILD

Distance from coast:
East 5km + | West 5km +



Typically starts 5 kilometres (depending on your location) from breaking surf such as is found on exposed coasts or greater than 1 kilometre from calm saltwater such as estuaries. Mild environments categorise the majority of New Zealand and are characterised by:

- No salt deposits.
- No smell of salt in the air.

MODERATE

Distance from coast:
East 500m-5km | West 1-5km



Typically starts 500 – 1000 metres (depending on your location) from breaking surf such as is found on exposed coasts or in the immediate vicinity of calm saltwater such as estuaries. Moderate environments are characterised by:

- Little or no salt deposits.
- The occasional smell of salt in the air.

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SEVERE

Distance from coast:
East 100-500m | West 500m-1km



Typically starts 100 – 500 metres (depending on your location) from breaking surf such as is found on exposed coasts, characterised by:

- Light salt deposits.
- A frequent smell of salt in the air.
- In the immediate vicinity of large expanses of calm salt water such as harbour foreshores.

This environment may be extended inland by prevailing winds & local conditions.

VERY SEVERE

Distance from coast:
East 25-100m | West 50-500m



Typically starts 25 metres from the high-water mark on the east coast and 50 metres from the high-water mark on the west coast, characterised by:

- Heavy salt deposits.
- The almost constant smell of salt spray in the air.
- Close to breaking surf such as is found on exposed coasts.

For anything within 100 metres of a salt water body, please contact COLORSTEEL® for confirmation of your warranty. This environment may be extended inland by prevailing winds & local conditions.

EXTREMELY SEVERE

Distance from coast:
East 0-25m | West 0-50m



The environment typically starts 0 metres from the high-water line on both coasts with the following conditions:

- Very heavy salt deposits.
- Constant smell of salt spray in the air.
- Immediate vicinity of breaking surf and offshore construction such as on jetties, wharfs or breakwaters.

For anything within 100 metres of a salt water body, please contact COLORSTEEL® for confirmation of your warranty. This environment may be extended inland by prevailing winds & local conditions.

			ROOFING	WALL CLADDING	ACCESSORIES	ROOFING	WALL CLADDING	ACCESSORIES	ROOFING	WALL CLADDING	ACCESSORIES	ROOFING	WALL CLADDING	ACCESSORIES	ROOFING	WALL CLADDING	ACCESSORIES
MAXAM™ Superior protection for Mild inland environments to Very Severe coastal environments.	WARRANTY	PERFORATION ¹	50 YEARS	30 YEARS	15 YEARS	40 YEARS	25 YEARS	15 YEARS	30 YEARS	20 YEARS	15 YEARS	20 YEARS	20 YEARS	15 YEARS	Not recommended in this environment		
		PAINT ²	18 YEARS	15 YEARS	10 YEARS	18 YEARS	15 YEARS	10 YEARS	15 YEARS	15 YEARS	10 YEARS	15 YEARS	15 YEARS	10 YEARS			
	MAINTENANCE		Rain washing	Manual washing every year	Manual washing every 6 months	Rain washing	Manual washing every year	Manual washing every 6 months	Rain washing	Manual washing every 6 months	Manual washing every 3 months	Rain washing	Manual washing every 3 months	Manual washing every month			
ALTIMATE® Ultimate protection for Extremely Severe marine and breaking surf environments	WARRANTY	PERFORATION ¹	50 YEARS	30 YEARS	15 YEARS	40 YEARS	25 YEARS	15 YEARS	30 YEARS	25 YEARS	15 YEARS	30 YEARS	25 YEARS	15 YEARS	25 YEARS	20 YEARS	15 YEARS
		PAINT ²	18 YEARS	15 YEARS	10 YEARS	18 YEARS	15 YEARS	10 YEARS	15 YEARS	15 YEARS	10 YEARS	15 YEARS	15 YEARS	10 YEARS	15 YEARS	15 YEARS	10 YEARS
	MAINTENANCE		Rain washing	Manual washing every year	Manual washing every 6 months	Rain washing	Manual washing every year	Manual washing every 6 months	Rain washing	Manual washing every 6 months	Manual washing every 3 months	Rain washing	Manual washing every 3 months	Manual washing every month	Rain washing	Manual washing every 3 months	Manual washing every month

The MAXAM™ warranties for roofing and cladding in the above table also apply to DRIDEX®. DRIDEX® is not recommended for accessories. Accessories: Gutters, downpipes and fascia.



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Class 1

Strandboard®

Building Products Information Requirements | Info. Sheet

Version: Strandboard® | V2 19.04.24

Product name	Strandboard® By Laminex® New Zealand
Product line	N/A
Product identifier	Strandboard®

Place of manufacture

Aotearoa New Zealand	✓
Overseas	

Product description

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Strandboard® is a versatile reconstituted wood panel manufactured entirely from renewable, New Zealand Pinus Radiata. Panels are produced by adding a non-formaldehyde resin with wood strands and pressing them together under heat and pressure.

Strandboard® is designed specifically for a range of building, furniture and joinery applications.

The resin used has been developed to resist the effects of moisture in areas of high humidity.

Strandboard® is available in the following sheet sizes:

- 2400 x 1200 x 12mm
- 3600 x 1200 x 12mm

Note: All dimensions and measurements are nominal.

Relevant building code clauses

- B1 Structure - B1.3.1, B1.3.2, B1.3.3 (f), (h), (j), B1.3.4
- B2 Durability - Performance B2 B2.3.1 (a) not less than 50 years, and B2.3.1 (b) 15 years, B2.3.1 (c) 5 years
- C3 Fire affecting areas beyond the fire source - C3.4 (a)

- F2 Hazardous building materials - F2.3.1

Contributions to compliance

Strandboard® is manufactured in accordance with AS/NZS 1859.1:2017 and tested in accordance with AS/NZS 4266.1:2017.

When stored, handled, installed, and maintained in accordance with the Strandboard® Brochure, Strandboard® will meet the provisions of the New Zealand Building Code (NZBC) B2/AS1 - 1.2.1 and has a serviceable life of at least (a) 50 years as a structural element, (b) 15 years, or (c) 5 years.

Strandboard® complies with the requirements of NZBC B1/VM1. Calculated to BRANZ P21:2010, AS/NZS 1170 - 2&5, NZS3604:2010

Scope of use

Strandboard® is primarily for use as an internal wall and ceiling lining.

Strandboard® has been tested for use as wall bracing element.

Strandboard® can also be used for:

- Partitions in general areas including changing rooms and toilets
- flooring overlays to existing wooded and concrete floors
- General carcass and cabinetry work

Strandboard® has a Material Group Number of 3.

Strandboard® has a Sound Transmission Class (STC), of 25dB.

Strandboard® is not fire rated as part of a fire protected boundary or fire wall.

Conditions of use

Strandboard® MUST NOT be used for:

- Exterior applications
- Areas subjected to repeated water spill or constant dampness
- Marine use
- Shower lining
- Saunas, indoor pools
- Window reveals
- Exterior door panels

Strandboard® panels are not waterproof and therefore must not be allowed to come in direct or prolonged contact with water. The panels must be finished with a protective coating prior to occupation of the building.

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Adequate pre-conditioning prior to installation and precise following of installation instructions are essential for satisfactory results, especially during wet seasons and high humidity.

Due to the uptake of airborne moisture, permanent board distortion may occur if Strandboard® is placed in close proximity to framework with moisture content exceeding 18%.

Attention to storage, regular stock rotation, preconditioning at the installation point and provision of adequate joint clearances will help accommodate any board movement.

Supporting documentation

The following additional documentation supports the above statements:

Title (type)	Version	URL
Strandboard® Brochure	J010529 02/23	Click here
Strandboard® Warranty	April 2024	Click here
Strandboard® Safety Data Sheet	11/3/20	Click here
Strandboard® Fire Test	12 Dec 2022	Click here
Strandboard® SEO Formaldehyde Emissions	24 July 2019	Click here
Strandboard® Volatile Organic Compounds (VOC) Certificate	24 July 2019	Click here
Strandboard® Declare Label	01 Sep 2022	Click here

Contact details

Manufacture location	New Zealand
Legal and trading name of manufacturer	Juken New Zealand Limited
Address for service	11 Whangatane Drive, Kaitaia 0482 New Zealand
Manufacturer website	www.jnl.co.nz
Manufacturer email	info@jnl.co.nz
Manufacturer phone number	+64 9 3733933
Manufacturer NZBN	9429038769917

Distributor location	New Zealand
Legal and trading name of distributor	Fletcher Building Products Limited (company number 952008), trading as Laminex® NZ.
Distributor address for service	810 Great South Road Auckland 1061 New Zealand
Distributor website	laminex.co.nz
Distributor email	CSC@laminex.co.nz
Distributor phone number	0800 303 606
Distributor NZBN	9429037626969

Warnings and bans

Is the building product/building product line subject to warning or ban under section 26 of the Building Act 2004?

No

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BRANZ Appraised

Appraisal No. 676 [2021]

**STRANDFLOOR®
FLOORING**



strandfloor®
square edge



strandfloor®
tongue&groove

Appraisal No. 676 [2021]

This Appraisal replaces BRANZ
Appraisal No. 676 [2016]

BRANZ Appraisals

Technical Assessments of
products for building and
construction.

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NEW ZEALAND

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Product

- 1.1 Strandfloor® is an engineered woodpanel flooring material for the interior flooring of residential and commercial buildings.
- 1.2 Strandfloor® is available as both a square edge and as a tongue & groove system.

Scope

- 2.1 Strandfloor® has been appraised for use as sheet flooring material on suspended timber-framed floors that have been designed and constructed in accordance with NZS 3604, Section 7.
- 2.2 Strandfloor® has also been appraised for use as an overlay on concrete slab-on-ground floors, suspended concrete floors and suspended timber floors.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Strandfloor® Flooring, 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. Strandfloor® Flooring meets the requirements for loads arising from self-weight, imposed gravity loads arising from use, earthquake, wind and impact [i.e. B1.3.3 (a), (b), (f), (h), and (j)]. See Paragraphs 8.1-8.8.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years and B2.3.1 (b) 15 years. Strandfloor® Flooring meets these requirements. See Paragraphs 9.1-9.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Strandfloor® Flooring meets this requirement. See Paragraphs 13.1 and 13.2.

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Technical Specification

Strandfloor® Sheets

- 4.1 Strandfloor® sheet flooring is manufactured from strands of radiata pine. The wood strands are bonded with a pMDI resin and contain a mineral wax-based water repellent throughout the thickness of the sheet. At manufacture, the sheets have an average density of 680 kg/m³ and average moisture content of 10%. The sheets are identified by the product name printed on one face.
- 4.2 Strandfloor® sheet flooring material is a wood-based high density board which has a plain wood colour. Strandfloor® Square Edge is square edged and has a nominal thickness of 20 mm.
- 4.3 Strandfloor® Tongue & Groove has a nominal thickness of 20 mm, with the long edges factory grooved with a 4.5 mm wide and 9.5 mm deep slot, and fitted on one side with a rigid opaque white polypropylene tongue. This forms a tongue & groove (shear key) joint between adjacent sheets.
- 4.4 Strandfloor® is manufactured to the following tolerances:
- Thickness ± 0.2 mm.
 - Length and width ± 1.5 mm.
 - Squareness 0.5 mm/m.
 - Sheet edges 1 mm/m maximum deviation from the line.
- 4.5 The product is available as set out in Table 1 and Table 2.

Table 1: Strandfloor® Square Edge

Sheet Sizes [mm]	Approximate Weight per Sheet [kg]
3,600 x 2,400 x 20*	118
3,600 x 1,200 x 20	59
2,400 x 1,200 x 20	39

*Made to order.

Table 2: Strandfloor® Tongue & Groove

Sheet Sizes [mm]	Approximate Weight per Sheet [kg]
3,600 x 1,200 x 20	59
2,400 x 1,200 x 20	39

Accessories

- 4.6 Accessories used with Strandfloor®, which are supplied by the contractor are:
- **Fixings** - hot-dip galvanised or stainless steel 60 mm x 2.8 mm annular-grooved flooring nails or 50 mm x 8 g screws that comply with AS 3566.1, for fixing Strandfloor® to timber framing.
 - **Adhesive** - BRANZ appraised adhesive suitable for adhering timber sheet material to timber framing or concrete as required.

Handling and Storage

- 5.1 Strandfloor® must not be stored on wet concrete floors. Sheets must always be block-stacked on bearers at maximum 1,200 mm centres. For short-term storage, sheets must be protected from the weather with a breather-type cover which is supported clear of the sheet surface on battens, so that air can circulate freely around the stack.
- 5.2 For long-term storage, Strandfloor® must be stored inside, in well-ventilated, dry conditions.

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Technical Literature

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

General

- 7.1 Strandfloor® may be used as pre-laid or post-laid flooring for suspended timber floors designed to Section 7 of NZS 3604, and as a flooring overlay to concrete slab-on-ground floors and suspended concrete or timber floors.
- 7.2 When flooring is pre-laid, care must be taken in the planning and construction stages to ensure the building is closed in within the maximum exposure period of 8 weeks. If this is unlikely, then the flooring must be post-laid.
- 7.3 When pre-laid, an expansion gap of 40 mm is required at 15 m intervals over double joists or blocking. This 40 mm gap is filled after closing in. A minimum 8 mm clearance must be provided between panel edges and fixed objects such as bottom plates, columns, abutting concrete, etc.
- 7.4 For timber-framed systems, the use of a construction adhesive is recommended by BRANZ, in conjunction with mechanical fasteners, to help eliminate floor system movement, which could result in the undesirable generation of noise [squeaking]. The use of adhesives for fixing Strandfloor® in this application is outside the scope of this Appraisal.

Strandboard™ Tongue & Groove Diaphragm Floors

- 7.5 Where Strandfloor® Tongue & Groove is used for diaphragm floors, the joist spacing supporting the Strandfloor® must be no greater than 450 mm centres. Strandfloor® Tongue & Groove sheets must be laid with the long edges perpendicular to the joists and the short edges coincident with the joists. The nailing pattern to be used in fixing these sheets down must be in accordance with the Technical Literature.

Subfloor Ventilation

- 7.6 Where Strandfloor® is laid over a subfloor framing system, all timber and flooring must be protected against damage from ground water moisture in accordance with all the requirements of NZS 3604, Section 6. Cross-flow ventilation around the full perimeter of the building must be provided in accordance with the relevant requirements of NZS 3604, Section 6.14. In calculating the required number of vents, only the open unobstructed area of each vent unit shall be taken into account. Hot-air, steam systems, and relief or overflow pipes must not vent or drain into subfloor areas. To allow for adequate ventilation and access, a minimum clearance of 550 mm between the surface of the ground and the underside of the Strandfloor® is required.

Concrete Floors

- 7.7 Concrete slab-on-ground floors, where Strandfloor® is to be used as a flooring overlay, must be constructed using protective damp-proof membranes in accordance with NZS 3604, Section 7.5. The concrete surface must not deviate by more than 5 mm over 3 m. In addition, the substrate must be sound, dust free and dry. The relative humidity of air at the concrete surface must not exceed 75% prior to installation. Relative humidity must be determined in accordance with BRANZ Bulletin No. 644. It is important that where a construction joint exists in a concrete slab, a joint must also be formed in the flooring directly above.

Finishing

- 7.8 Strandfloor® must be finished by sealing the surface, or finishing with a polyurethane coating system or other floor covering, as detailed in the Technical Literature, before occupancy.

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Wet Areas

- 7.9 The design of Strandfloor® in wet areas must be undertaken in conjunction with the Technical Literature, NZS 3604, Paragraph 4.3.4 and NZS 3602, Table 1. Laminex New Zealand recommend the use of Strandfloor® H3.1 in wet areas. Refer to the Technical Literature and BRANZ Appraisal No. 677 [2021] for more information.
- 7.10 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:
- **Water Splash** – these are areas subject to intermittent splashing of water such as around baths, vanities, tubs and sinks.
 - **Shower Areas [Spaces]** – these are areas subject to frequent and heavy water splash such as enclosed showers, unenclosed shower zones and showers over baths.
- 7.11 Where Strandfloor® is used in shower areas, a waterproof membrane system specified for use with timber panel flooring must be used to protect the Strandfloor®. The waterproof membrane must comply with AS/NZS 4858 or be covered by a valid BRANZ Appraisal. Other water splash areas must be protected by impervious floor coverings in accordance with NZBC Acceptable Solution E3/AS1, Paragraph 3.1.1.
- 7.12 A floor waste is recommended where accidental flooding is possible. Floor wastes must be installed in accordance with the requirements of NZBC Acceptable Solution E3/AS1, Paragraph 2.2 or NZBC Acceptable Solution G13/AS1, Paragraph 3.4.

Exposure

- 7.13 Due to rain wetting before closing in, it may be possible for the moisture content of the pre-laid sheets to temporarily exceed the 18% level given in NZBC Acceptable Solution E2/AS1, Paragraph 10.2 c). Under normal circumstances, when used and installed as required by this Appraisal and the Technical Literature, this level of temporary wetting of Strandfloor® is acceptable.

Structure

Density

- 8.1 Strandfloor® Square Edge and Strandfloor® Tongue & Groove sheets have a density of approximately 680 kg/m³.

Loads

- 8.2 Strandfloor® will support loads of up to 1.5 kPa in buildings built within the scope of NZS 3604 with maximum floor joist spacing of 600 mm centres. Strandfloor® will support loads up to 3 kPa for all other non-domestic flooring applications built within the scope of NZS 3604 with maximum floor joist spacing of 600 mm centres. Point loads may reduce allowable floor joist spacing, please refer to the Floor Design section of the Technical Literature.
- 8.3 Timber floors built outside the scope of NZS 3604 have not been assessed and are outside the scope of this Appraisal. These floors must be subject to specific design and Laminex New Zealand must be consulted for relevant design information, strength and stiffness.
- 8.4 The installation of Strandfloor® over steel floor joists has not been assessed and is outside the scope of this Appraisal. Laminex New Zealand must be consulted for relevant design information using these floor systems.
- 8.5 For typical NZS 3604 applications pre-laid over supports at the above spacings, the stiffness of the sheets will still be acceptable after exposure to the weather for 8 weeks for Strandfloor®. Post-laying of sheets avoids any loss in stiffness which may occur as a result of weathering.

Structural Diaphragms

- 8.6 Strandfloor® has been appraised for use as a sheet material for diaphragms to resist lateral loads in NZS 3604 buildings. Such diaphragms must be detailed as required by Clause 7.3 of NZS 3604 and the Technical Literature. Screw fixing must not be used for diaphragm floors.

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Heat

- 8.7 Over-floor heating systems may be used with Strandfloor® provided it is not subjected to a temperature exceeding 35°C.
- 8.8 Strandfloor® must not be subjected to temperatures exceeding 50°C for prolonged periods.

Durability

- 9.1 Strandfloor® meets the performance requirements of NZBC Clause B2.3.1 [a] not less than 50 years where the floor is a structural diaphragm or it is installed under structural walls, and the performance requirements of NZBC Clause B2.3.1 [b] at least 15 years in other situations.

Serviceable Life

- 9.2 Flooring systems based on Strandfloor® can be maintained in a serviceable condition for at least 50 years, provided that:
- When pre-laid, the flooring has not been exposed to the weather for a period greater than 8 weeks.
 - Appropriate measures have been taken to ensure the moisture content of the flooring is controlled in accordance with the provisions of NZBC Acceptable Solutions E2/AS1 and E3/AS1, the Technical Literature and this Appraisal.
 - The flooring has not been exposed to further weathering, or subjected to water immersion, e.g. flooding, or to sub-zero temperatures while in a wet condition.
- 9.3 When sheets are used as a floor overlay fixed directly over concrete floors and the sheets do not perform any structural function [i.e. support loads], the NZBC does not require a minimum serviceable life for the covering. However, where slab-on-ground floors are permanently protected from ground moisture in accordance with NZS 3604, Section 7.5, a serviceable life of over 50 years is still possible.

Maintenance

- 10.1 Adequate subfloor ventilation must be maintained by ensuring vegetation or other obstructions are kept away from vents in perimeter foundation walls. Where ground vapour barriers exist they must be maintained in a serviceable and effective condition.
- 10.2 In wet areas, impervious floor coverings [or waterproof membranes] must be maintained to ensure water cannot penetrate through to the Strandfloor®. Any floor wastes must be installed and maintained so as to remain unobstructed, drain to the outside of the building, and prevent the Strandfloor® from becoming wet.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to Strandfloor® from heat sources such as fireplaces, heating appliances, flues and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.
- 11.2 The serviceable life of the product may be affected if the surface temperature exceeds 50°C for long periods. Fuel-burning appliance manufacturers must therefore be consulted to ascertain the clearances or protection required to ensure that a 50°C surface temperature is not exceeded. Clearances specified in Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and Acceptable Solution C/AS2 may not be sufficient for some appliances.

Fire Affecting Areas Beyond the Fire Source

- 12.1 Strandfloor® can be used as flooring in Risk Group SH dwellings, which have no specific fire requirements under the NZBC.
- 12.2 For Risk Groups other than SH, surface finish requirements for floors are given in NZBC Acceptable Solution C/AS2, Paragraph 4.17.3.

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Hazardous Building Materials

- 13.1 The adhesive used to manufacture Strandfloor® contains no formaldehyde. The amount of formaldehyde emitted by the Strandfloor® is less than similar flooring materials manufactured using melamine urea formaldehyde type adhesives. Formaldehyde emissions from Strandfloor® meet the E zero classification when tested in accordance with AS/NZS 4266.1.
- 13.2 The level of formaldehyde emission will decrease with time. After installation, emission levels will be controlled by ventilation together with the sealing of the surface or finishing with a polyurethane system, or the use of coverings such as tiles, vinyl or carpets with foam or rubber underlays. Covering or sealing of the sheets must be carried out before the building is occupied.

Energy Efficiency

- 14.1 For the purposes of calculating the building performance index of the building envelope [refer to NZBC Clause H1.3.2] the R-value of Strandfloor® 20 mm sheets should be taken as 0.17 m²K/W.

Installation Information

Installation Skill Level Requirements

- 15.1 All design and building work must be carried out in accordance with the Strandfloor® Technical Literature and this Appraisal by competent and experienced tradespersons conversant with Strandfloor®. Where the work involves Restricted Building Work [RBW] this must be completed by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant License Class.

General

- 16.1 General installation of Strandfloor® must be in accordance with the Technical Literature and the provisions of this Appraisal.
- 16.2 It does not generally matter which way up the Strandfloor® sheets are laid. If the floor is to be finished with a clear finish, then all Strandfloor® sheets should be laid with the printed face down.
- 16.3 Sheets must be supported at all edges and ends, which may require additional blocking to be installed. Strandfloor® Tongue & Groove does not need blocking under the tongue & groove joint.
- 16.4 Each sheet of Strandfloor® must span at least two floor joist spans [i.e. be continuous over three joists], except at floor edges where infill sheets may be required.
- 16.5 The moisture content of the floor framing timber must not exceed 18% when Strandfloor® is installed.
- 16.6 Strandfloor® must be fixed with 60 x 2.8 mm hot-dip galvanised or stainless steel, annular-grooved flooring nails, or 50 x 8 g screws [non-diaphragm applications only] at 150 mm centres around the perimeter of the sheets, and at 300 mm centres at intermediate supports. Nails may be power or hand driven but must be parallel with, and no closer than 10 mm to the edge of the sheet.
- 16.7 Where Strandfloor® Tongue & Groove is to be used as a diaphragm floor, then fixing must be in accordance with the Technical Literature. This type of flooring system requires the supporting joists to be at no more than 450 mm centres. Strandfloor® Square Edge sheets may have a joist spacing of up to 600 mm.
- 16.8 Where used as an overlay to timber substrates, the moisture content of the substrate must not exceed 15%.
- 16.9 Existing timber floor substrates must be re-punched and then coarse sanded flat prior to fixing the sheets in place.
- 16.10 When used as an overlay on timber substrates or as a second layer over a pre-laid single layer, sheets must be fixed with mechanical fasteners or adhesive with fasteners, ensuring that sheet joints do not coincide with joints in the substrate.
- 16.11 Where used as an overlay to tongue & groove timber flooring, the joints in the Strandfloor® must not coincide with the joints in the tongue & groove flooring.

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- 16.12 Where used as an overlay to concrete, the concrete surface must not deviate by more than 5 mm over 3 m. In addition, the substrate must be sound, dust free and dry. The relative humidity of air at the concrete surface must not exceed 75% prior to installation. Relative humidity must be determined in accordance with BRANZ Bulletin No. 644. As a general guide for new concrete slabs, one month of drying time must be allowed for each 25 mm thickness of concrete.
- 16.13 When used as an overlay on concrete, sheets must be bonded using a full spread of approved adhesive [see the Technical Literature].
- 16.14 Continuously-laid bottom plates to walls in pre-laid situations must be cut away at openings as soon as possible, in order to allow ponded water to drain or be removed.
- 16.15 Protection required to prevent damage to the flooring during other construction processes must be provided in a manner which allows sheets exposed to the weather to dry quickly. For this reason, temporary weather protection such as plastic sheeting or liquid sealers must not be used directly on sheet surfaces.

Finishing

- 17.1 Covering or sealing of the Strandfloor® must be carried out after the building is fully closed-in but before it is occupied. Details for finishing are provided in the Technical Literature.
- 17.2 Covering or sealing must not be carried out until the moisture content of the flooring is less than 15%.
- 17.3 Some coating and adhesive manufacturers may require lower moisture contents for optimum performance when their products are used on Strandfloor®. The instructions of these manufacturers must be followed when their products are used on Strandfloor®.

Health and Safety

- 18.1 Exposure to wood dust may cause irritation to the respiratory system and skin and may cause sensitisation resulting in asthma, and by skin contact resulting in dermatitis. A dust mask and eye protection must be worn when working with Strandfloor®. Work areas must be ventilated and kept clean. Machinery used must be fitted with dust extractors. Off-cuts, shavings and dust must be disposed of in accordance with the requirements of local authorities.

Basis of Appraisal

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

Tests

- 19.1 The change in the physical properties of the Strandfloor®, such as modulus of rupture, modulus of elasticity, internal bond strength, thickness swell and surface water absorption after natural weathering have been determined by BRANZ.
- 19.2 The density, modulus of rupture, modulus of elasticity, internal bond, and deflection under concentrated load [stiffness] of Strandfloor® have been determined by BRANZ.
- 19.3 Strength capacity and deflection under concentrated load [stiffness] of Strandfloor® exposed to the weather for eight weeks, have been determined by BRANZ.
- 19.4 The thermal resistance of Strandfloor® has been determined by BRANZ.
- 19.5 Formaldehyde emission levels have been determined by testing to AS/NZS 4266.1. The results of these tests have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 20.1 The Technical Literature for Strandfloor® has been reviewed by BRANZ and found to be satisfactory.

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Quality

- 21.1 The manufacture of Strandfloor® has been examined by BRANZ, including methods adopted for quality control. Details of the manufacturing processes, and quality and composition of the raw materials used were obtained and found to be satisfactory.
- 21.2 The quality management systems of the Strandfloor® production have been assessed and registered by SGS as meeting the requirements of ISO 9001.
- 21.3 Laminex New Zealand is responsible for the quality of the product supplied.
- 21.4 Quality of installation of the product on-site is the responsibility of the installer.
- 21.5 Maintenance of the flooring system is the responsibility of the building owner.

Sources of Information

- AS 3566.1:2002 Self-drilling screws for the building and construction industries.
- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 4266.1:2017 Reconstituted wood-based panels – Methods of testing – Part 1: Base panels.
- AS/NZS 4858:2004 Wet area membranes.
- BRANZ Appraisal No. 677 [2021] Strandfloor® H3.1 Flooring.
- BRANZ Bulletin No. 644 Solid timber strip flooring on a concrete slab.
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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In the opinion of BRANZ, **Strandfloor® Flooring** 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 **Laminex New Zealand**, 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. **Laminex New Zealand**:
 - 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 **Laminex New Zealand**.
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 **Laminex New Zealand** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

13 September 2021

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PRODUCT CERTIFICATE

THIS IS TO CERTIFY

STRANDFLOOR® FLOORING

Certificate No: BRANZ-CM-1003

Date of Issue: 20 February 2019

Revision Date: 20 February 2022

CERTIFICATE HOLDER



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Cheyldra Percy

Cheyldra Percy
Chief Executive Officer
BRANZ Limited

DESCRIPTION OF PRODUCT

Strandfloor® is an engineered wood-based panel flooring material available as Strandfloor® Square-Edge and Strandfloor® Tongue & Groove, which has white polypropylene tongues. The panel flooring is suitable for up to 8 weeks exposure. All panels are ink marked on the underside with the product code, Strandfloor and a five digit traceability code.

USE OF PRODUCT

- Strandfloor® is for use as panel flooring material on suspended timber-framed floors that have been designed and constructed in accordance with NZS 3604, Section 7.
- Strandfloor® is also for use as a non-structural overlay on concrete slab-on-ground floors, suspended concrete floors and suspended timber floors.

COMPLIES WITH THE FOLLOWING PROVISIONS OF THE NEW ZEALAND BUILDING CODE (NZBC)

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2, B1.3.3 [a], [b], [f], [h], and [j], and B1.3.4.

Clause B2 DURABILITY: Performance B2.3.1 [a] not less than 50 years (when used as a diaphragm floor or installed under bottom plates), B2.3.1 [b] 15 years (when installed as flooring between bottom plates), and B2.3.1 [c] 5 years (when used as a non-structural overlay).

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

SUBJECT TO THE FOLLOWING CONDITIONS AND LIMITATIONS

- The maximum exposure period for Strandfloor® flooring before the building is closed-in (protected from moisture) is 8 weeks.
- The moisture content of the Strandfloor® flooring must be controlled in accordance with the provisions of NZBC Acceptable Solutions E2/AS1 and E3/AS1, NZS 3604, and the Technical Literature.
- Strandfloor® flooring in-service surface temperatures must not exceed 50°C adjacent to heating appliances or 35°C where floor heating is used.
- Where Strandfloor® flooring is used as a structural diaphragm only nail fixing must be used.
- Strandfloor® must not be used in wet areas where maintenance of an impervious coating cannot be assured. Refer to NZS 3602, Table 1.

REFERENCE DOCUMENTS

This Product Certificate must be read in conjunction with:

- BRANZ Appraisal No 676 [2016] Strandfloor® Flooring.
- Technical Literature: Strandfloor® Technical Manual, Edition 5, 03/19.



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The Certificate Holder must maintain compliance with the conditions set out in Regulation 15 of the Building (Product Certification) Regulations 2008.

This Certificate is issued by BRANZ Limited, an independent certification body accredited by the product certification body appointed by the Chief Executive of the Ministry of Business, Innovation and Employment (MBIE) under the Building Act 2004. MBIE does not in any way warrant, guarantee or represent that the building method or product the subject of this certificate conforms with the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product. MBIE disclaims, to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the building method(s) or products(s) referred to in this certificate.

It is advised to check that this Product Certificate is currently valid and not withdrawn, suspended or superseded by a later issue, by referring to the MBIE website, www.mbie.govt.nz

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Cheyldra Percy

Cheyldra Percy
Chief Executive Officer
BRANZ Limited

APPENDIX A - PRODUCT TECHNICAL DATA

A1: TYPE AND INTENDED USE OF PRODUCT

Strandfloor® is for use as pre-laid or post-laid flooring for suspended timber floors designed in accordance with NZS 3604 Section 7, and as a flooring overlay to concrete slab-on-ground floors and suspended concrete or timber floors.

A2: PRODUCT SPECIFICATION

Strandfloor® is in accordance with the performance requirements of AS/NZS 1860.1 [before and after exposure] as required by NZS 3604, Paragraph 2.3.7.

Strandfloor® flooring is manufactured from strands of radiata pine. The wood strands are bonded with a pMDI resin and contain a mineral wax-based water repellent throughout the thickness of the panel. At manufacture, the panels have an average density of 680 kg/m³ and average moisture content of 10%.

Strandfloor® Square Edge is square edged and has a nominal thickness of 20 mm.

Strandfloor® Tongue & Groove is 20 mm nominal thick, with the long edges factory grooved with a 4.5 mm wide and 9.5 mm deep slot, and fitted on one side with a rigid, opaque white polypropylene tongue. This forms a tongue and groove [shear key] joint between adjacent panels.

For the purposes of calculating the building performance index of the building envelope, the R-value of Strandfloor® 20 mm panels should be taken as 0.17 m²K/W. This has been determined through testing by BRANZ.

The product is available as set out in Table 1 and Table 2.

Table 1: Strandfloor® Square Edge

Sizes [mm]	Approximate Weight per [kg]
3600 x 2400 x 20	118
3600 x 1200 x 20	59
2400 x 1200 x 20	39

Table 2: Strandfloor® Tongue & Groove

Sizes [mm]	Approximate Weight per [kg]
3600 x 1200 x 20	59
3600 x 800 x 20	39
2400 x 1200 x 20	39

Fixings - hot dip galvanised or stainless steel 60 mm x 2.8 mm annular grooved flooring nails or 50 mm x 8 g screws that comply with AS 3566.1.

Adhesive - BRANZ Appraised adhesive suitable for adhering wood-based flooring material to timber or concrete.



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Cheyldra Percy

Cheyldra Percy
Chief Executive Officer
BRANZ Limited

A3: INSTALLATION REQUIREMENTS

Installation must be carried out in accordance with the following:

- Technical Literature: Strandfloor® Technical Manual, Edition 5, 03/19.
- NZS 3604, Section 7.
- BRANZ Appraisal No 676 [2016] Strandfloor® Flooring.

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APPENDIX B - OTHER RELEVANT TECHNICAL DATA

B1: GENERAL

The design of Strandfloor® in wet areas must be undertaken in conjunction with the Technical Literature, NZS 3604, Paragraph 4.3.4 and NZS 3602, Table 1.

Strandfloor® in wet areas must be protected by an impervious floor covering in accordance with NZBC Acceptable Solution E3/AS1.

B2: STRUCTURE

General

Each panel of Strandfloor® must span at least two floor joist spans [i.e. be continuous over three joists], except at floor edges where infill part panels are required.

Strandfloor® Square Edge panels must be supported at all edges and ends with solid blocking. Strandfloor® Tongue & Groove does not require blocking under the tongue and groove joint. In wet areas, where a waterproofing membrane is being used, refer to the membrane suppliers information for support requirements.

Loading

Strandfloor® will support loads of up to 3 kPa with joists at 600 mm centres as given in NZS 3604 Table 1.2.

Diaphragms

The maximum joist spacing for Strandfloor® Square Edge diaphragm floors is 600 mm. The diaphragm is as specified by NZS 3604, Section 7.3.

The maximum joist spacing for Strandfloor® Tongue & Groove diaphragm floors is 450 mm. Refer to the Technical Literature for design and installation information.

B3: PREVENTION OF FIRE OCCURRING

Separation or protection must be provided to Strandfloor® 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.

B4: INSTALLATION

The moisture content of the floor framing timber must not exceed 18% when Strandfloor® is installed.

When Strandfloor® is used as an overlay to timber substrates, the moisture content of the substrate must not exceed 15%.

When Strandfloor® is used as an overlay to concrete the relative humidity of air at the concrete surface must not exceed 75% prior to installation of the Strandfloor®, as per the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 10.2[d]. Slabs on ground must be constructed in accordance with NZS 3604, Section 7.5.



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Cheyldra Percy

Cheyldra Percy
Chief Executive Officer
BRANZ Limited

APPENDIX C - BASIS OF CODEMARK CERTIFICATION

The following tests have been carried out on Strandfloor®:

- Testing in accordance with the requirements of AS/NZS 1860.1 and BRANZ criteria to demonstrate structural and durability performance.
- The change in the physical properties of Strandfloor®, including modulus of rupture, modulus of elasticity, internal bond strength, thickness swell and surface water absorption after natural weathering have been determined by BRANZ.
- The density, modulus of rupture, modulus of elasticity, internal bond, and deflection under concentrated load [stiffness] of Strandfloor® have been determined by BRANZ.
- Strength capacity and deflection under concentrated load [stiffness] of Strandfloor® exposed to the weather for 8 weeks, have been determined by BRANZ.
- Formaldehyde emission levels have been determined by testing to AS/NZS 4266.16. The results of these tests have been reviewed by BRANZ and found to be satisfactory.
- BRANZ testing and monitoring of wood-based flooring products through BRANZ Appraisals since 1977.

The referenced Technical Literature has been examined by BRANZ and found to be satisfactory.

The quality of supply to the market is the responsibility of Laminex New Zealand.

Building designers are responsible for the design of the building, and for the incorporation of the Strandfloor® into their design in accordance with the instructions of Laminex New Zealand.

Quality of installation is the responsibility of the installer in accordance with the instructions of Laminex New Zealand.

SOURCES OF INFORMATION

- AS 3566.1: 2002 Self-drilling screws for the building and construction industries.
- AS/NZS 1860.1: 2002 Particleboard flooring – Part 1: Specifications.
- AS/NZS 4266.16:2004 Reconstituted wood based panels - Methods of test. Method 16: Formaldehyde emission - Desiccator method.
- BRANZ Appraisal No. 676 [2016] Strandfloor® Flooring.
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3604: 2011 Timber-framed buildings.
- Acceptable Solutions and Verification Methods for New Zealand Building Code Protection from Fire Clauses C1-C6, Ministry of Business, Innovation and Employment, First Edition April 2002 [Amendment 4, 1 January 2017].
- 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 8, 30 November 2018].
- Acceptable Solutions and Verification Methods for New Zealand Building Code Internal Moisture Clause E3, Ministry of Business, Innovation and Employment, Second Edition February 1998 [Amendment 6, 01 January 2017].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

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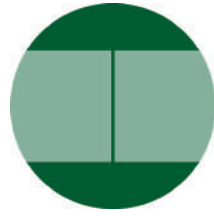
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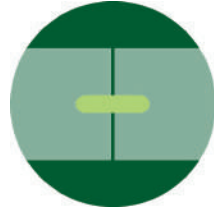
BRANZ Appraised

Appraisal No. 677 [2021]

**STRANDFLOOR® H3.1
FLOORING**



strandfloorH3.1®
square edge



strandfloorH3.1®
tongue&groove

Appraisal No. 677 [2021]

This Appraisal replaces BRANZ
Appraisal No. 677 [2016]

BRANZ Appraisals

Technical Assessments of
products for building and
construction.

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Product

- 1.1 Strandfloor® H3.1 is an engineered woodpanel flooring material for use as the interior flooring of residential and commercial buildings.
- 1.2 Strandfloor® H3.1 is treated to H3.1 for use in wet areas.
- 1.3 Strandfloor® H3.1 is available as both a square edge and as a tongue & groove system.

Scope

- 2.1 Strandfloor® H3.1 has been appraised for use as sheet flooring material on suspended timber-framed floors that have been designed and constructed in accordance with NZS 3604, Section 7.
- 2.2 Strandfloor® H3.1 has also been appraised for use as an overlay on concrete slab-on-ground floors, suspended concrete floors and suspended timber floors.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Strandfloor® H3.1 Flooring, 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. Strandfloor® H3.1 Flooring meets the requirements for loads arising from self-weight, imposed gravity loads arising from use, earthquake, wind and impact [i.e. B1.3.3 (a), (b), (f), (h), and (j)]. See Paragraphs 8.1-8.8.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years and B2.3.1 (b) 15 years. Strandfloor® H3.1 Flooring meets these requirements. See Paragraphs 9.1-9.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Strandfloor® H3.1 Flooring meets this requirement. See Paragraphs 13.1 and 13.2.

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Technical Specification

Strandfloor® H3.1 Sheets

- 4.1 Strandfloor® H3.1 sheet flooring is manufactured from strands of radiata pine. The wood strands are treated with a water-based organic preservative and insecticide, bonded with a pMDI resin and contain mineral wax-based water repellent throughout the thickness of the sheet. At manufacture, the sheets have an average density of 680 kg/m³ and average moisture content of 10%. The sheets are identified by the product name printed on one face.
- 4.2 Strandfloor® H3.1 sheet flooring material is a wood-based high density board which has a plain wood colour. Strandfloor® H3.1 has a nominal thickness of 20 mm.
- 4.3 Strandfloor® H3.1 Tongue & Groove has the long edges of the sheets factory grooved with a 4.5 mm wide and 9.5 mm deep slot, and fitted on one side with a rigid opaque green polypropylene tongue. This forms a tongue & groove (shear key) joint between adjacent sheets.
- 4.4 Strandfloor® H3.1 is manufactured to the following tolerances:
- Thickness ± 0.2 mm.
 - Length and width ± 1.5 mm.
 - Squareness 0.5 mm/m.
 - Sheet edges 1 mm/m maximum deviation from the line.
- 4.5 The product is available as set out in Tables 1 and 2.

Table 1: Strandfloor® H3.1 Square Edge

Sheets sizes [mm]	Approximate weight per sheet [kg]
3,600 x 2,400 x 20*	118
3,600 x 1,200 x 20	59
2,400 x 1,200 x 20	39

*Made to order.

Table 2: Strandfloor® H3.1 Tongue & Groove

Sheet sizes [mm]	Approximate weight per sheet [kg]
3,600 x 1,200 x 20	59
2,400 x 1,200 x 20	39

Accessories

- 4.6 Accessories used with Strandfloor® H3.1, which are supplied by the contractor are:
- **Fixings** - hot-dip galvanised or stainless steel 60 mm x 2.8 mm annular-grooved flooring nails or 50 mm x 8 g screws that comply with AS 3566.1, for fixing Strandfloor® H3.1 to timber framing.
 - **Adhesive** - BRANZ appraised adhesive suitable for adhering timber sheet material to timber framing or concrete as required.

Handling and Storage

- 5.1 Strandfloor® H3.1 must not be stored on wet concrete floors. Sheets must always be block-stacked on bearers at maximum 1,200 mm centres. For short-term storage, sheets must be protected from the weather with a waterproof breather-type cover which is supported clear of the sheet surface on battens, so that air can circulate freely around the stack.
- 5.2 For long-term storage, Strandfloor® H3.1 must be stored inside, in well-ventilated, dry conditions.

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Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Strandfloor® H3.1. 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

General

- 7.1 Strandfloor® H3.1 may be used as pre-laid or post-laid flooring for suspended timber floors designed to Section 7 of NZS 3604, and as a flooring overlay to concrete slab-on-ground floors and suspended concrete or timber floors.
- 7.2 When flooring is pre-laid, care must be taken in the planning and construction stages to ensure the building is closed in within the maximum exposure period of 12 weeks. If this is unlikely, then the flooring must be post-laid.
- 7.3 When pre-laid, an expansion gap of 40 mm is required at 15 m intervals over double joists or blocking. This 40 mm gap is filled after closing in. A minimum 8 mm clearance must be provided between panel edges and fixed objects such as bottom plates, columns, abutting concrete etc.
- 7.4 For timber-framed systems, the use of a construction adhesive is recommended by BRANZ, in conjunction with mechanical fasteners to help eliminate floor system movement, which could result in the undesirable generation of noise [squeaking]. The use of adhesives for fixing Strandfloor® H3.1 in this application is outside the scope of this Appraisal.

Strandfloor® H3.1 Tongue & Groove Diaphragm Floors

- 7.5 Where Strandfloor® H3.1 Tongue & Groove is used for diaphragm floors, the joist spacing supporting the Strandfloor® H3.1 Tongue & Groove must be no greater than 450 mm centres. Strandfloor® H3.1 Tongue & Groove sheets must be laid with the long edges perpendicular to the joists and the short edges coincident with the joists. The nailing pattern to be used in fixing these sheets down must be in accordance with the Technical Literature.

Subfloor Ventilation

- 7.6 Where Strandfloor® H3.1 is laid over a subfloor framing system, all timber and flooring must be protected against damage from ground water moisture in accordance with the requirements of NZS 3604, Section 6. Cross-flow ventilation around the full perimeter of the building must be provided in accordance with the relevant requirements of NZS 3604, Section 6.14. In calculating the required number of vents, only the open unobstructed area of each vent unit shall be taken into account. Hot-air, steam systems, and relief or overflow pipes must not vent or drain into subfloor areas. To allow for adequate ventilation and access, a minimum clearance of 550 mm between the surface of the ground and the underside of the Strandfloor® H3.1 floor is required.

Concrete Floors

- 7.7 Concrete slab-on-ground floors, where Strandfloor® H3.1 is to be used as a flooring overlay, must be constructed using protective damp-proof membranes in accordance with NZS 3604, Section 7.5. The concrete surface must not deviate by more than 5 mm over 3 m. In addition, the substrate must be sound, dust free and dry. The relative humidity of air at the concrete surface must not exceed 75% prior to installation. Relative humidity must be determined in accordance with BRANZ Bulletin No. 644. It is important that where a construction joint exists in a concrete slab, a joint must also be formed in the flooring directly above.

Finishing

- 7.8 Strandfloor® H3.1 must be finished by sealing of the surface or finishing with a polyurethane coating system or other floor covering, as detailed in the Technical Literature, before occupancy.

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Wet Areas

- 7.9 Strandfloor® H3.1 is treated to Hazard Class H3.1, and is therefore suitable for use in wet areas as specified by NZS 3602, Table 1C.3 and Note 7.
- 7.10 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:
- **Water Splash** – these are areas subject to intermittent splashing of water such as around baths, vanities, tubs and sinks.
 - **Shower Areas [Spaces]** – these are areas subject to frequent and heavy water splash such as enclosed showers, unenclosed shower zones and showers over baths.
- 7.11 Where Strandfloor® H3.1 is used in shower areas, a waterproof membrane system specified for use with timber panel flooring must be used to protect the Strandfloor® H3.1. The waterproof membrane must comply with AS/NZS 4858 or be covered by a valid BRANZ Appraisal. Other water splash areas must be protected by an integrally waterproof sheet material (e.g. polyvinylchloride) with sealed joints or a waterproof membrane that complies with AS/NZS 4858 or that is covered by a valid BRANZ Appraisal.
- 7.12 A floor waste is recommended where accidental flooding is possible. Floor wastes must be installed in accordance with the requirements of NZBC Acceptable Solution E3/AS1, Paragraph 2.2 or NZBC Acceptable Solution G13/AS1, Paragraph 3.4.

Exposure

- 7.13 Due to rain wetting before closing in, it may be possible for the moisture content of the pre-laid sheets to temporarily exceed the 18% level given in NZBC Acceptable Solution E2/AS1, Paragraph 10.2 c). Under normal circumstances, when used and installed as required by this Appraisal and the Technical Literature, this level of temporary wetting of Strandfloor® H3.1 is acceptable.

Structure

Density

- 8.1 Strandfloor® H3.1 Square Edge and Strandfloor® H3.1 Tongue & Groove sheets have a density of approximately 680 kg/m³.

Loads

- 8.2 Strandfloor® H3.1 will support loads of up to 1.5 kPa in buildings built within the scope of NZS 3604 with maximum floor joist spacing of 600 mm centres. Strandfloor® H3.1 will support loads up to 3 kPa for all other non-domestic flooring applications built within the scope of NZS 3604 with maximum floor joist spacing of 600 mm centres. Point loads may reduce allowable floor joist spacing, please refer to the Floor Design section of the Technical Literature.
- 8.3 Timber floors built outside the scope of NZS 3604 have not been assessed and are outside the scope of this Appraisal. These floors must be subject to specific design and Laminex New Zealand must be consulted for relevant design information, strength and stiffness.
- 8.4 The installation of Strandfloor® H3.1 over steel floor joists has not been assessed and is outside the scope of this Appraisal. Laminex New Zealand must be consulted for relevant design information using these floor systems.
- 8.5 For typical NZS 3604 applications pre-laid over supports at the above spacings, the stiffness of the sheets will still be acceptable after exposure to the weather for 12 weeks for Strandfloor® H3.1. Post-laying of sheets avoids any loss in stiffness which may occur as a result of weathering.

Structural Diaphragms

- 8.6 Strandfloor® H3.1 has been appraised for use as a sheet material for diaphragms to resist lateral loads in NZS 3604 buildings. Such diaphragms must be detailed as required by Clause 7.3 of NZS 3604 and the Technical Literature. Screw fixing must not be used for diaphragm floors.

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Heat

- 8.7 Over-floor heating systems may be used with Strandfloor® H3.1 provided it is not subjected to a temperature exceeding 35°C.
- 8.8 Strandfloor® H3.1 must not be subjected to temperatures exceeding 50°C for prolonged periods.

Durability

- 9.1 Strandfloor® H3.1 meets the performance requirements of NZBC Clause B2.3.1 [a] not less than 50 years where the floor is a structural diaphragm or it is installed under structural walls, and the performance requirements of NZBC Clause B2.3.1 [b] at least 15 years in other situations.

Serviceable Life

- 9.2 Flooring systems based on Strandfloor® H3.1 can be maintained in a serviceable condition for at least 50 years, provided that:
- When pre-laid, the flooring has not been exposed to the weather for a period greater than 12 weeks; and,
 - Appropriate measures have been taken to ensure the moisture content of the flooring is controlled in accordance with the provisions of NZBC Acceptable Solutions E2/AS1 and E3/AS1, the Technical Literature and this Appraisal; and,
 - The flooring has not been exposed to further weathering, or subjected to water immersion, e.g. flooding, or to sub-zero temperatures while in a wet condition.
- 9.3 When sheets are used as a floor overlay fixed directly over concrete floors and the sheets do not perform any structural function [i.e. support loads], the NZBC does not require a minimum serviceable life for the covering. However, where slab-on-ground floors are permanently protected from ground moisture in accordance with NZS 3604, Section 7.5, a serviceable life of over 50 years is still possible.

Maintenance

- 10.1 Adequate subfloor ventilation must be maintained by ensuring vegetation or other obstructions are kept away from vents in perimeter foundation walls. Where ground vapour barriers exist they must be maintained in a serviceable and effective condition.
- 10.2 In wet areas, impervious floor coverings (or waterproof membranes) must be maintained to ensure water cannot penetrate through to the Strandfloor® H3.1. Any floor wastes must be installed and maintained so as to remain unobstructed, drain to the outside of the building, and prevent Strandfloor® H3.1 from becoming wet.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to Strandfloor® H3.1 from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.
- 11.2 The serviceable life of the product may be affected if the surface temperature exceeds 50°C for long periods. Fuel-burning appliance manufacturers must therefore be consulted to ascertain the clearances or protection required to ensure that a 50°C surface temperature is not exceeded. Clearances specified in Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and Acceptable Solution C/AS2 may not be sufficient for some appliances.

Fire Affecting Areas Beyond the Fire Source

- 12.1 Strandfloor® H3.1 can be used as flooring in Risk Group SH dwellings, which have no specific fire requirements under the NZBC.
- 12.2 For Risk Groups other than SH, surface finish requirements for floors are given in NZBC Acceptable Solution C/AS2 Paragraph 4.17.3.

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Hazardous Building Materials

- 13.1 The adhesive used to manufacture Strandfloor® H3.1 contains no formaldehyde. The amount of formaldehyde emitted by the Strandfloor® H3.1 is less than similar flooring materials manufactured using melamine urea formaldehyde type adhesives. Formaldehyde emissions from Strandfloor® H3.1 meet the E zero classification when tested in accordance with AS/NZS 4266.1.
- 13.2 The level of formaldehyde emission will decrease with time. After installation, emission levels will be controlled by ventilation together with the sealing of the surface or finishing with a polyurethane system, or the use of coverings such as tiles, vinyl or carpets with foam or rubber underlays. Covering or sealing of the sheets must be carried out before the building is occupied.

Energy Efficiency

- 14.1 For the purposes of calculating the building performance index of the building envelope [refer to NZBC Clause H1.3.2] the R-value of Strandfloor® 20 mm sheets should be taken as 0.17 m²K/W.

Installation Information

Installation Skill Level Requirements

- 15.1 All design and building work must be carried out in accordance with the Strandfloor® H3.1 Technical Literature and this Appraisal by competent and experienced tradespersons conversant with Strandfloor® H3.1. Where the work involves Restricted Building Work (RBW) this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant License Class.

General

- 16.1 General installation of Strandfloor® H3.1 must be in accordance with the Technical Literature and the provisions of this Appraisal.
- 16.2 It does not generally matter which way up the Strandfloor® H3.1 sheets are laid. If the floor is to be finished with a clear finish, then all Strandfloor® H3.1 sheets should be laid with the printed face down.
- 16.3 Strandfloor® H3.1 Tongue & Groove does not need blocking under the tongue & groove joint.
- 16.4 Each sheet must span at least two floor joist spans (i.e. be continuous over three joists), except at floor edges where infill sheets may be required.
- 16.5 The moisture content of the floor framing timber must not exceed 18% when Strandfloor® H3.1 is installed.
- 16.6 Strandfloor® H3.1 must be fixed with 60 x 2.8 mm hot-dip galvanised or stainless steel, annular-grooved flooring nails, or 50 x 8 g screws (non-diaphragm applications only) at 150 mm centres around the perimeter of the sheets, and at 300 mm centres at intermediate supports. Nails may be power or hand-driven but must be parallel with, and no closer than 10 mm to the edge of the sheet.
- 16.7 Where Strandfloor® H3.1 Tongue & Groove is to be used as a diaphragm floor, then fixing must be in accordance with the Technical Literature. This type of flooring system requires the supporting joists to be at no more than 450 mm centres. Strandfloor® H3.1 Square Edge sheets may have a joist spacing of up to 600 mm.
- 16.8 Where used as an overlay to timber substrates, the moisture content of the substrate must not exceed 15%.
- 16.9 Existing timber floor substrates must be re-punched and then coarse sanded flat prior to fixing the sheets in place.
- 16.10 When used as an overlay on timber substrates or as a second layer over a pre-laid single layer, sheets must be fixed with mechanical fasteners or adhesive with fasteners, ensuring that sheet joints do not coincide with joints in the substrate.

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- 16.11 Where used as an overlay to tongue & groove timber flooring, the joints in the Strandfloor® H3.1 must not coincide with the joints in the tongue & groove flooring.
- 16.12 Where used as an overlay to concrete, the concrete surface must not deviate by more than 5 mm over 3 m. In addition, the substrate must be sound, dust free and dry. The relative humidity of air at the concrete surface must not exceed 75% prior to installation. Relative humidity must be determined in accordance with BRANZ Bulletin No. 644. As a general guide for new concrete slabs, one month of drying time must be allowed for each 25 mm thickness of concrete.
- 16.13 When used as an overlay on concrete, sheets must be bonded using a full spread of approved adhesive [see the Technical Literature].
- 16.14 Continuously-laid bottom plates to walls in pre-laid situations must be cut away at openings as soon as possible, in order to allow ponded water to drain or be removed.
- 16.15 Protection required to prevent damage to the flooring during other construction processes must be provided in a manner which allows sheets exposed to the weather to dry quickly. For this reason temporary weather protection such as plastic sheeting or liquid sealers must not be used directly on sheet surfaces.

Finishing

- 17.1 Covering or sealing of the Strandfloor® H3.1 must be carried out after the building is fully closed-in but before it is occupied. Details for finishing are provided in the Technical Literature.
- 17.2 Covering or sealing must not be carried out until the moisture content of the flooring is less than 15%.
- 17.3 Some coating and adhesive manufacturers may require lower moisture contents for optimum performance when their products are used on Strandfloor® H3.1 Flooring. The instructions of these manufacturers must be followed when their products are used on Strandfloor® H3.1 Flooring.

Health and Safety

- 18.1 Exposure to wood dust may cause irritation to the respiratory system and skin and may cause sensitisation resulting in asthma, and by skin contact resulting in dermatitis. A dust mask and eye protection must be worn when working with Strandfloor® H3.1. Work areas must be ventilated and kept clean. Machinery used must be fitted with dust extractors. Off-cuts, shavings and dust must be disposed of in accordance with the requirements of local authorities.

Basis of Appraisal

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

Tests

- 19.1 The change in the physical properties of the Strandfloor® H3.1, such as modulus of rupture, modulus of elasticity, internal bond strength, thickness swell and surface water absorption after natural weathering have been determined by BRANZ.
- 19.2 The density, modulus of rupture, modulus of elasticity, internal bond, and deflection under concentrated load [stiffness] of Strandfloor® H3.1 have been determined by BRANZ.
- 19.3 Strength capacity and deflection under concentrated load [stiffness] of Strandfloor® H3.1 exposed to the weather for 12 weeks, have been determined by BRANZ.
- 19.4 The thermal resistance of Strandfloor® H3.1 has been determined by BRANZ.
- 19.5 Formaldehyde emission levels have been determined by testing to AS/NZS 4266.1. The results of these tests have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 20.1 The Technical Literature for Strandfloor® H3.1 has been reviewed by BRANZ and found to be satisfactory.

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Quality

- 21.1 The manufacture of Strandfloor® H3.1 has been examined by BRANZ, including methods adopted for quality control. Details of the manufacturing processes, and quality and composition of the raw materials used were obtained and found to be satisfactory.
- 21.2 The quality management systems of the Strandfloor® H3.1 production have been assessed and registered by SGS as meeting the requirements of ISO 9001.
- 21.3 Laminex New Zealand is responsible for the quality of the product supplied.
- 21.4 Quality of installation of the product on-site is the responsibility of the installer.
- 21.5 Maintenance of the flooring system is the responsibility of the building owner.

Sources of Information

- AS 3566.1:2002 Self-drilling screws for the building and construction industries.
- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 4266.1:2017 Reconstituted wood-based panels – Methods of testing – Part 1: Base panels.
- AS/NZS 4858:2004 Wet area membranes.
- BRANZ Bulletin No. 644 Solid timber strip flooring on a concrete slab..
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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In the opinion of BRANZ, **Strandfloor® H3.1 Flooring** 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 **Laminex New Zealand**, 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. **Laminex New Zealand:**
 - 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 **Laminex New Zealand**.
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 **Laminex New Zealand** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

13 September 2021

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Strandfloor®

Technical Manual



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Laminex®
NEW ZEALAND

Strandfloor®

Technical manual

Edition 11 May 2024

strandfloor®

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CMNZ10003



strandfloorH3i®

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CMNZ10004



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1 Scope and interpretation

1.1 Compliance

Strandfloor® and StrandfloorH3.1® have CodeMark Product Certificates.

Strandfloor® has two BRANZ Appraisals - Strandfloor® No. 676 (2021), and StrandfloorH3.1® No. 677 (2021).

The CodeMark Certificates and BRANZ Appraisals cover the use of both product options within the scope of the New Zealand Building Code.



The valid appraisal's and Codemark certificates can be found on the BRANZ website – www.branz.co.nz

Strandfloor® and StrandfloorH3.1® will meet the following provisions of the New Zealand Building Code:

- o Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4 for loads arising from self-weight, imposed gravity loads arising from use, earthquake, wind and impact [i.e. B1.3.3 (a), (b), (f), (h), and (j)].
- o Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, and B2.3.1 (b) 15 years.
- o Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

StrandfloorH3.1® meets the criteria specified in NZS 3602 - Table 1C.3 - Note 7. NZS 3602 being an Acceptable Solution to meet the requirement of the New Zealand Building Code – Clause B2 Durability.

1.2 Scope

The Strandfloor® information in this manual has been specifically designed in accordance with AS/NZS 1170 to comply with the appropriate design loadings for domestic and commercial buildings.

Strandfloor® panels are suitable for timber framed buildings within the scope of NZS 3604, clause 1.1.2 and those uses specifically designed within this manual.

Tables 1.1 and 1.2 together with figures 1.1 and 1.2 in NZS 3604 may be used to determine the scope.

1.3 Interpretation

Interpretation shall be as detailed in NZS 3604, clause 1.2.

1.3.1 NZS 3604 Commentary

Interpretation shall be as detailed in NZS 3604, clause 1.2. In particular, the words "shall" or "must" identifies a mandatory requirement for compliance with NZS 3604. The word "should" refers to practices which are advised or recommended. Clauses prefixed by "C" and printed in italic type (such as these) are intended as comments on the corresponding mandatory clauses.

1.4 Definitions

Definitions are those given in NZS 3604, clause 1.3.

1.5 Make sure your information is up to date

When specifying or installing Laminex New Zealand® product, ensure you have the current technical manual. If you are not sure you do, or you need more information, visit laminex.co.nz or call Laminex New Zealand® on 0800 303 606.

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2 General product description

2.1 Strandfloor® material

High-density wood based panels are manufactured for Laminex New Zealand®, primarily for use as flooring, under the trade mark Strandfloor®.

Panels are produced by pressing strands of wood together under heat and pressure.

2.2 Identification

All panels are ink marked on the underside with the product identification and a 5 digit manufacturing traceability number. StrandfloorH3.1® panels also have the NZ Timber Preservation Council registration number, the type of treatment and the Hazard Class included.

All panels will have a label on the upper face.

Strandfloor® Tongue & Groove has a white polypropylene tongue. StrandfloorH3.1® Tongue & Groove has a green polypropylene tongue.

2.3 Uses

Strandfloor® can be used:

- o As pre-laid or post-laid flooring over traditional timber floor joists, engineered timber ("I" joists) or steel joist supports in single or double layer applications.
- o As floor diaphragms for the transfer of wind and earthquake loads within the scope of NZS3604.
- o As floor diaphragms using Specific Engineer Design (SED) for transfer of wind and seismic loads. (refer section 5.2).
- o As an overlay to concrete floor slabs or wooden floors.
- o For general stair construction*.
- o For shelving and packaging*.
- o As carcass members for cabinetry*.
- o StrandfloorH3.1® Substrate for profiled metal roofing and asphalt shingles (refer to Strandsarking® technical information for installation details)*.

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*Uses not assessed by BRANZ.

2.4 Strandfloor® types

Four particular types are marketed, each having their own qualities and unique uses.



2.4.1 Strandfloor® Square Edge

- o Strandfloor® Square Edge consists of 20mm nominally thick high density reconstituted wood panels.
- o Panels are finished with a square edge.
- o This is a general purpose product intended for all uses.
- o Square edge panels shall always be used when it is intended to clear finish the floor (refer to C2.4.1 at bottom of page).
- o Product made Made To Order (MTO). Minimum Order Quantity (MOQ) and additional lead time is required.



2.4.2 Strandfloor® Tongue & Groove

- o Strandfloor® Tongue & Groove consists of 20mm nominally thick high density reconstituted wood panels, specifically marketed as flooring.
- o It is identical to Strandfloor® Square Edge in its manufacture but has the addition of a polypropylene white tongue to one long edge, and a groove to the other.
- o When correctly installed this gives the required shear strength and eliminates the need for timber nogs.
- o There is a range of three panel sizes particularly designed for common joists centres.



2.4.3 StrandfloorH3.1® Square Edge

- o StrandfloorH3.1® Square Edge consists of 20mm nominally thick high density reconstituted wood panels, specifically marketed for use in wet areas
- o The improved resin composition meets the H3.1 treatment requirements, with the added benefit of a 50% increase in exposure time.
- o The added properties are ideal for floors with joists at maximum centres – i.e. 600mm.
- o Product made Made To Order (MTO). Minimum Order Quantity (MOQ) and additional lead time is required.



2.4.4 StrandfloorH3.1® Tongue & Groove

- o StrandfloorH3.1® Tongue & Groove consists of 20mm nominally thick high density reconstituted wood panels, specifically marketed for uses in wet areas.
- o It is identical to StrandfloorH3.1® Square Edge but has the addition of a polypropylene green tongue to one long edge and a groove to the other.
- o When correctly installed this gives the required shear strength and eliminates the need for timber nogs (except in wet areas – refer to section 6.2.7 installation).

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C2.4.1 This is to ensure that timber nogs are used to support edges – if Tongue & Groove product is used, cracking of surface coatings may eventuate due to slight differential movement.

C2.4.3 Refer section 4 – Durability.

C2.4.4 Refer section 4 – Durability.

2.5 Flooring guide

Figure 2.1. is a helpful guide when determining which product suits a particular application. Other considerations may be necessary but the flow chart is a good first step.

Figure 2.1



Note: All Square Edge product is Made To Order (MTO). A Minimum Order Quantity (MOQ) and additional lead time is required.

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3 Material properties

3.1 Description

Strandfloor® panels are manufactured from strands of radiata pine which impart a range of colour tones within each panel.

The wood strands are bonded together with a pMDI resin which is applied to each individual wood strand prior to the pressing of the panels. A wax emulsion is added at this stage to impart additional moisture resistance to the strands.

A water based fungicide and insecticide is applied to each individual strand to provide protection throughout the panel that meets the H3.1 treatment classification.

The long edges of the tongue and groove Strandfloor® panels are factory grooved and fitted on one side with a polypropylene tongue.

3.2 Panel dimensions

Table 3.1 gives panel dimensions for all products.

Table 3.1

Panel dimensions			
Product	Panel sizes mm	Weight (kg) per m ²	Weight (kg) per panel
Strandfloor® Square Edge*	3600 x 1200 x 20	13.6	58.8
	2400 x 1200 x 20	13.6	39.2
Strandfloor® Tongue & Groove	3600 x 1200 x 20	13.6	58.8
	2400 x 1200 x 20	13.6	39.2
StrandfloorH3.1® Square Edge*	3600 x 1200 x 20	13.6	58.8
	2400 x 1200 x 20	13.6	39.2
StrandfloorH3.1® Tongue & Groove	3600 x 1200 x 20	13.6	58.8
	2400 x 1200 x 20	13.6	39.2

*Product Made To Order (MTO). A Minimum Order Quantity (MOQ) and additional lead time is required. All dimensions and measurements are nominal

3.3 Panel tolerances

Table 3.2 gives panel tolerances for all products (ex factory).

Table 3.2

Panel tolerances	
Length	+/- 1.5mm
Width	+/- 1.5mm
Thickness	+/- 0.2mm
Panel edge straightness	1mm/metre maximum deviation from the line
Panel squareness	The difference between the measured diagonals is no greater than 0.5mm/metre

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3.4 Physical properties

Strandfloor® Square Edge, Strandfloor® Tongue & Groove, StrandfloorH3.1® Square Edge and StrandfloorH3.1® Tongue & Groove are manufactured to meet or exceed the requirements of AS/NZS 1860.1:2017 Specifications for particleboard flooring.

Table 3.3 Strandfloor® Square Edge & Strandfloor® Tongue & Groove

Property	Units	AS/NZS 1860.1:2017 Reported Values	AS/NZS 1860.1:2017 min/max
Bending Strength (MoR)	MPa	21.2	17
Modulus of elasticity (MoE)	MPa	3483	2650
Internal bond strength (IB)	MPa	0.581	0.5
24-hour thickness swell	%	13.8	14

The properties listed in Table 3.3 have been determined by relevant test methods in AS/NZS 4266.1:2017, and are intended for quality assurance. They should not be used for structural design.

Table 3.4 StrandfloorH3.1® Square Edge & StrandfloorH3.1® Tongue & Groove

Property	Units	AS/NZS 1860.1:2017 Reported Values	AS/NZS 1860.1:2017 min/max
Bending Strength (MoR)	MPa	23.8	19
Modulus of elasticity (MoE)	MPa	3469	2750
Internal bond strength (IB)	MPa	0.726	0.55
24-hour thickness swell	%	7.8	8

The properties listed in Table 3.3 have been determined by relevant test methods in AS/NZS 4266.1:2017, and are intended for quality assurance. They should not be used for structural design.

3.5 Acoustic properties

Product	Thickness	STC Value (dB)	IIC Value (dB)
Strandsarking®	16.3mm	27	N/A
Strandfloor®	20mm	24	13
Strandboard®	12mm	25	N/A
Strandboard®	9mm	25	N/A

(Tested by UoA acoustics lab - not assessed by BRANZ).

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4 Durability

4.1 Producer statement

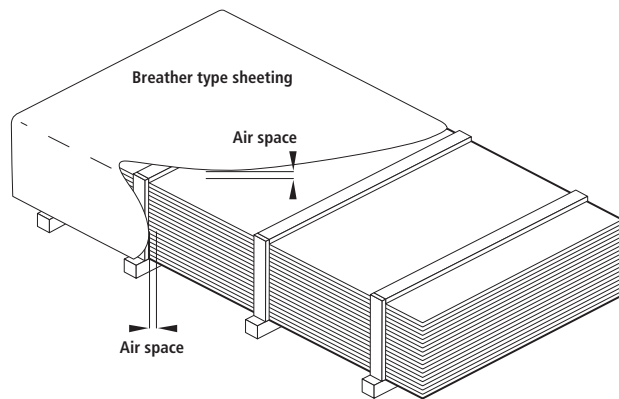
When stored, handled, installed and maintained in accordance with this document, Strandfloor® panels will meet: **The durability performance requirements of NZBC B2.3.1 (a) for 50 years.**

The specifications, details and methods described herein shall be strictly observed to avoid building code non-compliance.

Laminex New Zealand® will not be liable to any person if the conditions as to storage, handling, installation and maintenance of Strandfloor® panels as outlined within this document are not complied with.

StrandfloorH3.1® Square Edge and StrandfloorH3.1® Tongue & Groove panels have been treated to resist attack by insects such as borer.

Figure 4.1



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4.2 BRANZ product assessments

Strandfloor® has two CodeMark Product Certificates and two BRANZ Appraisals. The current versions of the CodeMark Certificates and BRANZ Appraisals are published on the BRANZ website www.branz.co.nz

The CodeMark Certificate and BRANZ Appraisals confirm that: Strandfloor® panels will have a life of at least 50 years.

4.3 Durability conditions

The following conditions shall be met; otherwise the durability of Strandfloor® will be compromised.

4.3.1 Handling and storage

- o Panels shall be stored and handled so as to minimise surface and edge damage.
- o Wherever possible panels shall be stored inside under cover. Outside storage shall be for short periods only. Panels shall not be stacked on wet concrete floors.
- o The panels shall be flat stacked clear of the ground, on evenly placed, full width, level bearers. Bearers shall be of uniform thickness and shall extend across the full width of the stack (refer figure 4.1).
- o When stored in external situations, panels shall be protected from the weather. A breather-type cover shall be used, supported clear of the top and sides of the panels using battens to allow air to circulate freely around the pack (refer figure 4.1).
- o Check panels for defects before installation.

4.3.2 Weathering

- o Strandfloor® Square Edge and Strandfloor® Tongue & Groove shall not be exposed to weathering for more than eight weeks.
- o StrandfloorH3.1® Square Edge and StrandfloorH3.1® Tongue & Groove shall not be exposed to weathering for more than 12 weeks.
- o Panel properties may be affected by moisture saturation and/or exposure to sub-zero temperatures.
- o During the exposed period, do not allow water to pond on the surface. Remove water by sweeping and forming small holes adjacent to plate lines. Do not directly cover panels with sheeting or apply liquid sealers to any surface. Panels should weather in their raw condition to allow release of absorbed moisture.

4.3.3 Wet areas

- o In “wet areas” panels shall be protected with a suitable wet area membrane or an integrally waterproof sheet material. – Section 9: Finishing – 9.3 Wet areas.

4.3.4 Heat

- o Panels shall be separated from fuel burning appliances, flues and chimneys in accordance with NZBC Section C – AS/1.
- o Panels shall not be subjected to temperatures exceeding 50°C for a prolonged period.

4.3.5 Prohibited uses

- o Panels shall not be used in covered exterior situations with no weather protection e.g. open verandas.
- o Once installed and in use, panels shall not be subjected to conditions that will allow the continuing moisture content to be above 16%.
- o Panels shall not be used as a substrate for decking membranes.

4.3.6 Defects

- o Before installation please check panels for defects.

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C4.3.2 The “weather exposed” period includes the time that the panels are in an exposed condition when being transported or stored on site without covering. Panels will respond to changes in humidity and moisture content. Some grain raising may result. Loss of stiffness and strength can occur if panels are exposed to sub-zero conditions whilst saturated – i.e. ski lodges. If the exposure period cannot be met, then panels shall be post laid (once the structure is enclosed). Alternatively, sheet covering may be used providing it is indirect and adequate air space is maintained (“tent” effect).

C4.3.3 A “wet area” is any area within a building supplied with water from a water supply system, e.g. kitchens, bathrooms, toilets, shower rooms, laundries, changing rooms, ensuites, etc.

C4.3.4 Over floor and under floor type heating systems may be used with Strandfloor® products providing the operating temperature does not exceed 35°C and the panel moisture content is less than 16%. The heating system manufacturer must be consulted prior to installation.

5 Floor design

5.1 Non-specific design

The use engineered timber flooring joists such as LVL, I-Beam or Pozi -STRUTS with a moisture content less than 15% is strongly recommended, and will provide the following benefits:

5.1.1 Joist selection

Ranges of joists are now available, in solid timber, engineered timber ("I" joists) and steel. Each has its particular advantages and preferences.

The use of solid timber or "I" joists, with a moisture content of less than 15%, is strongly recommended and will provide the following benefits:

- o Post construction shrinkage and distortion will be minimised, limiting fastener noise and nail popping.
- o Deflection will be limited as dry timber is stronger and stiffer.
- o In all cases joists are lighter and easier to handle – particularly with "I" joists.

In some cases it is hard to avoid the use of "wet" timber due to the treatment requirements of NZS 3602. If this is the case care should be taken to select straight and undistorted material or consideration given to post laying of panels.

5.1.2 Domestic buildings

In domestic housing applications, joist support centres up to 600mm are acceptable for all Strandfloor® products, in line with Table 1.2 of NZS 3604.

- o If a more rigid floor is required reduce support centres to 450mm or less.
- o For large floors, over 25m long, consider post laying or allow for expansion.
- o Ensure that adequate ventilation is provided in sub-floor areas (see 5.3.1).
- o When clear finish/coating is the required finish surface use only Square Edge panels (refer C5.1.2b below).
- o Additional panel support will be required for high point loads such as pianos, billiard tables etc.

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C5.1.2a See section 7 – 7.4. Large floors.

C5.1.2b This is to ensure that timber nogs are used to support edges – if Tongue & Groove product is used, cracking of surface coatings may eventuate due to slight differential movement.

5.1.3 All other buildings

In all non-domestic building applications (i.e. residential, institutional, educational and other buildings):

- o Joist spacings shall not exceed 600mm centres.
- o The kPa loadings, from Table 1.2 of NZS 3604, shall not be exceeded without specific design.
- o Special attention shall be given at the design stage to the effects of concentrated loadings, such as high density foot traffic, storage racks, hand trolley point loads etc.
- o Where a double layer floor system is used, joists can be spaced up to 600mm support centres for all products.
- o Adequate cross flow ventilation shall be provided in all subfloor areas.
- o Where large areas of Strandfloor® are laid e.g. gymnasiums, community halls, institutional type dwellings, farm buildings etc., it is important to ensure that careful consideration is given to the cross flow effect of sub-floor ventilation and allowance is made for panel expansion.
- o Post laying is always the better option for large floors, particularly where clear finishing.

5.1.4 Structural diaphragms

All Strandfloor® products can be used for structural diaphragms. Design requirements for diaphragms to resist wind or seismic loads are given in NZS 3604.

- o Strandfloor® Square Edge complies if fixed in accordance with this manual.
- o Strandfloor® Tongue & Groove complies if fixed in accordance with this manual and joist centres do not exceed 450mm.
- o Refer to 5.2.3 Specific Engineer Design for structural diaphragms outside scope of NZS 3604.

For floor diaphragms complying with NZS 4229 – Concrete Masonry Buildings Not Requiring Specific Engineering Design – Strandfloor® Square Edge shall be used. Details shall be in accordance with NZS 4229.

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C5.1.3 Residential, institutional, educational and other buildings as described in NZS 3604: clause 1.1.2 (e), (ii) - (v).

C5.1.4 See section 7 – Installation, for special fixing details.

5.2 Specific design, commercial and industrial use

The following information has been specifically designed for Strandfloor® products. All calculation is based on the requirements and methods detailed in AS/NZS 1170.

Reference to Table 3.1 of this standard will give the requirements for particular activities, which can then be aligned with these tables.

This information is by no means exhaustive but covers the common commercial and industrial situations that may occur outside the scope of NZS 3604 and the majority of those within AS/NZS 1170.

All other situations require individual specific design.

5.2.1 Uniformly distributed actions (UDL)

Table 5.1 gives safe uniformly distributed actions for Strandfloor®.

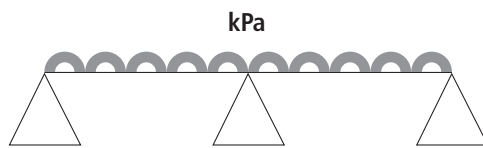


Table 5.1

Strandfloor®	
Span up to 600mm	
Single layer	5kPa
Double layer	10kPa

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5.2.2 Concentrated actions

Table 5.2 gives safe concentrated actions for Strandfloor®.

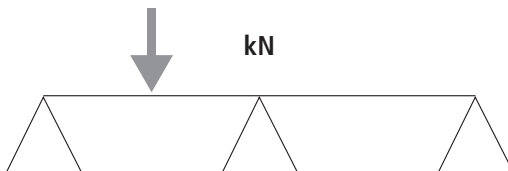


Table 5.2

Strandfloor®					
Support centres	400mm	450mm	500mm	550mm	600mm
Single layer	4kN	3.2kN	3kN	2.1kN	1.8kN
Double layer	8kN	6.4kN	5kN	4.2kN	3.6kN

5.2.3 Specific Engineer Design (SED) structural diaphragms

If you wish to use Strandfloor® and StrandfloorH3.1® in Specific Engineer Design (SED) diaphragm floor applications, please contact the Laminex technical team at technical.services@laminex.co.nz

C5.2.1 Refer section 7 – Installation, for double layer fixing details.

5.3 Sub-floor ventilation

Sub-floor ventilation must be provided to all platform floors suspended above the ground to ensure the ongoing moisture content of the Strandfloor® remains at or below 16%.

The following information shall be regarded as the minimum ventilation levels required. Failure to control moisture in the Strandfloor® could result in a non-performance which Laminex New Zealand® will not be responsible for.

5.3.1 Opening requirement

This requirement shall be met by the provision of evenly distributed openings in the foundation wall, at a rate of no less than 3500mm² for every m² of floor area. The openings shall be as near as possible to the underside of the plates and bearers and be positioned to allow effective cross flow.

Either one, or a combination of the following methods, may be used to construct ventilation openings:

- o Continuous gaps, at least 20mm wide between baseboards, around the building perimeter.
- o Perimeter wall ventilators with sufficient net open area spaced regularly, commencing 750mm from the wall corner and at intervals of no greater than 1.8m.
- o A 50mm gap between the wall plates and a boundary joist at the ends of cantilevered floor joists and the wall plate and joist, where the bearer is cantilevered.
- o Other regularly spaced openings that will provide adequate ventilation.

It is important to ensure that party walls, internal foundations, attached terraces, or any other impediment, do not obstruct the subfloor ventilation airflow, and that:

- o No point of the ground is more than 7.5m from a ventilation opening, or
- o The subfloor ventilation rate is greater than 10 air changes per hour for wet sites, or five air changes per hour for dry sites.

5.3.2 Vapour barriers

Where a sub-floor space cannot be adequately ventilated, the ground under a suspended floor shall be covered with a vapour barrier having a vapour flow resistance of no less than 50MN s/g, and a thickness of no less than 0.25mm. Refer figure 5.3.

Even with a vapour barrier, ventilation openings shall still be provided, but the net open area may be reduced to no less than 700mm² for every m² of floor area and be located to provide air cross flow in the subfloor space.

The vapour barrier shall be installed in a way that ensures:

- o It covers the total ground area.
- o Adjacent sheets are lapped no less than 75mm and laps are intermittently taped.
- o The ground is shaped to prevent water accumulation on the vapour barrier.
- o Water drains to the exterior.
- o It is securely held in place by bricks, large stones or a similar method.

Where floor area designs still do not meet the above criteria, consideration should be given to the use of mechanical draft ventilation systems that create a subfloor ventilation rate greater than 10 air changes per hour for wet sites, or five air changes per hour for dry sites.

It is essential that all ventilation openings remain unrestricted and that vegetation is not allowed to cause obstructions over the life of the building.

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C5.3.1 All requirements in accordance with NZBC – E2/AS1 and NZS 3604.

C5.3.2 It is strongly recommended that vapour barriers be installed regardless of the situation. Great advantages can be gained in the reduction of sub-floor moisture content for very little cost.

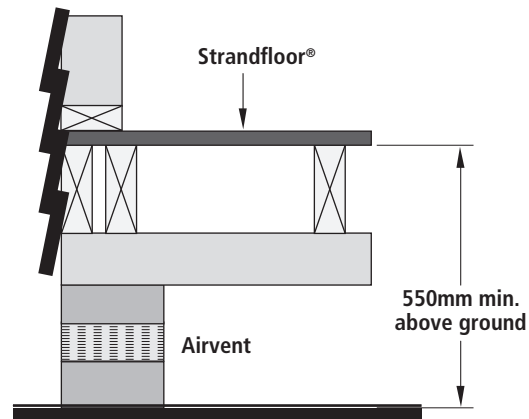
5.4 Ground clearance

A minimum clearance of 550mm between the surface of the ground beneath the building and the underside of the flooring panels shall be provided in order to give adequate sub-floor air capacity and to provide access for inspection of the sub-floor structure.

The clearance of 550mm may not be reduced, even when vapour barriers are installed. Vapour barriers only allow the reduction in the ventilation requirement not the clearance dimension.

For ground clearance detail, see Figure 5.3.

Figure 5.3



5.5 Fire ratings

Strandfloor® can be used as flooring in detached dwellings that have no specific fire resistance rating requirements under the NZBC (purpose group SH).

For other types of occupancy, product use depends on the number of stories, the number of full and intermediate floors involved and whether the building is sprinkled etc.

For the purpose of compliance with clause C3.4(b) of the NZBC, Strandfloor® products have been assigned a critical radiant flux value of 2.2 kW/m².

5.6 Insulation

While Strandfloor® panels used to form an on-ground platform floor will contribute toward the building performance index of the building envelope, additional insulation material will be needed to achieve the thermal insulation requirements as detailed in NZBC H1.3.2. For the purposes of calculation the R-value of 20mm Strandfloor® panels shall be taken as 0.17 m²K/W.

When fitting any insulation it is important to ensure the material that is chosen is installed in accordance with the insulation manufacturers' instructions. It is also critical to ensure that control of moisture in the sub-floor space is maintained as the efficiency of some insulation materials may be affected by elevated moisture levels.

5.7 Supporting timber

The moisture content of the support system at the time of laying and fixing the flooring panels can affect the performance of the total floor system. As wet framing dries it will shrink. This can reduce the effectiveness of the fixing, allowing movement of panels resulting in floor squeaking and nail-head rise under vinyl flooring.

The use of kiln dried timber or "I" joists is therefore recommended.

Herringbone strutting in lieu of solid blocking will reduce the likelihood of a noisy floor. End nailing of solid blocks often result in squeaking and is hard to rectify once the structure is closed in.

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C5.6a Refer NZBC C/VMZ appendix B - Table B1.

C5.6b Refer 5.3 Sub-floor ventilation.

6 Specification clauses

6.1 General

The clauses listed below are those recommended to be used when specifying Strandfloor® products for all building uses as covered by NZS 3604 1.1.2 (e).

It will be necessary to edit those particular sections that apply to the specific project documentation.

6.2 Recommended clauses

6.2.1 Documents referred to

Documents referred to in this section are:

- o AS/NZS 1859 Reconstituted wood-based panels - Specifications Part 1: Particleboard.
- o AS/NZS 1860 Particleboard flooring, AS/NZS 1860.1:2017: Specifications.
- o NZS 3604 Timber framed buildings.

Strandfloor® has two BRANZ appraisals – Strandfloor® – No. 676 (2021) and StrandfloorH3.1® - No. 677 (2021). The current versions of these are published on the BRANZ website – www.branz.co.nz.

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

6.2.2 Manufacturers documents

Confirm current status of documentation held:

- o By visiting www.laminex.co.nz
- o Or call Laminex New Zealand® Customer Services Team on 0800 303 606.

6.2.3 Materials

- o Strandfloor® Square Edge
- o Strandfloor® Tongue & Groove
- o StrandfloorH3.1® Square Edge
- o StrandfloorH3.1® Tongue & Groove

6.2.4 Components

- o NAILS – 60mm annular grooved gun nails or annular grooved particleboard nails.
- o SCREWS - (for timber joists) - 45mm x 8g (minimum size), and those listed in table 7.3, pg.24.
- o ADHESIVE – Elastomeric construction or polyurethane paste adhesive (in continuous beads).
- o SCREWS – (for steel joists) – 45mm x 10g Tek self drilling screws corrosion resistant. (Outside the scope of the CodeMark Certification).

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C6.2.2 It is important to ensure that all on-site personnel have access to up to date information. Products are not used in isolation, but as part of a process. Particular details of handling, storage, installation, finishing and protection, can vary from what is considered the norm.

C6.2.3 Select the appropriate material by referring to Section 2 – Product description and Section 5 – Floor design.

C6.2.4 Select the appropriate component by referring to Section 7 – Installation.

6.2.5 On-site conditions

Take delivery of and accept packets of Strandfloor®, dry and undamaged. Reject all damaged material. Store on a level, firm base, well ventilated and completely protected from weather and damage, all as manufacturers requirements. Check panels for defects before installing.

Avoid distortion and contact with damaging substances. Protect edges and surfaces from damage. Use a sufficient number of people to lift and lay sheets with ease.

Do not commence work until the substrate is plumb and level, in true alignment and to the Strandfloor® manufacturer's requirements.

6.2.6 Application

- o Adhesive fastening – Use construction adhesive to joists in conjunction with mechanical fixing. Apply adhesive in a continuous 5mm bead to all floor joists. For Tongue & Groove panels, apply a 2mm bead of construction adhesive to the top of the tongue prior to insertion into the groove. Remove excess adhesive. Apply adhesive in a continuous 5mm bead to all floor joists and between sheets ends and edges (Square Edge panels) where they butt together.
- o Nail fixing – Nail panel ends (and panel edges for Square Edge) at 150mm centres 10mm from the edge. Nail intermediates at maximum 200mm, with all nails slightly skewed except for corner vertical nails. Where Tongue & Groove material is used, nails shall be 15mm from the edge to avoid tongue damage.
- o Screw fixing – Screw panel ends (and panel edges for Square Edge panels) at 150mm centres 10mm from the edge. Screw intermediate support at maximum 200mm. For Tongue & Groove panels, locate screws 15mm from the edge to avoid tongue damage. Pre-drill the panel for screw fixing.

6.2.7 Installation

Laying of Strandfloor® Tongue & Groove

- o Programme work for minimal exposure to weather and lay sheets across the joists in a staggered pattern.
- o Panels to span at least three joists.
- o Lay panels with brand name down.
- o Allow 8mm minimum clearance between panel edges and fixed objects including columns and bottom plates.
- o Provide continuous edge support at building perimeter.
- o Provide continuous tongue and groove edge support (nogs) in wet areas or where rigid floor finishes (ceramic tiles) are used (refer section 2.4.4). Nogs maybe omitted where a suitable tile and slate underlay is used. Joins on tile & slate underlay shall not coincide with flooring panel joins.
- o All fixings to finish flush with surface at time of fixing. Tighten fixings; punch nails and tighten screws just prior to sanding.
- o Close butt edges and ends of panels. Do not cramp.
- o Do not allow water to remain ponded on the floor surface – remove as soon as possible.
- o Do not cover panels with polythene or apply liquid sealers, while exposed to weathering.

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C6.2.5 All fasteners shall be corrosion resistant. Fastener sizes given in 6.2.4 shall be minimum dimensions.

C6.2.6 Refer Section 4 – Durability.

C6.2.6a In general terms nailing with adhesive is the recommended method as it allows control throughout the installation process.

C6.2.6b Refer to Section 7 – Installation – for double nailing requirements for diaphragm floors.

C6.2.7 Select the appropriate clauses regarding installation of Strandfloor® Square Edge or Tongue & Groove.

Laying of Strandfloor® Square Edge

- o Programme work for minimal exposure to weather and lay sheets across the joists in a staggered pattern.
- o Panels to span at least three joists.
- o Lay panels with brand name down.
- o Allow 8mm minimum clearance between panel edges and fixed objects including columns and bottom plates.
- o Provide continuous edge support at perimeter and at panel edges with solid blocking minimum ex 100mm x 50mm.
- o All fixings to finish flush with surface at time of fixing. Tighten fixings; punch nails and tighten screws just prior to sanding.
- o Close butt edges and ends of panels. Do not cramp.
- o Do not allow water to remain ponded on the floor surface – remove as soon as possible.
- o Do not cover panels with polythene or apply liquid sealers, while exposed to weathering.

6.2.8 Completion

- o Leave work to the standard required by following procedures.
- o Remove all debris, unused materials and elements from the site.

6.2.9 Surface finish

- o Carpet and wet area membrane – Single cut with a drum or belt sander – 60 to 100 grit.
- o Sheet vinyl – Single cut with a drum or belt sander – 60 to 100 grit. Installation of vinyl floor covering requires the application of a flexible or sheet underlayment. Refer to vinyl manufacturers technical installation data.
- o Clear coating – 1st cut with a drum sander – 60 to 80 grit.
2nd cut with a disc sander – 100 grit.
3rd cut with disc sander – 120 to 150 grit.
- o Follow coating manufacturer's instructions.

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C6.2.9

Refer also Section 9 – Finishing. Clear coating is not suitable for wet areas. Clear coating or covering the board with an impervious layer should not be carried out if Strandfloor® is above 15% moisture content.

7 Installation

7.1 General

The following information applies to all Strandfloor® products:

- o Continuous support shall be provided at the building perimeter.
- o Lay ink marked face to joists – (side with label should face up).
- o Panels shall be close butted together without being placed under pressure by mechanical cramping.
- o Panels shall be staggered when used as a diaphragm and it is recommended that staggering is used for general use.
- o Each panel shall span at least two floor joist spacings (i.e. supported over three consecutive joists) except where part panels provide the necessary infill at the building edge.
- o A minimum of 8mm clearance shall be made between edges and any fixed object e.g. bottom plates, masonry walls, abutting concrete floors, structural columns etc. This is to accommodate linear expansion that may occur during the weather exposure period and eliminate moisture transfer from concrete to Strandfloor®.
- o To stop permanent staining do not leave materials (scaffolding, nails, etc.) on panels during wet conditions and avoid spills of cement, paint, tea, etc.
- o If adhesive is being used apply a continuous 5mm bead to the top of the joists (and nogs if used) just prior to each sheet being positioned and fixed in place. Also apply a 5mm bead between sheet ends and edges (Square Edge panels) as installation proceeds.

7.2 Strandfloor® Square Edge

The following information applies to Strandfloor® Square Edge panels only:

- o Support shall be provided to all panel edges and ends by way of joists and nogs/dwangs.
- o All supporting timber shall be a minimum of ex 100mm x 50mm.
- o For joist spacings of 400mm or 600mm, panels can be laid with, or across the joists. (refer figure 7.1 and 7.2).
- o For joist spacings of 450mm panels shall be laid across the joists. (refer figure 7.2).

When Square Edge panels are to be clear finished, ensure panel sizes, types and batches are not mixed.

Figure 7.1

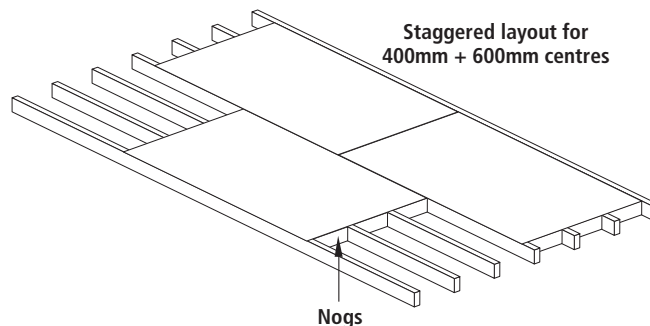
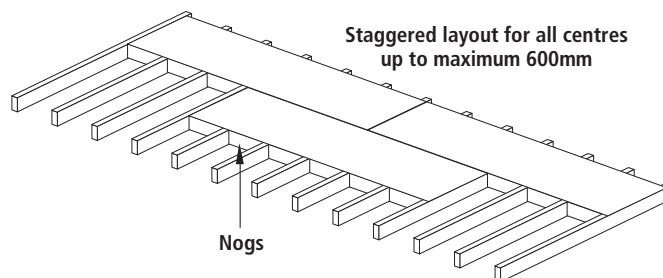


Figure 7.2



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C7.1 Where a part panel is necessary, consideration should be given to the specific location and potential loads. If the area is likely to carry regular foot traffic or heavy concentrated loads, consideration should be given to installing nogs/dwangs at centres matching the joist spacings.

C7.2 This will ensure that shading between panels does not occur – five digit number on underside of panel is a batch number.

7.3 Strandfloor® Tongue & Groove

The following information applies to all Strandfloor® Tongue & Groove panels:

- o Panels shall always be laid across the joists. (Refer figure 7.2 for panel orientation).
- o Lay the first row with the brand name down and the tongue aligned to the perimeter of the floor (refer figure 7.3).
- o Ends of sheets should be close butted and centred over joists.
- o Check the grooved edge, for straightness, with a string line.
- o Fix panels with only sufficient fastenings to avoid movement – this will stop any distortion of the grooved edge prior to further installation.
- o Allow for a stagger of at least one joist space and position the first sheet of the second row, with the tongue adjacent to the groove of the first row.
- o If adhesive is to be used, apply a thin bead along the top of each tongue, before insertion into the groove.
- o Lay a blocking piece (an off-cut of minimum ex 150mm x 50mm timber 1.4m long) across the joists, in the centre of the panel, on the grooved edge.
- o Stand on the blocking piece and strike with a heavy hammer to drive the panel tongue into the groove of the first row.
- o It will assist if a second person can stand on the joint between the two rows.
- o Fix, as before and continue the process to complete the second row – the first row can now be fully fixed.
- o Subsequent rows are similarly installed to complete the floor.

Figure 7.3

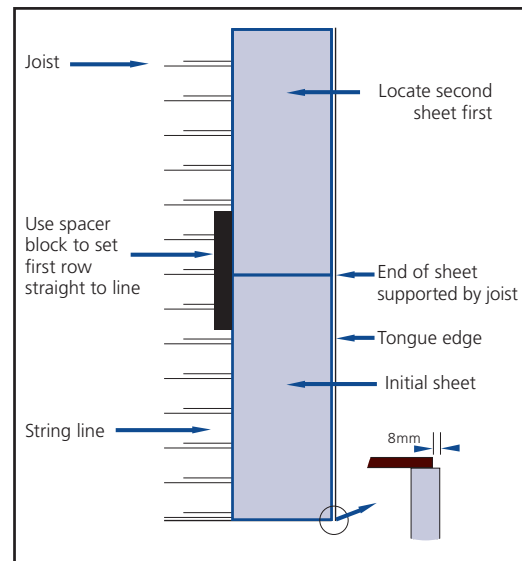


Table 7.1 gives an indication of the quantity of fixings required for Strandfloor® panels. Extra fixings may be required for diaphragm floors. C/A equals construction adhesive cartridges (375ml). Refer 7.6 Diaphragm floors.

Table 7.1

Fixing quantities Tongue & Groove panels				
Panel size (mm)	3600 x 1200		2400 x 1200	
Joist centres	Nails (number)	C/A (cartridge)	Nails (number)	C/A (cartridge)
600mm	53	0.6	39	0.4
450mm	67	0.7	N/A	N/A
400mm	74	0.8	53	0.5

Fixing quantities Square Edge panels				
Panel size (mm)	3600 x 1200		2400 x 1200	
Joist centres	Nails (number)	C/A (cartridge)	Nails (number)	C/A (cartridge)
600mm	89	1	63	0.7
450mm	99	1.1	N/A	N/A
400mm	104	1.2	73	0.8

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C7.3a At this stage the tongue in the first row is redundant and can be removed for use elsewhere, if required.

C7.3b Refer 7.6 Diaphragm floors.

7.4 Large floors

A large floor is one with a length or width exceeding 25m.

All large floors that are pre-laid (exposed to weather) shall provide for panel expansion.

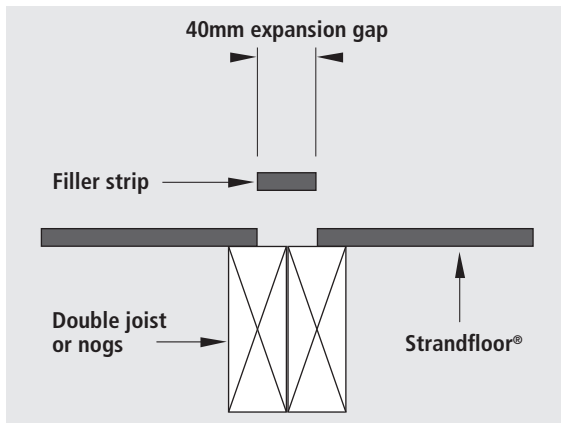
This can be achieved by:

- o Leaving out one row of flooring panels across the building width at centres not exceeding 25m until the structure is completely closed in.
- o Providing a 40mm wide expansion gap under partition lines or other hidden situations, at no greater than 25m intervals. (refer figure 7.4) Insert a filler strip on completion.

All large floors that are post-laid (not exposed to weather) do not require expansion provisions.

It is essential that no exposure of any type occur.

Figure 7.4



7.5 Fixing

The type and position of the fastening chosen is important for long-term performance. Incorrectly fixed panels and high moisture content in timber may lead to squeaking floors which can be difficult to remedy at a later date.

Table 7.3. on page 24 gives details of acceptable fastener types. All others are unacceptable.

Perimeter fixing shall be 10mm from the panel edges except where long edges have tongues. Increase to 15mm to avoid tongue damage.

7.5.1 Adhesive

Adhesive is recommended for use in conjunction with mechanical fastening.

Adhesive should be applied in a continuous 5mm bead to all floor joists & nogs if present, and between sheet ends and edges square edge panels. A 2mm bead should be applied along the tongue of the tongue & groove panels as they are laid.

Refer to Table 7.2 for a list of adhesive options.

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C7.4a Ensure that the 8mm clearance is maintained around the perimeter and between fixed objects. Where a double joist is not available, use rows of double nogs.

C7.4b If floor is to be clear finished ensure all product is from the same batch (check identification numbers on underside of panels).

C7.5.1a The use of a continuous bead of adhesive will result in the joist and panel 'acting as one' which will provide a stiffer platform floor.

C7.5.1b The application of adhesive between sheets as they are laid will restrict moisture uptake through the panel edges.

Table 7.2

Adhesive Options		
Timber Joists	Sika Nailbond Premium	5mm continuous bead to the top of each joist and between sheets at ends and edges, 2mm bead to the top of the tongue.
	Bostik Alpha Grip	
	Gorilla Grip	
	HB Fuller Sturdi Bond	
Steel Joists	Sikaflex 123 MS Bond	
	Gorilla 940FC	
	Gorilla MS Sealant	

Note: Check with adhesive supplier to ensure adhesives not listed are suitable.

Table 7.3

Fastener types				
Timber Joists (includes SG8, LVL8 & I-Beams)	Minimum size	Fixing centres mm		SED Diaphragms*
		Perimeter	Intermediates	
Annular Grooved particleboard flooring nails (NZ Nails)	60mm	150	200	✓
Galvanised jolt head nails (NZ Nails)	60mm	150	200	✓
Self drilling screws corrosion resistant (Bremick)	45mm x 8 gauge	150	200	✓
Self drilling Stainless Steel screws (Bremick)	50mm x 10 gauge	150	200	✓
Simpson Strongtie SS Screw	50mm x 10 gauge (SSWSC2BSA10)	150	200	✓
Simpson Strongtie Zinc Screw	50mm x 10 gauge (WSV50SA)	150	200	✓
Beck Scrail SubLok Pro	57mm x 2.8 gauge	150	200	✓
Delfast Shank Nail	50mm x 2.8 gauge	150	200	✓
BeA 16/45 NK HZ Staple	45mm x 10.6 x 1.47	Refer to notes	Refer to notes	✓

Notes:

Minimum spacings for BeA 16/45 NK HZ Staple as below:

- o 22mm (along the grain for $0 \geq 30^\circ$).
- o 22 mm (perpendicular to the grain).
- o 30 mm (loaded end grain).
- o 22 mm (unloaded end grain).

NZS 3604 refers to 2.8mm or 3.1mm diameter nails. Equivalency for other fastener types listed in table 7.3 was determined through testing.

If you wish to know more about fastener geometry and strength details please contact the Laminex technical team at technical.services@laminex.co.nz

*Fixing centres apply to standard floors and NZS3604 diaphragms only (for SED diaphragms refer to section 5.2.3).

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7.5.2 Nails

Hand-driven nails shall initially be driven flush with the surface. Punching of nails must take place after building is closed in – just prior to sanding. This allows for the moisture content of joists to dry during building construction.

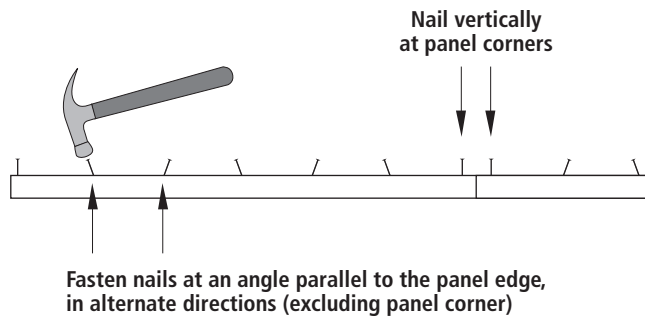
Hand-driven nail fastening usually provides a better finish for clear coatings than power-driven nails.

To improve lateral holding, nails shall be slightly angled and be driven parallel to the sheet edge (refer figure 7.5).

When using power-driven nails, set the depth adjuster attachment on the power tool to drive nails flush with the surface of the panel. This will allow hand punching to take place just prior to sanding.

The use of the pre-punching mechanism increases the risk of squeaky floors, as any timber shrinkage that occurs as the supports dry out is not taken up later as is the case when the punching process is carried out at sanding and floor finishing stage.

Figure 7.5



7.5.3 Screws

For best results when screw fixing Strandfloor® products ensure the panel is in contact with the joist when installing the screw. Drive the head of the screw not more than 2mm below the surface.

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C7.5.2 Hand nailing will generally give the best result as more control can be exercised. The best possible result will be achieved with the proper use of annular grooved hand driven nails used in conjunction with adhesive.

C7.5.3 Care should be taken when retightening screws, as heads are liable to shear, particularly if rusting has occurred.

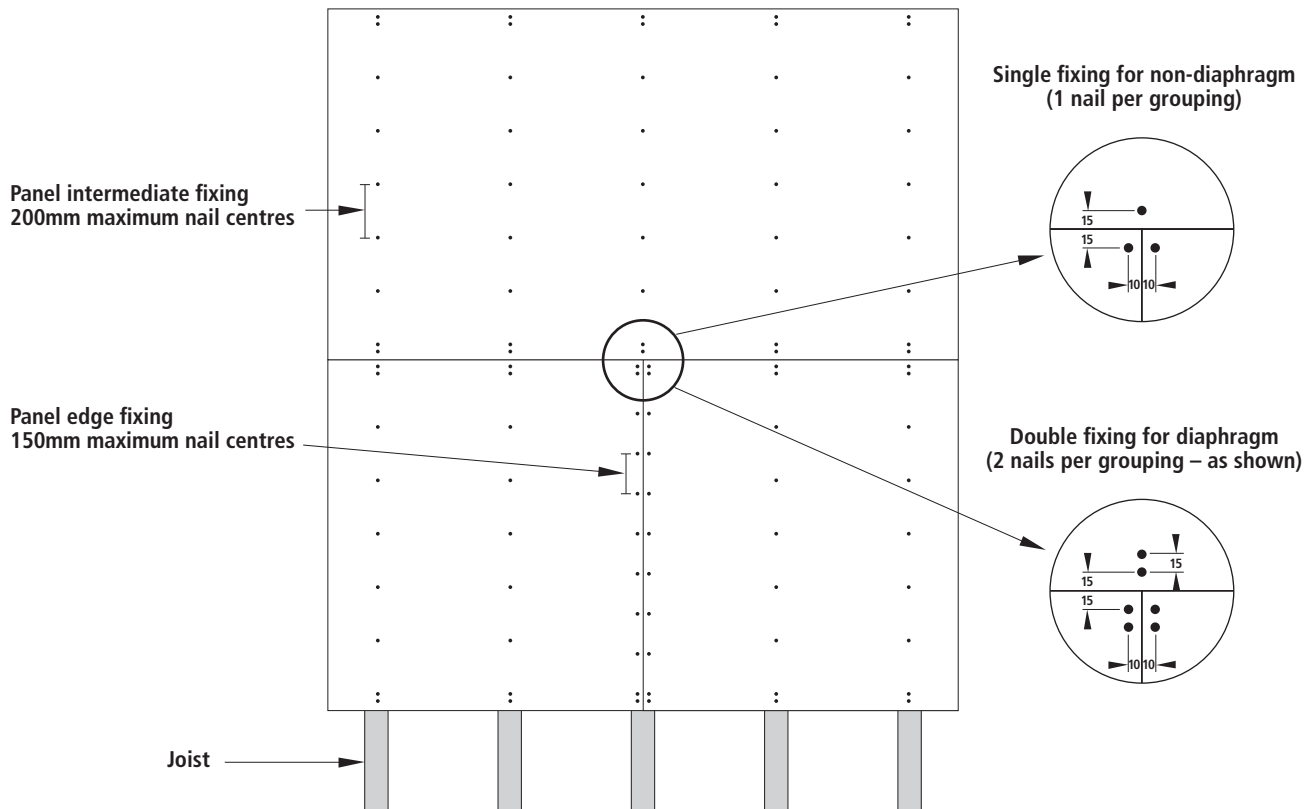
7.6 Diaphragm floors

Specific types of fasteners are suitable for fixing diaphragm floors, including screws and hybrid fasteners. Refer to Table 7.3 on page 24 for details of acceptable fastener types.

Square Edge panels - there are no restrictions or additional fixing requirements when using Strandfloor® Square Edge panels to form a diaphragm.

Tongue & Groove panels - When using Strandfloor® Tongue & Groove panels to form a diaphragm, joist spacings must not exceed 450mm centres. In addition to the standard nailing, extra nails, as shown in figure 7.6, are required along the long edge placed 30mm back.

Figure 7.6



7.7 Double layer installation

The bottom layer of Strandfloor® shall be laid as for single layer flooring panels.

The top layer shall be laid in a similar pattern with edges of panels offset in each direction from the bottom layer edges.

All panel ends shall be located centrally over joists or blocking to ensure positive fixing and nail length increased to 75mm.

When installing a double layer flooring system, allow for the installation of the second layer after closing in and when all sub-trade work is completed. This will provide a clean unweathered surface for clear finishing.

Moisture content of the first layer must be at 15% or below before the second layer is installed.

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7.8 Avoiding “squeaking and creaking”

Since the 1960s when reconstituted wood flooring was introduced, the panels have been laid on “green” floor joists.

The drying out of this timber is a major cause of panel movement that can lead to a noisy floor.

Strandfloor® itself does not create noise, but common causes of creaking or squeaking floors are:

- o Poor alignment of the joists bearing surfaces, creating gaps resulting in uneven stress on fixings.
- o Shrinkage as the joists dry out – timber shrinks across the grain, leaving a gap between the underside of the sheet and the top of the joist.
- o Using long span joists which allow the floor to deflect more and creak at the solid blocking fixings.
- o Insufficient and loose strutting or blocking of the joists.
- o Swelling of the Strandfloor® panels exposed to the weather. Swollen edges of the panel may not bear tightly on the joists when they dry. Sanding may level the thickened edge, but this does not rectify the underside. Nails shall therefore be punched and/or screws re-tightened just prior to sanding.
- o Insufficient fixings holding the panels to the support system.
- o Panels not being fully fixed down when laid.
- o Foot traffic in the house working the panels down the shank of the nails onto the top of the joists often leading to squeaking as the nail shafts work in the Strandfloor® panels.
- o Power fastenings being over-driven into the panel core.
- o Hand fixed nailing being punched off at the initial fastening stage with no allowances made for any subsequent movement as drying of materials occurs.
- o Fastenings being positioned too close to the panel edges.

The following good practice will help to avoid a noisy floor:

- o When possible, use dry joists.
- o For new buildings, reduce the joist span or increase joist depth to reduce deflection (prop green long span joists at mid span until they are dry).
- o Consider the use of an engineered floor system.
- o Level the joist tops before laying the flooring panels.
- o Ensure dry solid blocking or herringbone strutting is fitted tightly to stiffen floor in accordance with NZS 3604.
- o If using solid blocking fit as late as possible so that joists are drier and shrinkage will be less.
- o Herringbone strutting is preferred as it can be tightened from the underside after timber is dry and before ceilings are fixed to upper floor joists.
- o Lay flooring panels with staggered joints.
- o Don't cramp flooring panels tightly together.
- o Drive fastenings flush with the top surface of the board at time of laying.
- o Leave punching of nails and/or re-tightening of screws as long as possible.
- o Use adhesive/nail fixing system where possible and completely nail off at time of laying.

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8 Flooring overlays

8.1 General

Laminex New Zealand® manufactures or distributes a range of panel products suitable for overlaying existing concrete and wooden floors for commercial and domestic requirements.

There is a panel suitable for most flooring overlay applications, including:

- o All Strandfloor® products
- o Lakepine® MDF
- o Strandboard®
- o Trade Essentials® Hardboard

This section is specific to Strandfloor®, for others refer to individual publications.

All other sections of this manual apply equally to this section.

Overlays are only intended for interior use and should not be exposed to weathering. The fixing of overlays should not be carried out until the structure is closed and the substrate is waterproof and dry.

8.2 Uses

Overlays can be used for:

- o Refurbishing uneven and damaged tongue and groove wooden floors.
- o Re-leveling damaged and uneven concrete floors in commercial premises prior to laying carpet, vinyl, parquet or floor tiles.
- o Upgrading of school and community halls, gymnasium floors and stages, to meet the requirements for dancing, indoor bowling and other sporting activities.
- o Structural upgrades of wooden flooring in existing commercial buildings.
- o As a substrate for solid timber tongue and groove overlays.

8.3 Pre-conditioning

To ensure equilibrium of product, panels should be conditioned (left separated and standing vertically) in the installation location for at least 48 hours, prior to commencing fixing.

8.4 Direct floor overlay

Full spread adhesives recommendations*

- o SikaBond® T-55 Flooring Adhesive
- o Gorilla MS Flooring Adhesive
- o Ardex AF-480

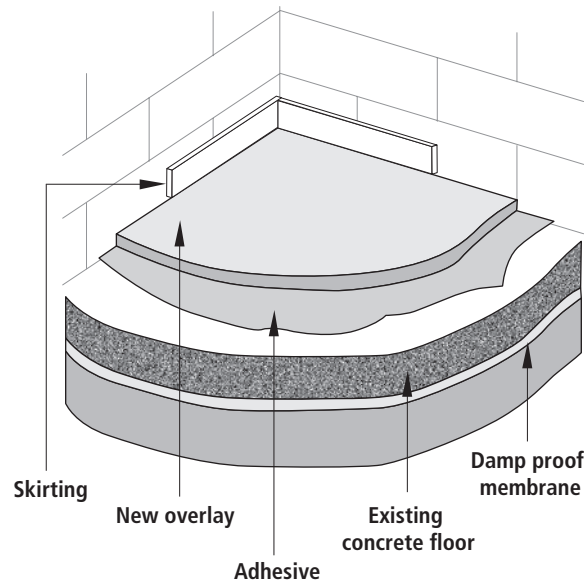
*Refer to adhesive manufacturer's technical literature for application instructions.

All Strandfloor® products may be attached directly to existing concrete or timber floors. (refer figure 8.1).

The use of Strandfloor® Tongue & Groove panels will control long edge differential movement, and improve panel hold down when direct overlaying.

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Figure 8.1



8.4.1 Timber substrates

For best results when direct overlaying, use a combined nail/full spread adhesive method. This eliminates any tendency for “drumming” in the new floor. A construction adhesive is recommended and should be applied as a full spread, to the manufacturer’s instructions.

Existing tongue and groove wooden floors shall be refixed and repunched as applicable, and then coarse sanded to provide a flat substrate. Ensure that there are no protruding nails prior to machine sanding.

When overlaying a tongue and groove timber floor, or existing particleboard floor, ensure that the joints in the new panels do not occur directly above parallel joints in the base floor.

All clearances, fastening and finishing detail applies equally where described elsewhere in this manual.

8.4.2 Concrete substrates

For best results when direct overlaying onto concrete, use a full spread adhesive method. This reduces panel movement and “drumming”.

Mechanical fixing of direct overlays on concrete floors should be avoided.

A construction adhesive is recommended and should be applied as a full spread, to the manufacturer’s instructions.

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C8.4.1 Refer section 7 – Installation, for fixing specifications.

C8.4.2a Concrete waterproofing additives do not guarantee a dry substrate. A membrane is the only safe solution.

C8.4.2b BRANZ Bulletin No. 585 “Site Measurement of Moisture in Timber and Concrete”, describes the whole process and how measurements shall be taken.

Localised defects in the existing floor (i.e. exceeding 5mm undulations per 3m in any direction) shall be matrix filled to a leveled surface as applicable, and high spots ground flat.

The prepared floor surface shall be clean, sound and dust free.

New and old concrete floor slabs shall be dry before laying. As a guide for new concrete, allow one-month drying time per 25mm of floor slab thickness.

There are a number of "rule of thumb" methods to determine if concrete is sufficiently dry to install overlays. The only true method is to measure the relative humidity of the concrete surface, using a flooring hygrometer. (refer figure 8.2).

The reading shall be below 70% before the laying of Strandfloor® can be considered.

Substrates shall be free from wax, oil, moisture, grease, dirt and dust or loose material.

Construction joints shall be formed in the overlay to coincide with those in the concrete substrate. Bridging construction joints is not recommended.

Before applying adhesive the floor shall be vacuumed clean and wiped over with a damp mop.

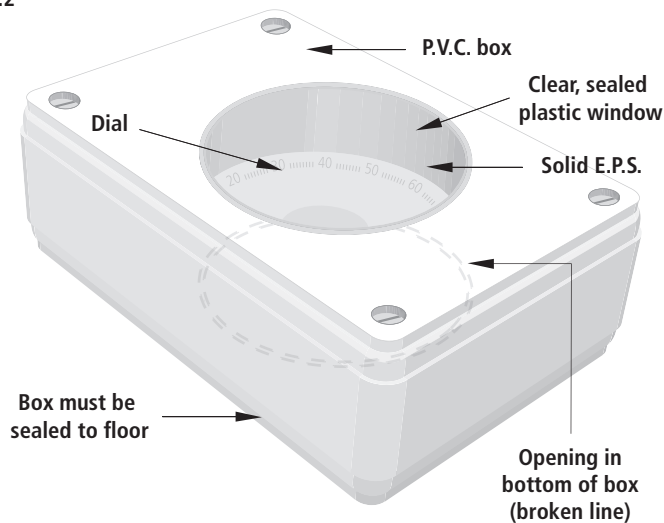
Apply full spread adhesive to the manufacturer's specifications.

All clearances, fastening and finishing details apply equally where described elsewhere in this manual.

Temporary even pressure (e.g. sandbags) should be laid over the floor area until the adhesive has cured. Pay particular attention to square-edged panel intersections, where it is necessary to eliminate surface differentials.

Prohibit traffic over the new floor until the new adhesive is fully cured as recommended by the adhesive manufacturer.

Figure 8.2



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C8.4.2c The adhesive shall be full spread. Spot or bead application may lead to "drumming".

8.5 Indirect floor overlay

All Strandfloor® products can be used for indirect overlays, up to spans of 600mm.

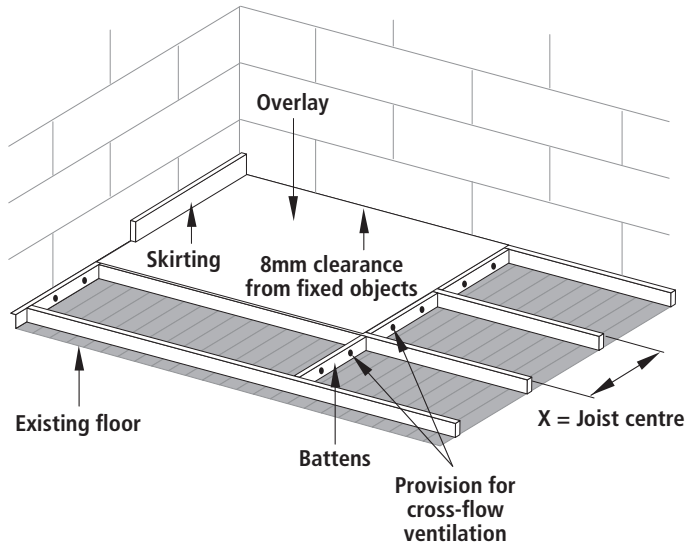
Flooring panels are fastened to timber battens fixed to the existing concrete or timber surface, dependent on end application (Square Edge or Tongue & Groove). (refer figures 8.3 and 8.4).

Indirect overlaying of concrete, with tongue and groove product, allows for services to be installed within the cavity and specialist sprung floors can be accommodated. (refer figure 8.4).

Increased floor stiffness will be achieved when closer support centres are used.

The use of Strandfloor® Tongue & Groove panels will accommodate better cross-flow ventilation.

Figure 8.3

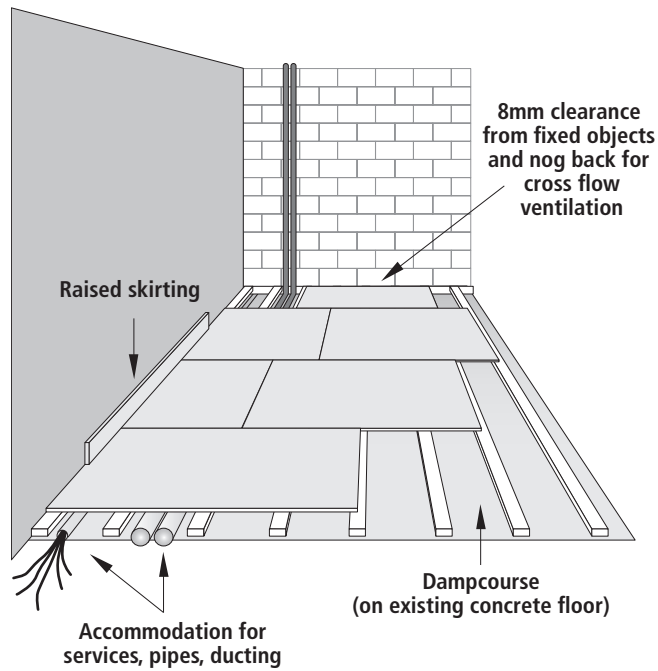


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C8.5a Refer section 5 - Floor design, for all joist spacings.

C8.5b BRANZ Bulletin No. 585 "Site Measurement of Moisture in Timber and Concrete", describes the whole process and how measurements shall be taken.

Figure 8.4



Provision shall be made for cross flow air change within the new floor cavity especially when overlaying concrete substrates. (refer figure 8.3).

Where large floor areas are to be installed, effective cross flow ventilation between battens is essential and a surface moisture barrier may be required.

New and old concrete floor slabs shall be dry before laying and the use of a hygrometer is essential.

The reading shall be below 70% before the laying of Strandfloor® can be considered.

Ensure battening accommodates any excessive sub-floor undulations and ensure "hold downs" are secure.

Sub-floor framing moisture content shall not exceed 18%.

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9 Finishing

9.1 General preparation

Strandfloor® flooring panels provide an ideal substrate for most types of floor finishes. All floors will require sanding prior to covering or coating.

No Strandfloor® material shall remain in a permanently raw unfinished condition. After the building is completed and before occupation panels shall be finished with floor coverings such as carpet, sheet vinyl, ceramic tiles etc, or a coating system.

Table 9.1

Floor sanding			
Surface finish	Cut	Sander type	Paper grit
Clear coating	First	Drum	60 – 80
	Second	Disc	100
	Third	Disc	120 – 150
Other finishes	Single		60 – 100
(carpet, vinyl, wet area membranes etc.)			

Prior to applying floor finishes nails shall be punched or screws retightened. All panels should be sanded in line with table 9.1.

Excessive sanding of Strandfloor® or using too coarse a paper will reduce the thickness of the panel thereby affecting the structural strength of the panel.

9.2 Dry areas

The following applies to areas that are not supplied with water from a water supply system:

9.2.1 Sheet vinyl and vinyl planking

- o The moisture content of panels shall be checked prior to laying of vinyl. The maximum moisture content shall not exceed 15% especially at panel edges before any finishing takes place. Covering of Strandfloor® with higher moisture content can result in an unsatisfactory visual appearance owing to panel shrinkage as it dries out over a period of time.
- o Carefully sand the entire floor area as required in table 9.1.
- o Prior to the application of sheet vinyl either a flexible floor leveling underlayment for wooden floors, or sheet underlayment as per vinyl suppliers technical data, shall be applied to the surface of the panels. Always refer to the vinyl manufacturers technical data for installation of underlayment.

9.2.2 Carpet

- o Carefully sand the entire floor area as required in table 9.1.

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C9.1a Refer section 11 – Health and safety.

C9.2.1a Consider effects of moisture in the structure. Refer to section 5.7 - Supporting timber.

9.2.3 Clear finish

- o Where a premium finish is required post laying of the Strandfloor® should be considered.
Note: Strandfloor® Square Edge is Made To Order (MTO) and a Minimum Order Quantity (MOQ) is required.
- o When clear coating use only Strandfloor® Square Edge product.
- o Hand-driven nailing will usually give a better finish than power-driven nails.
- o Panel sizes and batch numbers should not be mixed if an overall uniform appearance is desired.
- o Flooring intended for clear finishing shall be kept clean and free from staining, soiling and abrasion.
- o When clear finishing large floor areas, e.g. halls and gymnasiums, etc. post laying of the floor is recommended.
- o Clear finishing is not suitable in wet areas (refer to NZBC E3/AS1).
- o The moisture content of panels shall be checked prior to coating. The maximum moisture content shall not exceed 15% especially at panel edges before any finishing takes place. Coating of Strandfloor® with higher moisture content can result in an unsatisfactory visual appearance owing to panel shrinkage as it dries out over a period of time.
- o Clear coatings should provide protection in normal domestic building applications for a limited period. The clear coating manufacturer's application instructions shall be strictly followed and their requirements for periodic recoating shall be adhered to.

The following sequence is required for clear coating:

- o Ensure floor panels are dry, at or below 15% moisture content.
- o Punch nails just prior to sanding.
- o Fill nail holes with a compatible filler colour matched to the Strandfloor®.
- o Carefully sand the entire floor area as required in table 9.1.
- o Remove dust from the entire floor surface and skirtings by broom and vacuum cleaner.
- o Apply the first coat of polyurethane in accordance with the manufacturer's instructions.
- o Sand and apply further coats as required by coating manufacturer.
- o At all times strictly follow the coating manufacturer's instructions.

9.2.4 Sports court markings

It is recommended that painted court markings be carried out prior to clear finishing and follow the requirements of the final coating manufacturer.

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C9.2.3b This is to ensure that timber nogs are used to support edges – if Tongue & Groove product is used cracking of surface coatings may eventuate due to slight differential movement.

C9.2.3d This will ensure that shading between panels does not occur – identification numbers printed on one face of the panels are batch numbers.

C9.2.3g Refer definition 9.3 – Wet areas.

C9.2.3i Best results are achieved when specialist applicators carry out the work. Should any imperfections appear in panel surfaces during coating, cease work and contact the panel supplier or the coating manufacturer.

9.3 Wet areas

The long term performance of Strandfloor® will be affected if exposed to moisture for prolonged periods. StrandfloorH3.1® provides additional protection where accidental wetting may occur and therefore is recommended to form the wet area platforms. It is not intended that Strandfloor® products in general get wet once the structure is closed in and water tight. It is therefore essential that protection is provided to the surface in all wet areas.

9.3.1 Definition

A wet area is any area within a building supplied with water from a water supply system, e.g. kitchens, bathrooms, toilets, shower rooms, laundries, changing rooms, en-suites etc.

9.3.2 Impervious surface finish

In wet areas, Strandfloor® panels shall be covered with a floor covering or finish that is impervious (i.e. does not allow the passage of moisture).

While Acceptable Solution E3/AS1 provides a list of impervious surface finishes that meet the requirements of the NZBC, Laminex New Zealand® believe that the laying of an appropriate (1) wet area membrane in accordance with the Code of Practice for Internal Wet Area Membranes prior to the installation of any decorative surface, is best practice to ensure the Strandfloor® will remain dry for the life of the structure.

The installation of an appropriate wet area membrane shall be in accordance with the manufacturers' recommendations. As with the vinyl covering, the membrane shall be returned up the wall at least 75mm. Where appropriate, the membrane shall be returned up the vertical front face of any fixture. If not appropriate, the membrane shall continue under the fixture and return up the wall at the room perimeter.

It is strongly recommended that floor drains be installed wherever possible to control the affect of any accidental flood. Critical areas for the inclusion of a floor drain include: under dish washers, in laundries and where spa baths are installed.

Care must be taken to ensure all pipes and penetrations through the vinyl or wet area membrane are fully sealed to eliminate any seepage through to the Strandfloor®. The inclusion of an appropriate wet area membrane will allow for most decorative floor finishes to be considered as the finished surface of Strandfloor®. This includes but not limited to ceramic and stone tiles, strip timber, planked vinyl, vinyl tiles, carpet, cork tiles, laminate flooring and sheet vinyl that is not coved or finished with heat welded joints.

Where alternative coverings are laid over an appropriate wet area membrane, compatibility between the two products must be checked. At no time must the decorative surface material compromise (puncture) the wet area membrane.

Maintenance recommendations as prescribed by the vinyl or wet area membrane manufacturers must be adhered to.

The particular clause – 9.2.1. Sheet vinyl – applies equally to “wet areas”.

Please note: As with other floor coverings the moisture content of the Strandfloor® must not exceed 15%, especially at sheet edges, at the time the vinyl or wet area membrane is installed.

9.3.3 Impervious coatings (polyurethane / paint)

Polyurethane and other liquid coatings such as paint, are not considered an impervious coating under NZBC E3/AS1.

If a Strandfloor® appearance is desired a waterproof membrane shall be applied to the structural StrandfloorH3.1® layer and 12mm Strandboard or 20mm Strandfloor® overlay installed. (refer to section 8, flooring overlays for flooring overlay installation details).

(1) An appropriate wet area membrane is one that complies with AS/NZS 4858 or which carries a current BRANZ Appraisal (see BRANZ web site www.branz.co.nz for the current list of appraised wet area membranes).

10 Maintenance

10.1 Ongoing maintenance

The occupier or owner, throughout the life of the building, shall maintain the following specific areas:

10.1.1 Floor coverings

- o Floor coverings in wet areas, shall be maintained to ensure water cannot penetrate through to the Strandfloor®. To ensure long-term performance of the flooring, the surface protection system shall be repaired at any sign of damage.
- o Other floor coverings and coatings shall be maintained to ensure the Strandfloor® surface is protected.
- o Floor wastes shall remain unobstructed and drain to the outside of the building.

10.1.2 Sub-floor space

- o The sub-floor space shall continue to receive ventilation throughout the life of the building.
- o Air vents in the foundation enclosure perimeter of the building shall not be obstructed by shrubs and gardens, etc. or any building extensions including decks. Building extensions shall allow for the continued compliance with sub-floor ventilation requirements.
- o Vapour barriers required to provide adequate moisture control in the sub-floor areas shall be maintained in an effective condition.
- o Clothes drier vents or steam vents shall not be allowed to exit into the sub-floor space. All relief valves or overflow pipes shall discharge outside of the building.

10.2 General precautions

- o Strandfloor® shall not be re-exposed to weather during renovations or extensions.
- o Where heavy floor loads are intended such as iron-framed pianos or billiard tables, etc. professional engineering advice should be sought to avoid undesired deflection or surface failure.

10.3 Accidental flooding

- o In any area where accidental flooding may occur, such as where water holding whiteware appliances are installed, a floor waste is recommended.
- o If for any reason flooding should occur, care shall be taken to ensure that the panels can dry out quickly. Removal of carpets or other loose laid floor coverings may be necessary and the slitting of the under floor foil, to ensure water is not trapped in the drape, may also be required.
- o It is essential that air be allowed to circulate around the panels and the replacement of floor coverings etc. shall not be considered until the Strandfloor® is below 16% moisture content.

If required, Laminex New Zealand® will test samples to verify continued fitness for use.

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11 Health and safety

11.1 Working conditions

Health and safety precautions shall be taken when working with wood panel products.

- o Occupational exposure to wood dust from any timber has been classified as hazardous. Wood dust is classed as a known carcinogenic to humans and its inhalation over many years increases the risk of nasal cancers. Similar exposure to uncontrolled wood dust can lead to allergic reactions such as dermatitis, asthma or chronic eye, nose and throat irritation in some people. Common symptoms of wood dust irritation are nasal discharge, dry or sore nose/throat, blocked, bleeding or itchy nose, sneezing, catarrh or coughing.
- o Work areas shall be well ventilated and kept clean.
- o Strandfloor® has been manufactured with polymeric diphenylmethane diisocyanate (pMDI) as a resin. This remains in the finished board in the form of polyurea or polyurethane. Evidence suggests that this causes no health effects in the normal population.
- o The resin used to manufacture Strandfloor® is non-formaldehyde based. Despite that, low levels of formaldehyde gas naturally present in the wood may be released from the product under some conditions. Formaldehyde is classified as a known carcinogen. However, in well ventilated areas the concentration of formaldehyde is unlikely to exceed the World Health Organisation Standard of 0.1 ppm for the general environment. The product is classified as Super E Zero (SE0) when tested in accordance with AS/NZS 4266.1: 2017 Formaldehyde Emission - Desiccator Method, similar classification as solid untreated wood.
- o Work areas must be well ventilated and kept clean. Sawing, sanding and routing equipment should be fitted with dust extractors such that dust levels are kept within standards outlined by Worksafe Australia, Worksafe New Zealand or the specific country of use. If not, wear a Dust Mask conforming with AS/NZS 1715 and AS/NZS 1716 and eye protection conforming with AS/NZS 1337.
- o Offcuts, shavings and dust shall be disposed of in a manner that avoids the generation of dust and in accordance with the requirements of local waste authorities.
- o In end use applications all product surfaces exposed to occupied space shall be sealed. In end use applications all product surfaces exposed to occupied space shall be sealed.

11.2 Safe working practices

- o Never use a power saw in a poorly ventilated area.
- o Always use M class extractor unit as a minimum.
- o Always use an approved sharp sawblade when cutting wood panels.
- o Always follow tool manufacturers' safety recommendations.
- o Always wear an approved properly-fitted approved dust mask (P1 or P2).

11.3 Formaldehyde

11.3.1 Control

When installed, emission levels can be controlled by room ventilation and covering of the surface. The surface shall be sealed or covered with a coating system or alternatively, with a floor covering such as foam-backed carpet, carpet with rubber underlay, sheet vinyl or ceramic tiles.

Sealing or covering of the surface shall be carried out before the building is occupied.

When it is anticipated that the building may be closed for long periods of time, "trickle" ventilators shall be provided.

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11.3.2 Formaldehyde facts

Formaldehyde is a clear, naturally occurring gas, which is given off by plants, animals and human beings as part of the normal life process.

Formaldehyde is used in a wide range of consumer products and scientific and industrial processes. Formaldehyde is biodegradable, being destroyed by exposure to the atmosphere and by biological processes in soil and water, plants, animals and human beings.

Because some people can react to low levels of formaldehyde exposure, all possible sources of emissions in homes should be checked.

Among the factors which can lead to a build-up of formaldehyde levels in some homes are:

- o Unsealed or uncovered reconstituted wood flooring.
- o Unpainted or unsealed reconstituted wood products such as door jambs, scotias and skirting boards, doors and plywood.
- o Unpainted or unsealed furniture made out of reconstituted wood products like cupboards, chests of drawers and kitchen and laundry units.
- o Thermal backed curtaining and upholstery.
- o LPG-Fuelled heaters and cookers (unflued).
- o Cooking with hot oil.
- o Cigarette smoke.

11.3.3 Risks

Formaldehyde is a natural gas, which will break down when exposed to the atmosphere, but in confined spaces this dissipation is slower.

Formaldehyde is irritating to the nose and throat, eyes and skin. Some people are hypersensitive to formaldehyde and experience allergic reactions resembling asthma. They also experience runny noses and skin reactions.

11.3.4 Detecting formaldehyde

Air-borne formaldehyde is detectable by smell at about 0.3 – 0.4 parts per million (ppm) and at this level may cause mild eye irritation for some people.

At 0.5 ppm some people notice a mild effect in the throat. At 1.0 ppm and over, watering of the eye begins. At 10.0 ppm, intolerable irritant effects on the nose and throat are felt.

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12 Product warranty

12.1 Strandfloor® warranty information

Laminex New Zealand® (a division of Fletcher Building Products Limited) ("Distributor") confirms the terms and conditions of the Strandfloor® 50 Year Limited Warranty (the Warranty") in respect of the Strandfloor® supplied by the distributor to you.

When stored, handled, installed and maintained in accordance with the Strandfloor® Technical Manual that is current at the time of installation, Strandfloor® will meet the durability requirements of the New Zealand Building Code (NZBC) B2.3.1(a) and has a serviceable life of at least 50 years.

Laminex New Zealand® will not be liable to any persons if the conditions as to storage, handling and installation and maintenance of Strandfloor® panels as outlined within the Strandfloor® Technical Manual are not complied with. It is the obligation of the installer of the Strandfloor® to convey this information to the relevant owner / occupant.

If you have any questions, or in the unlikely event of a problem with Strandfloor®, please contact Laminex New Zealand® Customer Services. Contact details are at the bottom of this page.

Strandfloor® Technical information is available from Strandfloor® stockists. Refer to website for warranty. For more information visit laminex.co.nz or call 0800 303 606.

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VISIT US

laminex.co.nz

CALL US

0800 303 606

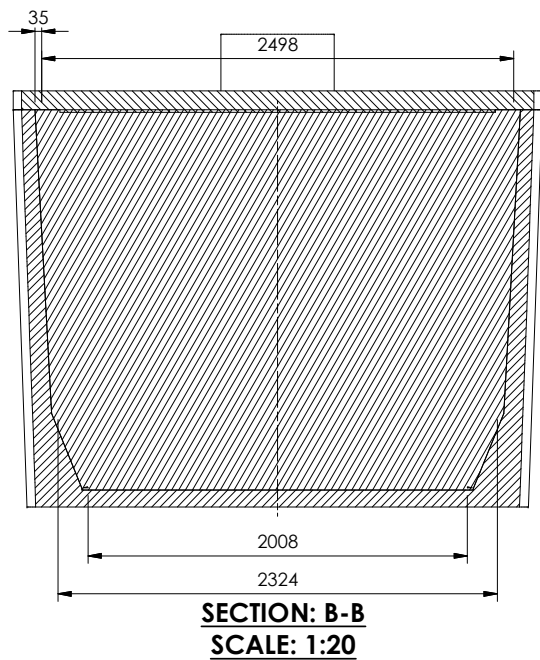
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Laminex®
NEW ZEALAND

TOTAL VOLUME (60mm THICK PARTITION) = 10,125 LTR



ISOMETRIC VIEW

[illegible]



INSTALLATION GUIDELINES FOR THE 10,000 LTR WATER TANK

IMPORTANT NOTES:

- Ensure that the inlet to your tank is lower than your lowest stretch of spouting. An additional fall may be necessary depending on the distance between the source of the water (house roof) and your tank.
- Suitable site access is the responsibility of the purchaser. Check that there are no overhead wires, branches, buildings, gate posts or other obstacles blocking access to the loaded delivery truck. The transport contractor will take every care not to damage property but will not be responsible for damage caused due to restricted access.
- Make sure the ground is firm enough to take the weight of a loaded truck. If you have any doubts raise them with us before delivery.
- Make sure there are no holes, drains or septic tanks etc. that the truck could fall into when delivering your tank.
- If you intend backfilling, partially burying your tank you should inform us of this when placing your order. The tank can then be manufactured to take the additional stresses placed on it.
- Buried applications- any tanks installed 800mm below ground could require a specific design to avoid potential hydraulic uplift of the tank. Please refer to engineer for specific design criteria.
- On the day of installation of partially buried tanks (up to 2.1m). It is critical that the tanks are filled completely with water not exceeding the overflow point until it is installed, to prevent floatation from occurring. The tanks should remain full until connected to the water catchment.
- On the day of installation, it is essential to install and pipe the overflow away from the tank base to prevent undermining on the site or you will void all warranty.

INSTALLATION STEPS:

1. Level the ground which will form the base for the tank. Excavate the virgin solid ground. Do not use excavated material to achieve a level platform. The tolerance allowed is 40mm.
2. The base should be a 3.6 meters x 3.6 meters square hole x 2.15m Depth for 3m ø tanks.
3. Add hard fill (base course) and compact with a compactor. Compact to a depth of 100mm thick. The tolerance to be within 15mm.
4. Add 7mm GAP granular fines as bedding material- this should be 75mm thick. Do not compact, this should be screeded to within 5mm tolerance over the entire base.

PLEASE NOTE: it is up to the installer to check all heights are correct and suitable for the purpose at the point of installation.

Product may vary on given values.

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Phone 0800 253 273 Fax: 06 353 3020

Email: admin@wrighttanks.co.nz Web: www.wrighttanks.co.nz

PO Box 4777, Palmerston North, 4442



SITE PREPARATION:

- Foundations must be 'good ground' in accordance with NZS3604.
- The site for your tank must be free of all solid objects (rocks, tree stumps, roots etc.) and be flat, level and consistent across the tank base to allow the tank to sit evenly. This can be achieved by using a level and straight edge, laser level or similar method.
- An uneven foundation base will result in the tank being 'off plumb'.
- Correct site preparation is critical in order to transfer the weight of the tank and water to the prepared foundation.
- Uneven weight transfer will result in failure of the tank base and therefore will not be covered by warranty.

WARRANTY TERMS AND CONDITIONS**CONDITIONS OF WARRANTY:**

- Tank warranty will be voided unless site preparation is carried out by a Wright Tanks approved earthworks contractor or Wright Tanks themselves.
- If installation guidelines are not followed and site preparation is not adequate full install prices will be charged to rectify.
- Wright Tanks accepts no liability for damage caused due to improper site preparation and incorrect site situations that are outside our requirements and recommendations. (Refer to site preparation).
- Liability of Wright Tanks products is limited to the repair, or if necessary, replacement of the concrete tank concerned. The decision to repair or replace the tank lies exclusively with Wright Tanks Ltd.

THIS WARRANTY DOES NOT COVER:

- Damage caused after delivery resulting from poor or inadequate site preparations.
- Tanks that are not placed directly on to a prepared tank site at the time of delivery.
- Damage caused during transportation or installation
- Moving the tank from its original location
- Undermining of the ground supporting the tank in any way
- Filling of the tank with water past the overflow point before the overflow pipe is fitted.
- Blocked or incorrectly installed overflow pipe. This includes overflow pipe not being installed away from the tank base.
- Installation of the partially buried tanks exceeding the maximum ground level as per our specifications.
- Exceeding of the load capacity on the manhole lid.
- Hydraulic uplift (Floatation)
- Normal wear and tear. Aging
- Negligent or accidental damage that occurs after delivery.
- Failure resulting from natural causes (earthquakes, flooding, ground settlement/subsidence and temperature differential)
- Repairs carried out by unauthorised or unqualified persons.
- Use of a tank for purposes other than for which it was originally intended.
- Site specific water chemistry and its effect on concrete. If you have any further queries regarding your site, delivery of our tank, or require further information on concrete water shortage tanks, please feel free to contact us.

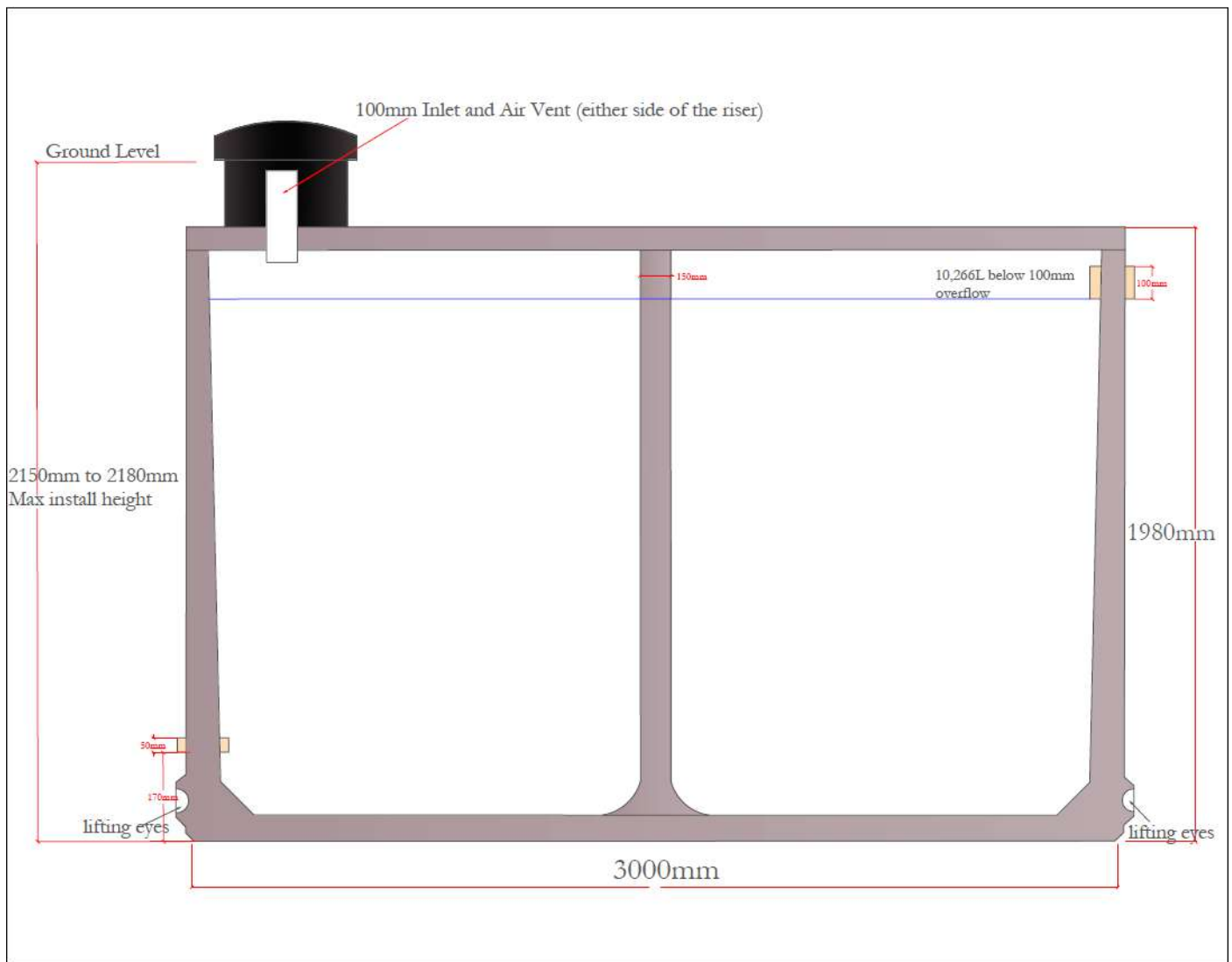
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BRANZ Appraised

Appraisal No. 968 [2023]

VELUX SKYLIGHTS

Appraisal No. 968 [2023]

This Appraisal replaces BRANZ
Appraisal No. 968 [2017]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Velux Skylights are for use on roofs to provide natural light into interior spaces within buildings. Velux Skylights come in two ranges – low-pitch models include the FCM, VCM and VCS series, suitable for use on roof pitches between 0° and 60°, and FS, VS, VSE and VSS series which are for use with roof pitches between 15° and 60°. Some models are openable and can be used to provide ventilation.

Scope

- 2.1 Velux Skylights [FS, VS, VSE and VSS series] have been appraised for use on buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and maximum floor plan area; and,
 - with roof structures designed and constructed to meet the requirements of the NZBC; and,
 - with masonry tile, pressed metal tile, and profiled metal roof cladding systems complying with NZBC Acceptable Solution E2/AS1; and,
 - with a roof pitch between 15° and 60°; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.
- 2.2 Velux Low-Pitch Skylights [FCM, VCM and VCS series] have been appraised for use on buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regard to building height and maximum floor plan area; and,
 - with roof structures designed and constructed to meet the requirements of the NZBC; and,
 - with pitched roof cladding types and profiles and minimum pitches as specified in E2/AS1; or,
 - for use on flat or nominally flat roofs making use of membrane roof systems; and,
 - with a roof pitch between 0° and 60°; and,
 - situated in NZS 3604 Wind Zones up to, and including, Extra High.

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Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Velux Skylights, if designed, used, installed, and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC.

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.3. Velux Skylights meet the requirements for loads arising from snow, wind and impact [i.e. B1.3.3 (g), (h) and (j)]. See Paragraphs 8.1-8.3.

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years. Velux Skylights meet this requirement. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1 and E2.3.2. Velux Skylights meet these requirements. See Paragraph 12.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1 and F2.3.3 (a). Velux Skylights meet these requirements. See Paragraph 7.3.

Clause G4 VENTILATION: Performance G4.3.1 and G4.3.3. Openable Velux Skylights contribute to meeting these requirements. See Paragraph 14.1.

Clause G7 NATURAL LIGHT: Performance G7.3.1 and G7.3.2. Velux Skylights contribute to meeting these requirements. See Paragraph 15.1.

Clause G9 ELECTRICITY: Performance G9.3.1. Velux Skylights meet this requirement. See Paragraph 16.1.

Clause H1 ENERGY EFFICIENCY: Performance H1.3.1 and H1.3.2E. Velux Skylights contribute to meeting these requirements. See Paragraph 17.1.

Technical Specification

- 4.1 Velux Skylights [FS, VS, VSE and VSS series] are a range of fixed and opening skylights which are manufactured from preservative treated softwood frames and sashes, finished on the interior faces with a white semi-gloss paint. External cappings are 'grey friars' coloured PVDF lacquered aluminium.
- 4.2 Velux Low-Pitch Skylights [FCM, VCM and VCS series] are a range of fixed and opening low-pitch skylights which are finished on the interior faces with a white semi-gloss paint. The FCM Low-Pitch Skylight has an aluminium frame to the perimeter of the insulated glazing unit and an integral rubber gasket to seal the unit to the curb. The VCM and VCS Low-Pitch Skylights have aluminium frames and sashes with white PVC interior frames. External cappings for Velux Low-Pitch Skylights are aluminium. All aluminium components of Velux Low-Pitched Skylights are pre-finished with a 'grey friars' coloured PVDF lacquer. Velux Low-Pitch Skylights are primarily suited for use with roof membranes and wide-profile metal roofing. Flashings and roof detailing for Velux Low-Pitch Skylights must be specifically designed in all instances.
- 4.3 The Velux Skylight models covered by this Appraisal are:
- FS / VS / VSE / VSS:
 - Size code range C01-S06, dimension range 550 x 700 mm-1,140 x 1,180 mm.
 - FCM:
 - Size code range 1430-4646, dimension range 488 x 895 mm-1,302 x 1,302 mm.
 - VCM / VCS:
 - Size code range 2222-4646, dimension range 692 x 692 mm-1,302 x 1,302 mm.

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Glazing

- 4.4 VELUX Skylights are factory glazed using sealed double-glazed insulating glass units (IGU's). The IGU's are Type 04 which is the product code on the packaging and is marked on the IGU itself on the spacer bar between the glazing and on the glass panes.
- 4.5 Type 04 units comprise either a 3 or 3.9 mm thick toughened outer pane with a low emissivity (Low-E) coating, a 9 mm argon-filled cavity and a 5.36 mm thick inner pane of laminated toughened safety glass. The outer pane has a coating which is designed to reduce the buildup of dirt and ease cleaning.
- 4.6 The units carry markings to show compliance with American National Standards Institute Standard ANSI Z97.1.

Flashings

- 4.7 EDW, EDL and EKW Flashings are a range of Kynar 500 painted aluminium flashings designed for use with Velux Skylights (FS, VS, VSE and VSS series). Flashings and roof detailing for the Low-Pitch Skylight must be specifically designed and are outside the scope of the Appraisal.

Handling and Storage

- 5.1 Handling and storage of all components of Velux Skylights is under the control of the skylight installer. Components must be kept dry and under cover at all times. Care must be taken to avoid surface damage to the skylight components and flashings during the installation process.

Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
 - Technical Manual - Velux Skylights and Roof Windows - New Zealand - Product: Skylights - April 2020.
- 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

General

- 7.1 Velux Skylights are for use on roofs to provide natural light into interior spaces within buildings. Velux Skylights come in two ranges, low-pitch models include the FCM, VCM and VCS series, suitable for use on roof slopes between 0° and 60°. The FS, VS, VSE and VSS series are appraised with roof slopes between 15° and 60°. Installation of Velux Skylights on roofs with other pitches is outside the scope of this Appraisal and their installation must be specifically designed in all instances.
- 7.2 Velux Skylights are suitable for most existing timber-framed roofs. For such installations, it is important that the roof structure is checked by a suitably qualified person for structural adequacy and suitability of the existing roof cladding.
- 7.3 Velux Skylights meet the safety glass requirements of NZS 4223.4 for sloped glazing up to an installed height above floor level of not more than 5 m *(Note: The installed height means the height to the highest part of the glazing)*.
- 7.4 When installed on new roofs, whenever possible, the installation should be carried out concurrently with the roof cladding installation.

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Structure

Wind

- 8.1 Velux Skylights are suitable for use in NZS 3604 Wind Zones up to, and including, Extra High.

Snow

- 8.2 Velux Skylights are suitable for use in areas where buildings are designed for a 1 kPa snow loading.

Point Loads

- 8.3 Velux Skylights have been assessed for point loads from AS/NZS 1170 for situations where supports should be placed over the surface when access is necessary.

Durability

Serviceable life

- 9.1 Velux Skylights are expected to have a serviceable life of at least 15 years, provided they are maintained in accordance with this Appraisal and the Technical Literature.
- 9.2 On exposure to the weather, the coil-coated aluminium may gradually lose the original surface finish. A faster reduction in both surface finish and overall serviceable life can be anticipated in severe industrial, geothermal and marine exposures.

Maintenance

- 10.1 The internal surface of the glazing on Velux Skylights can be simply cleaned from inside the building where reasonable access is provided. The exterior glass surface of Velux Skylights can only be cleaned from the exterior of the building.
- 10.2 The glazing and external surfaces of the skylights can be cleaned using a mild, non-abrasive glass cleaner along with a soft brush or other non-abrasive applicator to maintain the surface appearance.
- 10.3 Interior surfaces of Velux Skylight models VSE, VS and FS with pre-finished wood frames need to be inspected annually. As with any finished surface, it is subject to peeling, cracking or fading and will need to be re-finished/re-painted periodically. To re-finish/re-paint the skylight interior wood surfaces, prepare the skylight by removing the factory finish.
- 10.4 Keep all leaves clear from around Velux Skylights. Ensure all exposed fasteners are secure. Inspect roofing and flashing for excessive wear or scratches on the roofing finish. Scratches in the cladding finish may be fixed with touch-up paint available through Velux New Zealand Ltd. Damaged claddings or flashings should be replaced as soon as they are detected.
- 10.5 The internal workings of the manual and the Integra electric operators are considered maintenance free over the lifetime of the Velux Skylight. Mechanisms are pre-lubricated and need no additional lubrication. The chains and hinges should be checked and lubricated as required.

Prevention of Fire Occurring

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

External Moisture

- 12.1 Velux Skylights, 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.

Internal Moisture

- 13.1 Experience with double-glazed skylights has shown that in normal domestic or similar applications, the windows do not pose a significant risk of condensation when correctly installed.

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Ventilation

- 14.1 Velux Skylights which contain an openable aperture will contribute to the compliance of a building with NZBC Clause G4. Consideration must be given to the 'net openable area' required for a particular space by the designer. NZBC Acceptable Solution G4/AS1 provides guidance on required ventilation.

Natural Light

- 15.1 Velux Skylights all contain transparent apertures which can contribute to the compliance of a building with NZBC Clause G7. Consideration of the amount of illuminance provided by the skylight for a particular space will depend on a wide range of factors unique to each installation e.g. room size, position, sun orientation, angle, etc. The use of Velux Skylights to supplement natural light from other sources is an Alternative Solution to NZBC Clause G7.

Electricity

- 16.1 Where a new electrical supply is required for Velux opening skylights, the installation must be completed by a Registered Electrician in accordance with New Zealand Electrical Code of Practice NZECP 51.
- 16.2 Electrical safety of the electric skylight operator complies with IEC 60335.

Energy Efficiency

Velux Schedule Method

- 17.1 The Velux Schedule Method may be used as an alternative solution to the Schedule Method contained in the NZBC Acceptable Solution H1/AS1 for housing, and other buildings up to 300 m² in floor area. The Velux Schedule Method requires that:
- the sum of the vertical glazing area and the Velux product area [Velux skylights, roof windows and sun tunnels] is 30% or less of the total wall area; and
 - the combined glazing area on the east, south, and west facing walls is 30% or less of the combined total area of these walls; and
 - the Velux product area is no more than 1.5 m² or 1.5% of the total roof area [whichever is greater]; and
 - the opaque door area is no more than 6 m² or 6% of the total wall area [whichever is greater]; and
 - the roof, wall, floor, window and door glazing R-values are in accordance with section 2.1.2 of NZBC Acceptable Solution H1/AS1.

Calculation and Modelling Methods

- 17.2 Alternatively, designers can use the calculation methods contained in NZBC Acceptable Solutions H1/AS1 or H1/AS2, or the modelling methods contained in NZBC Verification Methods H1/VM1 or H1/VM2. Contact Velux New Zealand Ltd for the relevant product R-values.

Installation Information

Installation Skill Level Requirement

- 18.1 The installation of Velux Skylights must be completed by installers trained by Velux New Zealand Ltd or by competent, experienced tradespersons with an understanding of roof window installation and weathertightness details.

System Installation

- 19.1 Installation must be completed in accordance with instructions given in the Velux Skylights Technical Literature and this Appraisal.

Health and Safety

- 20.1 There are no particular health and safety issues relating to the installation or use of Velux Skylights. Installers must however observe safe working practices for working on roofs and at heights.

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Basis of Appraisal

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

Tests

- 21.1 Velux Skylights have been subjected to dynamic weather resistance testing by a National Association of Testing Authorities (NATA) registered laboratory in Australia. Velux Skylights have also been subjected to dynamic weather resistance testing by BRANZ.

Other Investigations

- 22.1 Velux Skylights have been assessed for resistance to impact loads, snow loads and resistance to wind pressures (non-cyclonic regions). These assessments have been reviewed by BRANZ and were found to be satisfactory.
- 22.2 An assessment was made of the durability of Velux Skylights by BRANZ.
- 22.3 The Velux Schedule Method has been reviewed by BRANZ experts.
- 22.4 Site inspections have been carried out by BRANZ to assess fitness for purpose and the practicability of installation, and to assess in service performance.
- 22.5 Weathertightness detailing of the Velux Skylights has been assessed by BRANZ and found to be satisfactory. Instructions for installation of units and associated flashing components for different roof types have also been reviewed and found to be satisfactory.
- 22.6 The Technical Literature for Velux Skylights has been examined by BRANZ and found to be satisfactory.

Quality

- 23.1 The manufacture of Velux Skylights 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. BRANZ has taken note of Uniform Evaluation Service (UES) Evaluation Report Number 199 which covers quality aspects associated with Velux Skylights. BRANZ has also taken note of ETA Denmark European Technical Assessment ETA-13/0764 of 14/10/2015 which covers Velux Flashings.
- 23.2 The quality of materials, components and accessories supplied to the market is the responsibility of Velux New Zealand Ltd.
- 23.3 Quality of installation on-site of Velux Skylight components and accessories is the responsibility of the installer.
- 23.4 Designers are responsible for building design, and specification of natural lighting and ventilation systems.
- 23.5 Building owners are responsible for any required maintenance of Velux Skylights in accordance with the advice of Velux New Zealand Ltd.

Sources of Information

- ANSI Z97.1:2015 For safety glazing materials used in buildings - safety performance specifications and methods of test.
- AS 4285:1995 Skylights.
- AS/NZS 1170.0:2002 Structural design actions - Permanent, imposed and other actions.
- IEC 60335 Household and similar electrical appliances - safety.
- NZECP 51:2004 New Zealand Electrical Code Of Practice For Homeowner/Occupier's Electrical Wiring Work in Domestic Installations, Ministry of Economic Development, 2004.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4223.4:2016 Code of practice for glazing in buildings - Dead, wind and snow loading.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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In the opinion of BRANZ, **Velux Skylights** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Velux New Zealand Ltd**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

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

For BRANZ



Claire Falck
Chief Executive
Date of Issue:
21 August 2023

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Form 2A:
Memorandum from licensed building
practitioner (certificate of design work)

SECTION 30C OR 45, BUILDING ACT 2004

The building

Street address of building:

The owner

Full name:

Mailing address:

Telephone number:

Email address:

Identification of design work that is restricted building work

I carried out/supervised the following design work that is restricted building work:

Design work that is restricted building work ✓	Building work <i>(If appropriate, provide details of the restricted building work)</i>	Carried out/supervised <i>(Specify whether you carried out this design work or supervised someone else carrying out this design work)</i>	Reference to plans and specifications <i>(If appropriate, specify references)</i>
Primary structure			
<input type="checkbox"/> Foundations and subfloor framing			
<input type="checkbox"/> Walls			
<input type="checkbox"/> Roof			
<input type="checkbox"/> Columns and beams			
<input type="checkbox"/> Bracing			
<input type="checkbox"/> Other			

External moisture management systems

<input type="checkbox"/> Damp proofing			
<input type="checkbox"/> Roof cladding or roof cladding system			
<input type="checkbox"/> Ventilation system (for example, subfloor or cavity)			
<input type="checkbox"/> Wall cladding or wall cladding system			
<input type="checkbox"/> Waterproofing			
<input type="checkbox"/> Other			

Fire safety systems

<input type="checkbox"/> Emergency warning systems, evacuation and fire service operation systems, suppression or control systems, or other			
---	--	--	--

Note:

1. The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.
2. Continue on another page if necessary.

Are waivers or modifications of the building code required?: ☐ Yes ☐ No

If yes, provide details of the waivers or modifications below:

Clause (List relevant numbers of building code)	Waiver/modification required (Specify nature of waiver or modification of building code)

Note:

Continue on another page if necessary.

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(Name of licensed building practitioner who is licensed to carry out or supervise design work that is restricted building work)

Licensed building
practitioner number:

(if applicable)

Registered architect number:

(if applicable)

Chartered professional
engineer number:

(if applicable)

Mailing address:

Street address/registered office:

Telephone number:

Mobile number:

Facsimile:

Email address:

Website:

(if applicable)

Declaration

I,

(name of licensed building practitioner), certify that the design work that is restricted building work recorded on this form:

☐

(a) complies with the building code; or

☐

(b) complies with the building code subject to any waiver or modification of the building code recorded on this form.

Signature:



Date:

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association of
consulting and
engineering

589

589

engineering
new zealand
te ao rangahau

PRODUCER STATEMENT – PS1 DESIGN

BUILDING CODE CLAUSE(S):

JOB NUMBER:

ISSUED BY:

(Engineering Design Firm)

TO:

(Owner/Developer)

TO BE SUPPLIED TO:

(Building Consent Authority)

IN RESPECT OF:

(Description of Building Work)

AT:

(Address, Town/City)

LEGAL DESCRIPTION:

N/A ☐

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We have been engaged by the owner/developer referred to above to provide (Extent of Engagement):

in respect of the requirements of the Clause(s) of the Building Code specified above for Choose an item., as specified in the Schedule, of the proposed building work.

The design carried out by us has been prepared in accordance with:

- ☐ Compliance documents issued by the Ministry of Business, Innovation & Employment (Verification method/acceptable solution) and/or;
- ☐ Alternative solution as per the attached Schedule.

The proposed building work covered by this producer statement is described on the drawings specified in the Schedule, together with the specification, and other documents set out in the Schedule.

On behalf of the Engineering Design Firm, and subject to:

- Site verification of the following design assumptions:
- All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that:

- the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the Schedule, will comply with the relevant provisions of the Building Code and that;
- the persons who have undertaken the design have the necessary competency to do so.

I recommend the Choose one level of construction monitoring.

I, (Name of Engineering Design Professional)

, am:

- ☐ CPEng number

and hold the following qualifications

The Engineering Design Firm holds a current policy of Professional Indemnity Insurance no less than \$200,000

The Engineering Design Firm Choose one a member of ACE New Zealand.

SIGNED BY (Name of Engineering Design Professional):

(Signature below):

Hamish Wells

Digitally signed by Hamish Wells

Date: 2025.02.13 09:35:45 +13'00'

ON BEHALF OF (Engineering Design Firm):

Date:

Note: This statement has been prepared solely for the Building Consent Authority named above and shall not be relied upon by any other person or entity. Any liability in relation to this statement accrues to the Engineering Design Firm only. As a condition of reliance on this statement, the Building Consent Authority accepts that the total maximum amount of liability of any kind arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in tort or otherwise, is limited to the sum of \$200,000.

This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.

SCHEDULE to PS1

Please include an itemised list of all referenced documents, drawings, or other supporting materials in relation to this producer statement below:

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GUIDANCE ON USE OF PRODUCER STATEMENTS

Information on the use of Producer Statements and Construction Monitoring Guidelines can be found on the Engineering New Zealand website

<https://www.engineeringnz.org/engineer-tools/engineering-documents/producer-statements/>

Producer statements were first introduced with the Building Act 1991. The producer statements were developed by a combined task committee consisting of members of the New Zealand Institute of Architects (NZIA), Institution of Professional Engineers New Zealand (now Engineering New Zealand), Association of Consulting and Engineering New Zealand (ACE NZ) in consultation with the Building Officials Institute of New Zealand (BOINZ). The original suite of producer statements has been revised at the date of this form to ensure standard use within the industry.

The producer statement system is intended to provide Building Consent Authorities (BCAs) with part of the reasonable grounds necessary for the issue of a Building Consent or a Code Compliance Certificate, without necessarily having to duplicate review of design or construction monitoring undertaken by others.

PS1 DESIGN Intended for use by a suitably qualified independent engineering design professional in circumstances where the BCA accepts a producer statement for establishing reasonable grounds to issue a Building Consent;

PS2 DESIGN REVIEW Intended for use by a suitably qualified independent engineering design review professional where the BCA accepts an independent design professional's review as the basis for establishing reasonable grounds to issue a Building Consent;

PS3 CONSTRUCTION Forms commonly used as a certificate of completion of building work are Schedule 6 of NZS 3910:2013 or Schedules E1/E2 of NZIA's SCC 2011²

PS4 CONSTRUCTION REVIEW Intended for use by a suitably qualified independent engineering construction monitoring professional who either undertakes or supervises construction monitoring of the building works where the BCA requests a producer statement prior to issuing a Code Compliance Certificate.

This must be accompanied by a statement of completion of building work (Schedule 6).

The following guidelines are provided by ACE New Zealand and Engineering New Zealand to interpret the Producer Statement.

Competence of Engineering Professional

This statement is made by an engineering firm that has undertaken a contract of services for the services named, and is signed by a person authorised by that firm to verify the processes within the firm and competence of its personnel.

The person signing the Producer Statement on behalf of the engineering firm will have a professional qualification and proven current competence through registration on a national competence-based register such as a Chartered Professional Engineer (CPEng).

Membership of a professional body, such as Engineering New Zealand provides additional assurance of the designer's standing within the profession. If the engineering firm is a member of ACE New Zealand, this provides additional assurance about the standing of the firm.

Persons or firms meeting these criteria satisfy the term "suitably qualified independent engineering professional".

Professional Indemnity Insurance

As part of membership requirements, ACE New Zealand requires all member firms to hold Professional Indemnity Insurance to a minimum level.

The PI Insurance minimum stated on the front of this form reflects standard practice for the relationship between the BCA and the engineering firm.

Professional Services during Construction Phase

There are several levels of service that an engineering firm may provide during the construction phase of a project (CM1-CM5 for engineers³). The building Consent Authority is encouraged to require that the service to be provided by the engineering firm is appropriate for the project concerned.

Requirement to provide Producer Statement PS4

Building Consent Authorities should ensure that the applicant is aware of any requirement for producer statements for the construction phase of building work at the time the building consent is issued as no design professional should be expected to provide a producer statement unless such a requirement forms part of the Design Firm's engagement.

Refer Also:

- ¹ Conditions of Contract for Building & Civil Engineering Construction NZS 3910: 2013
- ² NZIA Standard Conditions of Contract SCC 2011
- ³ Guideline on the Briefing & Engagement for Consulting Engineering Services (ACE New Zealand/Engineering New Zealand 2004)
- ⁴ PN01 Guidelines on Producer Statements

www.acenz.org.nz
www.engineeringnz.org

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ROOF AREA - 125m2

TOTAL AREA INCLUDED IN CALCULATIONS - 125m2
INFILTRATION RATE - 350mm/hr

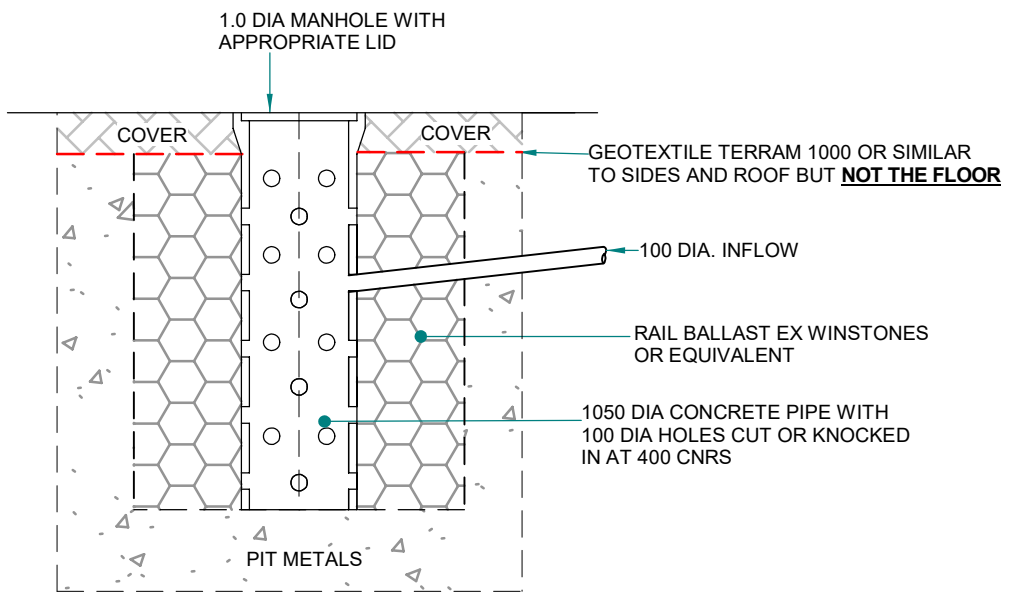
BOULDER TRENCH (SHOWN ON PLANS)

SOAK PIT 2.5m LONG x 2.0m WIDE x 1.5m DEEP
BOULDER LINED SOAK PIT WITH 1 x 1050 DIA
MANHOLE. DEPTH INCLUDES 200mm OF TOP SOIL
OVER BOULDERS

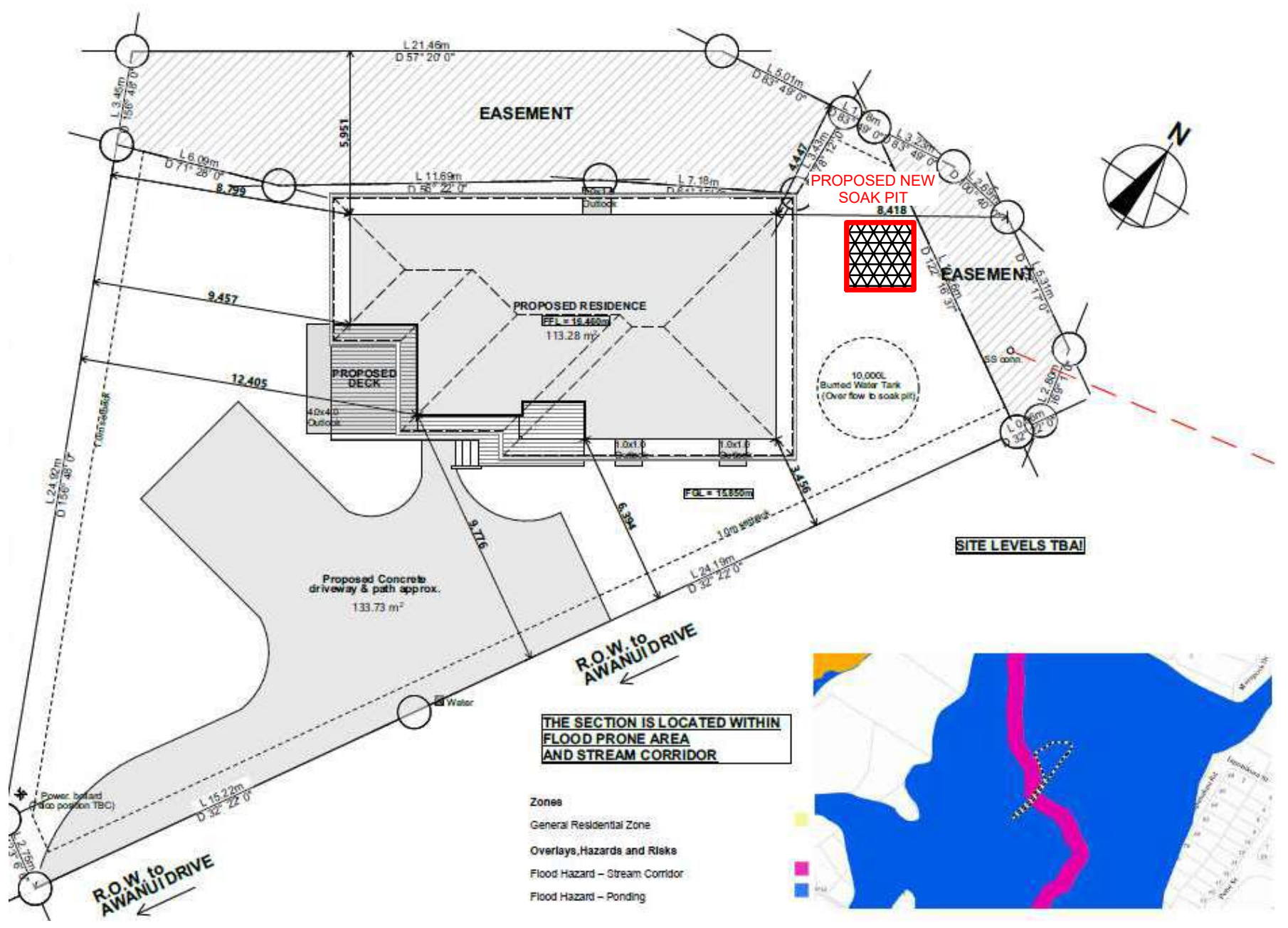
DESIGN TO 1/100 STORM RETURN PERIOD UTILISING
HIRDS RAINFALL DATA

SOAK PITS TO BE A MINIMUM OF 2m OFF FOUNDATION
EDGE AND 1m OFF BOUNDARIES AND CLEAR OF
HARDSTAND AREAS.

CONFIRM ANY CHANGES TO SOAK PIT AREAS WITH
DESIGN ENGINEER PRIOR TO SOAK PIT CONSTRUCTION



BALLAST PIT DETAIL NTS



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Site	62 Awanui Drive, Waikanae	Regional Authority	GWRC
Client	A1 Homes	Period of testing	by others
Territorial Authority	KCDC	Weather	fine
Topography	flat	Groundwater observations	Nil
Ground cover	Grass	Rainfall	1000mm approx
Geology	subdiv fill over river gravels	Site stability	ok
Existing drainage	to ground		
Soil data 1		Category	test bore
Q2a		1	EF depth
			1.5
			test bore diameter
			1

Soil test percolation data

Note: only enter values in the yellow shaded cells!!

line	int min	elap time	water depth	change	diameter	area	V loss	Av depth	p surface	P,l/m2/mn	selected P values	Depth mm	Soil key	Bore data	Soil CAT
1	0	0.0	1.500												
2	5.0	5.000	0.850	0.650	1.00	0.79	510.509	1.18	4.4768	22.81					
3	5.0	10.000	0.500	0.350	1.00	0.79	274.889	0.68	2.9060	18.92					
4	5.0	15.000	0.270	0.230	1.00	0.79	180.642	0.39	1.9949	18.11					
5	5.0	20.000	0.130	0.140	1.00	0.79	109.956	0.20	1.4137	15.56					
6	5.0	25.000	0.050	0.080	1.00	0.79	62.832	0.09	1.0681	11.76					
7	5.0	30.000	0.000	0.050	1.00	0.79	39.270	0.03	0.8639	9.09					
8	5.0	35.000	0.000	0.000	1.00	0.79	0.000	0.00	0.7854	0.00					
9	0.0	35.000	0.000	0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
10	0.0	35.000	0.000	0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					1
11		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
12		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
13		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
14		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
15		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
16		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
17		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
18		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
19		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!					
20		35.000		0.000	1.00	0.79	0.000	0.00	0.0000	#DIV/0!	3000				

sum P	# results	av
64.35	4	16.09
DF		0.25
Des infill		4.02

Average trench soakage is all the floor and half the side wall area

Soak pit design data

line no.	runoff data							soak pit data					Pit										outputs			
	storm return period	storm duration	C runoff coefficient	I rainfall intensity	A for catchment	Q surface runoff	QT	perc rate	trench width	trench length	effective depth	depth from GL	average infiltrative surface including floor	excavated volume	MH volume MHv	effective storage volume	tank effective storage volume	total effective storage volume	Average trench soakage rate	storage volume required	Time for pit to empty	Is there enough storage??				
								P	W	L	Ed	D														
								4.02	2.00	2.50	1.30	1.50														
	years	min		mm/hr	m2	l/s	m3	l/m2/min	m	m	m	m	m2	v	m3	m3	m3	m3	m3	l/s	m3	hrs	T or F			
1	100	10	0.90	131.0	125	4.09	2.46	4.0	2.00	2.50	1.3	1.5	10.85	7.500	1.021	3.103	0.000	3.103	0.73	2.02	0.77	TRUE				
2		20	0.90	90.8	125	2.84	3.41	4.0	2.00	2.50	1.3	1.5	10.85	7.500	1.021	3.103	0.000	3.103	0.73	2.53	0.97	TRUE				
3		30	0.90	73.2	125	2.29	4.12	4.0	2.00	2.50	1.3	1.5	10.85	7.500	1.021	3.103	0.000	3.103	0.73	2.81	1.07	TRUE				
4		60	0.90	50.3	125	1.57	5.66	4.0	2.00	2.50	1.3	1.5	10.85	7.500	1.021	3.103	0.000	3.103	0.73	3.04	1.16	TRUE				
5		120	0.90	33.9	125	1.06	7.63	4.0	2.00	2.50	1.3	1.5	10.85	7.500	1.021	3.103	0.000	3.103	0.73	2.39	0.91	TRUE				
6		360	0.90	17.4	125	0.54	11.75	4.0	2.00	2.50	1.3	1.5	10.85	7.500	1.021	3.103	0.000	3.103	0.73	-3.96	-	1.51	TRUE			
7		720	0.90	11.1	125	0.35	14.99	4.0	2.00	2.50	1.3	1.5	10.85	7.500	1.021	3.103	0.000	3.103	0.73	-16.43	-	6.28	TRUE			
8		1440	0.90	6.9	125	0.22	18.63	4.0	2.00	2.50	1.3	1.5	10.85	7.500	1.021	3.103	0.000	3.103	0.73	-44.21	-	16.88	TRUE			

duration	l/mm/hr by return period Kapiti						
	1yr	2yr	5yr	10yr	20yr	50yr	100yr
10min	38.4	50.4	70.7	84.0	97.0	113.6	126.1
20min	28.8	37.4	50.5	59.3	67.7	78.5	86.5
30min	22.8	29.8	40.7	48.0	55.5	64.1	70.8
1hr	15.8	20.5	27.7	32.5	37.1	43.1	47.5
2hr	11.0	14.3	19.1	22.2	25.3	29.2	32.3
6hr	6.4	8.2	10.8	12.5	14.2	16.2	17.9
12hr	4.3	5.4	6.8	7.9	8.8	10.0	10.8
24hr	2.6	3.5	4.3	5.0	5.6	6.4	7.0

Excavated	floor area	5
Ratio	floor/wall	0.461
%	floor/wall	46.1
Design	SF	1.46

Trench perimeter 5

area	m2	125	A	62
length	m	2.50	L	63
depth	m	1.50	D	64
width	m	2.00	W	65
design perc rate	l/m2/min	4.02	p	66
effective depth in fil	m	1.30	Edp	67
storage tank size	m3	0	sTs	68
effective depth in storage	m	1.30	Eds	69
MHd	m	1	MHv	70
C		0.90		71
# MH's		1		72
Pit fill void ratio	boulders	0.38		73
				74

Hamish Wells
CPEng #186323

duration	l/mm/hr by return period 2100 Wanganui						
	1yr	2yr	5yr	10yr	20yr	50yr	100yr
10min	51.6	72.6	85.8	99.0	116.4	129.0	
20min	37.2	52.2	61.8	71.1	83.4	92.1	
30min	29.6	41.6	49.6	57.2	66.8	74.0	
1hr	19.4	26.5	31.3	36.0	41.9	46.4	
2hr	12.2	15.9	18.3	20.6	23.7	26.0	
6hr	6.1	7.8	8.8	9.9	11.2	12.3	
12hr	3.9	4.7	5.5	6.2	7.0	7.6	
24hr	2.4	3.1	3.6	4.1	4.7	5.2	

duration	l/mm/hr by return period Kimberly ex PB						
	1yr	2yr	5yr	10yr	20yr	50yr	100yr
10min	51.6	72.6	85.8	99.0	102.0	116.4	
20min	37.2	52.2	61.8	71.1	72.0	83.4	
30min	29.6	41.6	49.6	57.2	58.6	66.8	
1hr	19.4	26.5	31.3	36.0	41.2	41.9	
2hr	12.2	15.9	18.3	20.6	27.0	23.7	
6hr	6.1	7.8	8.8	9.9	13.8	11.2	
12hr	3.9	4.7	5.5	6.2	9.0	7.0	
24hr	2.4	3.1	3.6	4.1	5.9	4.7	

HMW Q100 plus GW	K hist Otaki	K RCP2.6 Otaki
119.1	128	138
84.1	81	88
68.4	64	68
48.1	42	45
31.5	28	30
16.1	15	16
10.5	10	10
6.9	6	6

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Soakage Test Services Ltd

23 Pharazyn Ave
Waikanae 5036
ph : 027 290 9797
email: soaktest@xtra.co.nz

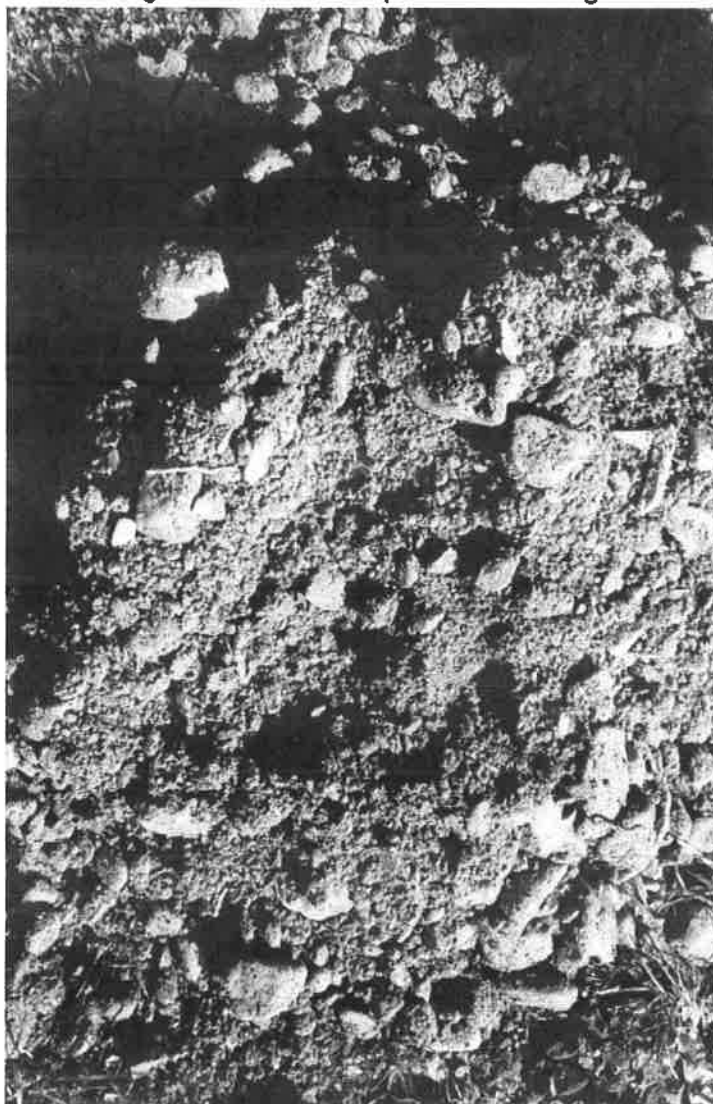
Soakage Test Report

Date : 21 May 2021

Site : 64 Awanui Dr

Test conditions

A test bore was augured through topsoil followed by clay with occasional rocks and transitioning at around 600 deep to coarse river gravels and rocks..



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Date of test: 19 May 2021
Licensed Tester: Ken Pooley
Ground water table: Not encountered
Pre-soak commenced: 10:25 AM
Fill cycle complete: 14:25 using 2285 litres

Test methodology

Soakage Test services testing is conducted via an automated system which controls the pre-soak for the required 4 hour period then switching to timer mode which registers the drop in water level in 50mm increments capturing accurate results in strict accordance with the requirements of VM1.

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SOAKAGE TEST RESULT SHEET

Test Method E1/VM1
 Test ID Test 1
 Address 64 Awanui Dr
 Waikanae
 Client Brad Jefferies
 Test by: Soakage Test Services Ltd

Date test conducted :

Time started :

Location :

Presoak:

19 May 2021

10:25

Lat: -40.864681 Lon: 175.06627

Fill cycle complete: 14:25 Litres: 2285.5*

Pin	Depth of Water in borehole (meters)
Pin 0	0.60
Pin 1	0.55
Pin 2	0.50
Pin 3	0.45
Pin 4	0.40
Pin 5	0.35
Pin 6	0.30
Pin 7	0.25
Pin 8	0.20
Pin 9	0.15
Pin 10	0.10
Pin 11	0.00
Pin 12	0.00
Pin 13	0.00
Pin 14	0.00
Pin 15	0.00
Pin 16	0.00
Pin 17	0.00
Pin 18	0.00
Pin 19	0.00
Pin 20	0.00
Pin 21	0.00
Pin 22	0.00
Pin 22	0.00
Pin 22	0.00

Pin	Time from start of test 't' (seconds)
t1	9.00
t2	49.30
t3	89.90
t4	132.10
t5	180.80
t6	230.50
t7	297.20
t8	383.90
t9	508.60
t10	733.40
t11	0.00
t12	0.00
t13	0.00
t14	0.00
t15	0.00
t16	0.00
t17	0.00
t18	0.00
t18	0.00
t18	0.00
t18	0.00
t18	0.00
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t18	0.00
t18	0.00

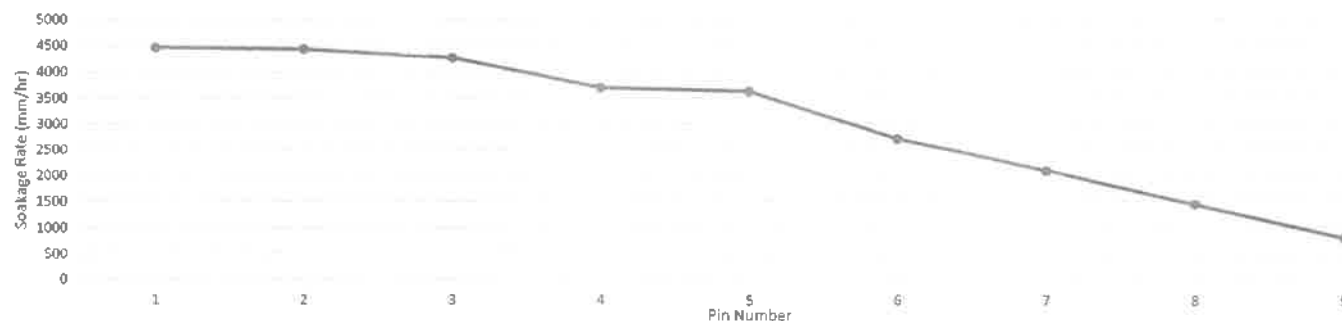
Total time to empty :

Pin	Time between readings 'dt' (seconds)
dt1 = t1	9.0
dt2 = t2 - t1	40.3
dt3 = t3 - t2	40.6
dt4 = t4 - t3	42.2
dt5 = t5 - t4	48.7
dt6 = t6 - t5	49.7
dt7 = t7 - t6	66.7
dt8 = t8 - t7	86.7
dt9 = t9 - t8	124.7
dt10 = t10 - t9	224.8
dt11 = t11 - t10	
dt12 = t12 - t11	
dt13 = t13 - t12	
dt14 = t14 - t13	
dt15 = t15 - t14	
dt16 = t16 - t15	
dt17 = t17 - t16	
dt18 = t18 - t17	
dt18 = t18 - t17	
dt18 = t18 - t17	
dt18 = t18 - t17	
dt18 = t18 - t17	
dt18 = t18 - t17	
dt18 = t18 - t17	
dt18 = t18 - t17	
dt18 = t18 - t17	
dt18 = t18 - t17	

12.2 minutes

Pin	Convert to mm per hour per m ²
20000	50*1000 / dt1 * 60 * 60
4467	(Pin 0 - Pin 1)*1000 / dt2 * 60 * 60
4434	(Pin 1 - Pin 2)*1000 / dt3 * 60 * 60
4266	(Pin 2 - Pin 3)*1000 / dt4 * 60 * 60
3697	(Pin 3 - Pin 4)*1000 / dt5 * 60 * 60
3622	(Pin 4 - Pin 5)*1000 / dt6 * 60 * 60
2699	(Pin 5 - Pin 6)*1000 / dt7 * 60 * 60
2077	(Pin 6 - Pin 7)*1000 / dt8 * 60 * 60
1444	(Pin 7 - Pin 8)*1000 / dt9 * 60 * 60
801	(Pin 8 - Pin 9)*1000 / dt10 * 60 * 60
0	(Pin 9 - Pin 10)*1000 / dt11 * 60 * 60
0	(Pin 10 - Pin 11)*1000 / dt12 * 60 * 60
0	(Pin 11 - Pin 12)*1000 / dt13 * 60 * 60
0	(Pin 12 - Pin 13)*1000 / dt14 * 60 * 60
0	(Pin 13 - Pin 14)*1000 / dt15 * 60 * 60
0	(Pin 14 - Pin 15)*1000 / dt16 * 60 * 60
0	(Pin 15 - Pin 16)*1000 / dt17 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60
0	(Pin 16 - Pin 17)*1000 / dt18 * 60 * 60

Soakage Rate Over Time



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Hamish Wells

Engineer Limited

Civil
Structural
Infrastructure
Land Development
Environmental

206 Otaki Gorge Road, Otaki 5542

CIVIL AND STRUCTURAL ENGINEER INITIAL GEOTECHNICAL ASSESSMENT REPORT

This report identifies soil suitability for the following project and provides a justification of the decision made by the Civil or Structural Engineer that a geotechnical report by a Chartered Professional Engineer (Geotechnical) or Professional Engineering Geologist should not be required.

This document is only an indication of what additional information or expertise may be required. There will always be exemptions to general guidance, and the Structural or Civil Engineer should use their professional judgement in every case to determine the appropriate skills and expertise required for the job

The document is not to be used to report ground investigations and soil assessment for projects with geotechnical risks outside the bounds of competence for a Structural Engineer. Understanding the contents of the document must be within the competencies of the engineer(s) named

This report has been prepared for the clients exclusive use and may not be relied on for any other purpose or by any other person other than the client without our prior written agreement

Project Details

Client Details	A1 Homes
Client Email	paul.wilson@a1homes.co.nz
Property Street Address	62 Awanui Drive, Waikanae
Legal Description	Lot 2 DP 578379
Territorial Authority	Kapiti Coast District Council
Regional Authority	Greater Wellington Regional Council
Engineering Company	Hamish Wells Engineer Ltd
Report Prepared by	Josh

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Reviewed by	Hamish
Report Date	27/11/2024
HTWLtd Job number & Email	240564

Summary of Proposed Development

Structure Type	Single Storey - Light
Levels above ground	One
Design Life	50 Years
Importance Level	IL 2
Foundation Type	Waffle slab/ribrast

Summary of Desktop Assessment

List of geotechnical Reports available	NA
Wind Zone	High as per BRANZ
Corrosion Zone	C
Earthquake Zone	3
Site subsoil type	D
NZGS data	Q2a - Poorly to moderately sorted gravel with minor sand or silt underlying aggradational and degradational terraces
Findings of previous geotechnical reports	N/A
Geological maps available	GWRC GIS maps, BRANZ mapping and WCC maps
NZGD data nearby (within 200m)	Subdivision scala penetrometer results 167.2m southeast (See exert)
Geo hazards from Council GIS or equivalent	Ponding

Known Geotechnical hazards on site	None
Close proximity active faults	1.93km southeast Ohariu Fault
Topographical assessment of the surrounding area	Flat residential area
Buried services and structures	Existing house services
Anticipated engineering geological model from maps and previous investigations and level of uncertainty in the model	Silts over alluvial river gravels

Ground Investigations

The following investigations/tests were undertaken to evaluate the subsurface conditions on site. Site plan and test locations can be found in Appendix One. Investigation data, graph and soil photos can be found in Appendix Two

Date of Investigation	27/11/2024
Person completing field work	Josh

Testing completed

Type of Test	# of Tests	Max depth (mBGL)	Avg Depth (mBGL)	Test Standard followed
Scala Penetrometer - (minimum 2m or justifiable refusal)	4	0.9	0.6	NZS3604: 2011
Hand Augur / Test Pit (minimum 2m or justifiable refusal)	2	0.2	0.2	NZS3604: 2011
Average Shear Vane Strength (kPa)	NA	NA	NA	

Visual assessments were undertaken in accordance with NZGS Field Guide for the Description of Soil and Rock 2005

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Investigation Findings

Item	Yes	No	Comments
Hazard check	Yes		Ponding
Desktop study	Yes		
Ground investigations	Yes		As per 3604:2011 - Section 3
Liquefaction risk (sandy soils, high groundwater)		No	Negligible risk of liquefaction from available GNS mapping and as a result of on site investigations
Slope stability risk, address both risk of inundation from above as well as global stability and instability from below; referring published hazard maps and local knowledge		No	Flat site
Expansive soils (refer published maps and local knowledge)		No	No expansive soils on site
Potentially compressible soils (recent alluvial soils (e.g. silts/peats); refer published hazard maps and local knowledge)		No	No compressible soils on site
Probable maximum settlement met under NZ Building Code		No	Less than 50mm under ULS event
'Good ground' per NZ 3604 (latest edition)	Yes		600mm below EGL

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Minimum 300 kPa ultimate bearing strength established	Yes		600mm below EGL
Minimum 200 kPa at depths	Yes		300mm below EGL
Close-proximity active fault risk – has fault location been established / is min offset met?		No	1.93km southeast Ohariu Fault

Ground Water and Shear Vane Test Results

Ground Water level	Ground water table not encountered-due to shallow gravels
Average Shear Vane Strength (kPa)	NA

Risk Assessment

Risk	Consequence Description	Risk Level H/M/L	Proposed Mitigation
Potential liquefaction	Structural damage	L	None required due to negligible liquefaction risk
Slope stability	Slip into adjacent gully	NA	Flat site
Flooding	Water damage to building	H	Minimum floor height advised by KCDC
NZS 3604 type shallow investigation	Soft surface soils	L	Ground suitable for waffle slab foundations

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RECOMMENDATIONS

Item	Comments
Planned earthworks	Site prep as per latest firth rib raft manual and NZS3604:2011
Planned earthworks (Fill)	Base course with sand blinding placed as per NZS 4431:1989
Ground improvement/ remediation	Site scrape
Foundation recommendations	Ground is suitable for a non sed waffle/raft foundation system
Building restriction zone (BRZ)	No
Preliminary SW design / control of surface water / groundwater	HWEL to design OSSWD and issue a PS1 memorandum
On-site wastewater design required? Any preliminary recommendations.	No
Further investigation/assessments	Soak pit and water tanks to be built outside the line of influence, engineer to be made aware if encroaching proposed dwelling

This report has been prepared for the clients exclusive use and may not be relied on for any other purpose or by any other person other than the client without our prior written agreement

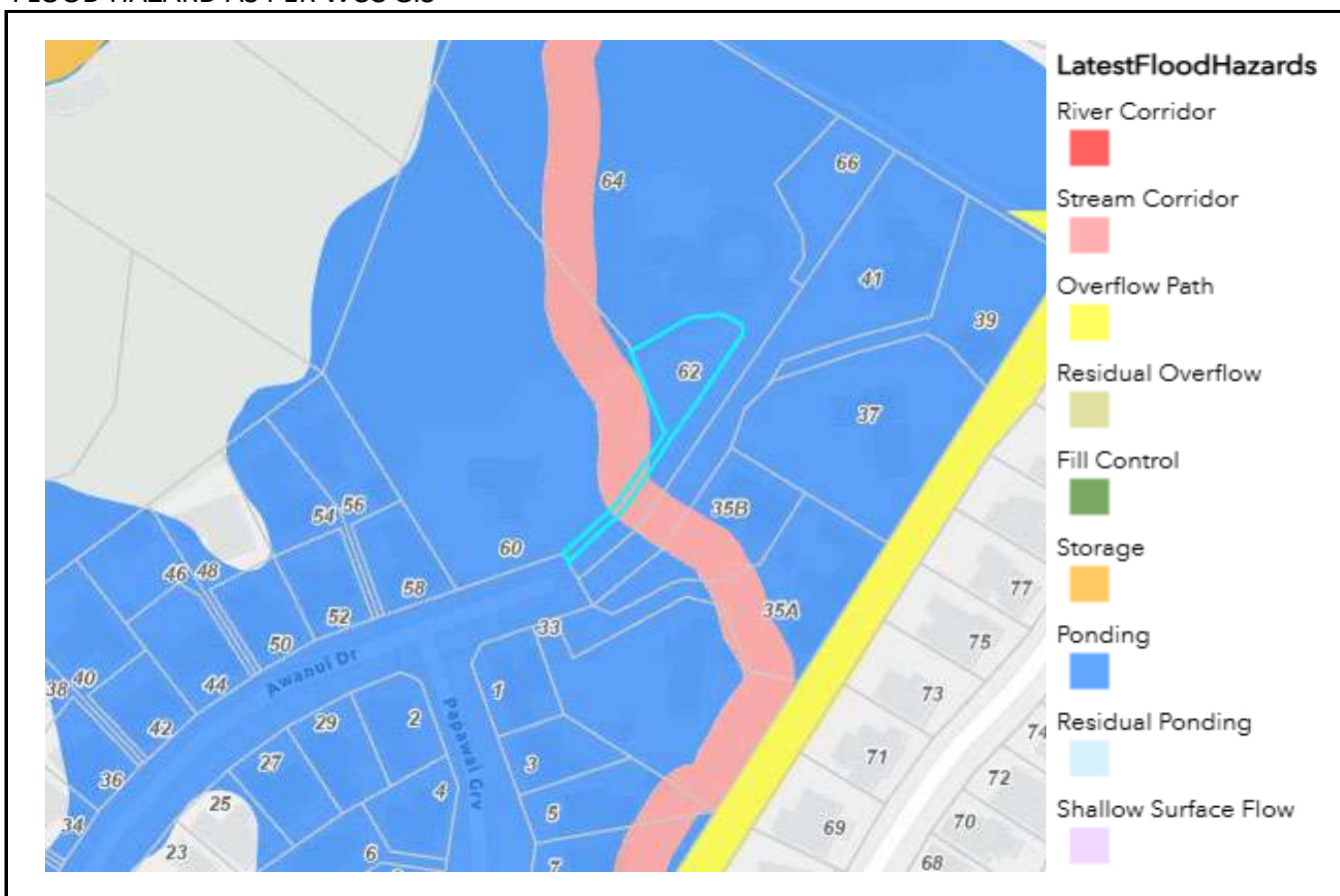
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SITE TEST LOCATION PLAN

LIQUEFACTION AS PER KCDC



FLOOD HAZARD AS PER WCC GIS



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WIND ZONE AS PER KCDC



NZGD



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FOUNDATION REQUIREMENTS AS PER RIBRAFT MANUAL

NUMBER OF STORIES	ROOF	GROUND FLOOR EXTERNAL WALLS	SECOND STOREY EXTERNAL WALLS	1.5KPA LIVE LOAD & UP TO 1KPA SNOW LOAD	3KPA LIVE LOAD & /OR 2KPA SNOW LOAD
SINGLE STOREY	Light	Light		A	A
	Heavy	Light		A	B
	Light	Heavy		B	B
	Heavy	Heavy		C	C
DOUBLE STOREY	Light	Light	Light	C	D
	Heavy	Light	Light	D	E
	Light	Heavy	Light	D	E
	Heavy	Heavy	Light	E	G

FOUNDATION TYPE	ULTIMATE BEARING CAPACITY (KPA)	MIN. BLOWS PER 300MM DEPTH FOR SCAI TESTING
A	140	4
B	175	5
C	210	6
D	240	7
E	275	8
G	Good ground	9

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ONSITE PHOTOS



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ONSITE PHOTOS



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8.6 Scala Penetrometer Testing

Testing as per NZS3604:2011 Section 3.3 Test Method for Soil Bearing Capacity

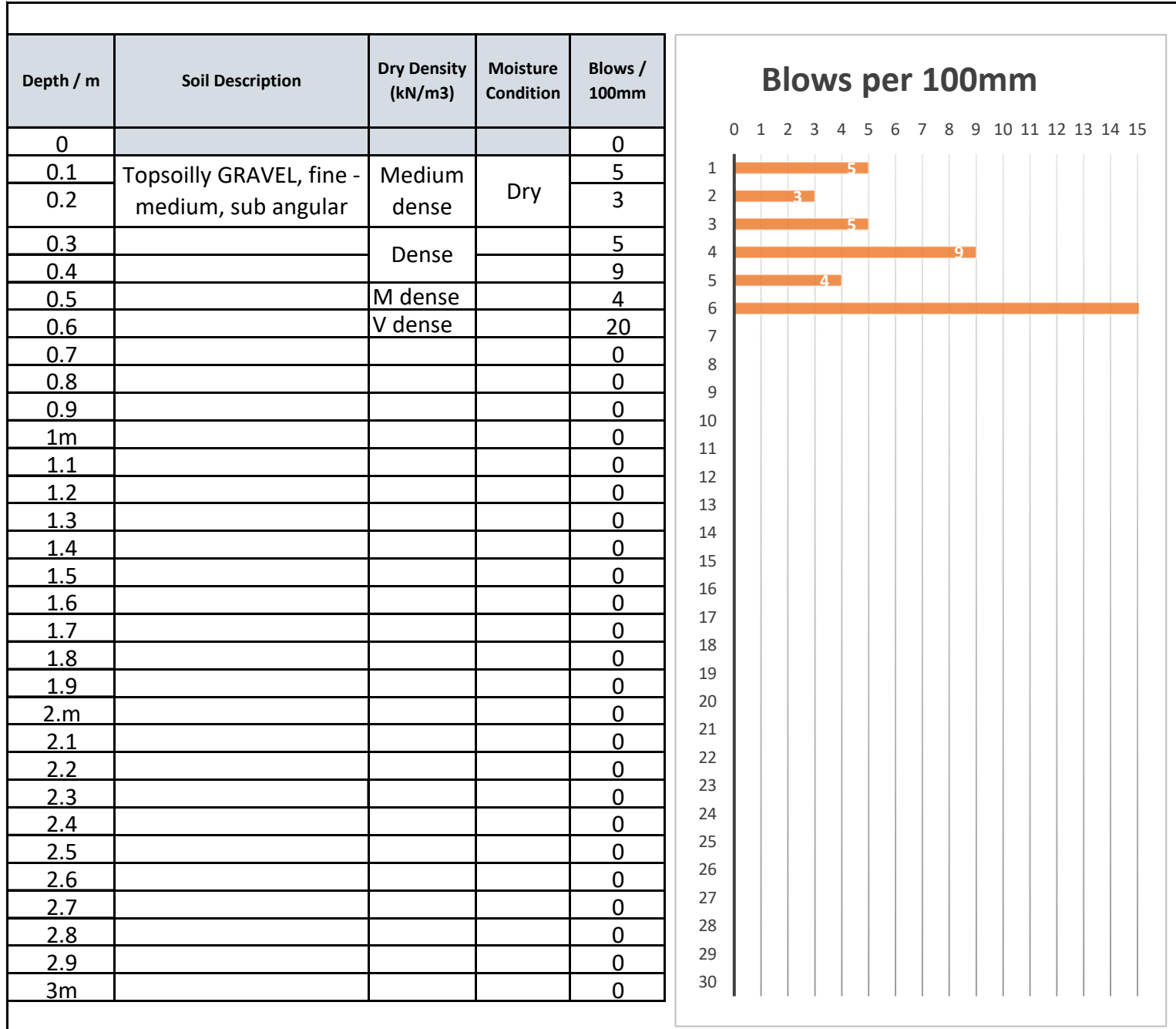
Test Number	A	B	C	D	E
Ground Level (m)					
Depth (m)	Blows/100mm				
0.0	0	0	0	0	0
0.1	5	5	10	5	
0.2	3	6	10	2	
0.3	5	5	8	3	
0.4	9	4	20	7	
0.5	4	7		7	
0.6	20	11		5	
0.7		7		6	
0.8		8		20	
0.9		20			
1.0					
1.1					
1.2					
1.3					
1.4					
1.5					
1.6					
1.7					
1.8					
1.9					
2.0					
2.1					
2.2					
2.3					
2.4					
2.5					
2.6					
2.7					
2.8					
2.9					
3.0					

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Appendix Two

TEST A

Scala Penetrometer Field Sheet



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Appendix Two

TEST C
Scala Penetrometer Field Sheet

Depth / m	Soil Description	Dry Density (kN/m ³)	Moisture Condition	Blows / 100mm
0				0
0.1	Topsoilly GRAVEL, fine - medium, sub angular	Dense	Dry	10
0.2				10
0.3				8
0.4		V dense		20
0.5				0
0.6				0
0.7				0
0.8				0
0.9				0
1m				0
1.1				0
1.2				0
1.3				0
1.4				0
1.5				0
1.6				0
1.7				0
1.8				0
1.9				0
2.m				0
2.1				0
2.2				0
2.3				0
2.4				0
2.5				0
2.6				0
2.7				0
2.8				0
2.9				0
3m				0

Blows per 100mm

Depth (m)	Blows per 100mm
1	10
2	10
3	8
4	20

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PRODUCT PROFILE

DAB SUBMERSIBLE PUMP

DAB-DIVERTRON1200



The pump is a light and compact high head submersible clean water automatic pressure system pump supplied wired and ready to install. The pump includes an electronic automatic restart pump control with dry run protection.

The pump is characterised by:

- Corrosion resistant pump components.
- Fully automatic operation.
- Shaft seal with sand protection boot.
- 240V single phase motor with in-built auto reset thermal overload.
- 15m of power cable.
- 2 year warranty.
- Flows to 95 l/m
- Heads to 46 m

Electrical data:

Rated voltage:	240V
Mains frequency:	50 Hz
Rated output:	750W
Rated output:	1100W
Current:	4.8 amps
Motor duty:	Continuous
Motor type:	Asynchronous
Motor protection:	In-built thermal overload
Ingress protection:	IP 68
Insulation class:	F
Power cable length:	15 m H07RNF
Net weight:	11.0 kg
Dimensions:	480L x 150H x 150W (mm)

Liquid:

Clean water temperature range: 2 – 35 °C

Materials:

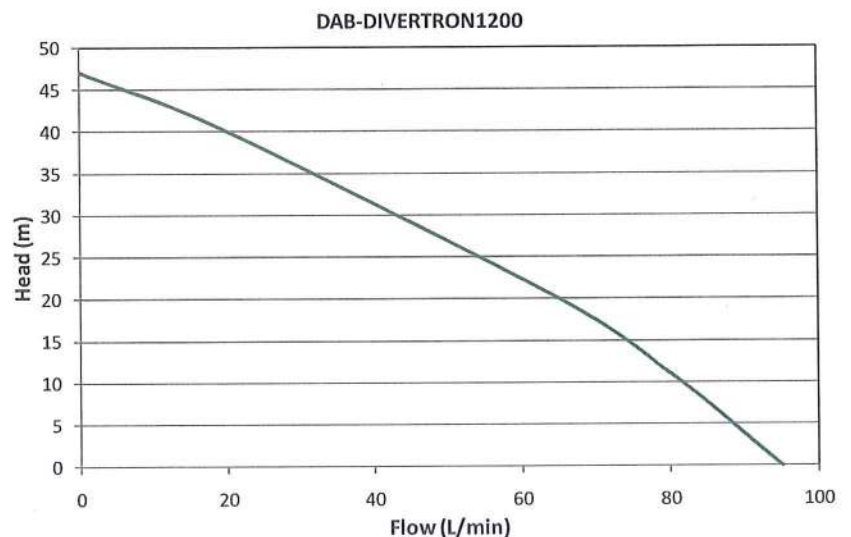
Pump body:	Noryl
Impellers (4):	Noryl with stainless steel wear ring
Diffusers (4):	Noryl with floating dry run resistant wear ring
Pump shaft:	SS416
Shaft seal:	Nitrile

Installation:

Maximum ambient temperature:	40 °C
Maximum submergence:	15m.
Pipe connections discharge:	1"

2 Year Dab Pump Warranty

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Product Compliance Scheme (PCS)

Certificate of Conformity Type Test

Australian Certification Services Pty Ltd hereby certifies that a sample of the product/s as identified in the listing below and submitted by;

White International Pty Ltd

Has been examined and found to be in conformity with the requirements of the Standard/s referred to below;

Evaluated to:	AS/NZS 4020:2005 Testing of products for use in contact with drinking water
Product Type:	Self Prime Jet Pump, Self Prime Submersible Pump
Brand	DAB
Model Number(s)	JINOX62M, JINOX62MP, JINOX62MPCX, JINOX62MAPCX JINOX82M, JINOX82MP, JINOX82MPCX, JINOX82MAPCX JINOX102M, JINOX102MP, JINOX102MPCX, JINOX102MAPCX JINOX112M, JINOX112MP, JINOX112MPCX, JINOX112MAPCX JINOX132M, JINOX132MP, JINOX132MPCX, JINOX132MAPCX JETCOM62M, JETCOM62MP, JETCOM62MPCX, JETCOM62MAPCX JETCOM82M, JETCOM82MP, JETCOM82MPCX, JETCOM82MAPCX JETCOM102M, JETCOM102MP, JETCOM102MPCX, JETCOM102MAPCX ACTIVEJINOX62M, ACTIVEJINOX82M, ACTIVEJINOX102M, ACTIVEJINOX112M, ACTIVEJINOX132M ACTIVEEINOX30/30M, ACTIVEEINOX30/50M, ACTIVEEINOX40/50M, ACTIVEEINOX40/80M EUROINOX30/30M, EUROINOX30/30MP, EUROINOX30/30MPCX, EUROINOX30/30MAPCX EUROINOX30/50M, EUROINOX30/50MP, EUROINOX30/50MPCX, EUROINOX30/50MAPCX EUROINOX40/50M, EUROINOX40/50MP, EUROINOX40/50MPCX, EUROINOX40/50MAPCX EUROINOX40/80M, EUROINOX40/80MP, EUROINOX40/80MPCX, EUROINOX40/80MAPCX EUROINOX40/80MAD DIVERTRON1200

Maximum Holding Water Temperature

Cold Water (20°C)

As Tested Exposure

Scaling Factor of 0.01 applied

Test Report Identification

Australian Water Quality Centre (AWQC) NATA Test Report
Number 69023

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06/03/2025

Issue Date: 25th June 2015
Initial Issue Date: 28th May 2010
Expiry Date: 27th May 2020



Paul Greig
General Manager

Certificate No.: 4001

This certificate remains the property of Australian Certification Services Pty Ltd



13 March 2025

BC250084
Further Information Received
13/03/2025

Attention: Scott Kyle

Re: 62 Awanui Drive, Waikanae – building consent :250084

Please find enclosed the technical evidence to prove that the natural hazard for 62 Awanui Drive being in a ponding/flooding zone has been mitigated.

Installation of a larger pipe installed under our driveway from the soak pit on the road at the end of the cul de sac to discharge any excess water from that soakpit into the stream as requested and approved by kcdc.

When the new driveway was created it was installed over the top of the existing bridge tar seal resulting in a higher level at the bridge. This has resulted in zero water being able to enter number 62 Awanui Drive via the driveway.

A 15.5 mtr cixtex rainwater smart soak system has been installed under the newly created driveway designed to discharge any excess water from the section.

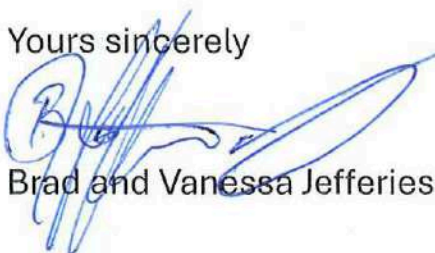
An additional soak pit will be installed in the northern area of the section of number 62 to again aid in discharging any excess water.

We are proposing to install a free draining gravel driveway for 62 Awanui Drive to again alleviate any possibility of flooding .

The A1 home being built will be built at a higher level (16.46mtr) to minimise the possibility of being flooded. This level is over the bottom height of my house windows of 64 Awanui Drive ! The soakage test shows good natural drainage of the section.

The technical information provided shows that adequate provision has been made to protect the land and building and as a result we strongly believe the natural hazard of flooding/ponding should not be listed on the title.

Yours sincerely



Brad and Vanessa Jefferies

KAPITI COAST DISTRICT COUNCIL

Authorised to commence work subject to

my letter of.....

And/or amendments marked on the plan

for consent number. RM 200047

Signed and approved by development control team.

and other Council teams for various aspects of design

D C team. Shurpail Date 24/03/21

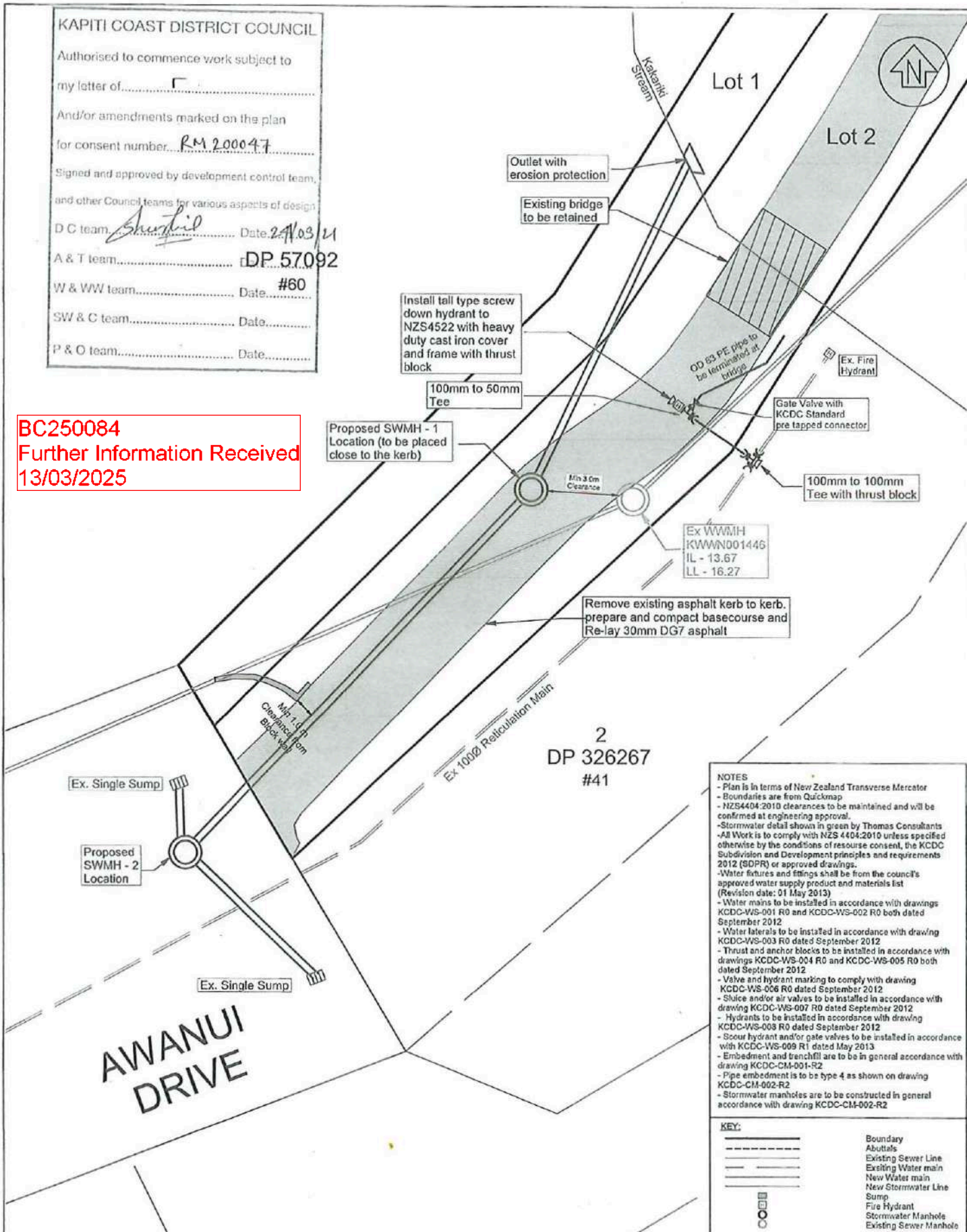
A & T team..... DP 57092

W & WW learn..... Date..... #60

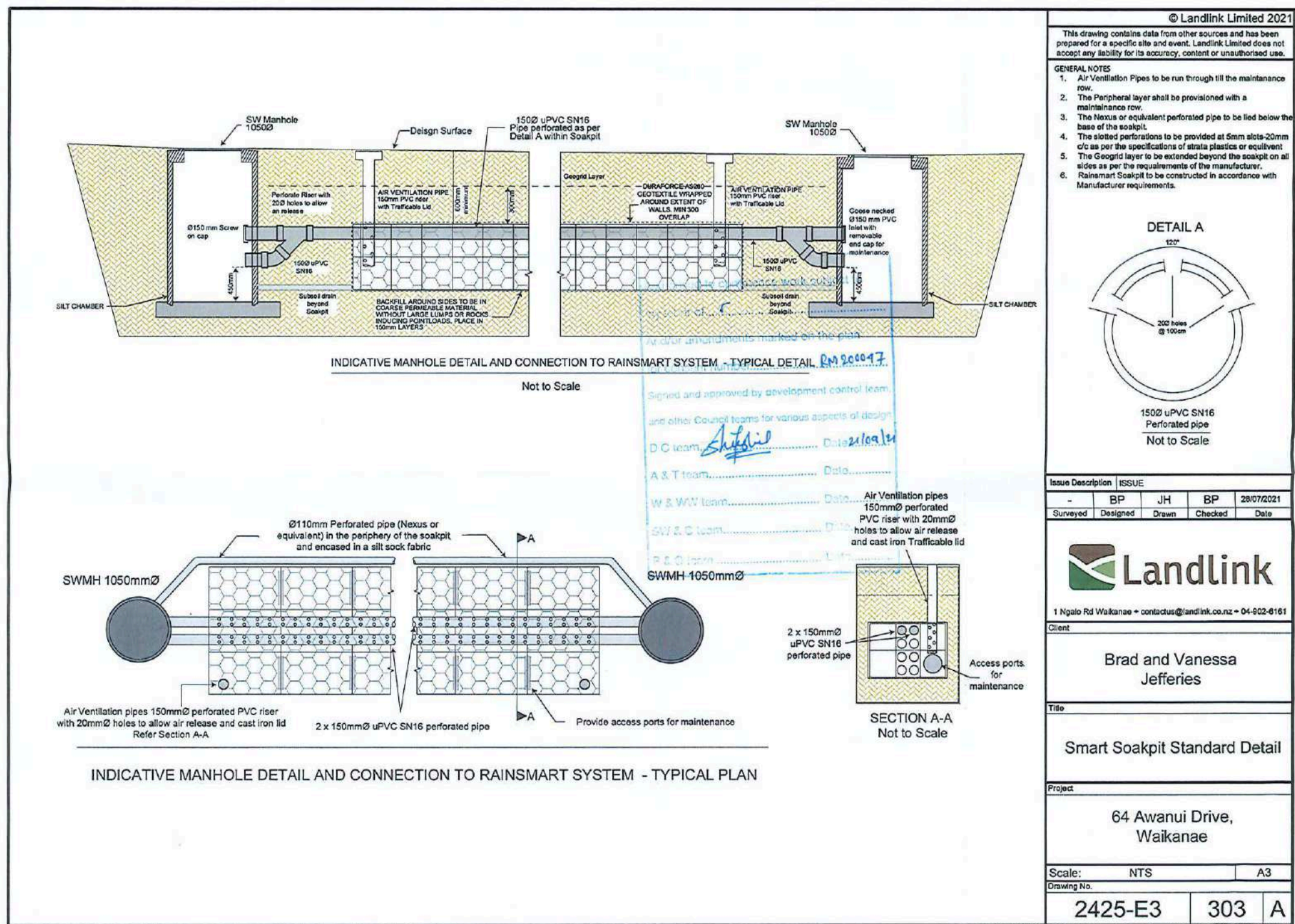
SW & C team..... Date.....

P & O team..... Date.....

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Further Information Received
13/03/2025



Client	© Landlink Limited 2021				
Brad and Vanessa Jefferies	Issue description		Water Design amendment		
Title	-	RF	RV	RF	24-Mar-2021
Services Design Plan	Surveyed	Designed	Drawn	Checked	Date
Project	Scale: 1:150				A3
64 Awanui Drive Waikane	Drawing No.				
	2425-E1		001	C	



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13/03/2025

ROOF AREA - 125m²

TOTAL AREA INCLUDED IN CALCULATIONS - 125m²
INFILTRATION RATE - 350mm/hr

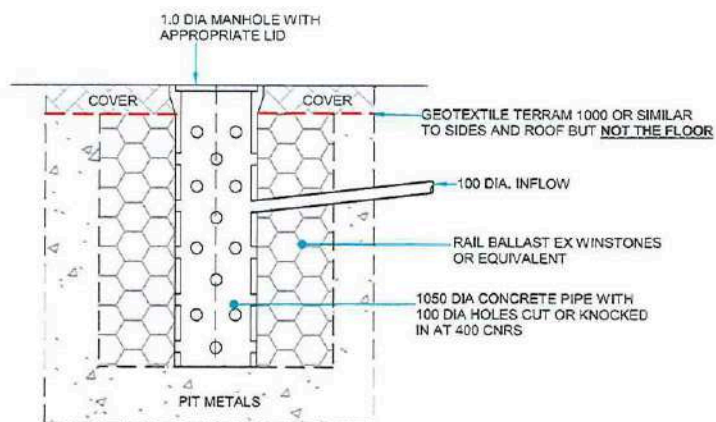
BOULDER TRENCH (SHOWN ON PLANS)

SOAK PIT 2.5m LONG x 2.0m WIDE x 1.5m DEEP
BOULDER LINED SOAK PIT WITH 1 x 1050 DIA
MANHOLE. DEPTH INCLUDES 200mm OF TOP SOIL
OVER BOULDERS

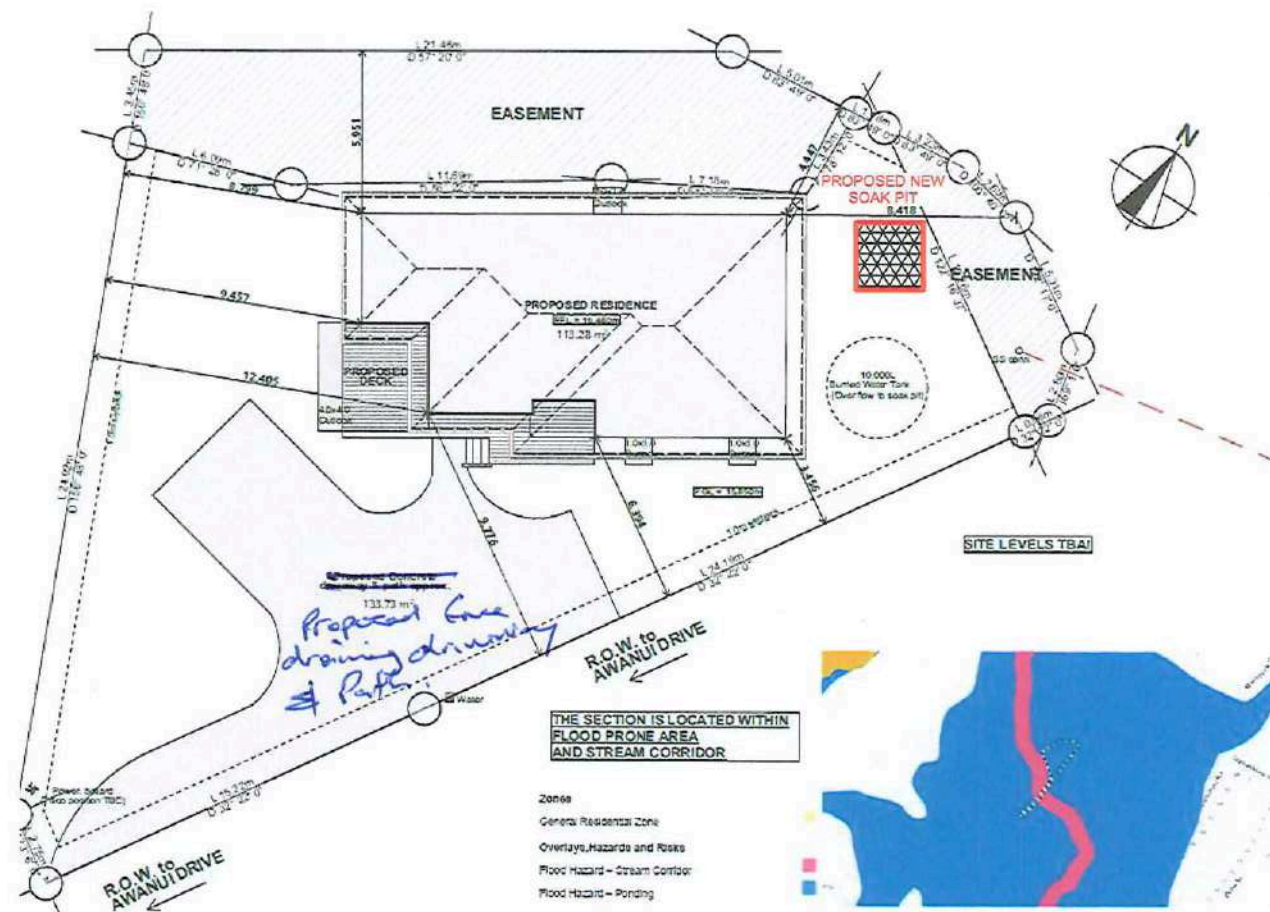
DESIGN TO 1/100 STORM RETURN PERIOD UTILISING
HIRDS RAINFALL DATA

SOAK PITS TO BE A MINIMUM OF 2m OFF FOUNDATION
EDGE AND 1m OFF BOUNDARIES AND CLEAR OF
HARDSTAND AREAS.

CONFIRM ANY CHANGES TO SOAK PIT AREAS WITH
DESIGN ENGINEER PRIOR TO SOAK PIT CONSTRUCTION



BALLAST PIT DETAIL NTS



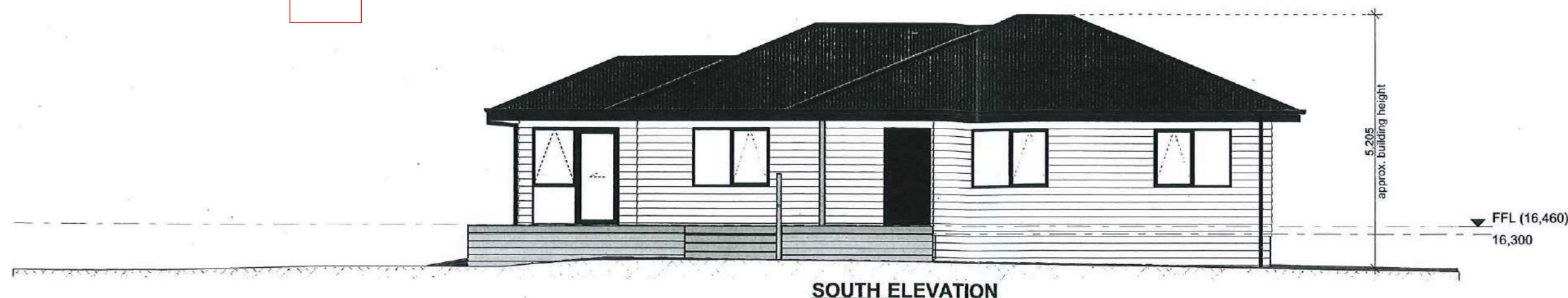
19 May 2021
10:25
Lat: -40.864681 Lon: 175.06627
Fill cycle complete: 14:25 Litres: 2285.5*

[illegible]

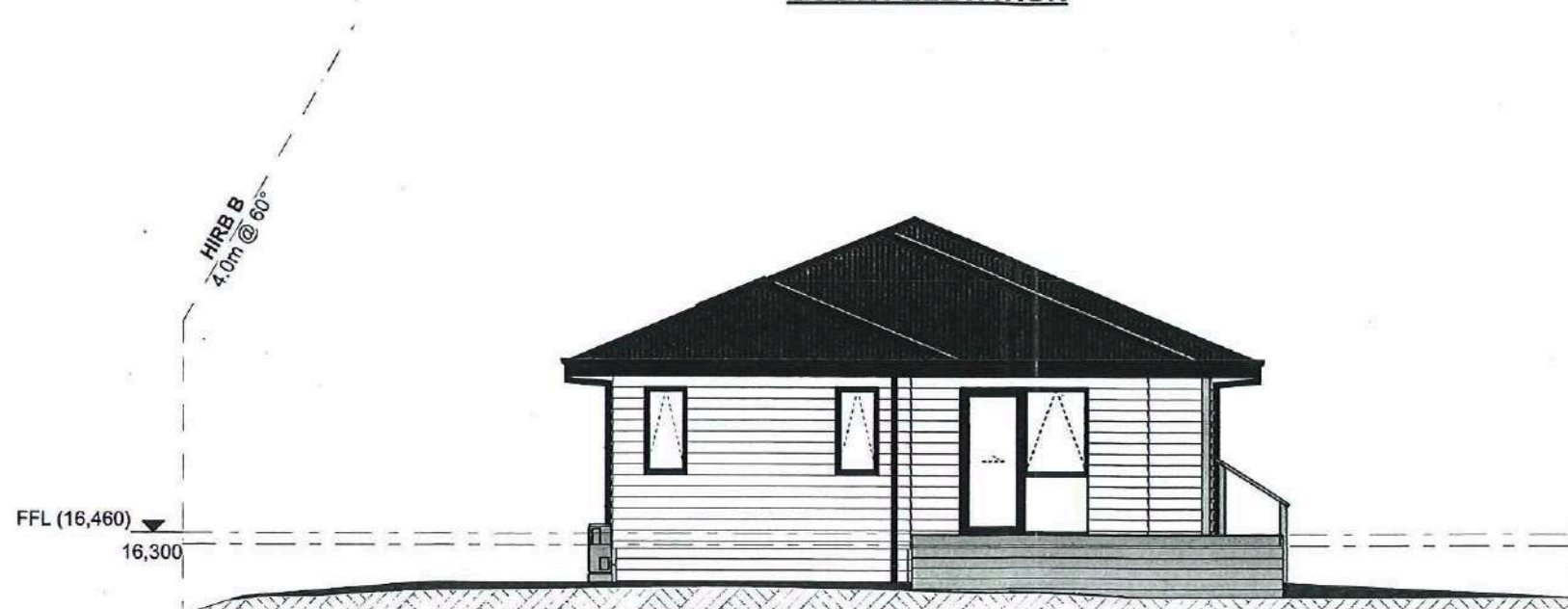
determined by average, ignoring top two and bottom readings, to achieve value on minimum slope of curve as per 0.02 d)

General Notes:

Any encroachments shown are to be confirmed by a registered surveyor prior to commencement of foundations. No liability shall be held by designer with this confirmation.



SOUTH ELEVATION



WEST ELEVATION

Cautionary Notes:

BUILDING CONTRACTOR TO ASSESS SITE TO ENSURE DAYLIGHTING & BUILDING RESTRICTIONS ARE COMPLIED WITH.
NO LIABILITY FOR ENCROACHMENT SHALL BE HELD BY DESIGNER IF SITE IS NOT SURVEYED BY A REGISTERED SURVEYOR PRIOR TO COMMENCEMENT OF FOUNDATIONS.

Construction Notes:

Glazing in accordance with NZS 4223:2008/2016 plus amendments
All glazing low-e clear float except for obscure glass to bathrooms & wc
Double glazing to all window and door joinery

Aluminium joinery head heights to be 2.0m
Refer to floor plan for door & window sizes. Joinery schedule & sizes to be confirmed by pre-cut manufacturer & joinery fabricator PRIOR to manufacture by way of communication via e-mail, phone or other.

HIRB = Height in Relation to Boundary

NZBC D1/AS1 Access Routes:

H3.2 timber steps and landing to all access points, H5 timber to ground (owners care)
Acceptable Slip Resistance for Walking Surfaces:
• Timber
• Uncoated profiled
Profile at right angles to direction of pedestrian traffic. Algal growth on uncoated timber walkways significantly reduces slip resistance when wet and requires regular removal, e.g. by high pressure waterblasting.

Risk Factor	Description	Risk	Score
Wind Zone	High	M	1
Number of Storeys	Single Storey	L	0
Roof/Wall Intersection Design	Fully protected (e.g. hip and gable roof with eaves)	L	0
Eaves Width	450mm - 600mm wide	M	1
Envelope Complexity	Simple rectangular with single cladding type.	L	0
Deck Design	Timber slat deck at ground floor level	L	0
			Total Score: 2
Selected Cladding:	Fibre cement weatherboard over nominal 20mm drained cavity		

Foundation:

NZS 3604:2011 Timber Foundation

Wall Cladding:

James Hardie Linea weatherboard - 180 mm

Roof Cladding:

22.5° pitch. NZS Colorsteel MAXAM Corrugate profile


Fascia and Spouting:

Metalcraft 155 Colorsteel fascia
Metalcraft 1/4 round spouting
Marley PVC 80mmØ round downpipes

Joinery:

APL Residential suite Aluminium joinery

With respect to Lots 2 and 3: The minimum floor level to the underside of the floor joist or underside of the slab of any habitable building shall be 16.3 and 15.8 metres respectively above the 1953 Wellington MSL datum.

 <p>DO NOT scale off drawings. Cross reference all drawings. Any discrepancies MUST be clarified with the designer immediately before commencing works or ordering. NO construction or site works are to commence until Building Consent becomes unconditional.</p> <p>COPYRIGHT: Any and all drawings commissioned remain the property of A1 Homes NZ Limited, including all copyright and similar rights subsisting in those drawings, and are solely for use as described on the drawings, and may not be used for any other purpose or reproduced in whole or in part without written permission obtained from A1 Homes NZ Limited.</p>	ELEVATIONS						Scale: 1:100	Sheet no: 11	Client Details:	Job no: AW611P	
	Design: A1	Drawn: MPP/TN	Check: UP	LBP: UP	Date: 11/03/2025	Brad & Vanessa Jefferies					
	Wind:	Earthq:	Exposure:	Snow:	Climate:	Address:					
	HIGH	3	C	N1	3	62 Awanui Drive Waikanae					
						www.A1homes.co.nz				KH110a	



**RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy**



R.W. Muir
Registrar-General
of Land

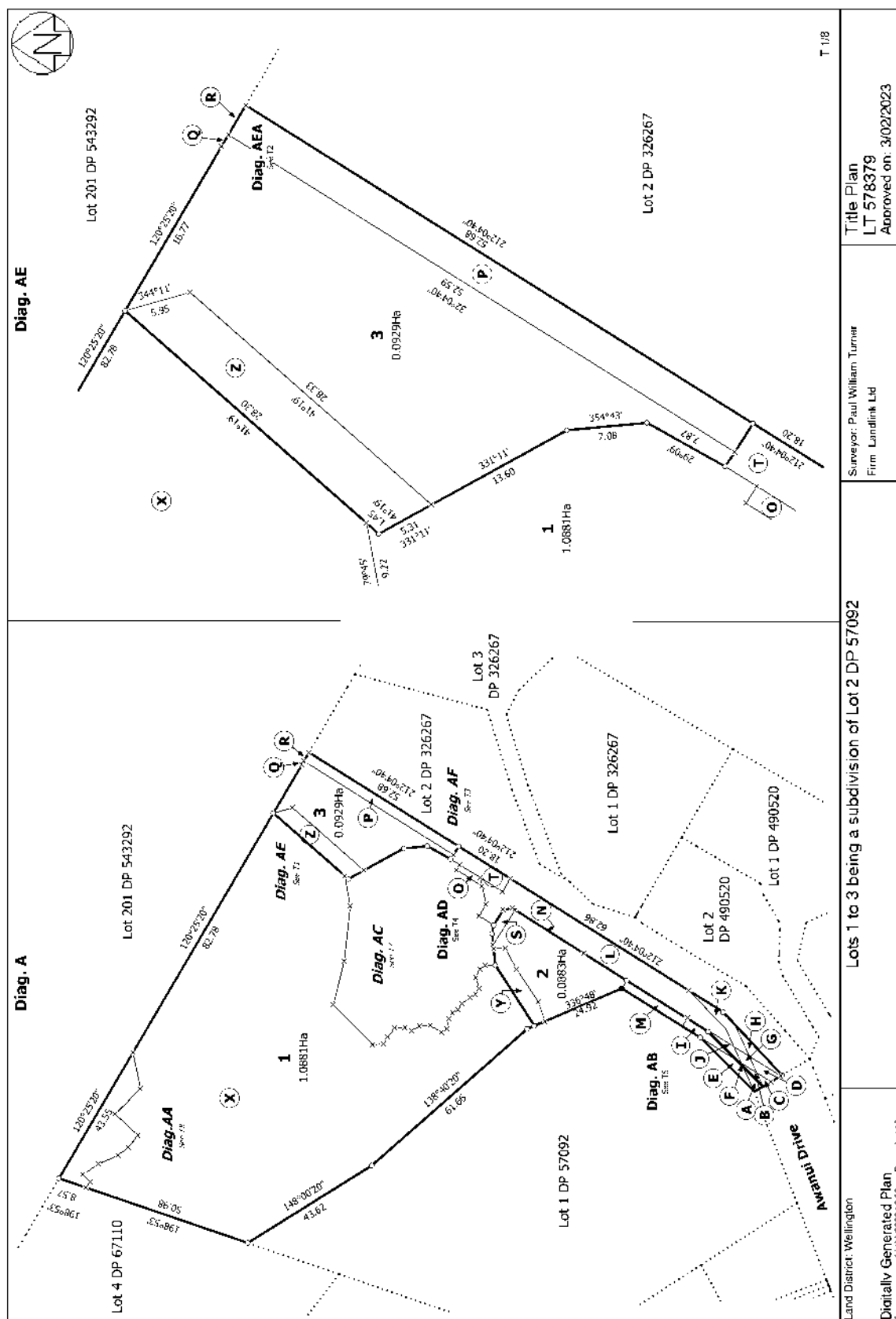
Identifier **1070273**
Land Registration District **Wellington**
Date Issued 14 March 2023
Prior References
WN26D/477

BC250084
Received by
Kapiti Coast District Council
06/03/2025

Estate Fee Simple
Area 883 square metres more or less
Legal Description Lot 2 Deposited Plan 578379
Registered Owners
Bradford Eric Jefferies, Vanessa Anne Jefferies and TMF Trustees Services (2005) Limited

Interests

Land Covenant in Transfer 675506.8 - 7.3.1985 at 9:45 am
Subject to sewage drainage rights (in gross) over part marked A on DP 578379 in favour of the (now) Kapiti Coast District Council created by Transfer 675506.6 - 7.3.1985 at 9:45 am
The easement created by Transfer 675506.6 is subject to Section 309 (1) (a) Local Government Act 1974
12651467.3 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 14.3.2023 at 11:02 am
Subject to a right (in gross) to drain water over part marked I on DP 578379 in favour of Kapiti Coast District Council created by Easement Instrument 12651467.4 - 14.3.2023 at 11:02 am
The easements created by Easement Instrument 12651467.4 are subject to Section 243 (a) Resource Management Act 1991
Subject to a right (in gross) to convey telecommunications over parts marked A, E, I and M all on DP 578379 in favour of Chorus New Zealand Limited created by Easement Instrument 12651467.5 - 14.3.2023 at 11:02 am
The easements created by Easement Instrument 12651467.5 are subject to Section 243 (a) Resource Management Act 1991
Subject to a right (in gross) to convey electricity over parts marked A, E, I and M in favour of Electra Limited created by Easement Instrument 12651467.6 - 14.3.2023 at 11:02 am
The easements created by Easement Instrument 12651467.6 are subject to Section 243 (a) Resource Management Act 1991
Subject to a right of way, a right to convey electricity, water and telecommunications and a right to drain water over parts marked A, E, I and M and a right to drain sewage over part marked S all on DP 578379 created by Easement Instrument 12651467.7 - 14.3.2023 at 11:02 am
Appurtenant hereto is a right of way, a right to convey electricity, water and telecommunications and a right to drain water and sewage created by Easement Instrument 12651467.7 - 14.3.2023 at 11:02 am
The easements created by Easement Instrument 12651467.7 are subject to Section 243 (a) Resource Management Act 1991
Land Covenant in Covenant Instrument 12651467.8 - 14.3.2023 at 11:02 am (Limited as to duration)



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WATER DEMAND MANAGEMENT DECLARATION OF COMPLIANCE



In 2009 Council required all new homes built in urban areas to provide an alternative source of water for flushing toilets and outdoor irrigation. This form is to be submitted with all applications for a Project Information Memorandum/Building Consent for new or relocated dwellings on land zoned residential.

Address of Project:	60 Awanui Drive, Waikane
Number of Dwellings:	1
Building Consent Number:	(Office Use Only)

1. Water Demand Management Solution

All dwellings subject to this development (new or relocated) will use one of the following water demand management solutions in accordance with the District Plan (please tick one box):

<input checked="" type="checkbox"/>	Rainwater storage tanks with a total volume of not less than 10,000 litres, for each house in the development.
<input type="checkbox"/>	Rainwater storage tanks with a total volume of not less than 4,000 litres, for each house in the development, and a complying greywater diversion device.
<input type="checkbox"/>	The application is made with an alternative solution (note that a discretionary resource consent will be required).
<input type="checkbox"/>	The application is made without provision for water demand management (note that a notified resource consent will be required).

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2. For All Applications where Water Demand Management Will be Provided

Volume of rainwater storage tanks:

I confirm all the following:

<input checked="" type="checkbox"/>	That the rainwater tank volume complies with selected water demand management option and have provided a certificate from the manufacturer demonstrating the tank volume.
<input checked="" type="checkbox"/>	That there will be no direct connection from the reticulated water supply to any outside taps.
<input checked="" type="checkbox"/>	That there will be a direct connection from the rainwater storage tanks to all internal toilet cisterns and any external taps.
<input checked="" type="checkbox"/>	That there will be no direct connection from the reticulated water supply to any toilet cistern.
<input checked="" type="checkbox"/>	I understand that the toby or manifold may have to be replaced with a dual feed manifold at my expense. <i>A dual feed manifold has one supply for the house and a separate restricted supply to connect to the rainwater tank.</i>
<input type="checkbox"/>	I have completed Kāpiti Coast District Council Form 159: "Water Supply Connection / Alteration Application Form". <i>An applicant is required to submit this form to Kāpiti Coast District Council Water and Wastewater Team if a new water connection or alteration of existing connection is required.</i>

3. For Applications Where a Greywater Diversion Device is to be Installed

Size of Disposal Field:

(Note that this needs to be marked on the site plan or the plumbing and drainage plan submitted to Council).

I confirm all the following:

<input type="checkbox"/>	That greywater will be collected from all laundry and bathroom drains (excluding toilets) and channelled to a greywater diversion device for use in outdoor irrigation.
<input type="checkbox"/>	The greywater worksheet is attached and confirms that greywater diversion is suitable on the lot.
<input type="checkbox"/>	That the device will be installed by an approved installer and that a certificate demonstrating this will be available to Council on request after installation.

4. Signatures

Name:	Tracey Nicole
Signed:	<i>TNicole</i>
Date:	26/2/2025

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Kapiti Coast District Council
06/03/2025

GREYWATER IRRIGATION CALCULATION SHEET

This sheet will help determine whether there is sufficient area available to reuse greywater for irrigation. Remember that greywater should be diverted to sewer and only used for garden irrigation when needed.

Greywater irrigation will not be suitable for your proposed dwelling, if it is in an area where:

- soils are too slow draining,
- ground is too steep,
- there are high water tables less than a meter below the surface, or within 20m of a drain, wetland, pond, river or other water body

If greywater is unsuitable, you will need to install a minimum of 10,000 litres of rainwater storage.

The following will help establish if your site is suitable for greywater irrigation.

Greywater Diversion Device:	
Model:	
Irrigation method	

1. Is the area being irrigated at least 20m away from a water body?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
--	------------------------------	-----------------------------

2. Area available for irrigation.	_____m ²
Calculate the area you have available for outdoor irrigation allowing for set back distances below:	
Property boundaries, pedestrian paths, and driveways.	0.5
Footings of buildings.	1.5
Retaining wall footing.	1.0
In ground swimming pool surrounds.	1.0
In ground potable water tank.	6.0
Bores intended for human consumption.	50.0

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06/03/2025

3. Greywater Volume

Calculate how much water your home could generate. As the number of people will vary over the life of the house, use the following calculation to estimate greywater volume.

40 Litres	+	60 Litres	=	100 Litres	x		x	7 Days	=	_____ Litres
Laundry Usage		Bathroom Usage		Total Daily Usage		Occupancy (depends on number of bedrooms – see below)		Days per week		The amount of greywater produced each week

Bedroom numbers in home	Occupancy for design purposes and calculation
1	2
2	4
3	6
4	8
5	10
6	12

Litres produced each week	÷	Soil irrigation rate*	=	area needed for irrigation
_____ litres/week		_____ mm/day		_____ m ²

Match the soil on your site to the soil irrigation rates below.

Soil Category	Soil Texture	Irrigation rate * for greywater	Indicative drainage class
1	Gravel and sands - structure-less	35 mm/week	Rapid draining
2	Coarse to medium sand	35 mm/week	Free draining
3	Medium-fine and loamy sand (dune sands)	35 mm/week	Good drainage
4	Sandy loam, loam and silt loam	20 mm/week	Moderately well drained
5	Sandy clay loam, clay loams, silt clay loam, peaty loam	20 mm/week	Moderate to slow drainage
6	Sandy clay, non-swelling clay and silty clay, peat	15 mm/week	Slowly draining
7	Swelling clay, grey clay, hardpan	15 mm/day	Poorly or non-drained

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4. Does area available = area needed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>If the area available is greater than the area needed, the proposed application area is sufficient to cope with the volume of greywater that is likely to be generated and approval may be granted if all other conditions are met.</p> <p>Enter the area available on the compliance sheet and mark out on the <u>site plan</u> or <u>plumbing and drainage plan</u> the area to be irrigated with greywater.</p>		

<p>5. There isn't enough area for greywater irrigation</p> <p>If the area available is less than the area needed, the proposed application area is insufficient to cope with the volume of greywater that is likely to be generated.</p> <p>If you want greywater irrigation but the area available does not appear to be sufficient, you can:</p> <ul style="list-style-type: none"> • select a system that limits greywater to be suitable to your site conditions; • apply for an alternative solution that will only use greywater from the bathroom or laundry; • use a suitably qualified person to design a greywater system suited to your site (please attach their report with the compliance sheet).

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06/03/2025

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06/03/2025

Form 2A

Memorandum from licensed building practitioner: Certificate of design work
Section 45 and Section 30C, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

THE BUILDING

Street address: 62 Awanui Drive

Suburb:

Town/City: Waikanae

Postcode:

THE OWNER

Name(s): Brad & Vanessa Jefferies

Mailing address:

Suburb:

PO Box/Private Bag:

Town/City:

Postcode:

Phone number: 021 115 7659

Email address: paul.wilson@a1homes.co.nz

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies (✓)	
()	sole designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design myself – no other person will be providing any additional memoranda for the project
(✓)	lead designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and no other person will be providing any additional memoranda for the project
()	lead designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the other designers will provide their own memoranda relating to their specific RBW design
()	specialist designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)

I Uros Plajh ~~carried out~~ / supervised the following design work that is restricted building work

PRIMARY STRUCTURE: B1

Design work that is restricted building work	Description	Carried out/ supervised	Reference to plans and specifications
Tick(✓) if included Cross (X) if excluded	[If appropriate, provide details of the restricted building work]	[Specify whether you carried out this design work or supervised someone else carrying out this design work]	[If appropriate, specify references]

Primary structure

All RBW Design work relating to B1	(✓)	-	() Carried out (✓) Supervised	-
Foundations and subfloor framing	(✓)	Timber Subfloor to NZS3604:2011,	() Carried out (✓) Supervised	Sht 7,8, 14 & 15 (foundation + Cross Sections)
Walls	(✓)	Timber Frame to NZS3604:2011	() Carried out (✓) Supervised	Sht 14 & 15 (Cross Sections)
Roof	(✓)	Timber Trusses by Placemakers	() Carried out (✓) Supervised	Sht 14 -16 (Cross Sections + Roof Plan) + Prenail Truss Design
Columns and beams	(✓)	Timber Lintels by Placemakers, Timber Lintels to NZS3604:2011	() Carried out (✓) Supervised	Sht 16 (Roof Plan)
Bracing	(✓)	Bracing to NZS3604:2011, GIB Ezybrace system, CHH ECOPLY bracing	() Carried out (✓) Supervised	Sht 20 (Bracing Plan) + Bracing calculations
Other	(X)		() Carried out () Supervised	

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EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2

All RBW design work relating to E2	(√)	-	() Carried out (√) Supervised	-
Damp proofing	()	-	() Carried out () Supervised	-
Roof cladding or roof cladding system	(√)	<i>Profiled Longrun metal roofing, corrugate</i>	() Carried out (√) Supervised	Sht 11-15 (elevations + Cross Sections)
Ventilation system (for example, subfloor or cavity)	(√)	<i>Drained & Vented cavity to NZBC E2/AS1</i>	() Carried out (√) Supervised	Sht 14 & 15 (Cross Sections)
Wall cladding or wall cladding system	(√)	<i>JH Linea w/board,</i>	() Carried out (√) Supervised	Sht 11-15 (elevations + Cross Sections)
Waterproofing	()		() Carried out () Supervised	
Other	(X)		() Carried out () Supervised	

FIRE SAFETY SYSTEMS: C1 – C6

Emergency warning systems, evacuation and fire service operation systems, suppression or control systems, or other	(X)	<i>Residential Smoke alarms to NZBC C/AS1 (not RBW)</i>	() Carried out () Supervised	
--	-----	---	-----------------------------------	--

Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.

Note: continue on another page if necessary.

WAIVERS AND MODIFICATIONS

Waivers or modifications of the building code are required () Yes (√) No

If Yes, provide details of the waivers or modifications below:

Clause	Waiver/modification required
<i>[List relevant clause numbers of building code]</i>	<i>[Specify nature of waiver or modification of building code]</i>

Note: continue on another page if necessary.

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06/03/2025

ISSUED BY

Name: Uros Plajh		LBP or Registration number: BP132726	
The practitioner is a:	(√) Design LBP	() Registered architect	() Chartered professional engineer
Design Entity or Company (optional):			
Mailing address (if different from below): PO BOX 4516, MOUNT MAUNGANUI SOUTH 3149			
Street address / Registered office:			
Suburb:		Town/City:	
PO Box/Private Bag:		Postcode:	
Phone number: 07 578 7345		Mobile:	
After Hours:		Fax:	
Email address: uros@spacelab.nz		Website:	

DECLARATION

I **Uros Plajh**, LBP,

state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW:

- Complies with the building code

Signature:

Date: 19 December 2024

BC250084
Received by
Kapiti Coast District Council
06/03/2025

View Instrument Details



Instrument No 12651467.3
Status Registered
Date & Time Lodged 14 March 2023 11:02
Lodged By Maskell, Julius James
Instrument Type Consent Notice under s221(4)(a) Resource Management Act 1991



Affected Records of Title	Land District
1070272	Wellington
1070273	Wellington
1070274	Wellington

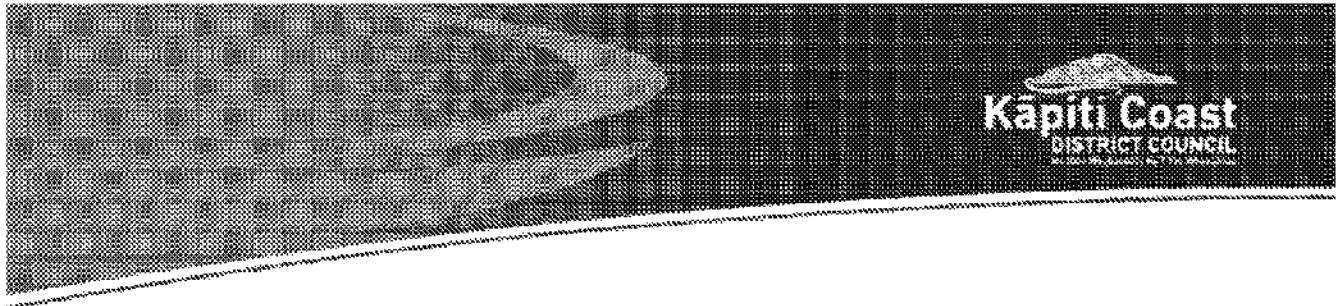
Annexure Schedule Contains 2 Pages.

Signature

Signed by Julius James Maskell as Territorial Authority Representative on 06/03/2023 02:03 PM

*** End of Report ***

BC250084
 Received by
 Kapiti Coast District Council
 06/03/2025



**CONSENT NOTICE
PURSUANT TO SECTION 221 OF
THE RESOURCE MANAGEMENT ACT 1991**

**IN THE MATTER OF A PLAN LODGED FOR
DEPOSIT UNDER NUMBER 578379
AND RESOURCE CONSENT NO. RM200047**

**BC250084
Received by
Kapiti Coast District Council
06/03/2025**

**(being the subdivision of Lot 2 DP 57092)
At 64 Awanui Drive, Waikanae
For Vanessa Anne Jefferies**

The Regional Regulatory Titles Officer at Wellington

PURSUANT to Section 221 of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that it has consented to the subdivision and in respect to Lots 1-3 the following conditions are to be complied with on a continuing basis:

1. **With respect to Lots 1-3:** Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the Engineering Report prepared by Landlink Re: Engineering report for 3 lot subdivision, Brad and Vanessa Jefferies at 64 Awanui Drive, Waikanae" dated 13 March 2020 and submitted to Council in relation to application No. RM200047. A copy of the report is available in Council's Office at any time the office is open to the public and is stored electronically under e-docs reference no. RESCON-1917568819-45330.
2. **With respect to Lots 2 and 3:** As a secondary overflow path is not available or is through private property, on-site storm water disposal shall be designed to cater for a 100-year return event. The lot owners shall provide a stormwater attenuation/disposal system which shall comply with the requirements and intent of the report titled "Engineering report for 3 lot subdivision, Brad and Vanessa Jefferies at 64 Awanui Drive, Waikanae" prepared by Landlink Limited and dated 13 March 2020 and the further information supplied on 11 December 2020 and submitted to Council in relation to application No. RM200047. A copy of the report is available in Council's Office at any time the office is open to the public and is stored electronically under e-docs reference no. RESCON-1917568819-45330.

The certified stormwater disposal design as an option for compliance and it shall be the ongoing responsibility of the owner to construct and maintain a system which meets the above performance standard as it applied at the time of approval.



3. **With respect to Lots 2 and 3:** The minimum floor level to the underside of the floor joist or underside of the slab of any habitable building shall be 16.3 and 15.8 metres respectively above the 1953 Wellington MSL datum.
4. **With respect to Lots 1-3:** The following activities are prohibited within the Ecological Site K133 and the buffer areas identified as X, Y and Z:
- Planting of exotic fauna;
 - Planting of fauna not from the Foxton Ecological District;
 - Buildings and structures.

Issued in respect of application No. RM200047 on this 8th day of November 2022.



SOPHAS UCH
AUTHORISED OFFICER



Sashin Nair
AUTHORISED OFFICER

BC250084
Received by
Kapiti Coast District Council
06/03/2025

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Drainage**
Inspection Outcome: **Fail**
Inspected By: **Stew Nelson**
Inspection Date: **25 August 2025 1:04 p.m.**
Duration: **30 minutes**

Inspection Element	Status
General	Fail
Pipe diameter 100mm	Pass
Bedding material Pea metal	Pass
Gully trap	Pass
Connections/angles Laid to compliant angles, joint connection fixtures and sizes, pink primer used, pipe soffit's maintained	Pass
Branch length	Pass
Direction/fall Laid to compliant gradients according to DN and system used	Pass
Holding water Plugged at lateral connection, system holding water, good flow on release	Pass
Terminal vent	N/A
Registration number Fox plumbing	Pass
Stormwater sumps	N/A
Elevated drainage	N/A
Soak pit Engineered design completed, PS4 and site report to follow	Fail
Agent/owner written approval	N/A
Non compliance discussed onsite Email sent to A1 homes	Pass
Next Inspection required Tidy up failed inspections	Pass
Other	N/A



Taken at 1:02 PM on Monday 25/08/2025



Taken at 1:02 PM on Monday 25/08/2025



Taken at 1:03 PM on Monday 25/08/2025



Taken at 1:03 PM on Monday 25/08/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Drainage**
Inspection Outcome: **Fail**
Inspected By: **Stew Nelson**
Inspection Date: **25 August 2025**

Failed Items

General

Soak pit	Engineered design completed, PS4 and site report to follow
----------	--

Passed Items

General

Pipe diameter	100mm
Bedding material	Pea metal
Gully trap	
Connections/angles	Laid to compliant angles, joint connection fixtures and sizes, pink primer used, pipe soffit's maintained
Branch length	
Direction/fall	Laid to compliant gradients according to DN and system used
Holding water	Plugged at lateral connection, system holding water, good flow on release
Registration number	Fox plumbing
Non compliance discussed onsite	Email sent to A1 homes
Next Inspection required	Tidy up failed inspections

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Subfloor**
Inspection Outcome: **Pass**
Inspected By: **Gareth McCullagh**
Inspection Date: **31 October 2025 9:36 a.m.**
Duration: **0 minutes**

Inspection Element	Status
General	Pass
Non compliance discussed onsite	N/A
Spoke to builder	
Other	Pass

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Drainage**
Inspection Outcome: **Pass**
Inspected By: **Gareth McCullagh**
Inspection Date: **31 October 2025 9:37 a.m.**
Duration: **0 minutes**

Inspection Element	Status
General	Pass
Soak pit	Pass
Engineered design completed, PS4 and site report to follow	
Ps4 supplied	
Non compliance discussed onsite	N/A
Email sent to A1 homes	

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Final Inspection**
Inspection Outcome: **Pass**
Inspected By: **Gareth McCullagh**
Inspection Date: **31 October 2025 10:07 a.m.**
Duration: **30 minutes**

Inspection Element	Status
Exterior	Pass
All previous inspections/notes passed	Pass
Drawings	Pass
Additional information/plan	N/A
Sub-floor ventilation	Pass
Base boards in and vents	
Roof fixings	Pass
Screwed as required	
Spouting and down-pipes	Pass
In and connected	
Deck structure	Pass
Flashings - roof	Pass
Penetrations - flashings	Pass
Barriers	N/A
Gully dishes	Pass
In place	
Stormwater and site drainage	N/A
Handrails	Pass
Wastes to gully	Pass
Fixings - durability	Pass
Steps/stairs	Pass
Terminal vents/AAVs	Pass
Completed	
Brick veneer cladding	N/A
Cladding painted/sealed	Pass
All cladding has been painted and sealed as required	
Flashings - windows/doors	Pass
All windows and doors flashed as required	
Cladding ground clearance	Pass
Non compliance discussed onsite	N/A
Final check complete	Pass
Other	Pass
All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.	
Interior	Pass
All previous inspections/notes passed	Pass
Drawings	Pass
Additional information/plan	N/A

Service areas-floors/walls	Pass
Sealed as required	
Stair design	N/A
Handrails	N/A
Barriers from falling	N/A
Lighting	Pass
Windows and light fixtures in place for natural and artificial lighting	
Laundering	Pass
Cooking facilities	Pass
Smoke detectors	Pass
In all bedrooms and hallway	
Food storage/preparation	Pass
Ventilation	Pass
HWC flues	N/A
HWC restraint	Pass
Tempering valve	Pass
Glazing - human impact	Pass
Safety glass in place	
Window restrictors	N/A
Hot water temp	Pass
50 degrees	
Solid fuel heater	N/A
Water supply tank	Pass
Trap seals and AAVS	Pass
All vanities, sinks and tubs are trapped as required	
Cistern flushing	Pass
Toilets flushing as required and running off non potable water	
WC pan connection	Pass
Non potable water signs	Pass
Septic system	N/A
Window labels	N/A
Non compliance discussed onsite	N/A
Final check complete	Pass
All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.	
Other	Pass
All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.	
Intertenancy/commercial	N/A
Other	N/A



Taken at 9:38 AM on Friday 31/10/2025



Deck clearance

Taken at 9:38 AM on Friday 31/10/2025



Taken at 9:38 AM on Friday 31/10/2025



Taken at 9:39 AM on Friday 31/10/2025



Taken at 9:39 AM on Friday 31/10/2025



Taken at 9:40 AM on Friday 31/10/2025



Taken at 9:41 AM on Friday 31/10/2025



Taken at 9:41 AM on Friday 31/10/2025



Taken at 9:41 AM on Friday 31/10/2025



Taken at 9:42 AM on Friday 31/10/2025



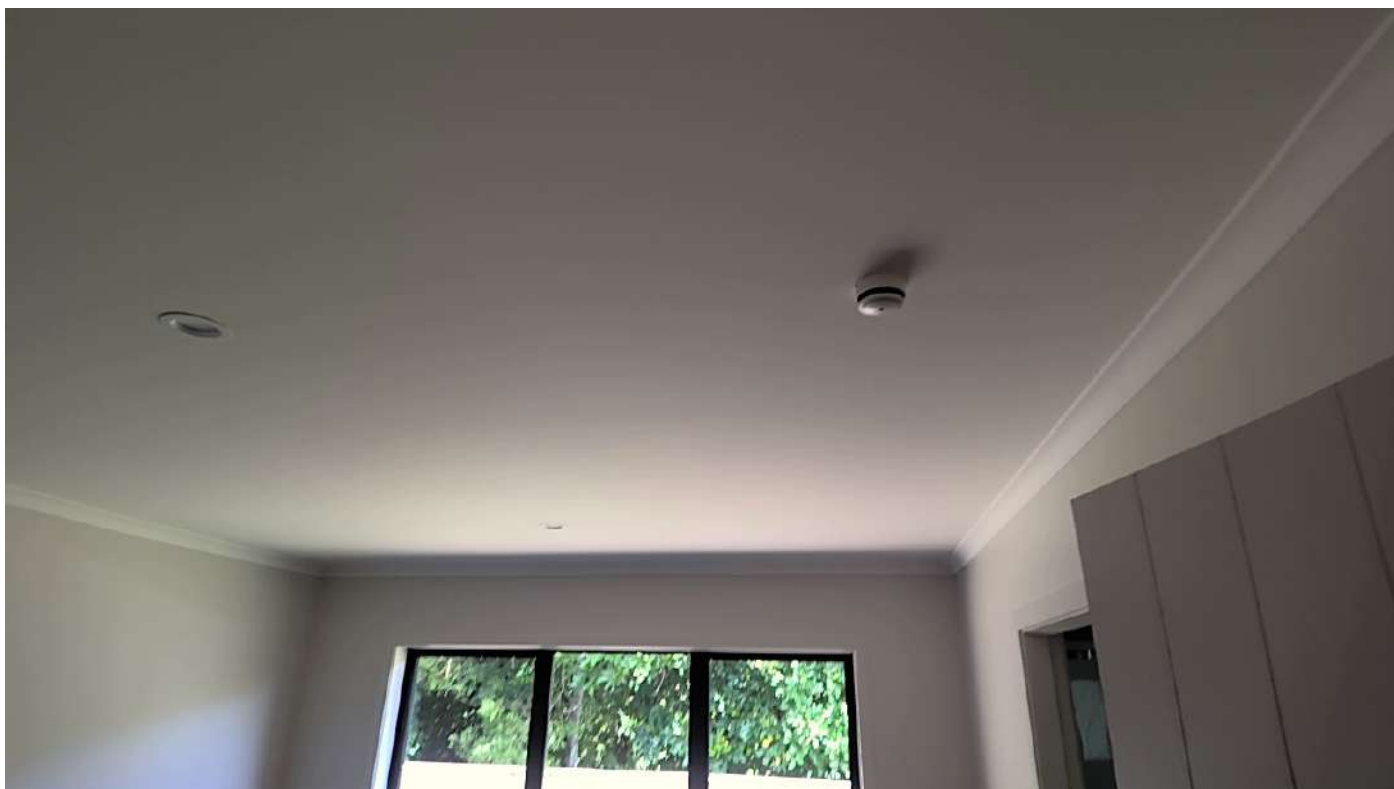
Taken at 9:42 AM on Friday 31/10/2025



Taken at 9:42 AM on Friday 31/10/2025



Taken at 9:43 AM on Friday 31/10/2025



Taken at 9:54 AM on Friday 31/10/2025



Taken at 9:55 AM on Friday 31/10/2025



Taken at 9:55 AM on Friday 31/10/2025



Taken at 9:55 AM on Friday 31/10/2025



Taken at 9:56 AM on Friday 31/10/2025



Taken at 9:57 AM on Friday 31/10/2025



Taken at 9:57 AM on Friday 31/10/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Piles**
Inspection Outcome: **Pass**
Inspected By: **Gareth McCullagh**
Inspection Date: **31 October 2025**

Passed Items

General

Other

Ps4 supplied

Inspection Type: **Subfloor**
Inspection Outcome: **Pass**
Inspected By: **Gareth McCullagh**
Inspection Date: **31 October 2025**

Passed Items

General

Other

Inspection Type: **Drainage**
Inspection Outcome: **Pass**
Inspected By: **Gareth McCullagh**
Inspection Date: **31 October 2025**

Passed Items

General

Soak pit

Engineered design completed, PS4 and site report to follow

Ps4 supplied

Inspection Type: **Final Inspection**
Inspection Outcome: **Pass**
Inspected By: **Gareth McCullagh**
Inspection Date: **31 October 2025**

Passed Items

Exterior

All previous inspections/notes passed

Drawings	
Sub-floor ventilation	
Roof fixings	Base boards in and vents
Spouting and down-pipes	Screwed as required
Deck structure	In and connected
Flashings - roof	
Penetrations - flashings	
Gully dishes	In place
Handrails	
Wastes to gully	
Fixings - durability	
Steps/stairs	
Terminal vents/AAVs	Completed
Cladding painted/sealed	All cladding has been painted and sealed as required
Flashings - windows/doors	All windows and doors flashed as required
Cladding ground clearance	
Final check complete	
Other	All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.
Interior	
All previous inspections/notes passed	
Drawings	
Service areas-floors/walls	Sealed as required
Lighting	Windows and light fixtures in place for natural and artificial lighting
Laundering	
Cooking facilities	
Smoke detectors	In all bedrooms and hallway
Food storage/preparation	
Ventilation	
HWC restraint	
Tempering valve	
Glazing - human impact	Safety glass in place
Hot water temp	50 degrees
Water supply tank	
Trap seals and AAVS	All vanities, sinks and tubs are trapped as required
Cistern flushing	Toilets flushing as required and running off non potable water
WC pan connection	
Non potable water signs	
Final check complete	All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.
Other	All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Piles**
Inspection Outcome: **Fail**
Inspected By: **Stew Nelson**
Inspection Date: **13 June 2025 9:23 a.m.**
Duration: **30 minutes**

Inspection Element	Status
General	Fail
Pile size	N/A
Pile layout	Pass
Aligns with consented plans	
Minimum floor level	N/A
Special piles	N/A
Timber treatment	N/A
Hole depth	Pass
Aligns with the consented plans	
Agent/owner written approval	N/A
Non compliance discussed onsite	Pass
Vincent on site	
LBP number	Pass
Vincent A1 homes	
Next Inspection required	Pass
Subfloor	
Other	Fail
1. Require engineer site report, informed inspecting next Tuesday	
2. Require confirmation from surveyor for heights once framing is constructed	
Site Inspection	Pass
Boundaries identified	Pass
Pegs identified, Vincent confirms set out per plan. SORG	
Ground conditions checked	N/A



Taken at 9:19 AM on Friday 13/06/2025



Taken at 9:21 AM on Friday 13/06/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Piles**
Inspection Outcome: **Fail**
Inspected By: **Stew Nelson**
Inspection Date: **13 June 2025**

Failed Items

General

Other

1. Require engineer site report, informed inspecting next Tuesday
2. Require confirmation from surveyor for heights once framing is constructed

Passed Items

General

Pile layout

Aligns with consented plans

Hole depth

Aligns with the consented plans

Non compliance discussed onsite

Vincent on site

LBP number

Vincent A1 homes

Next Inspection required

Subfloor

Site Inspection

Boundaries identified

**Pegs identified, Vincent confirms set out per plan.
SORG**

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Subfloor**
Inspection Outcome: **Fail**
Inspected By: **Stew Nelson**
Inspection Date: **26 June 2025 4:28 p.m.**
Duration: **0 minutes**

Inspection Element	Status
General	Fail
Other	Fail
Still require engineers site note and to confirmation of Heights	

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Piles**
Inspection Outcome: **Fail**
Inspected By: **Stew Nelson**
Inspection Date: **26 June 2025 4:29 p.m.**
Duration: **0 minutes**

Inspection Element

Status

General

Fail

Other

Fail

1. Require engineer site report, informed inspecting next Tuesday
2. Will need to confirm finished floor heights



Kapiti Coast District Council
175 Rimu Road
Private Bag 60601
Paraparaumu 5254
Phone (04) 296 4700

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Piles**
Inspection Outcome: **Fail**
Inspected By: **Stew Nelson**
Inspection Date: **26 June 2025**

Failed Items

General

Other

1. Require engineer site report, informed inspecting next Tuesday
2. Will need to confirm finished floor heights

Inspection Type: **Subfloor**
Inspection Outcome: **Fail**
Inspected By: **Stew Nelson**
Inspection Date: **26 June 2025**

Failed Items

General

Other

Still require engineers site note and to confirmation of Heights

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Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Postline / Wet area Pre Application**
Inspection Outcome: **Pass**
Inspected By: **Charlie Maltby**
Inspection Date: **15 August 2025 10:04 a.m.**
Duration: **45 minutes**

Inspection Element	Status
General	Pass
Sighted previous inspection notes	Pass
Sighted and reviewed previous expenses.	
Conforms with approved drawings	Pass
Sighted and reviewed the consented plans on site.	
Confirm additional information/amended plan	N/A
Sheet bracing	Pass
GS1-N and BL1-H	
Correct sheet materials used to align with consented plans	
Sheet fixings	Pass
Correct fixing patterns and fixing type align with product specifications	
Sheet heights	Pass
Sheets are the required distance off the floor	
Minimum 5mm off floor.	
Fire/acoustic separation	N/A
Not part of this consent.	
Agent/owner written approval	N/A
Wet area substrate system	N/A
LBP number	Pass
VINNIE	
Non compliance discussed onsite	N/A
Next Inspection required	Pass
Drainage	
Other	Pass
All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply	



GS1-N

Taken at 9:52 AM on Friday 15/08/2025



BL1-H with brace line

Taken at 9:53 AM on Friday 15/08/2025



Taken at 9:53 AM on Friday 15/08/2025



Ensuite with GS1-N

Taken at 9:56 AM on Friday 15/08/2025



laundry

Taken at 9:57 AM on Friday 15/08/2025



Taken at 9:57 AM on Friday 15/08/2025



main bathroom

Taken at 9:57 AM on Friday 15/08/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Postline / Wet area Pre Application**
Inspection Outcome: **Pass**
Inspected By: **Charlie Maltby**
Inspection Date: **15 August 2025**

Passed Items

General

Sighted previous inspection notes
Conforms with approved drawings
Sheet bracing

Sheet fixings

Sheet heights

LBP number

Next Inspection required

Other

Sighted and reviewed previous expenses.

Sighted and reviewed the consented plans on site.

GS1-N and BL1-H

Correct sheet materials used to align with consented plans

Correct fixing patterns and fixing type align with product specifications

**Sheets are the required distance off the floor
Minimum 5mm off floor.**

VINNIE

Drainage

All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply

GoGet Inspection Audit Report

Consent No: **250084**
 Applicant: **ACW Construction Ltd**
 Site Address: **62 Awanui Drive, Waikanae**
 Work Type: **3 bedroom dwelling.**

Inspection Type: **Pre Clad**
 Inspection Outcome: **Fail**
 Inspected By: **Stew Nelson**
 Inspection Date: **15 July 2025 10:24 a.m.**
 Duration: **30 minutes**

Inspection Element	Status
General	Fail
Inspection notes	Pass
Drawings	Pass
Additional information/plan	N/A
Fire Separations	N/A
Building wrap type	Pass
Flexible wrap in place as per consented plans	
Flexible sealing tape	Pass
Completed	
Deck membrane fixed in accordance with specification	N/A
Head flashings	Fail
No windows yet	
Sill flashings	Pass
WANZ bars in place and screwed off as required	
Back flashings	N/A
Saddle flashings	N/A
Internal/external corner flashings	Pass
Soakers to cladding, confirm at final	
Jamb flashings	N/A
Capillary clearances	N/A
Flashing penetrations/seals	Fail
Yet to be installed, to be sited on the interior at preline	
Ground/Deck Cladding Clearance	N/A
Additional strapping to wrap	Pass
Extra strapping has been fitted at 300mm centres	
Batten timber treatment	Pass
H3.1.	
Cavity closers	Pass
In place	
Battens in place	Pass
All cavity battens have been completed as per the system specifications - Linea	
Battens structural fixing	N/A
Cavity spacers	N/A
Cavity spacers size and slope	N/A
LBP number	Pass
Vincent Saunders	
Agent/owner written approval	N/A
Non compliance discussed onsite	Pass
Photos to be provided of Head flashings or book another inspection depending on wait	

times

Next Inspection required

Pass

Preline

Other

N/A



Taken at 10:18 AM on Tuesday 15/07/2025



Taken at 10:18 AM on Tuesday 15/07/2025



Taken at 10:19 AM on Tuesday 15/07/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Pre Clad**
Inspection Outcome: **Fail**
Inspected By: **Stew Nelson**
Inspection Date: **15 July 2025**

Failed Items

General

Head flashings	No windows yet
Flashing penetrations/seals	Yet to be installed, to be sited on the interior at preline

Passed Items

General

Inspection notes	
Drawings	
Building wrap type	Flexible wrap in place as per consented plans
Flexible sealing tape	Completed
Sill flashings	WANZ bars in place and screwed off as required
Internal/external corner flashings	Soakers to cladding, confirm at final
Additional strapping to wrap	Extra strapping has been fitted at 300mm centres
Batten timber treatment	H3.1.
Cavity closers	In place
Battens in place	All cavity battens have been completed as per the system specifications - Linea
LBP number	Vincent Saunders
Non compliance discussed onsite	Photos to be provided of Head flashings or book another inspection depending on wait times
Next Inspection required	Preline

GoGet Inspection Audit Report

Consent No: **250084**
 Applicant: **ACW Construction Ltd**
 Site Address: **62 Awanui Drive, Waikanae**
 Work Type: **3 bedroom dwelling.**

Inspection Type: **Pre Wrap**
 Inspection Outcome: **Pass**
 Inspected By: **Jeremy Lincoln**
 Inspection Date: **10 July 2025 11:01 a.m.**
 Duration: **45 minutes**

Inspection Element	Status
General	Pass
Inspection notes	Pass
Sighted and failed items have been reassessed where appropriate	
Drawings	Pass
Additional information/plan	N/A
Fire Separations	N/A
Cladding type identified	Pass
Linea	
Stud spacing appropriate for cladding	Pass
Stud spacing and any blocking meets the cladding specifications	
Exterior sheet bracing and angle brace fixing	Pass
Bathroom ply brace installed	
Bottom plate connections	Pass
All bottom plate connections fixed in compliance with the building consent documentation	
Building wrap type	Pass
Tekton	
Flexible building wrap product matches the consented plans	
Roof Cross Bracing	Pass
Valleys & hips	
Roofing type	Pass
Longrun	
Purlin fixing	Pass
Aligns with consented plans	
Decking substrate	N/A
Top Plate Connection	Pass
Top plate to studs fixed with Studloc screws	
Lintel Connections	Pass
Lintels connected with Studloc screws	
Truss connections	Pass
Aligns with the supplied truss plan	
Column/post connections	Pass
Top and bottom connections align with consented plans	
LBP number	Pass
136932	
Agent/owner written approval	N/A
Non compliance discussed onsite	Pass
With vincent	
Next Inspection required	Pass
Preclad	
Other	N/A



Taken at 10:45 AM on Thursday 10/07/2025



Taken at 10:46 AM on Thursday 10/07/2025



Taken at 10:46 AM on Thursday 10/07/2025



Taken at 10:46 AM on Thursday 10/07/2025



Taken at 10:47 AM on Thursday 10/07/2025



Taken at 10:53 AM on Thursday 10/07/2025



Taken at 10:54 AM on Thursday 10/07/2025



Taken at 10:55 AM on Thursday 10/07/2025



Taken at 10:55 AM on Thursday 10/07/2025



Taken at 10:58 AM on Thursday 10/07/2025



Taken at 11:00 AM on Thursday 10/07/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Pre Wrap**
Inspection Outcome: **Pass**
Inspected By: **Jeremy Lincoln**
Inspection Date: **10 July 2025**

Passed Items

General

Inspection notes	Sighted and failed items have been reassessed where appropriate
Drawings	
Cladding type identified	Linea
Stud spacing appropriate for cladding	Stud spacing and any blocking meets the cladding specifications
Exterior sheet bracing and angle brace fixing	Bathroom ply brace installed
Bottom plate connections	All bottom plate connections fixed in compliance with the building consent documentation
Building wrap type	Tekton Flexible building wrap product matches the consented plans
Roof Cross Bracing	Valleys & hips
Roofing type	Longrun
Purlin fixing	Aligns with consented plans
Top Plate Connection	Top plate to studs fixed with Studloc screws
Lintel Connections	Lintels connected with Studloc screws
Truss connections	Aligns with the supplied truss plan
Column/post connections	Top and bottom connections align with consented plans
LBP number	136932
Non compliance discussed onsite	With vincent
Next Inspection required	Preclad

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Preline Building**
Inspection Outcome: **Pass**
Inspected By: **Luke Natrass**
Inspection Date: **12 August 2025 10:05 a.m.**
Duration: **60 minutes**

Inspection Element	Status
General	Pass
Moisture re check inspection	
Sighted previous inspection notes	Pass
Sighted previous inspection notes	
Conforms with approved drawings	Pass
All items assessed and deemed to comply with approved plans.	
Fire Separations	N/A
Not part of consent	
Max moisture content	Pass
Multiple check points indicate compliant moisture levels of 15-16% max	
Ventilation to rooms	Pass
Opening windows and doors align with the consented plans.	
Framing - timber treatment and grades	Pass
MSG8, H1.2 red stag pine framing.	
Lintel/beam size and fixing	Pass
All lintels and beams deam to comply and fixed as required.	
Insulation	Pass
Insulation values align with the consented H1 report	
Insulation install completed with good friction fitting.	
Top plate connection	Pass
Top plate to stud fixed with studloc screws.	
Ceiling batten	Pass
Rondo battens installed at 600 mm centers.	
Stud spacing	Pass
Internals and external framing at 600 mm centers.	
Ceiling diaphragm	N/A
Not part of consent	
Bracing connections	Pass
handi brackets in place as and were required.	
Air seals	Pass
All windows, doors and under frames are foamed and sealed as required.	
Bottom plate fixings	Pass
All frames fixed down as required.	
Building closed in	Pass
Building closed in adequately to allow lining.	
Grade of timber framing	Pass
Sg8 pine framing.	
Wet area substrate	N/A
Not part of consent.	
LBP number	Pass
Vinny.	

Non compliance discussed onsite

N/A

Next Inspection required

Pass

Postline

Other

Pass

All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.



Taken at 10:01 AM on Tuesday 12/08/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Preline Building**
Inspection Outcome: **Pass**
Inspected By: **Luke Natrass**
Inspection Date: **12 August 2025**

Passed Items

General

Sighted previous inspection notes
Conforms with approved drawings

Max moisture content

Ventilation to rooms

Framing - timber treatment and grades
Lintel/beam size and fixing

Insulation

Top plate connection

Ceiling batten

Stud spacing

Bracing connections

Air seals

Bottom plate fixings

Building closed in

Grade of timber framing

LBP number

Next Inspection required

Other

Moisture re check inspection

Sighted previous inspection notes

All items assessed and deemed to comply with approved plans.

Multiple check points indicate compliant moisture levels of 15-16% max

Opening windows and doors align with the consented plans.

MSG8, H1.2 red stag pine framing.

All lintels and beams deam to comply and fixed as required.

Insulation values align with the consented H1 report
Insulation install completed with good friction fitting.

Top plate to stud fixed with studloc screws.

Rondo battens installed at 600 mm centers.

Internals and external framing at 600 mm centers.

handi brackets in place as and were required.

All windows, doors and under frames are foamed and sealed as required.

All frames fixed down as required.

Building closed in adequately to allow lining.

Sg8 pine framing.

Vinny.

Postline

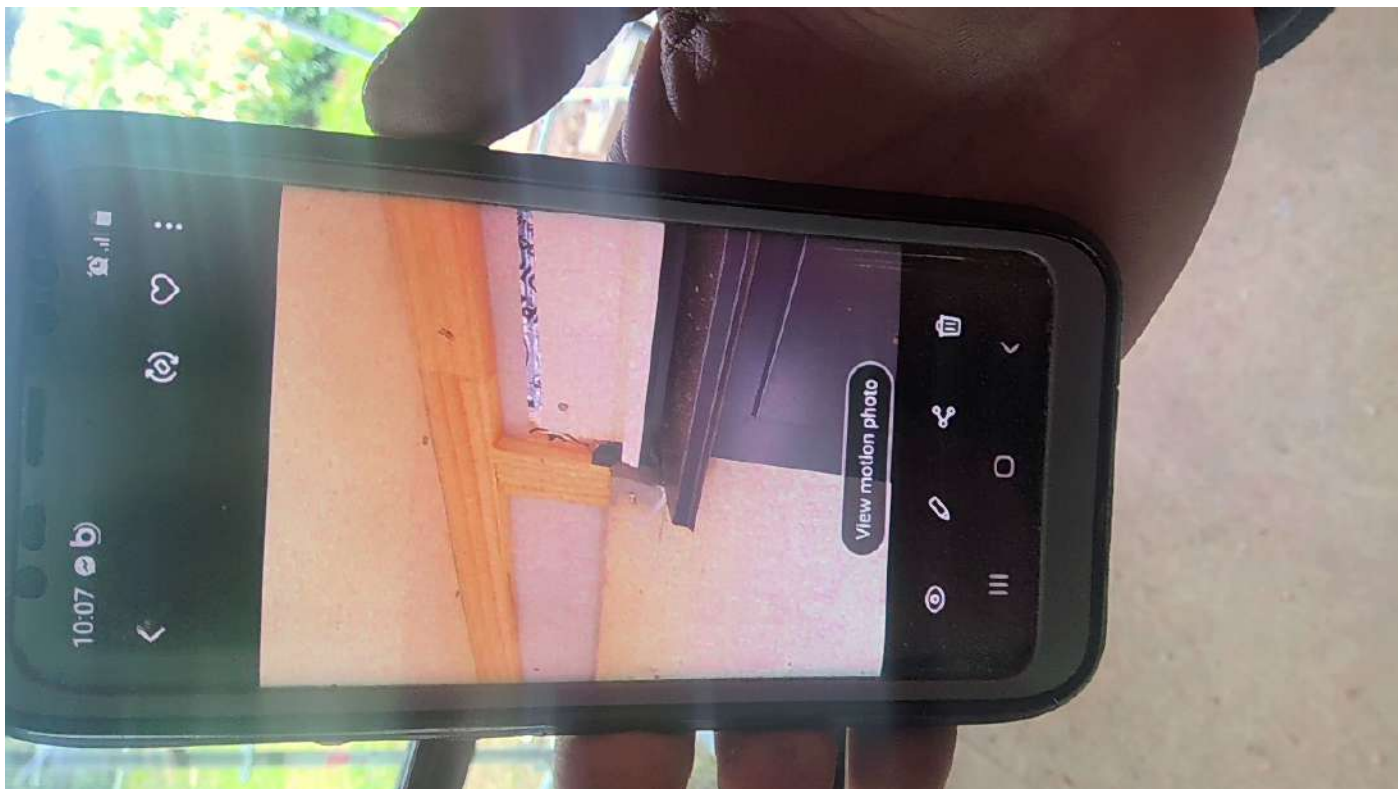
All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

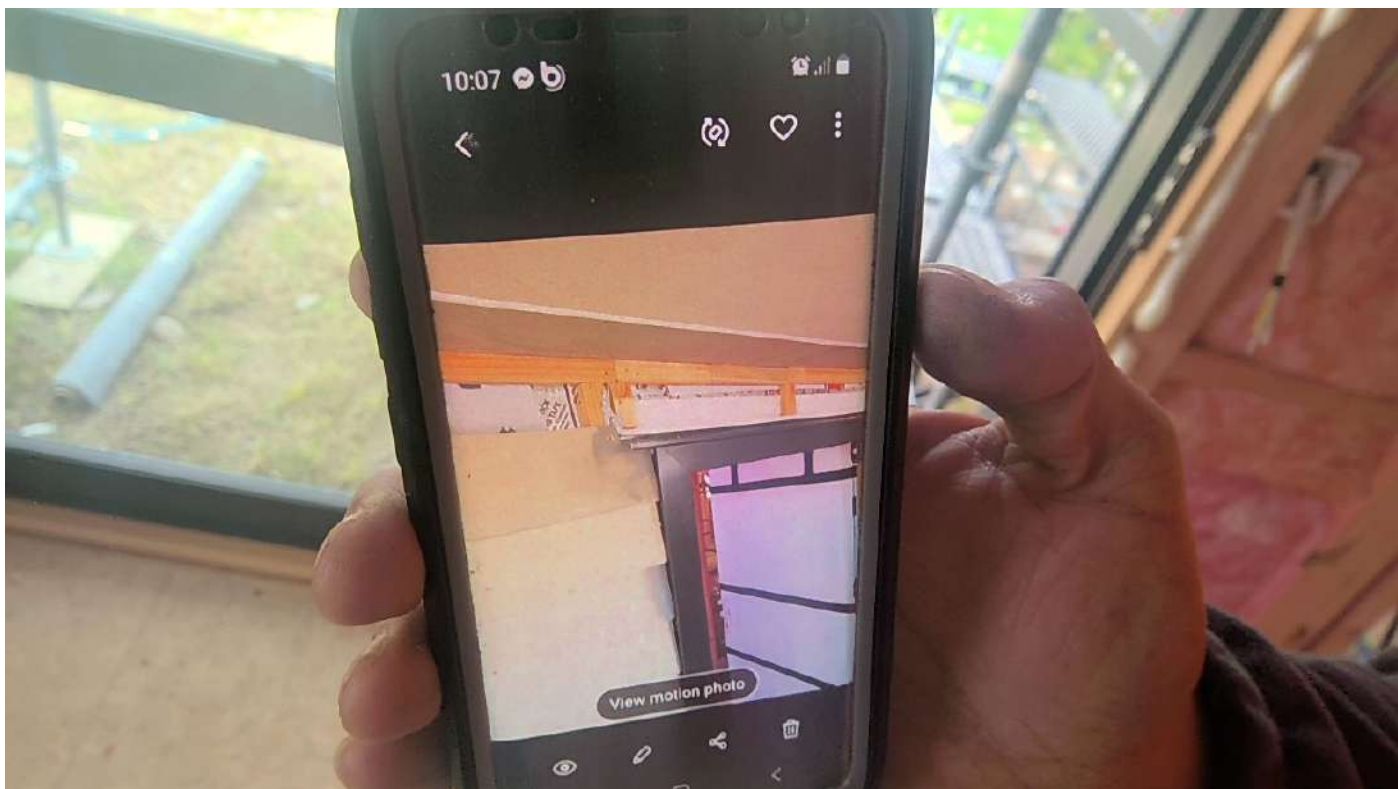
Inspection Type: **Pre Clad**
Inspection Outcome: **Pass**
Inspected By: **Luke Natrass**
Inspection Date: **7 August 2025 10:11 a.m.**
Duration: **15 minutes**

Inspection Element	Status
General	Pass
Head flashings	Pass
Sighted photos of Head flashings in place and taped back to wrap with stopends, cavity closers and battens as required	
Flashing penetrations/seals	Pass
X1 Services penetrations are all sealed against the wall wrap with proprietary tradeseal boot flashing	
Non compliance discussed onsite	N/A
Next Inspection required	Pass
Postline	
Other	Pass
All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.	



Head flashings

Taken at 10:07 AM on Thursday 7/08/2025



Taken at 10:07 AM on Thursday 7/08/2025



Penetration flashing

Taken at 10:09 AM on Thursday 7/08/2025

GoGet Inspection Audit Report

Consent No: **250084**
 Applicant: **ACW Construction Ltd**
 Site Address: **62 Awanui Drive, Waikanae**
 Work Type: **3 bedroom dwelling.**

Inspection Type: **Preline Building**
 Inspection Outcome: **Fail**
 Inspected By: **Luke Natrass**
 Inspection Date: **7 August 2025 10:27 a.m.**
 Duration: **60 minutes**

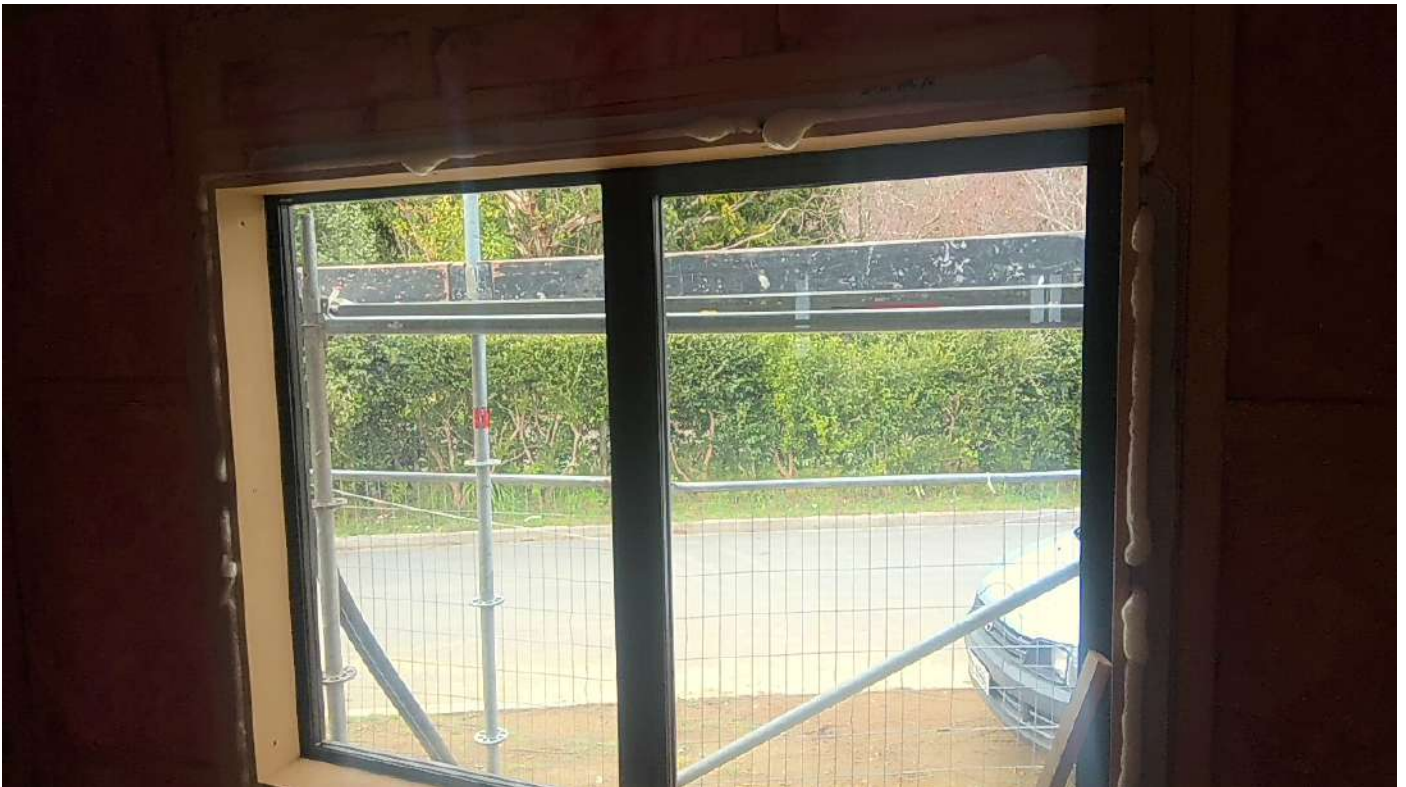
Inspection Element	Status
General	Fail
Sighted previous inspection notes	Pass
Sighted and failed items have been reassessed where appropriate	
Conforms with approved drawings	Pass
All items assessed and deemed to comply with approved plans	
Confirm additional information/amended plan	N/A
Fire Separations	N/A
Max moisture content	Fail
Multiple check points indicate high moisture levels of 26-32% , re-check required	
Ventilation to rooms	Pass
Opening windows and doors align with the consented plans	
Framing - timber treatment and grades	Pass
MSG8, H1.2 red stag pine framing	
Lintel/beam size and fixing	Pass
All lintels and beams deam to comply and fixed as required	
Insulation	Pass
Insulation values align with the consented H1 report	
Insulation install completed with good friction fitting	
Top plate connection	Pass
Top plate to stud fixed with studloc screws	
Ceiling batten	Pass
Rondo battens installed at 600 mm centers	
Stud spacing	Pass
Internals and external framing at 600 mm centers	
Ceiling diaphragm	N/A
Bracing connections	Pass
handi brackets in place as and were required	
Air seals	Pass
All windows, doors and under frames are foamed and sealed as required	
Bottom plate fixings	Pass
All frames fixed down as required	
Building closed in	Pass
Building closed in adequately to allow lining	
Grade of timber framing	Pass
Sg8 pine framing	
Wet area substrate	N/A
Not part of consent	
Wood burner	N/A
LBP number	Pass
Vinny	

Agent/owner written approval	N/A
Non compliance discussed onsite	Pass
Spoke with builder on site re requiring moisture re check , but ok to line ceilings and top horizontal sheets only	
Next Inspection required	Pass
Preline Moisture re check	
Other	Fail
Re check require but , but ok to line ceilings and top horizontal sheets only	



Wall insulation

Taken at 10:11 AM on Thursday 7/08/2025



window airseals

Taken at 10:12 AM on Thursday 7/08/2025



Taken at 10:13 AM on Thursday 7/08/2025



Taken at 10:14 AM on Thursday 7/08/2025



Taken at 10:16 AM on Thursday 7/08/2025



Insulation r ratings

Taken at 10:17 AM on Thursday 7/08/2025



Ep1 handi brackets in place
Taken at 10:21 AM on Thursday 7/08/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Preline Building**
Inspection Outcome: **Fail**
Inspected By: **Luke Nattrass**
Inspection Date: **7 August 2025**

Failed Items

General

Max moisture content	Multiple check points indicate high moisture levels of 26-32% , re-check required
Other	Re check require but , but ok to line ceilings and top horizontal sheets only

Passed Items

General

Sighted previous inspection notes	Sighted and failed items have been reassessed where appropriate
Conforms with approved drawings	All items assessed and deemed to comply with approved plans
Ventilation to rooms	Opening windows and doors align with the consented plans
Framing - timber treatment and grades	MSG8, H1.2 red stag pine framing
Lintel/beam size and fixing	All lintels and beams deam to comply and fixed as required
Insulation	Insulation values align with the consented H1 report Insulation install completed with good friction fitting
Top plate connection	Top plate to stud fixed with studloc screws
Ceiling batten	Rondo battens installed at 600 mm centers
Stud spacing	Internals and external framing at 600 mm centers
Bracing connections	handi brackets in place as and were required
Air seals	All windows, doors and under frames are foamed and sealed as required
Bottom plate fixings	All frames fixed down as required
Building closed in	Building closed in adequately to allow lining
Grade of timber framing	Sg8 pine framing
LBP number	Vinny
Non compliance discussed onsite	Spoke with builder on site re requiring moisture re check , but ok to line ceilings and top horizontal sheets only
Next Inspection required	Preline Moisture re check

Inspection Type: **Pre Clad**
Inspection Outcome: **Pass**
Inspected By: **Luke Natrass**
Inspection Date: **7 August 2025**

Passed Items

General

Head flashings

Sighted photos of

Head flashings in place and taped back to wrap with stopends, cavity closers and battens as required

Flashing penetrations/seals

X1 Services penetrations are all sealed against the wall wrap with proprietary tradeseal boot flashing

Next Inspection required

Postline

Other

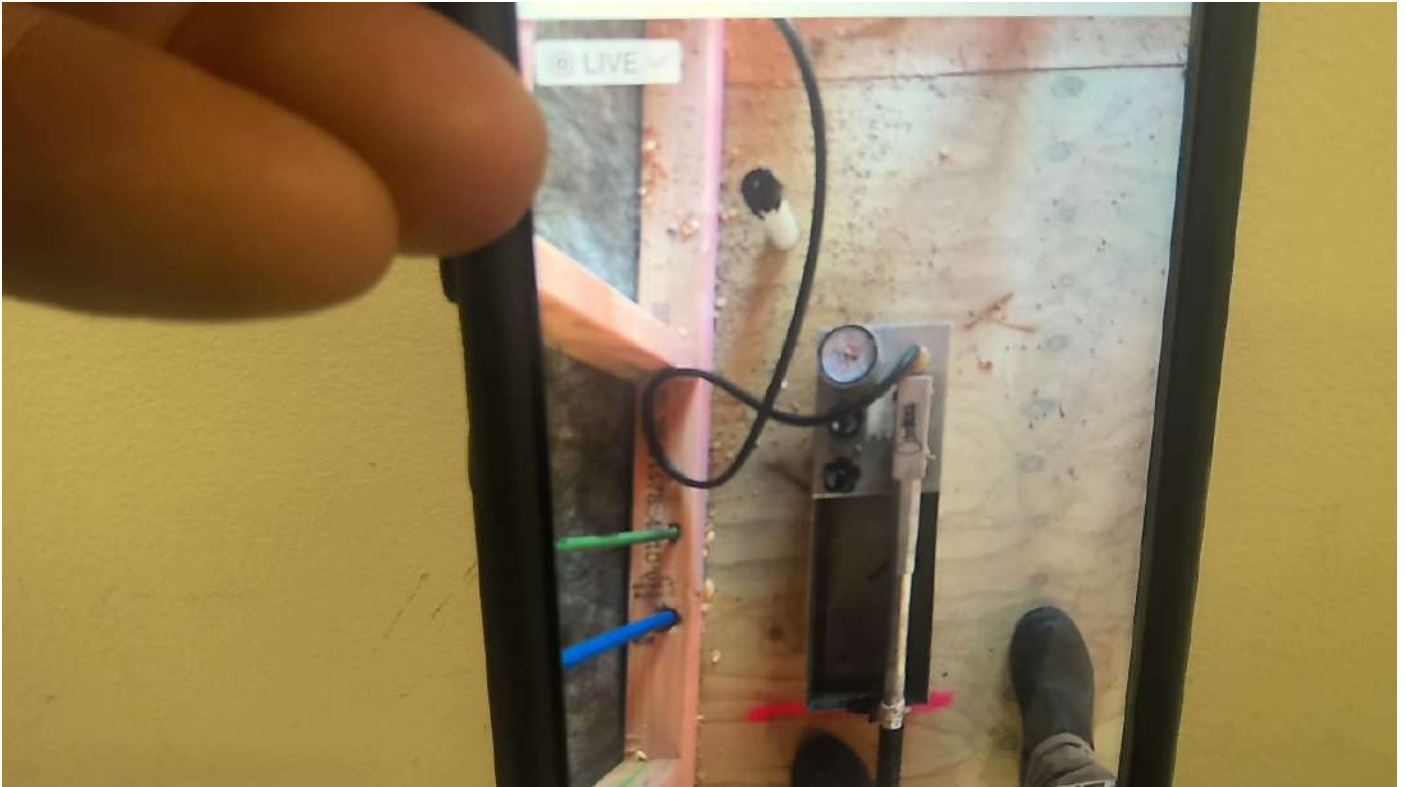
All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Preline Plumbing**
Inspection Outcome: **Pass**
Inspected By: **Luke Natrass**
Inspection Date: **1 August 2025 10:11 a.m.**
Duration: **60 minutes**

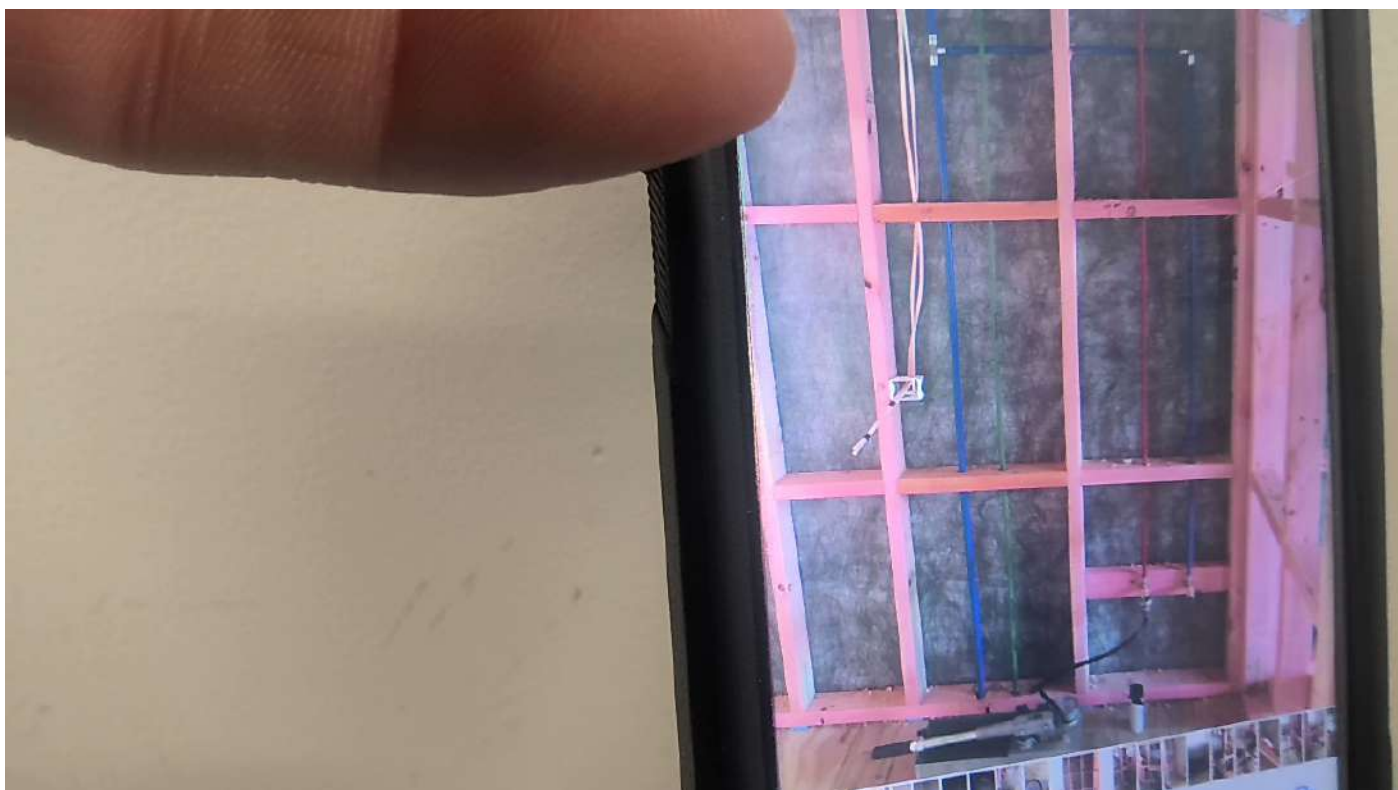
Inspection Element	Status
General	Pass
Sighted previous inspection notes	N/A
Conforms with approved drawings Plumbing fixtures locations match consented plans	Pass
Confirm additional information/amended plan	N/A
Plumber dwayne fox 15044	Pass
Soil pipe size and test	Pass
Pipes fixed/supported all pipes clipped and secured	Pass
System used AS3500	Pass
TPR line/discharge point tpr is piped to exterior via tundish and safetray	Pass
Inbuilt S/W pipes tested	N/A
Vents terminated Roof penetration of vents have been completed	Pass
Pressure test Test sited to 1500Kpa Hot, cold and non potable where looped together	Pass
Back flow preventor	N/A
Waste pipe size and test	Pass
Floor wastes	N/A
Shut off valves 3 in 1 valve fitted and located under house	Pass
Fire wraps and collars	N/A
Agent/owner written approval	N/A
Non compliance discussed onsite	N/A
Next Inspection required preline building	Pass
Other All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.	Pass



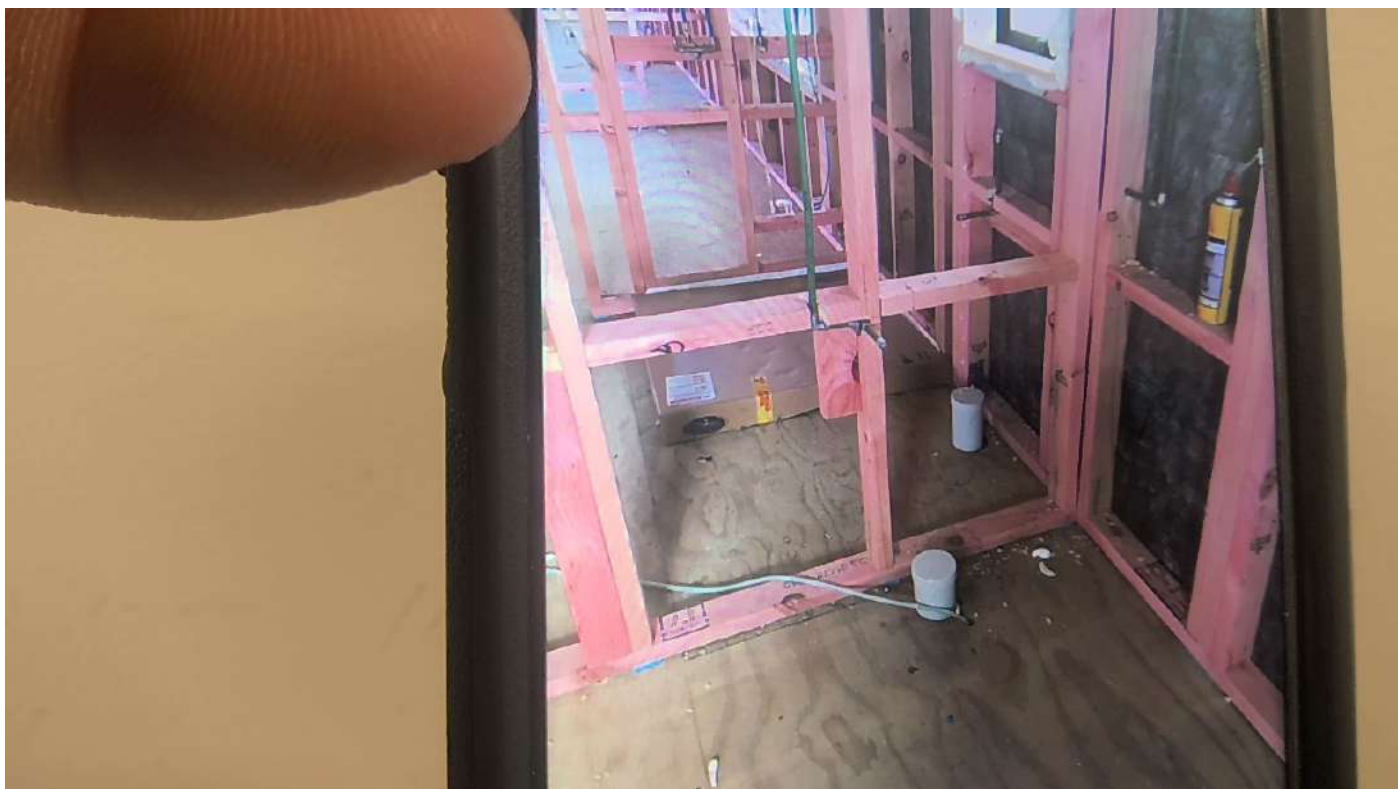
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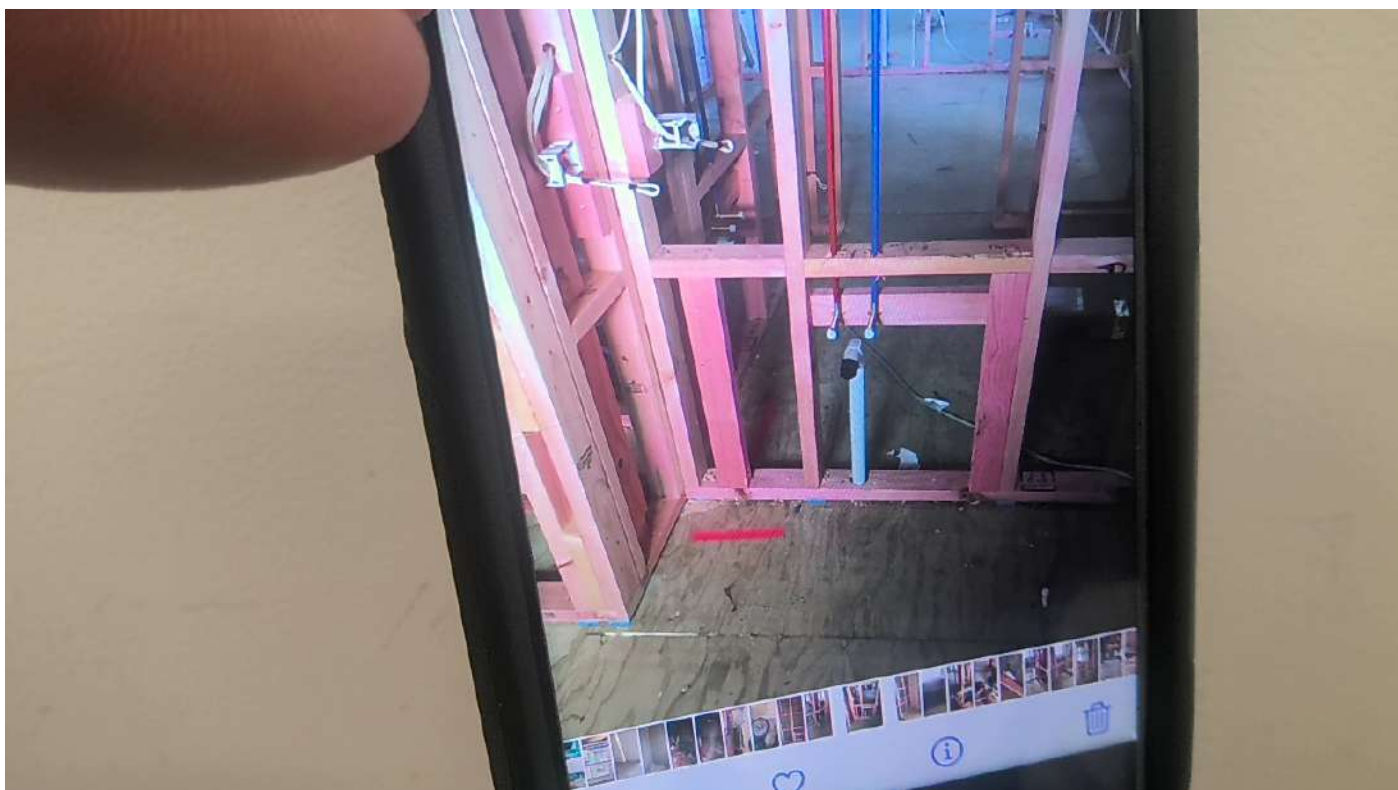
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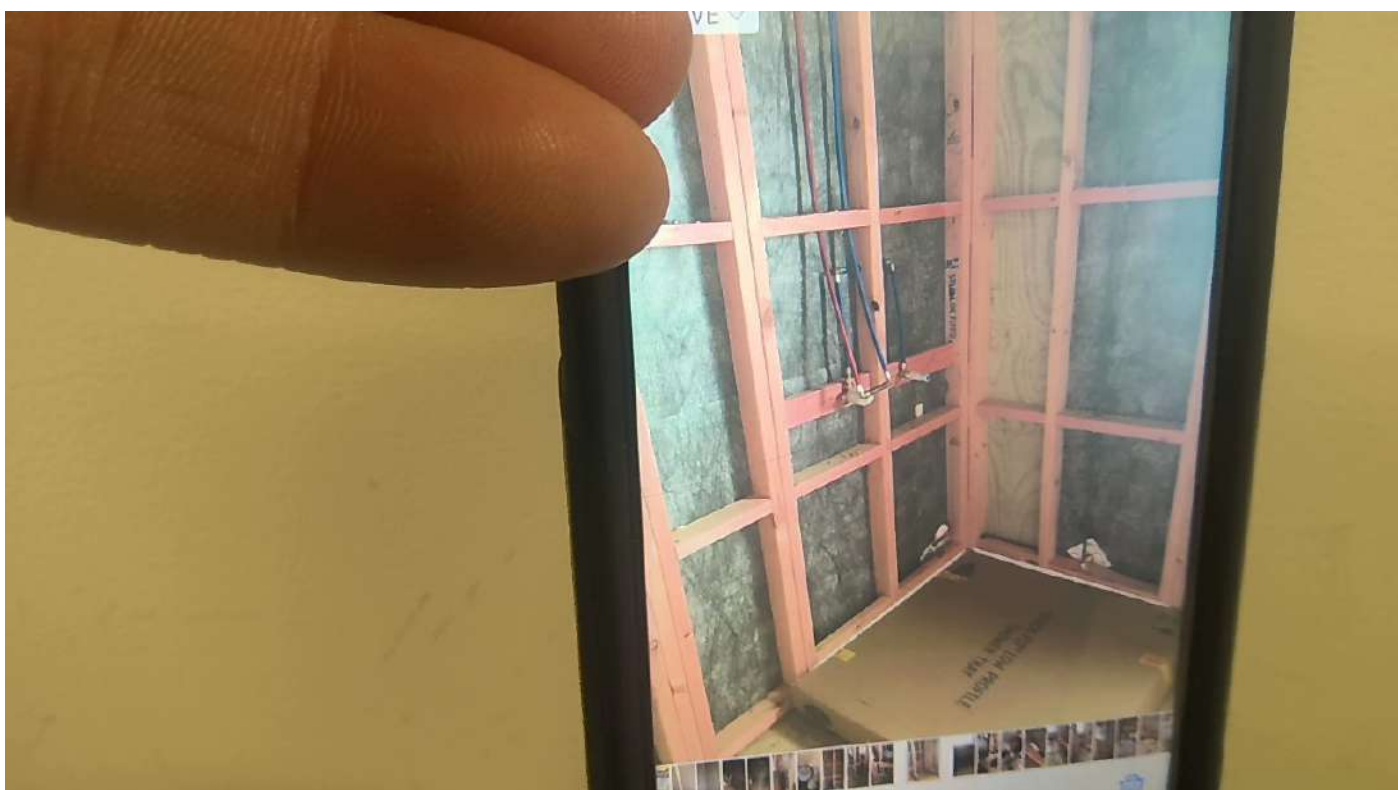
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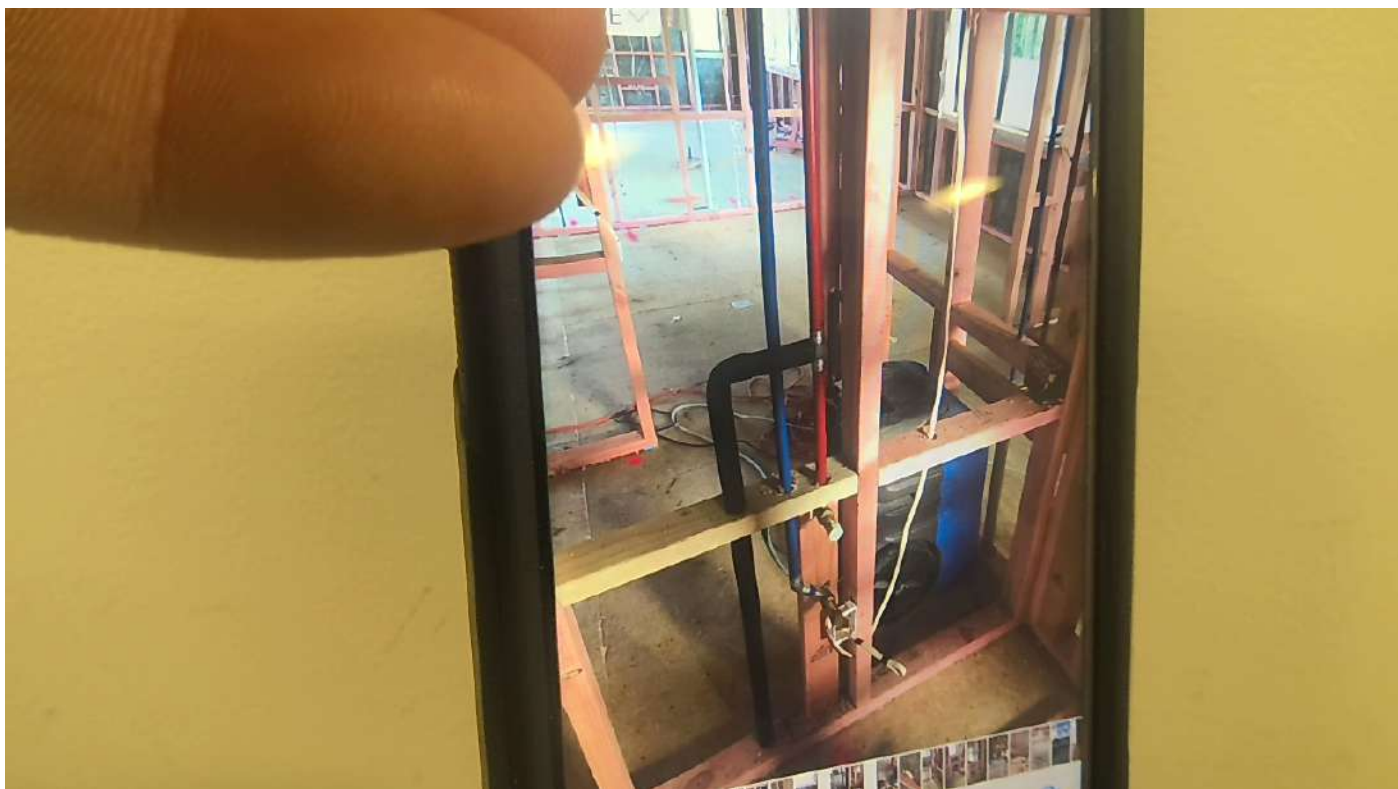
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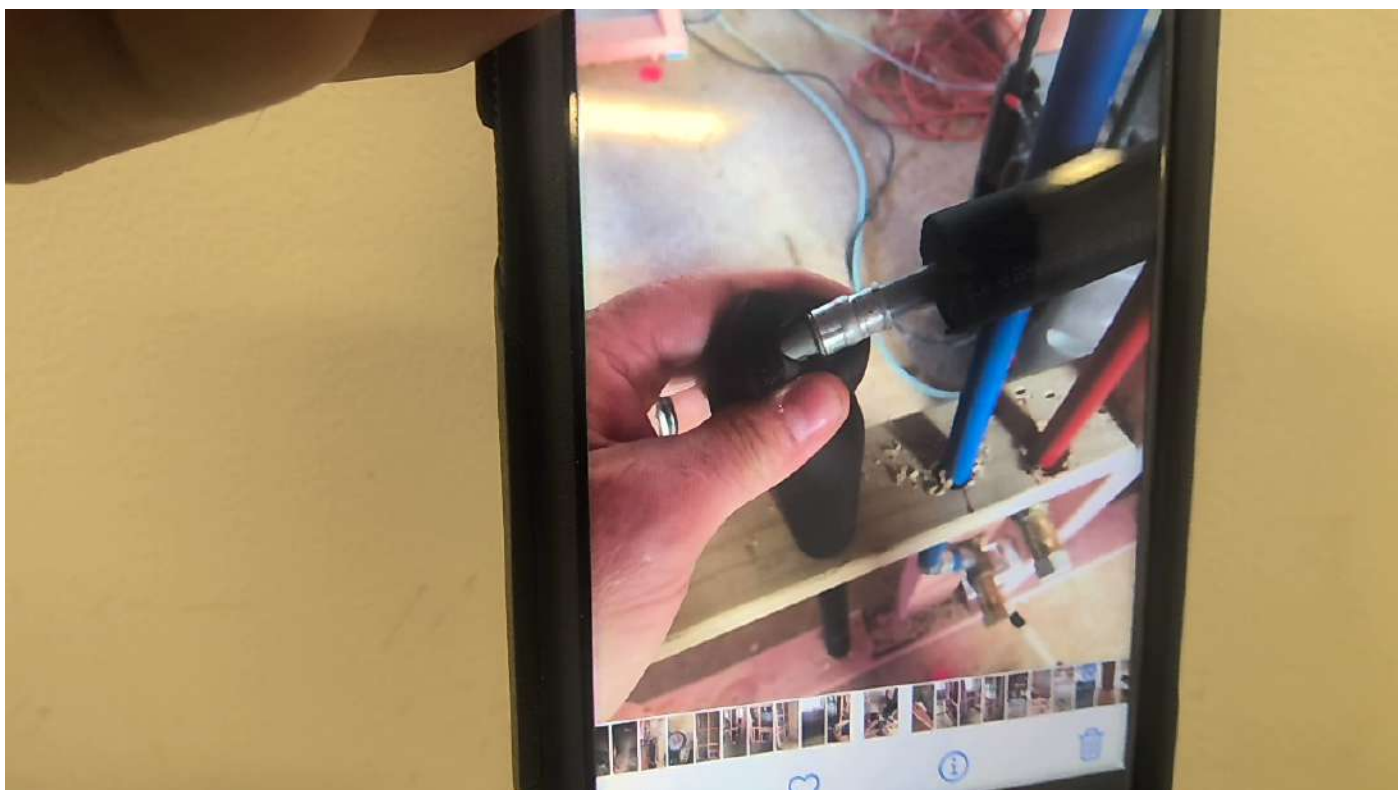
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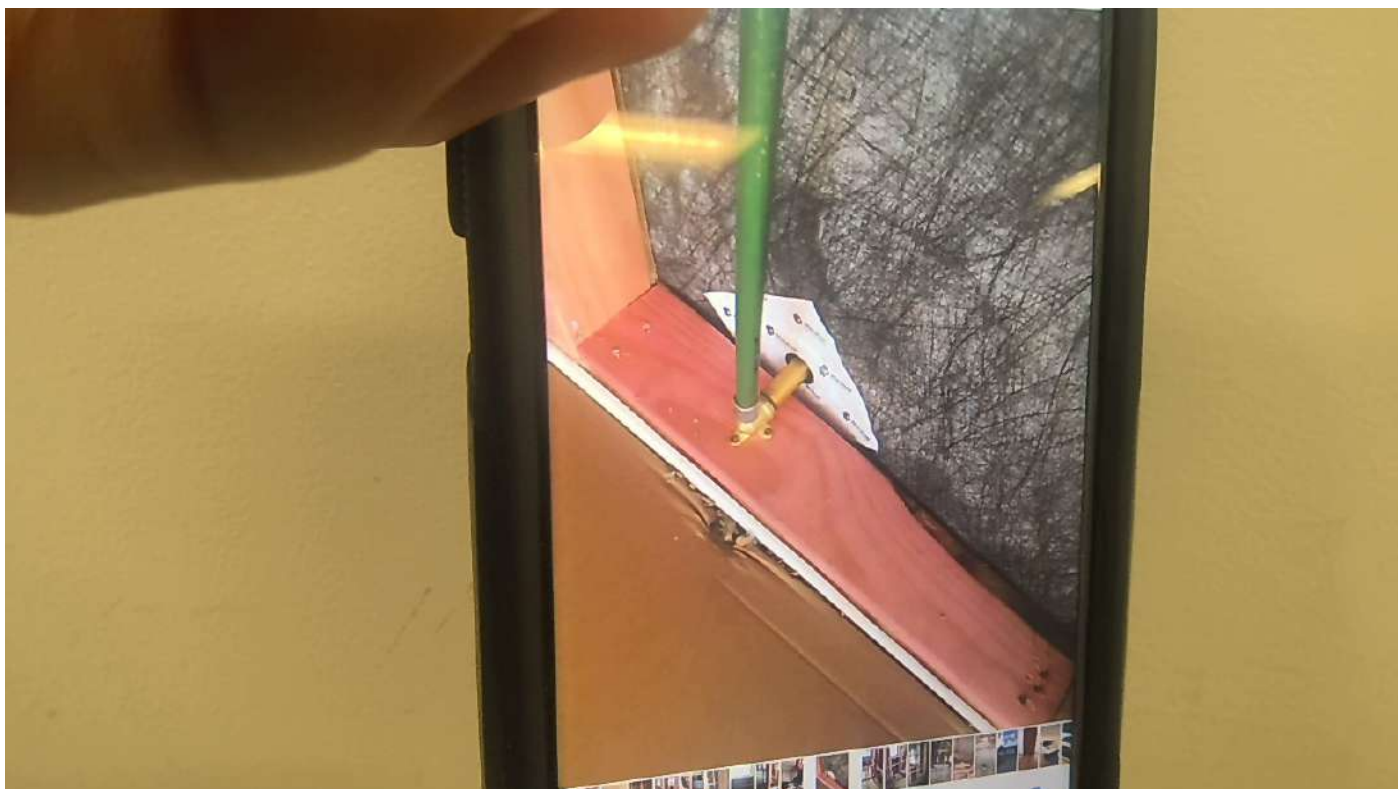
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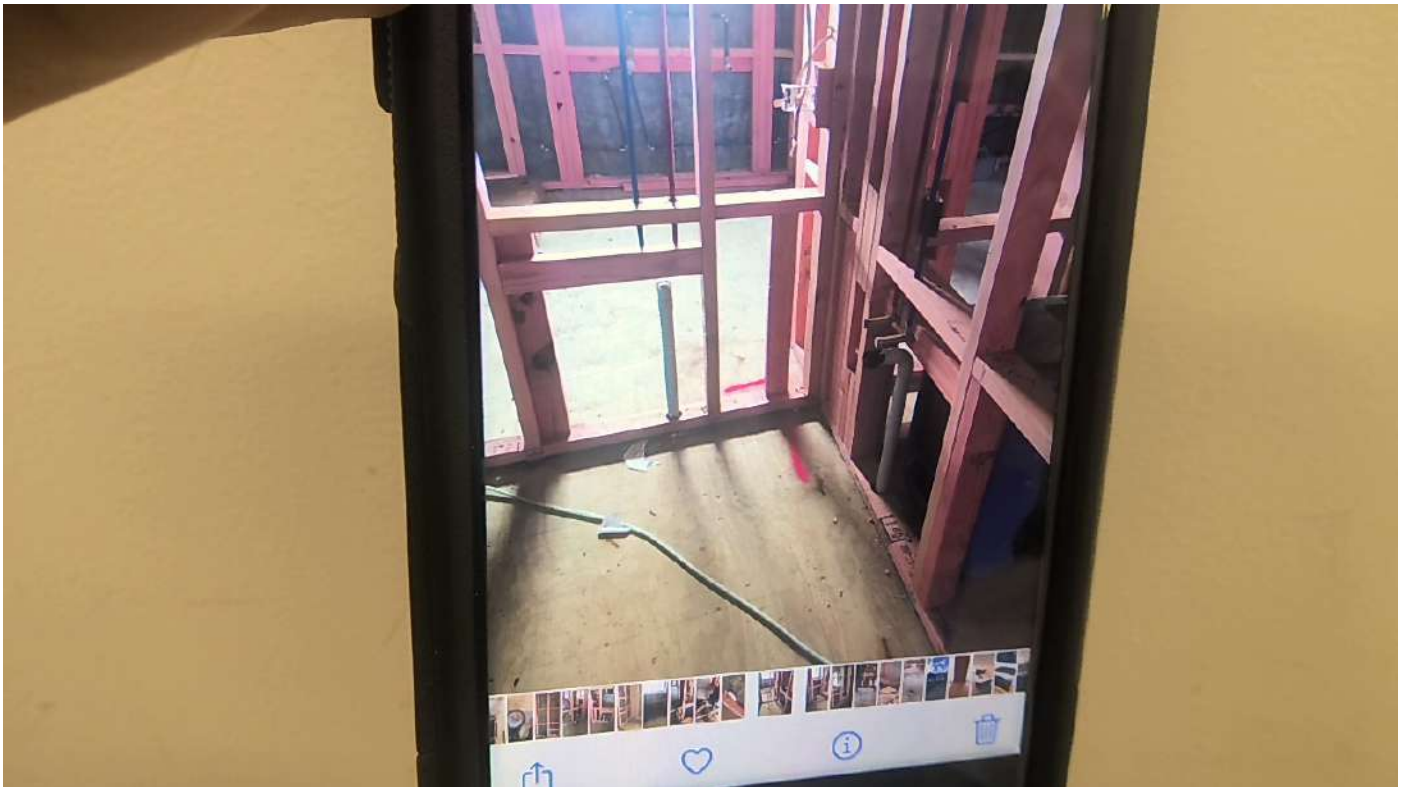
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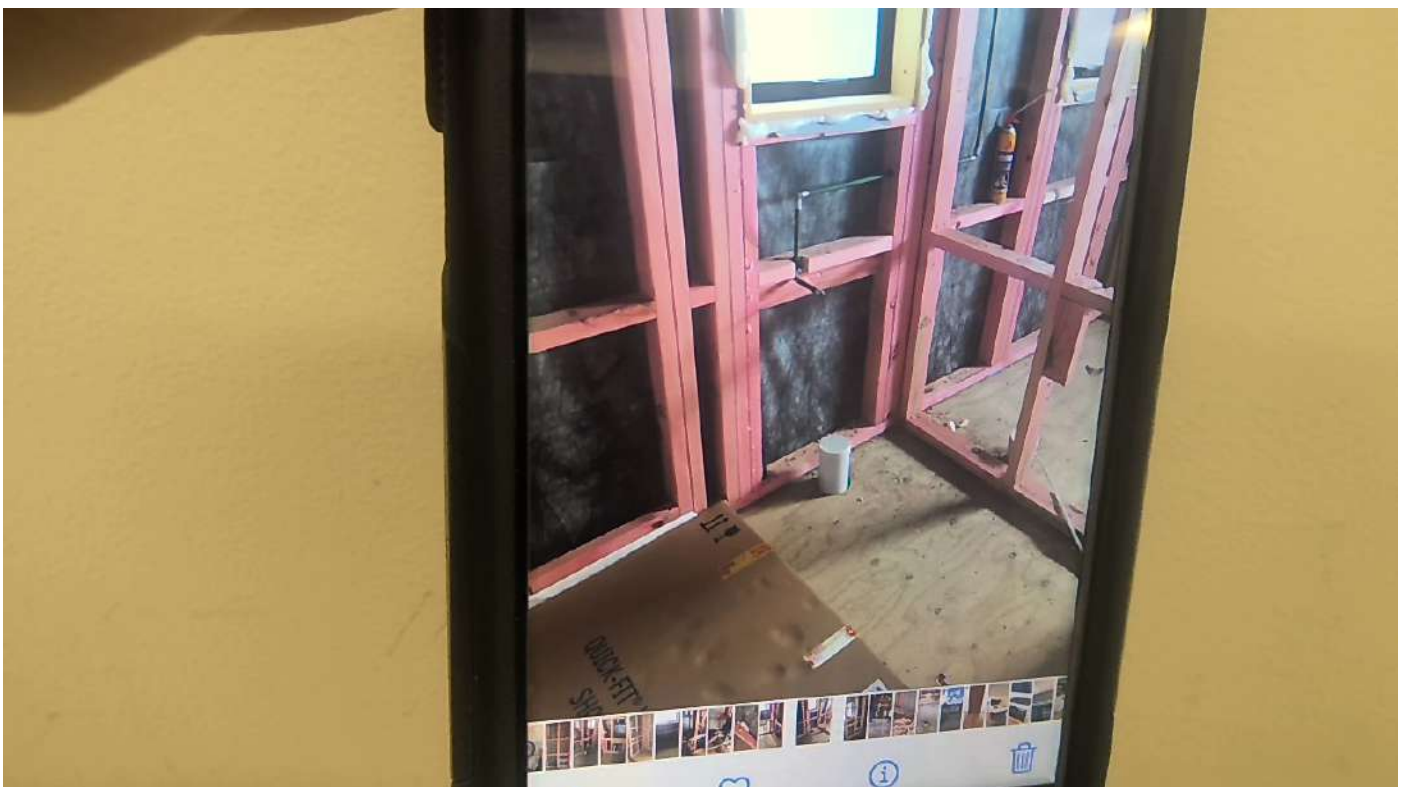
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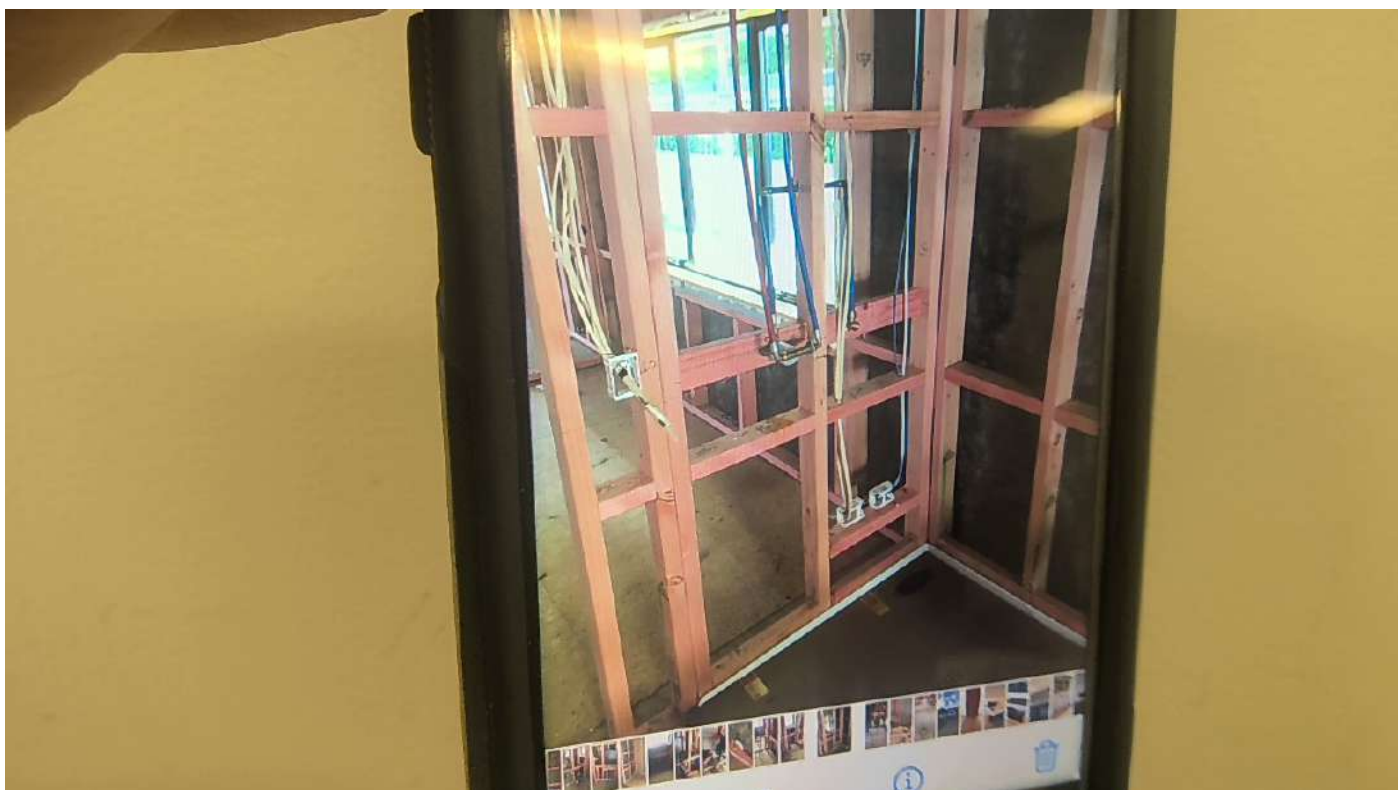
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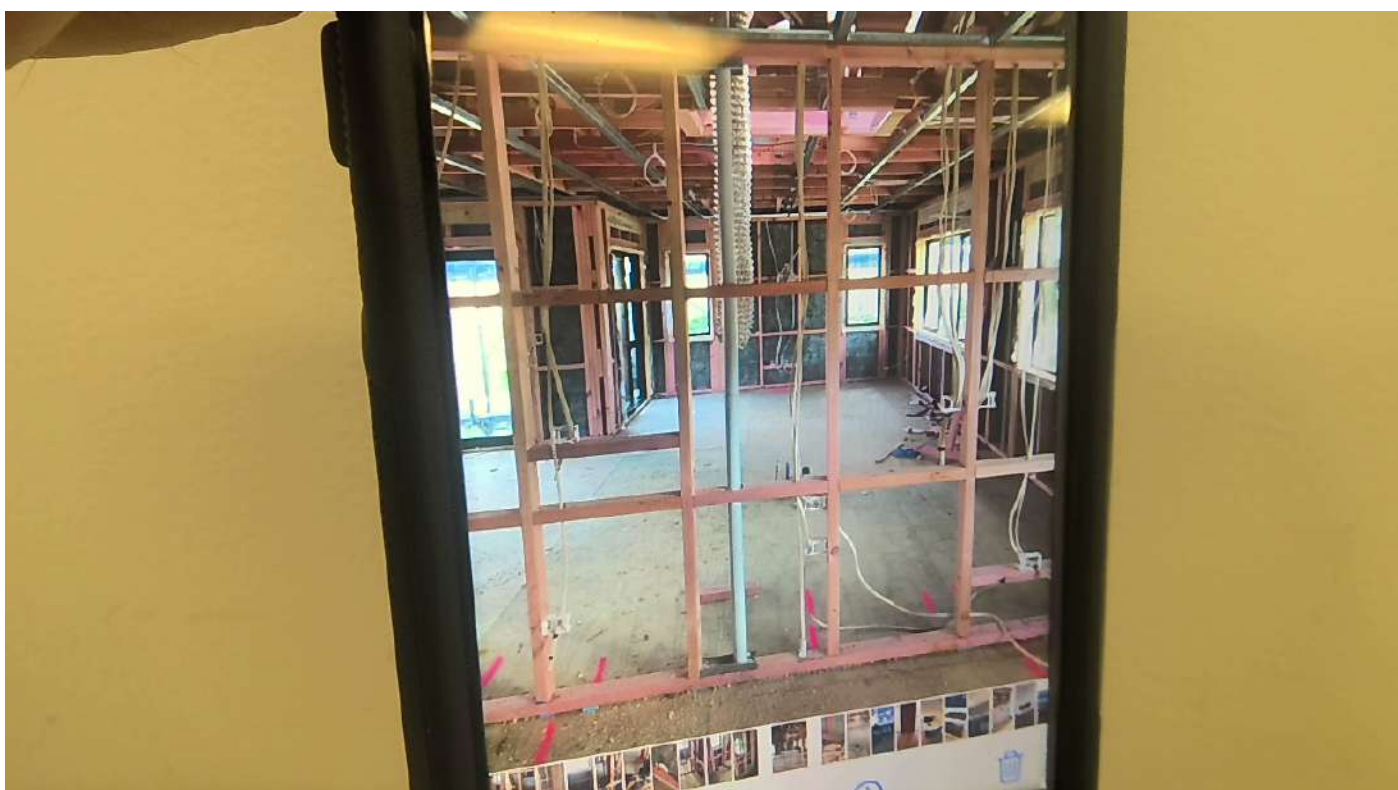
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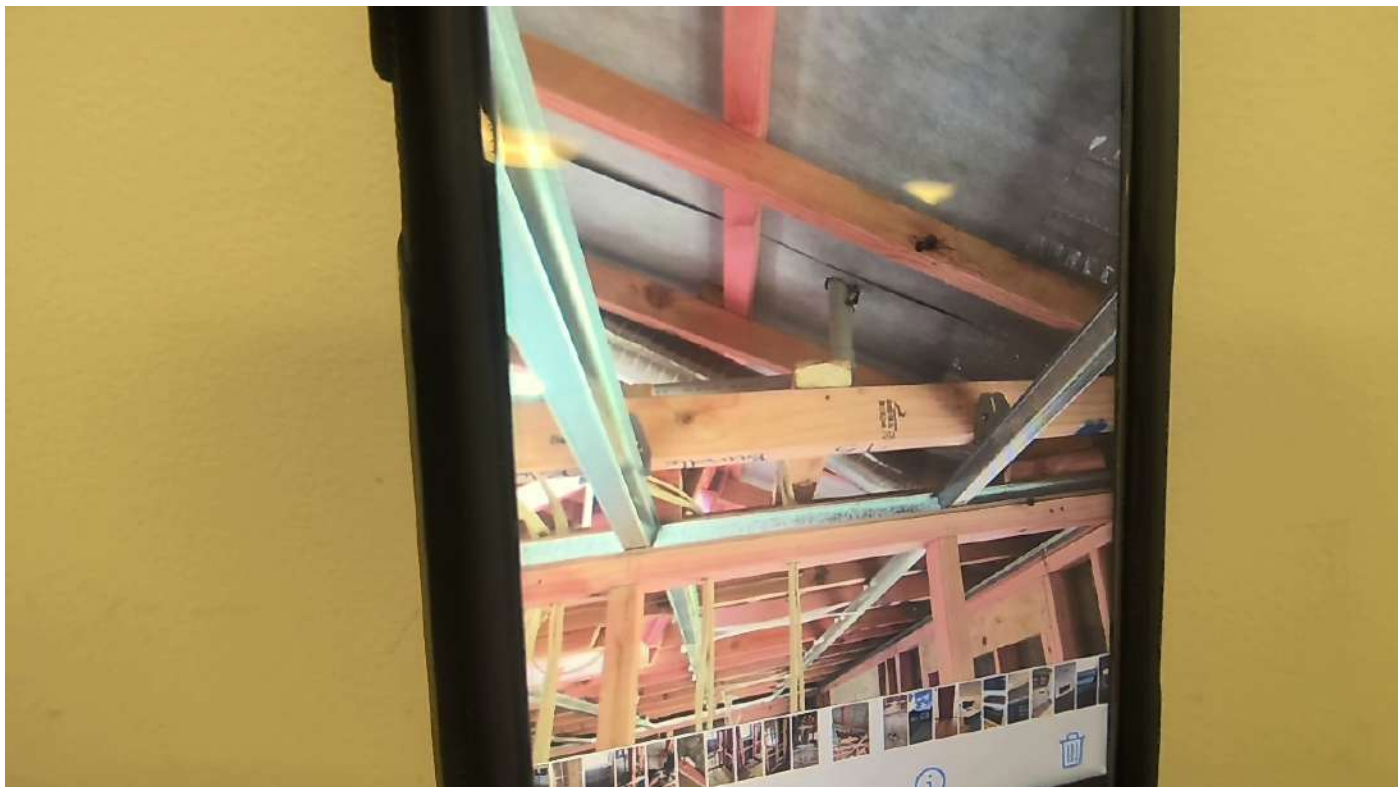
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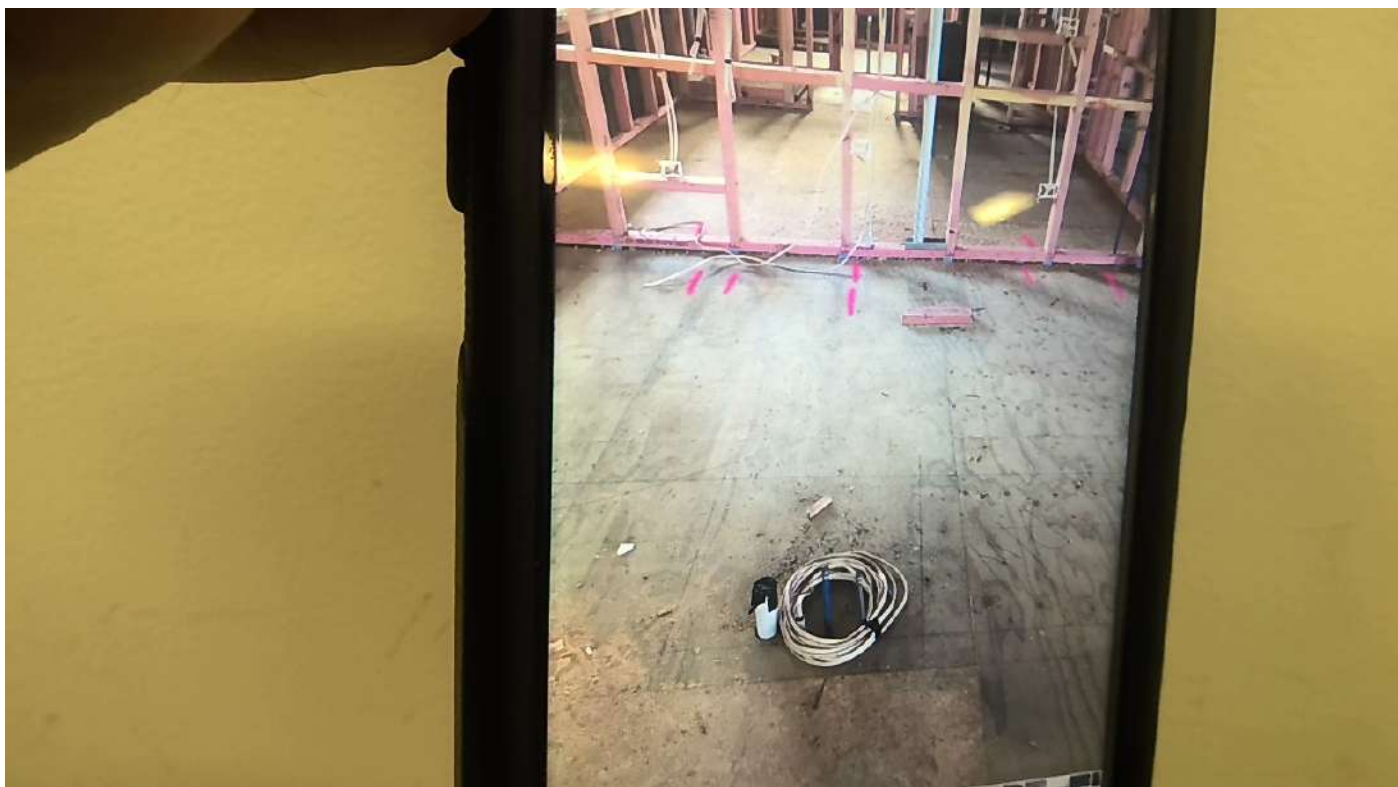
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Taken at 10:08 AM on Friday 1/08/2025



Taken at 10:08 AM on Friday 1/08/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Preline Plumbing**
Inspection Outcome: **Pass**
Inspected By: **Luke Natrass**
Inspection Date: **1 August 2025**

Passed Items

General

Conforms with approved drawings

Plumber

Soil pipe size and test

Pipes fixed/supported

System used

TPR line/discharge point

Vents terminated

Pressure test

Waste pipe size and test

Shut off valves

Next Inspection required

Other

**Plumbing fixtures locations match consented plans
dwayne fox 15044**

all pipes clipped and secured

AS3500

tpr is piped to exterior via tundish and safetray

Roof penetration of vents have been completed

Test sited to 1500Kpa

Hot, cold and non potable where looped together

3 in 1 valve fitted and located under house

preline building

**All aspects relating to this inspection have been
assessed and checked against the consented
documentation and deemed to comply.**

GoGet Inspection Audit Report

Consent No: **250084**
Applicant: **ACW Construction Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**

Inspection Type: **Subfloor**
Inspection Outcome: **Fail**
Inspected By: **Gareth McCullagh**
Inspection Date: **24 June 2025 10:42 a.m.**
Duration: **30 minutes**

Inspection Element	Status
General	Fail
Pile/bearer/joist fixings All sized correctly and stainless steel fixings in place 16kn nail plates cyclone tie and wiredogs	Pass
Notching/holes	Pass
Solid blocking In place	Pass
Joists 450mm centres	Pass
Beams/bearers Double bearer h3.2	Pass
LBP number 136932	Pass
Agent/owner written approval	N/A
Non compliance discussed onsite Spoke to builder	Pass
Timber braces	N/A
Next Inspection required	N/A
Other Still require engineers site note. And surveyors report from pile inspection	Fail



Taken at 10:38 AM on Tuesday 24/06/2025



Taken at 10:38 AM on Tuesday 24/06/2025



anchorile

Taken at 10:38 AM on Tuesday 24/06/2025



Taken at 10:39 AM on Tuesday 24/06/2025



Taken at 10:39 AM on Tuesday 24/06/2025



cyclone tie

Taken at 10:39 AM on Tuesday 24/06/2025



Taken at 10:39 AM on Tuesday 24/06/2025



Taken at 10:39 AM on Tuesday 24/06/2025



Taken at 10:39 AM on Tuesday 24/06/2025

SITE NOTICE

Consent No: **250084**
Applicant: **B & V Jefferies & TMF Trustees Services 2005 Ltd**
Site Address: **62 Awanui Drive, Waikanae**
Work Type: **3 bedroom dwelling.**
Building Category: **R1**

Inspection Type: **Subfloor**
Inspection Outcome: **Fail**
Inspected By: **Gareth McCullagh**
Inspection Date: **24 June 2025**

Failed Items

General

Other

Still require engineers site note. And surveyors report from pile inspection

Passed Items

General

Pile/bearer/joist fixings

**All sized correctly and stainless steel fixings in place
16kn nail plates cyclone tie and wiredogs**

Notching/holes

Solid blocking

In place

Joists

450mm centres

Beams/bearers

Double bearer h3.2

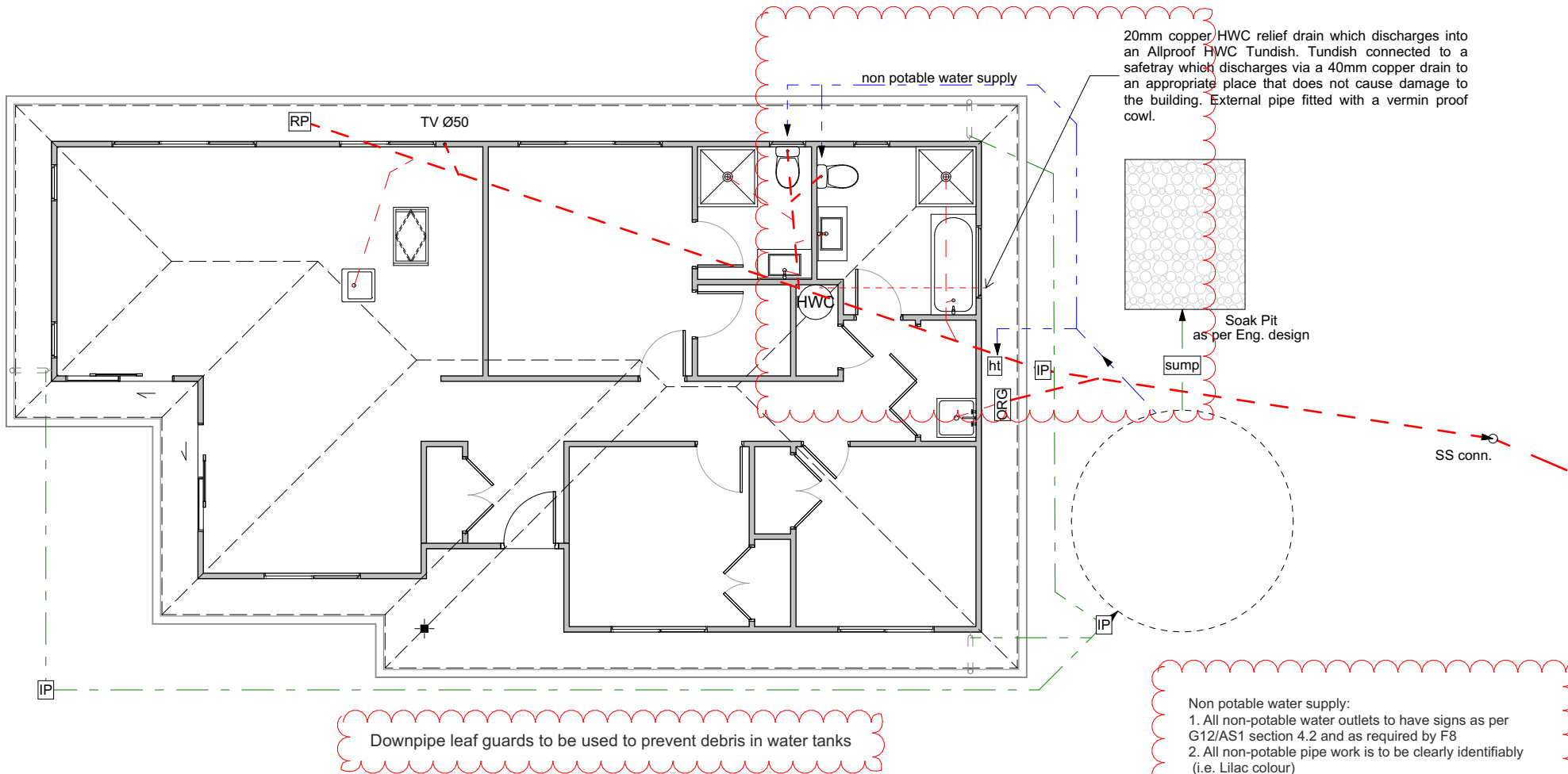
LBP number

136932

Non compliance discussed onsite

Spoke to builder

BC250084
Further Information Received
10/04/2025



Water tank - information:
A fill valve to be used in order to facilitate trickle
feed top up from the Toby when the static tank
water level is less than a 1000L

Non potable water supply:
1. All non-potable water outlets to have signs as per G12/AS1 section 4.2 and as required by F8
2. All non-potable pipe work is to be clearly identifiably (i.e. Lilac colour)
3. Non-potable water is to be supplied to at least one external hose tap and to all WCs

4.2 Outlet identification
4.2.1 NZBC F8 requires signs to be provided to all potential hazards. Outlets for non-potable water shall be identified non-potable, by displaying the safety sign shown in Figure 3.

Figure 3: Non-potable Water Sign
Paragraph 4.2.1

Construction Notes:
NZBC G13/AS3
Plumbing to AS/NZS:3500.2.2 (min 1:60 pipe gradient) by qualified tradesman.
Contractor to locate all service connections on site prior to earthworks confirm all boundary setbacks & restrictions comply with current regulations prior to commencement of foundations.
All waste pipes PVC. Sizes, fall, venting & discharge to be confirmed by NZ qualified plumber. Confirm positions of available services cabling etc on site prior to any excavation

Water Supply:
Internal water pipes to Polybutylene.
All pipework and pipes exposed to freezing to be lagged with closed cell foam
- Closed cell foam polymer insulation or fibre glass insulation which is preformed to the shape of the pipe and not less than 13 mm thick, is acceptable material for preventing pipes less than or equal to 40 mm diameter from freezing. Any insulation material that absorbs moisture shall be protected in a waterproof membrane.

Fixture unit rating: 20 units
Bathroom Group- 6 (x2)
Laundry tub - 5
Kitchen sink - 3

Table 3.9.3.1 — Size and rating of vents

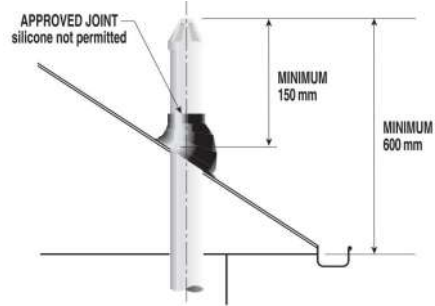
Size of vent pipe DN	Fixture units discharging to drain	Vent rating
40	> 1 ≤ 10	0.5
50	> 10 ≤ 30	1
65	> 30 ≤ 175	2
80	> 175 ≤ 400	3
100	> 400 ≤ 600	6

TV min 50mm Ø NZS3500

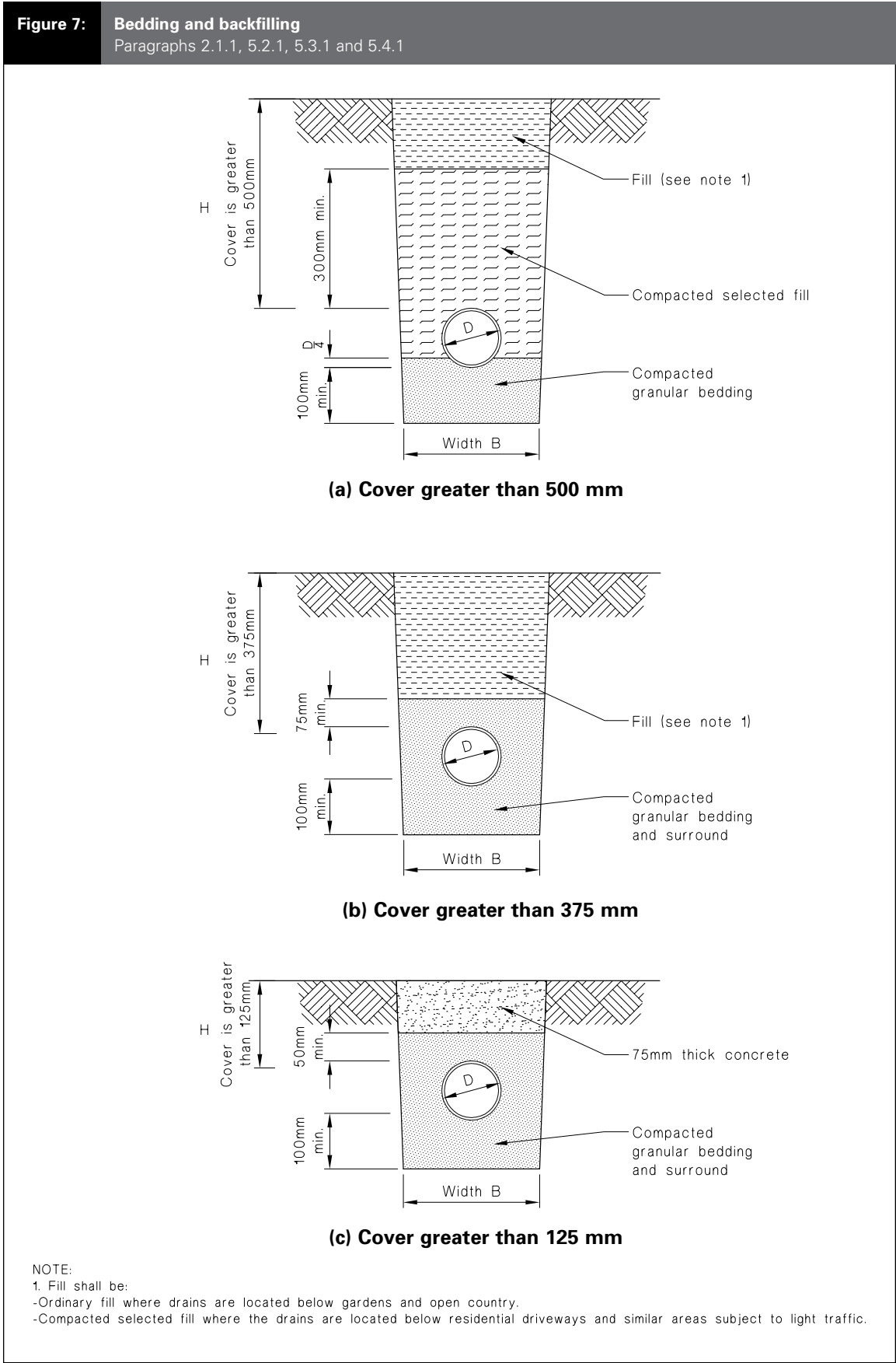
Plumbing Legend as per AS/NZS 3500 part 2 : 2021

Symbol	Item	Symbol	Item
	Inspection point		DN100 uPVC SS pipe, DN100 min water closets (ref specs) min 1:60 gradient
	Downpipe		DN100 uPVC SW pipe, min 1:120 gradient
	Hose Tap		min uPVC fixture waste pipe sizes: DN40 basins, single head showers, baths, sinks, dishwasher & ldy tubs, DN50 multiple heads showers, sinks + dishwashers, Ldy tub + washing machine (combined)
	Overflow relief gully		DN65 unvented branch drains exceeding 2.5m long (max 5 fixture unit rating)
	Terminal vent		DN65 to all wastes discharging directly into drain under slab min 1:40 gradient. 20mm HWC vent drain (copper)

Water supply pipe (from water tank) = DN20

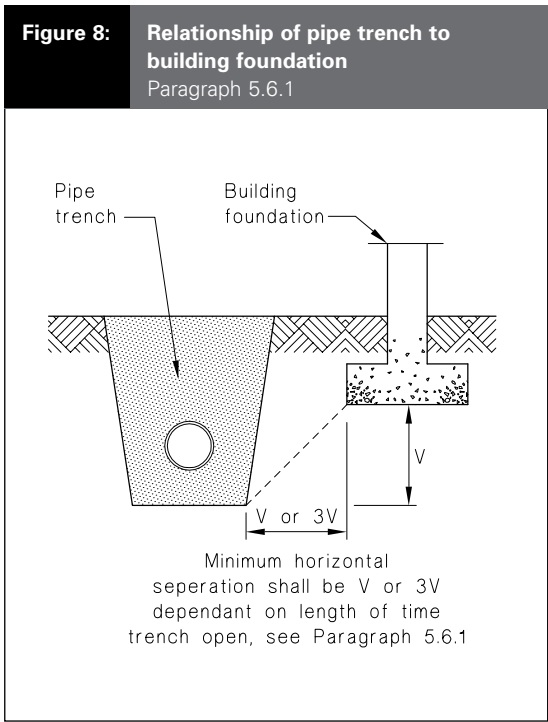


NZBC: E1 Surface Water
3.7 Access for maintenance
3.7.1 Access for maintenance shall be provided on all drains. Access is to be achieved via an inspection point, rodding point, inspection chamber or access chamber, complying as appropriate with Figures 10, 11 or 12.
3.7.2 Points of access shall be spaced at no further than:
a) 50 m where rodding points are used.
b) 100 m where inspection points, inspection chambers or access chambers are used.
3.7.3 Points of access are required at:
a) Changes in direction of greater than 45°,
b) Changes in gradient of greater than 45°, and
c) Junctions of drains other than a drain, serving a single downpipe, that is less than 2.0 m long.
3.7.4 Inspection chambers or access chambers (see Figures 11 and 12) shall be provided where changes in both gradient and direction occur and where either is greater than 22.5°.
3.7.5 Where the depth to the invert of the drain exceeds 1.0 m, an inspection chamber is not acceptable and an access chamber shall be used.



BC250084
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Kapiti Coast District Council
06/03/2025

Proximity of trench to building
3.9.7 Proximity of trench to building
For light timber frame and concrete masonry buildings founded on good ground and constructed in accordance with NZS 3604 or NZS 4229, pipe trenches which are open for no longer than 48 hours shall be located no closer than distance 'V' (see Figure 14) to the underside of any building foundation. Where the trench is to remain open for periods longer than 48 hours, the minimum horizontal separation shall increase to 3V in all ground except rock.



NZBC: E1 Surface water:
3.9 Bedding and backfilling
3.9.1 General
NZBC B1 requires all drains be constructed to withstand the combination and frequency of loads likely to be placed upon them without collapse, undue damage, undue deflection or undue vibration.
In addition, adequate support needs to be provided to prevent gradients becoming less than those required as a result of:
a) Differential settlement, or
b) Deflection of an unsupported span.
3.9.2 Bedding and backfilling
Figure 13 gives acceptable solutions for the bedding and backfilling of the drainage pipes except where:
a) The trench is located within or above peat, or
b) Scouring of the trench is likely due to unstable soils, or
c) The horizontal separation between any building foundation and the underside of the pipe trench is less than that required by Paragraph 3.9.7, or
d) The cover H to the pipe is more than 2.5 m.
3.9.3 Trench slope
Where the slope of the trench is 1 in 8 or greater, anti-scour blocks shall be provided.
These anti-scour blocks shall be:
a) Constructed from 150 mm thick concrete (17 MPa),
b) Keyed into the sides and floor of the trench by 150 mm,
c) Extended to 300 mm above the drain or to ground level where the drain cover is less than 300 mm, and
d) Spaced at:
i) 7.5m centres for trench slopes between 1 in 8 and 1 in 5, or
ii) 5.0m centres for trench slopes greater than 1 in 5.
3.9.4 Trench width
The width B of the trench shall be no less than the pipe diameter D plus 200 mm.
Trench width at the top of the pipe shall be no more than 600 mm unless the pipe(s) in the trench are covered with concrete, as shown in Figure 13 (c).
3.9.5 Acceptable materials
Acceptable fill materials shown in Figure 13 are:
a) Bedding material of clean granular noncohesive material with a maximum particle size of 20 mm, or
b) Selected compacted fill of any fine-grained soil or granular material which is free from topsoil and rubbish and has a maximum particle size of 20 mm, or
c) Ordinary fill which may comprise any fill or excavated material.
3.9.6 Placing and compacting
a) Granular bedding and selected fill shall be placed in layers of no greater than 100 mm loose thickness and compacted.
b) Up to 300 mm above the pipe, compaction shall be by tamping by hand using a rod with a pad foot (having an area of 75 ± 25 mm by 75 ± 25 mm) over the entire surface of each layer to produce a compact layer without obvious voids.
c) More than 300 mm above the pipe, compaction shall be by at least four passes of a mechanical tamping foot compactor (whacker type) with a minimum weight of 75 kg.

Building Height Restrictions

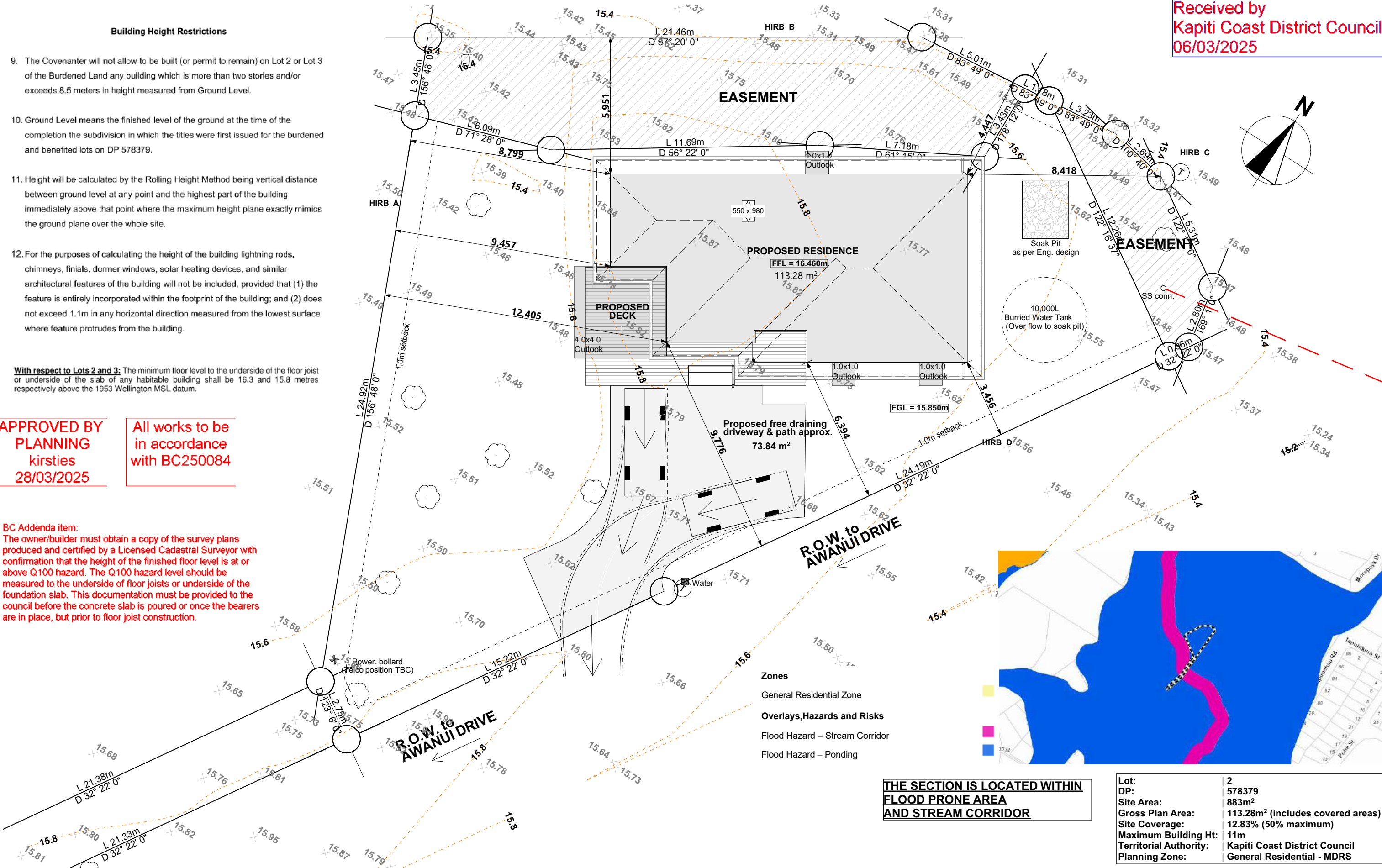
9. The Covenanter will not allow to be built (or permit to remain) on Lot 2 or Lot 3 of the Burdened Land any building which is more than two stories and/or exceeds 8.5 meters in height measured from Ground Level.
10. Ground Level means the finished level of the ground at the time of the completion the subdivision in which the titles were first issued for the burdened and benefited lots on DP 578379.
11. Height will be calculated by the Rolling Height Method being vertical distance between ground level at any point and the highest part of the building immediately above that point where the maximum height plane exactly mimics the ground plane over the whole site.
12. For the purposes of calculating the height of the building lightning rods, chimneys, finials, dormer windows, solar heating devices, and similar architectural features of the building will not be included, provided that (1) the feature is entirely incorporated within the footprint of the building; and (2) does not exceed 1.1m in any horizontal direction measured from the lowest surface where feature protrudes from the building.

With respect to Lots 2 and 3: The minimum floor level to the underside of the floor joist or underside of the slab of any habitable building shall be 16.3 and 15.8 metres respectively above the 1953 Wellington MSL datum.

APPROVED BY
PLANNING
kirsties
28/03/2025

All works to be
in accordance
with BC250084

BC Addenda item:
The owner/builder must obtain a copy of the survey plans produced and certified by a Licensed Cadastral Surveyor with confirmation that the height of the finished floor level is at or above Q100 hazard. The Q100 hazard level should be measured to the underside of floor joists or underside of the foundation slab. This documentation must be provided to the council before the concrete slab is poured or once the bearers are in place, but prior to floor joist construction.



Zones
General Residential Zone

Overlays, Hazards and Risks
Flood Hazard – Stream Corridor
Flood Hazard – Ponding

THE SECTION IS LOCATED WITHIN
FLOOD PRONE AREA
AND STREAM CORRIDOR

Lot:	2
DP:	578379
Site Area:	883m²
Gross Plan Area:	113.28m² (includes covered areas)
Site Coverage:	12.83% (50% maximum)
Maximum Building Ht:	11m
Territorial Authority:	Kapiti Coast District Council
Planning Zone:	General Residential - MDRS



DO NOT scale off drawings. Cross reference all drawings. Any discrepancies MUST be clarified with the designer immediately before commencing works or ordering. NO construction or site works are to commence until Building Consent becomes unconditional.

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SITE PLAN

Design: A1	Drawn: MPP/TN	Check: UP	LBP: UP
Wind: HIGH	Earthq: 3	Exposure: C	Snow: N1
			Climate: 3

Scale: 1:150	Sheet no: 2
Rev:	
Date: 21/02/2025	
www.A1homes.co.nz	

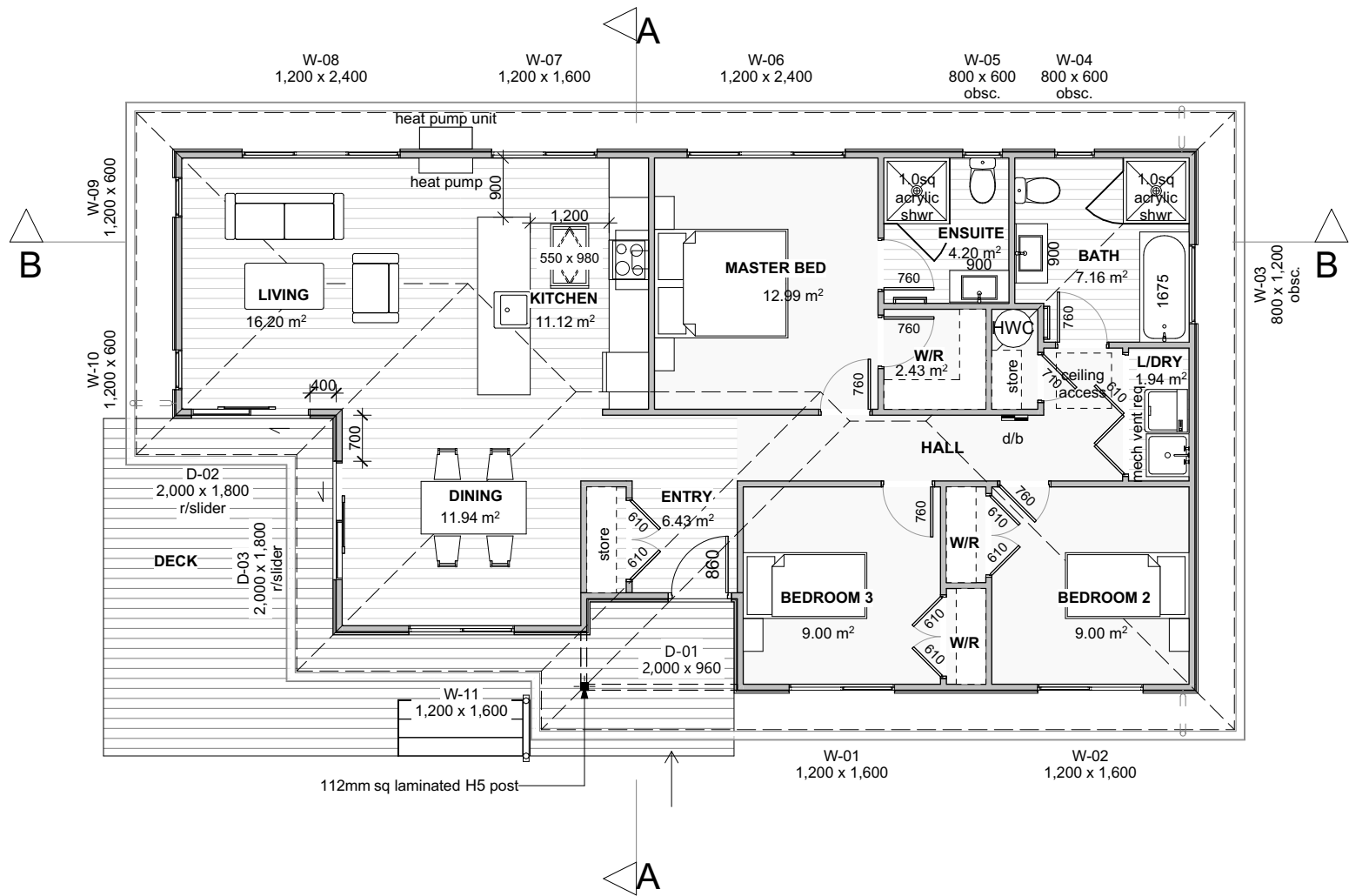
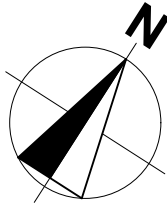
Client Details:
Brad & Vanessa Jefferies

Address:
62 Awanui Drive
Waikanae

Job no: AW611P

KH110a





FLOOR FINISHES:

- Carpet**
Master Bedroom
Bedroom 2
Bedroom 3
W/R, storage
Hall, storage

- Vinyl**
Living
Dining
Kitchen
Bath
Ensuite
Entry
Laundry
Storage

FLOOR AREAS:
o/frame area = 110.02 m²

CLADDING KEY:
JH Linea weatherboard

Note:
2420 stud ht. throughout

Cautionary Notes:
Always cross reference the foundation plan with the framing plan prior to setting out

Joinery sizes shown are box sizes & are preliminary only.
Site measure and confirm all joinery sizes, reporting to designer any changes, PRIOR to ordering joinery. No liability shall be held by designer for incorrect supply of joinery.

Refer to all written dimensions, DO NOT scale off drawings.

Construction Notes:
Electric hobs with vented r/hood.
Polybutylene water supply pipes.
Hot water supply pipes shall be thermally insulated to comply with H1/AS1 5.0
Mains pressure 180L HWC with tempering valve & seismic restraint in accordance with NZBC: 2004 section G12.
The delivered hot water temperature at any sanitary fixture used for personal hygiene shall not exceed 50°C
*Check cylinder height for under stair locations

Tapered edge joints in ceilings
To reduce the risk of cracks caused by substrate movement, back-blocking of tapered edge joints is required in the following situations.
• When timber battens have been used:
Any area containing 3 or more tapered joints
• When steel battens have been used:
Any area containing 6 or more tapered joints

Please confirm layout & fittings of kitchen & bathrooms etc before foundation commences

Note:
- Kitchen layout diagramatic and only to be used for drainage reference, refer to kitchen plans for exact design.

Separation between electric hob and the Gib lined wall:
Cut out for hob: min. 55mm from back of bench top.
Overhead clearances: not less than 650mm from hob surface to range hood
Side clearances: Where dimension to any vertical combustible surface is less than 150 mm, surface shall be protected to a min. height of 150 mm above hob for full dimension (width or depth) of cooking surface area.
Protection of combustible surfaces: 5mm thick ceramic tiles or graphic glass is suitable to protect 10mm Gib board.

G3/AS1
1.1.3 Food preparation surfaces shall be easily maintained in a hygienic condition. Stainless steel, decorative high pressure laminate, and tiles are examples of suitable materials for these surfaces.

1.6 Wall linings
Wall linings adjacent to appliances and facilities shall have surfaces that can be easily maintained in a hygienic condition. Stainless steel, decorative high pressure laminate, tiles, wallboards with painted or applied impervious coatings or films, are examples of suitable materials for these surfaces.

Stairs to comply with NZBC:D1 access; main private
max 190rise, min 280 tread. Wall mounted grab rail @900ht from tread nosing

A landing min 900deep shall be provided at the top & bottom of every flight of stairs where the rise of the flight is more than 600mm. Handrails are required to one side of all stairs with 4 or more risers - NZBC D1/AS1: Access routes

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06/03/2025