

# Cleaning your filter / Bio Starter

## Cleaning out your filter

Although your waste water system is serviced on a regular basis, there is one crucial task that you as the occupants of the house should schedule, as part of your regular home maintenance.

The outlet filter on your waste water system must be cleaned regularly to reduce the stress on your pump, and it helps keep your power bill down too. We recommend cleaning the filter once a month (1st of each month, so that it is easy to remember), and the filter is kept squeaky clean.

Most modern systems have a filter that looks like, or is similar to this:



## How do I clean it?

1. Always wear rubber gloves when cleaning your filter
2. First switch your system off at the power source
3. To remove the cartridge, hold the bottom of the casing and screw the collar clockwise to undo
4. Rotating the disc cartridge for a minute or two under the garden hose is usually sufficient to clean all the silty residue off the filter (so that the discs spin is best)
5. Put the cartridge back in the casing and screw back on – hand tight only
6. Remember to switch the power to the system back on!

## 'Water Alarm'

When the 'Water' alarm activates, it is usually because the filter is blocked. The filter should be cleaned immediately the alarm activates, as your pump will be continuously trying to pump water out and cannot. This will cause undue stress, and will possibly shorten the life of the pump.

If you clean the filter and the alarm does not go off after half an hour or so, please ring your installer or service agent as there may be a problem.

## Bio Zyme: Industrial

### What is it and how does it work?

"BIO-ZYME" is a non-toxic, biodegradable, environmentally friendly, deodorising agent, which augments biological action. Bio-Zyme biochemically eliminates odours by changing the molecular structure of the host environment, digest contaminants and speeds up the natural biodegrading process.

Bio-Zyme includes natural enzymes that break down oils, grease and fats in septic tanks, making it easier for nature's bacteria to eliminate organic waste matter and at the same time any odours.

Bio-Zyme is placed in the system at the installation stage. This is to give the system some food to start the biological bugs populating.

### Problem

- System has been switched off for a long period of time so it has an odour
- System has been running, but has had no sewage for a long period of time
- System has a large amount of the wrong product flushed into the system (ie Napisan-Bleach-Janola) refer to page 6 of Homeowners guide. This could have killed the anaerobic bacteria bugs in the system

### Solution

- Flush 2lt of Bio-Zyme down toilet

**If problem continues please contact your Certified Services Technician.**





## Customer care

An AirTech™ aerated wastewater treatment system will provide you with many years of rewarding and reliable performance supported and serviced by our network of fully trained and certified installation and service technicians.

Our friendly, expert technicians have extensive product and system knowledge and are able to provide you excellent support should you require it. It's all part of our commitment to your total satisfaction and peace of mind.

## Technical specification AirTech™ sewage treatment system

The specifications of the AirTech™ aerated wastewater treatment system are as follows:

### • Tank chambers

Polyethylene modular interlocking tank chambers  
– complying with construction standard AWS/NZS 1546.1

### • Primary chamber filter

100mm S/S effluent filter. Flow modulated outlet

### • Air blower

Blower – AP80.11kw (the manufacturer recommends changing the filter every 3 months)

### • Diffuser

250mm disc diaphragm

### • Air System

Supplies air to the diffuser and venturi sludge return system (aerobic and anaerobic). The air system is controlled by valves enabling the air supply to be regulated and fine tuned to achieve the most effective and efficient use of air in the treatment system

### • Media

Bio-tube module – purpose made polyethylene biological treatment and filtration media

### • Effluent pump

D42a submersible pump, 26m maximum head

### • Effluent filter

1 1/4" disc filter – red grooved rings 120 mesh  
= 130 micron

### • Disinfection (option)

1. Chlorinator (optional) – chlorine tablet water contact dispenser /single adjustable tube
2. Electronic treatment – water sterilisation system

## Design certification

The design of the AirTech™ sewage treatment system has been developed in accordance with sound and widely accepted engineering principles and technology. The system has been assessed, for a typical domestic household wastewater loading, as capable of meeting the following quality of effluent treatment:

Biochemical oxygen demand	14 to 20 mg/l
Total suspended solids	20 to 30 mg/l
Faecal coliforms (Soil treatment)	less than 1000/fcu/100ml (crc ga standard)
Faecal coliforms (With disinfection)	0 to 200/100ml

The technical specifications are for the AirTech™ domestic wastewater treatment system. Because of the company's on-going research and development, RX Plastics Ltd. reserves the right to alter specifications without notice. Such alterations will maintain or improve the above effluent quality standard.

## AirTech™ performance certification

Many local authorities are interested in an assessment of the effectiveness of advanced (aerobic) wastewater treatment systems (compared to conventional septic tanks) for when no reticulated sewerage system exists.

A trial site was established at the site of the Rotorua wastewater treatment plant in 2005 to measure advanced wastewater treatment system performance. RX Plastics has independent certification on all Wastewater Treatment units.

### Performance Certificate



Company:	RX Plastics Ltd
Address:	P O Box 360, Ashburton
Model:	RX Plastics AirTech 9000
Manufacturer rated daily flow (litres)	2000
Total operating capacity, including pump chamber (litres)	7000
Primary tank (litres)	3300

This is to certify that the **RX Plastics AirTech 9000** wastewater treatment system supplied by **RX Plastics Ltd** is considered to meet the requirements of rule 12(f) of the Operative On-Site Effluent Treatment Regional Plan 2006. Therefore it may be installed as a permitted activity in the Bay of Plenty, anywhere **outside the Rotorua Lakes Catchments**, provided that all other requirements of rule 12 are met.

The certification relates only to the particular model described above, on the basis that the key specifications are the same as those in the model tested at the Rotorua trial facility. This includes tank and chamber volumes, re-circulation rates, and media total surface area.

For any questions about this certificate please contact Sam Weiss on 0800 368 267.

**Note:** In order to comply with Regional Plan requirements Environment Bay of Plenty must be provided with written confirmation that a system has been installed to the manufacturer's specifications and that it fully meets the requirements of rule 12.

Sam Weiss  
Project Implementation Officer  
Environment Bay of Plenty

Working with our communities for a better environment  
E mahi ngatahi e pai akeai te taiao

EXCLUDES ROTORUA CATCHMENTS

AIRTECH™ NR

AIRTECH™ 7000



# Commission/servicing report

☐ AirTech™ 7000 ☐ AirTech™ 9000

Owner		Home	Yes	No	Date
Address		Call first	Yes	No	Telephone
Council		Tank id number			

## Electrical

## Comments

Alarms tested	Water	Yes	No	Air	Yes	No	
Electric blower box checked and cleaned					Yes	No	
Lid secured					Yes	No	

## Air blower

Temperature	Okay	High	
Noise level	Okay	High	
Filters cleaned - internal	Yes	No	

## Septic chamber

Bio tube filter cleaned								
Accumulation - sludge	Low	Med	High	Crust	Low	Med	High	
Inlet and junction clear						Yes	No	

## Air and sludge return systems

Odour	OK	High	
Aeration	Good	Poor	
Air diffuser checked	Yes	No	
Clarification chamber	Good	Poor	
Sludge return to primary clear	Yes	No	
Sludge accumulation (check depth)	High	Low	

## Irrigation chamber

Clean irrigation chamber	Yes	No	
Turbidity	Mg/litre		
Irrigation pump operation pressure	Good	Fair	Poor
Condition	Ok	Inaccessible	Replace/repair
Irrigation laterals	Ok	Cleaned	Replace/repair
Disc filter	Ok	Replaced	Cleaned
Lid covers	Yes	No	

Comments: .....

Technician:..... Signed:.....

Homeowner:..... Signed:.....



# Performance certification

## Certificate of construction/installation Onsite wastewater system



Issued by: \_\_\_\_\_ To: \_\_\_\_\_  
Installation Company's name Consent holder

Copy to be supplied to: \_\_\_\_\_ Council: \_\_\_\_\_

In respect of discharge consent to: \_\_\_\_\_ Condition: \_\_\_\_\_

Property address: \_\_\_\_\_  
Property on which sewage system has been installed

Property legal description: Lot: \_\_\_\_\_ DP: \_\_\_\_\_

Installer's name: \_\_\_\_\_ Company name: \_\_\_\_\_

Address: \_\_\_\_\_ Town/city: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

I \_\_\_\_\_, duly authorised agent of \_\_\_\_\_  
Installer's name Company name

Have read and fully understood the relevant conditions of \_\_\_\_\_ and certify that this onsite wastewater system has been constructed and installed in accordance with these conditions as well as the approved design plans attached to this consent.

Installation date: \_\_\_\_\_ Installer's signature: \_\_\_\_\_ Date: \_\_\_\_\_

## Certificate of Training Onsite wastewater system



This is to certify that the owner has been trained and has a firm understanding of the system,  
how it works and the service requirements

Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Approved Certifying Technician:

\_\_\_\_\_

Signed: \_\_\_\_\_ Date: \_\_\_\_\_



**The RX Septic Tank range meets the objectives of:**

Australia New Zealand joint standard 1546 1

Australia New Zealand joint standard 1547

ARC Environment TP 58

Design and testing verified by registered engineers and consultants

Process analysis undertaken at Lincoln University

Member on-site Wastewater Special Interest Group (OSW-SIG)

Local authority approved

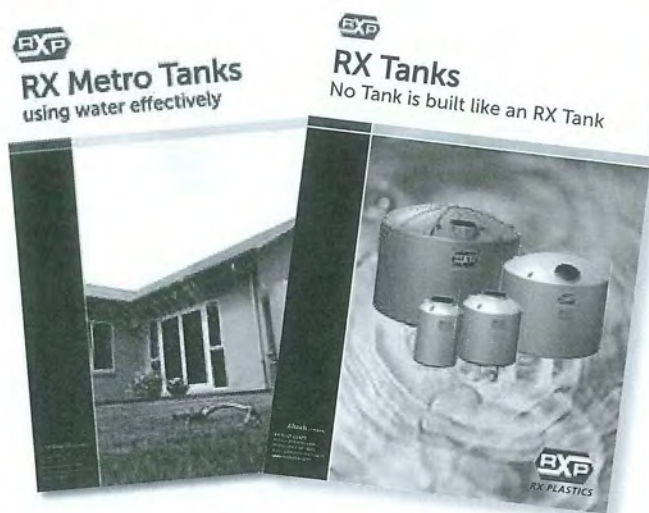
Meets World Health Organisation (WHO) effluent quality standards

ISO9001 Quality Management System: Telarc Registration No. 807

NZ Pat Appn No. 529820



## Metro Tanks / Max Tanks



Please ask for our Metro Tank and Max Tank brochures for more information.

Your AirTech™ Service Agent:

RX PLASTICS LTD  
PO Box 360 Ashburton  
Phone +64 3 307 9081  
Email [sales@rxplastics.co.nz](mailto:sales@rxplastics.co.nz)  
[www.rxplastics.co.nz](http://www.rxplastics.co.nz)

AUGUST 2014



**RX PLASTICS**

an *OAliaxis* company





YOU ARE HERE:

[Tank Range](#)[Underground](#)

## FLAT TOP UNDERGROUND TANK

Our 25,000 Litre Flat Top Underground Concrete Tank has been designed to be buried with 300mm of topsoil coverage so your tank doesn't need to cover your back yard, your back yard can cover your tank. Perfect for small sections or unobstructed views.

80% of these underground concrete water tanks are installed under flat ground and installation in these cases is pretty easy. Our underground concrete water tanks can also be installed into a bank but are not meant to be used as a retaining wall. The main point is to ensure the bottom half of the concrete tank is buried all the way around to hold the tank in place.

The top half can be exposed one side if it suits. The top of the tank is designed to hold only 300mm of soil and some foot traffic, it will not hold a bank up. It is better to bury the tank at the top of the bank not the bottom or bury it at the bottom with a retaining wall to hold the bank off the tank. Phone Ian on 0800 353 222 if you need more information on the structural strength of our tanks.



### UNDERGROUND

Check out our 25,000 Litre Precast Concrete Underground Tank



### ABOVE GROUND

Our Flagship Product! 25,000 Litre precast concrete water tank, unbeatable quality!



### 10,000LITRE

Underground rainwater recycling system meets Kapiti Coast Council requirements.

## SINGLE POUR PRECAST

All Eletank branded tanks are single pour precast which means there are no joins under water in the tank, it is a single piece of concrete which is the best manufacturing process available in New Zealand.

## LOCAL SUPPORT

Wherever possible we use local contractors for all work onsite, our contacts in the area mean we can respond rapidly when needed.

## INSTALLATION

When any tanks are installed below ground adequate sub drainage MUST be provided to stop tanks rising when empty due to rising water tables. We can add a flange to the bottom of the tank to help stabilise it if high water tables are expected.

Access must be provided through the top of the buried tanks.

If multiple tanks are installed under ground, coupling together should be done by a registered Plumber or Drainer as these connections are prone to failure because of the pressures involved and normal ground compaction / movement. All joints between tanks are to be FLEXIBLE.

If compacting around in-ground tanks, fill tanks first, before compacting starts.

Tanks should not be buried more than the 300mm riser height without engineering advice

If installing tanks under a floor, the floor must be designed to carry the loading and installation must be supervised by a REGISTERED ENGINEER.

For any further information or pricing, phone one of our sales team on  
**0800 353 222**

We offer a full supply and install service

## A LITTLE ABOUT US

Larsens Concrete and Drainage are a precast concrete products manufacturer, started by Walter Larsen in 1932 we have grown to make a wide

<http://www.eletank.co.nz/TankRange/allUnderground.html>

## CONTACT INFORMATION

437 Heads Road,

For standard product sales inquiries, E-mail



J0029



06 August, 2019

Blair Browne  
Lot 3, 6 Hadfield Road  
Waikanae  
Kapiti

Dear Blair

**RE: Firefighting water supply for Lot 3, 6 Hadfield Road, Waikanae**

Thank you for the opportunity to inspect your plans in regards to firefighting water supplies for your new dwelling. I can confirm your water tank plan meets all the conditions as listed below.

- The water tank will be located onsite as indicated on your plan provided.
- The water tank will be a minimum size of 30,000 litres.
- The water tank will be fitted with a 100mm screw thread coupling.
- The water tank will be located within 6 meters of a 3 meter hard standing drive as per your plan.

Please use this letter with Kapiti District Council as you move through the next stage of your project.

If you have any questions or need further information on the above, please contact me.

Kind regards



Peter Walker

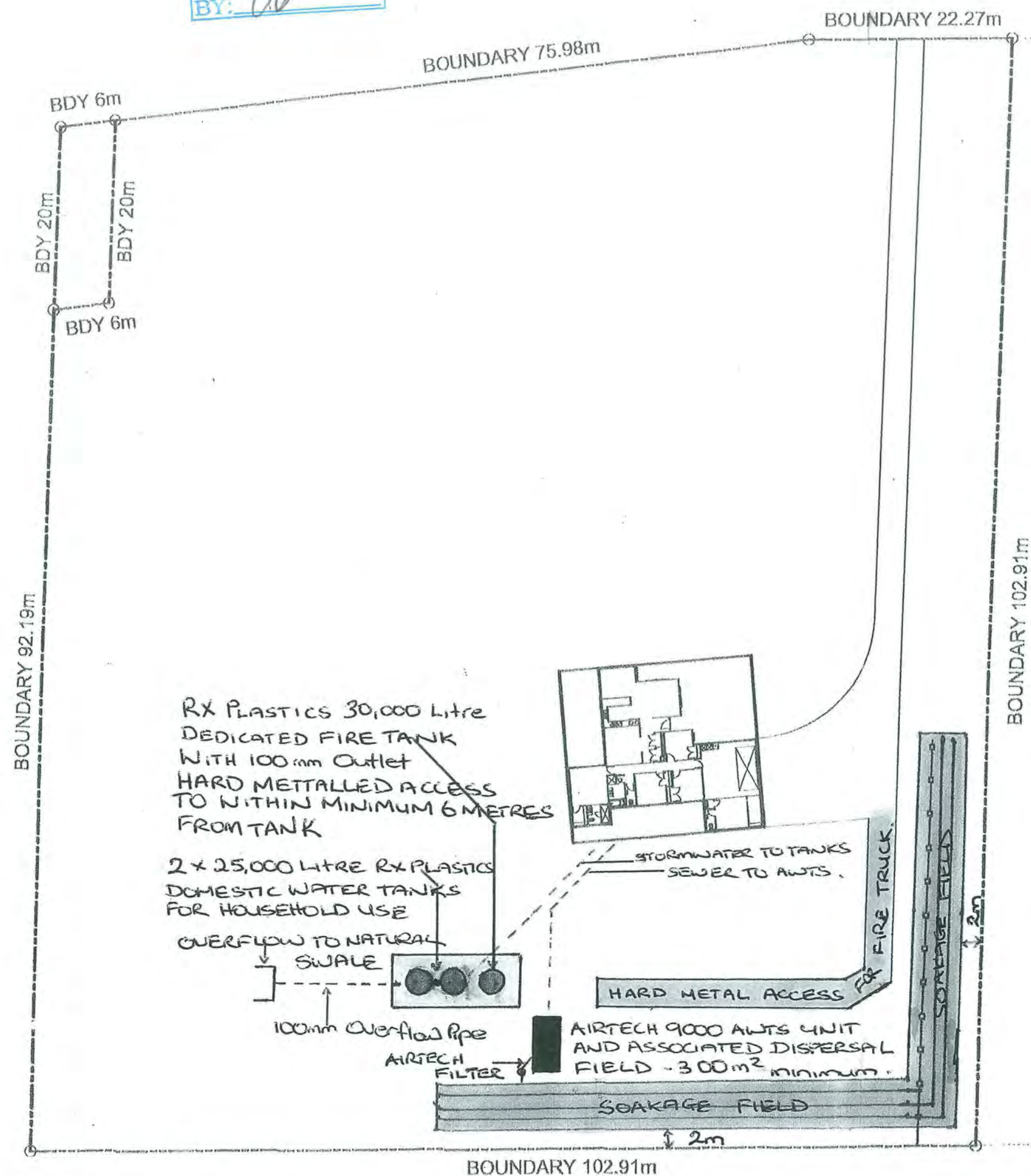
Deputy Principal Rural Fire Officer  
Wellington-Chatham Islands Rural Fire District

027 839 7370  
[peter.walker@fireandemergency.nz](mailto:peter.walker@fireandemergency.nz)



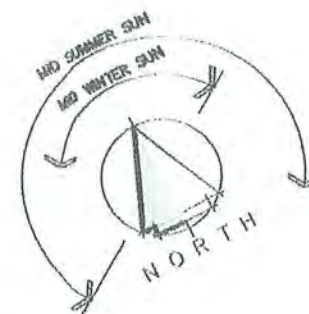


J0030



LOT 3  
DP 531543  
SITE AREA = 12149m<sup>2</sup>  
DWELLING = 227.6m<sup>2</sup>  
COVERAGE = 2% (Max 35%)

VERY HIGH WIND ZONE  
CORROSION ZONE C



Revisions:  
JUNE 24 / 2019 rev A

Client Sign:

Client Sign:

Builder Sign:

Date:

## PRELIMINARY PLANS

Project:

**NEW  
DWELLING**  
LOT 3 HADFIELD ROAD  
PEKA PEKA

Client:

BEAT ME

Drawing Title:

**SITE PLAN**

Designer:

**COASTAL**  
ARCHITECTURE LTD

11 Kodel Place  
Paraparaumu  
New Zealand  
Tel: 04 296 1248  
e-mail: coastalarchitect@gmail.com

Drawn:  
MB

Drawn:  
BF

Scale:  
as shown

Job:  
980059

Page of:  
1

Rev:  
A



**G.J. Gardner.**

New Zealand's favorite home builders

**SITE PLAN**

SCALE 1:500

NOTE: SITE CONCEPT ONLY SUBJECT TO ENGINEERING APPROVAL

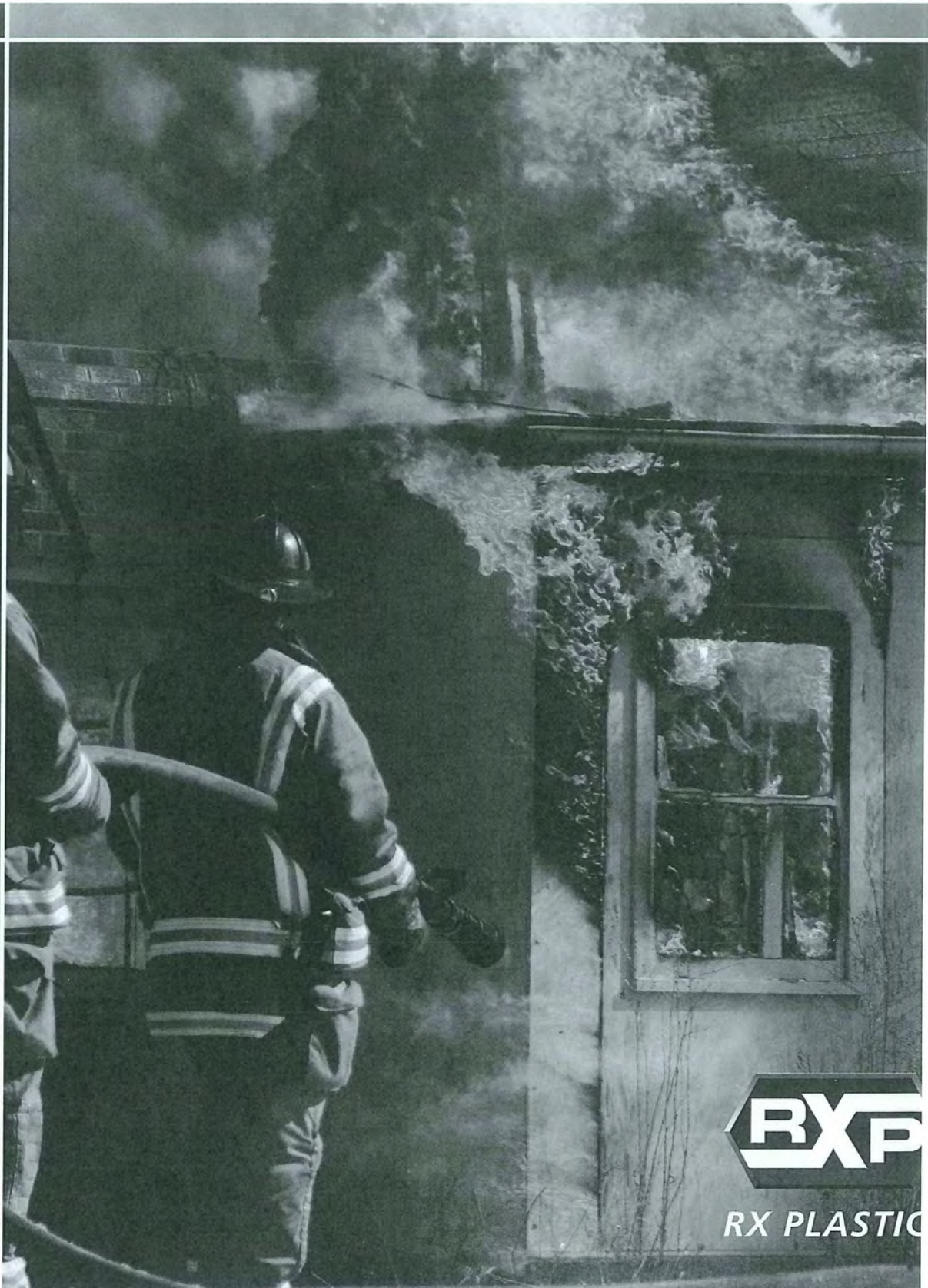
All work shall be in accordance with the NZBC. If in doubt AS/NZS 1170:2002 shall apply. This drawing is a preliminary design and is not to be used for construction. It is the responsibility of the client to ensure that all necessary approvals are obtained. The copyright of this document is published from G.J. Gardner. The copyright of this document is published from G.J. Gardner.





00031

# RX Fire Fighting Kit and Water Reserve Kit



an *OAliaxis* company

RX PLASTICS LTD  
PO Box 360 Ashburton  
Phone +64 3 307 9081  
Email [sales@rxplastics.co.nz](mailto:sales@rxplastics.co.nz)  
[www.rxplastics.co.nz](http://www.rxplastics.co.nz)



RX PLASTIC



# RX Fire Fighting and Water Reserve Kit



Maintaining a water reserve in case of a fire could mean the difference between saving or losing a valued asset

Ensure emergency services have access to your stored water, simply ask for RX Fire Fighting Kit and Water Reserve Kit from your RX Plastics supplier.

The RX Firefighting Kit is suitable for 15,000L, 25,000L and 30,000L RX MAX™ Tanks only, using 25mm or 50mm inlet fittings. RX offer the 100mm Fire Fighting outlet with a standard fire hose coupling and the 75mm Fire Fighting outlet with a camlock fitting. These fittings will require supporting separately from the RX Tank wall.

The RX Fire Fighting Kit complies with SNZ PAS 4509 : 2008\*, the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice.

Please refer to the fittings shown when ordering to ensure you receive the correct kit to suit your requirements or notify our sales team of your individual requirements.

## Important Notice:

Contact the Principal Rural Fire Officer through your local District Council Office and seek advice on what size tank outlet is most appropriate for your area. Advice on tank size, location and Fire appliance access to the water supply in relation to the property to be protected can also be provided.

## Fire Fighting Kit



### Concrete slab

A concrete slab is required for mounting the bracket, for the installation of the RX Fire Fighting Kit. The concrete slab will be no smaller than the 500mm x 500mm square and a minimum thickness of 50mm. The bracket will be DYNA bolted to the concrete slab.



### Overflow

Ensure that the overflow does not erode the foundation. Overflow to be fitted at 270mm from the ground in one of the panels beside the manhole.

### Venting

To avoid the possibility of internal pressure or vacuum an adequate vent must be installed. The vent hole must be at least the same size as the outlet. If the tank has an RX Fire Fighting kit attached, the vent is to be fitted to the dome of the tank, or the tank lid must be removed before use.

## Water Reserve Kit



RX 25,000L MAX™ Tank with RXFR50 and FF100 shown



**RX PLASTIC**

\*This is the guidance/directing document that requires the provision of Fire Fighting Water.

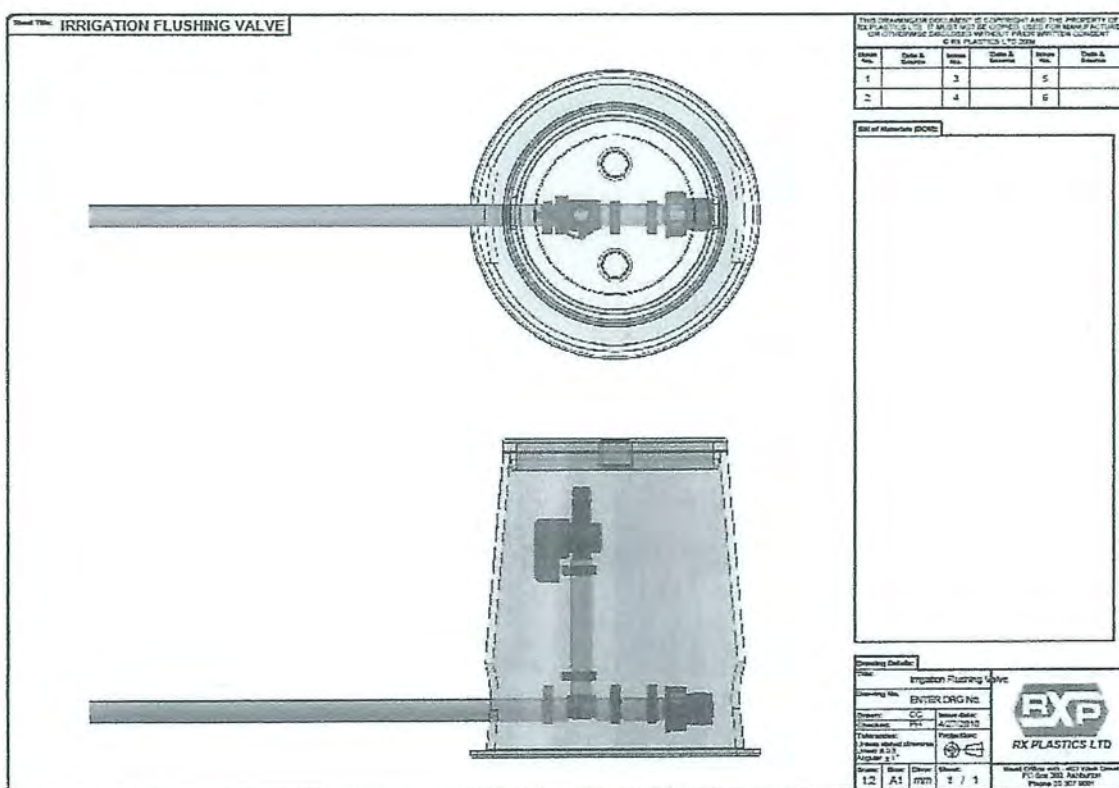
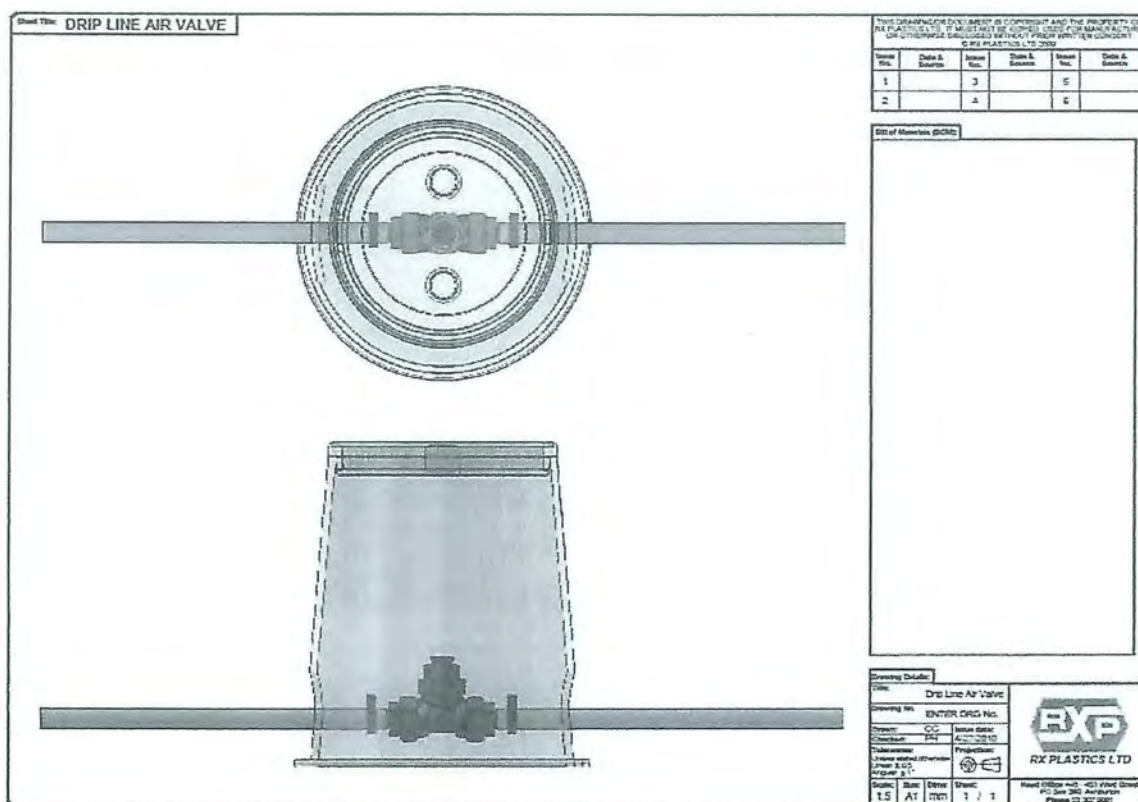
Call 0800 4 TANKS (82647) to order your Water Reserve Kit and Fire Fighting Kit today.

18 OCTOBER 2018

Please note: we also recommend you talk to your Principal Fire Officer through your local Council.

an **Aliaxis** company









North Island

# RX Tanks

No tank is built like an RX Tank



an *Aliaxis* company

RX PLASTICS LTD  
PO Box 360 Ashburton  
Phone +64 3 307 9081  
Email [sales@rxplastics.co.nz](mailto:sales@rxplastics.co.nz)  
[www.rxplastics.co.nz](http://www.rxplastics.co.nz)



**RX PLASTICS**



# RX Tanks



Whether you are storing, transporting or distributing water or wastewater, RX Plastics has the solution for you, with manufacturing facilities New Zealand wide and selections of strong supporting brands, RX Plastics can assist whatever your requirements.

RX Plastics MAX™ Tanks are compliant to the standard AS/NZS 4766:2006 ApprovalMark International Ltd. Our entire process from tank design and manufacture through to the finished product is compliant to meet the highest design and manufacturing standard AS/NZS 4766 - ApprovalMark International Ltd.

## Tanks

- Compliant to the highest standard AS/NZS4766
- RX Tanks meet the highest design and manufacturing standards
- UV stabilised, food grade polyethylene (FDA approved)
- Resistant to algae growth
- Lab tested to ensure tank meets our strict guidelines
- Use of diagnostic tooling during manufacture ensures heating and cooling cycles are optimised
- One piece construction for strong robust tanks
- The size of our tanks in litres refers to actual amount of usable water that can be stored – that's guaranteed

## Standard water tank colours



## MAX™ tank colours



Other colours available on request.

## MAX™ Tanks

– 10,000, 15,000, 25,000 and 30,000 litres

RX Plastics MAX™ Tanks are compliant to the Standard – AS/NZS 4766:2006 – ApprovalMark International Ltd.

### Features:

- 400mm manhole for easy inspection (10,000 & 15,000 litres)
- 600mm manhole for easy inspection (25,000 & 30,000 litres)
- Building permit not required for 30,000 litre tank
- Easy to transport with built-in lifting lugs
  - 4 lugs for 10,000 litres
  - 6 lugs for 15,000, 25,000 & 30,000 litres
- Flat panel for ballcock and accessories, and for ladder stability
- For water use 1SG only (1m³ = 1000kgs water)
- For use of potable water storage between 1 – 23°C
- All tanks are supplied with a clip-on lid
- 20 year warranty
- Standard colours: Karaka Green, Mist Green, Heritage Green, Beige, Dark Grey and Black

10,000, 15,000, 25,000 and 30,000 litre MAX™ Tanks have two pre-drilled BSP threaded outlets and are supplied with 1x 50mm hex nipple and 1 x 50mm bung.

## Water Tanks

– 500, 1,100, 2,000, 3,200, 5,250, 7,500 litres

RX Plastics water tanks are compliant to the Standard – AS/NZS 4766:2006 – ApprovalMark International Ltd.

Easy to install and suited to any industrial, agricultural or domestic application requiring storage of 500 to 7,500 litres.

### Features:

- 400mm manhole for easy inspection
- 500 – 1,100 litre tanks have centre placement for manhole
- 2,000 – 7,500 litre tanks have outside edge placement for manhole
- Easy to fit outlets and valves
- 4 lugs for lifting, carrying and tying down
- For water use 1SG only (1m³ = 1,000kgs water)
- For use of potable water storage between 1 – 23°C
- Tanks are supplied without fittings or pre-drilled holes
- All tanks are supplied with a clip-on lid
- 20 year warranty
- Standard colours: Mist Green, Heritage Green, Beige and Black



## Water Tanks



3,900mm  
6,600 gallons  
30,000 Litres



3,500mm  
5,500 gallons  
25,000 Litres



3,000mm  
3,300 gallons  
15,000 Litres



2,150mm  
2,200 gallons  
10,000 Litres



2,500mm  
1,650 gallons  
7,500 Litres



2,150mm  
1,154 gallons  
5,250 Litres



1,850mm  
705 gallons  
3,200 Litres



1,500mm  
440 gallons  
2,000 Litres



1,200mm  
242 gallons  
1,100 Litres



840mm  
110 gallons  
500 Litres



## Colostrum Tanks

– 500, 1,100, 2,000, 3,200, 5,250, 7,500 litres

Colostrum Tanks are made from strong robust opaque plastic.

### Features:

- Easy to transport with built-in lifting lugs
- Ease of drilling for wide range of fittings
- 500 – 1,100 litre tanks have centre placement for manhole
- 2,000 – 7,500 litre tanks have outside edge placement for manhole
- Clear stencil markings showing the volume in litres
- Four lugs for lifting, carrying and tying down
- All tanks are supplied with a clip-on lid
- Also available COLSTIRRER – Colostrum Zinc Coated Manual Stirrer



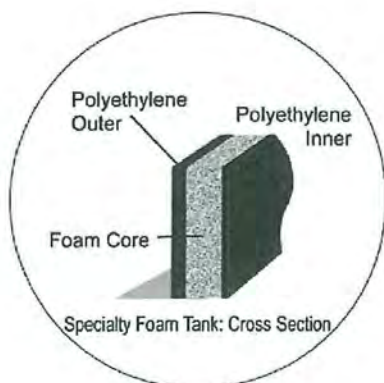
## Foamed Tanks

– 500, 1,100, 2,000, 3,200, 5,250, 7,500 litre

These are the result of a three-shot process in which a thick polyethylene foamed centre is sandwiched between a polyethylene outer and inner skin. Foamed tanks provide extra strength. With superior insulation properties, water is able to be kept at a cooler, more consistent temperature. Foamed tanks are a logical choice for temperature-controlled environments, particularly in the refrigeration industry. Available in black only.

### Features:

- Easy to transport with built-in lifting lugs
- Ease of drilling for wide range of fittings
- 500 – 1,100 litre tanks have centre placement for manhole
- 2,000 – 7,500 litre tanks have outside edge placement for manhole
- Four lugs for lifting, carrying and tying down
- Tanks are supplied without fittings or pre-drilled holes
- All tanks are supplied with a screw-in lid



## Molasses Tanks

– 500, 1,100, 2,000, 3,200, 5,250, 7,500, 10,000, 15,000, 25,000, 30,000 litres

Molasses Tanks are specially made extra duty tanks for the storage of heavy molasses or similar liquids (1 litre molasses = 1.4kg. This means that 1,000 litres will weigh 1,400kg). Therefore the tank must be stronger to hold the added weight. Molasses tanks are the same shape as a standard tank but with a thicker wall for holding heavy viscous liquids.

### Features:

- 500 – 1,100 litre tanks have centre placement for manhole
- 2,000 – 30,000 litre tanks have outside edge placement for manhole
- Easy to transport with built-in lifting lugs
- Thicker walls
- Molasses kits sold separately and fitted to molasses kits only. Small or large kit options available
- All tanks are supplied with a clip-on lid



Molasses tank wall

Normal water tank wall





## Tank Kits



**Frost Protection Unit for MAX™ Tanks**  
– RXFP25 (25mm), RXFP50 (50mm)

Ensuring the availability and flow of water, the frost protection unit stops the ballcock freezing in colder weather.



**Fire/Water Reserve MAX™ Tanks**  
– RXFR25 (25mm), RXFR50 (50mm)

Along with the fire fighting kits, the Fire/Water Reserve kit ensures that if there is a fire, firefighters can access water immediately.

**MAX™ Tank Fire Fighting Kits**  
– FFK 75 (75mm), FFK 100 (100mm)



FFK 100 (100mm)



FFK 75 (75mm)

The RX Fire Fighting Kits are suitable for 15,000, 25,000 and 30,000 litre tanks only, using 25mm and 50mm inlet fittings. RX offer the 100mm fire fighting outlet with a standard fire hose coupling, and the 75mm fire fighting outlet with a camlock fitting. These fittings require support separately from the RX Tank wall (bracket supplied with kit).

### Molasses Kits

RXMK-LGE – Large Molasses Kit  
RXMK-SM – Small Molasses Kit



Molasses kits are available to facilitate the supply of molasses. Fitted with a clear site glass, you will always know how much molasses you have on hand.

*Large molasses kit pictured.*

## Tank Accessories



**RXWLI**  
– RX Water Level Indicator  
– Water monitoring at a glance

Easy installation, designed specifically for an RX Plastics tank. Highly visible orange float for easy level indication, stainless steel shafts and sturdy plastic fittings.

**RXWLI**  
– RX Water Level Indicator extension – 1 metre  
– Extension recommended for the RX MAX™ Tank series



**VVSE/JRW**  
– Reservoir Water Level Indicator

Easily fitted RX tanks to show water level at a glance. Highly visible yellow indicator, double bracing arms. Constructed from stainless steel.

**VVSE/JRWEXT**  
– Reservoir Water Level Indicator Extension – 1 metre  
– Extension recommended for the RX MAX™ Tank series

**RXRESV** – Reservoir Valve Dual Lever  
– 32mm (1¼"), 40mm (1½"), 50mm (2")



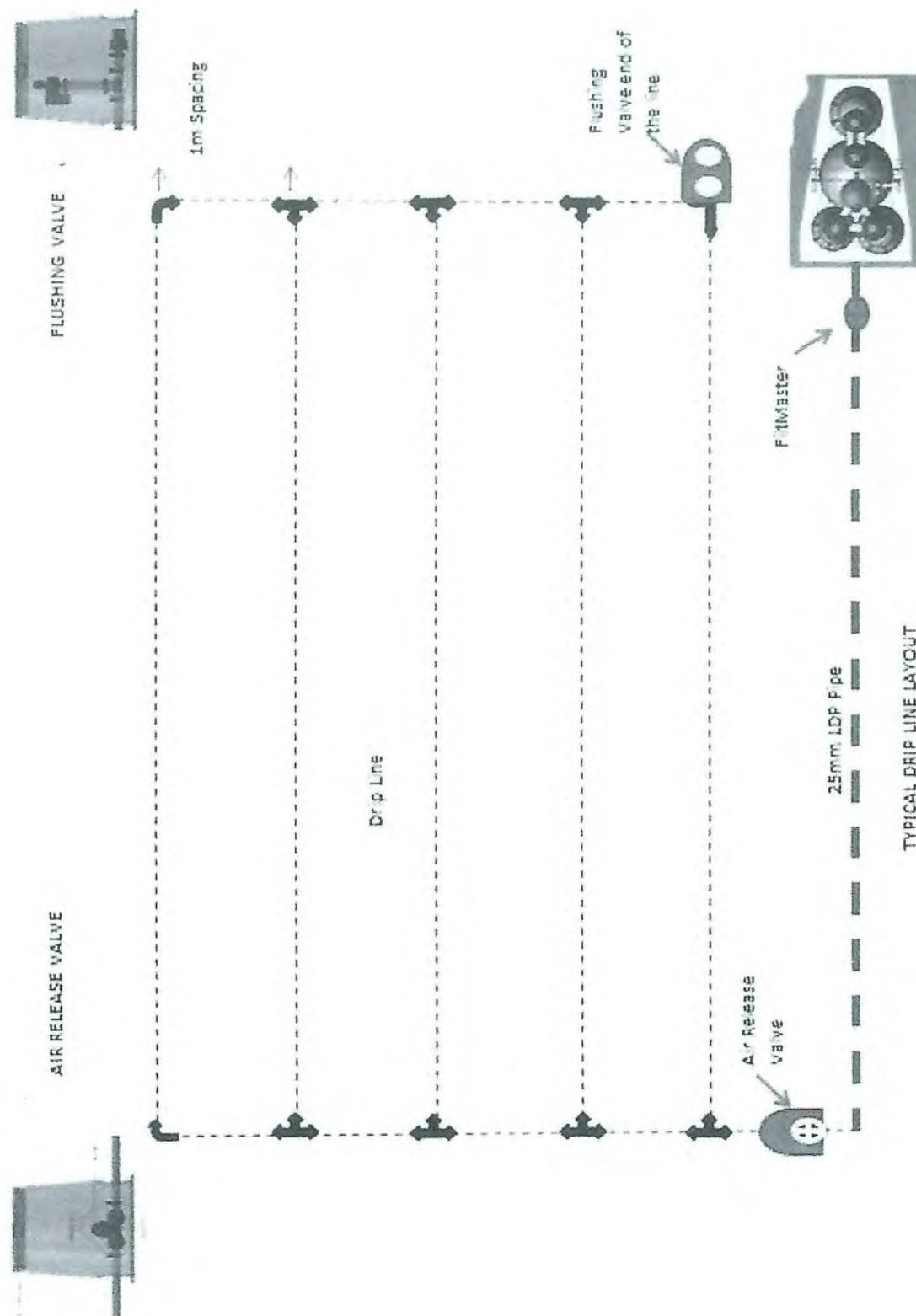
### Applications:

Maintaining water levels in medium to large tanks, reservoirs and large troughs. Used in agricultural, commercial buildings and industrial water supplies.

### Working Pressure:

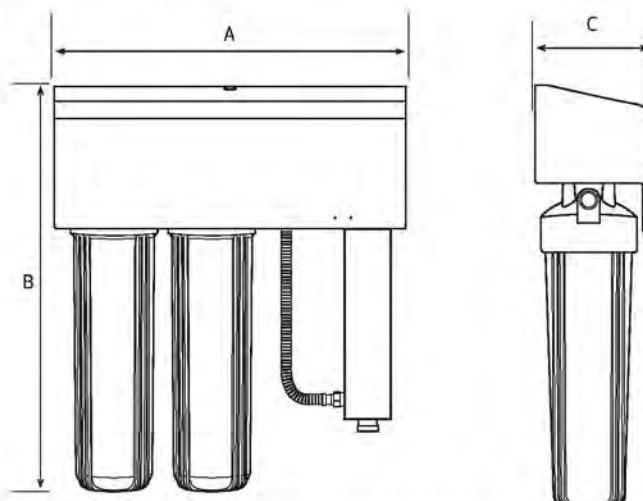
0 – 700kpa (0 – 100psi)





TYPICAL DRIP LINE LAYOUT





Model Number	A	B	C (Depth)
HYBRID-G8	670 mm	700 mm	211 mm
HYBRID-G9	670 mm	760 mm	211 mm



#### GENERAL INFO

#### DESIGNED FOR MAINS & RAINWATER SUPPLIES

### Filtration and Ultraviolet All in One Unit with Weather Cover

Puretec Hybrid Systems provide safe and purified water at every tap. Designed for both mains and rainwater supply, this filter system is highly effective in eliminating 99.99% bacteria and parasites in your water. The Hybrid Systems also reduces silt, sludge, dirt & rust giving good general purpose filtration.

#### SPECIFICATIONS

Model:	Hybrid-G8	Hybrid-G9
Replacement parts and cartridges:		
1st Stage Filtration	PL20MP1	PL20MP2
2nd Stage Filtration	PX01MP1	PX01MP2
High output UV lamp, 46 W	RL6	
Flow rate	75 Lpm	130 Lpm
Maximum temperature	52°C *	
Maximum Pressure	875 kPa	
Connection:	1" BSP [25mm]	

*Important Note: Use only genuine Puretec replacement cartridges. ~3 Year Platinum Protection applies to Puretec Systems when used in conjunction with a Puretec filter cartridge. Warranty excludes cartridges.*

#### HYBRID DOSAGE

Flow rate @40mJ/cm <sup>2</sup>	54 Lpm
Flow rate @30mJ/cm <sup>2</sup>	70 Lpm
Flow rate @16mJ/cm <sup>2</sup>	130 Lpm

#### FEATURES & BENEFITS

- Dual filtration for extra sediment capacity
- High Strength Light-weight Aluminium bracket with Architectural Grade PVDF electro coating
- Fast plug & play installation
- Designed for harsh climate
- Quick and easy plug-and-play installation
- Equipped with a lamp count-down timer and alarm
- Anti-tamper & childproof lockable lid
- Hinged lid for easy access for lamp change
- 3 Year Warranty



## ADDITIONAL INFORMATION

### The Hybrid Series Kills 99.99% Of Bacteria & Parasites

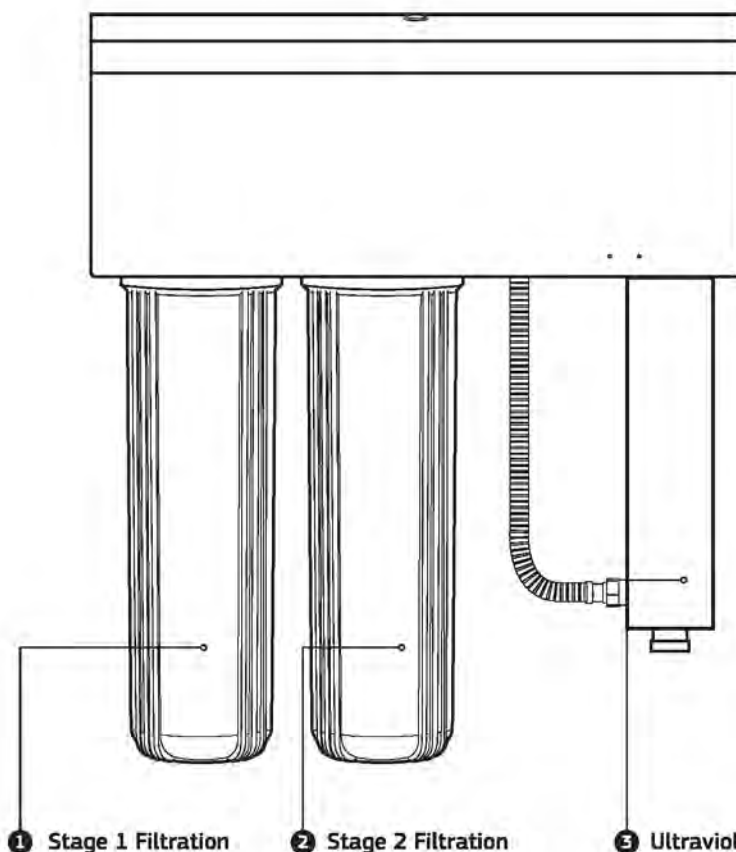
Thanks to its advanced UV technology – called Radfire™ – the Hybrid series kills 99.99% of tank water bacteria. Nothing else even comes close. Radfire™ is a natural water purification process, that's ecofriendly and completely chemical free. So you get safe, purified water at every outlet in the house.

### It Filters Your Water Too

As its name suggests, the Hybrid series combines two technologies to clean your water. In addition to killing 99.99% of bacteria with UV rays, it filters out sediment and anything else that manages to pass through your rainwater tank's coarser filter. This not only makes your water safe, but also prolongs the life of your household appliances.

### Longer Filter Life

The Hybrid series incorporates Puretec's long life filter technology, so you can go longer between filter replacements, and comes with our **3 Year Platinum Protection Warranty**^.



### Features & Benefits

#### Weather-proof Cover

Light-weight Aluminium bracket with Architectural Grade PVDF electro coating

#### Weather Protection

The Hybrid incorporates a weather cover for outdoor installations

#### Excellent Corrosion Resistance

Constructed using high strength aluminium bracket, lid and stainless chamber ensures no rusting

#### Easy Installation

4 mounting points for quick and easy installation

#### Neatly Concealed Monitor Panel

Monitors the lamp life, failure alarm (audible & visible) and total running days of the Radfire UV unit

#### Anti-Tamper Design

Anti-tamper and childproof lockable lid

#### 1 Stage 1 Filtration

A washable 20 micron sediment filter to remove silt, sludge, dirt, rust and other coarse particles

#### 2 Stage 2 Filtration

A solid 1 micron filter to remove fine particles

#### 3 Ultraviolet Protection

Kills 99.99% of bacteria with Radfire ultraviolet technology, a natural purification process that's completely eco-friendly and chemical-free



6<sup>th</sup> September 2019

**Attention:**     **G J Gardner Kapiti**  
M & L Construction Ltd  
P O Box 65  
Paraparaumu 5254

**PRE PRODUCTION PRODUCER STATEMENT  
DESIGNED FOR WIND ZONE: VERY HIGH**

**Project Name:**         **Beattie**

**Project Address:**     Lot 3 Hadfield Road – Peka Peka

We certify that the products to be supplied by our company for this project, meet or exceed the requirements of the New Zealand Building Code, NZS 4211:1985 Performance of Windows and NZS 4223 Glazing in Buildings.

More specifically, we will manufacture the aluminium windows and doors for this project in accordance with the design and manufacturing specifications provided by **NATIONAL ALUMINIUM LTD**, and those required by NZS 4223.

Window and door units to be manufactured to these specifications have been tested to, and comply with, the wind pressure rating, deflection, weather performance and glazing requirements of the above New Zealand Standards.

The products to be supplied by our company for this project, can be expected to have a serviceable life of not less than 15 years in accordance with section B2 of the New Zealand Building Code. This relates specifically to the structural elements of the windows and doors.

Over time, even with regular maintenance, decorative elements and non-structural fittings such as handles, fasteners, roller mechanisms, mohair and other similar components may require replacement as they wear out. This process does not contravene the Durability Requirements of section B2 of the New Zealand Building Code or this Producer Statement.

Yours sincerely



Danny Donoghue  
Accounts Manager





# **INSTALLATION INSTRUCTIONS & OWNERS GUIDE**

## **RHEEM MAINS PRESSURE ELECTRIC HOT WATER HEATERS**

### **Congratulations for choosing a Rheem Water Heater**

It is important that you take a few minutes  
to read this booklet as it may save you  
time and trouble later.

If you require any further information or your  
water heater needs to be serviced, please contact the  
Rheem Service Department on 0800 657 335,  
or the nearest service centre  
(look in the Yellow Pages under "Plumbers")  
Or visit [www.rheem.co.nz](http://www.rheem.co.nz)

### **Important to the Installer**

Do not leave this booklet inside the element cover  
after installation  
Please leave the booklet with the water heater's owner



## IMPORTANT INFORMATION

### GENERAL

- The information contained in this manual, and all other information or advice given at any time by Rheem New Zealand Limited in connection with the purchase, installation or use of a Rheem water heater, is given in good faith. Subject to any rights the owner may have under the "Consumer Guarantees Act 1993", Rheem New Zealand Limited will not be liable to any person for any inaccuracy or omission in the information or advice arising through the fault or negligence of Rheem New Zealand Limited or any other person or through any other cause whatsoever.
- This water heater is not intended to be operated, adjusted or tampered with by young children or infirm persons. Young children should be supervised to ensure they do not play with the water heater.

## ABOUT YOUR WATER HEATER

### Q. DOES THE WATER QUALITY AFFECT THE WATER HEATER?

- A. Your water heater is suitable for most public water supplies, however, some water qualities may have a detrimental effect on it. **If you are in a known harsh water area please refer to page 6.**

### Q. HOW HOT SHOULD THE WATER BE?

- A. All models (temperature range 60 - 70°C) require an authorised person to make any temperature adjustments. For reasons of safety and economy, we advise the thermostat is adjusted to the lowest setting that meets your needs.

The New Zealand Building Code requires a stored temperature setting of not less than 60°C. A tempering valve set at a maximum of 55°C must be used on domestic wet areas.

### Q. HOW DO I KNOW IF THE WATER HEATER IS INSTALLED CORRECTLY?

- A. Refer to the installation requirements on page 4.

### Q. HOW LONG WILL THE WATER HEATER LAST?

- A. There are a number of factors that affect the life of the water heater. These include; the water quality, water pressure, water temperature and the usage pattern, however, your Rheem water heater is supported by a comprehensive warranty (refer to page 7).

The life of the water heater may be extended by arranging for an authorised person to inspect the anode and replace it, if required.

The suggested time after installation when the anode should be inspected is:

Vitreous Enamel 8 years

Optima 10 years

For softened water supplies or in areas of poor water quality, it is recommended the anode be inspected 3 years earlier than shown (refer to "Water Quality" on page 6).

## HOW THE WATER HEATER WORKS

### SINGLE AND TWIN ELEMENT MODELS

Water stored within the water heater is heated by the electric heating element. The thermostat controls the electricity supply to the heating element so that a constant water temperature is maintained. As the cold water is heated it expands approximately 1/50 of its volume and, as a result, a small amount of water is discharged from the cold water expansion valve.

### NON-SIMULTANEOUS ELEMENT MODELS


The two heating elements are wired for non-simultaneous operation, so that only one heating unit can operate at a time. The bottom heating unit is usually connected to an off-peak (overnight) supply and the top heating unit to a continuous supply. **The red link wire must be removed from the terminal block during installation if two separate power supplies are to be used.** Leaving the link in place ensures both elements operate correctly with a single power supply.

The basic operation is as follows: when the water temperature at the top of the water heater has reached the set temperature, the thermostat switches the top element off. This creates a circuit to the bottom heating element by switching the neutral.

### SAFETY

On all models, a Temperature and Pressure Relief valve is supplied with each water heater. It can be found inside the front cover and must be mounted on top of the water heater.

Also fitted to the water heater is a thermostat, which incorporates an over-temperature thermal cut-out device.

 **Warning:** The operation of the thermal cut-out indicates a possible dangerous situation. The thermostat and thermal cut-out is to only be adjusted or reset by an authorised service person.



These safety devices must not be tampered with, or removed, and under no circumstances operate the water heater unless both devices are fitted.

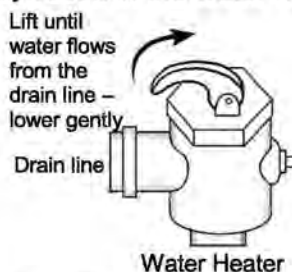
## REGULAR CARE

### MANUALLY OPERATING THE TEMPERATURE AND PRESSURE RELIEF (TPR) VALVE:

The easing lever (see diagram. 1) on the TPR valve should be operated regularly to remove lime deposits and verify that it is not blocked. **It is very important that you raise and lower the lever gently.**

**Warning:** To ensure the relief valve is working correctly, operate the relief valve easing lever at least every six months. Failure to do this may result in the water heater over-pressurising.

#### DIAGRAM 1



If water does not flow freely from the drain line or the valve fails to completely close and water continues to be discharged, contact the Rheem Service Department, phone 0800 657 335, or the nearest Rheem Service Centre (look in the Yellow Pages under "Plumbers").

### GOING ON HOLIDAYS:

If you plan to be away from home for one or two nights, we suggest that you leave the water heater switched on. However, if you plan to stay away more than a few nights, conserve energy by switching the water heater off at the isolating switch, or at the main switchboard. In locations where freezing could occur, you should leave the water heater turned on.

## SAVE A SERVICE CALL

**CHECK THE ITEMS BELOW BEFORE MAKING A SERVICE CALL. YOU MAY BE CHARGED FOR SERVICE IF THE FAULT IS NOT RELATED TO THE WATER HEATER MANUFACTURE OR PARTS SUPPLIED WITH THE WATER HEATER BY RHEEM.**

### WATER DISCHARGING FROM EXPANSION CONTROL VALVES

It is normal for the cold water expansion valve and the temperature and pressure relief valve to discharge a small quantity of water during the heating cycle. If either of these valves discharge more than a bucket full of water in 24 hours, one of the following may be the cause.

- **Continuous dribble**  
Try gently raising the easing lever on the relief valve for a few seconds. This may dislodge small particles of foreign matter and clear the fault.
- **Heavy flow of hot water until the water is cold – then stops while the water reheats**  
Immediately turn off the electricity supply to the water heater. Call the Rheem Service Department or look in the Yellow Pages under "Plumbers" for your nearest Rheem Service Centre or [www.rheem.co.nz](http://www.rheem.co.nz) to arrange an inspection.
- **A steady flow of water (often at night)**  
This may indicate that your cold water pressure sometimes rises above the design pressure of the water heater. A Pressure Limiting valve should be installed, or if one is installed, it may need replacing.

### NOT ENOUGH HOT WATER (or no hot water)

- **Is the electricity turned on?**  
Check the switch marked 'water heater' at the switchboard and the water heater isolating switch.  
Check the fuse or circuit breaker marked 'water heater'.

**WHERE THE WATER HEATER IS CONNECTED TO AN OFF PEAK (NIGHT RATE) ELECTRICAL TARIFF, THE SUPPLY MAY NOT BE AVAILABLE AT CERTAIN TIMES OF THE DAY.**

- **Do you have the correct size heater for your requirements?**  
Refer to the sizing guide in the Rheem sales literature or the Rheem website.
- **Is one outlet (especially the shower) using more hot water than you think?**  
Carefully review the family's hot water usage and if necessary, check the shower flow rate. For maximum efficiency we recommend the flow rate through the shower is between 8 to 10 litres per minute (mixed hot and cold). This can be achieved by installing a flow control valve if provision is not made to fit a flow restrictor in the shower rose.
- **Ensure the thermostat setting is appropriate. Note, some models require an authorised person to make electrical thermostat adjustments.**

### HIGH ELECTRICITY BILLS

- **Consider recent changes to your hot water usage pattern and check if there has been an increase in tariffs since your previous account.**
- **Is either of the expansion valves discharging too much water?**

- **Is one outlet (especially the shower) using more hot water than you think?**
- **Is there a leaking hot water pipe, dripping hot water tap, etc?**  
Even a small leak will waste a surprisingly large quantity of hot water and energy. Replace faulty tap washers, and have your plumber rectify any leaking pipe-work.

## INSTALLATION

Please take careful notice of the advice given as Rheem New Zealand Limited will not be liable for any loss or damage suffered as a result of the incorrect installation of the water heater, or any failure to check the capability of the electrical supply wiring to the water heater.

The water heater must be installed by a certified person or registered plumber and the installation must comply with the New Zealand Building Code, Rheem Installation Instructions, AS/NZS 3000 electrical installations and all local codes and regulatory authority requirements. Note that no warranty costs will be payable where the water heater is located in a position that does not comply with the Rheem water heater installation instructions or relevant statutory requirements, where the unit is installed in a position that does not allow safe or ready access, the cost of that access shall not be payable (refer to "Rheem Warranty" on page 7).

- **WATER HEATER LOCATION**

Water heaters with a galvanised outer casing are only suitable for indoor installations, whereas water heaters with a painted casing are suitable for both indoor and outdoor installations.

Clearance must be allowed for servicing and removal of the water heater and it must be accessible without the use of a ladder or scaffold. (Typical clearances are: TPR valve removal 135 mm, Element Cover and Element Removal 400 mm). Also, you must be able to read the information on the rating plate and if possible, leave headroom of one water heater length so the anode can be inspected or replaced.

- **CONNECTION SIZES**

- Hot and Cold water connections: RP ¾ / 20.
- Relief valve connection: RP ½ / 15.

- **INLET/OUTLET CONNECTIONS**

A union must always be provided at the cold water inlet and hot water outlet for disconnection reasons. All connection sockets on the water heater are parallel threaded and therefore tapered brass nipples must be used to ensure watertight connections. Both connections are fitted with plastic liners and it is important that they remain in situ for the water heater to function properly. These liners will be pushed into the correct position as the fitting is being screwed in.

- **NON RETURN VALVE**

A non return valve must be installed on the cold water line to the water heater.

- **PIPE SIZES**

The cold water line to the water heater should be the same size or bigger than the hot water line from the water heater. For best results, choose the most suitable pipe size for each individual application.


- **COLD WATER EXPANSION VALVE**

A cold water expansion valve must be fitted to the cold water line to the water heater.

- **TEMPERATURE AND PRESSURE RELIEF VALVE**

When fitting the temperature and pressure relief valve, ensure the probe has not been bent. Seal the thread with PTFE tape, or similar, as recommended by the valve manufacturer and screw the valve into the off-centre socket. Do not use a wrench on the valve body – use the spanner flats provided. Drain the TPR valve with a pipe the same size as the valve outlet. The drain must run downwards to a visible point outside the house, preferably over a gully trap.

In some setups or circumstances, such as if freezing could occur, an air break must be provided in the drain within 300 mm of the TPR valve, refer to the New Zealand Building Code - Clause G12 for requirements and acceptable solutions for the running of hot water drain line(s).

 **Warning:** *The drain line from the TPR valve must be in copper. A Rheem mains pressure water heater must not be installed and operated without a suitable (valve that complies with AS 1357.1) temperature and pressure relief valve. Under no circumstances block the outlet of this valve or its drain pipe.*

- **WATER SUPPLY PRESSURE**

Maximum permitted mains water pressure - refer product label and Table 5.2 AS/NZS 3500.4. Note inlet pressure control valve is required where maximum permitted mains pressure is likely to be exceeded.  
Minimum inlet pressure: 60 kPa

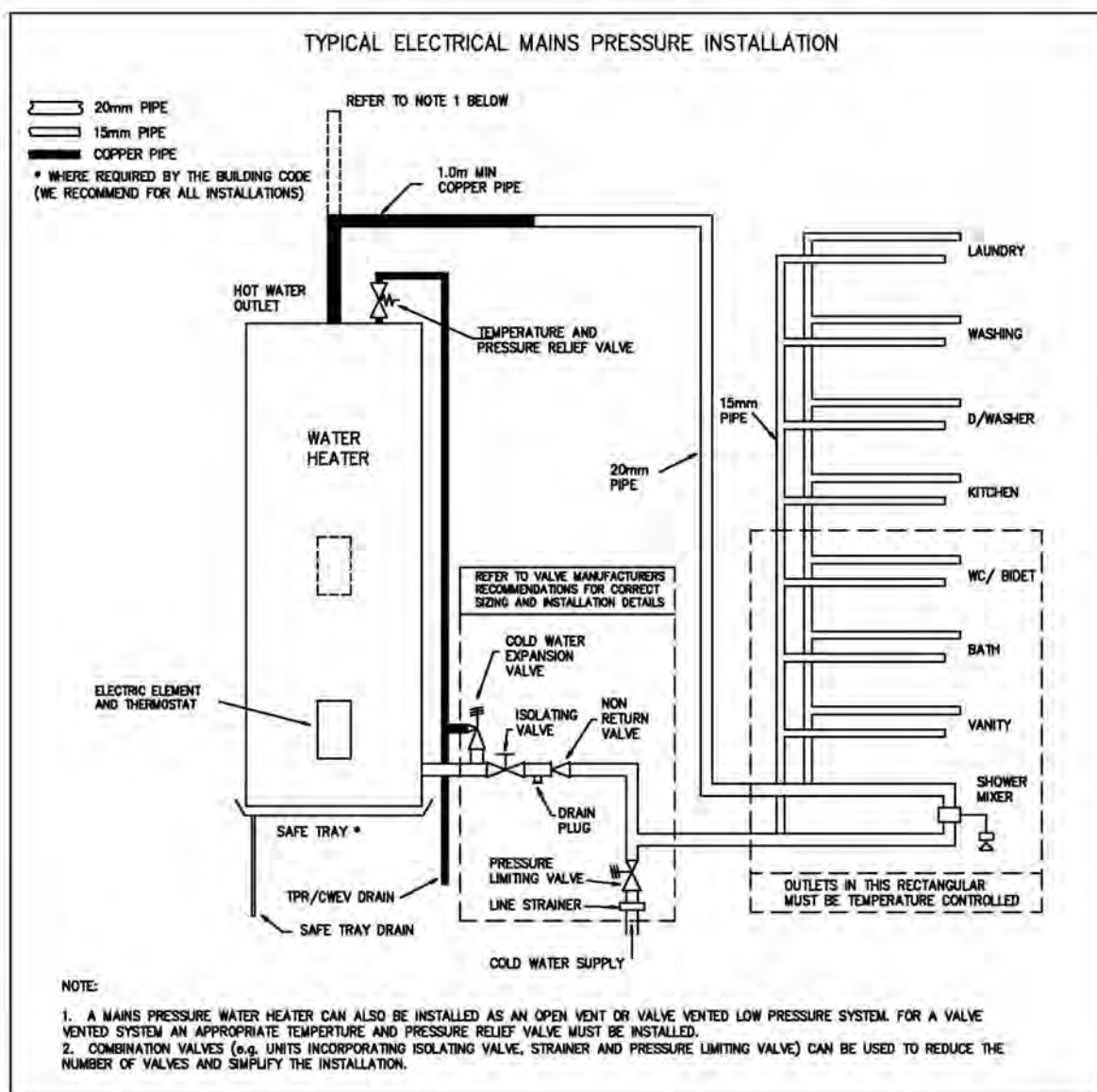
- **PRESSURE LIMITING/REDUCING VALVE**

If the water supply pressure exceeds the requirements of Table 5.2 AS/NZS 3500.4, a pressure limiting valve with a maximum setting of 500 kPa is to be fitted in the installation.

- **SAFE TRAY AND SEISMIC RESTRAINTS**

The water heater must be installed with a properly drained safe tray where there is the possibility of water damage to furniture, carpets or building. All water heaters must be restrained to protect against seismic forces. (Refer to the Zealand Building Code for acceptable solutions.)





**DIAGRAM 2:**

## CONNECTIONS - ELECTRICAL

The electrical installation must be completed in accordance with AS/NZS 3000. All water heaters are designed for 230 VAC, 50 Hz mains operation and a means of disconnection from the power supply must be incorporated in the fixed wiring during installation.

A flexible 20 mm conduit is required for the electrical cable to the water heater. The conduit is to be connected to the unit with a 20 mm plain to screw adaptor. Connect the power supply wires directly to the terminal block and earth tab connection, ensuring there are no excess wire loops inside the front cover. For details, refer to the wiring diagram on the inside of the element cover. **A separate heating element earth wire is not required because the element earths by the thread of the element boss or the flange being in contact with the element socket.**

## COMMISSIONING

### TO FILL AND TURN ON THE WATER HEATER

**Warning:** The power supply to the water heater must not be switched on until the water heater is filled with water and an "earth continuity test", as outlined in Annex A of AS/NZS 60335.1 has been carried out. Failure to do so will damage the element and shorten its life and may create a dangerous situation.

- Open all of the hot water taps in the house (don't forget the shower). Open the cold water isolation valve fully to the water heater to force the air out of the taps. As water flows freely from each tap, close it. Check the pipe-work for leaks.
- Switch on the electrical supply at the isolating switch to the water heater.

### TO TURN OFF THE WATER HEATER

If it is necessary to turn off the water heater on completion of the installation, such as on a building site or where the premises is vacant, then;

- Switch off the electrical supply at the isolating switch to the water heater.
- Close the cold water isolation valve at the inlet to the water heater.

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## DRAINING THE WATER HEATER

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- Switch off the electrical supply at the isolation switch to the water heater.
- Close the cold water isolation valve.
- Operate the relief valve easing lever to release the pressure in the water heater.
- Drain the water heater through the drain valve or plug.
- Undo the top outlet union or operate the relief valve easing lever again to let air into the water heater and allow the water to drain


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## WHAT YOU SHOULD KNOW ABOUT WATER QUALITY

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### WATER SUPPLY CHEMISTRY

Water quality can have a detrimental effect on water heater operation, components and life expectancy and may affect the warranty.

 **Warning:** *This water heater must be installed in accordance with advice given to be covered by the Rheem warranty.*

Your Rheem water heater is manufactured to suit the water condition of most local authority water supplies. However, some water supplies can have a detrimental effect on the water heater and its operation and/or life expectancy. This water heater must only be connected to a water supply which complies with these specifications for the Rheem warranty to apply. If you are unsure of your water chemistry you may be able to obtain information from your local water supply authority or you can contact Rheem and we will provide you with contact details of a suitable agency capable of testing your water for compliance with Rheem standards. Water quality tests must be carried out at the owner's cost.

### HARSH WATER AREAS

Rheem water heaters are designed for use in areas where the Total Dissolved Solids (TDS) content of the water supply is less than 2500 mg/L.

In areas where the TDS exceeds 600 mg/L it is possible the standard magnesium anode fitted to the water heater, may be excessively active. To alleviate this, the magnesium anode should be replaced with an aluminium anode. Where the TDS of the water is less than 40 mg/L, such as when the water has been deionised or is from an alpine supply, a high potential anode should be used. The changing of anodes must be carried out by a plumber or qualified service person.

### CAUTION

If your water supply has a TDS greater than 600 mg/L and the anode has not been changed, there is a possibility of hydrogen gas accumulating in the top of the water heater during long periods of no use.

If, under these conditions, the water heater has not been used for two or more weeks the following procedure should be carried out before using any electrical appliances (e.g. automatic washing machines and dishwashers) which are connected to the hot water supply.


The hydrogen, which is highly flammable, should be vented safely by opening a hot tap and allowing the water to flow. There should be no smoking or naked flames near the tap whilst it is turned on. Any hydrogen gas will be dissipated as indicated by an unusual spurting of the water from the tap. Once the water runs freely again any hydrogen in the system will have been released.

### SATURATION INDEX

The saturation index is used as a measure of the water's corrosive or scaling properties. In a scaling water supply calcium carbonate is deposited out of the water onto any hot metallic surface. When scaling water has a saturation index greater than +0.40 an expansion control valve must be fitted on the cold water line after the non-return valve.


Where the saturation index exceeds +0.80, low watts density elements should be used. Where the saturation index is less than -1.0, a corrosive resistant heating unit should be used (contact your local Rheem Service Department or an authorised service person).

Scaling water is water that containing levels of calcium carbonate (total hardness in excess of 200 mg/litre at any time when the water heater is operating) Scaling water can block and prevent the pressure & temperature relief valve from operating, resulting in damage to the water heater storage cylinder and water components. A cold water expansion control valve must be fitted where in all areas with scaling water to assist in preventing blockage of the pressure and temperature relief valve.

 **Warning:** *Failure to install an expansion control valve where scaling water conditions occur may result in the water storage cylinder failing or under certain circumstances over pressurising.*

To avoid damage to the storage cylinder and components Rheem strongly recommends scaling water be treated before entering the water heater by fitting appropriate water filters, conditioners, etc – refer to your local water authority for information on water in your area. A build up of white sediment on the hot taps or shower rose can be indicative of scaling water. Contact Rheem if this condition is observed.



 **Warning:** *Damage caused by scaling water can affect the Rheem warranty.*

The Rheem warranty of this water heater will not cover resultant faults on components, including storage tank, due to the effects of sludge and/or sediment as a result of connection to a water supply from silted or untreated sources, i.e. springs, dams, bores, rivers or town supplied from a bore.

**WATER HEATERS NOT INSTALLED IN ACCORDANCE WITH THE ABOVE ADVICE WILL NOT BE COVERED BY THE RHEEM WARRANTY.**

## **RHEEM WARRANTY**

### **Mains Pressure Electric Water Heater Product Warranty New Zealand Only**

In addition to your legal right, in New Zealand Rheem New Zealand Limited makes the following promise to the owner. We will repair or, if necessary, replace a defective unit or part of it, which has failed due to faulty manufacture on the following terms and conditions:

#### **1. THE RHEEM WARRANTY – GENERAL**

- 1.1 This warranty is given in respect of sales in New Zealand by Rheem New Zealand Limited of 475 Rosebank Road.
- 1.2 Rheem offer a trained and qualified national service network who will repair or replace components at the address of the unit subject to the terms of the Rheem warranty in New Zealand – contact your Rheem Service Centre on 0800 657 335.
- 1.3 For details about this warranty, you can contact your Rheem Service Centre in New Zealand on 0800 657 335.
- 1.4 The terms of this warranty are set out in section 2 and apply to units manufactured after 1<sup>st</sup> July 2016.
- 1.5 If a subsequent version of this warranty is published, the terms of that warranty will apply to units manufactured after the date specified in the subsequent version.

#### **2. TERMS OF THE RHEEM WARRANTY AND EXCLUSIONS TO IT**

- 2.1 The decision of whether to repair or replace a faulty component is at Rheem New Zealand Limited's sole discretion.
- 2.2 Where a failed component or unit is replaced under this warranty, the balance of the original warranty period will remain effective. The replacement does not carry a new Rheem warranty.
- 2.3 Where the unit is installed outside the boundaries of a metropolitan area, defined by Rheem as further than 25 km from a Rheem service centre, the cost of transport, insurance and travelling between the Rheem service centre and the installed site shall be the owner's responsibility.
- 2.4 Where the unit is installed in a position that does not allow safe or ready access, the cost of that access, including the cost of additional materials handling and/or safety equipment, shall be the owner's responsibility. In other words, the cost of dismantling or removing cupboards, doors, walls, roofs or trap doors and the cost of any special equipment to bring the unit to floor or ground level or to a serviceable position is not covered by this warranty.
- 2.5 This warranty only applies to the original and genuine Rheem unit in its original installed location and any genuine Rheem replacement parts. It does not cover any plumbing, gas fitting or electrical parts supplied by the installer, that are not an integral part of the unit, e.g. pipe-work, pressure limiting valve, stop valves, non-return valves, electrical switches, pumps and fuses.
- 2.6 The Rheem warranty does not cover faults that are a result of:
  - a) Accidental damage to the unit or any component, for example Acts of God such as floods, storms, fires, lightning strikes and the like and Third party acts or omissions.
  - b) Misuse or abnormal use of the unit.
  - c) Installation or use not in accordance with the Owner's Guide and Installation Instructions, New Zealand Building Code requirements or with relevant statutory and local requirements including failure to install a properly drained safe tray where required by the owners guide and installations.
  - d) Connection at any time to a water supply that does not comply with the water supply guidelines as outlined in the Owner's Guide and Installation Instructions, or poor water quality outside the limits specified in the owners guide and installation instructions.
  - e) Repairs, attempts to repair or modifications to the unit by a person other than Rheem Service or a Rheem Accredited Service Technician.
  - f) Faulty plumbing or faulty power supply.
  - g) Failure to maintain the unit in accordance with the Owner's Guide and Installation Instructions.
  - h) Transport damage.
  - i) Fair wear and tear from adverse conditions (for example, corrosion).
  - j) Cosmetic defects.
- 2.7 If you require a call out and we find that the fault is not covered by the Rheem warranty, you are responsible for Rheem Service Centre call out costs. If you wish to have the relevant component repaired or replaced by Rheem that service will be at your cost.
- 2.8 Subject to any statutory provisions to the contrary, this warranty excludes any and all claims however arising including under contract or tort for damage to furniture, carpet, walls, foundations or any other consequential loss or incidental expenses either directly or indirectly due to leakage from Rheem unit, or due to leakage from fittings and/ or pipe work of metal, plastic or other materials caused by water temperature, workmanship or other modes of failure.
- 2.9 This warranty excludes to the extent permissible all implied warranties set out in the sale of goods act 1908 (New Zealand) and all guarantees set out in the consumers guarantees act 1933 (New Zealand) to the extent that the goods are acquired for the purpose of resupply in trade consumption in the course of a process of production or manufacture or repairing or treating in trade other goods or fixtures on land.

### 3. WHAT IS COVERED BY THE RHEEM WARRANTY FOR THE UNITS DETAILED IN THIS DOCUMENT

- 3.1 Rheem will repair or replace a faulty component of your unit if it fails to operate in accordance with its specifications as follows:

Warranty Cover	The period from date of installation, in which the fault must appear, in order to be covered		*Domestic use is defined as; when the appliance is installed in a single family domestic dwelling.
What components are covered	Domestic use*	Non-domestic use*	What coverage you receive

#### Mains Pressure\*\*

#### Years

\*\* (Excludes Optima)

All components	1	1	Repair or replacement of failed component, or if necessary, replacement of the complete water heater, free of charge, including labour.
Cylinder only	3	1	Repair or replacement of the complete water heater, free of charge, including labour.
Vitreous Enamel - Cylinder only	7	3	Repair or replacement of the complete water heater, free of charge. Installation and labour cost are the responsibility of the owner.
Stainless Steel - Cylinder only	10	3	

#### Optima

#### Years

All components	3	1	Repair or replacement of failed component, or if necessary, replacement of the complete water heater, free of charge, including labour.
Cylinder only	5	1	Repair or replacement of the complete water heater, free of charge, including labour.
Cylinder only	10	5	Repair or replacement of the complete water heater, free of charge. Installation and labour cost are the responsibility of the owner.

### 4. ENTITLEMENT TO MAKE A CLAIM UNDER THIS WARRANTY

- 4.1 To be entitled to make a claim under this warranty you need to:
- Be the owner of the unit or have consent of the owner to act on their behalf.
  - Contact Rheem New Zealand Limited Service Department without undue delay after detection of the defect and, in any event, within the applicable warranty period.
  - Return the faulty component or unit as directed by the Rheem New Zealand Limited Service Department.
- 4.2 You are **not** entitled to make a claim under this warranty if your unit:
- Does not have its original serial numbers or rating labels.
  - Is not installed in New Zealand.

### 5. HOW TO MAKE A CLAIM UNDER THIS WARRANTY

- 5.1 If you wish to make a claim under this warranty, you need to:
- Contact Rheem New Zealand on 0800 657 335 and provide owner's details, address of the unit, a contact number and date of installation of the unit or if that's unavailable, the date of manufacture and serial number (from the rating label on the unit).
  - A Rheem service centre will arrange for the unit to be tested and assessed on-site.
  - If Rheem determines that you have a valid warranty claim, Rheem will repair or replace the unit in accordance with this warranty.
- 5.2 Any expenses incurred in the making of a claim under this warranty will be borne by you.

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AGPAC 250 MICRON 4M X 25M HEAVY DUTY POLYTHENE BLACK

## AGPAC 250 MICRON 4M X 25M HEAVY DUTY POLYTHENE BLACK

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- Manufactured using composite resins with an approximate 4% carbon black content
- Water vapour flow resistance exceeds 90 mns/g (mega-newton seconds per gram)
- Durability is sufficient to resist damage during correct installation procedures
- Will function as a DPM for a minimum of 50yrs!

\$ 108<sup>99</sup>

Aagpac



## BRANZ Appraised

Appraisal No. 447 [2010]

### LINEA® WEATHERBOARD CAVITY CLADDING



Appraisal No. 447 [2010]

Amended 01 March 2016

#### BRANZ Appraisals

Technical Assessments of products  
for building and construction.



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## Product

- 1.1 Linea® Weatherboard Cavity Cladding is a cavity-based bevelbacked fibre cement weatherboard wall cladding. It is designed to be used as part of an external cladding system for residential and light commercial type buildings where domestic construction techniques are used.
- 1.2 Linea® Weatherboard Cavity Cladding consists of Linea® Weatherboard, which is a bevelbacked fibre cement weatherboard, fixed over timber battens to form the cavity. The cladding is finished with a latex paint system.
- 1.3 The cladding incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall framing with a nominal 20 mm cavity. The cavity allows for any occasional ingress of water that may get past the external skin to drain to the exterior of the building, and any remaining moisture to dry by evaporation.

## Scope

- 2.1 Linea® Weatherboard Cavity Cladding has been appraised as an external wall cladding for buildings within the following scope:
  - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
  - constructed with timber framing complying with the NZBC; and,
  - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
  - situated in NZS 3604 Wind Zones up to, and including Extra High.
- 2.2 Linea Weatherboard Cavity Cladding has also been appraised for weathertightness and structural wind loading when used as an external horizontally fixed wall cladding solution for buildings within the following scope:
  - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
  - constructed with timber framing complying with the NZBC; and,
  - situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5 kPa.
- 2.3 Linea® Weatherboard must only be installed horizontally on vertical surfaces.
- 2.4 Linea® Weatherboard Cavity Cladding is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *[The Appraisal of Linea® Weatherboard Cavity Cladding relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone.]*

*[Note: Linea® Weatherboard Cavity Cladding can be used to provide fire resistance rated construction, but these aspects have not been assessed by this Appraisal and are outside its scope.]*



## Building Regulations

### New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Linea® Weatherboard Cavity Cladding 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. Linea® Weatherboard Cavity Cladding meets the requirements for loads arising from self-weight, earthquake, wind, impact and creep [i.e. B1.3.3 [a], [f], [h], [j] and [q]]. See Paragraphs 9.1 - 9.3.

**Clause B2 DURABILITY:** Performance B2.3.1 [b], 15 years and B2.3.2. Linea® Weatherboard Cavity Cladding meets these requirements. See Paragraphs 10.1 and 10.2.

**Clause C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE:** Performance C3.7. Linea® Weatherboard Cavity Cladding meets this requirement. See Paragraph 12.1.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.2. Linea® Weatherboard Cavity Cladding meets this requirement. See Paragraphs 14.1 - 14.5.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Linea® Weatherboard Cavity Cladding meets this requirement and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

## Technical Specification

- 4.1 Linea® Weatherboards are bevelback weatherboards with a tongue and groove at each end for jointing. The weatherboards are pre-primed with an acrylic primer on the front face and both edges. Linea® Weatherboards are 16 mm thick and are available 135 mm, 150 mm and 180 mm wide. All boards are supplied 4200 mm long.
- 4.2 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 bevel is cut on the back face of the weatherboards, the front edge at the bottom of the board is chamfered and the ends are tongue and grooved for jointing. Linea® Weatherboards are manufactured to meet the requirements of AS/NZS 2908.2.

### Accessories

- 4.3 Accessories used with Linea® Weatherboard Cavity Cladding which are supplied by James Hardie New Zealand are:
- **Axent™ Trim** - a 16 mm thick fibre cement trim manufactured from a reduced density cellulose fibre cement formulation. Axent™ Trim is pre-primed with an acrylic primer on the front face and both edges, and is available in sizes of 84 mm and 100 mm wide by 2600 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 2700 mm and 4000 mm lengths.
  - **Corner soakers** - 90° soakers are available for 135 mm, 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 3000 mm lengths.
- 4.4 Accessories used with Linea® Weatherboard Cavity Cladding which are supplied by the building contractor are:
- **Flexible wall underlay** - building paper complying with NZBC Acceptable Solution E2/AS1 Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlays.
  - **Flexible building underlay support** - polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible building underlay in place and preventing bulging of the bulk insulation into the drainage cavity. [Note: mesh and wire galvanising must comply with AS/NZS 4534.]

- **Rigid wall underlay** – Plywood or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1, Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barrier systems.
- **Flexible sill, head and jamb flashing tape** – flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- **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.
- **Joinery 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, 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, 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, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.
- **Cavity batten fixings** – 40 x 2.8 mm flat head hot-dip galvanised nails.
- **Linea® Weatherboard fixings** – 60 x 3.15 mm flat head hot-dip galvanised HardieFlex nails or stainless steel ring shank HardieFlex nails (for concealed nailing in NZS 3604 wind zones up to and including Very High), 75 x 3.15 mm jolt head 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 4.0 mm jolt head 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 2.5 kPa).
- **Axent™ Trim fixings** – 60 x 3.15 mm or 75 x 3.15 mm hot-dip galvanised jolt head nails and stainless steel ring shank jolt head nails.

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

#### **Paint System Specification**

- 4.5 Paint systems are not supplied by James Hardie New Zealand and have not been assessed, therefore they are outside the scope of this Appraisal.
- 4.6 All exposed faces, including top edges at sills and all bottom edges of Linea® Weatherboard, Axent™ Trim and accessories must be finished with a latex exterior paint system complying with any of Parts 7, 8, 9, or 10 of AS 3730.

#### **Handling and Storage**

- 5.1 Handling and storage of all materials supplied by James Hardie New Zealand or the building contractor, whether on site or off site, is under the control of the building contractor. Linea® Weatherboards must be stacked flat, off the ground and supported on a level platform. They must be kept dry at all times either by storing under cover or providing waterproof covers to the stack. Care must be taken to avoid damage to edges, ends and surfaces. Weatherboards must always be carried on edge.
- 5.2 Accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

#### **Technical Literature**

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Linea® Weatherboard Cavity Cladding. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.



## Design Information

### Framing

#### Timber Treatment

- 7.1 Timber wall framing behind Linea® Weatherboard Cavity Cladding must be treated as required by NZBC Acceptable Solution B2/AS1.

#### Timber Framing

- 7.2 Timber framing must comply with NZS 3604 for buildings or parts of a building within the scope limitations of NZS 3604. Buildings or parts of a building outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. Studs must be at maximum 600 mm centres in Low, Medium, High and Very High Wind Zones and maximum 400 mm centres for the NZS 3604 Extra High Wind Zone and specifically designed buildings. Nogs must be fitted flush between the studs at maximum 800 mm centres (for studs at 600 mm centres) or maximum 1200 mm centres (for studs at 400 mm centres).
- 7.3 Timber framing must have a maximum moisture content of 24% at the time of the cladding application. *[If weatherboards are fixed to framing with a moisture content of greater than 24% problems may occur at a later date due to excessive timber shrinkage.]*
- 7.4 Timber wall framing must have a maximum moisture content of 18% before the weatherboards are painted.

### General

- 8.1 When the Linea™ Weatherboard Cavity Cladding is used for specifically designed buildings up to 2.5 kPa ULS wind pressure, only the weathertightness and structural aspects of the cladding are within the scope of this Appraisal. All other aspects of the building need to be specifically designed and are outside the scope of this Appraisal.
- 8.2 Punchings in the cavity vent strip provide a minimum ventilation opening area of 1000 mm<sup>2</sup> per lineal metre of wall.
- 8.3 At ground level the bottom edge of Linea® Weatherboards must be kept clear of paved surfaces, such as footpaths, by a minimum of 100 mm and unpaved surfaces by 175 mm in accordance with NZBC Acceptable Solution E2/AS1, Table 18. The ground clearances to finished floor levels as set out in NZS 3604 must be adhered to.
- 8.4 At balcony, deck or low pitch roof/wall junctions, the bottom edge of Linea® Weatherboards must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 50 mm.
- 8.5 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including Very High, and rigid underlays for buildings in the Extra High wind zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure. Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the cavity batten fixing lengths must be increased by a minimum of the thickness of the underlay.
- 8.6 Where cladding penetrations are wider than the cavity batten spacing, allowance must be made for airflow between adjacent cavities by leaving a minimum gap of 10 mm between the bottom of the vertical cavity batten and the flashing to the opening.
- 8.7 Where Linea® Weatherboard Cavity Cladding abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

### **Interstorey Junctions**

- 8.8 Inter-storey drained joints must be constructed in accordance with the Technical Literature. Inter-storey drained joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 metres in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4 [b].

### **Structure**

#### **Mass**

- 9.1 The mass of the 135 mm wide Linea® Weatherboard when installed on the wall is 25.7 kg/m<sup>2</sup> at equilibrium moisture content (EMC). The mass of the 150 mm wide board is 24.9 kg/m<sup>2</sup> at EMC and the mass of the 180 mm wide board is 23.9 kg/m<sup>2</sup> at EMC. Linea® Weatherboard Cavity Cladding is therefore considered a light wall cladding in terms of NZS 3604.

#### **Impact Resistance**

- 9.2 Linea® Weatherboard Cavity Cladding will resist impacts likely to be encountered in normal residential use. The likelihood of impact damage to the cladding when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers provided for vulnerable areas.

#### **Wind Zones**

- 9.3 Linea® Weatherboard Cavity Cladding is suitable for use in all Wind Zones of NZS 3604 up to, and including, Extra High where buildings are designed to meet the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 1.1, or up to 2.5 kPa ULS wind pressure where buildings are specifically designed.

### **Durability**

#### **Serviceable Life**

- 10.1 Linea® Weatherboard Cavity Cladding installations are expected to have a serviceable life of at least 50 years provided the paint coating system is maintained in accordance with this Appraisal to ensure the Linea® Weatherboards and fixings remain dry in service. Linea® Weatherboards must be painted within 3 months of fixing.
- 10.2 Coastal locations can be very corrosive to fasteners, especially locations within distances of up to 500 m from the sea including harbours, or 100 metres from tidal estuaries and sheltered inlets, and otherwise as shown in NZS 3604, Figure 4.2. These coastal locations are defined in NZS 3604 as Zone D. To achieve a 50 year serviceable life in Zone D, Linea® Weatherboards must be fixed with stainless steel fasteners. Fasteners outside Zone D may be hot-dip galvanised steel.
- 10.2 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres, and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of Linea® Weatherboards in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604, Paragraph 4.2.4, and is outside the scope of this Appraisal.

#### **Maintenance**

- 11.1 Regular maintenance is essential for Linea® Weatherboard Cavity Cladding installations to continue to meet the NZBC durability performance provision and to maximise their serviceable life.
- 11.2 Annual inspections must be made to ensure that all aspects of the cladding system, including the paint coating system, flashings and any sealed joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately. Sealant and paint coatings must be repaired in accordance with the sealant or paint coating manufacturer's instructions.
- 11.3 Regular cleaning [at least annually] of the paint coating surface is recommended to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Paint systems must be recoated at approximately 7-15 yearly intervals in accordance with the paint manufacturer's instructions.



- 11.4 Minimum ground clearances as set out in this Appraisal must be maintained at all times during the life of the cladding. *[Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of Linea® Weatherboard Cavity Cladding.]*

### Control of External Fire Spread

- 12.1 Linea® Weatherboard has a peak heat release rate of less than 100 kW/m<sup>2</sup> and a total heat released of less than 25 MJ/m<sup>2</sup> in accordance with NZBC Acceptable Solution C/AS1, Table 5.1. The system is suitable for use on buildings with a SH Risk Group classification, at any distance to the relevant boundary. Linea® Weatherboard is also suitable for use where a non combustible material is specified. When Linea® Weatherboard is finished with a paint coating of not more than 1.0 mm in thickness, the exterior surface finishes requirements of NZBC Acceptable Solutions C/AS2 – C/AS6, Paragraph 5.8.1 do not apply in accordance with NZBC Acceptable Solutions C/AS2 – C/AS6, Paragraph 5.8.2 a).

### Prevention of Fire Occurring

- 13.1 When Linea® Weatherboard Cavity Cladding is finished with a paint coating of not more than 1.0 mm in thickness, clearance separations from chimneys and flues are not required. However, when used in conjunction with, or attached to heat sensitive materials, the heat sensitive material must be separated from chimneys and flues in accordance with the requirements of NZBC Acceptable Solutions C/AS1 – C/AS6, Paragraph 7.5.9 for the protection of combustible materials.

### External Moisture

- 14.1 Linea® Weatherboard Cavity Cladding, when installed in accordance with this Appraisal and the Technical Literature will prevent the penetration of moisture that could cause undue dampness or damage to building elements.
- 14.2 The cavity must be sealed off from the roof and sub-floor space to meet code compliance with Clause E2.3.5.
- 14.3 Linea® Weatherboard Cavity Cladding allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with Clause E2.3.6.
- 14.4 The details given in the Technical Literature for weather sealing are based on the design principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.
- 14.5 The use of Linea® Weatherboard Cavity Cladding where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirement for junctions, penetrations, etc to remain weather resistant.

### Internal Moisture

- 15.1 Buildings must be constructed with an adequate combination of thermal resistance and ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

### Water Vapour

- 15.2 Linea® Weatherboard Cavity Cladding is not a barrier to the passage of water vapour, and when installed in accordance with the Technical Literature and this Appraisal will not create or increase the risk of moisture damage resulting from condensation.

## Installation Information

### Installation Skill Level Requirements

- 16.1 Installation of Linea® Weatherboard and accessories supplied by James Hardie New Zealand and the building contractor must be completed by tradespersons with an understanding of cavity construction and bevelback weatherboard installation, in accordance with instructions given within the Linea® Weatherboard Cavity Cladding Technical Literature and this Appraisal.

### System Installation

#### Building Underlay and Flexible Sill and Jamb Tape Installation

- 17.1 The selected building underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the Linea® Weatherboard Cavity Cladding system. Flexible building underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75mm minimum at horizontal joints and 150mm minimum over studs at vertical joints. Generic rigid sheathing materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems shall be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the building underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

#### Cavity Battens

- 17.2 Cavity battens must be installed over the building underlay to the wall framing at maximum 600 mm centres where the studs are at 600 mm centres or at 400 mm centres when studs are at 400 mm centres. The battens must be fixed in place with 40 x 2.8 mm hot-dip galvanised flat-head nails at maximum 800 mm centres.
- 17.3 Where studs are at greater than 400 mm centres, a building underlay support must be installed over the building underlay between the cavity battens at maximum 300 mm centres.

#### Linea® Weatherboard Installation

- 17.4 Linea® Weatherboards may be cut on site by power saw. Holes and cut-outs may be formed by drilling a number of holes around the perimeter of the opening required and tapping out the centre with a hammer, or by using a hole saw.
- 17.5 Weatherboards must be dry prior to installation. Before the weatherboards are installed, cut ends exposed to the exterior such as at aluminium box corners or internal corners must be sealed with an acrylic sealer to reduce the absorbency of the fibre cement.
- 17.6 Linea® Weatherboards must be installed starting at the bottom of the wall. A cant strip (H3.1 treated timber or fibre cement) must be fixed behind the bottom course of weatherboards to ensure the weatherboards are set at the correct angle. The cant strip must be continuous around the perimeter of the building. The bottom course of weatherboards must overhang the bottom plate by a minimum of 50 mm.
- 17.7 Before the weatherboards are installed, the corner detail must be prepared to suit the selected option, e.g. external box corner, corner soaker. The necessary flashings, including window flashings, must be installed before commencing weatherboard fixing.
- 17.8 The first course of weatherboards must be full length, i.e. 4200 mm and commence from an external corner. Jointing of Linea® Weatherboards is made off the stud using the pre-cut tongue and groove joint. Tongue and groove joints may be located centrally between the studs, but must be no closer than 100 mm to the edge of a stud. A bead of sealant must be applied to the front side of the tongue before the corresponding board is inserted. Subsequent courses of weatherboards must be installed so that the tongue and groove joints are staggered by 600 mm minimum from joints in the previous course.



- 17.9 Linea® Weatherboards must have a minimum lap of 30 mm, and should be set out so as near to a full board as possible will finish under and over windows and doors and at the top of the wall. A storey rod can be used to accurately position weatherboard courses.
- 17.10 Linea® Weatherboards must be fixed to each stud using concealed fixings behind the lap of the boards or face nailing, except that face nailing must be provided at all corners and vertical edges of openings.
- 17.11 Concealed fixing must be carried out using 60 x 2.8 mm hot-dip galvanised or stainless steel Hardiflex nails depending on the location - see Paragraph 10.2. Nails must be fixed 25 mm from the top edge of the board and must be driven flush with the board surface.
- 17.12 Face nailing must be carried out using 75 x 3.15 mm hot-dip galvanised or stainless steel jolt-head nails in NZS 3604 wind zones up to and including Very High, or 90 x 4.0 mm hot-dip galvanised or stainless steel jolt-head nails in the NZS 3604 Extra High Wind Zone and specific design wind pressures up to a maximum design differential ULS of 2.5 kPa, depending on the location - see Paragraph 10.2. Nails must be fixed 15 mm up from the bottom of the board and punched a maximum of 2 mm below the surface of the board. When stainless steel nails are used, the top board at each lap must be pre-drilled.
- 17.13 Linea® Weatherboards can be hand or gun nailed. Nails must not be closer than 25 mm to the end of the board when hand nailing, or closer than 50 mm when gun nailing. *[Note: Gun nailing must only be used for concealed nailing.]*

#### **Aluminium Joinery Installation**

- 17.14 Aluminium joinery and associated head and sill flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.
- 17.15 After installing the window and door joinery, Axent™ Trim, planted sills and scribes may be installed in accordance with the Technical Literature to provide additional weatherproofing for the joinery/ weatherboard junction.

#### **Inspections**

- 17.16 The Technical Literature must be referred to during the inspection of Linea® Weatherboard Cavity Cladding installations.

#### **Finishing**

- 17.17 The paint coating manufacturer's instructions must be followed at all times for application of the paint finish. Linea® Weatherboards and trim must be clean and dry before commencing painting.

#### **Health and Safety**

- 18.1 Cutting of Linea® Weatherboard must be carried out in well ventilated areas, and a dust mask and eye protection must be worn.
- 18.2 When power tools are used for cutting, grinding or forming holes, health and safety measures as set out in the Technical Literature must be observed because of the amount of dust generated.
- 18.3 Safe use and handling procedures for Linea® Weatherboard and the components that make up the cladding system are provided in the relevant manufacturer's Technical Literature.

## Basis of Appraisal

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

### Tests

19.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for Linea® Weatherboard Cavity Cladding was based on testing and evaluation of all details within the scope and as stated within this Appraisal. Linea® Weatherboard Cavity Cladding was tested to E2/VM1 [as contained within NZBC Clause E2, Third Edition, Amendment 5]. The testing assessed the performance of the foundation detail, window head, jamb and sill details, meterbox head, jamb and sill details, balustrade to wall junction, parapet cap and internal and external corners. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of NZBC Acceptable Solution E2/AS1 for drained cavity claddings.
- Uniform wind face load tests to simulate wind pressures on 12 mm thick Linea® Weatherboards were carried out by BRANZ, and the results were used in assessing 16 mm thick Linea® Weatherboard used in Linea® Weatherboard Cavity Cladding.
- Cone Calorimeter testing to determine the peak rate of heat release and total heat release of Linea® Weatherboard was completed by BRANZ. The testing was carried out in accordance with AS/NZS 3837.

19.2 Linea® Weatherboards have been tested by a James Hardie NATA accredited laboratory in accordance with AS/NZS 2908.2. The testing covered: soak-dry, bending strength, warm water soaking, heat/rain, freeze/thaw and apparent density. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

19.3 Testing has been carried out by James Hardie New Zealand to determine the modulus of rupture and inter-laminar bond strength of carbonated and non-carbonated Linea® Weatherboard. The test methods and results have been reviewed by BRANZ and found to be satisfactory.

### Other Investigations

20.1 Weathertightness, structural, fire and durability opinions have been provided by BRANZ technical experts.

20.2 Site visits have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.

20.3 The manufacturer's Technical Literature has been examined by BRANZ and found to be satisfactory.

### Quality

21.1 The manufacture of Linea® Weatherboard has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

21.2 The quality of materials, components and accessories supplied by James Hardie New Zealand is the responsibility of James Hardie New Zealand. The quality control system of James Hardie New Zealand has been assessed and registered as meeting the requirements of ISO 9001: 2008.

21.3 Quality on site is the responsibility of the installer.

21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the building underlay, cavity battens, Linea® Weatherboard and accessories in accordance with the instructions of James Hardie New Zealand.

21.5 Building owners are responsible for the maintenance of Linea® Weatherboard Cavity Cladding in accordance with the instructions of James Hardie New Zealand.



### Sources of Information

- AS 3730 Guide to the properties of paints for buildings.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2908.2: 2000 Cellulose-cement products – Flat sheet.
- AS/NZS 3837: 1998 Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter.
- AS/NZS 4534: 1998 Zinc and zinc/aluminium-alloy coatings on steel wire.
- AS/NZS 4680: 2006 Hot-dip galvanized [zinc] coatings on fabricated ferrous articles.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3603: 1993 Timber Structures Standard.
- NZS 3604: 1999 Timber framed buildings.
- NZS 4211: 2008 Specification for performance of windows.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

### Amendments

#### Amendment No. 1, dated 31 January 2012.

This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011 and NZBC Acceptable Solution E2/AS1 Third Edition, Amendment 5.

#### Amendment No. 2, dated 30 October 2013.

This Appraisal has been amended to change the Appraisal Holder, change the Product Name and to update clause changes as required by the introduction of NZBC Fire Clauses C1 – C6 Protection from Fire and A3 Building Importance Levels.

#### Amendment No. 3, dated 5 March 2014.

This Appraisal has been amended to alter the scope to include NZS 3604 Wind Zone Extra High, and specific design wind pressures up to and including 2.5 kPa.

#### Amendment No. 4, dated 01 March 2016.

This Appraisal has been amended to remove the term Scyon®.



In the opinion of BRANZ, Linea® Weatherboard Cavity Cladding 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 James Hardie 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. James Hardie 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 James Hardie 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 James Hardie New Zealand or any third party.

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**For BRANZ**



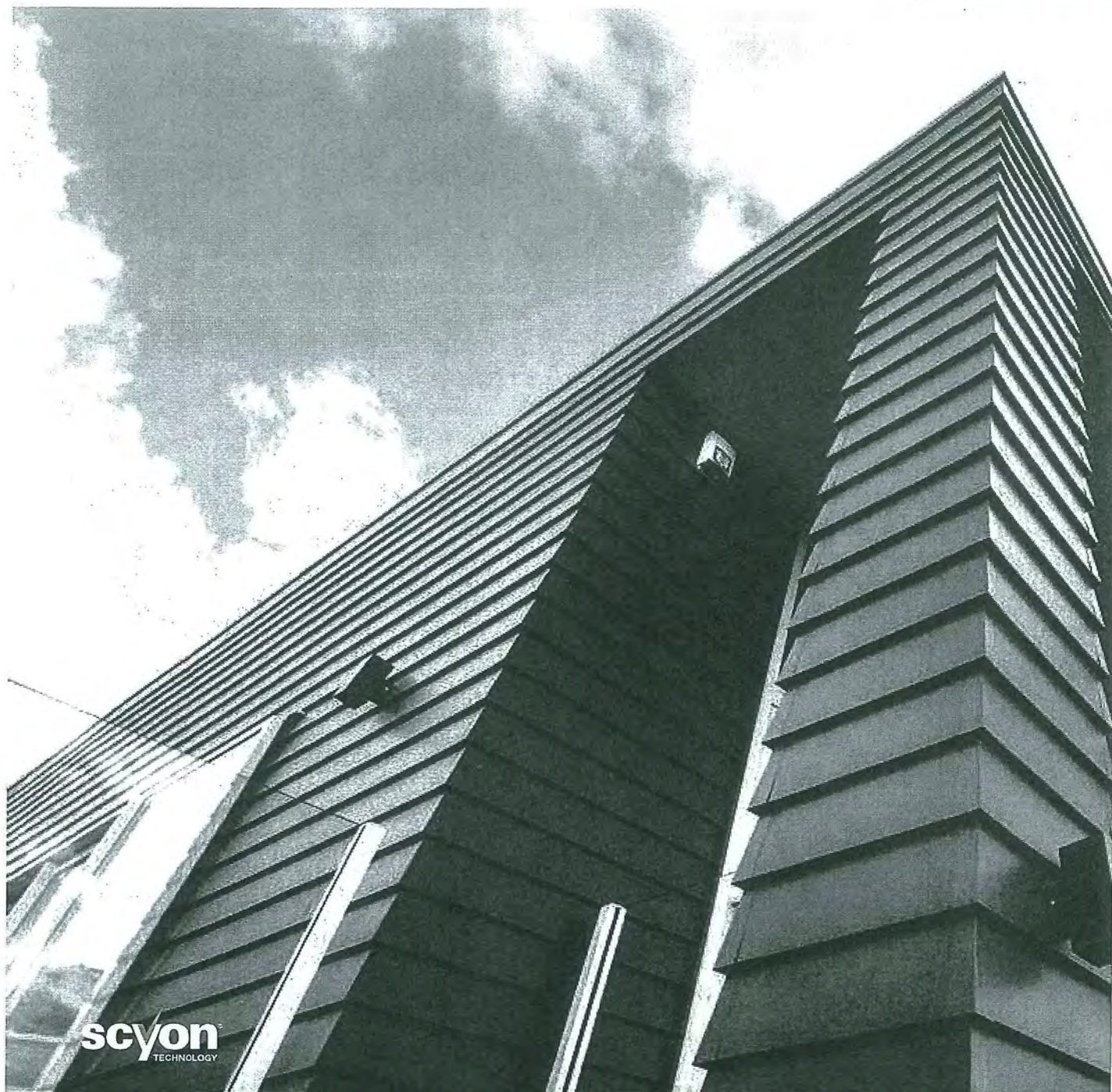
**Pieter Burghout**

Chief Executive

Date of Issue:

14 September 2010





# Technical Specification



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### WE VALUE YOUR FEEDBACK

To continue with the development of our products and systems, we value your input. Please send any suggestions, including your name, contact details, and relevant sketches to:

Ask James Hardie™  
Fax: 0800 808 988  
literaturefeedback@jameshardie.co.nz





# 1 Application and scope

## 1.1 APPLICATION

Linea® Weathrboard is a 16mm thick, pre-primed bevel back fibre cement weatherboard and is classified as lightweight wall cladding suitable for residential and light commercial construction using timber framed external walls. Linea Weatherboard is available in 135mm, 150mm and 180mm widths.

James Hardie also has available:

- Axent™ Fascia in two widths. Axent Fascia is a 16mm thick, pre-primed fibre cement product designed to accommodate James Hardie soffit linings.
- Axent™ Trim comes in a variety of widths for use as decorative trims around openings and external corners. Axent Trim is a 16mm thick, pre-primed fibre cement product.

### Specifier

If you are a specifier or other responsible party for a project ensure that the information in this document is appropriate for the application you are planning and that you undertake specific design and detailing for areas which fall outside the scope of these specifications.

### Installer

If you are an installer ensure that you follow the design, moisture management principles, associated figures and material selection provided by the designer and this James Hardie Technical Specification.

All the details provided in this document must be read in conjunction with the specifiers specification.

### Make sure your information is up to date

When specifying or installing James Hardie products, ensure you have the current manual. If you're not sure you do, or, if you need more information, visit [www.jameshardie.co.nz](http://www.jameshardie.co.nz) or Ask James Hardie on 0800 808 868.

## 1.2 SCOPE

This specification covers the use of Linea Weatherboard on buildings that fall within the scope limitations of the New Zealand Building Code (The NZBC) Acceptable Solution E2/AS1, Paragraph 1.1.

This specification includes the use of Linea Weatherboard in both direct to stud and cavity construction method and must be read in conjunction with the current BRANZ Appraisals for Linea Weatherboard.

This specification also covers the use of Linea Weatherboard in cavity construction for specific design projects (SED) subject to a wind pressure of 2.5kPa (ULS) maximum. This document is intended for use by architects, designers, specifiers or builders who are involved in specifying Linea Weatherboard. The document also serves the purpose of an installation manual for this product.

## 1.3 DETAILS

Various Linea Weatherboard details are provided in the Details section of this document. This specification and details in CAD file are also available to download from our website at [www.jameshardie.co.nz](http://www.jameshardie.co.nz).

## 1.4 SPECIFIC DESIGN

For use of Linea Weatherboard outside this published scope, the architect, designer or engineer must undertake specific design.

For advice on designs outside the scope of this specification, Ask James Hardie on 0800 808 868.

# 2 Design



## 2.1 COMPLIANCE

Linea Weatherboard direct fixed and cavity cladding has been issued a CodeMark certificate number GM-10-30018 which confirms Linea Weatherboard is deemed to comply with the requirements of the NZBC. Please refer to our website [www.jameshardie.co.nz](http://www.jameshardie.co.nz) for a copy of the CodeMark certificate. Linea Weatherboard also has a BRANZ Appraisal number 446 (2010) and 447 (2010) at [www.branz.co.nz](http://www.branz.co.nz) or [www.jameshardie.co.nz](http://www.jameshardie.co.nz).

## 2.2 RESPONSIBILITY

The specifier or other party responsible for the project must ensure that the information and details in this specification are appropriate for the intended application and that additional detailing is performed for specific design or any areas that fall outside the scope of this technical specification. For applications outside the scope of this literature and figures which are not provided herein, the architect, designer or engineer must undertake specific design and it should be ensured that the intent of their design meets the requirements of the NZBC.

All dimensions shown are in millimetres unless noted otherwise. All New Zealand Standards referenced in this manual are current edition and must be complied with.

James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

## 2.3 SITE AND FOUNDATION

The site on which the building is situated must comply with the NZBC Acceptable Solution E1/AS1 'Surface Water', Foundation design must comply with the requirements of NZS 3604 'Timber-framed Buildings' or be as per specific engineering design. The grade of adjacent finished ground must slope away from the building to avoid any possibility of water accumulation in accordance with the NZBC requirements.



## 2.4 SURFACE CLEARANCES

The clearance between the bottom edge of cladding and paved/unpaved ground must comply with section 9.1.3 of E2/AS1. The finished floor level must also comply with these requirements. These clearances must be maintained throughout the life of the building.

Linea Weatherboards must overhang the bottom plate on a concrete slab by a minimum of 50mm as required by the NZBC Acceptable Solution, E2/AS1 Table 18.

On the roofs and decks the minimum clearance must be 50mm.

Do not install external cladding such that it may remain in contact with water or ground.

## 2.5 MOISTURE MANAGEMENT

It is the responsibility of the specifier to identify moisture related risks associated with any particular building design.

Wall construction design must effectively manage moisture, considering both the interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration or that are artificially heated or cooled. Walls shall include those provisions as required by the NZBC Acceptable Solution E2/AS1 'External Moisture'. In addition, all wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate appropriate flashings for waterproofing. The other materials, components and installation methods used to manage moisture in the walls, must comply with the requirements of relevant standards and the NZBC. For information in relation to designing for weathertightness, refer to BRANZ and the Ministry of Business Innovation & Employment (MBIE) updates on the following websites, respectively [www.branz.co.nz](http://www.branz.co.nz) and [www.dbh.govt.nz](http://www.dbh.govt.nz).

## 2.6 STRUCTURE

Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific engineering design in accordance with NZS 3603 and AS/NZS 1170. Where specific engineering design is required, the framing stiffness must be equivalent to or more than the framing provisions of NZS 3604. In all cases stud spacing must not exceed 600mm centres maximum for buildings designed to NZS 3604 and 400mm centres maximum for specific engineering design buildings subject to design wind pressures higher than 1.5kPa.

For timber frame walls longer than 12m, it is best practice to allow for construction joints to accommodate movements generated due to timber shrinkage or deflection etc

## 2.7 WIND LOADING

Linea Weatherboard cladding is suitable for use in all wind zones as defined in NZS 3604. It is also suitable for use in SED buildings exposed to wind pressures up to 2.5kPa (ULS).

For wind pressures higher than those mentioned above, contact James Hardie at 0800 808 868 for assistance.

## 2.8 STRUCTURAL BRACING

Linea Weatherboard direct fixed installed as per Linea Weatherboard specific bracing details will provide bracing for buildings designed and constructed in accordance with NZS 3604. The Linea Weatherboard bracing systems have been independently tested by SCION using direct fixed construction. The following range of bracings can be achieved

- Wind 75 – 130 BU'S/m
- Earthquake 67 – 101 BU'S/m

Refer to the James Hardie Bracing Design Manual for details.

## 2.9 FIRE RATED WALLS

Walls clad with Linea Weatherboard using a direct fix or cavity construction method can achieve fire ratings of up to 90/90/90 when constructed in accordance with the James Hardie 'Fire and Acoustic' Design Manual. Linea Weatherboard must be face fixed for Fire Rated applications.

Refer to Fire and Acoustic Design Manual for further information about fire rated systems.

## 2.10 ENERGY EFFICIENCY

External walls constructed as per this technical specification, using Linea Weatherboard and bulk insulation, where the area of glazing is 30% or less of the total wall area, complies with the minimum R-value requirements for walls as per the NZBC Acceptable Solution H1/AS1 (The NZBC Clause H1 Energy Efficiency), Replacement Table 1. To meet the minimum thermal insulation requirements for the construction, the bulk insulation as specified in Table 1 must be used. This insulation may be substituted with insulation material having higher R-values. Thermal insulation of a wall is affected when the depth of the timber framing is increased or decreased or stud spacing is decreased. The calculation used in Table 1 is based on a timber framing size 90 x 45mm and an internal lining material such as James Hardie Villaboard® Lining or a 10mm plasterboard.

Table 1

Insulation capability		
Climate Zone	Construction R-Value Requirement	Minimum R-Value of Insulation Required
1 and 2	1.9 m <sup>2</sup> °C/W	#R2.0
3	2.0 m <sup>2</sup> °C/W	#R2.2



Total construction R-Value depends on the insulation material used and the framing ratio. The insulation material R-Values specified in this table are for studs spaced at 600mm c/c and nogs spaced at 800mm c/c.

# To achieve higher construction R-Values the wall insulation material must be replaced with an insulation material having higher R-Values to suit the requirements.

For further guidance on insulation requirement refer to current edition of 'House Insulation Guide' published by BRANZ.

## 3 Framing

### 3.1 GENERAL

This Linea Weatherboard technical specification is only suitable for timber-framed buildings. Other framing materials are outside the scope of this specification.

For Steel Framing refer to James Hardie Claddings Installation to Steel Framing Technical Supplement.

### 3.2 TIMBER GRADE

Timber must be graded in accordance with NZS 3631 'New Zealand Timber Grading Rules'. The timber grade to be used must be in accordance with NZS 3604 requirements.

### 3.3 DURABILITY

To comply with the NZBC requirements the external framing must be treated to a minimum H1.2 treatment. Refer to the NZBC Acceptable Solution B2/AS1 Durability for further information about the durability requirements. For timber treatment information refer to NZS 3602 (Timber and Wood-Based Products for use in Buildings) and NZS 3640 (Chemical Preservation of Round and Sawn Timber) for minimum timber treatment selection and treatment requirements. Also refer to framing manufacturer's literature for further guidance on timber selection.

Framing must be protected from moisture at sites in accordance with the recommendations of framing manufacturers.

Note: refer to NZS 3602 for information about the allowable moisture content in timber.

### 3.4 FRAME CONSTRUCTION

For buildings within the scope of NZS 3604 the framing sizes and set-out must comply with NZS 3604 with stud, nog/dwang centres as required by this specification.

In case of gable end trusses sitting on top plates of the external wall frame, the frame size must be in accordance with truss design and specification supplied by the frame and truss manufacturer/supplier supported by independent design producer statement.

#### 3.4.1 Direct fixed construction method

The following framing must be provided for direct fixed construction method:

- Studs must be provided at 600mm centres maximum.
- Nogs must be provided at 1200mm centres maximum.
- Double studs are required at internal corners.
- Extra packers may be required at external corners.
- Extra studs are required for aluminium internal corner sections.

#### 3.4.2 Cavity construction method

The following framing must be provided for cavity construction method:

- When studs are at 600mm centres the nogs must be provided at 800mm centres maximum.
- When studs are at 400mm centres the nogs may be provided at 1200mm centres maximum.
- Double studs are required at internal corners.
- Extra packers may be required at external corners.
- Extra studs are required for aluminium internal corner sections.

#### 3.4.3 Specific Engineering Design (SED)

For EH wind zone and specific engineering design projects the timber framing is required to be designed in accordance with NZS 3603 and AS/NZS 1170. The minimum framing sizes and layout must comply with this specification.

- Stud spacing 400mm centres maximum
- Nog spacing 1200mm centres maximum
- Other requirements as per 3.5.2 above

### 3.5 TOLERANCES

In order to achieve an acceptable wall finish, it is imperative that framing is straight and true. Framing tolerances must comply with the requirements of NZS 3604 and the manufacturer's specifications. All framing must be made flush.

# 4 Preparation

## 4.1 FLEXIBLE UNDERLAY OR HOMERAB PRE-CLADDING

Flexible underlay must be provided as per the requirements of the NZBC Acceptable Solution E2/AS1 'External Moisture' Table 23. The flexible underlay must be fixed in accordance with E2/AS1 and the underlay manufacturer's recommendations. Walls which are not lined on the inside face (e.g. garage walls or gable ends) must include a rigid sheathing or an air barrier behind the cladding which complies with the requirements of the NZBC Acceptable Solution E2/AS1 Table 23. For attached garages, flexible underlays must be selected in accordance with the NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. HomeRAB Pre-Cladding is suitable for use in these applications. It must be installed in accordance with James Hardie Rigid Air Barriers installation manual.

## 4.2 RIGID AIR BARRIER

For EH wind zone or Specific Engineering Design (SED) projects where the design wind pressures are between 1.5kPa (ULS) and 2.5kPa (ULS), RAB Board (6mm) must be used. Refer to James Hardie Rigid Air Barriers installation manual for information regarding its installation.

## 4.3 FLASHING

All wall openings, penetrations, intersections, connections, window sills, heads and jambs must be flashed prior to weatherboard installation. Please refer to moisture management requirements in Clause 2.5. The flexible underlay must be appropriately incorporated with penetration and junction flashings. Materials must be lapped in such a way that water tracks down to the exterior on the face of flexible underlay. The selected flashing materials must comply with the durability requirements of Table 20 of the NZBC Acceptable Solution E2/AS1.

## 4.4 VENT STRIP

The James Hardie uPVC cavity vent strip must be installed at the bottom of all walls constructed using the drained and ventilated cavity construction method. James Hardie uPVC vent strip has an opening area of 1000mm<sup>2</sup>/m length. It is important that the openings in the vent strip are kept clear and unobstructed to allow free drainage and ventilation of cavities.

## 4.5 CAVITY BATTENS

Buildings with a risk score of 13-20 calculated in accordance with the NZBC Acceptable Solution E2/AS1 Table 3 require Linea Weatherboards to be installed on a cavity.

The cavity battens provide airspace between the frame and cladding and are considered a "packer" only in this specification.

The timber battens must be minimum H3.1 treated in accordance with NZS 3640 (Chemical Preservation of Round and Sawn Timber) to comply with the durability requirements of B2/AS1.

Cavity battens must comply with E2/AS1 and:

- be minimum 18mm thick.
- be minimum as wide as the width of studs.
- must be fixed by the cladding fixings to the main framing through the flexible underlay.
- fix cavity battens to studs at maximum 600mm centres.
- until claddings are fixed the battens need only to be tacked to framing with 40 x 2.8mm nails at 800mm centres maximum.

(Batten fixing is required temporarily to keep them straight on the wall during construction.)

## 4.6 INTERMEDIATE SUPPORT

Where studs are at 600mm centres an intermediate means of restraining the flexible underlay and insulation from bulging into the cavity must be installed. An acceptable method to achieve this is using one of the following:

- intermediate cavity batten between the studs; or
- 75mm galvanised mesh; or
- polypropylene tape at 300mm centres fixed horizontally and drawn taut.

No intermediate supports are required:

- where studs are at maximum 400mm centres; or
- when rigid sheathings instead of flexible underlays are used.

## 4.7 CORNERS

Anticipated joist shrinkage must be allowed for in the design process. Do not run trims or aluminium extrusions continuously across solid floor joists. There are a number of options to select from when detailing external corners:

- 90° corner soaker in aluminium, copper or stainless steel. Refer to Figures 7 and 33.
- 135° corner soaker 180mm aluminium, contact James Hardie
- Box corners using Axent Trim. Refer to Figures 3, 4 and 30.
- Mitred corners to weatherboards. Refer to Figures 5 and 31.
- Aluminium boxed corners. Refer to Figures 6 and 32.

There are a number of options to select from when detailing internal corners:

- Scribed corner. Refer to Figures 8 and 34.
- 90° or 135° Aluminium W-mould. Refer to Figures 9, 10, 35 and 36.

## 4.8 JUNCTIONS AND PENETRATIONS

Refer to Clause 2.5 of this specification for moisture management requirements. All windows and doors must be detailed as per the requirements of this specification. James Hardie has developed the window details for Linea Weatherboards which meet the performance requirements of E2 'External Moisture', an approved document of the NZBC. Refer to Figures 11 to 22 and 38 to 51.



# 5 Fixing Linea Weatherboard

## 5.1 GENERAL

The horizontal lap of Linea Weatherboards must be 30mm minimum. In certain scenarios you may require to creep up the lap. This must not exceed 33mm. Linea Weatherboards must be kept dry whilst in storage prior to and during fixing. Cut ends which are exposed after installation or where sealant is applied to the boards such as slimline box corners, internal corners, mitred external corners etc, must be primed prior to installation. Dust and loose material must be removed before priming.

A minimum H3.1 treated timber cant strip must be provided to support the bottom board on the wall. Refer to Figure 1 and Figure 26.

## 5.2 FASTENER DURABILITY

Fasteners must meet the minimum durability requirements of the NZBC. NZS 3604 specifies the requirements for fixing's material to be used in relation to the exposure conditions and are summarised in Table 2.

Table 2

Exposure conditions and nail selection prescribed by NZS 3604

### NAIL MATERIAL

Zone D *	Zone C outside sea spray zone and Zone B and Geothermal hot spots	Bracing — All zones
Grade 316 Stainless	Hot-dipped galvanised or 316 stainless	Grade 316 stainless

\* (Zone C areas where local knowledge dictates that increased durability is required, appropriate selection shall be made) Microclimate conditions as detailed in NZS 3604, Paragraph 4.2.4 require SED.

Also refer to the NZBC Acceptable Solution 'E2/AS1' Table 20 and 21 for information regarding the selection of suitable fixing materials and their compatibility with other materials.

## 5.3 NAIL SIZE AND FIXING METHOD

Linea Weatherboards and Axent Trim must be fixed to timber with the types of nails specified in Tables 3 and 4, in accordance with the following requirements:

- Linea Weatherboard can either be face/exposed fixed or concealed fixed.
- Linea Weatherboard must be fixed into studs at maximum 600mm centres. Fixing centres to coincide with stud spacing. Refer to Figure 2 and 28.
- All concealed nails must be driven flush with the board surface.
- When concealed fixing Linea Weatherboards, nails must be driven under the lap of boards, except at all corners and vertical edges of openings where Linea Weatherboards must be face fixed. Refer to Figure 2 and Figure 29.
- Nails must be fixed 25mm from the end of the board when hand nailing. For gun nailing refer to Section 5.4.
- When using concealed fixing method, any gaps that may appear under the lap due to site conditions can be minimised by fixing a jolt head nail through the lap as per the exposed nailing method. Refer to Figure 2 and 29.
- When using concealed fixing method, Linea Weatherboard can also be tied together by face fixing through the lap using 32mm brad nails if desired.

- When face fixing Linea Weatherboard, the upper board must be pre-drilled before fixing with a jolt head nail.

Table 3

Nail requirements for Linea Weatherboards

### DIRECT TO STUD FIXING UP TO AND INCLUDING VH WIND ZONE

Concealed Nailing over flexible underlay	
40 x 2.8mm HardieFlex™ nails	Finish flush with the board surface.
Face Nailing over flexible underlay	
60 x 3.15mm jolt head nails	Hot-dipped galvanised jolt head nail with pre-drilling* through the top weatherboard.
	Stainless steel jolt head nail with pre-drilling* through the top weatherboard.
Concealed Nailing over rigid air barrier	
50 x 2.8mm HardieFlex™ nails	Finish flush with the board surface.
Face Nailing over rigid air barrier	
75 x 3.15mm jolt head nails	Hot-dipped galvanised jolt head nail with pre-drilling* through the top weatherboard.
	Stainless steel jolt head nail with pre-drilling* through the top weatherboard.

### CAVITY FIXING UP TO AND INCLUDING VH WIND ZONE

Concealed Nailing over flexible underlay	
60 x 3.15mm HardieFlex™ nails	Finish flush with the board surface.
Face Nailing over flexible underlay	
75 x 3.15mm jolt head nails	Hot-dipped galvanised jolt head nail with pre-drilling* through the top weatherboard.
	Stainless steel jolt head nail with pre-drilling* through the top weatherboard.
Concealed Nailing over rigid air barrier	
75 x 3.15mm HardieFlex™ nails	Finish flush with the board surface.
Face Nailing over rigid air barrier	
90 x 4.0mm jolt head nails	Hot-dipped galvanised jolt head nail with pre-drilling* through the top weatherboard.
	Stainless steel jolt head nail with pre-drilling* through the top weatherboard.

### CAVITY FIXING EH WIND ZONE AND SED PROJECTS (1.5KPA - 2.5KPA WIND PRESSURE)

Face Nailing	
90 x 4.0mm jolt head nail	Hot-dipped galvanised jolt head nail with pre-drilling** through the top weatherboard.
	Stainless steel shank jolt head nail with pre-drilling** through the top weatherboard.



# 7 Finishing

Table 4

Nail requirements for trim	
Single Thickness	60mm jolt head nails. If fixing over Linea Weatherboard use predrilled* 75 x 3.15mm jolt head nails.
Double Thickness	60mm jolt head nails.
Single plus packer	If fixing over Linea Weatherboard use 75 x 3.15mm jolt head nails through a pre-drilled* hole. When fixing to timber support use 60mm jolt head nails.

\* Use a 3.0mm drill bit. \*\* Use a 3.5mm drill bit

Note: Special fixing arrangements are required for bracing and fire-resistance rated wall systems. For more information Ask James Hardie on 0800 808 868.

## 5.4 GUN NAILING

Linea Weatherboard can also be gun-nailed with a D head or RoundDrive nail when concealed fixing method is used.

- Gun-nailing must not be used when Linea Weatherboard is used for bracing.
- Nails must be no closer than 50mm from the ends of boards when gun nailing is used — double studs will be required.
- Be minimum length and gauge as per Table 3.
- Be finished flush with surface of board.

# 6 Jointing

The ends of Linea Weatherboards are jointed off-stud by means of a tongue and groove joint. Tongue and groove joints may be located centrally between studs but no closer than 100mm from the edge of a stud. The joints must be staggered by 600mm minimum. Flexible sealant must be applied in the tongue and groove joint at the time of installation.

Note: Protective coating of Linea Weatherboard and Axent Trim is required in order to meet the durability requirements of the NZBC.

## 7.1 PREPARATION AND PRIMING

The Linea Weatherboard and Axent Trim must be dry before painting. Punch and fill all exposed nails a maximum of 2mm below the surface. Fill the hole with an exterior grade builders fill, allow to cure and sand smooth ready for priming. Prime the filled holes in accordance with paint manufacturer's specifications.

It is not recommended to seal under the lap of weatherboards as it helps circulation of air behind the weatherboard cladding.

## 7.2 SEALANTS

All sealants must demonstrate the ability to meet the relevant requirements of the NZBC and hold a current BRANZ Appraisal. Application and use of sealants must comply with manufacturer's instructions. Sealants, if coated, must be compatible with the paint system.

## 7.3 PAINTING

All Linea Weatherboards are pre-primed on their face and bottom edge with a factory applied acrylic base coat.

Linea Weatherboard must be painted within 90 days of installation. There is no restriction on the LRV of paint to be applied on the Linea Weatherboard. All exposed faces, including the top edges under the sills and bottom edges of Linea Weatherboard, Axent Trim and accessories must be finished with latex exterior paint system complying with any of parts 7, 8, 9, and 10 of AS 3730.

Dark coloured paints can be used on Linea Weatherboard and Trim. The dark colours in certain environments may fade over a period of time. Special paints/coatings are required in certain harsh environments.

Stainless steel soakers are generally left natural. For painting over stainless steel soakers, refer to paint manufacturer as special preparation and paints are required.

# 8 Storage and handling

Paint selection and the preparation required is dependant on paint chosen. Refer to the paint manufacturer for information before starting painting.

Linea Weatherboards and Axent Trim must be laid flat on a smooth level surface. To ensure optimum performance, store weatherboards under cover and keep dry prior to fixing. If the weatherboards should become wet, allow to dry thoroughly before fixing. Do not carry weatherboards on the flat, carry in the vertical position to avoid excessive bending.



# 9 Maintenance

The extent and nature of maintenance will depend on the geographical location and exposure of the building. It is the responsibility of the specifier to determine normal maintenance requirements to comply with The NZBC Acceptable Solution B2/AS1. As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- Washing down exterior surfaces every 6-12 months\*,
- Re-applying exterior protective finishes\*\*,
- Maintaining the exterior envelope and connections including joints, penetrations, flashings and sealants,
- Cleaning out gutters, blocked pipes and overflows as required,
- Pruning back vegetation close to or touching the building,
- The clearances between the bottom edge of Linea Weatherboard and the finished/unfinished ground must always be maintained.
- Stainless steel soakers used in extreme coastal conditions or in sea spray zones may show some signs of 'tea staining'. It is an aesthetic issue and to minimise staining soaker must be washed/polished frequently.

\*Do not use a water blaster to wash down the cladding.

\*In extreme coastal conditions or sea spray zones, wash every 3-4 months.

\*\*Refer to your paint manufacturer for washing down and recoating requirements related to paint performance.

# 10 Product information

## 10.1 MANUFACTURING AND CLASSIFICATION

James Hardie New Zealand is an ISO 9001 Telarc certified manufacturer. Linea Weatherboard and Axent Trim are manufactured to meet the requirements of AS/NZS 2908.2: 2000 'Cellulose-Cement Products'. Linea Weatherboard has a classification of Type A Category 3 in accordance with this Standard. Linea Weatherboard is an advanced lightweight cement composite building product incorporating James Hardie proprietary Scyon technology. The basic composition of product is Portland cement, ground sand, cellulose fibre and water.

Linea Weatherboard has a bevel back and tongue and groove at the ends for jointing. The bottom front edge of Linea Weatherboard is chamfered. The weatherboards are supplied pre-primed on their face and bottom edge with an acrylic primer.

Linea Weatherboards and Axent Trim are identified by the printing at regular intervals of the name Linea on the back face.

## 10.2 JAMES HARDIE TRIM

The Axent Trim, used for box corners, around windows and doors as well as special architectural features, is also made with the GLD technology and is supplied pre-primed with an acrylic primer.

## 10.3 DURABILITY

Linea Weatherboard and Axent Trim, when installed and maintained as per the technical specification, will meet the durability requirements for claddings as required in the NZBC Approved Document B2 'Durability'.

### 10.3.1 Resistance to moisture/rotting

Linea Weatherboard and Axent Trim have demonstrated resistance to permanent moisture-induced deterioration (rotting) and has passed the following tests in accordance with AS/NZS 2908.2:

- Water Permeability (Clause 6.2)
- Warm Water (Clause 6.4)
- Heat Rain (Clause 6.5)
- Soak Dry (Clause 6.6).
- Freeze-Thaw (Clause 8.2.3)

### 10.3.2 Control of External Fire Spread

Linea Weatherboard meets the requirements of Appendix C C7.1.1 and is classified as 'Non-Combustible Material' which is suitable for use as external wall cladding and complies with the requirements of Paragraph 5.4 of the NZBC Acceptable Solution C/AS1 and Paragraph 5.8.1 of Acceptable Solutions C/AS2 to C/AS6 of the NZBC.

### 10.3.3 Alpine regions

In regions subject to freeze/thaw conditions, Linea Weatherboard must not be in direct contact with snow or ice build up for extended periods, e.g. external walls in alpine regions subject to snow drifts over winter.

The Linea Weatherboard has been tested in accordance with AS/NZS 2908.2 Clause 8.2.3.

## 10.4 PRODUCT SIZES AND MASS

Available sizes of Linea Weatherboard and Axent Trim and its weight are given in Table 6.

## 10.5 SIZE AND WEIGHT

Linea Weatherboard is categorised as a Light Weight Wall Cladding as described in NZS 3604. Physical properties of Linea Weatherboard and Axent Trim are provided in Table 6.

# 11 Safe working practices

## **WARNING — DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA**

James Hardie products contain sand, a source of respirable crystalline silica which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either 'Score and Snap' knife, fibre cement shears or, where not feasible, use a HardieBlade™ Saw Blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (e.g. P1 or P2) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods — never dry sweep. For further information, refer to our installation instructions and Safety Data Sheets available at [www.jameshardie.co.nz](http://www.jameshardie.co.nz).

**FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.**

## James Hardie recommended safe working practices

### CUTTING OUTDOORS

1. Position cutting station so wind will blow dust away from the user or others in working area.
2. Use one of the following methods based on the required cutting rate:

#### BEST

- Dust reducing circular saw equipped with HardieBlade™ Saw Blade and HEPA vacuum extraction.

#### GOOD

- Dust reducing circular saw with HardieBlade™ Saw Blade.

### SANDING/REBATING/DRILLING/OTHER MACHINING

When sanding, rebating, drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.

### IMPORTANT NOTES

1. For maximum protection (lowest respirable dust production), James Hardie recommends always using "Best" — level cutting methods where feasible.
2. NEVER use a power saw indoors.
3. NEVER use a circular saw blade that does not carry the HardieBlade™ logo.
4. NEVER dry sweep — Use wet suppression or HEPA vacuum.
5. NEVER use grinders.
6. ALWAYS follow tool manufacturers' safety recommendations.

P1 or P2 respirators should be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at [www.jameshardie.co.nz](http://www.jameshardie.co.nz) to help you determine the most appropriate cutting method for your job requirements. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.



## Working instructions

Refer to recommended Safe Working Practices before starting any cutting or machining of product.

### HardieBlade™ Saw Blade

The HardieBlade™ Saw Blade used with a dust-reducing saw connected to a HEPA vacuum is ideal for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.



### Hole-forming

#### For smooth clean cut circular holes:

Mark the centre of the hole on the sheet.

Pre-drill a pilot hole.

Using the pilot hole as a guide, cut the hole to the appropriate diameter with a hole saw fitted to a heavy duty electric drill.

#### For irregular holes:

Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face.



Tap carefully to avoid damage to sheets, ensuring that the sheet edges are properly supported.

### Storage and handling

All James Hardie building products should be stored to avoid damage, with edges and corners of the sheets protected from chipping.

James Hardie building products must be installed in a dry state and be protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water or moisture, etc.

### Quality

James Hardie conducts stringent quality checks to ensure that any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure that the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

# 12 Product sizes

Table 6

Linea Weatherboard and Axent Trim sizes									
						Coverage Information			
Product	Length (mm)	Width (mm)	Thickness (mm)	End Details	Effective Cover (mm)	No. of planks/ metre height (approx.)	Mass kg/lineal m (approx. at EMC)	Mass kg/m <sup>2</sup> (approx. at EMC)	Weight/ packs (60 units/ pack)
Linea Weatherboard 135	4200*	135	16	T & G	105	9.5	2.62	25.70	660.00
Linea Weatherboard 150	4200*	150	16	T & G	120	8.3	3.1	24.93	781.00
Linea Weatherboard 180	4200*	180	16	T & G	150	6.7	3.57	23.92	899.00
Axent Trim 84mm	2600	84	16	Square	N/A	N/A	1.6	N/A	N/A
Axent Trim 100mm	2600	100	16	Square	N/A	N/A	1.9	N/A	N/A

\*Length is 4200mm plus 5mm for the tongue and groove making overall length 4205mm

\*The effective thickness of finished Linea Weatherboard on the wall at the lap is approximately 33 to 35mm

NOTE: All dimensions and masses provided are approximate only and are subject to manufacturing tolerances.

# 13 Accessories

Table 7

















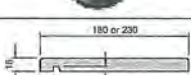

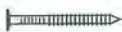














Accessories/Tools supplied by James Hardie			
Accessories	Description	Size (mm)	Code
	<b>External corner soaker 90° for Linea Weatherboards 180mm</b> <ul style="list-style-type: none"> <li>Aluminium</li> <li>Copper</li> <li>Stainless Steel</li> </ul>	200 long	301186 301188 301197
	<b>External corner soaker 135° for Linea Weatherboards 180mm</b> <ul style="list-style-type: none"> <li>Aluminium</li> </ul>	200 long	301178
	<b>External corner soaker 90° for Linea Weatherboards 150mm</b> <ul style="list-style-type: none"> <li>Aluminium</li> <li>Stainless Steel</li> </ul>	170 long	302820 302821
	<b>External corner soaker 90° for Linea Weatherboards 135mm</b> <ul style="list-style-type: none"> <li>Aluminium</li> <li>Stainless Steel</li> </ul>	155 long	301185 301196
	<b>External Slimline Box Corner Mould</b> Etched primed aluminium extrusion used to create external corner	2700 long 4000 long	301195 305809
	<b>Box Corner 'Z' Flashing</b>	2700 long	301203
	<b>Internal 'W' Mould 90°</b> Etched primed aluminium extrusion used to create 90° internal corner	2700 long 4000 long	301184 305807
	<b>Internal 'W' Mould 135°</b> Etched primed aluminium extrusion used to create 135° internal corner	2700 long	301183
	<b>Vent Strip</b> PVC moulding used as vermin proofing	3000 long	302490
	<b>JH Corner Under Flashing 50 x 50mm</b> PVC moulding used as under fashing for internal and external corners	3000 long	303745
	<b>Axent Trim 84mm</b>	84 x 2600 long	401943
	<b>Axent Trim 100mm</b>	100 x 2600 long	401930
	<b>HardieFlex™ nail - 5kg</b>	60 x 3.15mm	302782
	<b>HardieFlex™ nail - 5kg</b>	60 x 3.15mm	302784
	<b>HardieBlade™ Saw Blade</b> Diamond tip fibre cement circular saw blade. Spacers not included	4 tooth - 184mm	300660
	<b>HardieBlade™ Saw Blade</b> Diamond tip fibre cement circular saw blade. Spacers not included	6 tooth - 254mm	303375
	<b>Axent Fascia - 180mm - 230mm</b>	4200 long	401843 402230



Table 8

## Accessories not supplied by James Hardie

James Hardie recommends the following products for use in conjunction with its Linea Weatherboard and Axent Trim. James Hardie does not supply these products. There may also be some other accessories required depending upon the application. Please contact component manufacturer for information on their warranties and further information on their products.

Accessories	Description	Size (MM)	Material/appearance
	<b>Head flashing</b> Required over window heads to be supplied by window installer. Material must comply with Table 20 and 21 of E2/AS1.	To suit	Etch Primed Aluminium/Powder Coated
	<b>D head or RoundDrive Nail</b> Gun nail for concealed fixing Linea Weatherboard.	50 x 2.87 60 x 3.15	Hot Dip Galvanised Stainless Steel
	<b>HardieFlex™ Hot Dip Galv. Nails</b> For fixing cavity battens.	40 x 2.8mm	Hot Dip Galvanised
	Jolt Head Nail for face fixing to Linea Weatherboard. Hot Dip Galvanised or 316 Stainless Steel	50 x 2.8mm 60 x 3.15mm 75 x 3.15mm 90 x 4.0mm	Self colour
	<b>Joint sealant</b> Paintable flexible sealants are recommended for filling the joints. Refer to Section 7.2 for information.	Tube	Sika, Holdfast
	PEF Rod	Polyethylene foam	Sika or similar
	<b>Flexible tape</b> A flexible self-adhesive tape used in preparation of a window. Refer to the Window installation section in this manual for more information. e.g. Tyvek®, Marshall Innovations or similar.	Proprietary tape to adhere to flexible underlay	Tyvek, Marshall Innovations or similar
	<b>Flashing Material</b> as per Table 20, 'E2/AS1'		Flashing Fabricator
	Planted Sill		H3.1 minimum Treated Timber Timber Merchant or cut on site
	Titanium Coated High Speed Drill Bit. For pre-drilling prior to face fixing with jolt head.	3.0mm 3.5mm	
	Timber Scribe To scribe beside window, site cut to suit.	As required	H3.1 minimum Treated Timber Timber Merchant or cut on site
	Fibre Cement Cutting Blade Diamond tip 305mm diameter circular saw blade to fit drop saw.	305mm	Diamond Tipped
	Meter Box Refer Electrical Suppliers		
	Cant Strip Redway Developments 03 358 5775 Predrill the weatherboards when fixing using Redway Development Cant/Vent Strips	To suit	uPVC
	Inseal 3109 Sealing Strip.	5 x 3mm x 25mm	Black Compressible Foam
	CRC Builders Fill Two part exterior grade fill to finish over jolt head nails.		

# 14 Details

Various details outlined in the following table are available on Pages 15 to 42.

Table 9

Details				
Description	Direct fixed		Timber Cavity Batten Construction	
	Figure	Page	Figure	Page
Foundation detail and soffit detail	Figure 1	15		
Weatherboard fixing	Figure 2	15	Figure 30	30
Boxed corner	Figure 3 & 4	16	Figure 31	31
Mitre corner	Figure 5	17	Figure 32	31
Aluminium box corner	Figure 6	17	Figure 33	31
External corner soaker	Figure 7	18	Figure 34	32
Internal corner	Figure 8	18	Figure 35	32
Internal 90° aluminium 'W' mould corner	Figure 9	19	Figure 36	33
Internal 135° aluminium 'W' mould corner	Figure 10	19	Figure 37	33
Window sill with facings			Figure 39	34
Window sill with sill tray and facings	Figure 11	20		
Window door and head with facings	Figure 12	20	Figure 40	35
Window door and jamb with facings	Figure 13	21	Figure 41	35
Window door and sill without facings	Figure 14	21	Figure 42	35
Window door and head without facings	Figure 15	22	Figure 43	36
Window door and jamb without facings	Figure 16	22	Figure 44	36
Head flashing termination	Figure 17	23	Figure 45	37
One piece apron flashing joint	Figure 18	23	Figure 46	37
Pipe penetration	Figure 19	24	Figure 48	38
Meter box at head	Figure 20	24	Figure 49	39
Meter box at sill	Figure 21	25	Figure 50	39
Meter box at jamb	Figure 22	25	Figure 51	40
Timber cavity fix meter box			Figure 52	41
Deck junction	Figure 23	26	Figure 61	47
Cantilevered timber deck junction	Figure 24	27	Figure 62	47
Sloping soffit to weatherboard junction	Figure 25	27	Figure 59	46
Timber cavity batten fixing			Figure 27	28
Foundation detail			Figure 28	29
Soffit detail			Figure 29	29
Batten layout at window opening			Figure 38	34
One piece gutter/wall junction			Figure 47	38
Floating lap over floor joist			Figure 53	42
Drainage joint			Figure 54	43
Enclosed deck balustrade to wall			Figure 55	43
Enclosed balustrade to wall			Figure 56	44
Enclosed deck	Figure 26	28	Figure 57	45
Parapet flashing			Figure 58	45
Sloping soffit and wall junction			Figure 60	46
Door sill support detail			Figure 63	48
Junction between Linea® Weatherboard and fascia board			Figure 64	49
Exclosed roof to wall intersection			Figure 65	50



Figure 1: Direct fix foundation detail and soffit detail

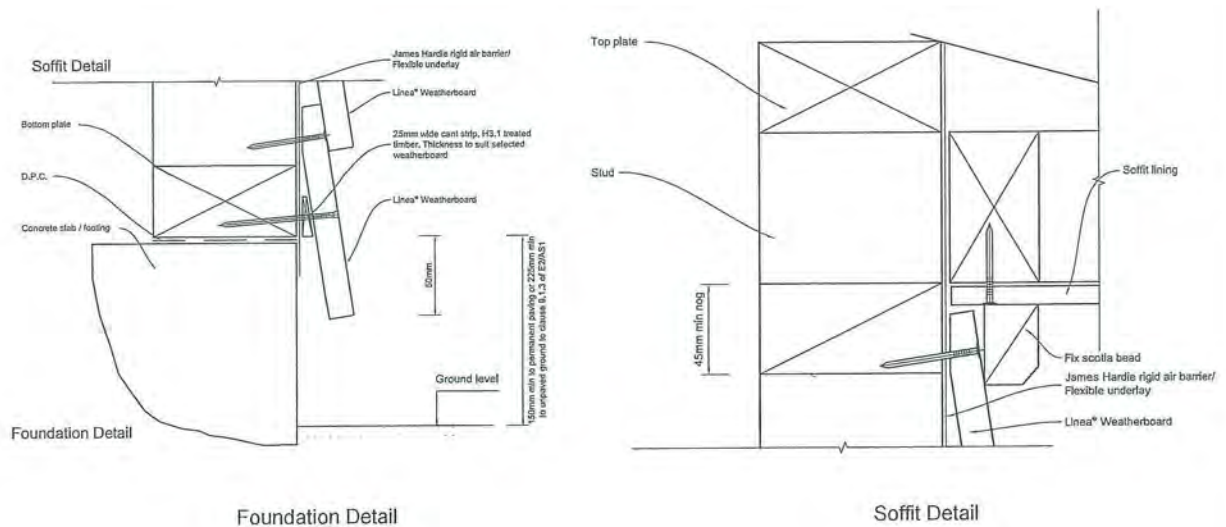


Figure 2: Direct fix weatherboard fixing

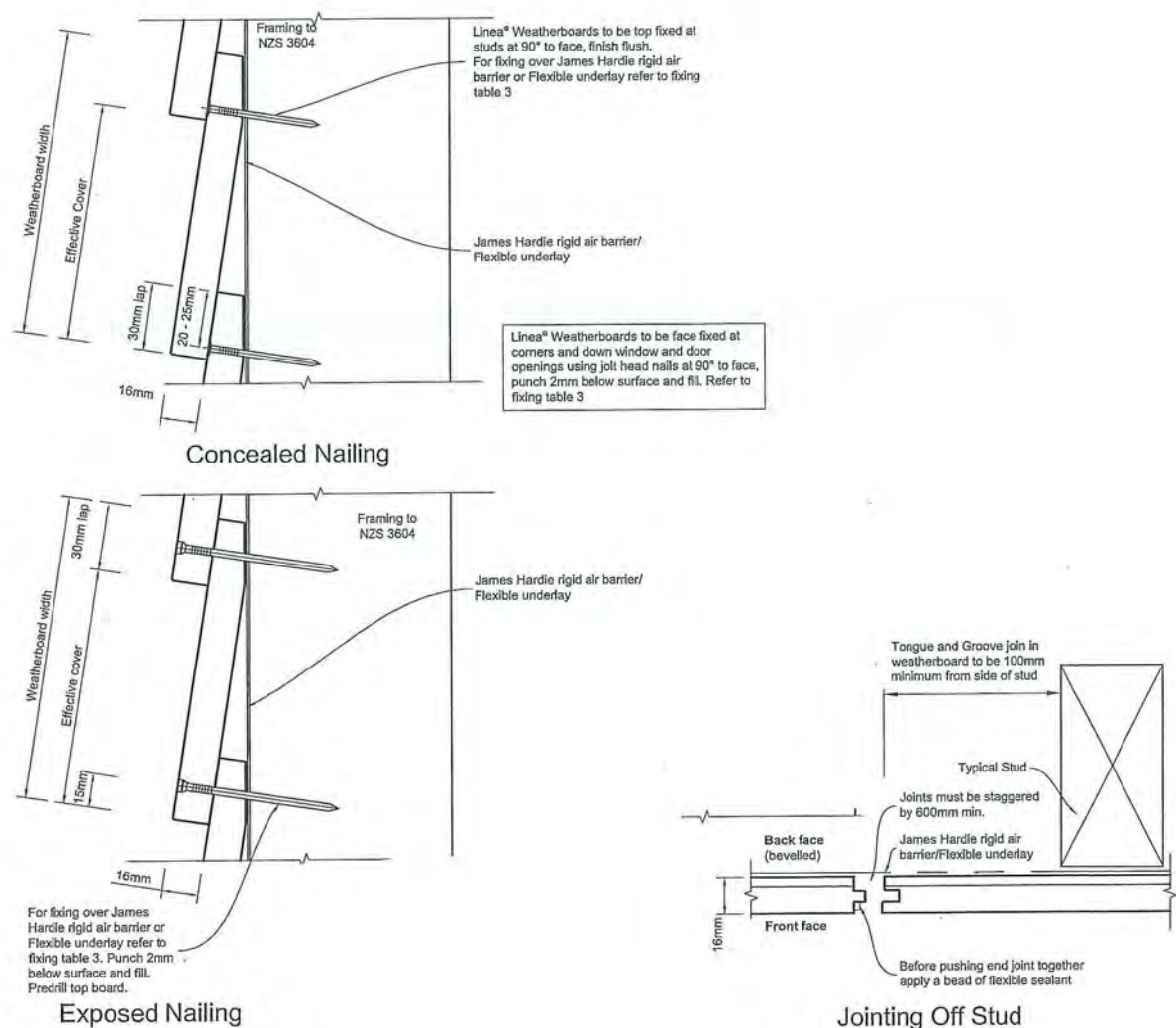


Figure 3: Direct fix boxed corner - Option 1

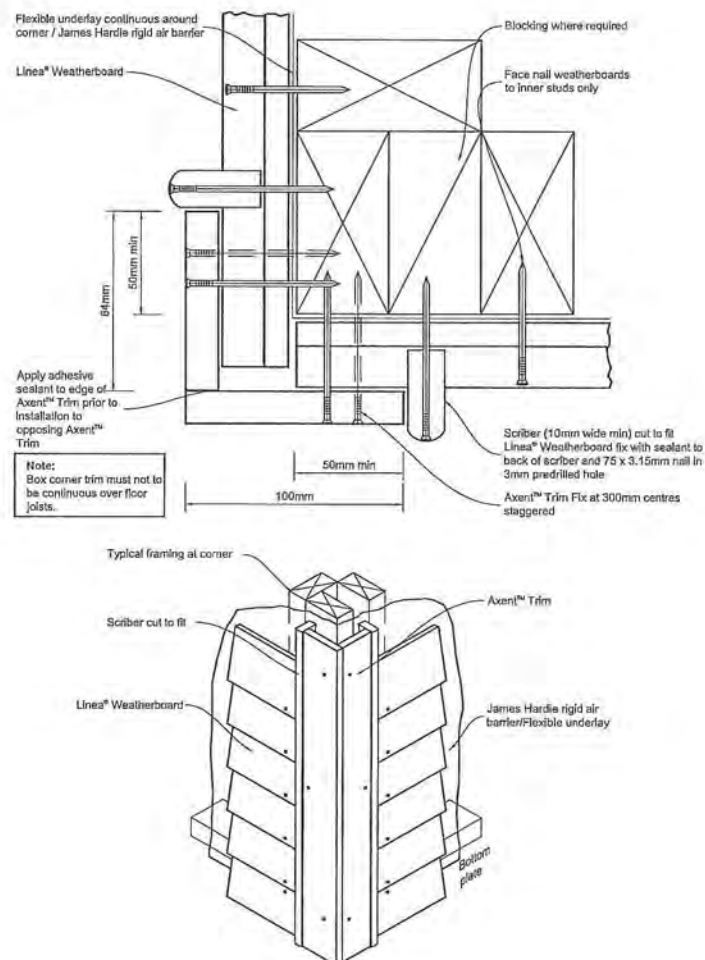


Figure 4: Direct fix boxed corner - Option 2

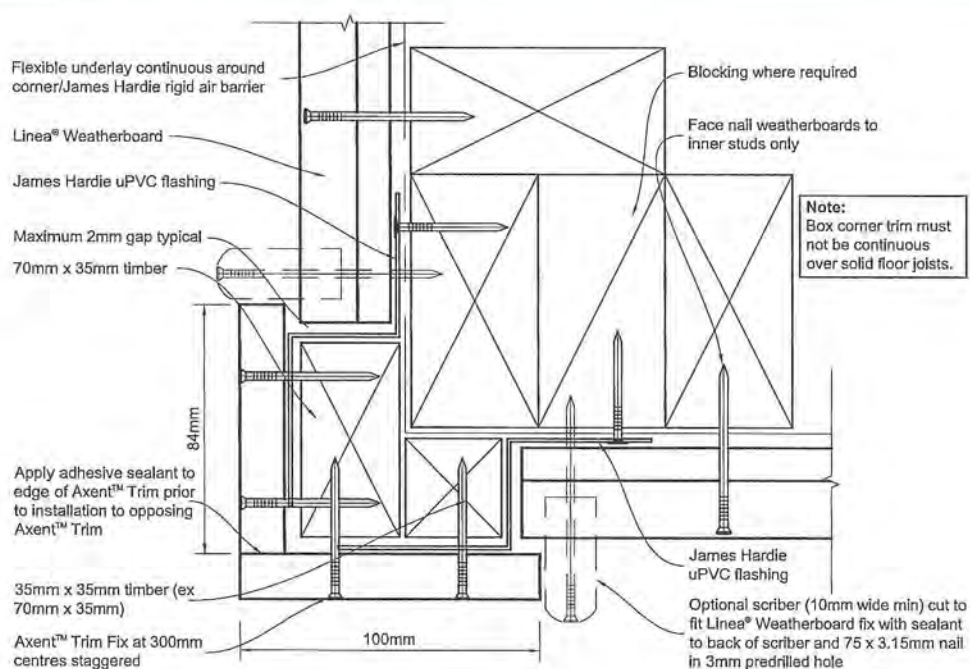




Figure 5: Direct fix mitre corner

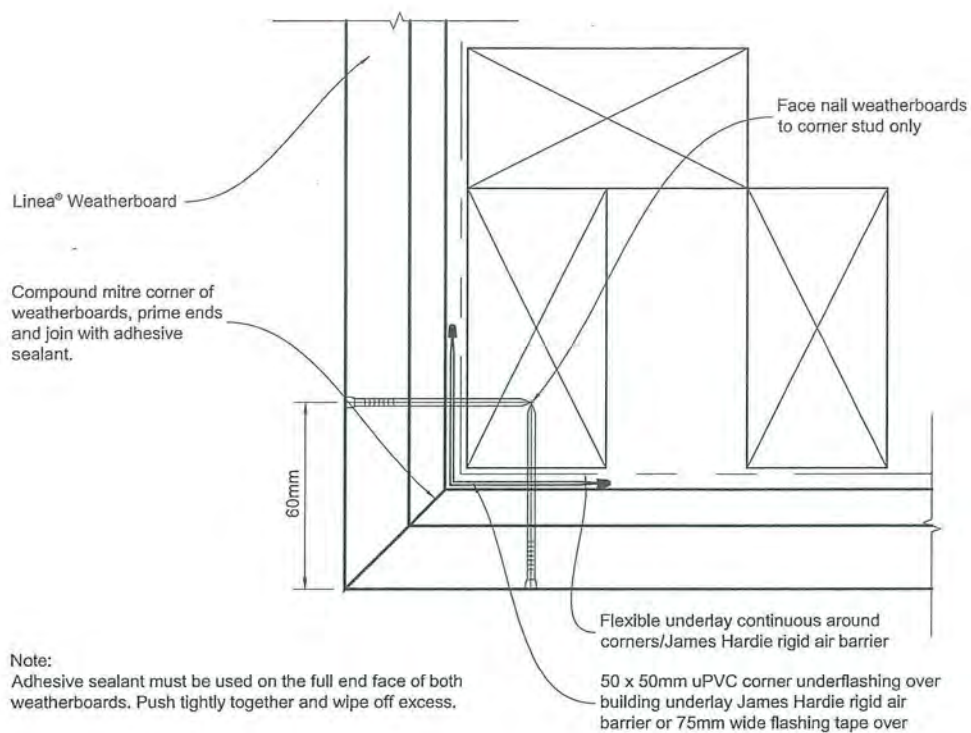


Figure 6: Direct fix aluminium box corner

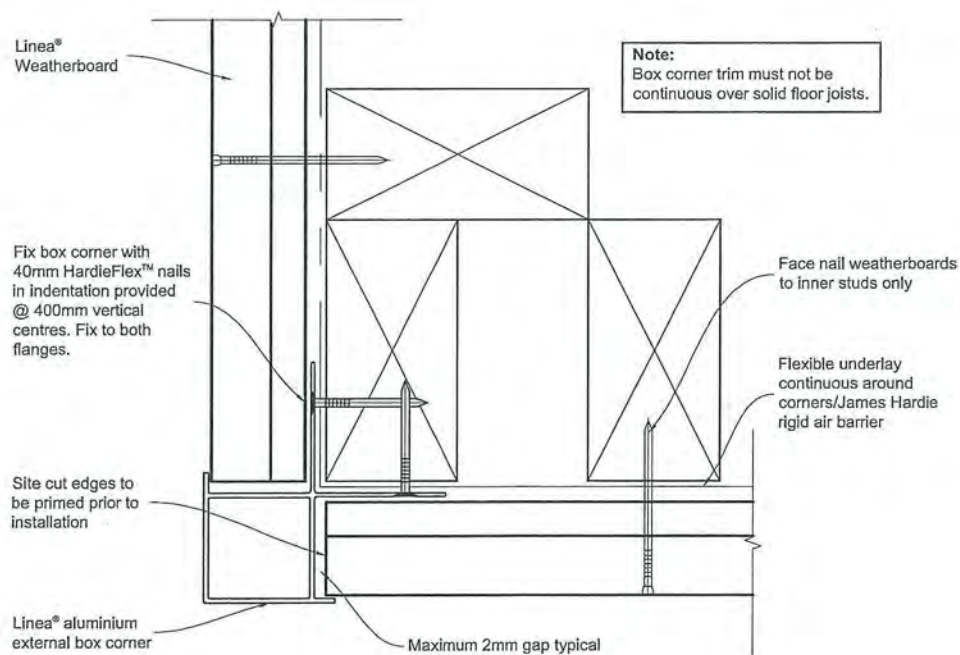
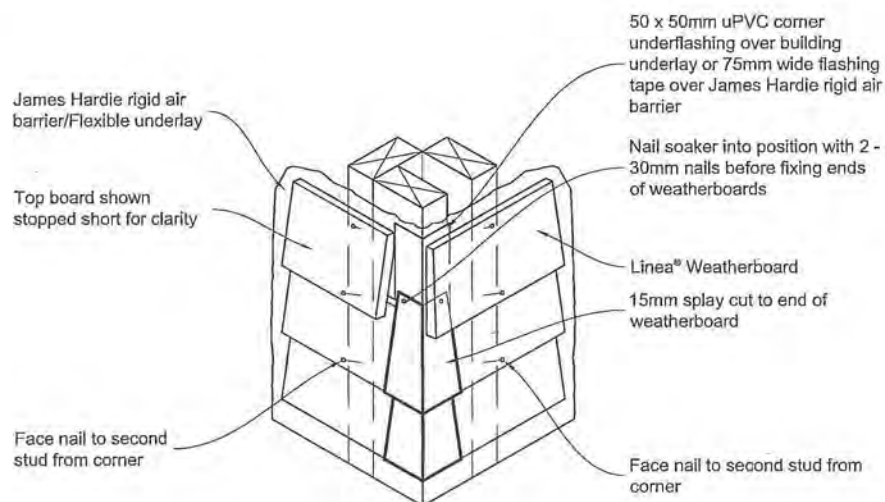


Figure 7: Direct fix external corner soaker



Soaker material	Nail material
Copper	Copper or phosphor bronze
Aluminium	Hot dip galvanised
Stainless steel	Stainless steel

Figure 8: Direct fix internal corner

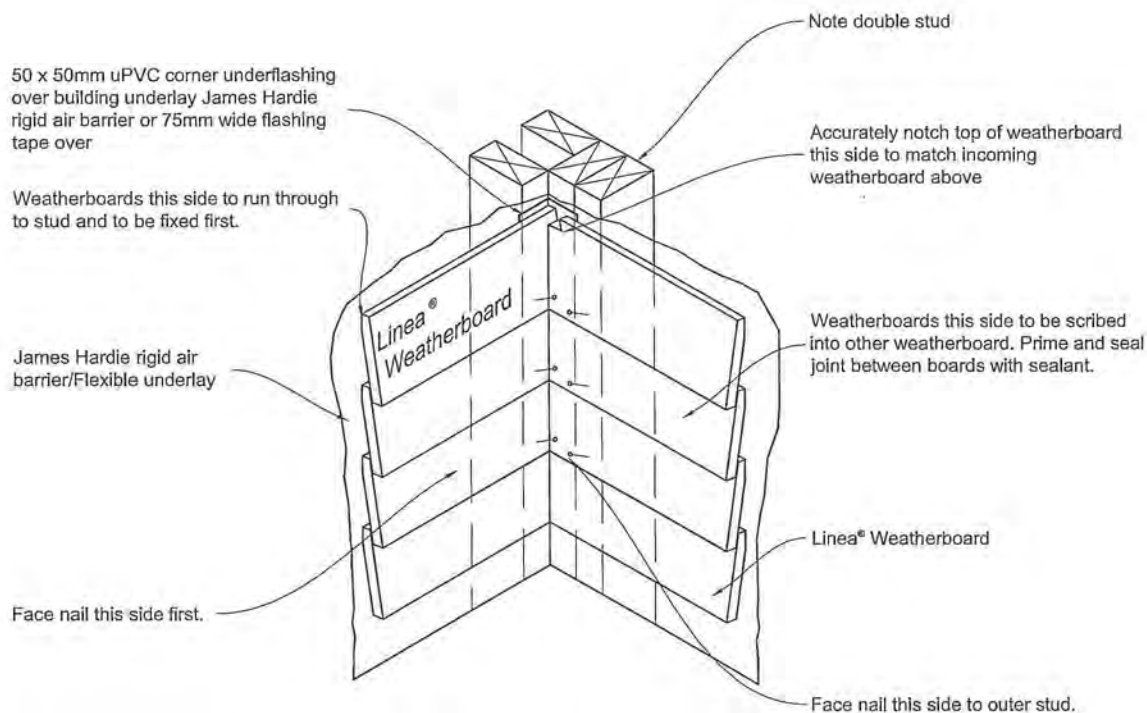




Figure 9: Direct fix internal 90° aluminium 'W' mould corner

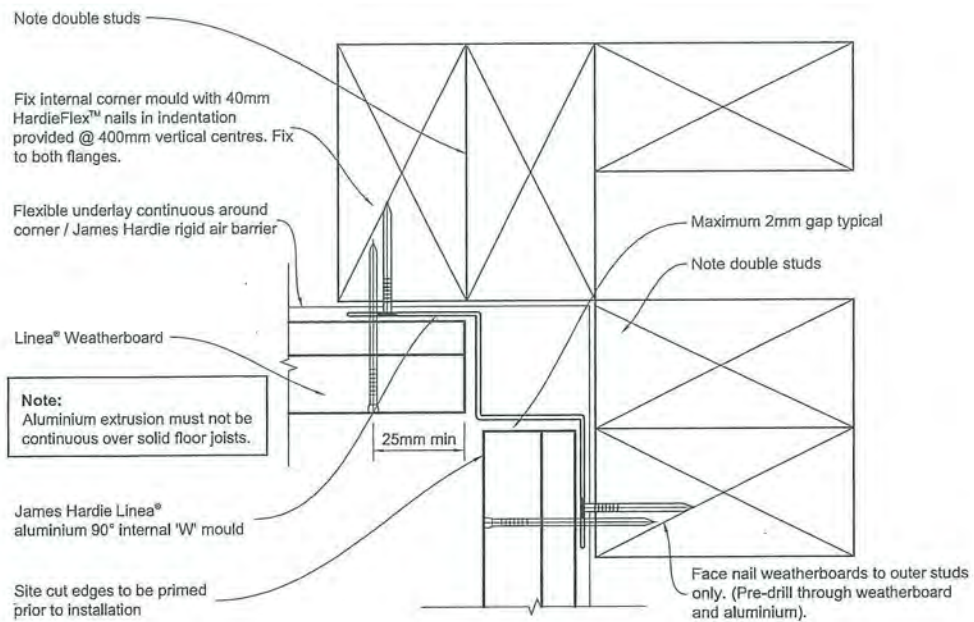


Figure 10: Direct fix internal 135° aluminium 'W' mould corner

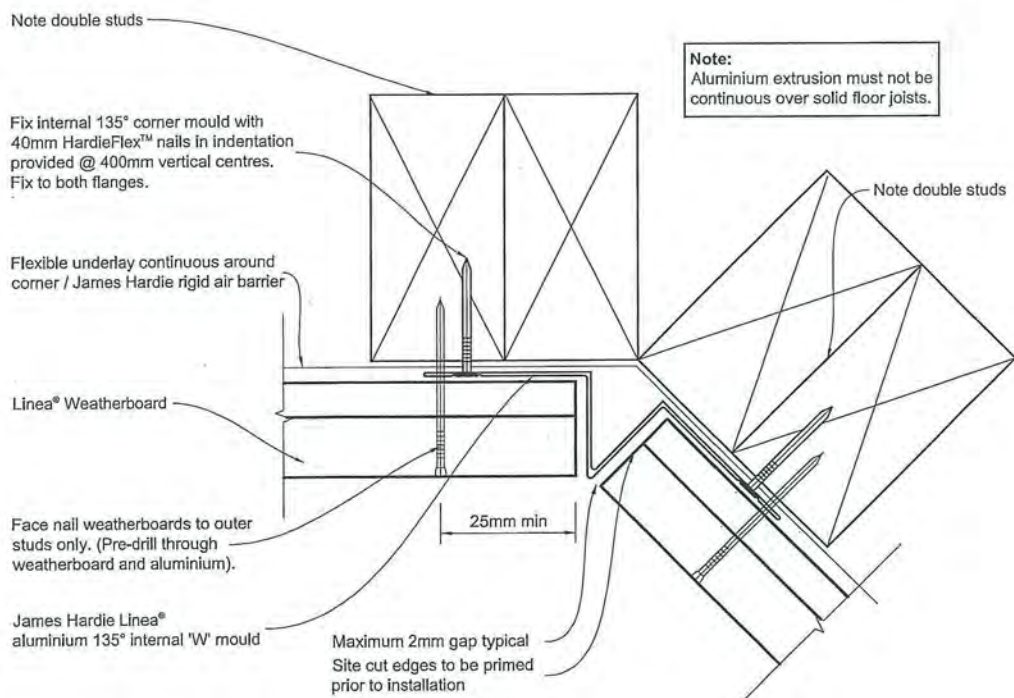
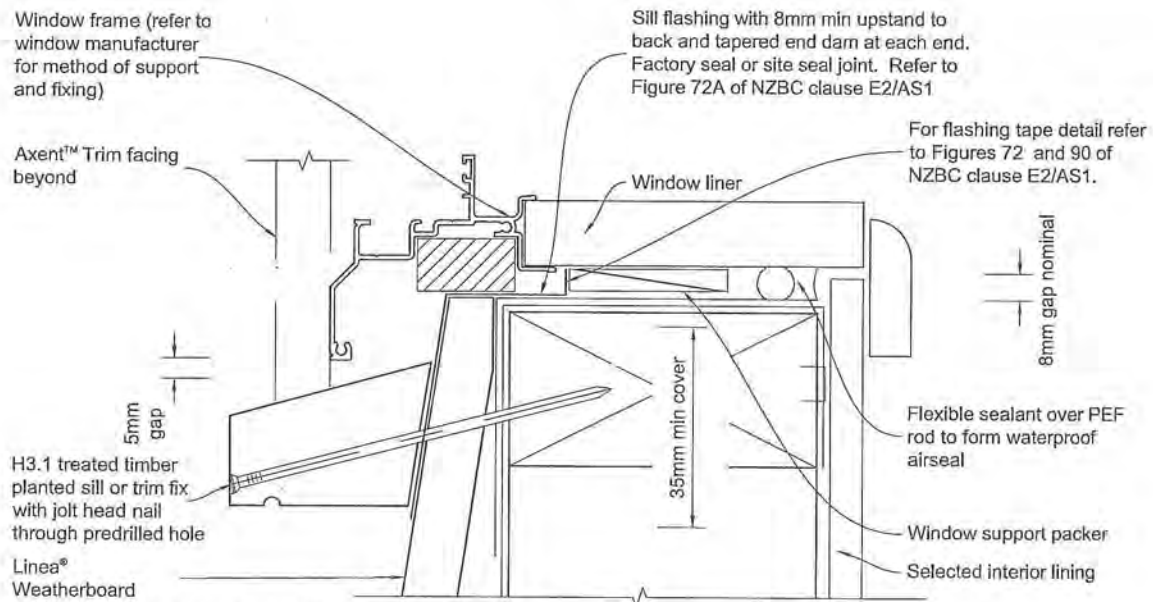


Figure 11: Direct fix window sill flashing sill tray and facings

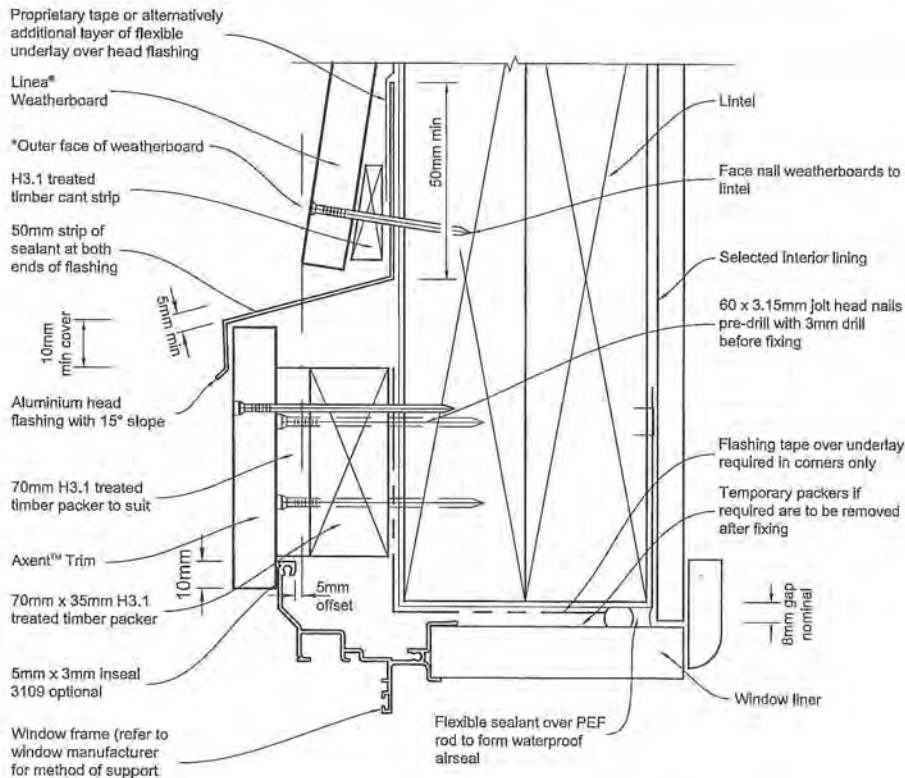


**General notes for materials selection**

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and Table 20 of NZBC clause E2/AS1.
2. Flexible underlay must comply with acceptable solution E2/AS1.
3. Flashing tape must have proven compatibility with the selected flexible underlay/James Hardie rigid air barrier and other materials with which it comes into contact.

Refer to the manufacturer or supplier for technical information for these materials.

Figure 12: Direct fix window head and door with facings

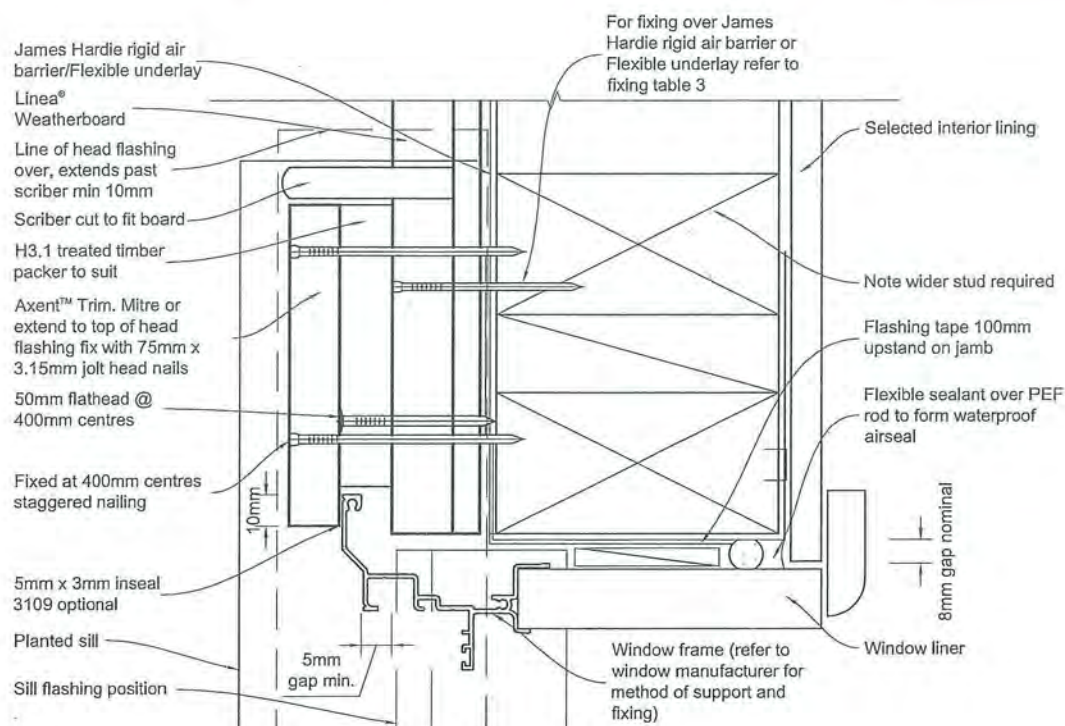


**Note:**

When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening. Sealant must be installed between head flashing and trim in VH wind zones. Refer to Figure 71 of E2/AS1

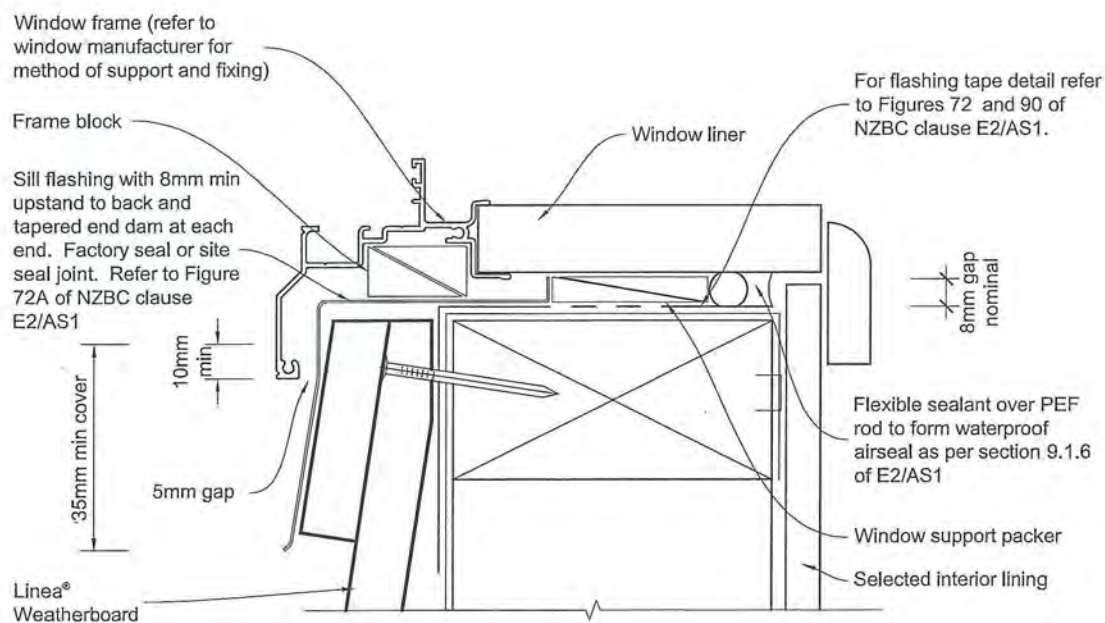


Figure 13: Direct fix window and door jamb with facings



Note:  
When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening.

Figure 14: Direct fix window and door sill without facings

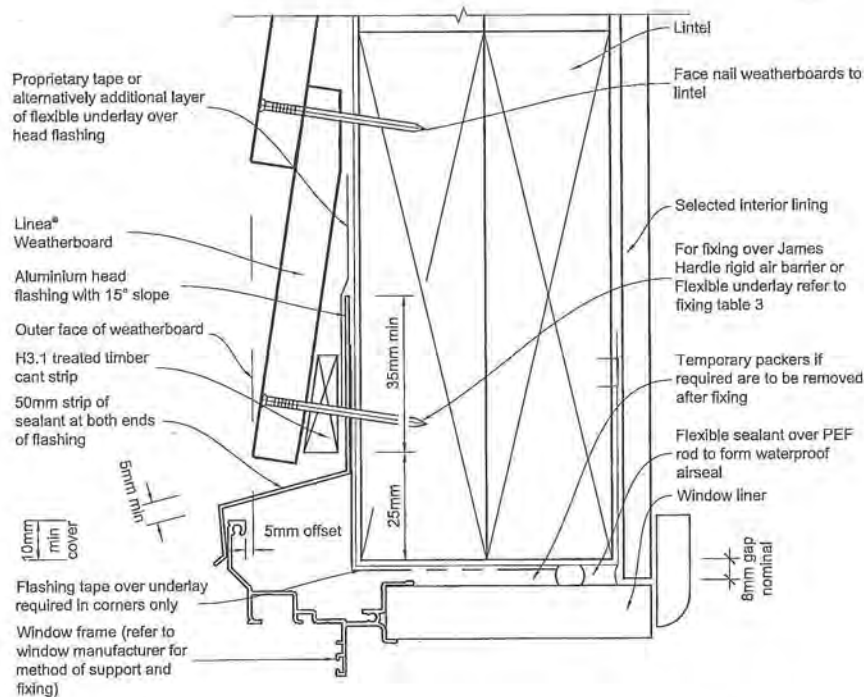


**General notes for materials selection**

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3. Flashing tape must have proven compatibility with the selected flexible underlay/James Hardie rigid air barrier and other materials with which it comes into contact.

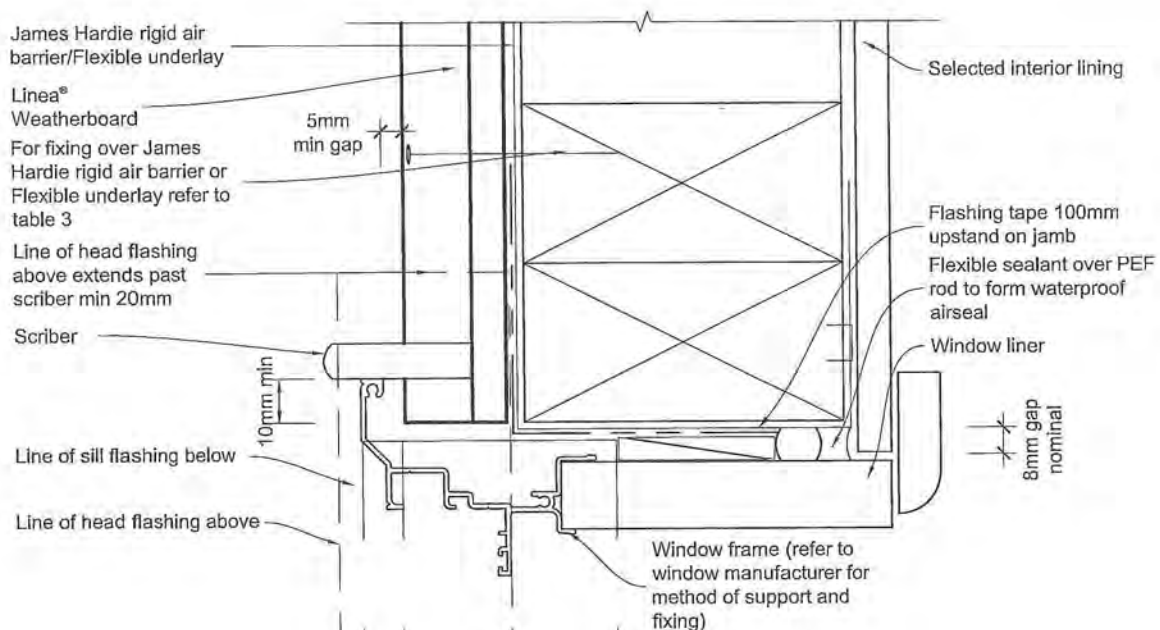
Refer to the manufacturer or supplier for technical information for these materials.

Figure 15: Direct fix window and door head without facings



Note:  
When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening.  
Sealant must be installed between head flashing and window flange in VH wind zones. Refer Figure 71 of E2/AS1

Figure 16: Direct fix window and door jamb without facings



Note:  
When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening.  
Alternatively window jamb can be formed as per E2/AS1 with jamb battens.



Figure 17: Direct fix head flashing termination

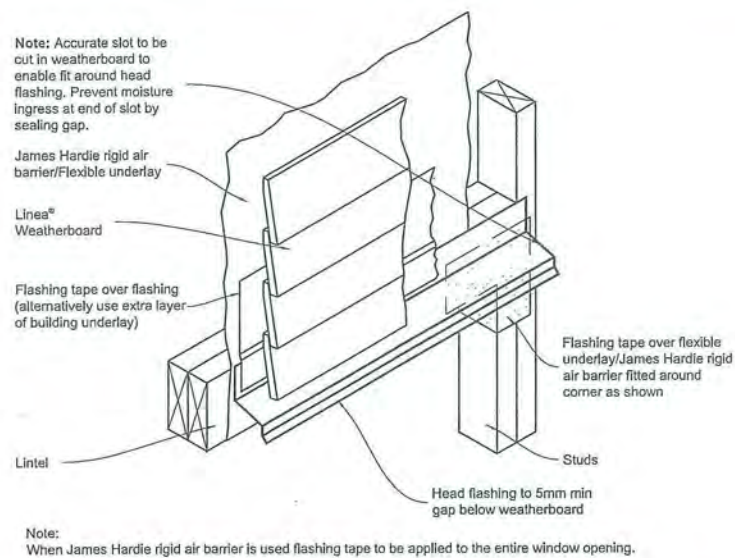
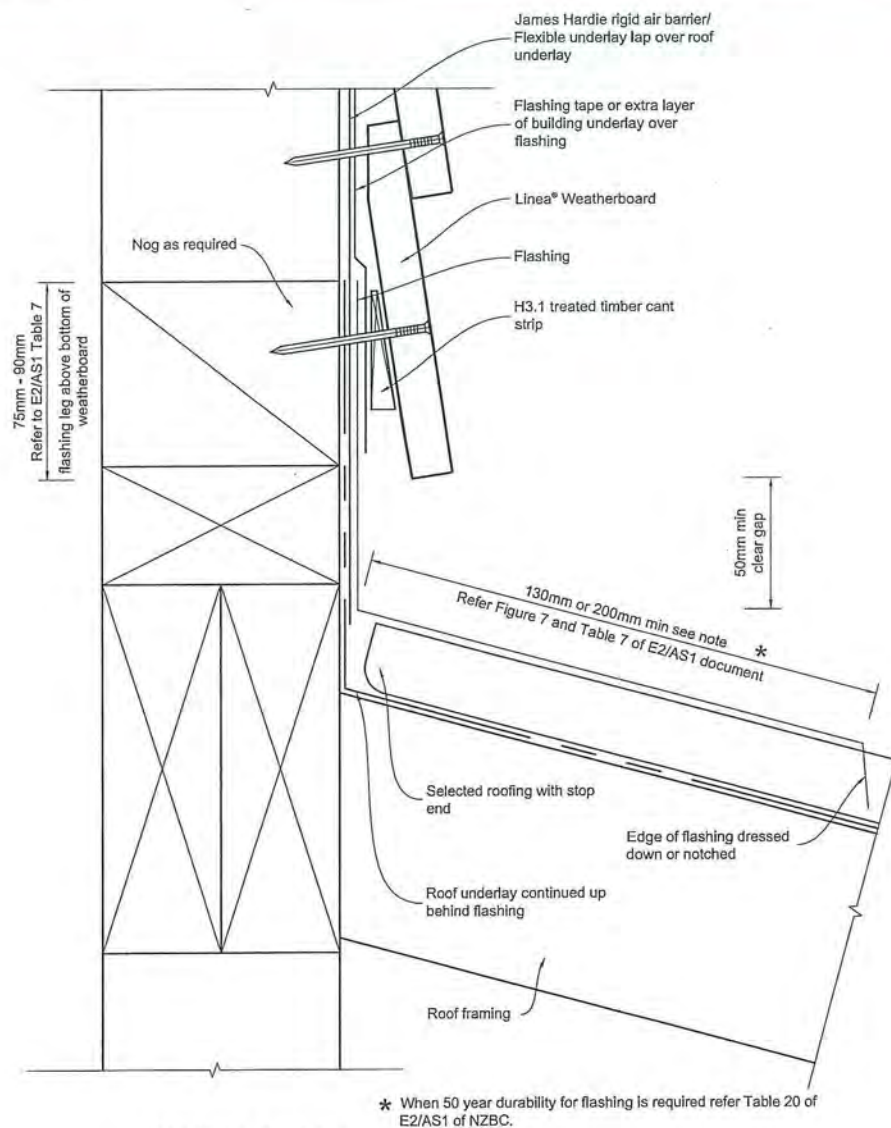


Figure 18: Direct fix one piece apron flashing joint



Vertical Section

Figure 19: Direct fix pipe penetration

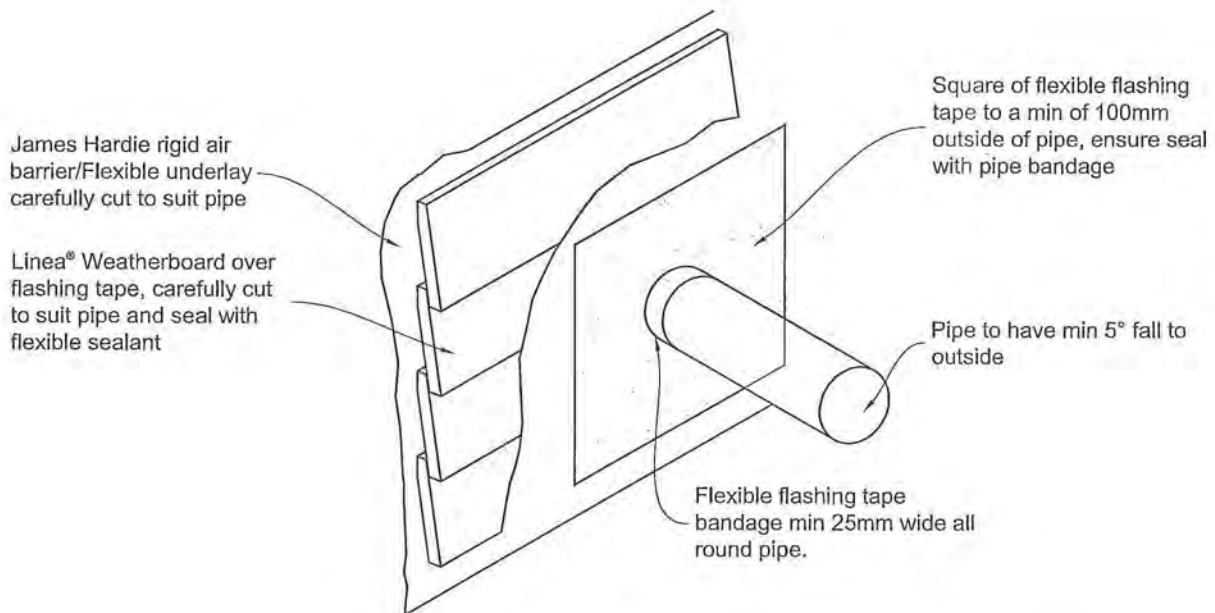
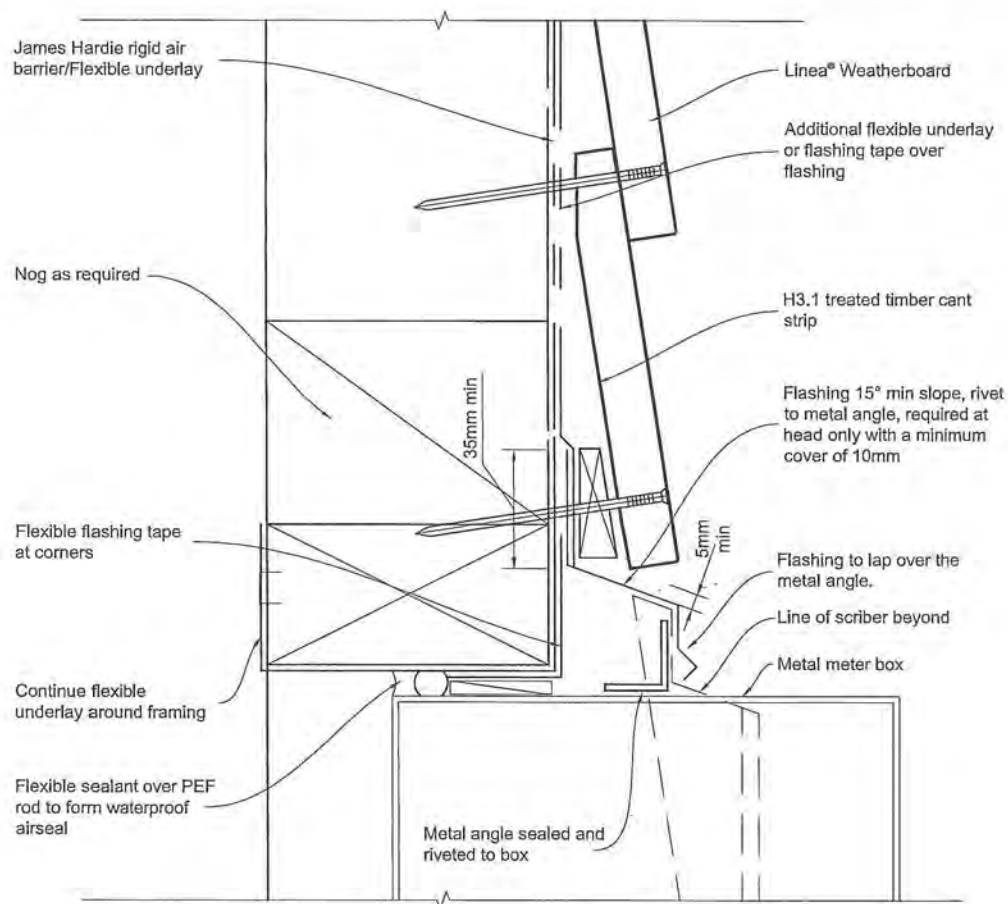


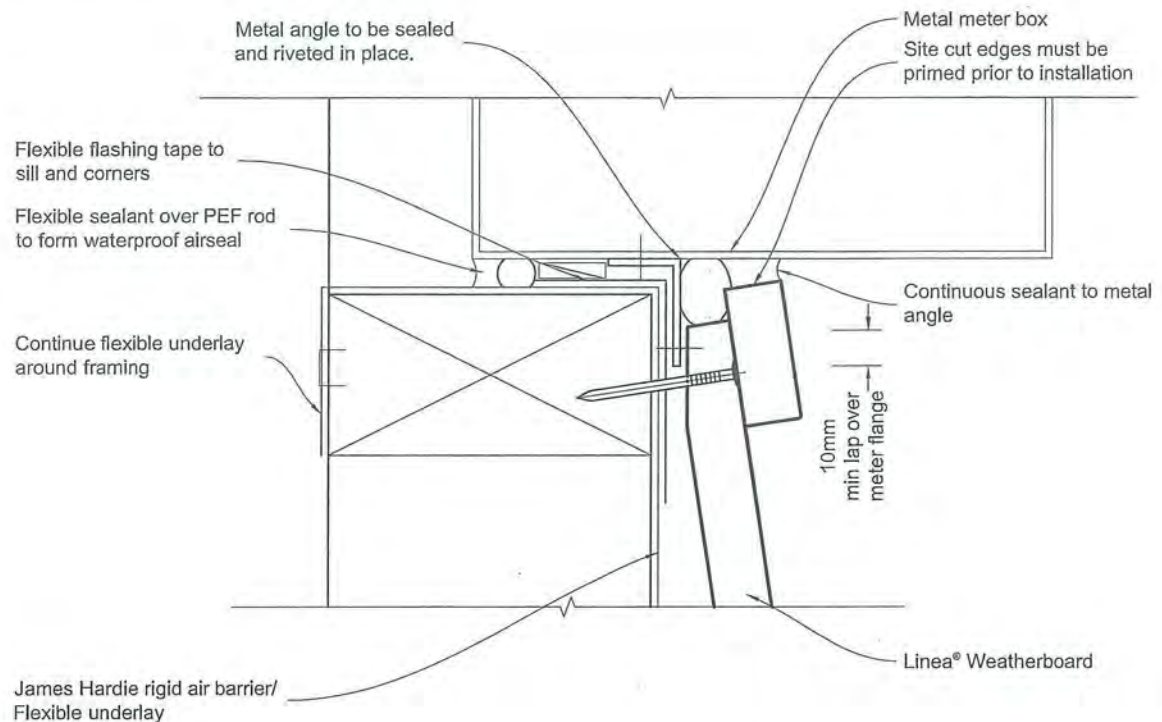
Figure 20: Direct fix meter box at head



Note:  
When James Hardie rigid air barrier is used flashing tape to be applied to the entire opening.

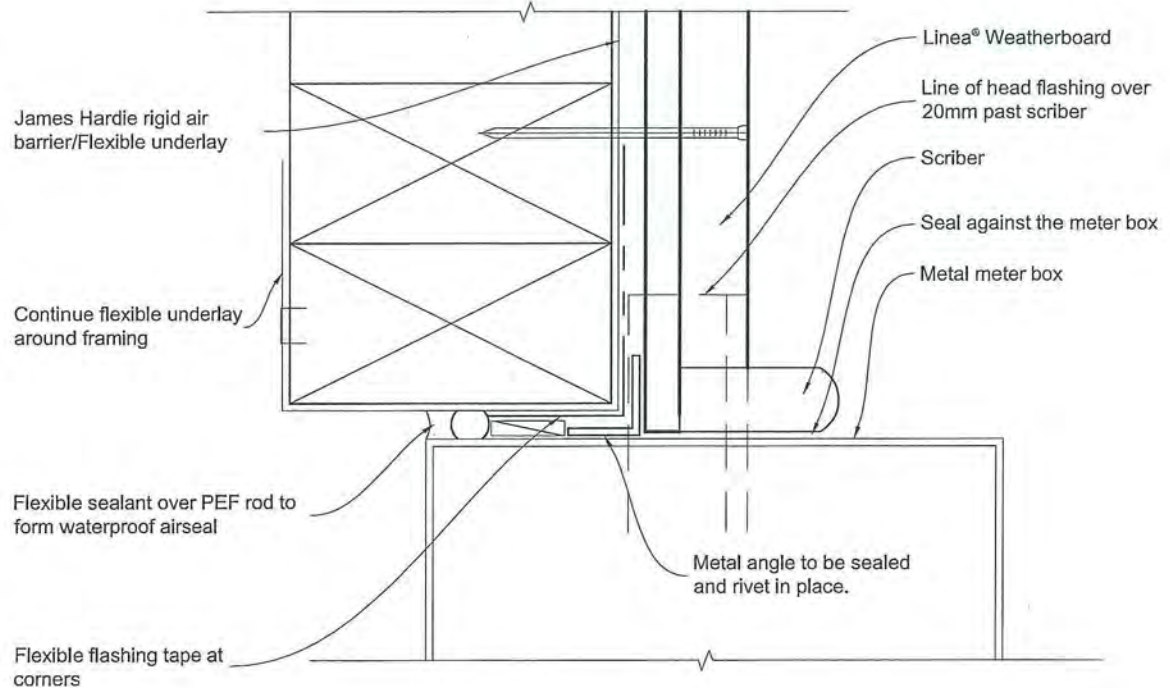


Figure 21: Direct fix meter box at sill



Note:  
When James Hardie rigid air barriers used flashing tape to be applied to the entire opening.

Figure 22: Direct fix meter box at jamb



Note:  
When James Hardie rigid air barrier is used flashing tape to be applied to the entire opening.

Figure 23: Direct fix deck junction

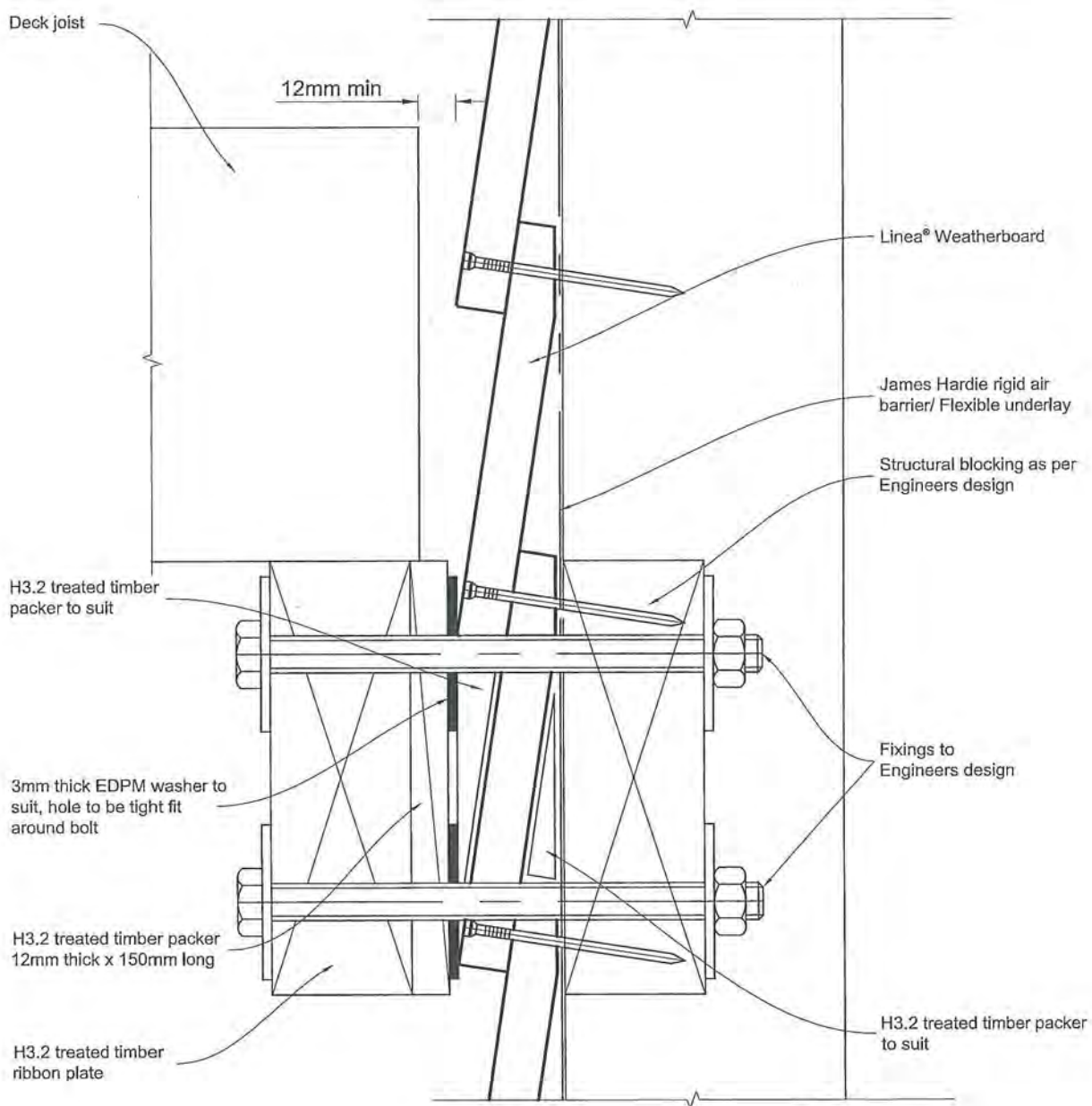




Figure 24: Direct fix cantilever deck junction

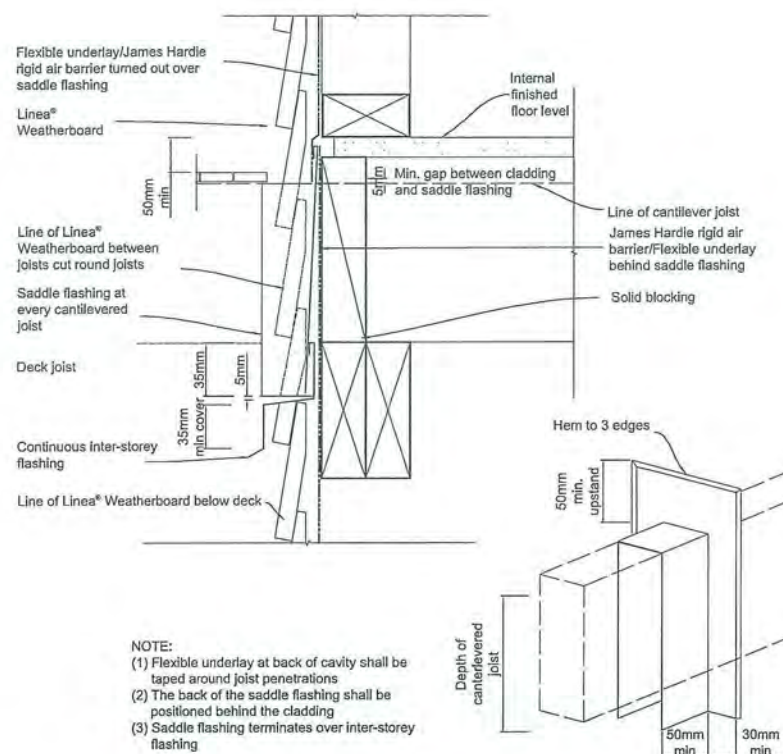


Figure 25: Sloping soffit to weatherboard junction combined figure

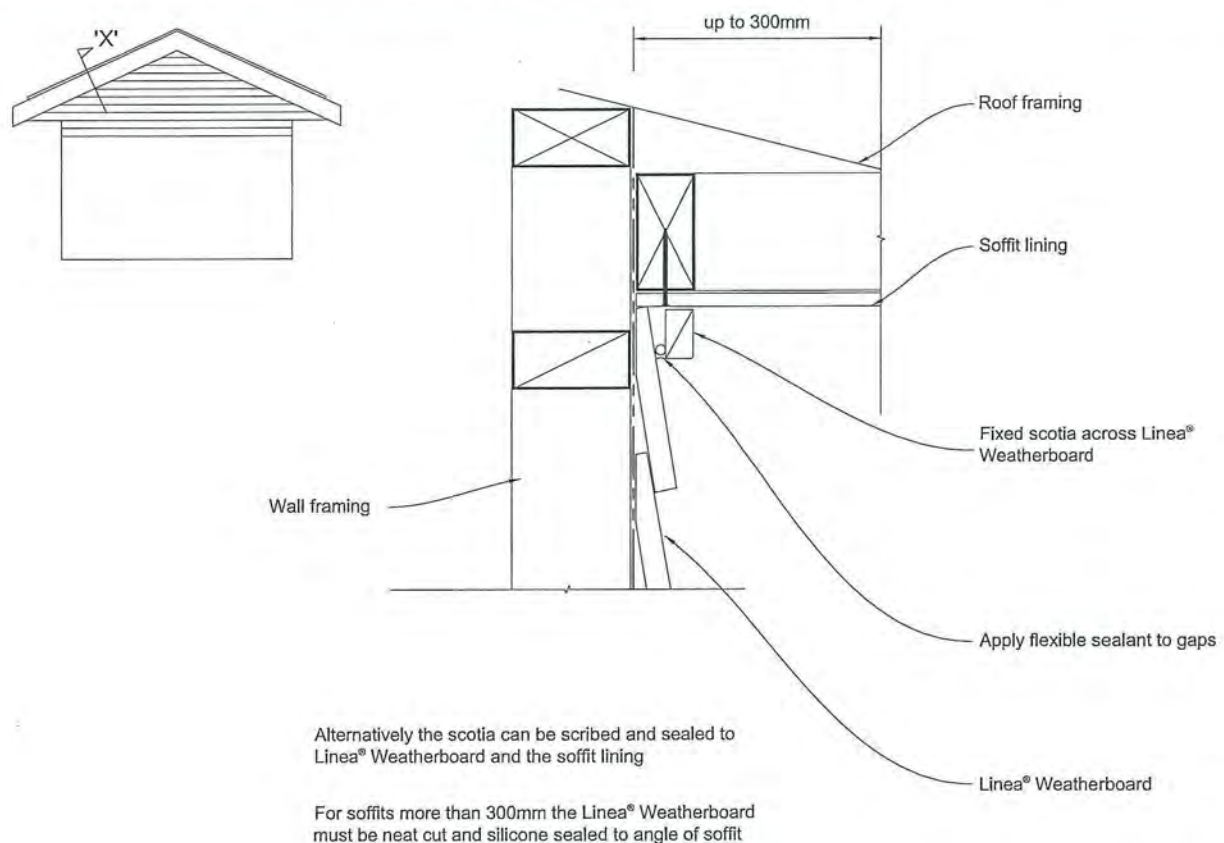


Figure 26: Enclosed deck

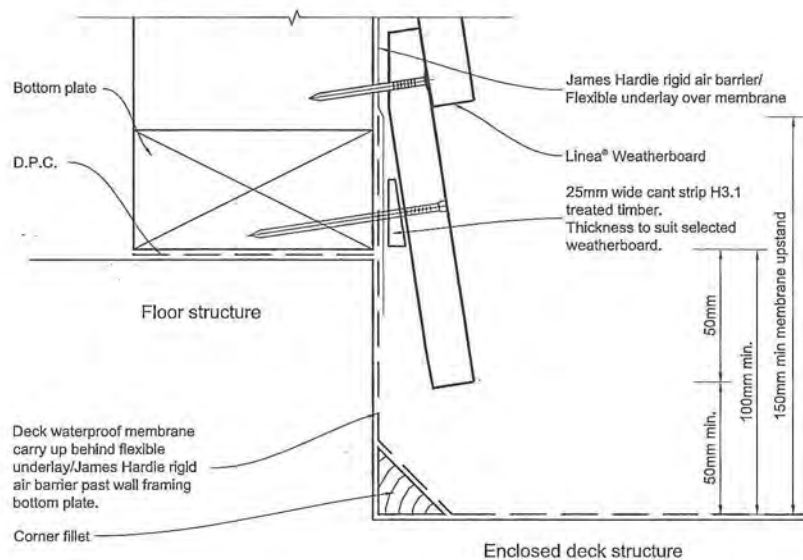


Figure 27: Timber cavity batten fixing

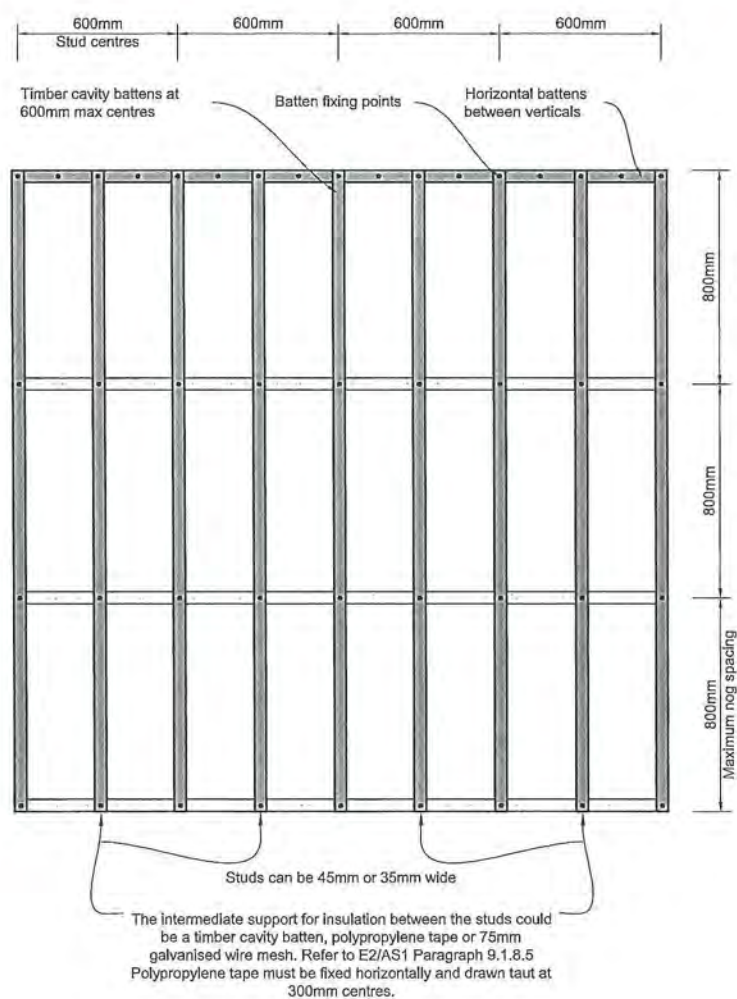




Figure 28: Timber cavity foundation detail

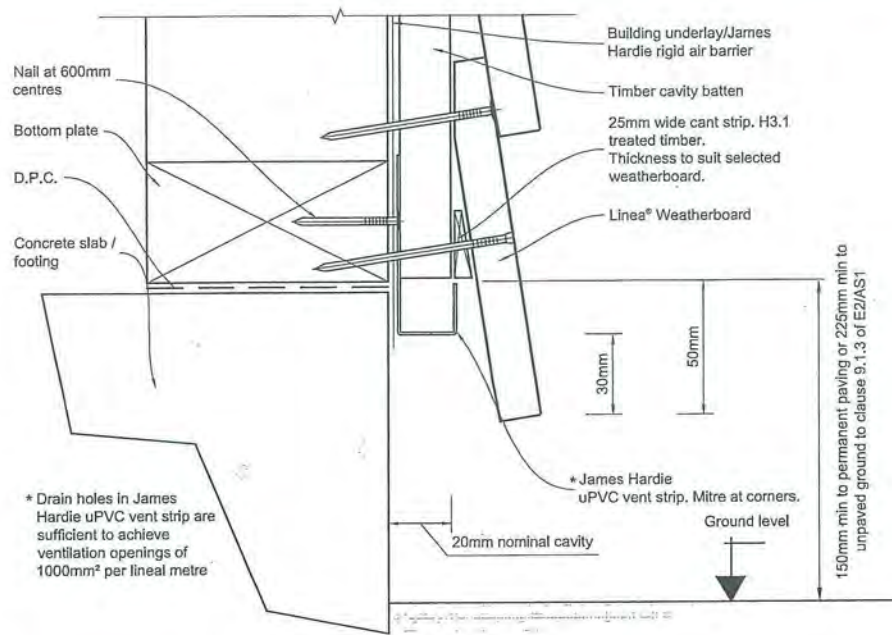


Figure 29: Timber cavity soffit detail

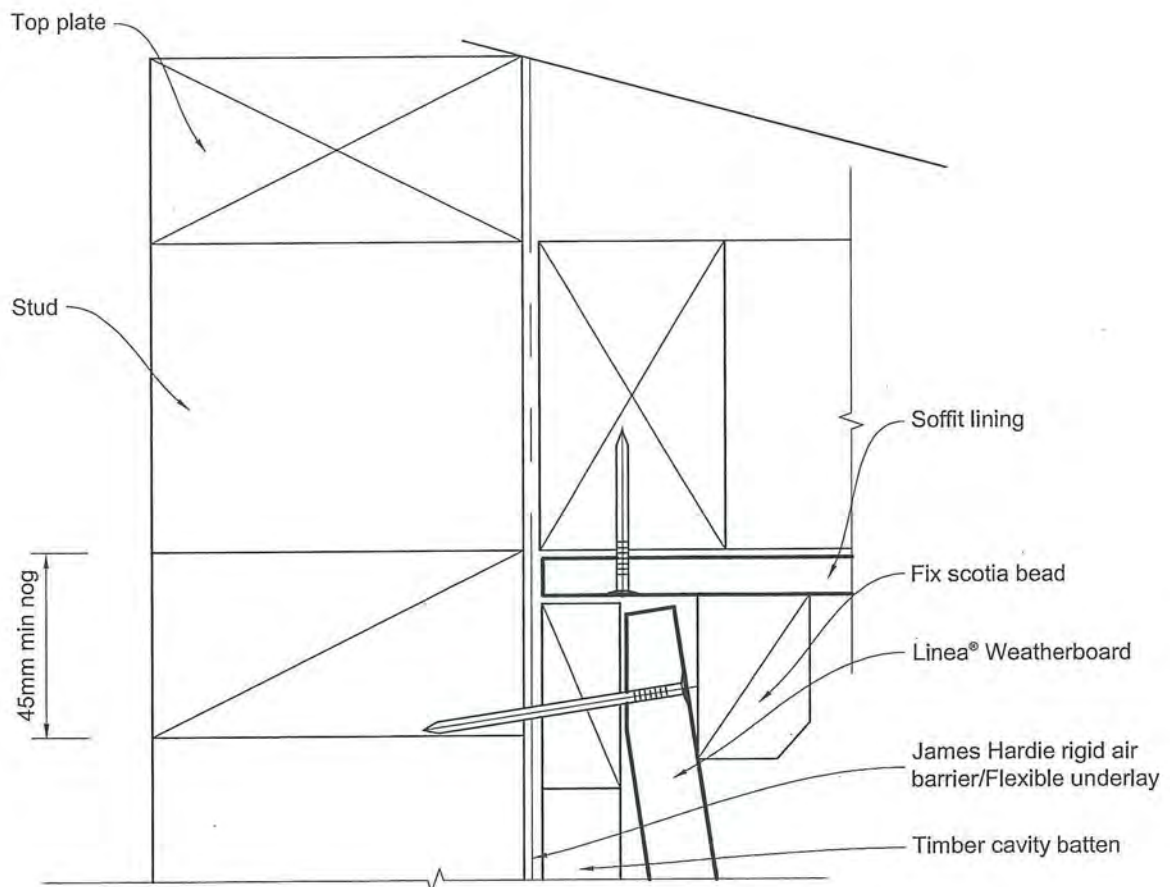


Figure 30: Timber cavity weatherboard fixing

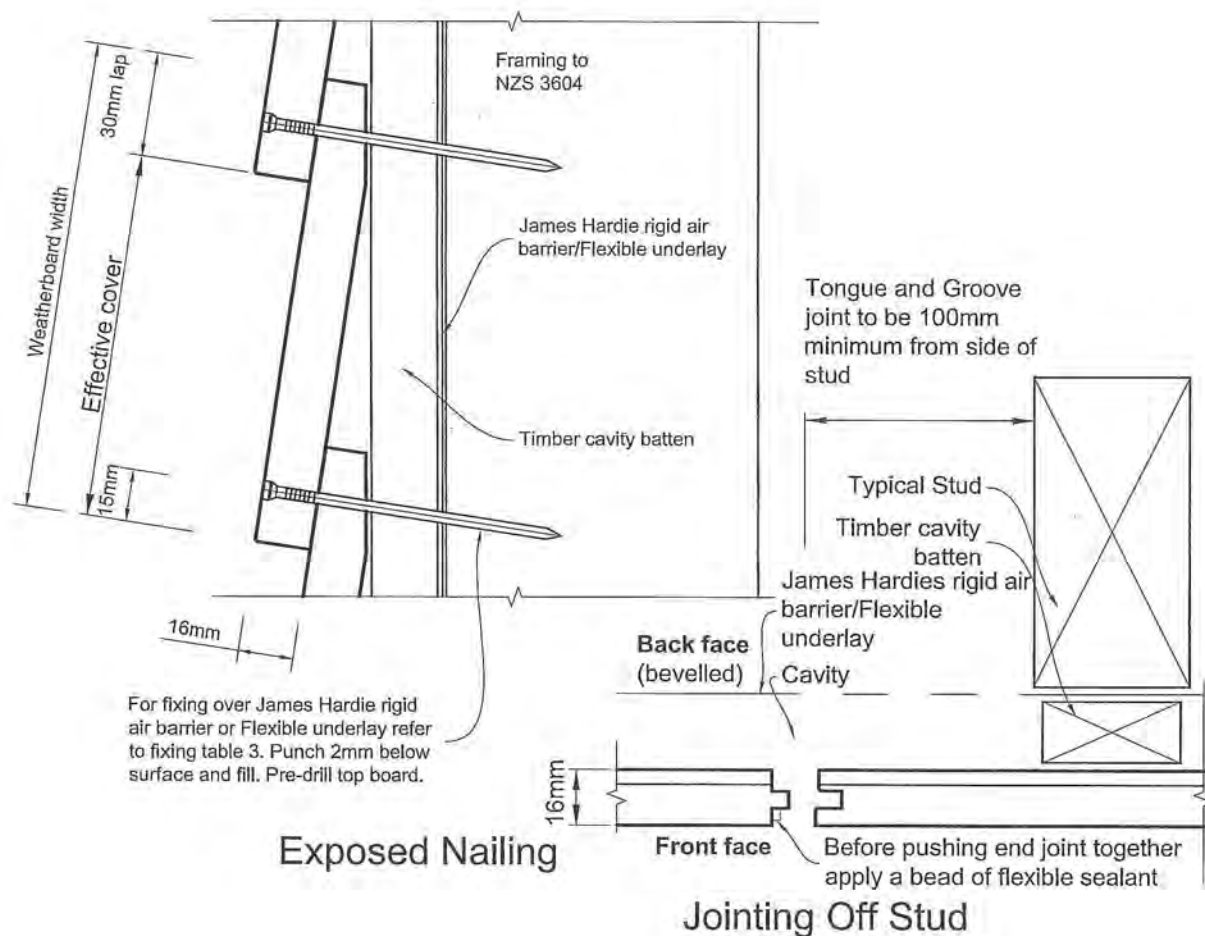
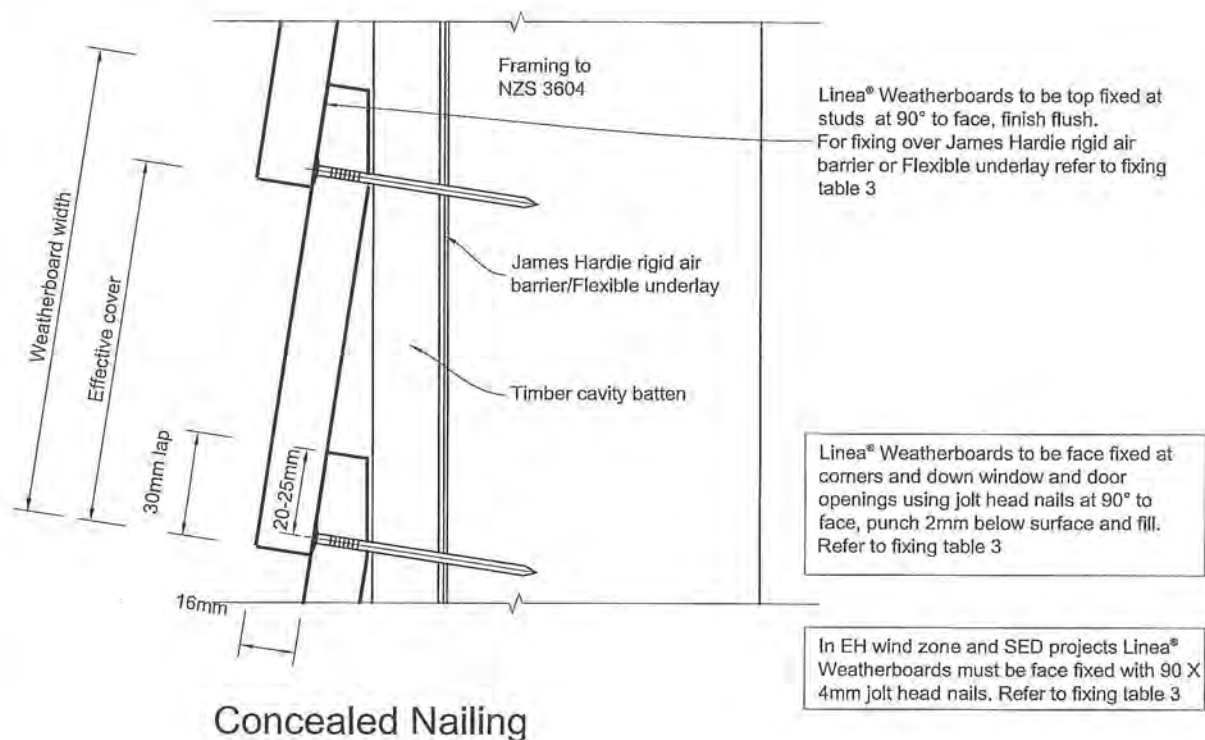




Figure 31: Timber cavity boxed corner

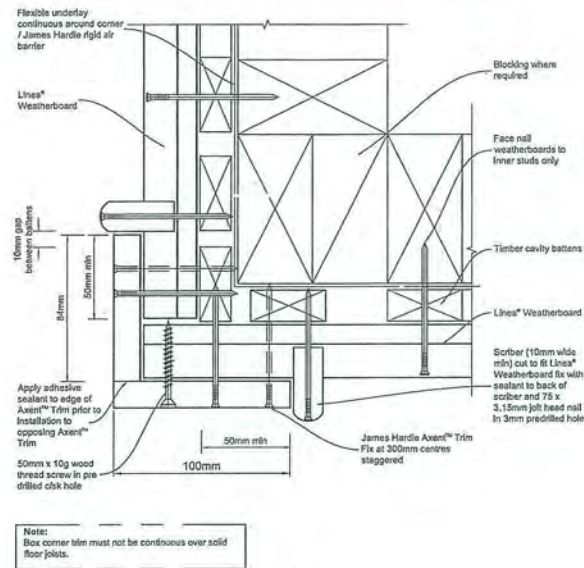


Figure 32: Timber cavity mitre corner

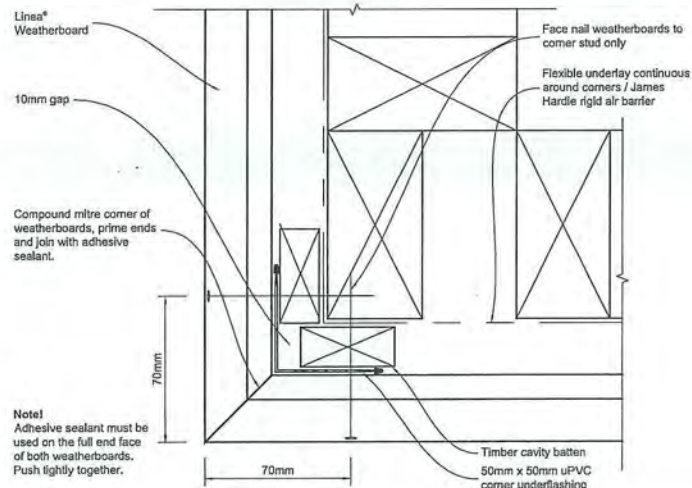


Figure 33: Timber cavity aluminium box corner

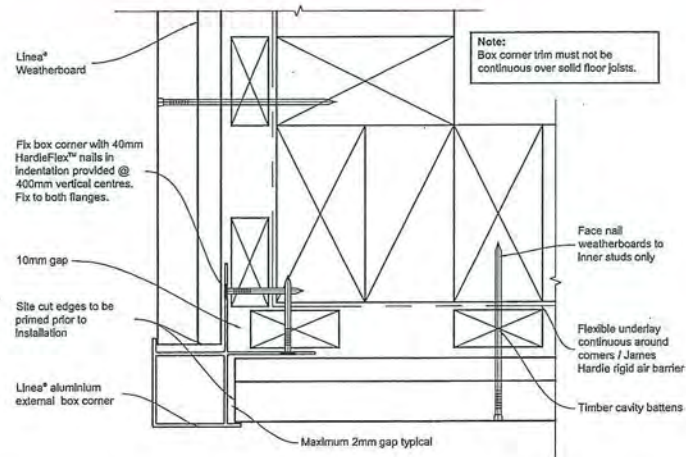
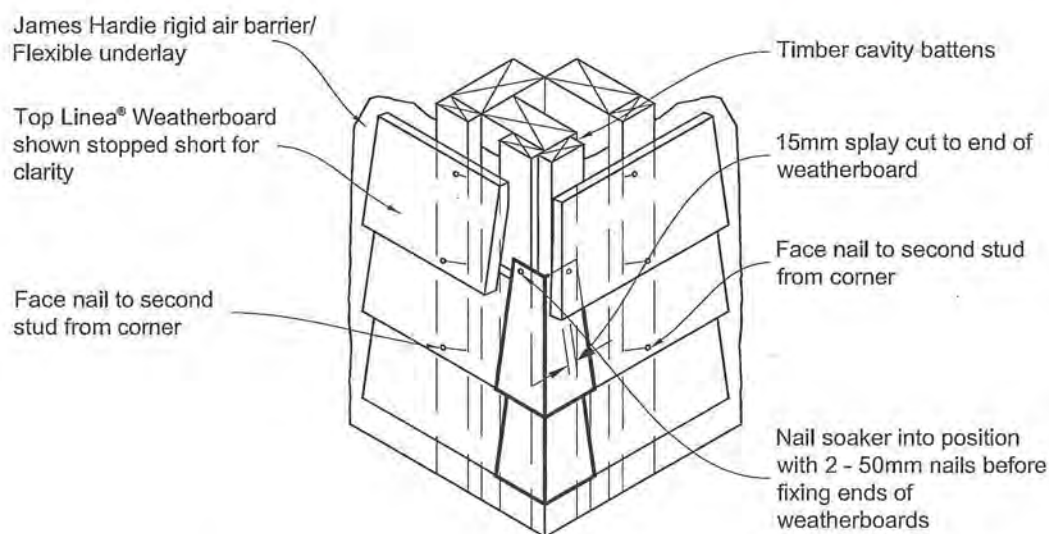


Figure 34: Timber cavity external corner soaker



Soaker material	Nail material
Copper	Copper or phosphor bronze
Aluminium	Hot dip galvanised
Stainless steel	Stainless steel

Figure 35: Timber cavity internal corner

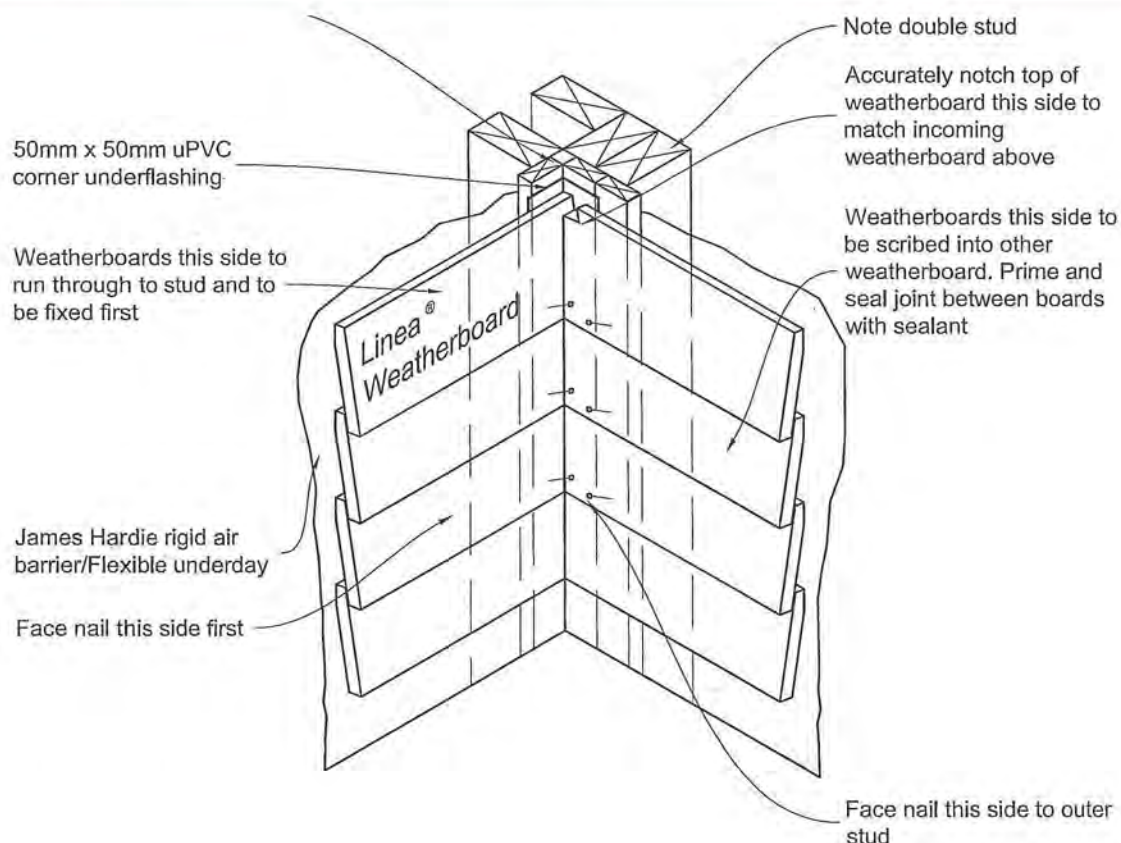




Figure 36: Timber cavity internal 90° aluminium 'W' mould corner

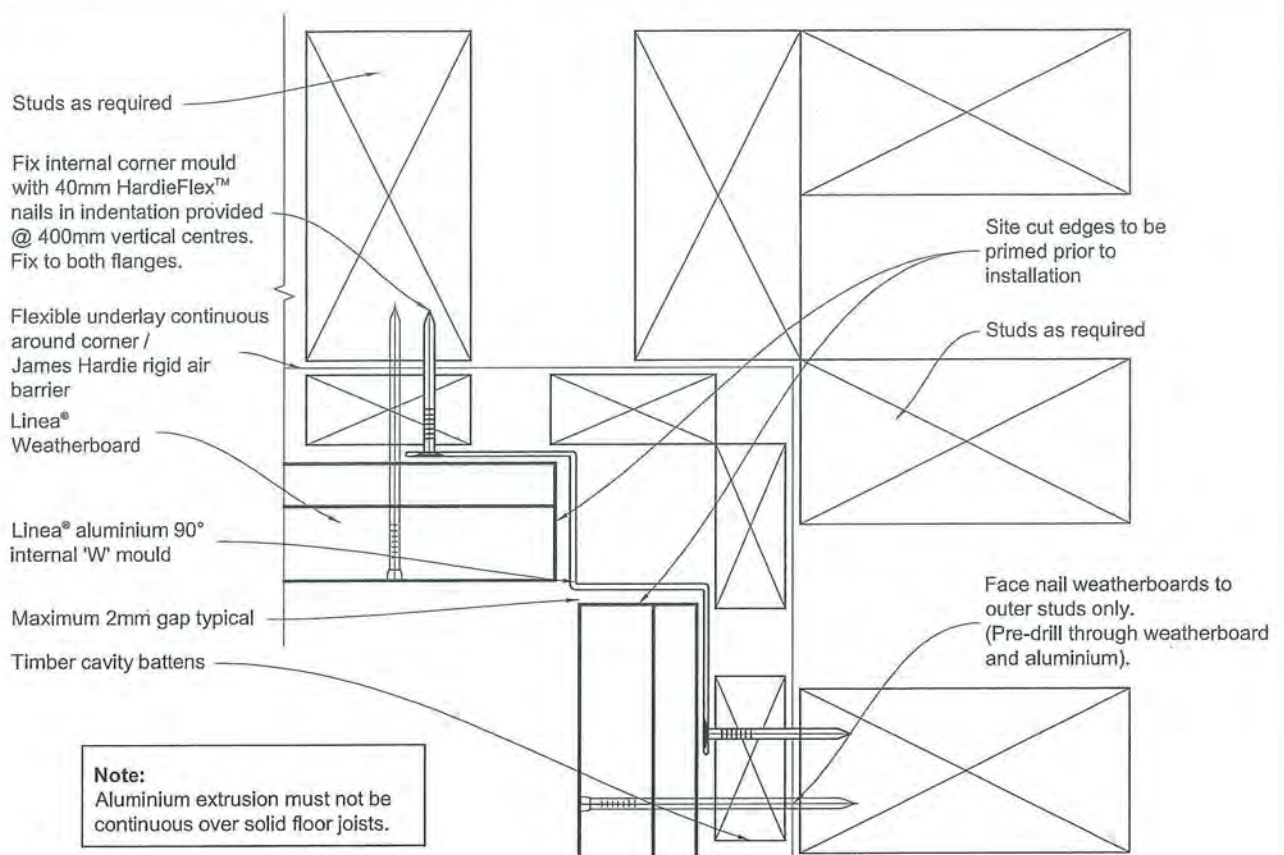


Figure 37: Timber cavity internal 135° aluminium 'W' mould corner

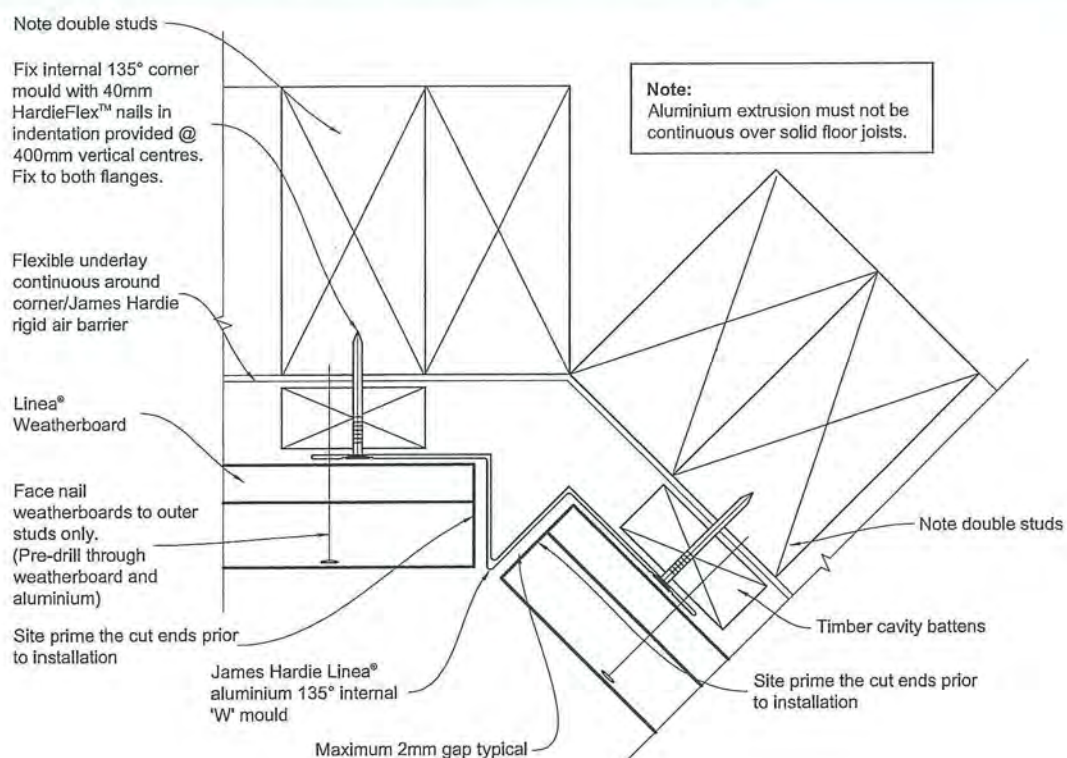
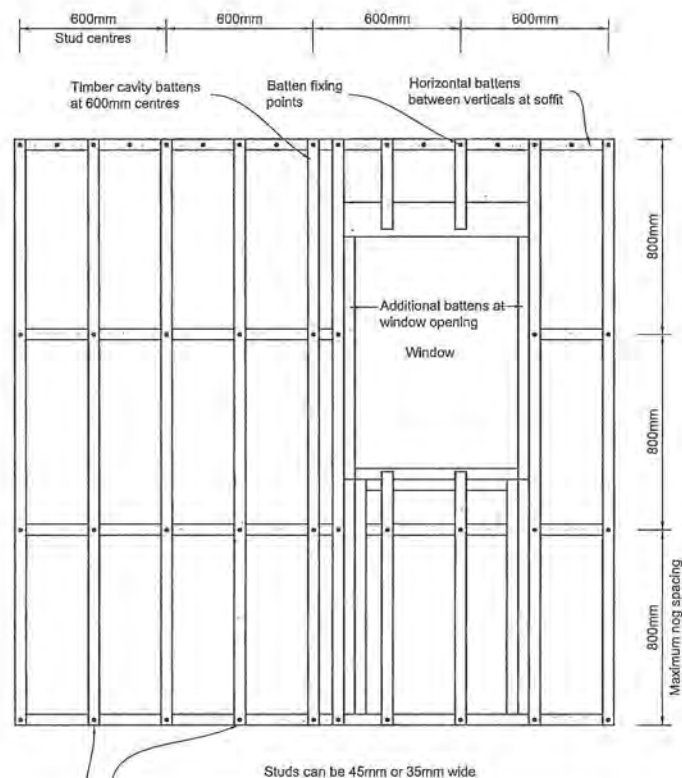
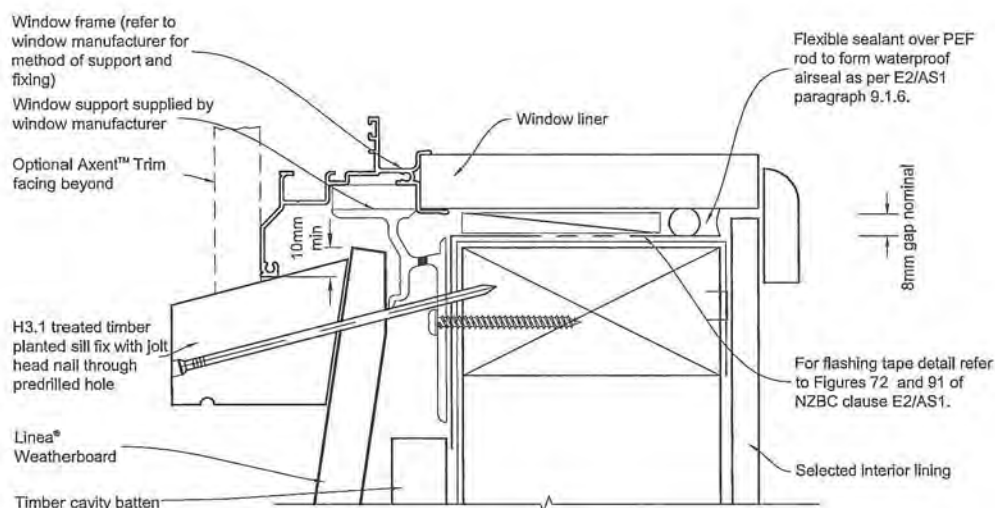


Figure 38: Timber cavity batten layout at window opening



The intermediate support for insulation between the studs could be a timber cavity batten, polypropylene tape or 75mm galvanised wire mesh. Refer to E2/AS1 Paragraph 9.1.8.5. Polypropylene tape must be fixed horizontally and drawn taut at 300mm centres.

Figure 39: Timber cavity window sill with facings



**General notes for materials section**

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and Table 20 of NZBC clause E2/AS1.
2. Flexible underlay must comply with acceptable solution E2/AS1.
3. Flashing tape must have proven compatibility with the selected flexible underlay / James Hardie rigid air barrier and other materials with which it comes into contact.

Refer to the manufacturer or supplier for technical information for these materials.



Figure 40: Timber cavity window and door head with facings

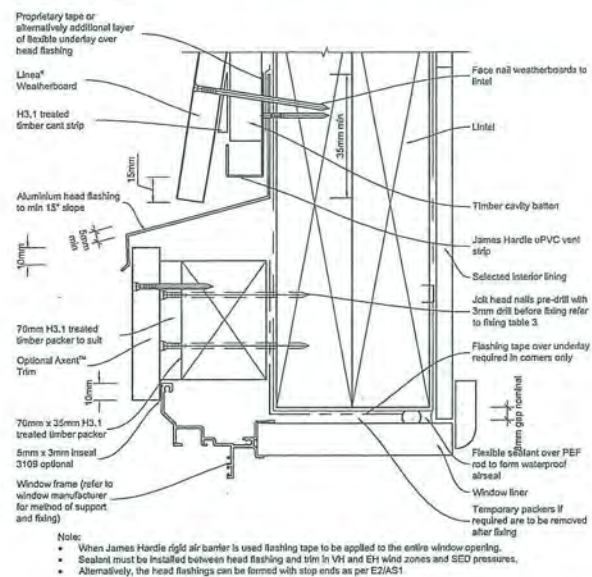


Figure 41: Timber cavity window and door jamb with facings

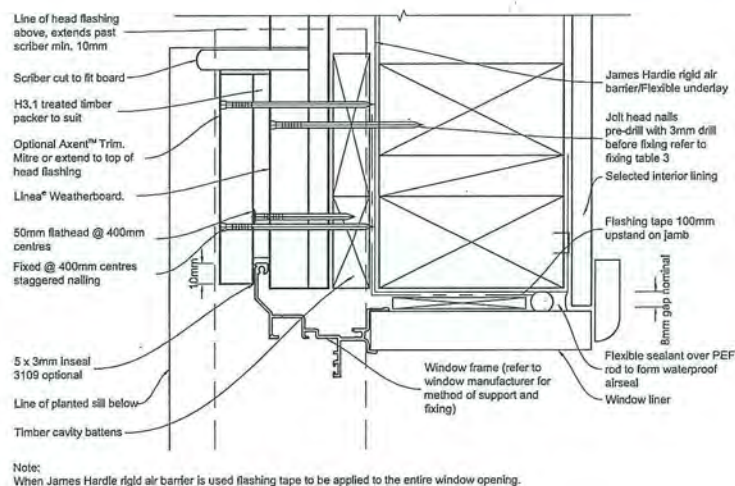


Figure 42: Timber cavity window and door sill without facings

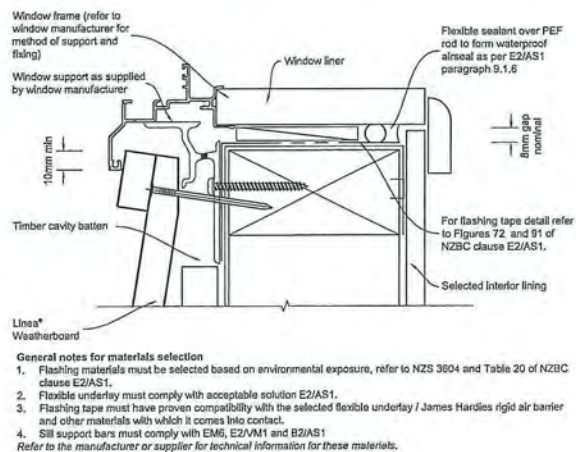
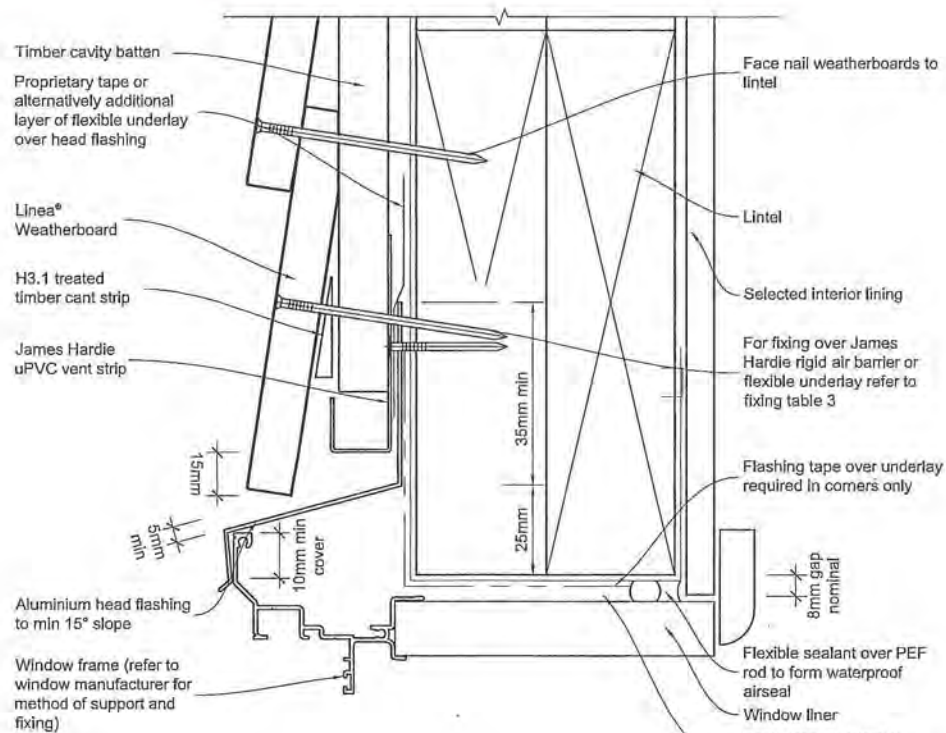


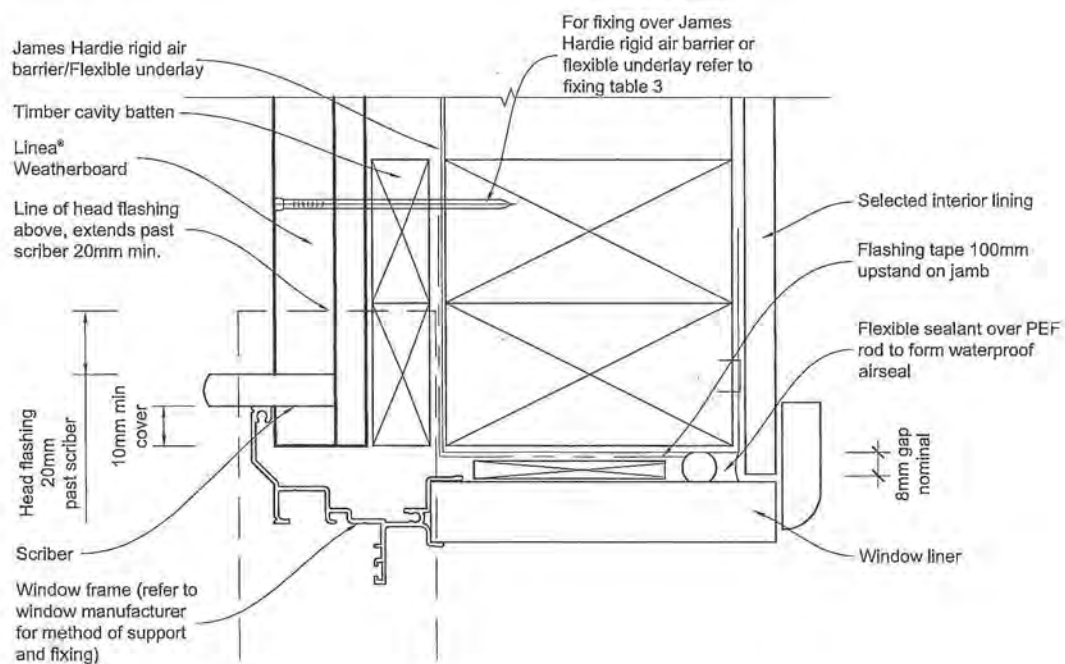
Figure 43: Timber cavity window and door head without facings



Note:

- When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening.
- Sealant must be installed between head flashing and flashing and trim in VH and EH wind zones and SED projects.
- Alternatively, the head flashings can be formed with stop ends as per E2/AS1

Figure 44: Timber cavity window and door jamb without facings



Note:

When James Hardie rigid air barrier is used flashing tape to be applied to the entire window opening.



Figure 45: Timber cavity head flashing termination

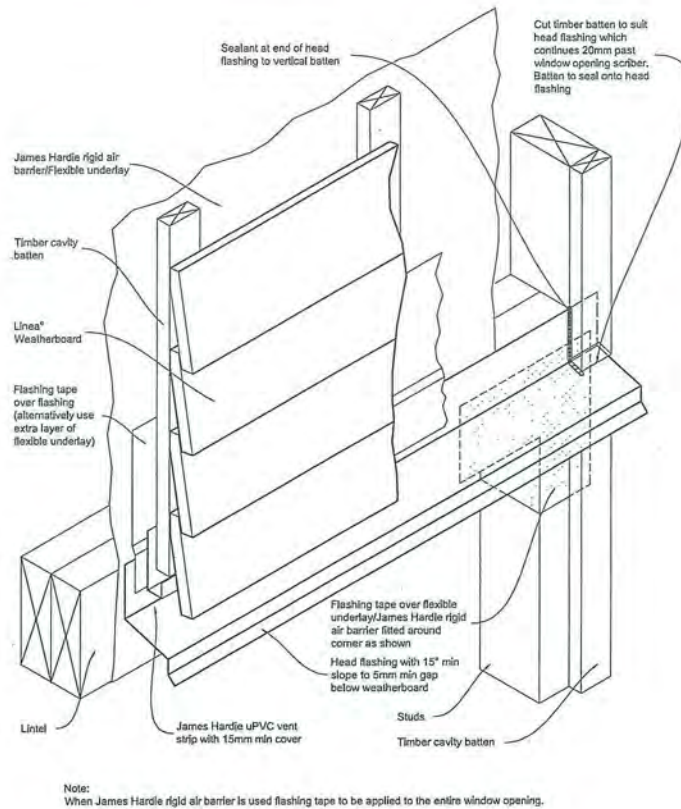


Figure 46: Timber cavity one piece apron flashing joint

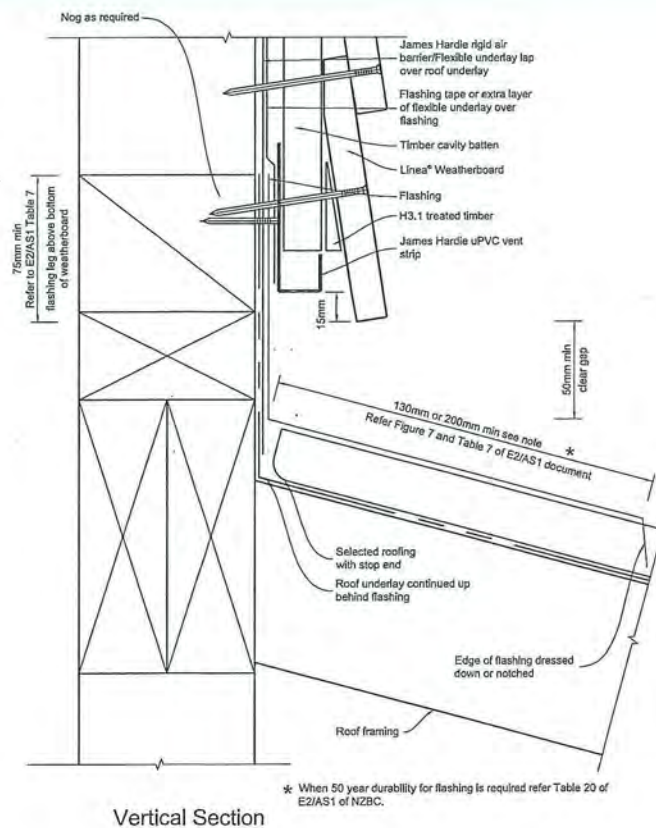


Figure 47: Timber cavity one piece gutter/wall junction

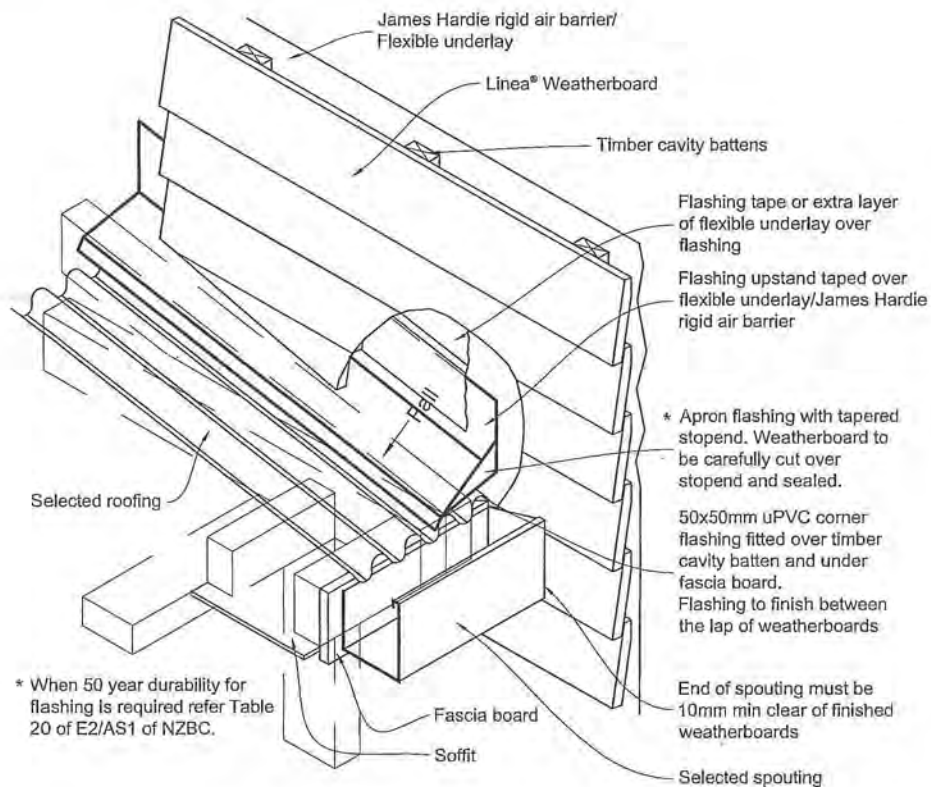


Figure 48: Timber cavity pipe penetration

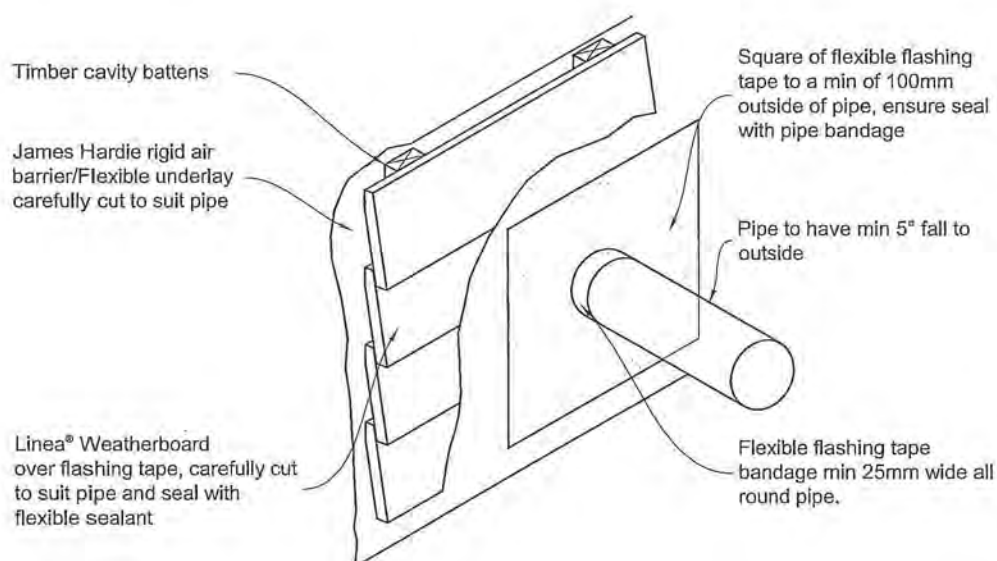
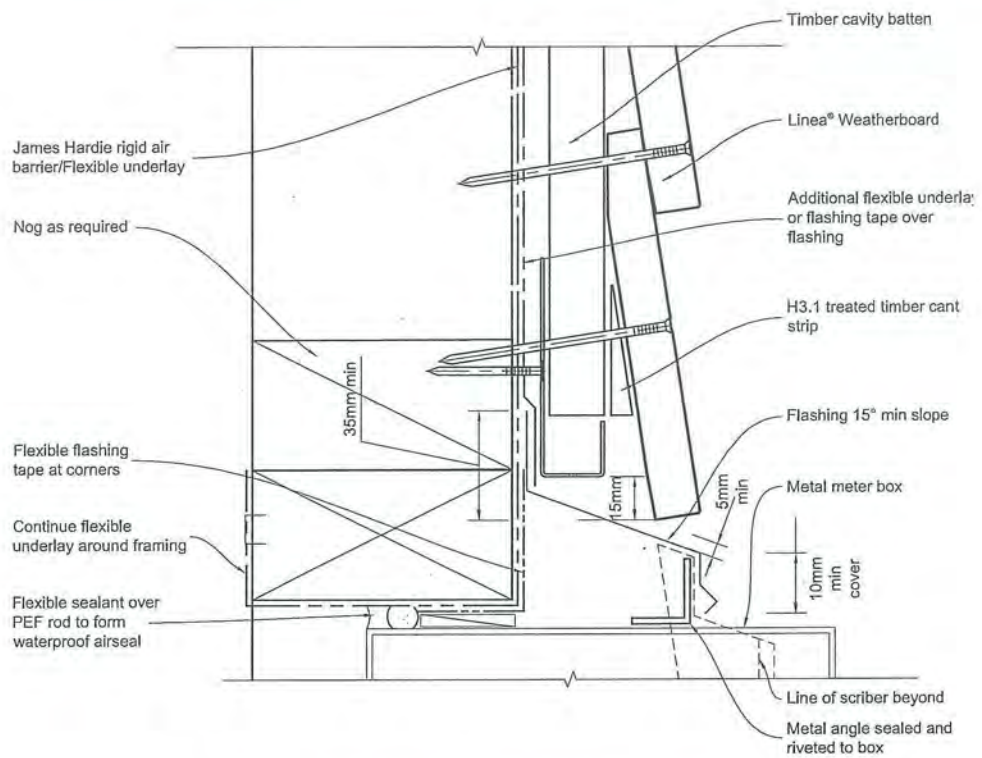


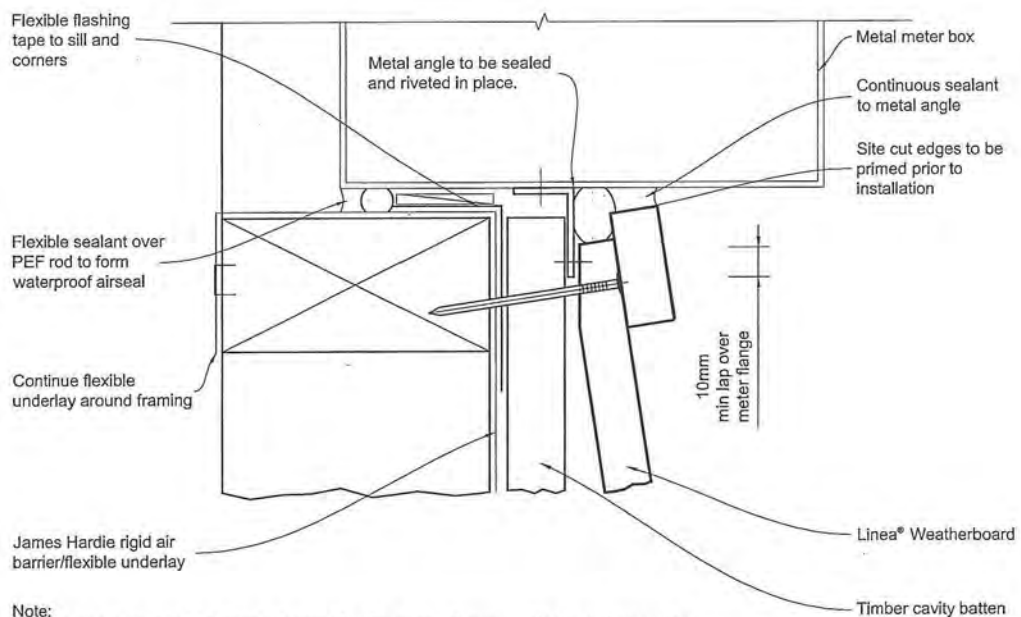


Figure 49: Timber cavity meter box at head



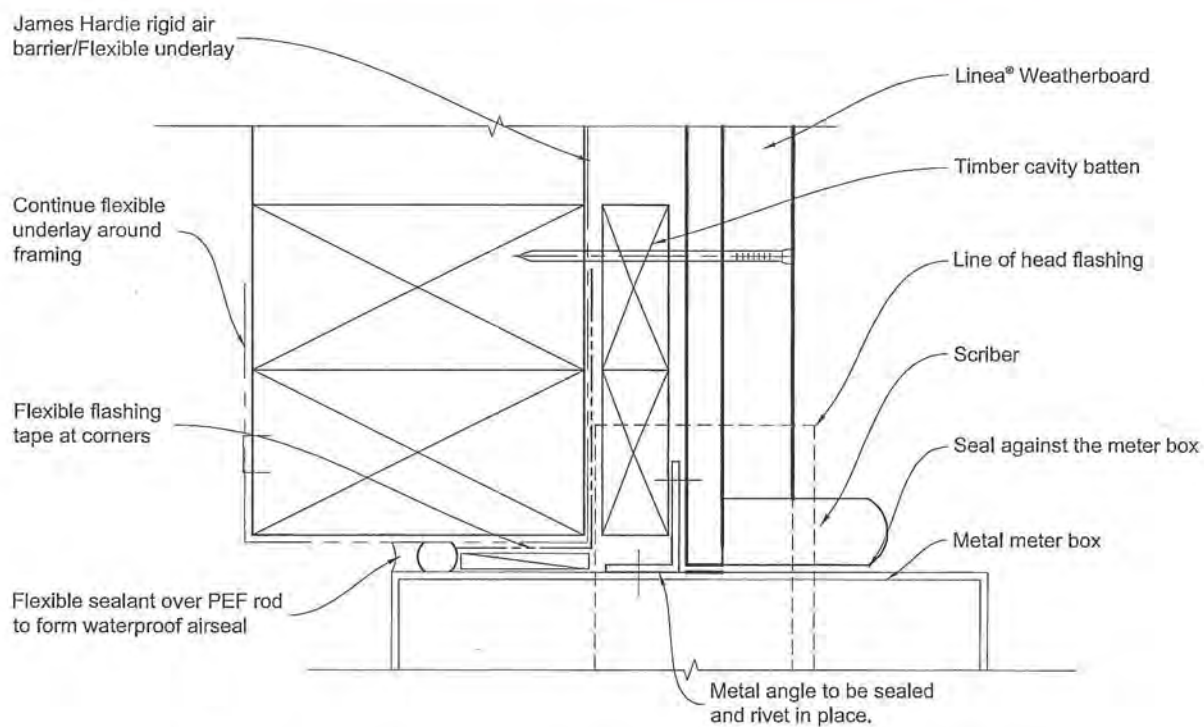
Note:  
When James Hardie rigid air barrier is used flashing tape to be applied to the entire opening.

Figure 50: Timber cavity meter box at sill



Note:  
When James Hardie rigid air barrier is used flashing tape to be applied to the entire opening.

Figure 51: Timber cavity meter box head flashing at jamb



Note:

When James Hardie rigid air barrier is used flashing tape to be applied to the entire opening.



Figure 52: Timber cavity fix meter box

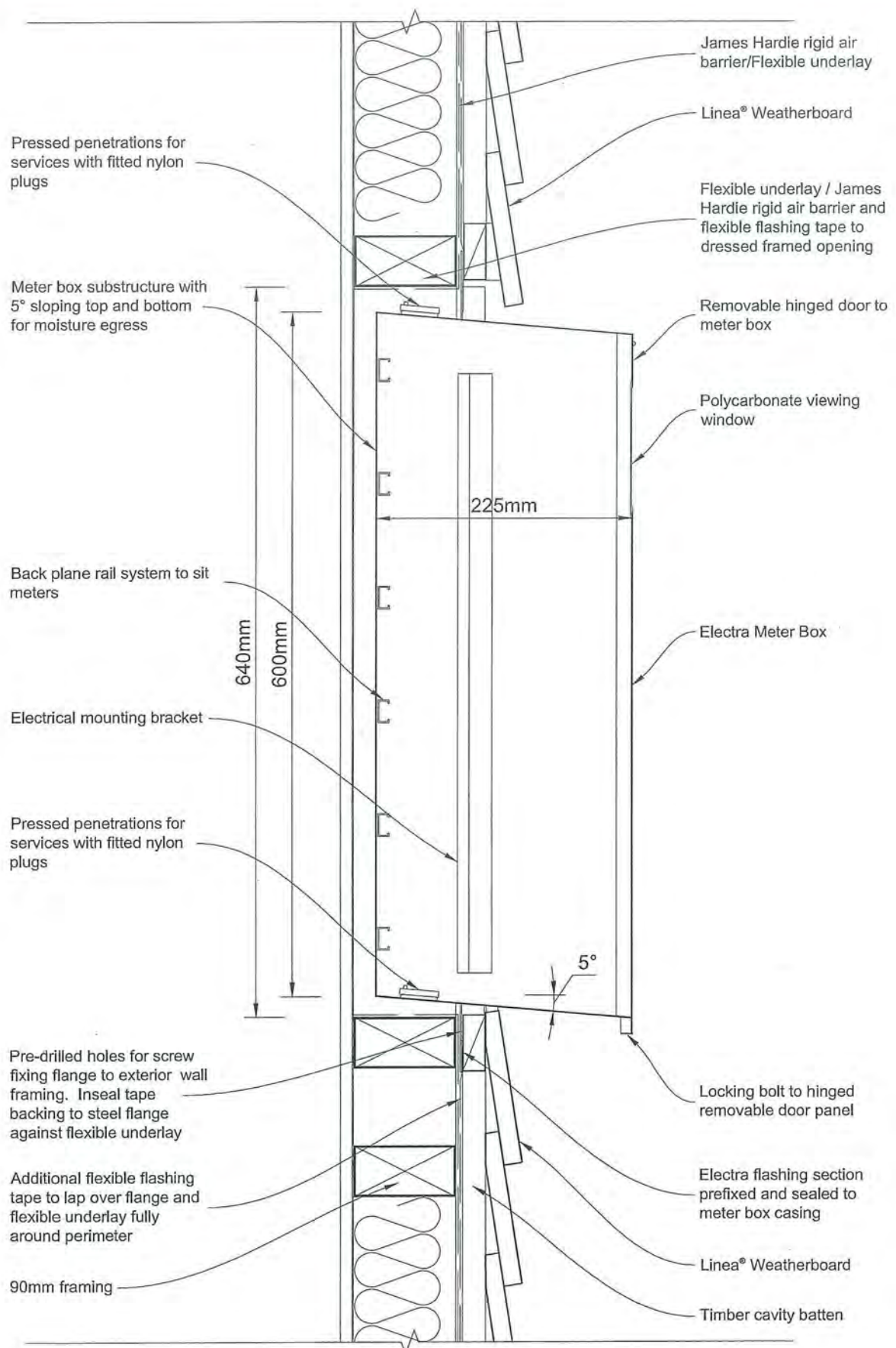
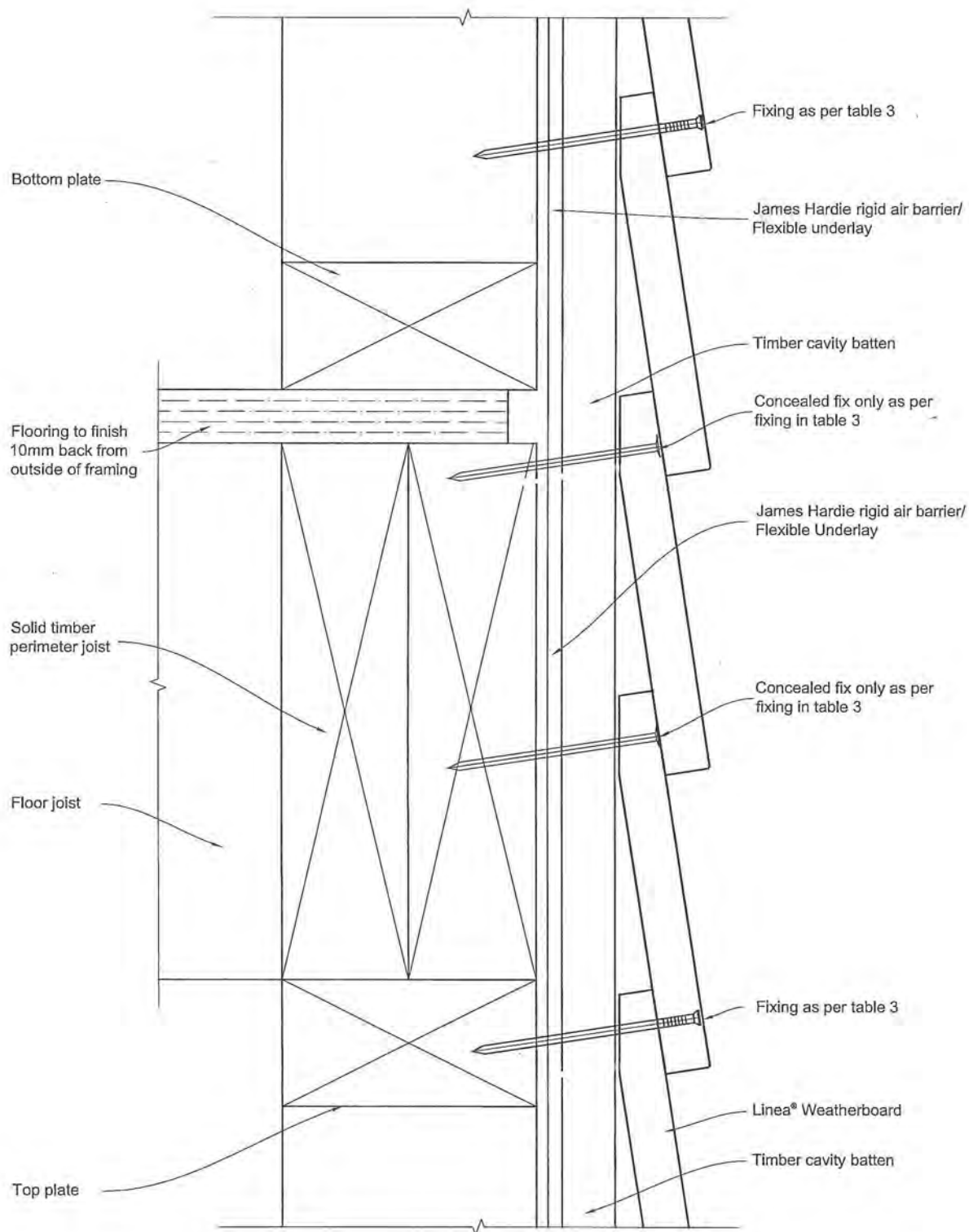


Figure 53: Floating lap over floor joist



## Vertical Section



Figure 54: Timber cavity drainage joint

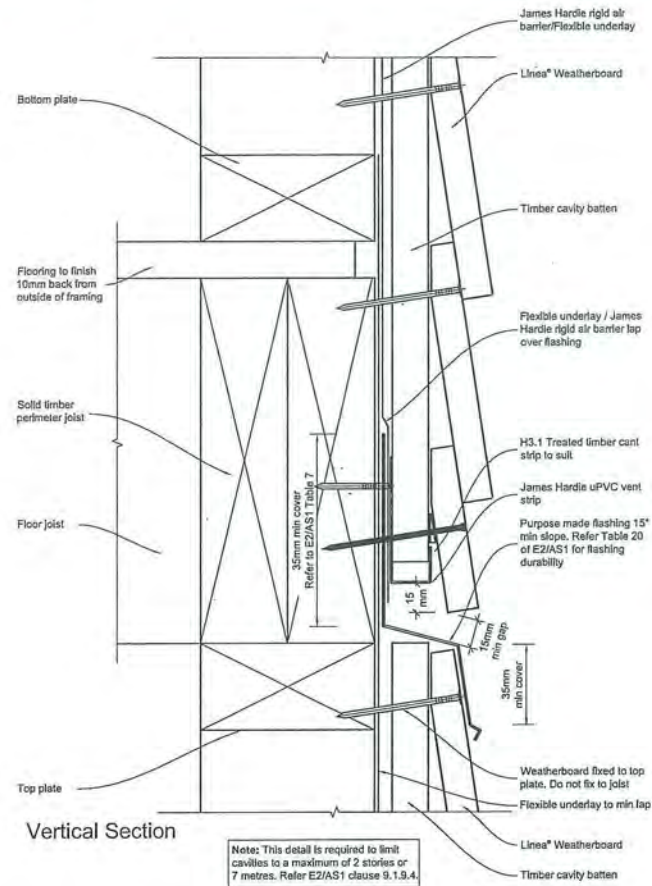


Figure 55: Timber cavity enclosed balustrade to wall

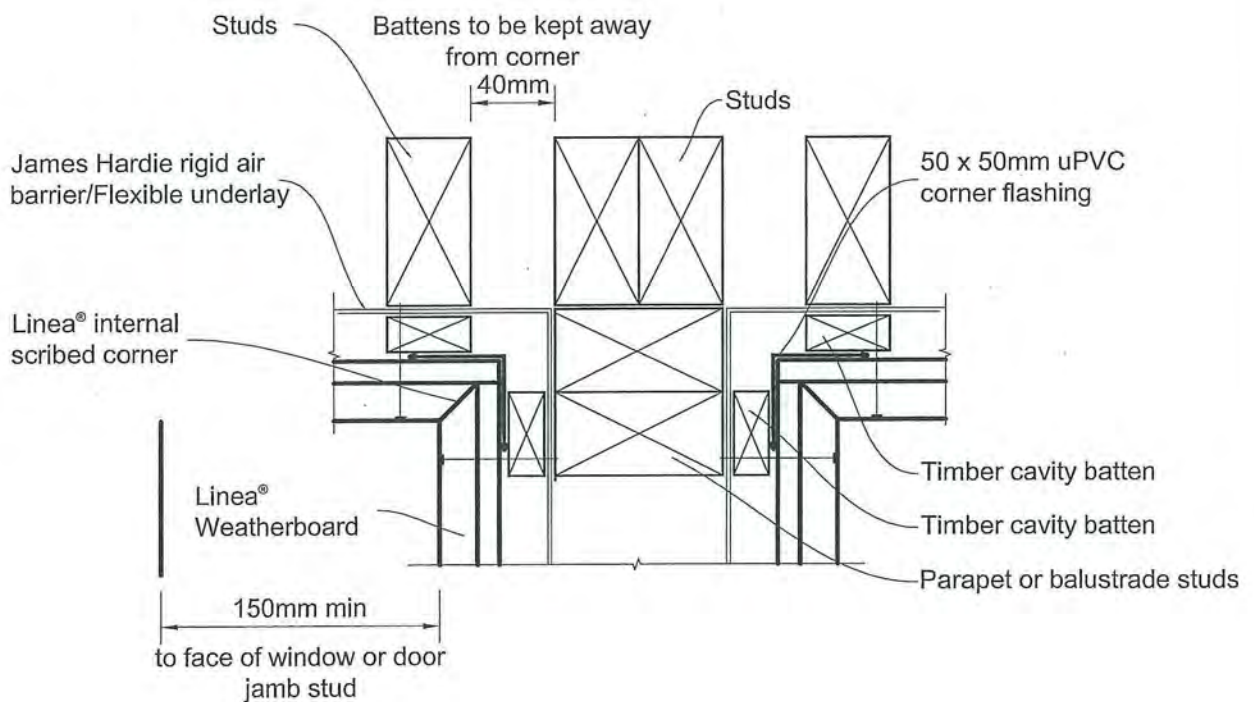


Figure 56: Timber cavity enclosed balustrade to wall

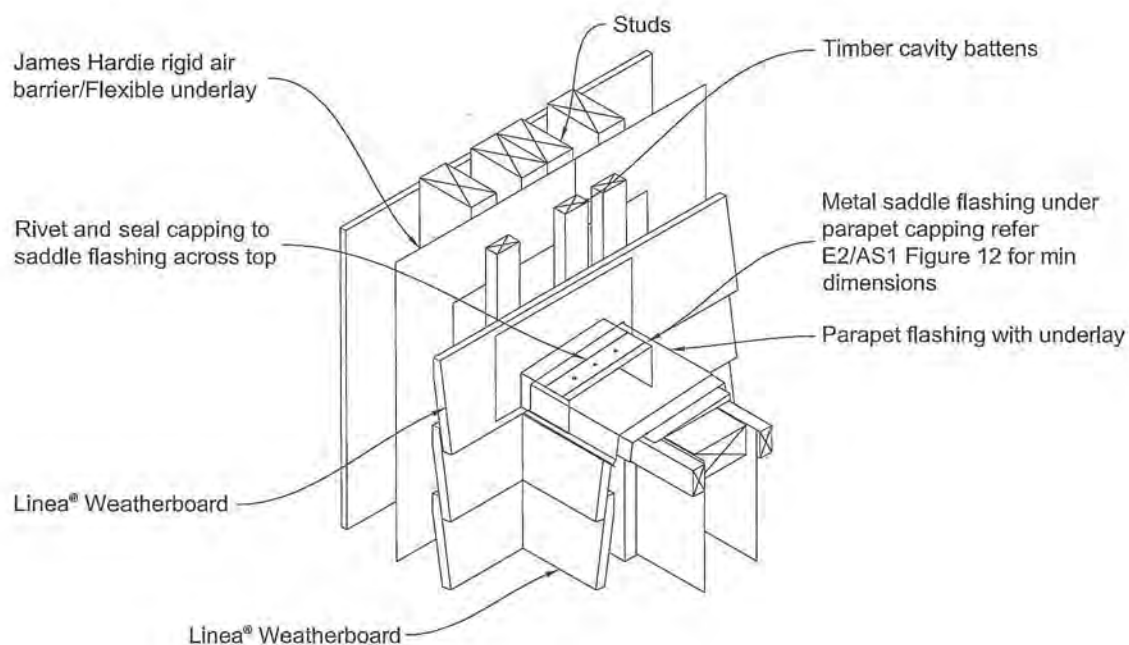
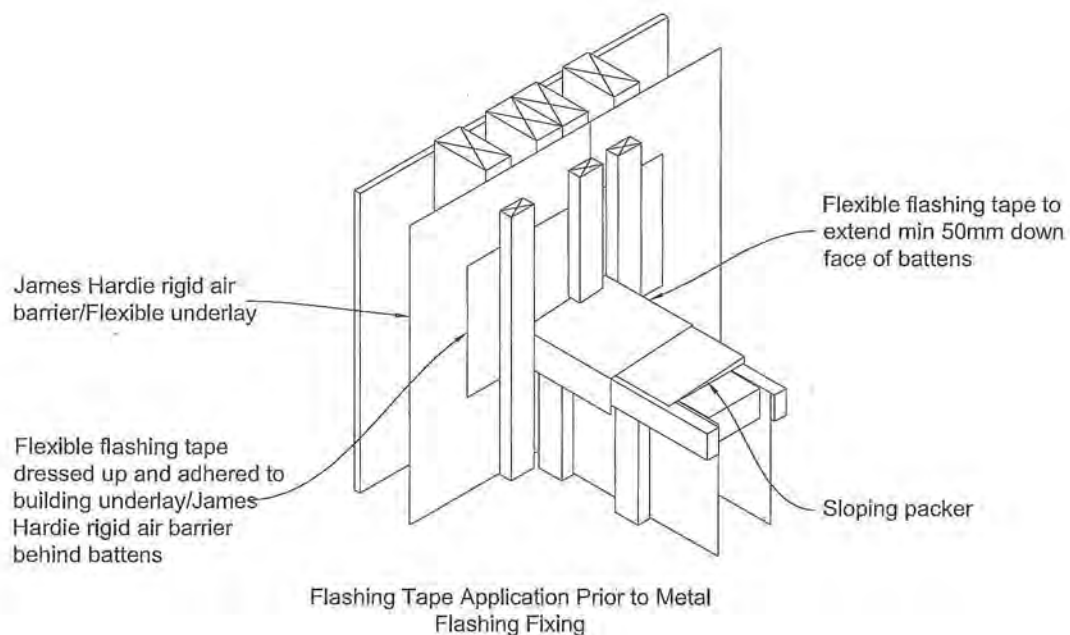
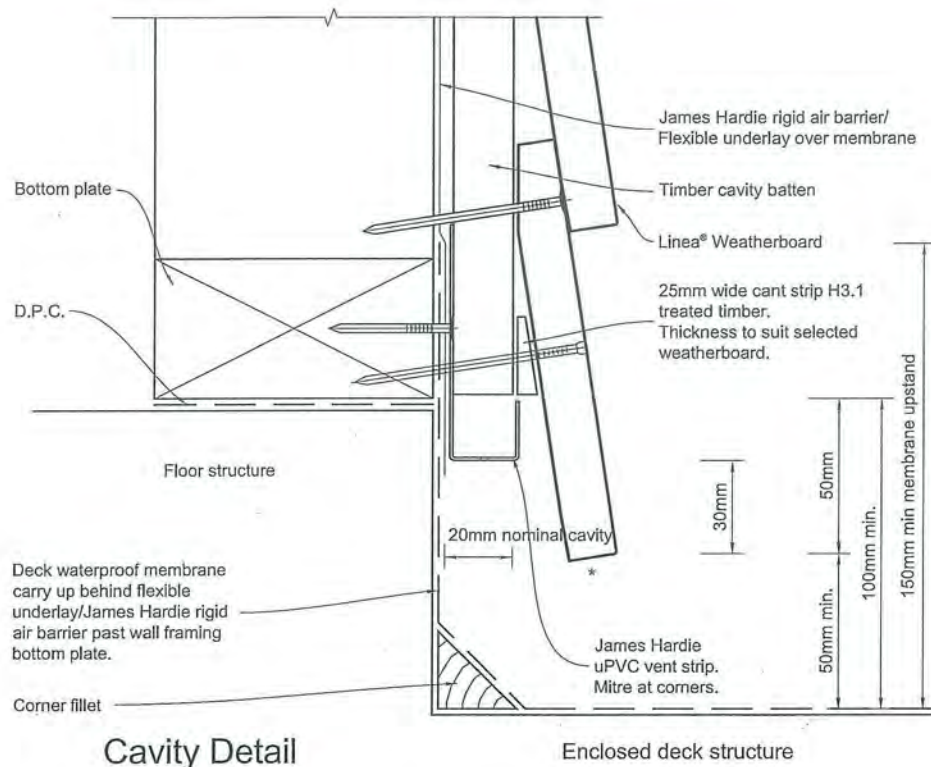




Figure 57: Timber cavity at enclosed deck



\* Drain holes in James Hardie uPVC vent strip are sufficient to achieve ventilation openings of 1000mm<sup>2</sup> per lineal metre

Figure 58: Timber cavity parapet flashing

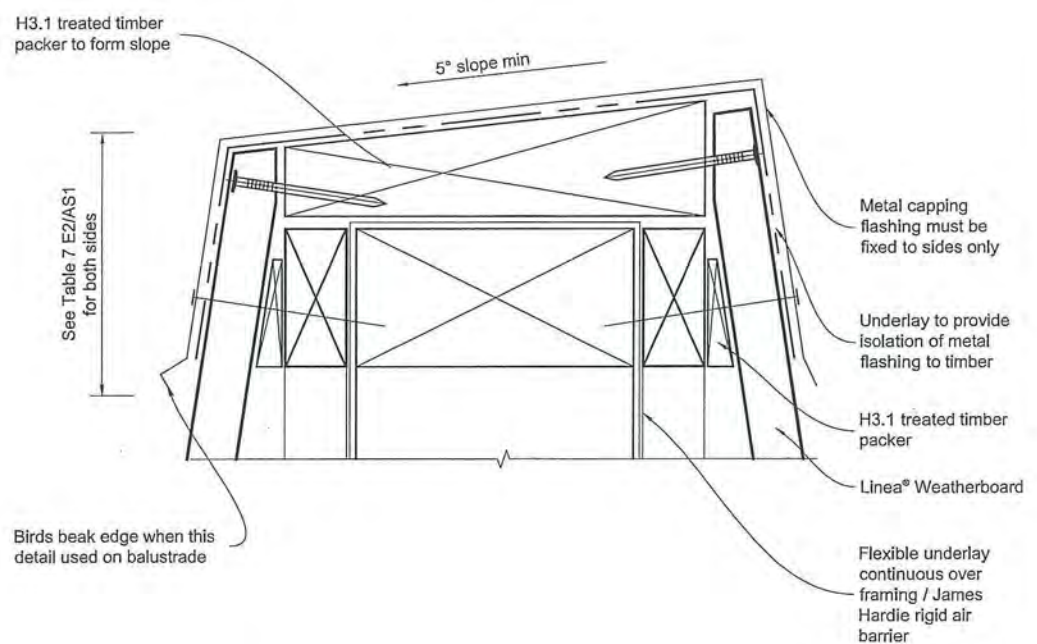
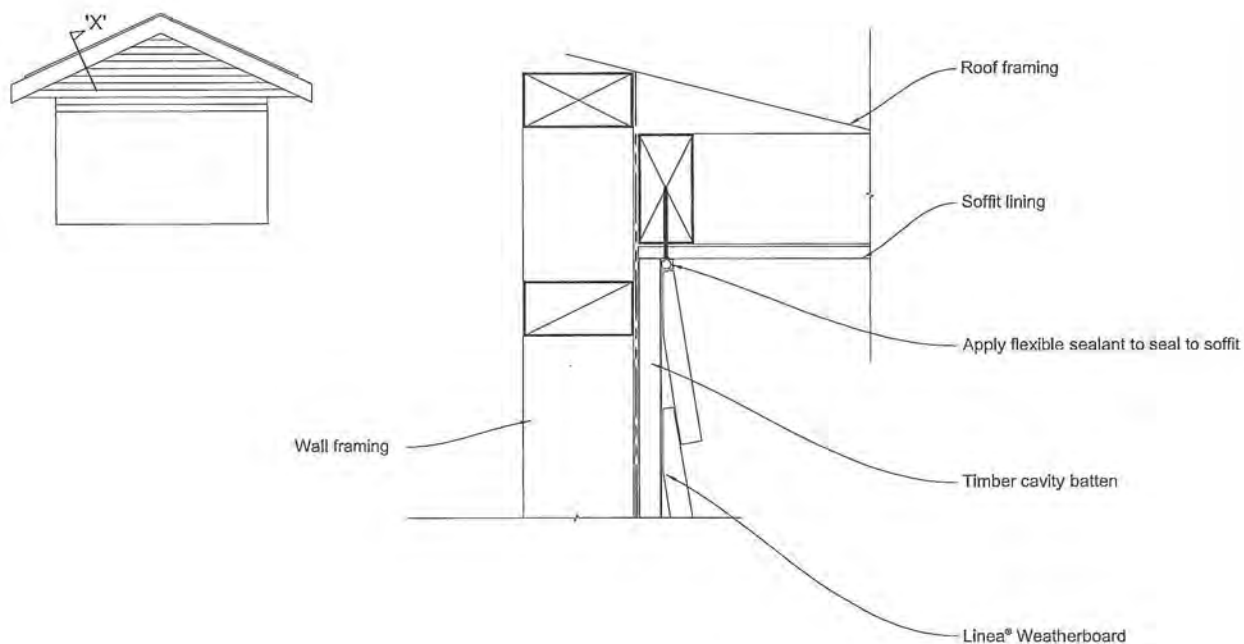


Figure 59: Linea® Weatherboard junction (section 'X') cavity to cable



The Linea® Weatherboard must be neat cut and silicone sealed to angle of soffit  
Alternatively a scotia can be scribed and sealed to Linea® Weatherboard and the soffit lining

Figure 60: Linea® Weatherboard sloping soffit and wall junction

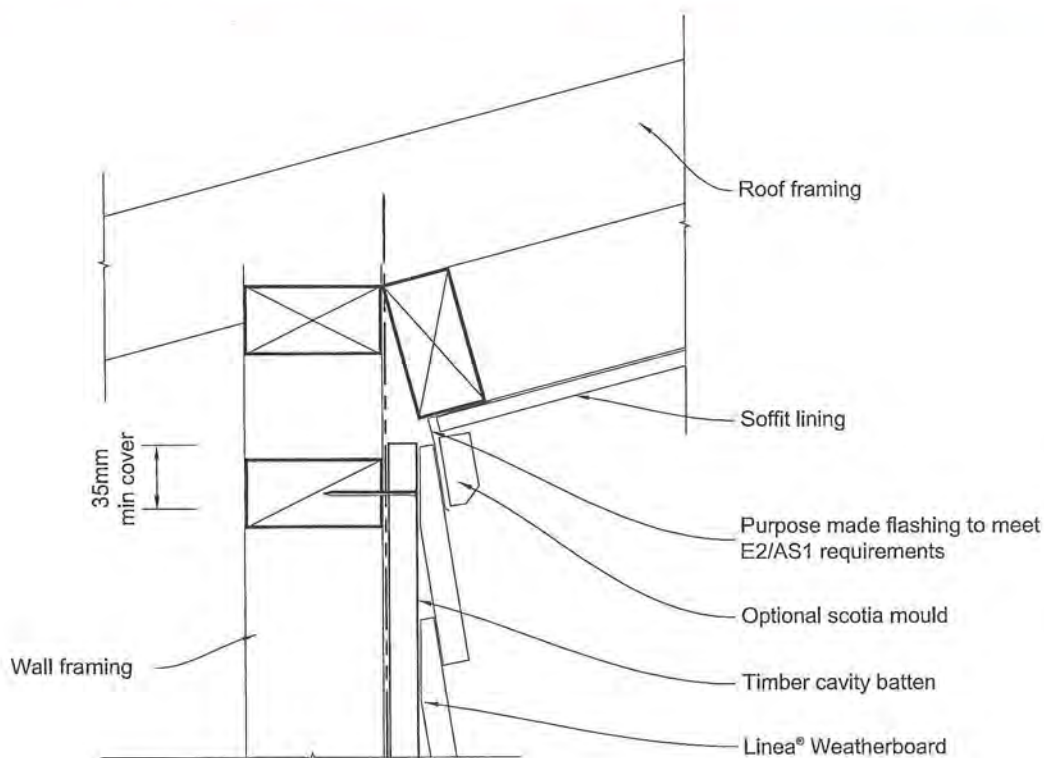




Figure 61: Timber cavity cantilevered timber deck junction

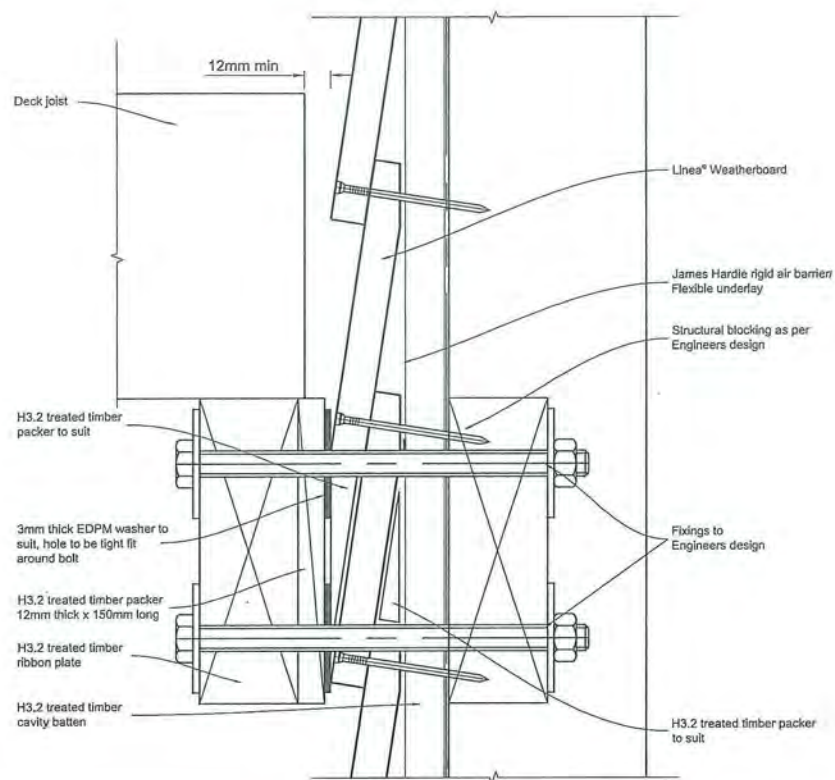


Figure 62: Linea® Weatherboard timber cavity cantilevered timber deck junction

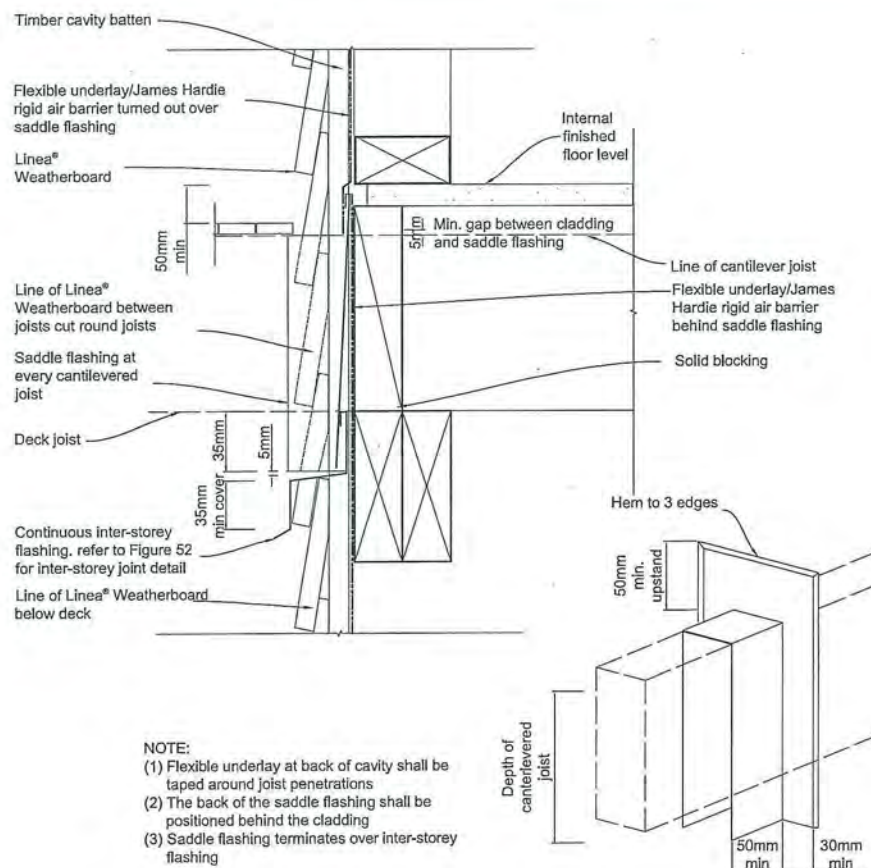
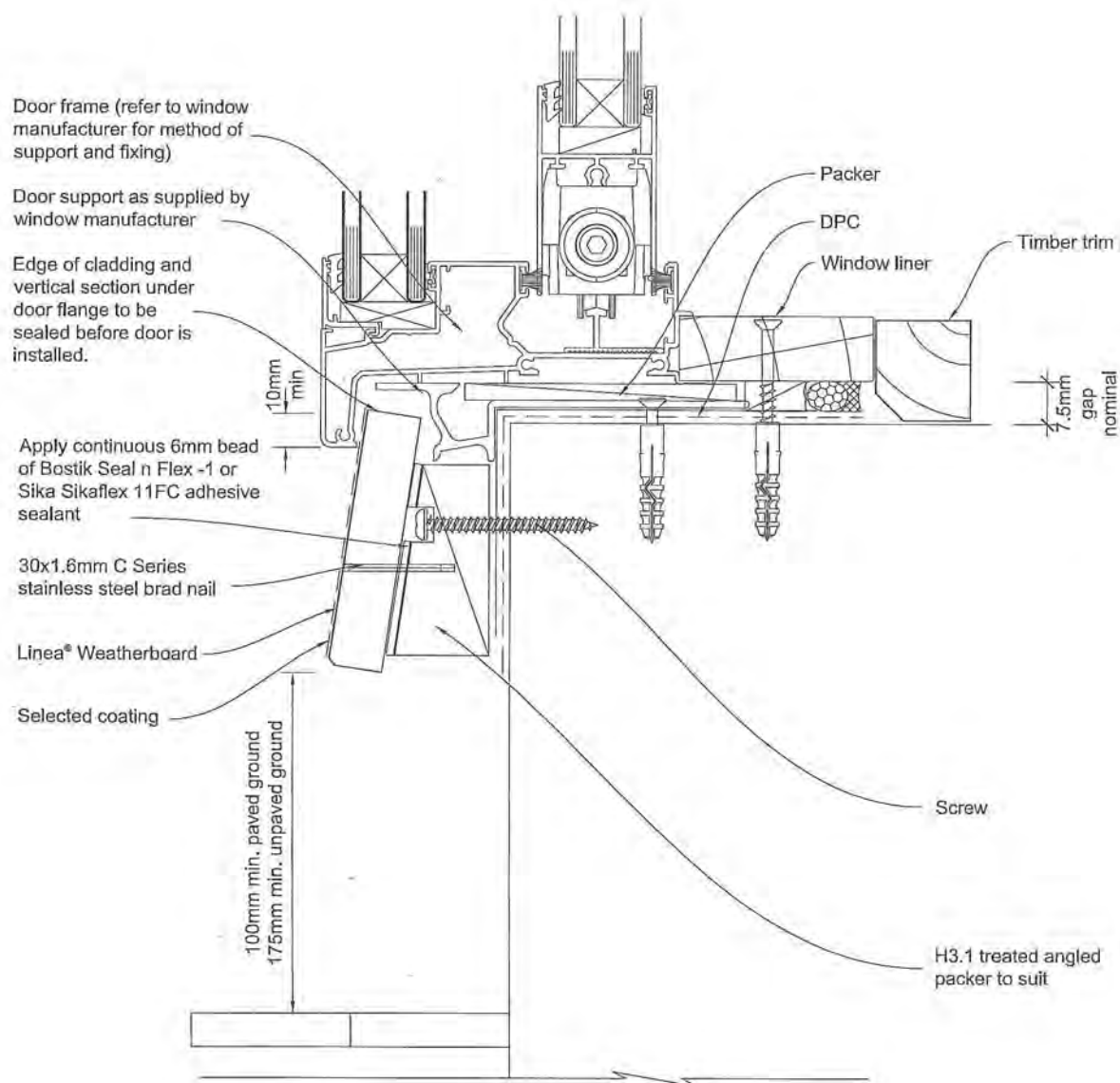


Figure 63: Door sill support detail



Refer to the manufacturer or supplier for technical information for these materials.

General notes for materials selection

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and Table 20 of the NZBC E2/AS1.
2. Building underlay must comply with acceptable solution E2/AS1.
3. Flashing tape must have proven compatibility with the selected flexible underlay and other materials with which it comes into contact.
4. Linea® Weatherboard to have sealed butt joint over batten at each corner of opening.



Figure 64: Junction between Linea® Weatherboard and fascia board

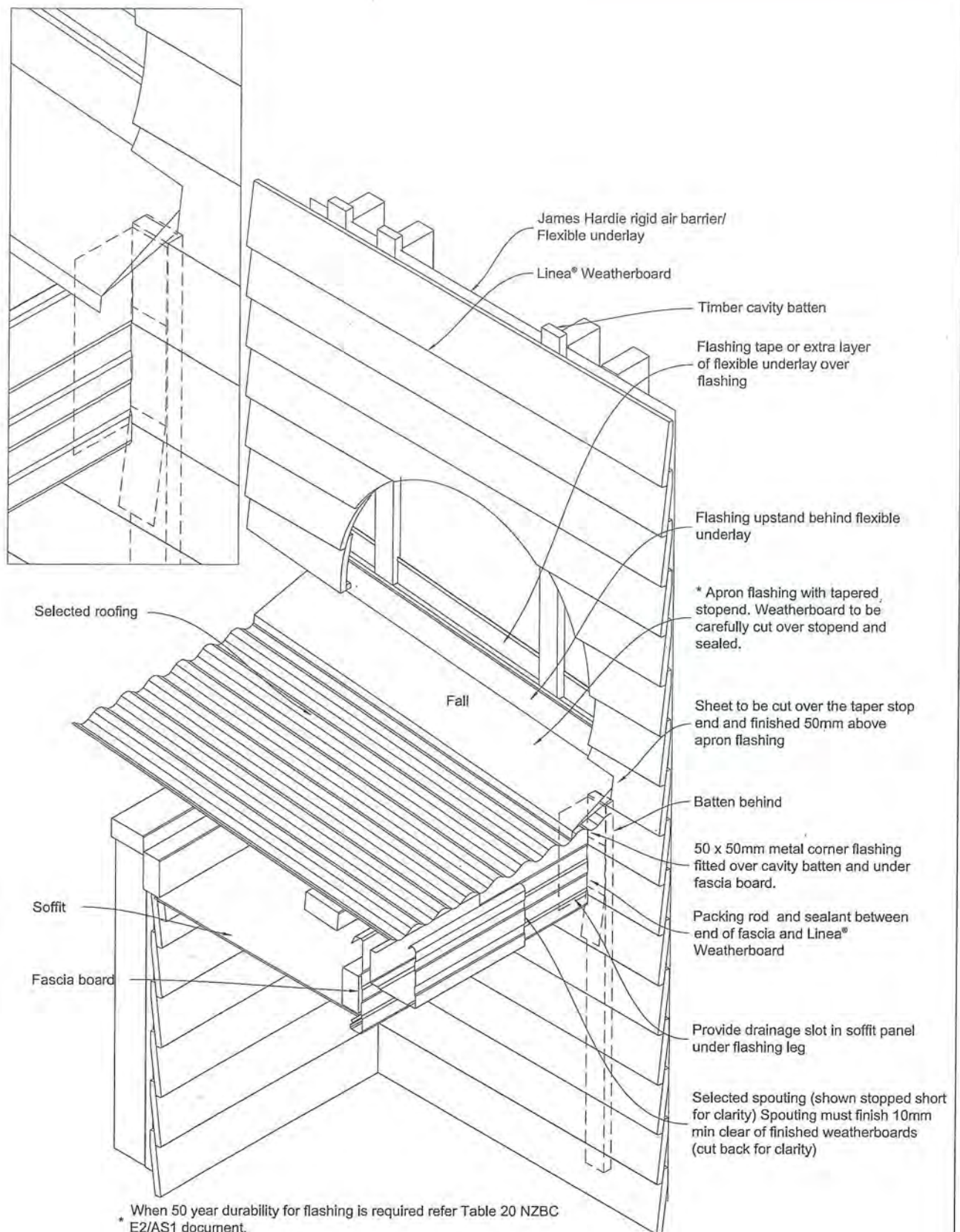
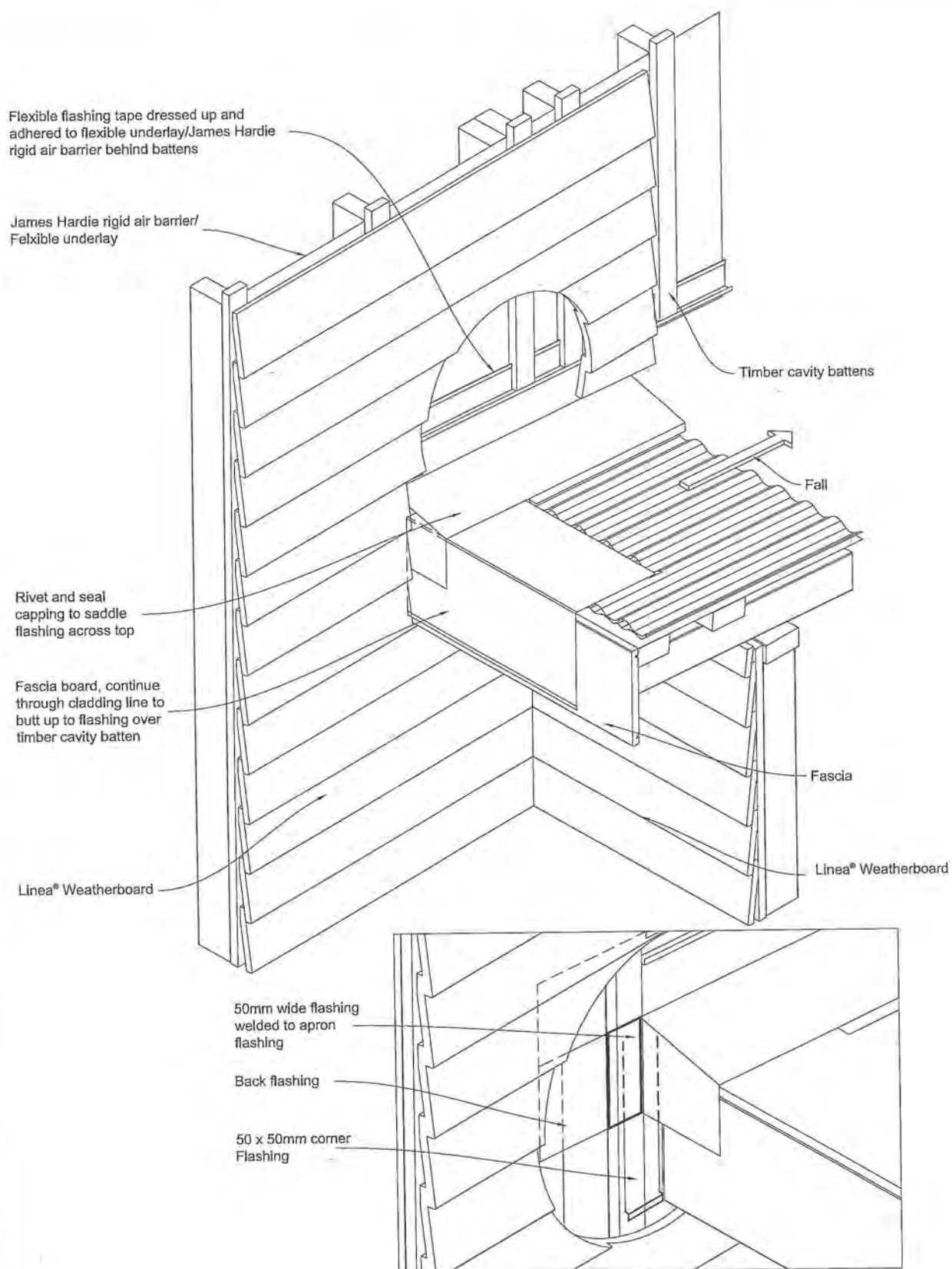


Figure 65: Exclosed roof to wall intersection





# Product Warranty

**Linea®**  
WEATHERBOARD

**April 2016**

Warranty: James Hardie New Zealand ("James Hardie") warrants for a period of 25 years from the date of purchase that the Linea® Weath\*board (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 Axent™ Trim and 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® Weath\*board when installed in accordance with the Linea® Weath\*board technical specification, 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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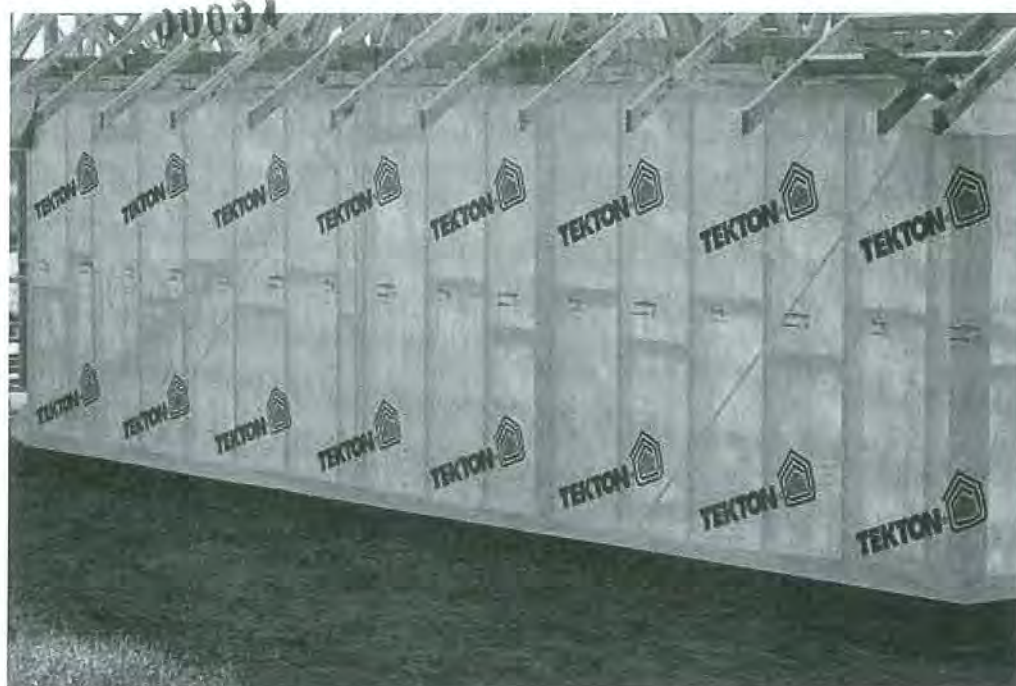
## BRANZ Appraised

Appraisal No. 548 [2013]

## TEKTON® BUILDING WRAP

### Appraisal No. 548 [2013]

This Appraisal replaces BRANZ Appraisal No. 548 [2007], issued 27 July 2007.  
Amended 17 December 2013.



### 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 a 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 regards 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 regards 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 underlays on timber and steel framed buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
  - 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 and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Alternative Solution** in terms of the New Zealand Building Code compliance.

## Technical Specification

- 4.1 Tekton® Building Wrap is a 100 g/m<sup>2</sup> light grey sheet polypropylene membrane material approximately 0.6 mm thick.
- 4.2 The product is supplied in rolls 1.370 m x 74 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 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 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Tekton® Building Wrap. 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

### Timber and Steel Framing

- 7.1 Studs must be provided at maximum 600 mm centres. Dwaings must be fitted flush between the studs at maximum 1200 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 ultra violet 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 as called up in 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 as called up in 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 7.4]
Vapour Resistance	$\leq 7 \text{ MN s/g}$	Pass
Water Resistance	$\geq 20 \text{ mm}$	Pass
pH of Extract	$\geq 5.5$ and $\leq 8$	9.78 [Note 1]
Shrinkage	$\leq 0.5\%$	Pass
Mechanical	Edge tear and tensile strength	<b>Edge tear:</b> Machine direction = 228 N Cross direction = 186 N <b>Tensile strength:</b> 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 in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.2.
- 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 (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 underlays.

### **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 ultra-violet 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 Solutions C/AS2 to C/AS6, 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 Tekton® Building Wrap from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

### **External Moisture**

- 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 Requirements

- 13.1 Installation must always be carried out in accordance with the Technical Literature and this Appraisal, by competent tradespersons with an understanding of wall wrap installation.

### 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 ultra-violet 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.

## 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.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 [Amendment 5, 1 August 2011].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

## Amendment

**Amendment No. 1, dated 17 December 2013.**

This Appraisal has been amended to fix an editorial error.





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.

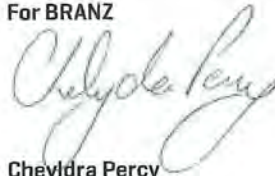
The Appraisal is issued only to Marshall Innovations Limited, and is valid until further notice, subject to the Conditions of Appraisal.

### 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 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.

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**For BRANZ**



**Cheyldra Percy**  
Chief Executive

Date of Issue:  
16 December 2013



#### Product Description

40 Below Window Tape is a self-adhesive flashing tape to seal around windows, doors, and other joinery openings as a secondary defence against water penetration.

#### Roll Sizes

H 75mm x L 20m    H 150mm x L 10m  
H 100mm x L 20m    H 200mm x L 20m  
H 150mm x L 20m

#### Certificate Holder

**Masons Plastabrick Ltd**  
9A Parkhead Place  
Albany Auckland 0632 N  
0800 522 533  
www.mpb.co.nz



#### Certification Body

**CertMark International Pty Ltd**  
T/A CertMark New Zealand  
ABN: 80 111 217 568  
JAS-ANZ Accreditation No. Z4450210AK  
PO Box 321 Tuakau 2121  
+64 (09) 951 8246  
www.CertMark.org

# CERTIFICATE OF CONFORMITY

This is to certify that  
**40 Below Window Tape**



#### Complies with the New Zealand Building Code:

1. B2.3.1 (b).
2. B2.3.2.
3. E2.3.2.
4. F2.3.1.

#### Product Purpose or Use

40 Below Window Tape is a self-adhered, flashing tape designed to protect windows penetrations from moisture infiltration. When integrated into the wall system and used properly, the tape will provide a secondary defence against water penetrating. 40 Below Window Tape can also be used as a Rigid Air Barrier Tape.

#### Subject to the following Conditions & Limitations:

- a. The certificate holder must maintain compliance with the conditions set out in Section 15 of the Building (Product Certification) Regulations 2008.
- b. This product can be applied in temperature ranges of between -40c to +65c.
- c. Ensure all surfaces to which 40 Below Window Tape is applied are clean, dry and free of dust.
- d. 40 Below Window Tape is to be applied only in areas as described in the Masons 40 Below Window Tape Installation Instruction April 2014 and on the packaging. It should not be used in areas where it has the potential to be exposed to heat such as chimney flues.
- e. When applying 40 Below Window Tape to LOSP treated timber, ensure the solvent has been allowed to flash off prior to installing the product. It is suggested that a minimum of one (1) week is allowed for.
- f. 40 Below Window Tape when used, installed and maintained in accordance with the requirements outlined in 40 Below Window Tape technical brochure April 2014, contributes to the requirements of Acceptable Solution E2/AS1, Clause 9.1.5 (b) (i).

**John Thorpe**  
CertMark International Pty Ltd

19/05/2016  
Date of Issue

CMA-CM40098 (Rev1)  
Certificate Number  
Revised June 2016

- This certificate is issued by an independent certification body accredited by the product certification accreditation body appointed by the Chief Executive of the Ministry of Business, Innovation & 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 to 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 product(s) referred to in this certificate
- It is advised to check that this Certificate of Conformity is currently valid and not withdrawn, suspended or superseded by a later issue by referring to the MBIE website, [www.mbie.govt.nz](http://www.mbie.govt.nz)
- This certificate may only be reproduced in its entirety.







## BRANZ Appraised

Appraisal No. 452 [2013]

## SIKA BOOM® AIR SEAL

Appraisal No. 452 [2013]

This Appraisal replaces BRANZ Appraisal No. 452 [2007] dated 29 May 2007.

### BRANZ Appraisals

Technical Assessments of products for building and construction.



BUILDING TRUST

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#### BRANZ

#### BRANZ

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RD1, Porirua 5381

Private Bag 50 908

Porirua 5240,

New Zealand

Tel: 04 237 1170

[branz.co.nz](http://branz.co.nz)



## Product

- 2.1 Sika Boom® is a self-expanding polyurethane foam air seal used around window and door penetrations and other cladding fenestration trim cavities to assist with weathertightness and energy efficiency.

## Scope

- 2.1 Sika Boom® has been appraised for use as an air seal around window and door penetrations and other cladding fenestration trim cavities in 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,
  - situated in NZS 3604 Wind Zones up to, and including Extra High.
- 2.2 Sika Boom® has also been appraised as an air seal with window and door joinery that is designed and manufactured in accordance with NZS 4211, situated in NZS 3604 Wind Zones up to, and including Extra High, and where the cladding is an Alternative Solution and/or the building is outside the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1. The weathertightness design of the window and door joinery penetrations and other cladding fenestration trim cavities in these situations has not been assessed and is outside the scope of this Appraisal.

## Building Regulations

### New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Sika Boom® Air Seal, 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. Sika Boom® Air Seal meets this requirement. See Paragraphs 8.1 and 8.2.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.2. When used as part of a cladding system, Sika Boom® Air Seal will contribute to meeting this requirement. See Paragraphs 10.1 – 10.4.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Sika Boom® Air Seal meets this requirement and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Acceptable Solution** in terms of New Zealand Building Code compliance as follows:

- self-expanding foam air seal in accordance with NZBC Acceptable Solution E2/AS1 Paragraph 9.1.6.

3.3 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance as follows:

- assisting the weathertightness performance of the building envelope in accordance with Paragraph 2.2 of this Appraisal.

## Technical Specification

4.1 Products and accessories supplied by Sika [NZ] Ltd are as follows:

### Air Seal

- **Sika Boom®** – a single component self expanding moisture cure polyurethane foam. Available as Sika Boom® – G a 750 ml can fitted with an adaptor system for use with a one component dispensing gun and Sika Boom in 250 ml, 500 ml, 750 ml Multi positional cans. *[Note these can be used in any position, the can does not have to be inverted to allow the foam to be propelled].*

### Accessories

- **Sika Boom® Cleaner** – a solvent based cleaner for the dispensing gun.

4.2 Accessories supplied by the building contractor are as follows:

- One-component dispensing gun.
- PEF backing rod – a closed cell polyethylene foam (PEF) backing rod complying with ASTM C1330.

## Handling and Storage

5.1 The handling and storage of Sika Boom® on site is the responsibility of the installer. Sika Boom® has a shelf life of 12 months if stored in unopened packaging under dry, cool conditions at temperatures between 5°C and 35°C. The product must be stored out of direct sunlight.

## Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Sika Boom®. 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.
- 6.2 Some installation instructions are also printed on the can. The can label also contains uses outside the scope of this Appraisal.

## Design Information

### General

- 7.1 The use of air seals is critical to assist the weathertightness performance of window and door joinery installations at the trim cavities, and other wall penetrations. Air seals also assist energy efficiency by reducing heat loss through these cavities.
- 7.2 Sika Boom® is designed to be used as a gap-filling air seal around window and door trim cavities and wall penetrations, e.g. plumbing pipes. It is designed for use in interior locations, and along with its good gap-filling capacities it has excellent adhesion to most materials. Two exceptions are polyethylene or polypropylene. However, testing completed on window installations incorporating polyethylene building wraps and polyethylene backed flashing tapes has shown that any potential lack of adhesion between Sika Boom® and the polyethylene will not affect its performance as an air seal.
- 7.3 Sika Boom® is designed to prevent air leakage at the interior face of the window and door trim cavities and wall penetrations. This prevention of air leakage assists in achieving the overall airtightness requirements of the trim cavity.
- 7.4 A PEF backing rod complying with ATSM C1330 must be used in all trim cavities and around wall penetrations to support the Sika Boom®. At the same time the backing rod prevents the trim cavity from being completely filled by restricting the depth of the air seal to a maximum of 45 mm.



- 7.5 Sika Boom® is not designed to overcome poor detailing and workmanship of window or door joinery installation. It is designed to be used in conjunction with flashing systems, not as a substitute.

### Durability

- 8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement of the air seal, and the ability to detect failure of the air seal both during normal use and maintenance of the building.

### Serviceable Life

- 8.2 When air seals are installed using Sika Boom® in accordance with this Appraisal [i.e. in dry, interior environments where the product is inaccessible, and completely sheltered from exposure to sunlight, chemicals, solvents and temperature extremes], they will remain serviceable for at least 15 years.

### Prevention of Fire Occurring

- 9.1 Separation or protection of the Sika Boom® from heat sources such as fire places, heating appliances, flues and chimneys must be provided. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

### External Moisture

- 10.1 Sika Boom® is a self-expanding polyurethane foam complying with the requirements of NZBC Acceptable Solution E2/AS1 Paragraph 9.1.6.
- 10.2 When installed over a PEF backing rod complying with ASTM C1330, window, door and other penetration openings in exterior walls incorporating Sika Boom® can minimise the risk of airflows carrying water into the building wall.
- 10.3 Sika Boom®, when installed in accordance with this Appraisal, will assist the total cladding system in complying with NZBC Acceptable Solution E2/AS1.
- 10.4 Buildings outside the scope of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 are the subject of specific weathertightness design. The designer must incorporate air seal details to meet their own requirements and the performance requirements of the NZBC. These details are outside the scope of this Appraisal.

## Installation Information

### Installation Skill Level Requirements

- 11.1 Installation of Sika Boom® must be completed by competent tradespersons with an understanding of air seal installation, in accordance with the instructions given in the Technical Literature and this Appraisal.

### General

- 12.1 Before the installation of Sika Boom®, the installer must refer to the contract documentation, E2/AS1 and the cladding system manufacturer's Technical Literature for guidance on the installation requirements of air seals in their system.
- 12.2 Substrate surfaces must be clean and free from any surface contaminants such as dust or grease that may cause loss of adhesion. Window and door joinery or wall penetrations must have been installed and firmly secured in place.
- 12.3 Substrate surfaces should be moistened with a mist of water before the installation of Sika Boom®. The moisture assists by accelerating the curing of the air seal and creating a more homogeneous cell structure.
- 12.4 After installation of the PEF backing rod, Sika Boom® must be extruded into the gap between the window or door reveal liner or wall penetration and the timber frame or building wrap at the internal face of the cavity using the dispensing gun. Once extruded, it will expand to fill the gap and form a continuous air seal.

- 12.5 Sika Boom® that has spilled but not cured can be removed with Sika Boom® Cleaner.
- 12.6 Sika Boom® that has cured can be trimmed with a sharp knife.

### Health and Safety

- 13.1 Safe use and handling procedures for Sika Boom® are provided on the can. Extra care must be taken when using the product in areas where there is insufficient ventilation, and suitable respiratory equipment must therefore be worn. Additional information on the product is available in the Material Safety Data Sheet available from Sika [NZ] Ltd.

## Basis of Appraisal

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

### Tests

- 14.1 A BRANZ ad-hoc test was completed to confirm the suitability of Sika Boom® for use as an air seal. The test results were reviewed by BRANZ experts and found to be satisfactory.
- 14.2 Cyclic and static pressure water leakage tests in accordance with AS/NZS 4284 were carried out by BRANZ on typical window installations to assess the practicability of expanding foam air seals.

### Other Investigations

- 15.1 The practicability of installation was assessed by BRANZ and found to be satisfactory.
- 15.2 A Material Safety Data Sheet for Sika Boom® has been reviewed by BRANZ and found to be satisfactory.
- 15.3 A durability opinion has been given by BRANZ technical experts for Sika Boom® when used as an air seal.

### Quality

- 16.1 The manufacture of the product has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory. The manufacturer is an ISO 9001:2008 Certified manufacturer.
- 16.2 The quality of supply of the product to the market is the responsibility of Sika [NZ] Ltd.
- 16.3 The quality of installation of the product on site is the responsibility of the installer.
- 16.4 Building designers are responsible for the design of the building, and for the incorporation of the air seal into their design in accordance with the instructions of Sika [NZ] Ltd.

### Sources of Information

- AS/NZS 4284: 2008 Testing of building facades.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4211:2008 Specification for performance of windows
- ASTM C1330-02 Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 [Amendment 5, 1 August 2011].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.





In the opinion of BRANZ, Sika Boom® Air Seal 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 Sika [NZ] 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. Sika [NZ] Ltd:
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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 Sika [NZ] 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 Sika [NZ] Ltd or any third party.

**For BRANZ**



**Chris Preston**  
Chief Executive  
Date of Issue:  
16 August 2013



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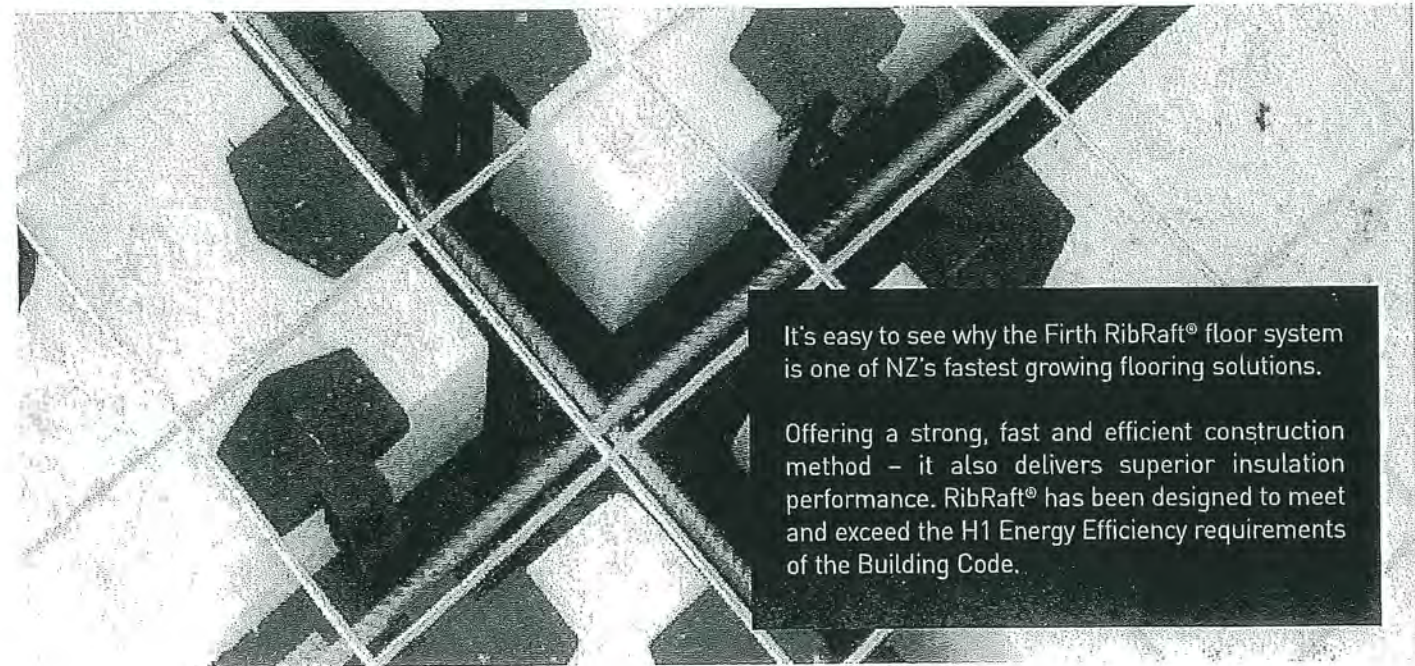
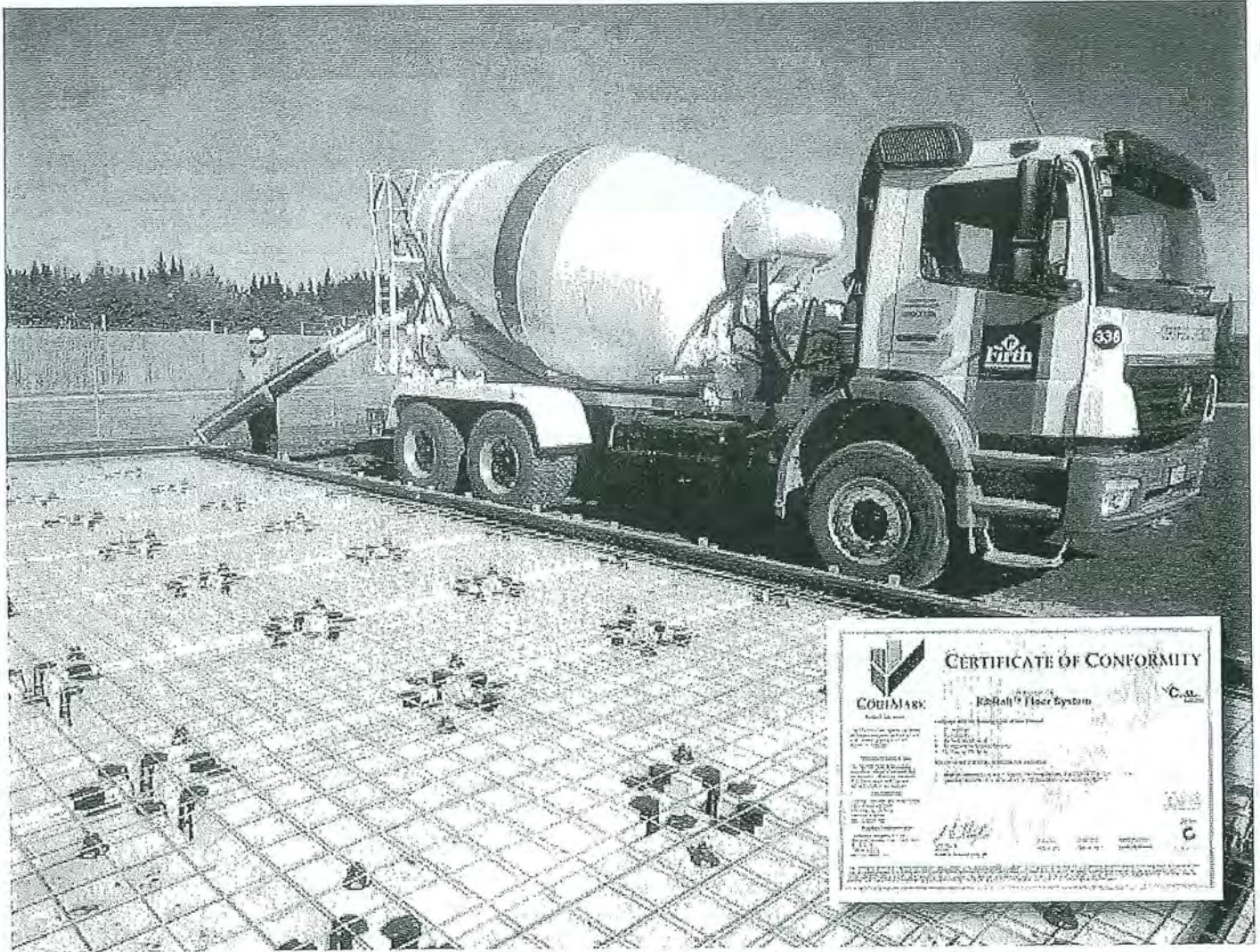
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CBI 4711/3121  
October 2012



# SUPERIOR FLOOR INSULATION DESIGN SOLUTIONS



It's easy to see why the Firth RibRaft® floor system is one of NZ's fastest growing flooring solutions.

Offering a strong, fast and efficient construction method – it also delivers superior insulation performance. RibRaft® has been designed to meet and exceed the H1 Energy Efficiency requirements of the Building Code.



## NZ BUILDING CODE REQUIREMENTS

In 2007, changes were made to Clause H1 (Energy Efficiency) of the Building Code.

The **Schedule Method** is the simplest method to achieve compliance under the Code. Using this method, the minimum R-values required for floors are:

$$\left. \begin{array}{l} R \ 1.3 \text{ m}^2 \text{ }^{\circ}\text{C/W} \\ R \ 1.5 \text{ m}^2 \text{ }^{\circ}\text{C/W} \end{array} \right\} \text{ Depending on the glazing R-value}$$

While the **Schedule Method** is simple and quick, the **Calculation Method** offers greater flexibility as it allows low R-values in some elements of the construction to be offset against higher R-values in other building elements such as floors.

## THE SUPERIOR SOLUTION

The insulation performance of a concrete floor is dependent upon a number of physical factors including:

- the floor structure
- the concrete mix used in the floor structure
- the ratio of the interior surface area to external perimeter area of the floor
- the thickness of the exterior wall placed on top of the perimeter of the floor
- the positioning and properties of specific insulation elements in the floor design

The Firth RibRaft® floor system - consisting of propriety RibRaft® polystyrene pods, plastic spacers and RaftMix™ concrete - has been further developed to meet and exceed the insulation requirements of Clause H1 of the Code.

That's the reason why RibRaft® offers such a superior solution. Where RibRaft® floors have higher R-values than required by the **Schedule Method**, there is now an opportunity to have less insulation in the other building elements by using the **Calculation Method**.

## RIBRAFT® R-VALUE DESIGN SOLUTIONS

The following wall, floor and floor area:perimeter ratio construction details describe a range of floor R-values which can only be achieved using the proprietary RibRaft® system.

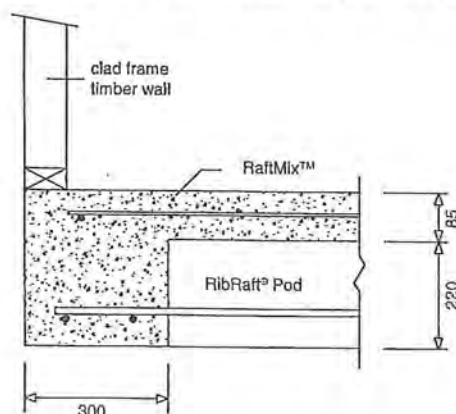
### SOLUTION 1

#### All RibRaft® Floors

All RibRaft® floors are acceptable under the Code which assumes a minimum of  $R \ 1.3 \text{ m}^2 \text{ }^{\circ}\text{C/W}$ .

### SOLUTION 2

#### RibRaft® Floors with a 90mm Frame Timber Clad External Wall



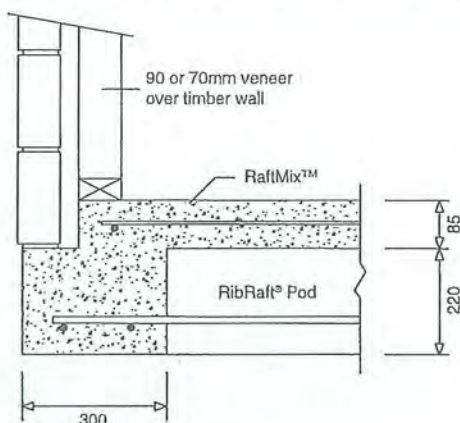
#### IMPORTANT NOTES:

1. The R-values in the following tables only apply to RibRaft® floors which have been constructed with RaftMix™ and RibRaft® pods and spacers.
2. The R-values below are calculated in accordance with NZS 4214:2006 "Methods of Determining the Total Thermal Resistance of Parts of Buildings".

	Floor Area To Perimeter Ratio m <sup>2</sup> /m									
	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value m <sup>2</sup> °C/W	1.48	1.52	1.64	1.75	1.86	1.97	2.07	2.17	2.38	2.57

## SOLUTION 3

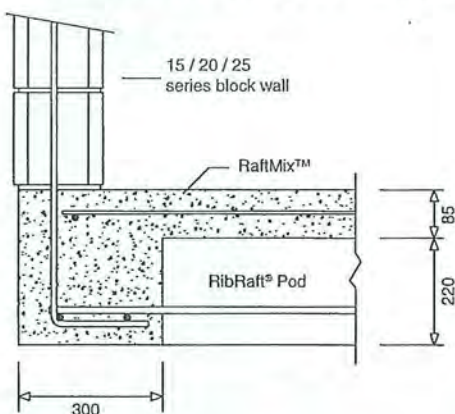
### RibRaft® Floors with a 90mm Timber Frame and 70-90mm Veneer Wall with Cavity



	Floor Area To Perimeter Ratio m <sup>2</sup> /m									
	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value m <sup>2</sup> °C/W	1.54	1.67	1.80	1.93	2.05	2.17	2.28	2.40	2.62	2.84

## SOLUTION 4

### RibRaft® Floors with a Firth Standard or HotBloc® Masonry External Wall



	Block	Floor Area To Perimeter Ratio m <sup>2</sup> /m									
		1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50	4.00
R-value m <sup>2</sup> °C/W	15 series	1.48	1.60	1.73	1.85	1.96	2.08	2.19	2.30	2.51	2.72
	20 series	1.54	1.67	1.80	1.93	2.05	2.17	2.28	2.40	2.62	2.84
	25 series	1.59	1.73	1.86	1.99	2.12	2.24	2.37	2.49	2.72	2.95

## SOLUTION 5

### RibRaft® Heated Floors

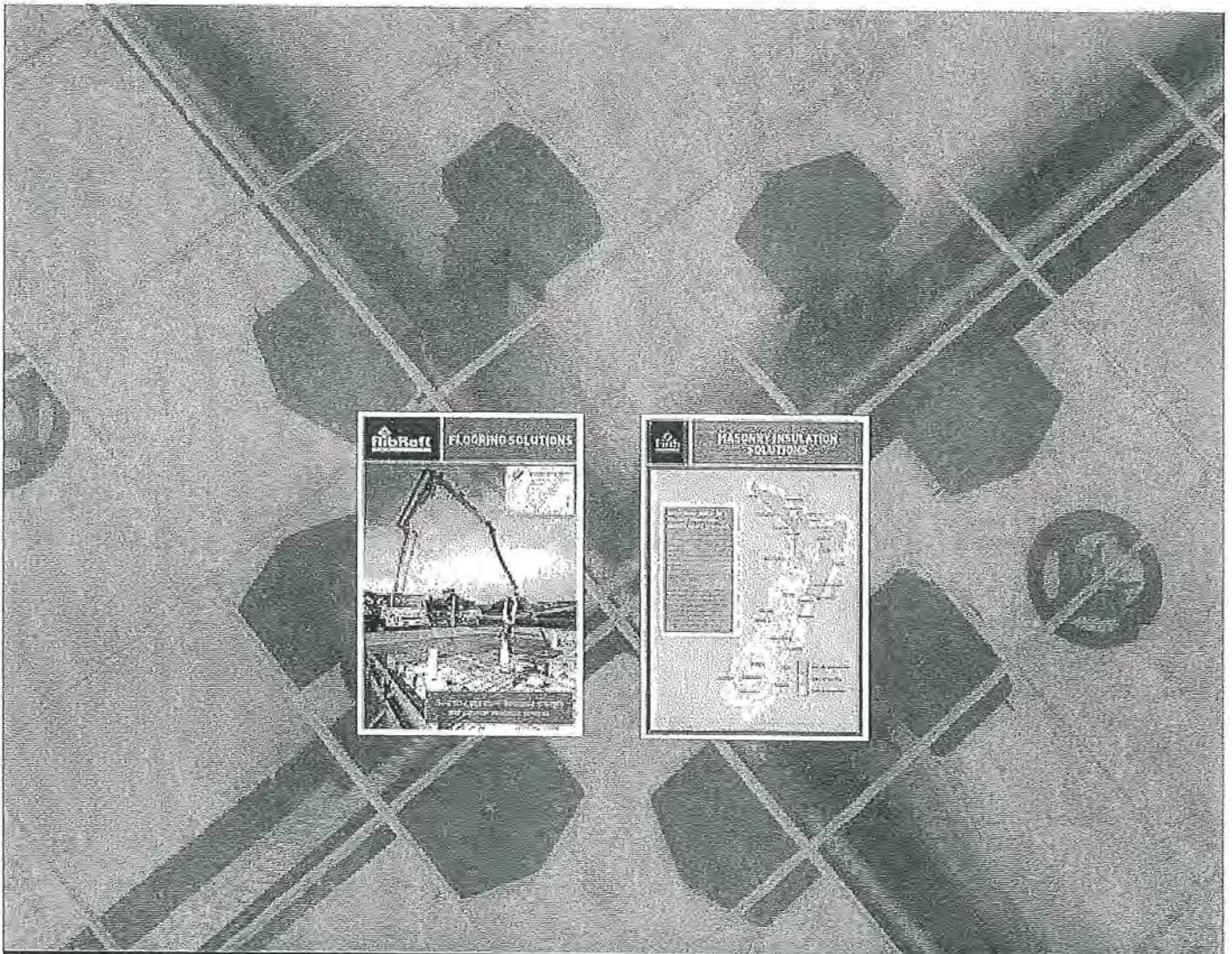
Where in-floor heating is used, the combination of RaftMix™ and RibRaft® pods ensures that  $(R_{IN})/(R_{OUT})$  is always less than 0.1. The R-value of the floor can

be established from the above tables. The Building Code requires that the floor has a R-value not less than 1.9 m<sup>2</sup> °C/W.



## DESIGN AND CONSTRUCTION

RibRaft® design and construction details can be found in the 'Firth RibRaft® Flooring Solutions' brochure and the 'Firth RibRaft® Floor System Manual'. These publications are available at [www.firth.co.nz](http://www.firth.co.nz) or by phoning 0800 800 576.



## SUSTAINABILITY: THE FIRTH CONCRETE & CONCRETE MASONRY SUSTAINABILITY LIFECYCLE

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Environmentally compliant manufacturing plants</li> <li><input checked="" type="checkbox"/> Surplus water and some aggregates recycled</li> <li><input checked="" type="checkbox"/> Low transport impacts</li> <li><input checked="" type="checkbox"/> Leftover concrete returned from construction sites</li> <li><input checked="" type="checkbox"/> Passive solar heated thermal mass makes completed buildings more energy efficient</li> </ul> | <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Most wash water returned from construction sites</li> <li><input checked="" type="checkbox"/> Highly durable, low maintenance buildings and no rot</li> <li><input checked="" type="checkbox"/> High degree of noise control</li> <li><input checked="" type="checkbox"/> Inherent fire resistance</li> <li><input checked="" type="checkbox"/> Overall longer effective building life</li> <li><input checked="" type="checkbox"/> Demolished concrete can be recycled as hard fill or aggregate</li> </ul> | <p>For more on Firth's contribution to building a sustainable tomorrow today, visit <a href="http://www.firth.co.nz">www.firth.co.nz</a> or call us on 0800 800 576 for our free brochure.</p> |
|--|---|--|

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[www.greenbuild.co.nz](http://www.greenbuild.co.nz)

0800 800 576  
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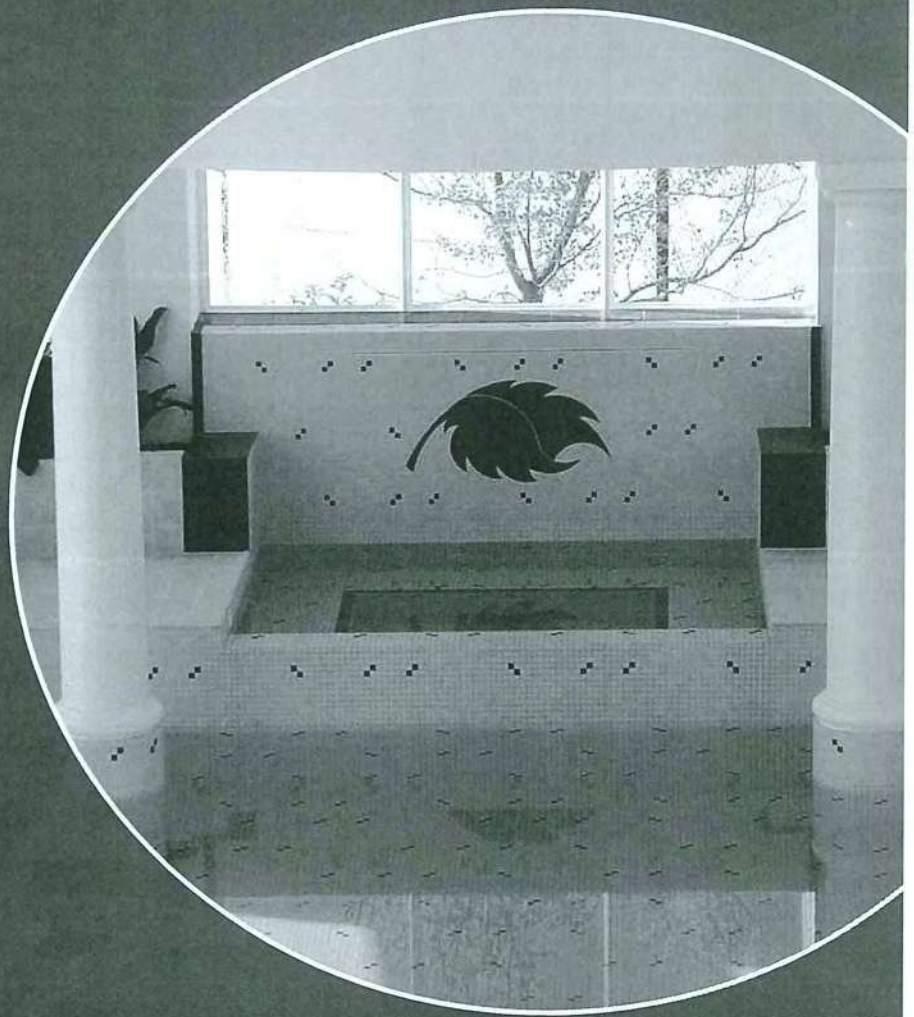


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# DAVCO WATERPROOFING GUIDE



Quality System



Quality  
Endorsed  
Company

ISO 9001 LIC 10065  
Standards Australia



**Davco**  
EXCELLENCE IN  
TILING SYSTEMS



## Product Information



Type	Product	Description
Acrylics	<i>Dampflex</i>	A white, acrylic-based, non-trafficable waterproofing and sealing ready to use from the container reinforced with fibreglass mat
	<i>Dampflex Reo</i>	An internally reinforced acrylic membrane which negates the need for reinforcement at wall/floor junctions and areas to be waterproofed
	<i>Duraflex</i>	A single pack, water based, high build membrane coating for long-term protection of exterior surfaces. Duraflex can be applied to materials such as concrete, render, aluminium, steel, cement. A standard colour range of White, Grey, Pale Beige, and Moss Green
	<i>Duratread</i>	A water based, high build trafficable membrane coating for the protection of floor surfaces. Can be applied to concrete, bitumen, steel, aluminium, etc.
Polyurethane	<i>K10 Plus</i>	Single pack, water based, polyurethane waterproofing membrane for internal and external wet areas, such as showers, bathrooms, etc. Ideal for roofs, including walkways and other exposed situations. Foot trafficable.
Acrylic/Cement	<i>Dampfast</i>	2-part waterproofing and sealing membrane that eliminates the need for a primer. Quick drying. Ideal for waterproofing shower recesses, laundry rooms, roofs, water tanks, cement toppings, planter boxes, etc.
Cementitious	<i>Davco K11</i>	A brush or spray applied, cement based system for waterproofing masonry through the crystallisation process. Davco K11 is applied to the side or the negative side of the substrate and as such is suitable for areas involving negative hydrostatic pressure i.e. lift wells, cellars etc.
Bitumens	<i>Bitumen Paint</i>	A multi purpose bitumen paint which can be used as an adhesive or a waterproofing agent.
	<i>Brushable Waterproofer</i>	A thick cold applied solvent based bitumen, reinforced with tough inert fibres to provide a non-trafficable, black, semi-flexible waterproofing membrane.
	<i>Brushable Duraseal</i>	A thick cold applied solvent based bitumen, reinforced with tough inert fibres to provide a non-trafficable, black, semi-flexible waterproofing membrane.
	<i>Duraseal Putty (Waterproofing Putty)</i>	A thick bitumen putty reinforced with tough inert fibres to produce a non-trafficable, black, semi-flexible waterproofing membrane. Putty has a thick consistency, and dries to form a thick waterproofing membrane.
	<i>Silvershield</i>	Water resistant bitumen-based coating containing flakes of aluminium to provide a reflective surface with tough bitumen barrier beneath. Ideal for use over roofs and walls for UV protection.
	<i>Aqueous Bitumen</i>	A single component, water-based emulsion of bitumen and acrylic solids content, formulated for coating concrete. Aqueous Bitumen forms an elastic membrane resistant to penetration of water.
	<i>Bitkote No. 3</i>	Bitkote No. 3 is suitable for general purpose repair and protection of timber, metal, brick, concrete and cement sheeted surfaces against water penetration. It can be used to waterproof concrete water storage tanks, ponds etc.
Miscellaneous	<i>Bitkote No.5</i>	Bitkote No. 5 contains reinforcing fibres for sealing cracks in concrete structures and is suitable for heavy duty applications. Ideal for use on roofs and can be used as a leveling layer prior to application of a waterproofing membrane.
	<i>Masonry Waterproofer</i>	A clear saturating fluid that effectively provides a barrier to water as well as soot, dirt and mould growth. In addition, it does not alter the appearance of the substrate when used on the exterior of brickwork or render.

**For help with product selection, refer to the Waterproofing Selection Guide**

**Type Tested**

These products have been type tested, granted by Quality Assurance Services, this certifies that the products conform with Specification no. AS3855:1994 highlighting their suitability for contact with not





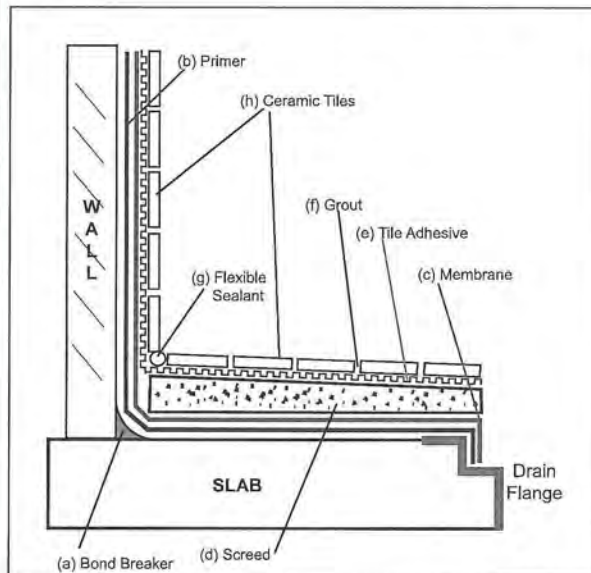
		Coverage <small>All figures quoted may vary depending on application site conditions and the porosity of the surface.</small>	Pack Sizes
ing membrane, tting.	CSIRO Appraised	4L will cover approximately 1.5m <sup>2</sup> when used with fibreglass matting.	4L, 10L and 20L.
use of conventional roofed.	CSIRO Appraised	15L will cover approximately • 10m <sup>2</sup> - to provide a 1mm thick dry film • 15m <sup>2</sup> - to provide a 0.6mm thick dry film	4L and 15L.
the sealing and applied to all common building sheet, masonry, brick, wood etc. sion Brown is available.		Flat Roofs: 500 micron dry film thickness - 1.1 m <sup>2</sup> /L. Pitched Roofs: 370 micron* dry film - 1.5 m <sup>2</sup> /L Walls (smooth): 250 micron* dry film - 2.2 m <sup>2</sup> /L High Movement / Likely Cracking areas: 1000 micron* dry film - 0.5 m <sup>2</sup> /L Junction/Joints: 500 - 1100 micron* dry film - 0.5 - 1.1 m <sup>2</sup> /L (ensure reinforcement is used).	4L and 20L.
e sealing and long-term protection masonry, brick and wood etc.		1m <sup>2</sup> per litre to achieve a dry film thickness of 500 microns*.	20L.
rane. Use to waterproof both , terraces and balconies. ons, as it is UV stable and		A 20L pail will cover approximately: • 13m <sup>2</sup> - to provide a 1mm thick dry film • 16m <sup>2</sup> - to provide a 0.8mm thick dry film • 20m <sup>2</sup> - to provide a 0.6mm thick dry film	20L.
re need for a reinforcement layer. ries, terraces, balconies, concrete	Type Tested CSIRO Appraised	10L / 20kg of Davco Dampfast will cover approx 12m <sup>2</sup> with a 1.5mm dry film thickness.	2L / 4kg Handy kit or 10L / 20kg unit.
ofing concrete and terproofs the positive able for applications		Ground Moisture - Approx 2kg/m <sup>2</sup> Hydrostatic Pressure On the negative side - Approx 4kg/m <sup>2</sup>	Davco K11 - Grey 25kg bags Cement Mix Fortifier - 5L and 20L.
isive primer or coating.		As an adhesive - approximately 4m <sup>2</sup> /L. As a primer - approximately 7m <sup>2</sup> /L. As a coating - approximately 7m <sup>2</sup> /L.	500ml, 1L, 4L and 20L.
ugh inert fibres, roofing membrane.	Type Tested	1L will cover approximately 1m <sup>2</sup> when applied at the rate of 1L / m <sup>2</sup> .	500ml, 1L and 4L. (Also available in 20L as Brushable Duraseal.)
face superior strength. Duraseal proof surface.		1kg will approx fill a joint 25mm x 25mm x 1.2m.	1kg, 4kg and 20kg. (It is also available in 300g cartridges - as Waterproofing Putty).
uminium for a protective silver r bitumen coatings to provide		1L will cover approx 8m <sup>2</sup> .	1L, 4L and 20L.
rylic latex of high men provides an		20L will cover 15m <sup>2</sup> applied with 2 coats. Each coat is applied at the rate of 0.67L / m <sup>2</sup> .	20L.
ction. Ideal for sealing most ainist water entry. Also ideal as a		20L will cover approx 20m <sup>2</sup> when applied at the rate of 1L / m <sup>2</sup> (two coats each applied at the rate of 0.5L / m <sup>2</sup> ).	4L and 20L.
water tanks and other concrete r rejuvenating old bituminous n of sheet and acrylic membranes.		20L will cover approx 20m <sup>2</sup> when applied at the rate of 1L / m <sup>2</sup> (two coats each applied at the rate of 0.5L / m <sup>2</sup> ).	20L.
ater penetration as ter the colour of the		Approximately 9-12 m <sup>2</sup> /L per coat	4L and 20L.

uide on the back of this brochure or call our Technical Advisory Line on 1800 653 347

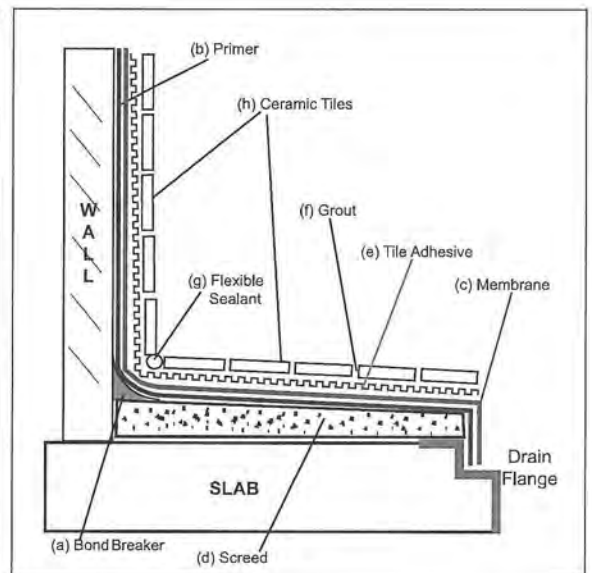


# 1. Waterproofing Wet Areas

## 1.1 Shower Recesses ( Category 1 Area)

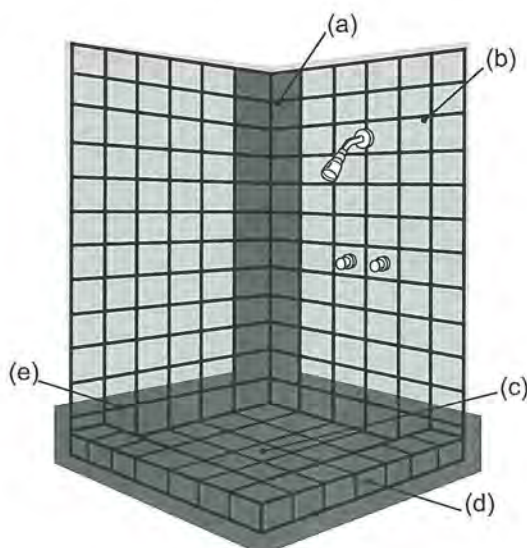


**AS 3740 - Waterproofing of Wet Areas within residential buildings**



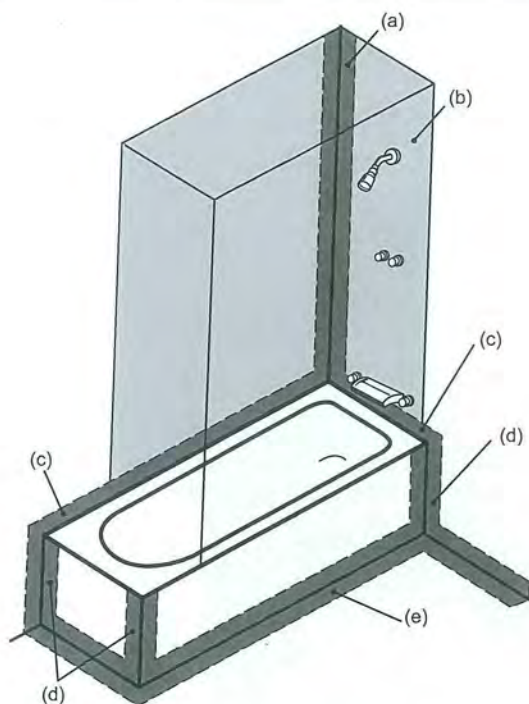
**Preferred Method**

- a) Use a bond breaker to create a "coved" corner detail - either Abelrod, 50mm bond breaker tape or Dawsil silicone sealant.
- b) Application of primer.
- c) The Australian Standard (AS 3740 Waterproofing of Wet Areas within Residential Buildings) calls for the membrane to be applied under the screed to receive tiles, but it is recommended that the membrane be applied over the screed laid to falls.
- d) Sand Cement Screed to ensure that a minimum of 1:80 fall to the waste is created. This equates to a 12.5mm fall over 1m. Note: A slurry coat of Davelastic mixed 1:1 with neat cement should be used to improve the adhesion of the screed if being applied over the membrane.
- e) Application of Tile Adhesive.
- f) Application of Grout.
- g) Use a flexible sealant either Dawsil or Colorcaulk in all wall/floor and wall/wall joins.
- h) Ceramic Tiles
- i) Drain Flange - ensure application of membrane is turned down into the drain flange.



## 1.2 Shower Recess Detailing

- a) AS 3740 calls for the membrane to be applied up the wall to 1800mm or to the height of the shower rose, out to a width of 150mm.
- b) However, it is recommended that the entire wall is coated with the membrane, up to the height of the shower rose.
- c) Apply the membrane over the entire floor area.
- d) If enclosed by a shower screen, apply the membrane up over the hob, and at least 150mm beyond the outside edge of the hob. If unenclosed, apply the membrane up over the hob, and out to a 1500mm radius from the shower rose.
- e) Apply the membrane to the base of the wall, at least 150mm above the height of the hob.



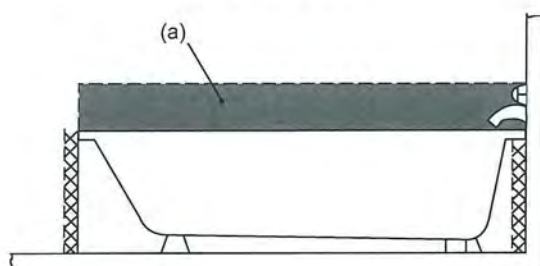
### 1.3 Shower-over-bath Enclosure (Category 1 Area)

- AS 3740 calls for the membrane to be applied up the wall/wall junction 1800mm from the floor or to the height of the shower rose, out to a width of 150mm.
- However, it is recommended that the entire wall is coated with the membrane, up to the height of the shower rose.
- Apply the membrane 150mm wide at the base of the bath wall sheet.
- Apply the membrane 150mm wide over the vertical corners of the bath.
- Apply the membrane 150mm wide along the bath/floor joint. If the bath is enclosed with a shower screen, this will be sufficient. If the bath is unenclosed, continue applying the membrane over the floor, out to a 1500mm radius from the shower rose.

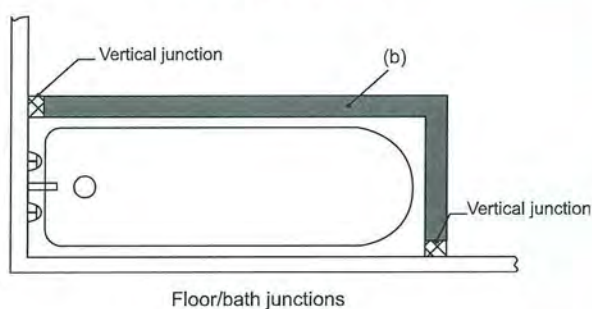
### 1.4 Other Wet Areas (Category 2)

#### 1.4.1 Baths

**Pedestal Bath**

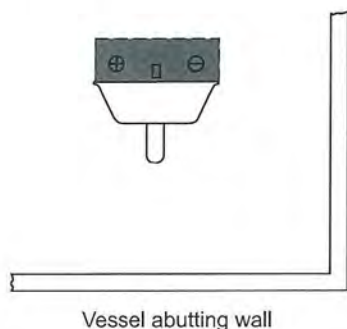


**Hob Mounted Bath**



- Apply the membrane 150mm wide at the base of the bath wall sheet.
- Apply the membrane 150mm wide along the bath/floor joint.

#### 1.4.2 Laundries, Sinks



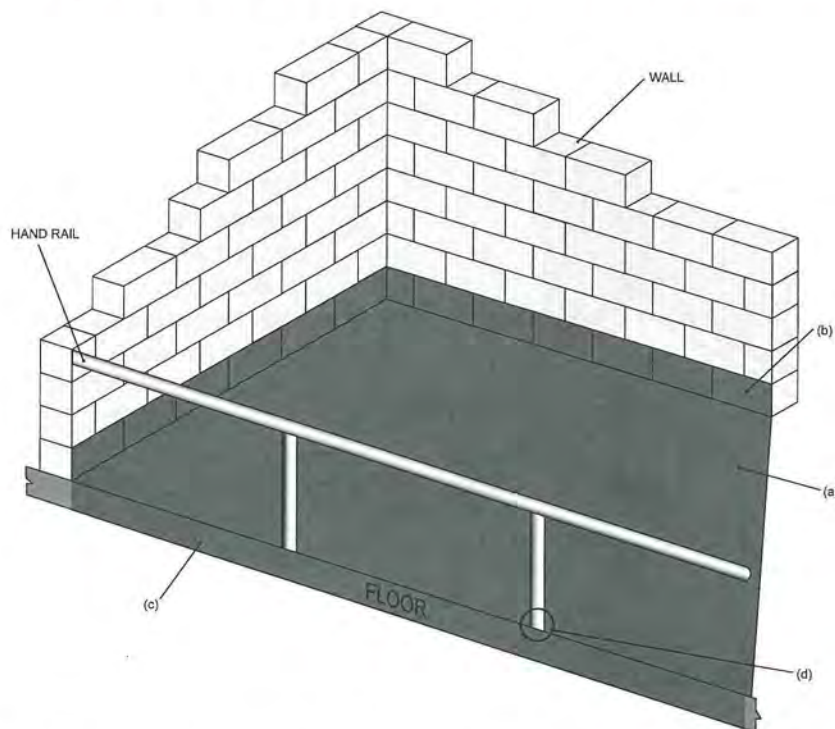
Apply membrane to the wall area 150mm above a fixed vessel, and for the width or length of the vessel.

#### Suitable Membranes:

- Dampflex
- Dampflex Reo
- Dampfast
- K10 Plus



## 2. Waterproofing, Roofs Decks and Balconies



- a) Ensure the deck is constructed with falls to the edge or to the drains which are a minimum 1:100 (ie 10mm over 1m)\*. If this has not been built into the floor, it will require a cement/sand screed be used to achieve this fall. Apply the membrane over the entire balcony floor, or over the screed if one has been applied.
- b) Apply the membrane up the wall at least 100mm, or to the first course of bricks.
- c) Apply the membrane over the front edge of the balcony and the underside of that front edge (if structurally possible).
- d) Ensure all gaps around handrail penetrations are carefully sealed, prior to covering with the membrane (Refer to Section 2.2.1).

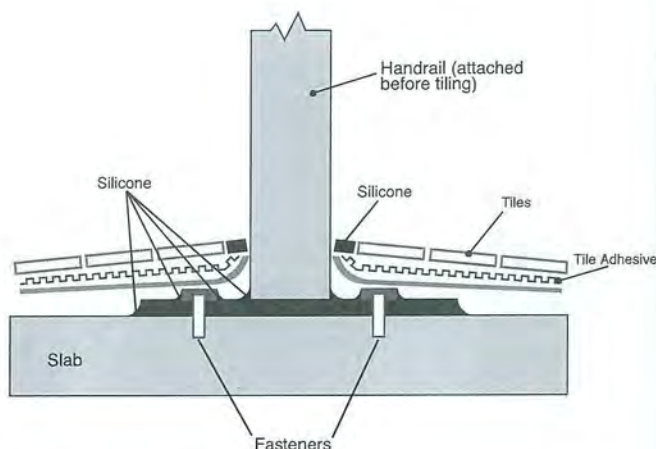
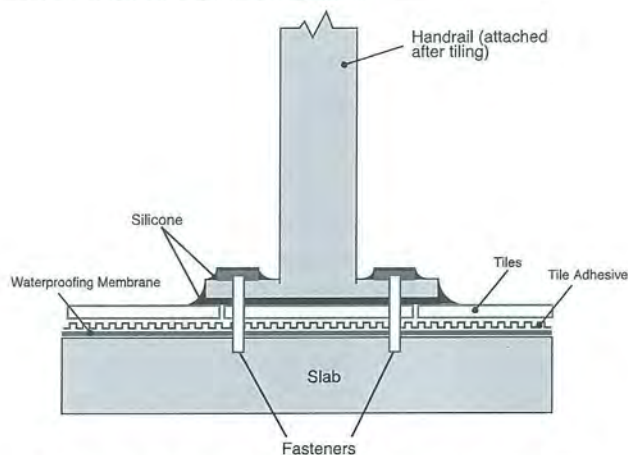
*\* As necessary, treat any cracks or joints per instructions in Section 5.*

### 2.1 Metal Roofs

- a) Ensure the metal surface is thoroughly cleaned and dry.
- b) Any rust needs to be removed with a wire brush or grinder. Treat with rust treatment as required.
- c) Fill any holes with Duraseal Putty (Refer to Section 4.2 for detailed hole repair).
- d) Allow to cure for 24 hours.
- e) Coat with two coats of Brushable Duraseal allowing it to cure for at least 7 days at 20°C before overcoating with Silvershield.
- f) Coat with Silvershield - allowing to dry for 24 hours at 20°C.

## 2.2 Rail/Pipe Penetration Details

### 2.2.1 Hand Rail Penetration



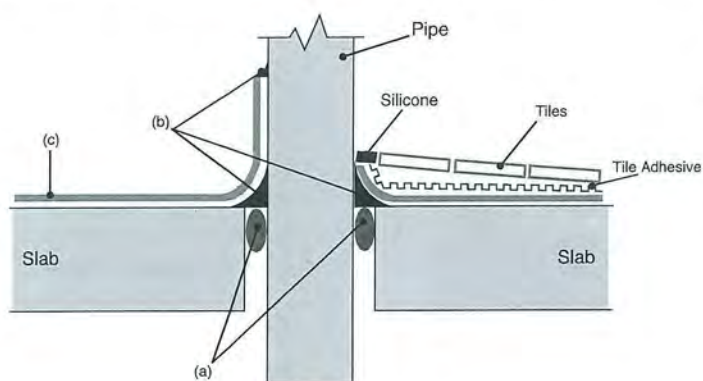
*For a situation where the handrail is attached after tiling:*

- Ensure the handrail and the fastening bolts are applied over one full tile.
- Apply Dawsil silicone sealant around the perimeter of the base plate, the sides of the base plate and over the head of the fastening bolts, to ensure it is fully sealed.

*For a situation where the handrail is attached prior to tiling:*

- The membrane is turned up the penetration to the point where the tiling will finish.
- The tiles & grout would be applied.
- Dawsil silicone sealant used to seal the gap between the tiles and the penetration.

### 2.2.2 Pipe Penetration



- If required, use Abelrod backer rod to fill gap between slab and pipe.
- Apply Dawsil (silicone sealant) over joint to form a corner cove, and to top of the membrane to finally seal it.
- Apply membrane after use of appropriate primer over concrete slab, (and suitable primer over the pipe penetration). Membrane should be turned up the pipe 100mm.

*For a situation where the balcony is to be tiled:*

- The membrane is turned up the penetration to the point where the tiling will finish.
- The tiles and grout would be applied.
- Dawsil Silicone sealant used to seal the gap between the tiles and the penetration.

#### Suitable Membranes for tiling over:

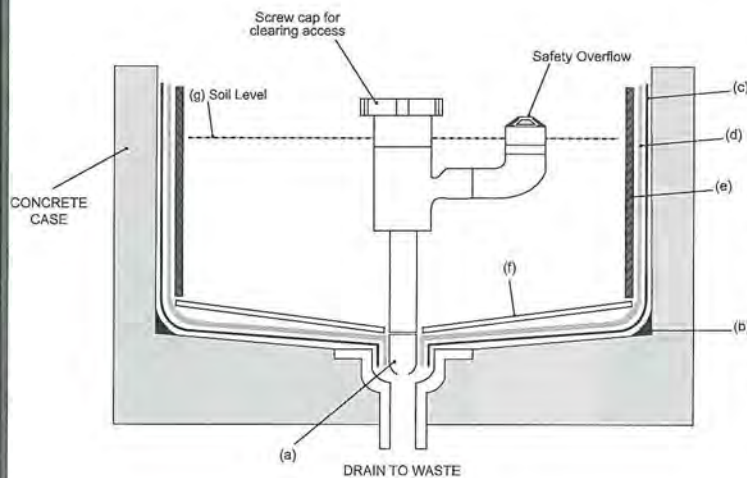
- Dampfast
- Dampflex Reo
- Davco K10 Plus
- Davco K11

#### Suitable Exposed Membranes:

- Brushable Duraseal/Silvershield
- Duraflex
- Duratread
- Davco K10 Plus



### 3. Planter Boxes

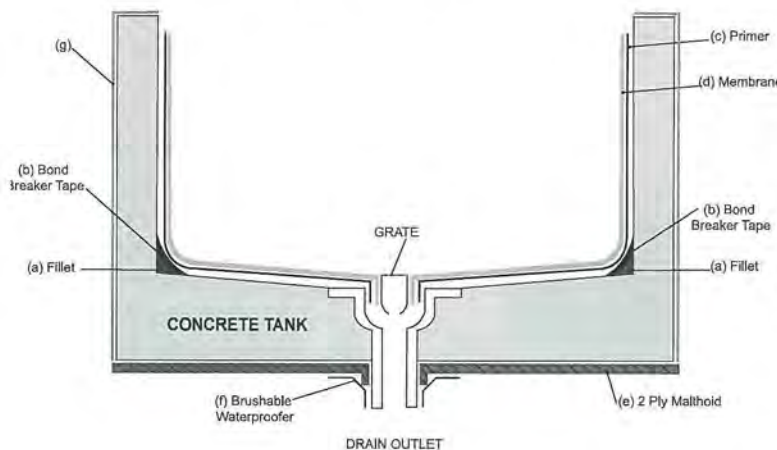


- a) Grate to stop roots going down drain waste.
- b) Davsil (silicone) or Sodaflex 603 as bond breaker in corners, allow to cure.
- \* *Treat any cracks as per instructions in Section 5.*
- c) Prime with suitable primer.
- d) Apply the membrane over the entire surface.
- e) Fibre cement protection board to stop root damage to the membrane.
- f) Drainage cell - recommended that this be wrapped in geo-filter fabric, to protect the membrane from root damage, and aid in drainage of moisture to the outlet.
- g) Soil level should be 100mm below the membrane.

*NOTE: The suitability of plants to be installed should be considered, as certain rooting systems are aggressive and may penetrate the membrane.*

### 4. Water Tanks/Ponds

#### 4.1 Concrete Tanks (Potable)

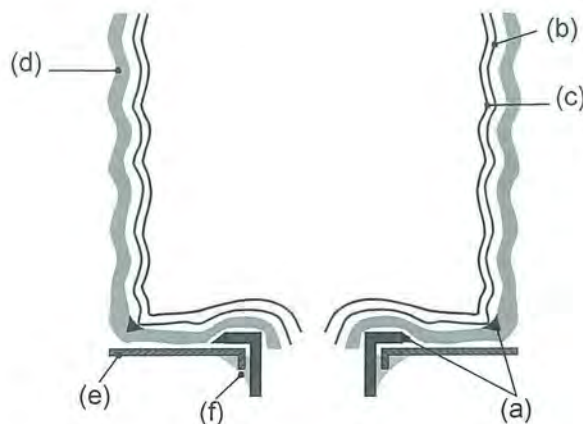


#### Surface Preparation

Ensure the tank is emptied and dried. If required, use a suitable biocide to remove any signs of biological growth/contamination, then allow to dry. Treat any cracks, joints as per instructions in Section 5. Ensure all sharp protrusions are removed/treated prior to application. All laitance must be removed by mechanical means. The tank needs to be thoroughly dried before starting work.

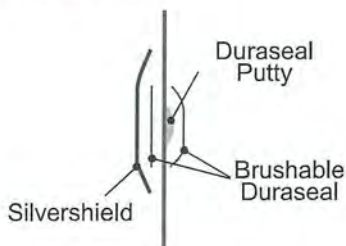
- (a) Apply a fillet into the corners using a 4:1 sand:cement screed, gauged with diluted Davelastic (mixed 1 part Davelastic to 3 parts water). Allow 24 hours to set.
- (b) Apply a bond breaker tape (eg, Duct tape), over the fillet, extending 20mm either side of fillet.
- (c) Apply primer coat over the entire tank surface. Allow to dry.
- (d) Apply 2 coats of membrane, allowing suitable drying/airing in between coats. Allow the final coat to dry for a minimum of 10 days, and then wash the membrane and allow it to dry thoroughly, at least twice, before filling.
- (e) To prevent water ingress from beneath the tank, it is recommended to sit the tank on a bed of Malthoid.
- (f) Apply a coat of Brushable Waterproofor to seal Malthoid to drain outlet and make base watertight.
- (g) It is also suggested the exterior of the tank be coated with Duraflex, a suitable exterior coating membrane system, to prevent water ingress.

## 4.2 Metal Tanks (Potable)



### Surface Preparation

#### Detailed Hole Repair



- Abrade surface with wire brush to remove any signs of rust.
- Treat with rust treatment as required.
- Fill hole with Duraseal Putty. Allow to cure 24 hours.
- Coat inside and out with Brushable Duraseal - coating 100mm radius from hole.
- Coat any Brushable Duraseal on the exterior of the tank which will be exposed to UV light with Silvershield.

#### General Surface Repair

- Ensure the tank is emptied, thoroughly cleaned and dry.
- Use a suitable biocide to remove any sign of biological growth/contamination, then allow to dry.
- Use a wire brush or grinder to remove any signs of rust and treat holes as mentioned above. Use a suitable rust treatment method as required to treat rust spots.
- Coat the treated area - coating 100mm radius from the edge of the treated area with Brushable Duraseal.

- Apply Duraseal Putty as bond breaker onto corner, and against inside flange of drain outlet.
- Prime entire inside using Bitumen Paint. Allow to dry 24 hours.
- Coat tank with 2 coats Brushable Duraseal, allowing 24 hours drying between coatings. Allow the final coat to dry for a minimum of 10 days, and then wash the membrane and allow it to dry thoroughly, at least twice, before filling.
- Apply a coating of Silvershield over the entire outside of the tank, should it require overcoating, or wherever any of the bitumen products are exposed to UV light.
- To protect the base of the tank from moisture, it is recommended to sit the tank on a bed of Malthoid.
- Apply a coat of Brushable Duraseal to seal the Malthoid to the drain outlet and make the base watertight.

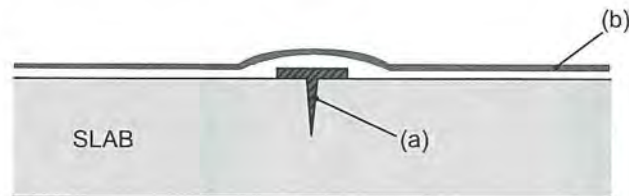
#### Suitable Membranes:

- Brushable Duraseal / Silvershield
- Dampfast
- Davco K11



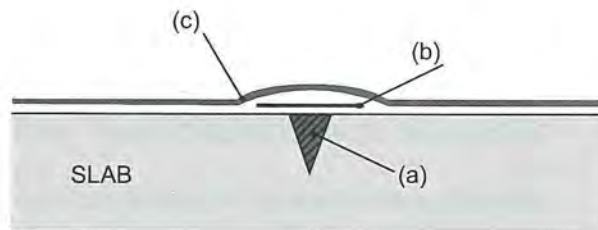
## 5. Treatment of Expansion Joints and Cracks

### 5.1 Non Structural Cracks (NOT Subject to Movement) < 0.5mm



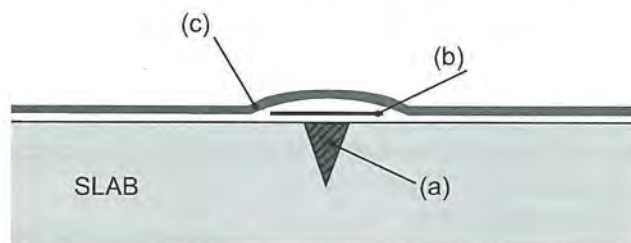
- a) Fill the crack with the membrane and apply a 50mm wide band of membrane over the length of the crack and allow to dry.
- b) Apply membrane to remainder of area, after use of suitable primer.

### 5.2 Non Structural Cracks (NOT Subject to Movement) > 0.5mm



- a) Route out the joint to form a 'V' shaped groove with a hand or power chisel, to a depth and width of approximately 25mm. Dampen the chiselled out crack with clean water and whilst still damp, fill the joint with Lanko 731 repair mortar or DuragROUT. Finish flush with the concrete surface and allow 24 hours to cure.
- b) Apply a 100mm band of membrane over the filled crack and allow to dry.
- c) Apply the membrane to the remainder of the area after use of suitable primer.

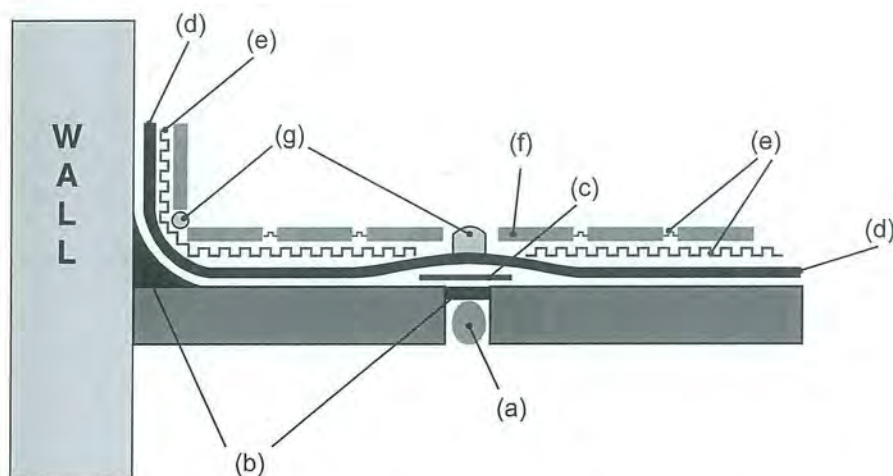
### 5.3 Structural Cracks (Subject to Movement)



**NOTE:** All structural cracks should be subject to investigation by a structural engineer prior to any remedial action. We offer the following as a guide only - each case needs to be assessed on its individual merits.

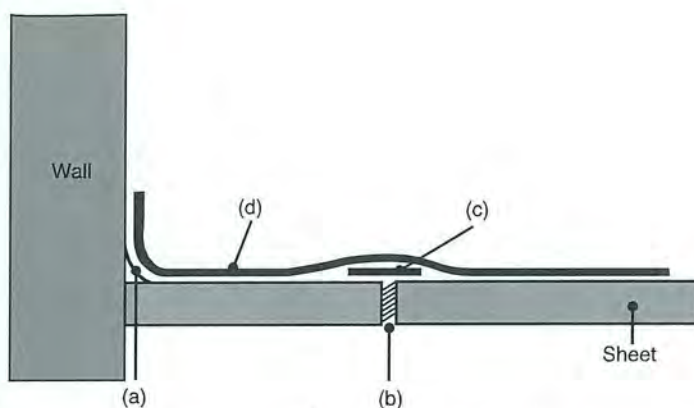
- a) Fill the crack with a flexible sealant - Dawsil (Silicone) or Sodaflex 603 (Polyurethane). Allow 24 hours to cure. In the case of large cracks, Abelrod can be used to pack the body of the crack, before filling with Dawsil or Sodaflex 603.
- b) Apply a 100mm wide strip of Polyethylene/Polypropylene tape over the total length of the crack - extending either side of where the crack finishes. \* Ensure the surface is clean prior to application of the tape, to achieve good adhesion.
- c) Apply the membrane to the remainder of the area after use of suitable primer.

## 5.4 Expansion Joints



- a) For wide joints (>10mm), the use of Abelrod (Polyethylene foam backer rod) is recommended.
- b) Use Davsil (silicone) or Sodaflex 603 (Polyurethane) to fill the remainder of the joint, and to provide a bond breaker at the wall/floor junction. (Narrow joints of <10mm can be filled with Davsil or Sodaflex 603 only).
- c) Apply a 50mm wide strip of polyethylene/polypropylene tape over the total length of the expansion joint.  
\* Ensure the surface is clean prior to application of the tape, to achieve good adhesion.
- d) Apply the membrane to the remainder of the area, after use of a suitable primer.
- e) & f) Application of adhesive, tiles and grout ensuring the expansion joint is NOT tiled over.
- g) Use Davsil (silicone) or Sodaflex 603 (Polyurethane) to fill the expansion joint and the wall/floor joint in the tiled surface.

## 5.5 Sheet Joint Detail



**NOTE:** Ensure the floor sheeting material used is suitable for the intended application - consult the manufacturer for suitability. All floor sheeting material must be fixed in accordance with the manufacturers instructions. All joint detailing must also be carried out in accordance with the manufacturers instructions. In the absence of suitable instructions for joint detailing we offer the following suggestion, however this does not override manufacturers instructions:

- a) Davsil (Silicone) or Sodaflex 603 (Polyurethane) bond breaker.
- b) Davsil or Sodaflex 603 in sheet joint, if the joint is greater than 1mm. For butt jointed sheets, or joints of less than 1mm, the use of a flexible sealant is not necessary.
- c) Polyethylene/Polypropylene tape - 50mm wide, to be placed over all joints, prior to application of membrane (including joints of less than 1mm). \* Ensure the surface is clean prior to application of the tape, to achieve good adhesion.
- d) Apply membrane, after use of a suitable primer.



# Davco Waterproofing Selection Guide

MEMBRANE OVERCOATED OR COVERED WITH.....					EXPPOSED MEMBRANE		
SUBSTRATE	Paint or other membrane	Tiles	Pavers	Vinyl	Timber floorboards (floating)	Light Foot Traffic (Building Maintenance)	Foot Traffic (Entertaining Areas)
Roofs & Decks							
concrete Slab element Screed	Dampflex Dampflex Reo K10 Plus	K10 Plus Dampflex Dampflex Reo Dampfast	K10 Plus Dampflex Dampflex Reo Dampfast	K10 Plus Dampflex Dampflex Reo Dampfast	K10 Plus Dampflex Dampflex Reo Dampfast	Duraflex K10 Plus Dampfast	Duratread
metal (primed)	Duraflex	Duraflex Dampflex Reo K10 Plus	Duraflex Dampflex Reo K10 Plus	Duraflex Dampflex Reo K10 Plus	Duraflex Dampflex Reo K10 Plus	Duraflex K10 Plus Brushable Duraseal/Silvershield	Duratread
compressed FC Sheet timber marine Grade Plywood	Dampflex Dampflex Reo K10 Plus	Dampflex Dampflex Reo K10 Plus	n/a	Dampflex Dampflex Reo K10 Plus	Dampflex Dampflex Reo K10 Plus	Duraflex K10 Plus Dampfast	
Wet Areas - Showers, Bathrooms & Laundries							
concrete Slab element Render element Screed	n/a	K10 Plus Dampflex Dampflex Reo Dampfast	n/a	K10 Plus Dampflex Dampflex Reo Dampfast	n/a	n/a	
compressed FC Sheet (Floors) gypsum Plasterboard (Walls) C Sheet (Walls)	n/a	Dampflex Dampflex Reo K10 Plus	n/a	Dampflex Dampflex Reo K10 Plus	n/a	n/a	
Immersed Areas - Swimming Pools							
concrete element Screed	Dampfast Davco K11	Dampfast Davco K11	n/a	n/a	n/a		
Retaining Walls, Landscaping							
concrete element Render element Screed	Davco K11 Bitkote No. 5 Brushable Waterproof	Dampfast Davco K11	Dampfast Davco K11 Bitkote No. 5 Brushable Waterproof	n/a	n/a	Planter Boxes	
						Dampfast Davco K11 Brushable Duraseal/Waterproof	

## Water Tanks / Ponds

concrete	Brushable Duraseal Bitkote No. 5 Dampfast Davco K11	These products are suitable for waterproofing the inside of concrete tanks. Should Brushable Duraseal be in a situation where it is exposed to UV, it will need to be overcoated with Silvershield. If Bitkote No.5 is in a position where it is exposed to UV, it should be overcoated with Duraflex. For potable applications, Brushable Duraseal or Dampfast are the only suitable membranes for use.	
metal (primed)	Brushable Duraseal	Brushable Duraseal is recommended for waterproofing the inside of metal tanks, and is suitable for use in potable situations. Should it be in a situation where it is exposed to UV, it will need to be overcoated with Silvershield.	

This is a guide for use in the selection of waterproofing membranes only. It is not intended as a guide for building design. For detailed information or assistance on applications not covered by this guide, refer to the datasheets or contact our Technical Advisory Line 1800 653 347



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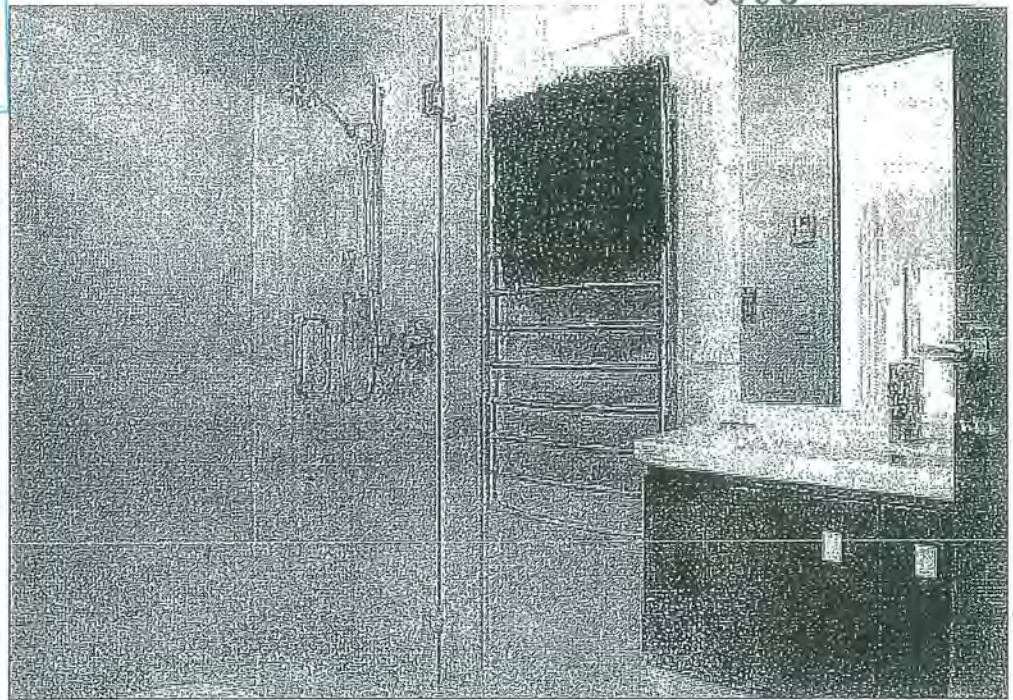
**BRANZ Appraised**  
Appraisal No. 609 [2017]

## DAVCO K10 PLUS AND K10 RAPID WET AREA MEMBRANES

Appraisal No. 609 [2017]

This Appraisal replaces BRANZ  
Appraisal No. 609 [2008]

Amended 24 May 2018.



### BRANZ Appraisals

Technical Assessments of  
products for building and  
construction.



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## Product

- 1.1 Davco K10 Plus and K10 Rapid are liquid-applied waterproofing membranes for use under ceramic or stone tile finishes in internal wet areas.

## Scope

- 2.1 Davco K10 Plus and K10 Rapid have been appraised for use as waterproofing membranes for internal wet areas of buildings, within the following scope:
- on floor substrates of concrete, flooring grade particleboard, plywood, compressed fibre cement sheet and fibre cement sheet tile underlay, and on wall substrates of concrete, concrete masonry, wet area fibre cement sheet lining systems and wet area plasterboard lining systems; and,
  - when protected from physical damage by ceramic or stone tile finishes; and,
  - where floors are designed and constructed such that deflections do not exceed  $1/360^{\text{th}}$  of the span.
- 2.2 The use of Davco K10 Plus and K10 Rapid on concrete slabs and walls where hydrostatic or vapour pressure is present is outside the scope of this Appraisal.
- 2.3 Movement and control joints in the substrate must be carried through to the tile finish. The design and construction of the substrate and movement and control joints is specific to each building, and therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.
- 2.4 Ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.5 The membranes must be installed by ParexGroup Pty Limited Approved and Trained Applicators.

## Building Regulations

### New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Davco K10 Plus and K10 Rapid 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 B2 DURABILITY:** Performance B2.3.1 [b] 15 years. Davco K10 Plus and K10 Rapid meet this requirement. See Paragraph 9.1.

**Clause E3 INTERNAL MOISTURE:** Performance E3.3.6. Interior wet area floors and walls incorporating Davco K10 Plus and K10 Rapid will meet this requirement. See Paragraphs 11.1 – 11.7.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Davco K10 Plus and K10 Rapid meet this requirement and will not present a health hazard to people.



## Technical Specification

- 4.1 Materials supplied by ParexGroup Pty Limited are as follows:
- Davco K10 Plus - A flexible [Class III as defined in AS/NZS 4858], single pack, water based polyurethane waterproofing membrane. It is supplied as a grey paste in 20 litre pails or green paste in 4 and 20 litre pails.
  - Davco K10 Rapid - A flexible [Class III as defined in AS/NZS 4858], single pack, water based polyurethane waterproofing membrane. It is supplied as a yellow paste in 5 and 15 litre pails.
  - Ultraprime - An acrylic based multipurpose primer for all porous substrates. It is supplied as a clear liquid in 1 and 5 litre containers.
  - Ultrabond - Is a grey, flexible, two - part primer/bond enhancer for use over difficult or non-porous substrates. It is supplied as a kit made up of a 20 kg bag and a 5 litre pail.

## Handling and Storage

- 5.1 All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and out of freezing conditions. The membrane products have a shelf life of 12 months from date of manufacture in the original unopened packaging. Once opened, the products must be used.

## Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Davco K10 Plus and K10 Rapid. 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 Davco K10 Plus and K10 Rapid are for use in buildings where an impervious waterproof membrane is required to floors and walls to prevent damage to building elements and adjoining areas.
- 7.2 The membranes must be protected from physical damage by the application of ceramic or stone tile finishes.
- 7.3 Movement and control joints may be required depending on the shape and size of the building or room, and the tile finish specified. Design guidelines can be found in the BRANZ Good Practice Guide to Tiling.
- 7.4 Timber floor framing systems must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of NZS 4203. In all cases framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported. Timber framing systems supporting the substrates must be constructed such that deflections do not exceed 1/360<sup>th</sup> of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.

### Substrates

#### Plywood

- 8.1 Plywood must be a minimum of 17mm thick complying with AS/NZS 2269, CD Grade Structural with sanded C face upwards and treated to H3 [CCA treated]. LOSP treated plywood must not be used. The plywood must be supported with dwangs or framing with a maximum span of 400 mm in each direction, fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres on the edges and 200 mm through the body of the sheets.

#### **Fibre Cement Compressed Sheet/ Fibre Cement Sheet Tile Underlay**

- 8.2 Fibre cement compressed sheet must be manufactured to comply with the requirements of AS 2908.2 and must be specified by the manufacturer as being suitable for use as a wet area substrate. Installation must be in accordance with the instructions of the manufacturer.

#### **Concrete and Concrete Masonry**

- 8.3 Concrete and concrete masonry substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101 and NZS 3604, Concrete Slab-On-Ground Floors and Concrete masonry to NZS 4229 and NZS 4230.

#### **Wet Area Wall Linings**

- 8.4 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588, and be covered by a valid BRANZ Appraisal for use in internal wet areas.
- 8.5 Fibre cement sheet must be manufactured to comply with the requirements of AS 2908.2 and must be specified by the manufacturer as being suitable for use as a wet area lining. Installation must be in accordance with the instructions of the manufacturer.

### **Durability**

#### **Serviceable Life**

- 9.1 Davco K10 Plus and K10 Rapid, when subjected to normal conditions of environment and use, are expected to have a serviceable life of at least 15 years and be compatible with ceramic or stone tile finishes with a design service life of 15-25 years.

#### **Maintenance**

- 10.1 No maintenance of the membranes will be required provided significant substrate movement does not occur and the tile finish remains intact. Regular checks must be made of the tiled areas to ensure they are sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiles, grouts and sealants.
- 10.2 In the event of damage to the membrane, the tiling must be removed and the membrane repaired by removing the damaged portion and applying a patch as for new work.
- 10.3 Drainage outlets must be maintained to operate effectively, and ceramic or stone tile finishes must be kept clean.

#### **Internal Moisture**

- 11.1 Davco K10 Plus and K10 Rapid are impervious to water and when appropriately designed and installed will avoid the likelihood of water penetrating behind linings or entering concealed spaces.
- 11.2 Davco K10 Plus and K10 Rapid are suitable for use to contain accidental overflow to meet NZBC Clause E3.3.2. A means of Code Compliance for overflow is given in NZBC Acceptable Solution E3/AS1, Paragraph 2.
- 11.3 Surfaces must be finished with ceramic or stone tile finishes. A means of Code Compliance to NZBC Clause E3.3.3 is given in NZBC Acceptable Solution E3/AS1, Paragraph 3.1.1 [b] and 3.1.2 [b].
- 11.4 Falls in showers and shower areas must be a minimum of 1 in 50. In unenclosed showers, falls must extend a minimum of 1500 mm out from the shower rose. Floor wastes must be provided and the floor must fall to the outlet.
- 11.5 The waterproofing membrane must completely cover shower bases, and for unenclosed showers it must extend a minimum of 1500 mm out from the shower rose. Further design guidance on waterproofing wet areas, including waterproofing walls and junctions can be obtained from AS 3740, the BRANZ Good Practice Guide to Tiling, and flooring and wallboard manufacturers.
- 11.6 Where water resistant wall finishes such as prefinished sheet materials are used, they must flash over the membrane a minimum of 30 mm.
- 11.7 BRANZ recommends the entire floor be covered by a waterproof membrane for bath, shower and spa rooms where wood-based floors are used.



## Installation Information

### Installation Skill Level Requirement

- 12.1 Installation must always be carried out in accordance with the Davco K10 Plus and K10 Rapid Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class and an understanding of internal wet area construction.
- 12.2 Installation and finishing of components and accessories supplied by ParexGroup Pty Limited and its approved applicators must be completed by trained applicators, approved by ParexGroup Pty Limited.

### Preparation of Substrates

- 13.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents.
- 13.2 Concrete substrates can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin No. 585. The relative humidity of the concrete must be 75% or less before membrane application.
- 13.3 All voids, cracks, holes, joints and excessively rough areas must be filled to achieve an even and uniform surface. Junctions of substrate abutments, such as at wall/floor and wall/wall junctions must have a bond breaker joint system installed as set out in the Technical Literature.
- 13.4 If required, substrates must be primed with the appropriate primer and allowed to cure before the membrane is installed.

### Membrane Installation

- 14.1 Installation must not be undertaken where the substrate surface temperature is below 5°C or above 35°C.
- 14.2 The membrane must be applied in two coats at the rates set out in the Technical Literature. The total finished system thickness of the Davco K10 Plus and K10 Rapid must be a minimum of 1.2 mm.
- 14.3 Application can be made by roller (medium/long nap) or brush (long bristle).
- 14.4 Clean up may be undertaken with water while the membrane is still wet.

### Tiling

- 15.1 The membrane must be fully cured before tiling. The cured membrane must be protected at all times to prevent mechanical damage, so may require temporary covers until the finishing is completed.
- 15.2 Tiling must be undertaken in accordance with AS 3958.1 and the BRANZ Good Practice Guide - Tiling. The compatibility of the tile adhesive must be confirmed with the adhesive manufacturer or ParexGroup Pty Limited.

### Inspections

- 16.1 Critical areas of inspection are:
  - Construction of substrates, including crack control and installation of bond breakers and movement control joints.
  - Moisture content of the substrate prior to the application of the membrane.
  - Acceptance of the substrate by the membrane installer prior to application of the membrane.
  - Installation of the membrane to the manufacturer's instructions, particularly installation to the correct thickness and use of reinforcement.
  - Membrane curing and integrity prior to the installation of tiles including protection from mechanical damage during curing and prior to tile installation.

## Basis of Appraisal

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

### Tests

- 17.1 The testing on Davco K10 Plus and K10 Rapid has been undertaken by various organisations:
- Testing to AS/NZS 4858: 2004 Appendix A including effect of heat aging, bleach, detergent and water on tensile and elongation, Water Vapour Transmission to ASTM E96-92 and cyclic movement.
  - Adhesion to various substrates and low temperature flexibility.
- Test methods and results were reviewed by BRANZ and found to be satisfactory.

### Other Investigations

- 18.1 An assessment was made of the durability of Davco K10 Plus and K10 Rapid by BRANZ technical experts.
- 18.2 Site visits have been carried out by BRANZ to assess the practicability of installation and to examine completed installations.
- 18.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

### Quality

- 19.1 The manufacture of the membrane has been examined by BRANZ, details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 19.2 The quality management system of the membrane manufacturer has been assessed and found to be satisfactory.
- 19.3 The quality of supply of the membrane system materials to the market is the responsibility of ParexGroup Pty Limited.
- 19.4 Quality on site is the responsibility of the ParexGroup Pty Limited Approved and Trained Applicators.
- 19.5 Designers are responsible for the substrate design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of the substrate manufacturer, ParexGroup Pty Limited and this Appraisal.
- 19.6 Building owners are responsible for the maintenance of the tiling or stone finishing systems in accordance with the instructions of ParexGroup Pty Limited.

### Sources of Information

- AS 2908.2: 2000 Cellulose-cement products – Flat sheet.
- AS 3740: 2010 Waterproofing of wet areas within residential buildings
- AS 3958.1 Guide to the installation of ceramic tiles.
- AS/NZS 2269: 2012 Plywood-Structural
- AS/NZS 2588:1998 Gypsum Plasterboard
- AS/NZS 4858: 2004 Wet area membranes.
- NZS 3101: 2006 Concrete Structures Standard.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design
- NZS 4230: 2004 Design of reinforced concrete masonry structures
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.
- Good Practice Guide – Tiling, BRANZ, 2015.





BRANZ Appraised  
Appraisal No. 609 [2017]

BRANZ Appraisal  
Appraisal No. 609 [2017]  
17 January 2017

DAVCO K10 PLUS AND K10  
RAPID WET AREA MEMBRANES



## Amendments

Amendment No. 1, dated 24 May 2018.

This Appraisal has been amended to include the Davco K10 Rapid Membrane.



BRANZ Appraised  
Appraisal No. 609 [2017]

BRANZ Appraisal  
Appraisal No. 609 [2017]  
17 January 2017

DAVCO K10 PLUS AND K10  
RAPID WET AREA MEMBRANES



In the opinion of BRANZ, Davco K10 Plus and K10 Rapid Wet Area Membranes 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 ParexGroup Pty 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. ParexGroup Pty 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 ParexGroup Pty 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 ParexGroup Pty Limited or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

17 January 2017



**Re; BRANZ appraisals/Code Mark Certification for Thermakraft 215 Bituminous building paper**

Please see below regarding the Thermakraft 215 underlay.

Bituminous Building papers are called out as the Acceptable Solution for building underlays in NZBC E2/AS1 Table 23, and NZS 2295; 2006 for both wall and roof application. As the Thermakraft 215 Bituminous underlay is recognised as an acceptable solution, a BRANZ appraisal/Code Mark Certification is not required, therefore has not been applied for.

Thermakraft has a rigorous test and quality assurance program to ensure that all products meet the performance and durability requirements of the NZBC. Full product traceability is available from the batch number on each label.

Therefore, if the Thermakraft 215 is installed to Thermakraft's recommendations, Design and User Guidelines & NZBC, it will contribute in meeting the requirements of the NZ Building Code for Durability and Performance.

Thermakraft's standard warranty applies if Thermakraft products are installed as per Thermakraft's Recommendations, Design and User Guidelines, the NZ Building Code and the installation has been supervised by a Licensed Building Practitioner.

Regards

**Daniel Marshall**

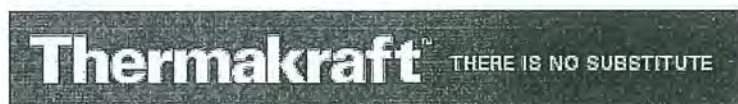
Technical Advisor

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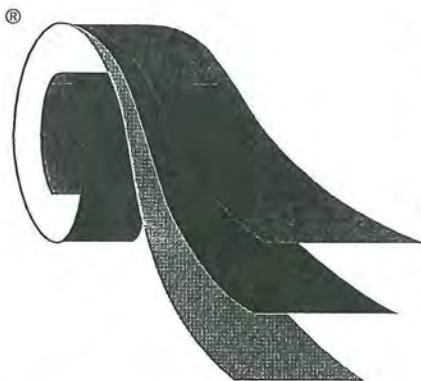
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# Thermakraft™

## THERMAKRAFT 215

Thermakraft 215 self-supporting roof and wall underlay is an absorbent, breathable underlay specifically designed for use in Domestic and Commercial buildings. Suitable as a roof and wall underlay with all cladding types, where Fire Retardancy is NOT required.

- ✓ Versatile building Underlay, designed for use in residential and commercial roof and wall applications.
- ✓ Reduces wind entry into wall and roof cavities, improving thermal efficiency of bulk insulation. Can be used as a vapour control layer, and improve thermal performance if installed and taped on the warm side of bulk insulation.
- ✓ High water resistance provides for temporary weather protection prior to installation of cladding, and acts as a secondary layer of water protection during its serviceable life.
- ✓ Highly water vapour permeable, allowing excess water vapour that may otherwise condense in the wall structure to escape.
- ✓ Lap line printed.



Self-Supporting



High Water Barrier



Breathable



Absorbent



ROOF



WALL

### ROOF AND WALL UNDERLAY

# THERMAKRAFT 215



## TECHNICAL SPECIFICATIONS

### NZBC E2/AS1 ROOF UNDERLAY REQUIREMENTS

NZBC E2/AS1 TABLE 23 ROOF UNDERLAY PROPERTIES	PROPERTY PERFORMANCE REQUIREMENTS	PROPERTY PERFORMANCE
Absorbency	$\geq 150\text{gsm}$	Pass
Vapour Resistance	$\leq 7 \text{ MN.s/g}$	Pass
pH of Extract	$\geq 5.5$ and $\leq 8$	Pass
Shrinkage	$\leq 0.5\%$	Pass
Water Resistance	$\geq 100\text{mm}$	Pass
NZS2295:2006 CLASSIFICATION		
Flammability Index		Non Fire Retardant
Wind Zone	R2	Up to Very High
NZS2295:2006	R2	Self Support

#### NOTE:

For wall cavity systems, NZBC Acceptable Solution E2/AS1 Paragraph 9.1.5.5 requires where stud spacing's are greater than 450mm centres, an intermediate means of restraining the building underlay and insulation from bulging into the drained cavity shall be installed. An acceptable means of achieving this is by fixing with Thermakraft Stud Strap horizontally at 300mm centres.

Thermakraft 215 complies with the requirements of NZBC E2/AS1 Table 23. Is suitable for use in the following:

- With absorbent wall claddings directly fixed to timber and steel framing; and,
- With non-absorbent wall claddings directly fixed to timber and steel framing; and,
- With absorbent and non-absorbent wall claddings installed over an 18mm minimum drained cavity; and,
- With masonry veneer in accordance with NZS 3604; and,
- Situated in NZS3604 Building Wind Zones up to, and including 'Very High' (wall); and,
- As a ROOF underlay Self-supporting when run horizontally at pitches  $3^\circ$  and greater. When run vertically at pitches  $>3^\circ$  and  $<10^\circ$  degrees, 215 must be supported. Support recommended at very low pitches; and,
- As a roof underlay suitable for use with all Roofing materials; and
- Is suitable as an air barrier in unlined wall spaces.

#### Flammability Index

Thermakraft 215  
is not fire retardant.



#### Roll Dimensions:

1250mm x 20m (25m<sup>2</sup>)  
1250mm x 40m (50m<sup>2</sup>)  
M2 is the roll size for actual coverage, allow for laps and joints.

## DURABILITY

For Thermakraft 215 to meet the Performance Requirements of NZBC Clause B2, Durability B2.3.1 (a) 50 years and B2.3.1 (b) 15 years, E2 External Moisture providing:

- Installed in accordance to the Application and Installation Guidelines.
- Run length no greater than 10 meters.
- Is not left exposed for more than (7 days) roof.
- Is not left exposed for more than (28 days) wall.
- Not recommended for use on LOSP treated timber, if used the timber must be free of solvent.
- Installed by or under guidance of Licensed Building Practitioners.
- Installed in accordance with the Roofing Code of Practice.



Customer Services  
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The recommendations contained in Thermakraft's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Thermakraft (for example quality of workmanship and design), Thermakraft shall not be liable for the recommendations in that literature and the performance of the Product, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards. Literature subject to change without notification. Latest documentation can be found on the website.



## WARRANTY

1. Subject to the terms of this warranty statement, **Thermakraft Limited** ("**Thermakraft**") warrants to the original purchaser of a Thermakraft product ("**the Product**") that the Product will, subject to compliance with the conditions below, be free from defects due to defective factory workmanship or materials and to the extent set out in Thermakraft's relevant published literature current at the time of purchase. Thermakraft warrants to the original purchaser of any accessories in respect of the Product supplied by Thermakraft that such accessories will be free from defects due to defective factory workmanship or materials.
2. Nothing in this warranty shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act 1993 ("**Consumer Guarantees Act**") or otherwise (except where the same may be excluded or modified to the maximum extent permitted by law). For the avoidance of doubt, the Consumer Guarantees Act does not apply to any purchaser of the Product who acquires the Product for:
  - (a) resupplying the Product in trade;
  - (b) consuming the Product in the course of a process of production or manufacture;
  - (c) repairing or treating in trade other goods or fixtures on land; or
  - (d) purposes other than personal, domestic or household use or consumption.
3. The term of the warranty in respect of the Product is 15 years from the date of purchase. Thermakraft is not liable for any claim that is not lodged by the original purchaser within the term of the warranty.
4. The entity giving this warranty is Thermakraft Limited (company number 6220850), a duly incorporated company having its registered address at 11 Turin Place, Otara, Auckland 1013. Its contact details are as follows:
  - (a) Telephone: 0800 806 595 / 09 273 3726
  - (b) Email: [sales@thermakraft.co.nz](mailto:sales@thermakraft.co.nz)

## CONDITIONS OF WARRANTY

This warranty is strictly subject to the following conditions:

5. Thermakraft will not be liable for breach of warranty unless the claimant has a valid claim and submits a claim in writing to Thermakraft. The written claim must be made 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.
6. The claim to Thermakraft must include the following:
  - (a) proof of purchase;
  - (b) the name, physical address, phone number and email address of the original purchaser (as the claimant);
  - (c) the name and address of the licensed building practitioner (as defined in section 7 of the Building Act 2004) ("**Licensed Building Practitioner**") who completed the installation (if any); and
  - (d) the date on which the defect became apparent.

For the avoidance of doubt, Thermakraft will not process any claim under this warranty unless the claim includes all of the relevant documents and/or information set out in this clause 6.
7. The warranty is personal to the original purchaser of the Product and is not transferable.
8. The Product must be installed by or under the direct supervision of a Licensed Building Practitioner strictly in accordance with the relevant Thermakraft literature in respect of the Product current at the time of installation. The Product must be installed in conjunction with the components or products specified in the relevant literature.
9. The Product must be installed in accordance with all applicable legal requirements.
10. All other products, including coating and joining systems, applied to, or used in conjunction with the Product must be applied or installed by a Licensed Building Practitioner and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice.
11. The project in which the Product is used must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand building code (as defined in section 7 of the Building Act 2004) ("**Building Code**"), regulations and standards and in accordance with the terms specified in any building consent issued by the local or territorial authority in which the project is being undertaken. If requested by Thermakraft, the claimant must provide a copy of the building consent.
12. The claimant agrees to provide information in relation to the installation and/or maintenance of the Product reasonably requested by Thermakraft in assessing any claim. Thermakraft is not liable for under this warranty if the requirements set out in clauses 8 to 11 have not been satisfied.





13. Notwithstanding any other provision contained in this warranty, the claimant's sole remedy for breach of this warranty is that Thermakraft will, at its sole discretion, elect to:
- (a) supply a replacement for the defective product;
  - (b) rectify the defective product; or
  - (c) pay the cost of the replacement or rectification of the defective product.
- If a defective product is repaired or rectified, the original warranty period will continue to apply based on the original date of purchase of the relevant product.
- To the maximum extent permitted by law, Thermakraft's liability for failing to comply with any statutory guarantee (or liability under any other warranty, condition or indemnity that cannot be excluded) is limited in the same manner as set out in this clause 13.
14. The claimant is responsible for its expenses in making any claim against Thermakraft under this warranty.
15. If Thermakraft determines that a claim is not valid, Thermakraft may charge the claimant for any labour, materials or transport costs incurred by it in assessing the claim.
16. To the maximum extent permitted by law, except as expressly set out in this warranty, Thermakraft 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, Thermakraft 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 or failure 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, normal wear and tear, growth of mould, mildew, fungi, bacteria or any organism on any Product surface or Product. It is a condition of this warranty that the claimant indemnifies Thermakraft against any and all of these excluded losses, damages and claims.
17. To the maximum extent permitted by law, all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded.
18. Any references to statutes or statutory provisions in this warranty include those statutes or statutory provisions as amended, extended, consolidated, re-enacted or replaced from time to time and any orders, regulations, instruments or other subordinated legislation made under them.

#### DISCLAIMER

The recommendations contained in Thermakraft's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in this warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Thermakraft (for example quality of workmanship and design), Thermakraft shall not be liable for the recommendations in that literature and the performance of the Product, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards.

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19 AUG 2019

BY: LH

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**G.J. Gardner.** HOMES

**BUILDING SPECIFICATION**

for

Lot 3 Hadfield Road, PEKA PEKA

Between

Adam and Laura Beattie  
**(the Purchaser)**

and

M and L Barke Construction Limited  
**(the Builder)**

Job Number: 980060



## Building Specification

PURCHASER : Adam and Laura Beattie  
SITE ADDRESS : Lot 3 Hadfield Road, PEKA PEKA  
TERRITORIAL AUTHORITY: Kapiti Coast District Council

### PLEASE READ CAREFULLY BEFORE COMPLETING THE SPECIFICATION

#### INTERPRETATION AND USE OF SPECIFICATION

- 1 This specification forms part of the contract for the proposed work when executed and initialled by both parties.
- 2 Where multiple choices are available, only one choice is permitted. If choice/s is/are not clarified by the Purchaser at the time of signing the choice/s is/are to be at the Builder's sole discretion.
- 3 All items are to be selected within the range as determined by the Builder as allowable for this style of building.
- 4 The Purchaser acknowledges that the Builder [M and L Barke Construction Limited] is the independent owner and operator of a GJ Gardner Homes franchise and agrees this building contract is exclusively between the Purchaser and the Builder [M and L Barke Construction Limited].

ITEM	DESCRIPTION	INITIAL ALTERATIONS
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#### 1. GENERAL


- a) Unless otherwise specified, the works shall be constructed in accordance with the Building Act 2004 (as amended) in conjunction with the New Zealand Building Code.
- b) Unless otherwise specified, the Purchaser is responsible to provide a house site clear of any obstructions to building including removal of long grass, shrubs and trees where necessary.
- c) It is acknowledged by the Purchaser that it is the Purchaser's responsibility to engage a licensed surveyor to peg the boundary corners of the allotment prior to commencement of site works if the survey pegs are not in place.
- d) The Purchaser acknowledges that it is their responsibility to provide all weather access suitable to allow vehicles and machinery, as normally used in the building industry, to drive in and out of the property.
- e) Unless otherwise specified, the contract price allows that town water supply will be available from an existing main of the Local Authority prior to commencement of construction. Where no such water supply exists, the Purchaser is to arrange at their expense, a temporary fresh water supply for building purposes by means satisfactory to The Builder, and to be available prior to commencement of construction.
- f) This contract allows for 240 Volt single phase power being available prior to and during the construction of the dwelling. Where no such power is available the Purchaser is to arrange temporary power to the satisfaction of The Builder at the Purchaser's expense.
- g) (i) Complying with statutory obligations and any notices and obtaining relevant approvals is the responsibility of The Builder.  
(ii) The Builder and the Purchaser acknowledge that notwithstanding proper requests by the Builder the Local Authority does not on all occasions carry out final inspections in relation to the works. The Purchaser further acknowledges and irrevocably agrees that they will not make any objection to the lack of provision of a final inspection report subsequent to practical completion and further will not withhold or cause to be withheld any progress payments due to The Builder, either directly or through their financier that are due to be paid to The Builder on practical completion of the works.

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Purchaser's Initials

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Builder's Initials



ITEM	DESCRIPTION	INITIAL ALTERATIONS
	(iii) The Purchaser acknowledges and agrees that should their financier refuse to advance all or any funds until the provision of a final inspection report from the Local Authority which may not be available, The Builder will at the Purchaser's cost obtain a final inspection report suitable to the financier from a qualified engineer/registered Builder.	
	h) Unless otherwise specified, all council building fees are paid for by The Builder. Any Bonds called for or development application fees requested by any Local or Other Authority or statutory body are to be arranged and paid for by the Purchaser.	
	(i) It is the responsibility of the Purchaser to obtain any necessary building consents from relevant developer or land corporation where a covenant applies.	
	i) An Engineer's soil report, footing and slab designs are to be provided by The Builder. The cost of which is taken from the initial deposit.	
	j) Should this Contract not proceed for any reason whatsoever all moneys expended by The Builder on Local Authority fees, obtaining soil reports and footing and slab designs, engineers fees and an administration fee of \$1,000.00 for the costs of preparation of contracts and plans shall be deducted forthwith from any deposit paid by the Purchaser. If the deposit paid by the Purchaser is insufficient to cover such costs then the Purchaser shall pay such extra costs to The Builder within fourteen days after receiving notification that the same are due and payable.	
	k) Colour selection must be completed before council approval has been received to enable the Purchaser's home to be built within the construction period stated in this contract. The colour selection forms part of this contract and any item at a cost above standard allowance will be charged as an extra.	
l)	(i) Any valuations required by the lending body (other than Council final inspection) are to be the responsibility of the Purchaser to organise.	
	(ii) The Builder takes no responsibility for any colour variation in the roof tile, brick, ceramic wall and floor tile, between those shown in displays or brochures to those delivered by the manufacturer. These products may vary slightly in colour from time to time and any discrepancy is the responsibility of the manufacturer.	
	(iii) Electrical plan is to be completed and returned to this office within seven days from the date the Purchaser signs the contract, failing which the standard electrical plan will apply.	
	(iv) The Purchaser and The Builder hereby agree that any extension of time claimed for practical completion due to wet or inclement weather shall be based on notification pursuant to the relevant clause of the Contract and shall be claimed as per the logged days by the nearest post office or weather bureau.	
	(v) The Purchaser acknowledges that it is their responsibility to pay a deposit to the electrical authority to connect power. Any delay by the electrical authority in connecting power shall not on its own delay practical completion or final payment to The Builder.	
	(vii) Where due to soil conditions, Local or Other Authority requirements, pump out tanks, submersible pumps and irrigation systems are needed over and above the normal septic system, the Purchaser agrees to bear the costs thereof and proceed by way of variation pursuant to the relevant clause of the Contract.	
m)	The Builder reserves the right to charge a \$200.00 fee for each variation requested by the Purchaser subsequent to execution of the contract. Variations are deemed to be changes, additions, deletions and alterations to contract, colour selection, allowances or prior variations. Each variation may add one week to the contract time.	
n)	The Builder accepts no responsibility to contact the owners of adjoining properties in relation to fencing. It is the Purchaser's responsibility to contact the adjoining neighbours to arrange rebates. Should the Purchaser not arrange rebates, The Builder will install the fence(s) as per the contract at the Builder's discretion.	

  
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ITEM	DESCRIPTION	INITIAL ALTERATIONS
	<p>o) The Purchaser acknowledges that they have not relied upon any representations made by The Builder, its agents, employees or workmen in entering into this contract other than those representations as are included in and form part of this contract.</p> <p>q) Provisional cost or prime sum items (to the value of items) in this contract will be adjusted with a margin for recovery of profit and administration as indicated in the building contract. Adjustments will be made on receipt of final invoice and credited off the final progress claim. These allowances are non-transferable and will be subject to a 5% retention if deleted.</p>	

## 2. INSURANCE / GUARANTEES

- a) Certified Builders Association of New Zealand, 10 Year Builders Guarantee.
- b) Public Liability and Contract Works Insurance.

## 3. EXCAVATION

The Owner acknowledges that after breaking the surface of the ground, if variations are required by the Engineer, or Territorial or Other Authorities, or due to the nature of the site access or due to extra excavations or footings required if rock or other obstacles are encountered, then the Builder will notify the Owner as provided for in Clause 4 of the contract and the cost of such variation together with a reasonable allowance for overheads and profits shall be adjusted against the contract sum.

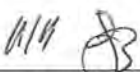
- a) All earthworks will be completed by the Owner.

## 4. CONCRETOR

- a) Footings and slab are designed to comply with NZS 3604, 2011 for Soil with 300kpa minimum bearing capacity and specifically designed by an engineer.
- b) FIRTH Ribraft Foundation system with polystyrene pods and steel mesh are the general basis for foundation design unless engineer specifies otherwise.
- c) Slab and footing concrete to be as per engineered design.
- d) Concrete pumping is included.
- e) Extra piers, beams, steel etc., if required by Engineer or Territorial Authority before or after Territorial Authority approval are at the Owner's expense.
- f) No Driveway has been included.
- g) No patios or paths have been included.

## 5. DRAINLAYER

- a) Sewerage installation to be in accordance with the Territorial Authority Approved Plan. All sewerage drainage is included, as required on site.
- b) Stormwater installation to be in accordance with the Territorial Authority Approved Plan. All stormwater drainage is included, as required on site.
- c) Supply and installation of a 25,000L above ground water tank (plumbed to the Kapiti Coast District Council requirements) including pump is to be supplied by Owner. Builder to connect the dwelling to the tank.
- d) Supply and installation of an Airtech 9000 septic system with drip line is to be owner care.
- e) The Builder will supply & install a conduit with draw wire for Telecommunication from house demarcation point to assumed street pillar location (to 15m). The Builder takes no responsibility should this assumed pillar location (as per plan) be incorrect.

  
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ITEM	DESCRIPTION	INITIAL ALTERATIONS
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- f) Power is to be charged directly to the Client via a power account established by the Builder in the Owner's name with Genesis Energy. All daily power charges and power usage is covered by the Owner for the duration of the build.
- g) Mains power cable is included, as required on site.
- h) Mains water supply is included, as required on site.
- i) Any water meter maintenance/connection costs will be covered by the Owner

## 6. CARPENTER/JOINER

- a) External and Internal Timber framing to be MSG8, kiln dried, to the Manufacturer's design or NZS 3604 2011 for up to a very high wind zone, H1.2 treatment for all framing.
- b) Roof Trusses are to manufacturer's design, as indicated on the plan and to detail, well fixed in accordance with NZS 3604 2011 for up to a very high wind zone. Based on a 25 degree hip and gable pitched roof.
- c) The Builder will provide an access hatch to the ceiling 635mm x 535mm in the garage.
- d) Breather type building paper is to be Tekton (BRANZ Appraisal No. 548, 2013).
- e) Window flashing system is to be 40 Below Window Tape - CertMark Certificate number CMA-CM40098
- f) Air seal is to be Sika Boom air seal (BRANZ Appraisal No. 452, 2013).
- g) Ceiling height is to be 2.4m throughout.

## 7. BRICKLAYER

- a) Supply and installation of bricks from the Builders 'Classic' range has been included.
- b) Joints are to be raked.
- c) Mortar colour is natural grey.
- d) Window sills are to be bricks laid on their edge.

## 8. EXTERNAL WALL CLADDING

- a) Exterior cladding will be James Hardie Linea weatherboards (16mm thick x 180mm wide) as detailed on the plan and painted.
- b) Soffits will be 4.5mm Fibre Cement sheeting with PVC jointer, painted.


## 9. ROOF COVERING

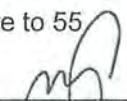
- a) The roof covering will be Gerard metal roof tiles from the Builder's Range fixed to Manufacturer's specification with a satin finish.
- b) The metal roof tiles will be fixed with an angle trim.
- c) Roofing underlay will be Thermakraft 215.

## 10. PLUMBING, FASCIA, GUTTER AND DOWNPIPES

Fascia and guttering shall be as shown on the drawings together with down pipes, all in accordance with manufacturer's specifications and recommendations.

- a) Fascia and gutters are pre-coated steel.
- b) Downpipes are 80mm round PVC, unpainted.
- c) Allow to supply and install hot water cylinder and run 20mm supply line and 15mm leads to all fittings.  
Install tempering valve to comply with NZS 4617 to limit hot water temperature to 55

  
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ITEM	DESCRIPTION	INITIAL ALTERATIONS
	degrees Celcius. Fit seismic restraint to hot water cylinder. Connections from the hot water cylinder will be lagged to insulate as applicable. The hot water supply from the hot water heater to the kitchen sink will be insulated in accordance with the minimum requirements of H1/AS1 as applicable.	
d)	Supply and run 25mm OD MDPE pipe supply line from street mains. Cold water reticulation within the dwelling to be run in Dux Secura polybutylene pipes installed in strict accordance with the manufacturers instructions for working and using the material. Hot water reticulation within the dwelling to be run in Dux Secura polybutylene pipes. All pipes to be concealed in the walls or under the floor.	
e)	All plumbing and drainage will comply with ASNZS.5.2000.	

### 11. ALUMINIUM WINDOWS AND DOORS


- a) All units are from the Nalco Weathertight Series suite.
- b) The front entrance door will be a painted Fibrewood Tongue and Groove (vertical) door in an aluminium powder coated frame.
- c) The external and internal entrance door handle will be the Legge 1244 300mm pull handle with Optimum 2-point Apex turn set.
- d) All aluminium hardware will be from the Aria range.
- e) The frame finish will be powder coated aluminium (from standard range).
- f) Reveals are pre-primed finger-jointed pine.
- g) Flashings for Linea cladding are aluminium.
- h) All units will be double glazed.
- i) All obscure glass as indicated on the plan will be Stippolite.
- j) Tinting of the windows is not included.
- k) All windows (except on sliders) will be double tongue.

### 12. DOORS (INCLUDING TYPE, FINISH, FURNITURE)

- a) The garage door will be pre-finished Windsor Ribline sectional door. Two Remote Controls are included.
- b) All internal doors will be 1.98m high, flush hollow core doors with a paint finish.
- c) All internal swing door handles will be Schlage Allegion Range in brushed chrome.
- d) All internal cavity slider door handles will be Schlage 46 100 (46 101 where privacy) in satin chrome.
- e) All door stops will be Miles Nelson 701 SC in satin chrome.

### 13. INTERNAL LININGS

- a) Walls are sheeted with 10mm Winstone GIB Board fixed to manufacturers specifications.
- b) Wet area walls such as bathroom, ensuite and WC are sheeted with 10mm Winstone Aqualine GIB Board fixed to manufacturers specifications.
- c) Ceilings are sheeted with 13mm Winstone GIB Board on Rondo battens fixed to manufacturers specifications.
- d) Wet area ceilings such as bathroom, ensuite and WC are sheeted with 13mm Winstone Aqualine GIB Board fixed to manufacturers specifications.

  
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ITEM	DESCRIPTION	INITIAL ALTERATIONS
e)	Cornice will be standard 55mm Gib Cove Classic pattern and fixed to manufacturers specifications.	
f)	Winstone Gib Board and Aqualine shall be stopped and sanded to a level 4 paint finish.	
g)	Insulation to external walls and to separate the house from the garage will be Pink Batts R2.2. No Batts will be placed in the garage external walls.	
h)	Insulation to ceilings (except garage) will be Pink Batts R3.2.	
i)	Construction expansion joints will be installed as and where required.	

#### **14. INTERNAL FINISHING TIMBERS**


- a) Architraves will be nominal 60 x 12mm Rad FJ in wet areas and otherwise MDF.
- b) Skirting will be nominal 60 x 12mm Rad FJ in wet areas (where not tiled) and otherwise MDF.
- c) Jambs will be 125mm x 40mm FJ Pine.
- d) The Profile will be bevelled.

#### **15. PLUMBING FIXTURES AND FITTINGS**

- a) Bath will be a Caroma Maxton (1675mm x 735mm) in white with end waste.
- b) Laundry tub will be Robinhood Supertub ST3702 (mixer included).
- c) Bathroom shower is a 1000mm x 1000mm (square) Clearlite Millennium with acrylic base, tiled walls and satin joinery. Moulded walls are not included.
- d) Ensuite shower is a 2000mm x 1000mm fully tiled wet area with frameless glass and a 20mm stepdown. Moulded walls are not included.
- e) Bathroom vanity will be a 900mm Clearlite vanity from Builder's range.
- f) Ensuite vanity will be a 900mm Clearlite vanity from Builder's range.
- g) W.C. Hand basins are 400mm wall hung Clearlite Mimas.
- h) W.C.'s are to be Caroma Venecia close coupled vitreous china suite.
- i) Hot water cylinder to be Rheem mains pressure 180 litre.
- j) Two hose taps have been included.
- k) W.C. Roll holders are Heirloom Veloso in chrome.
- l) W.C. Hand towel ring will be Heirloom Veloso in chrome.

#### **16. TAPWARE**

- a) Kitchen sink mixer will be Methven Echo Minimalist EM8105.
- b) Bathroom shower slide will be Methven Echo Minimalist EM8510.
- c) Bathroom shower mixer will be Methven Echo Minimalist EM8107.
- d) Bathroom vanity mixer will be Methven Echo Minimalist EM8101.
- e) Bathroom bath spout will be Methven Echo E9704 (150mm projection).
- f) Bathroom bath mixer will be Methven Echo Minimalist EM8107.
- g) Ensuite shower slides will be Methven Echo Minimalist EM8510.
- h) Ensuite shower mixers will be Methven Echo Minimalist EM8107.
- i) Ensuite vanity mixer will be Methven Echo Minimalist EM8101.
- j) W.C. Hand basin mixers will be Methven Echo Minimalist EM8101.
- k) A water feed for fridge is included.

  
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## ITEM DESCRIPTION

## INITIAL ALTERATIONS

**17. ELECTRICIAN**

- a) The builder will supply and install all electrical wiring and fittings.
- b) Single phase connection to be provided by the Builder.
- c) Recessed Martec LED downlights (model: TLAD3010WD, 13watt ,850 lumens in warm white) with white faceplates have been included as per the plan.
- d) External lights are allowed for as per the plan.
- e) Two-way switches have been included as per the plan.
- f) Double power points are allowed for as per the plan.
- g) Power points for appliances have been included as per the plan.
- h) Telephone point(s) are included as per the plan.
- i) Fibre optic hub and four data outlets have been included.
- j) T.V. point(s) are included as per the plan.
- k) Manrose 3 in 1: heating, fan, light to bathroom and ensuite is included. Fan is to be vented to outside.
- l) Battery operated smoke detectors are included as per regulations.
- m) Supply and install meter box and switchboard with underground supply to local authority supply. The switchboard shall be fitted with appropriate circuit breakers and have all circuits neatly labelled.
- n) Switch plates are to be PDL Series 600 in white.
- o) A hardwired garage door opener is included.
- p) The bathroom and ensuite heated towel rail will be a Newtech 5 bar (round) SL115 in stainless steel.
- q) Water Heating Elements: allowed to supply, wire for and install water heating element and thermostat complete with remote control switch. Water heating cylinder supplied and installed by plumber.
- r) A security system is not included.

**18. WHITE GOODS**

- a) Two Fisher & Paykel OB60SC5CEX1 wall ovens (stainless steel) will be supplied and installed by Builder.
- b) Fisher & Paykel CE604CBX1 ceramic hob (black) will be supplied and installed by the Builder.
- c) Fisher & Paykel HC90PLX4 rangehood (stainless steel) will be supplied and installed by the Builder.
- d) Fisher and Paykel DW60FC2X1 dishwasher (stainless steel) will be supplied and installed by the Builder.

**19. CABINETMAKER**

- a) The kitchen & pantry will be designed and custom made to the client's requirements with full installation by the kitchen joiners.  
The Provisional Sum allowed for this kitchen & pantry is \$16,000 +GST
- b) Kitchen sink will be supplied and fitted with the kitchen joinery and included in the Kitchen Provisional Sum noted above.
- c) Three pine slat shelves to each linen cupboard as shown on the plan.
- d) One painted shelf with hanging rail to each bedroom wardrobe as shown on the plan.

  
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**20. CERAMIC TILING**

All tiled areas are based on a standard grid lay pattern, other patterns are available at an additional cost.

- a) Bathroom wall tiles are from the Tilemax Builder's selection and will be applied to up to height of shower frame in shower enclosure, up to 300mm above the bath and to the bath surround. Waterproofing will be Davco K10 Plus Wet Area Membrane
- b) Bathroom floor tiles will be applied to the floor and skirting of the room from the Tilemax Builder's selection.
- c) Ensuite wall tiles are from the Tilemax Builder's selection and will be applied up to height of shower frame in shower enclosure. Waterproofing will be Davco K10 Plus Wet Area Membrane.
- d) Ensuite floor tiles will be applied to the floor and skirting of the room from the Tilemax Builder's selection.
- e) Dining Room floor tiles will be applied to the defined area of the room from the Tilemax Builder's selection.
- f) W.C. Floor tiles will be applied to the floor and skirting of the room from the Tilemax Builder's selection.
- g) Kitchen floor tiles are to be applied to the kitchen floor area as defined in the plan from the Tilemax Builder's selection (except for under floor standing fixtures).
- h) Entry floor tiles are to be applied to the defined entry floor area as per the plan from the Tilemax Builder's selection.
- i) Kitchen wall tiles will be applied to the area directly underneath the rangehood (750mm x 900mm) from the Tilemax Builder's selection.

**21. FLOOR COVERINGS**

- a) The bedrooms, hallway, lounge, and family room floors will be laid in carpet from the Builder's range with 10mm, 90kg foam underlay.
- b) Garage floor will be left as unpainted concrete.

**22. PAINTER**


- a) The Painter shall ensure that all necessary priming is carried out at the required stage of construction.  
The brand of paint used is Resene unless the client stipulates clearly that a specific brand must be used.

Four colours from a white base are allowed for without additional cost-

1. Ceilings
2. Skirtings & Architraves
3. Walls
4. Doors

The Building Contractor and the Painter will be provided with a full schedule of finishes and colours from the colour consultant.

- b) External painting by the Builder:
  1. Any external AC sheeting shall have one coat of acrylic primer undercoat and two coats of semi gloss water based acrylic paint.
  2. Any other external surfaces will be painted according to the Manufacturer's Specifications.
- c) External brick walls will be unpainted.

  
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ITEM	DESCRIPTION	INITIAL ALTERATIONS
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d) Internal Painting by the Builder.

1. Ceilings are to be painted with one coat of approved sealer and two coats of Matt finish flat acrylic ceiling paint to the Manufacturer's Specification (from white base).
2. Walls are to be painted with one coat of approved sealer and two coats of low sheen water base acrylic paint to the Manufacturer's Specification (from white base).
3. Cupboard interiors will be painted with the wall colour.
4. Wet Area walls and ceilings are to be painted with one coat of approved sealer and two coats of water based satin gloss acrylic paint to the Manufacturer's Specification (from white base).
5. Wall-paper is not included.

e) Timber work - doors, door jambs, architraves, reveals and skirtings will be painted with one coat of primer/undercoat, then two coats semi gloss water based acrylic paint in one colour.

### 23. MISCELLANEOUS

- a) Mirrors in bathroom and ensuite are 1000mm high by (maximum) length of vanity, unframed.
- b) Mirrors in W.C. is 600 x 400, unframed

### 24. ALLOWANCES & EXCEPTIONS

- a) Professional house clean and rubbish removal has been included.
- b) Fencing is not included.
- c) Piling is not included.
- d) Clothes line is not included.
- e) Curtains are not included.
- f) Air Conditioning A Fujitsu compact cassette heat pump has been included.
- g) Letterbox is not included.
- h) A Provisional Sum of \$2,000 + GST has been allowed for Resource Consent.

Dated this 31 day of July 2019.

SIGNED by the Purchaser

In the presence of

SIGNED by the Builder

in the presence of

Purchaser's Initials

Builder's Initials



# Memorandum from licensed building practitioner: Certificate of design work

Section 45 and section 30c, Building Act 2004

## THE BUILDING

**Street Address:** Lot 3, Hadfield Road,

**Suburb:** PEKA PEKA

## THE OWNER(S)

**Name(s):** Adam Beattie

**Mailing Address:** 49 Saunders Close, WHITBY,

**Phone Number:** or

**Email Address:**

## IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK

I **Bill Francis** carried out/supervised the following design work that is restricted building work:

### PRIMARY STRUCTURE

Design work that is restricted building work	Description of restricted building work	Carried out or supervised	Reference to plans and specifications
Tick <input checked="" type="checkbox"/>	If appropriate, provide details of the restricted building work	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Foundations and subfloor framing <input type="checkbox"/>	Rib-Raft by engineer	<input type="checkbox"/> Carried out <input type="checkbox"/> Supervised	
Walls <input checked="" type="checkbox"/>	Framing and lintels by pre-nail manufacturer	<input type="checkbox"/> Carried out <input checked="" type="checkbox"/> Supervised	Pg 3
Roof <input checked="" type="checkbox"/>	Truss Manufacturer has been supplied with relevant information to produce suitable trusses for this job	<input type="checkbox"/> Carried out <input checked="" type="checkbox"/> Supervised	Pg 5
Columns and beams <input type="checkbox"/>	NIL	<input type="checkbox"/> Carried out <input type="checkbox"/> Supervised	
Bracing <input checked="" type="checkbox"/>	Sheet bracing	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised	Pg 8
Other <input type="checkbox"/>		<input type="checkbox"/> Carried out <input type="checkbox"/> Supervised	



## EXTERNAL MOISTURE MANAGEMENT SYSTEMS

Design work that is restricted building work	Description of restricted building work	Carried out or supervised	Reference to plans and specifications
Tick <input checked="" type="checkbox"/>	If appropriate, provide details of the restricted building work	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Damp proofing <input checked="" type="checkbox"/>	To slab ONLY	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised	Pg 4
Roof Cladding or roof cladding system <input checked="" type="checkbox"/>	Pressed metal roof tiles	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised	Pg 5
Ventilation system (for example, subfloor or cavity) <input checked="" type="checkbox"/>	Brick Veneer & Linea Cavity system	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised	Pg 6
Wall cladding or wall cladding system <input checked="" type="checkbox"/>	Brick Veneer & Linea Cavity system	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised	Pg 6
Waterproofing <input checked="" type="checkbox"/>	Wet area shower	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised	
Other <input type="checkbox"/>	NIL	<input type="checkbox"/> Carried out <input type="checkbox"/> Supervised	

## FIRE SAFETY SYSTEMS

Design work that is restricted building work	Description of restricted building work	Carried out or supervised	Reference to plans and specifications
Tick if appropriate <input checked="" type="checkbox"/>	If appropriate, provide details of the restricted building work	Tick <input checked="" type="checkbox"/> whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Emergency warning systems <input checked="" type="checkbox"/>  Evacuation and fire-service operation systems  Suppression or control systems  Other	Smoke Alarms ONLY	<input checked="" type="checkbox"/> Carried out <input type="checkbox"/> Supervised	Pg 3, 9

**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.

## 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
List relevant clause numbers of building code	Specify nature of waiver or modification of building code required

## ISSUED BY

Name and contact details of the licensed building practitioner who is licensed to carry out or supervise design work that is restricted building work:

Name: Bill Francis

LBP or Registration number: 111338

The practitioner is a: ☒ Design LBP ☐ Registered architect ☐ Chartered professional engineer

Mailing Address (if different from below): PO Box 65, Paraparaumu

Street Address/Registered Office: 11 Kodex Place, Paraparaumu

Town/City: Paraparaumu

Postcode: 5032

Phone number:

Mobile: 0272499519

After hours:

Fax: 04 298 7910


Email address: billfrancis@paradise.net.nz

Website:

## DECLARATION

I Bill Francis certify that the design work that is restricted building work identified on this form:

- Complies with the building code, or
- Complies with the building code subject to any waiver or modification of the building code recorded on this form

Signature: 

Date:

7, 8, 2019.







## VIEW INSTRUMENT DETAILS

**Instrument No.** 11407246.2  
**Status** Registered  
**Date & Time Lodged** 05 Apr 2019 13:35  
**Lodged By** Fraser-Jones, Natalie Grace  
**Instrument Type** Consent Notice under s221(4)(a) Resource Management Act 1991

ioitu te  
**Land whenua**  
**Information**  
New Zealand



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Affected Records of Title	Land District
867911	Wellington

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**Annexure Schedule:** Contains 2 Pages.

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### Signature

Signed by David Saul Briscoe as Territorial Authority Representative on 05/04/2019 01:20 PM

\*\*\* End of Report \*\*\*





**KAPITI COAST DISTRICT COUNCIL**  
**CONSENT NOTICE PURSUANT TO SECTION 221**  
**OF THE RESOURCE MANAGEMENT ACT 1991**  
**FOR THE DEPOSIT OF LAND TRANSFER PLAN 81236**  
**THE SUBDIVISION OF LOT 1 & 3 DP 59055**  
**RM950038 : KELMORE HOLDINGS LTD, HADFIELD ROAD, PEKA PEKA**

**TO: The District Land Registrar at Wellington**

Pursuant to Section 221 (1) of the Resource Management Act 1991, the Kapiti Coast District Council hereby certifies that it has consented to the subdivision on the following condition/s to be complied with on a continuing basis:

1. That a specific engineering design will be required for on site effluent disposal for dwellings on each allotment to determine the method of disposal environmentally suitable for the specific house size and requirements on each lot.
2. That the wetland and the existing watercourses and drainage flowpaths within the allotments including the required drainage ditch and swale formations be maintained and shall not be altered except with the prior approval of Council.
3. That Dwellings on Lots 1 to 6 shall be located above the level of the railway embankment. Floor levels may be required to be elevated as a requirement of building consent to minimise the consequences of any overland stormwater flows.

Dated at Paraparaumu this *17th* day of *January* 1995

*for* *M. P. Wan*  
GENERAL MANAGER



NDZ\_0033396

RECALL FILE LABEL

F5000004052715

COM

13.54 25.JAN96 B 498339-2

PARTICULARS ENTERED IN REGISTER

LAND REGISTRY WELLINGTON

ASST LAND REGISTRAR



GT



# CODE COMPLIANCE CERTIFICATE

Section 95 Building Act 2004 [Form 7 – Building (forms) Regulations 2004]



Consent No: 190682

The Building			
Street address of building:	6 Hadfield Road, Te Horo	Building name:	N/A
Current, Lawfully established, use:	Residential Dwelling	Location of building within site/block number:	Central
Level/unit number:	Single Level	Intended life of the building if 50 years or less:	-
Legal description of land where building is located:	LOT 3 DP 531543	Year first constructed:	
The Owner			
Name of owner:	Beattie Laura Michelle & Beattie Adam James	Street address /registered office:	N/A
Contact person:	As above	Phone numbers:	
Mailing address:	31 Wood Leigh Paraparaumu Beach Paraparaumu 5032	Landline:	-
Email address:	-	Mobile:	027 682 2999
Website:	-	Daytime:	-
		After hours:	-
		Facsimile number:	-
First point of contact for communications with the Kapiti Coast District Council:			
Full Name: GJ Gardner Homes Kapiti/Wellington Mailing Address: PO Box 65, Paraparaumu 5254 Phones:: 04 296 1248 Email: julieanne.mollet@gjgardner.co.nz			
Building Work			
Building Consent No:	190682	Issued by:	Kapiti Coast District Council
Project Description:	New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage		

## Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that:

- (a) the building work complies with the building consent;

Michelle Salmon –  
Building Inspections Team Leader  
On behalf of **Kapiti Coast District Council**

Date: 31 March 2020

## GoGet Inspection Audit Report

Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

Inspection Type: **Brick Veneer**

Inspection Outcome: **Pass**

Inspected By: **Anthony Wilson**

Inspection Date: **3 December 2019 1:46 p.m.**

Duration: **30 minutes**

Inspection Element	Status
General	Pass
Min/max cavity achieved <b>40mm</b>	Pass
Brick tie fixings <b>In place, 1st course then every 3rd</b>	Pass
Washouts <b>Corners and half way between corners</b>	Pass
Weep holes <b>Every 3rd join</b>	Pass
Mortar strength <b>5-1 mix lime sand, mixed on site</b>	Pass
Mortar bedding <b>9mm</b>	Pass
Flashings	N/A
Brick tie durability <b>Galv</b>	Pass
Building wrap <b>Tekton Paper</b>	Pass
Under window vents <b>Not assessed at this inspection</b>	N/A
Rebate <b>clean and cleared.</b>	Pass
Veneer overhang <b>Flush</b>	Pass
Brick tie spacing <b>More than the minimum requirement</b>	Pass
Head lintels <b>Not part of this consent</b>	N/A
Control joints	N/A
LBP number <b>111559 Kelly Barker</b>	Pass
Other	N/A





**Cavity and ties**

Taken at 1:33 PM on Tuesday 3/12/2019



**40mm cavity and brick ties**

Taken at 1:34 PM on Tuesday 3/12/2019



**Ties**

Taken at 1:34 PM on Tuesday 3/12/2019



**Weep holes**

Taken at 1:34 PM on Tuesday 3/12/2019





**South Wall**

Taken at 1:34 PM on Tuesday 3/12/2019

## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Pre Clad**  
Inspection Outcome: **Pass**  
Inspected By: **Anthony Wilson**  
Inspection Date: **3 December 2019**

### Passed Items

#### General

Flashing penetrations	<b>Marshall boot flashings installed</b>
-----------------------	--

Inspection Type: **Brick Veneer**  
Inspection Outcome: **Pass**  
Inspected By: **Anthony Wilson**  
Inspection Date: **3 December 2019**

### Passed Items

#### General

Min/max cavity achieved	<b>40mm</b>
Brick tie fixings	<b>In place, 1st course then every 3rd</b>
Washouts	<b>Corners and half way between corners</b>
Weep holes	<b>Every 3rd join</b>
Mortar strength	<b>5-1 mix lime sand, mixed on site</b>
Mortar bedding	<b>9mm</b>
Brick tie durability	<b>Galv</b>
Building wrap	<b>Tekton Paper</b>
Rebate	<b>clean and cleared.</b>
Veneer overhang	<b>Flush</b>
Brick tie spacing	<b>More than the minimum requirement</b>
LBP number	<b>111559 Kelly Barker</b>



## GoGet Inspection Audit Report

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Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Drainage**

Inspection Outcome: **Pass**

Inspected By: **Jon Moser**

Inspection Date: **10 October 2019 11:28 a.m.**

Duration: **45 minutes**

Inspection Element	Status
General	Pass
Pipe diameter <b>100mm upvc storm water and sewer. Sewer laid fom preslab to septic tank.stormwater laid to rainwater bank of 3 tanks</b>	Pass
Bedding material <b>Pea metal</b>	Pass
Gully trap <b>Org branch in place with trap installed by garage</b>	Pass
Connections/angles <b>Y junctions used both sewer and sw</b>	Pass
Branch length <b>Inspections fitted asrequired.</b>	Pass
Direction/fall <b>Fall checked. To lift small section as requested on sewer</b>	Pass
Holding water <b>Air tested</b>	N/A
Terminal vent	N/A
Registration number <b>Daniel holland 24031</b>	Pass
Stormwater sumps <b>Stormwater branch capped for future sumps or connections</b>	Pass
Other	N/A



**Sewer drain with org**  
Taken at 11:30 AM on Thursday 10/10/2019



**Upperend of sewer drain**  
Taken at 11:31 AM on Thursday 10/10/2019





**Sw run to tank**  
Taken at 11:32 AM on Thursday 10/10/2019



**Sw wsetern side**  
Taken at 11:34 AM on Thursday 10/10/2019





**Sewer drain to septic system**  
Taken at 11:35 AM on Thursday 10/10/2019



## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Drainage**  
Inspection Outcome: **Pass**  
Inspected By: **Jon Moser**  
Inspection Date: **10 October 2019**

### Passed Items

#### General

Pipe diameter	<b>100mm upvc storm water and sewer. Sewer laid fom preslab to septic tank.stormwater laid to rainwater bank of 3 tanks</b>
Bedding material	<b>Pea metal</b>
Gully trap	<b>Org branch in place with trap installed by garage</b>
Connections/angles	<b>Y junctions used both sewer and sw</b>
Branch length	<b>Inspections fitted asrequired.</b>
Direction/fall	<b>Fall checked. To lift small section as requested on sewer</b>
Registration number	<b>Daniel holland 24031</b>
Stormwater sumps	<b>Stormwater branch capped for future sumps or connections</b>

## GoGet Inspection Audit Report

Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

Inspection Type: **Final Inspection**

Inspection Outcome: **Pass**

Inspected By: **Gareth McCullagh**

Inspection Date: **3 March 2020 9:50 a.m.**

Duration: **45 minutes**

Inspection Element	Status
Exterior	Pass
All previous inspections/notes passed	Pass
<b>All passed items on this inspection have been assessed against the consented documentation.</b>	
Drawings	Pass
<b>On site</b>	
Additional information/plan	N/A
<b>Not part of this consent</b>	
Sub-floor ventilation	N/A
Roof fixings	Pass
<b>Fixed as required</b>	
Spouting and down-pipes	Pass
<b>All in and connected</b>	
Deck structure	N/A
Flashings - roof	Pass
Penetrations - flashings	Pass
Barriers	N/A
<b>Not part of this consent</b>	
Gully dishes	Pass
<b>In place</b>	
Stormwater and site drainage	Pass
<b>All contained on site</b>	
Handrails	N/A
Wastes to gully	Pass
Fixings - durability	Pass
Steps/stairs	Pass
<b>Main entry step all ok</b>	
Terminal vents/AAVs	Pass
<b>Two completed</b>	
Cladding painted/sealed	Pass
<b>All sealed</b>	
Flashings - windows/doors	Pass
Cladding ground clearance	Pass
Final check complete	Pass
Other	Pass
<b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>	
Interior	Pass
All previous inspections/notes passed	Pass



Drawings	Pass
Additional information/plan	Pass
Service areas-floors/walls	Pass
<b>All sealed as required</b>	
Stair design	N/A
<b>Not part of this consent</b>	
Handrails	N/A
Balustrades	N/A
Lightings	Pass
Laundering	Pass
Cooking facilities	Pass
Smoke detectors	Pass
<b>All in place</b>	
Food storage/preparation	Pass
Ventilation	Pass
Insulation and clearance	Pass
HWC flues	N/A
HWC restraint	Pass
<b>Strapped as required</b>	
Tempering valve	Pass
Glazing - human impact	Pass
<b>Safety glass in place where required</b>	
Hot water temp	Pass
<b>51 degrees</b>	
Solid fuel heater	N/A
Water supply tank	Pass
Trap seals and AAVS	Pass
Cistern flushing	Pass
WC pan connection	Pass
Septic tank	Pass
Window labels	Pass
Final check complete	Pass
<b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>	
Other	N/A
Intertenancy/commercial	N/A
Other	N/A

---

#### Documentation

Drainage (Form 126) for stormwater installation	Received
Plumbing (Form 125) for pressure test and installation piped services	Received
Septic tank warranty	Received
<b>PS3 from installer</b>	



Taken at 9:31 AM on Tuesday 3/03/2020



Taken at 9:31 AM on Tuesday 3/03/2020





Taken at 9:31 AM on Tuesday 3/03/2020



Taken at 9:31 AM on Tuesday 3/03/2020



Taken at 9:32 AM on Tuesday 3/03/2020



Taken at 9:32 AM on Tuesday 3/03/2020





Taken at 9:32 AM on Tuesday 3/03/2020



Taken at 9:32 AM on Tuesday 3/03/2020



Taken at 9:33 AM on Tuesday 3/03/2020



Taken at 9:33 AM on Tuesday 3/03/2020





Taken at 9:33 AM on Tuesday 3/03/2020



Taken at 9:33 AM on Tuesday 3/03/2020



Taken at 9:36 AM on Tuesday 3/03/2020



Taken at 9:40 AM on Tuesday 3/03/2020





Taken at 9:41 AM on Tuesday 3/03/2020



Taken at 9:41 AM on Tuesday 3/03/2020



Taken at 9:41 AM on Tuesday 3/03/2020



Taken at 9:42 AM on Tuesday 3/03/2020





Taken at 9:42 AM on Tuesday 3/03/2020



Taken at 9:42 AM on Tuesday 3/03/2020



Taken at 9:42 AM on Tuesday 3/03/2020



Taken at 9:43 AM on Tuesday 3/03/2020





Taken at 9:44 AM on Tuesday 3/03/2020



Taken at 9:44 AM on Tuesday 3/03/2020



Taken at 9:46 AM on Tuesday 3/03/2020



Taken at 9:46 AM on Tuesday 3/03/2020



## GoGet Inspection Audit Report

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Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Foundation**

Inspection Outcome: **Fail**

Inspected By: **Gareth McCullagh**

Inspection Date: **1 October 2019 1:28 p.m.**

Duration: **30 minutes**

Inspection Element	Status
General	Fail
Footing depth	N/A
Engineers details required	Fail
<b>Ribraft design</b>	
Good bearing	N/A
Reinforcing	Pass
Siting	Pass
<b>Well within boundary 40metres nearest</b>	
<b>Boundary pegs sighted. Proposed work sited as per consented documentation</b>	
Sub-floor vents	N/A
Other	N/A
LBP number	Pass
<b>102284</b>	
Site Inspection	N/A

## GoGet Inspection Audit Report

---

Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Foundation**

Inspection Outcome: **Pass**

Inspected By: **Gareth McCullagh**

Inspection Date: **3 March 2020 9:51 a.m.**

Duration: **0 minutes**

Inspection Element	Status
General	Pass
Engineers details required	Pass
<b>Ribraft design. Supplied at final stage</b>	

---

### Documentation

Drainage (Form 126) for stormwater installation	Received
Plumbing (Form 125) for pressure test and installation piped services	Received
Septic tank warranty <b>PS3 from installer</b>	Received



## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Foundation**  
Inspection Outcome: **Fail**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **1 October 2019**

### Failed Items

#### General

Engineers details required

**Ribraft design**

### Passed Items

#### General

Reinforcing

Siting

**Well within boundary 40metres nearest  
Boundary pegs sighted. Proposed work sited as per  
consented documentation**

LBP number

**102284**

Inspection Type: **Pre-Slab Building**  
Inspection Outcome: **Fail**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **1 October 2019**

### Failed Items

#### General

Engineers details required

Steel reinforcing

Bar chairs

Other

**Ridraft design still to supply site notes**

**Not yet completed engineer to inspect**

**Also engineer added driven piles as part of design  
need sets**

### Passed Items

#### General

Rebate for brick veneer

Ground clearance

Concrete cover

Driveway S/W control

Sand blinding

Slab thickenings

**Thickenings in place**

Vapour barrier  
DPC penetrations taped  
Minimum floor level  
Siting  
LBP number

**In and taped**  
**All penetrations taped as required**

**102284**



## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Foundation**  
Inspection Outcome: **Pass**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **3 March 2020**

### Passed Items

#### General

Engineers details required	<b>Ribraft design. Supplied at final stage</b>
----------------------------	--

Inspection Type: **Pre-Slab Building**  
Inspection Outcome: **Pass**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **3 March 2020**

### Passed Items

#### General

Engineers details required	<b>Ridraft design still to supply site notes. Supplied at final stage</b>
Steel reinforcing	<b>Not yet completed engineer to inspect All steel work placed and tied as per consented documentation</b>
Bar chairs	<b>Bar chairs placed as required</b>
Other	<b>Also engineer added driven piles as part of design need sets All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>

Inspection Type: **Final Inspection**  
Inspection Outcome: **Pass**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **3 March 2020**

### Passed Items

#### Exterior

All previous inspections/notes passed	<b>All passed items on this inspection have been assessed against the consented documentation.</b>
Drawings	<b>On site</b>
Roof fixings	<b>Fixed as required</b>

Spouting and down-pipes	<b>All in and connected</b>
Flashings - roof	
Penetrations - flashings	
Gully dishes	<b>In place</b>
Stormwater and site drainage	<b>All contained on site</b>
Wastes to gully	
Fixings - durability	
Steps/stairs	<b>Main entry step all ok</b>
Terminal vents/AAVs	<b>Two completed</b>
Cladding painted/sealed	<b>All sealed</b>
Flashings - windows/doors	
Cladding ground clearance	
Final check complete	
Other	<b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>

#### Interior

All previous inspections/notes passed	
Drawings	
Additional information/plan	
Service areas-floors/walls	<b>All sealed as required</b>
Lightings	
Laundering	
Cooking facilities	
Smoke detectors	<b>All in place</b>
Food storage/preparation	
Ventilation	
Insulation and clearance	
HWC restraint	<b>Strapped as required</b>
Tempering valve	
Glazing - human impact	<b>Safety glass in place where required</b>
Hot water temp	<b>51 degrees</b>
Water supply tank	
Trap seals and AAVS	
Cistern flushing	
WC pan connection	
Septic tank	
Window labels	
Final check complete	<b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>

#### Documentation

Documentation	Status
Application for CCC	Received
Electrical safety certificate	Received
As-built drainage plan	Received
Drainage (Form 126) for stormwater installation	Received
Plumbing (Form 125) for pressure test and installation piped services	Received



Construction review PS4 statement for structural engineering Received

**Hamish Wells of Hamish Wells Engineer Ltd to Inspect: Site Prep, Piling and RibRaft Pre-pour**

Membrane applicator certificates - internal wet area Received

Timber framing and truss certification Received

Roof product manufacturers warranty Received

Record of Work Received

Water tank warranty Received

Septic tank warranty Received

**PS3 from installer**

Other (specify) Received

**PS3 or installers certificate from Internal Membrane Installer**

## GoGet Inspection Audit Report

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Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Postline / Wet area Pre Application**

Inspection Outcome: **Pass**

Inspected By: **Gareth McCullagh**

Inspection Date: **20 December 2019 8:51 a.m.**

Duration: **30 minutes**

Inspection Element	Status
General	Pass
Sighted previous inspection notes	Pass
Conforms with approved drawings	Pass
Confirm additional information/amended plan <b>Not part of this consent</b>	N/A
Sheet bracing <b>All gs1 in place</b>	Pass
Sheet fixings <b>All brace sheets screwed as required and standard gib also fixed</b>	Pass
Fire/acoustic separation <b>Not part of this consent</b>	N/A
Other <b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>	Pass
Wet area substrate system <b>Aqua line and fixed at 100mm centres</b>	Pass
LBP number	Pass



## GoGet Inspection Audit Report

Consent No: **190682**  
 Applicant: **GJ Gardner Homes Kapiti/Wellington**  
 Site Address: **6 Hadfield Road, Te Horo**  
 Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

Inspection Type: **Pre Clad**  
 Inspection Outcome: **Fail**  
 Inspected By: **Anthony Wilson**  
 Inspection Date: **20 November 2019 1:35 p.m.**  
 Duration: **30 minutes**

Inspection Element	Status
General	Fail
Inspection notes	Pass
Drawings	Pass
Additional information/plan <b>Site note received for internal wall taken out.</b>	Pass
Fire Separations <b>Not part of this consent</b>	N/A
Building wrap type <b>Marshall Tekton</b>	Pass
Flexible seling tape <b>Super stick with double layer on sills</b>	Pass
Deck membrane fixed in accordance with specification <b>Not part of this consent</b>	N/A
Head flashings <b>Windows right up to soffit, no head flashings apart from 1 where gable end is</b>	Pass
Sill flashings <b>Wanz bars in place</b>	Pass
Back flashings <b>Not part of this consent</b>	N/A
Saddle flashings <b>Not part of this consent</b>	N/A
Internal/external corner flashings <b>PVC flashings in place for linea</b>	Pass
Jamb flashings <b>In place, as per consented plans (brick)</b>	Pass
Capillary clearances <b>Drip edges for DPC under windows in place</b>	Pass
Flashing penetrations <b>Not yet installed, to be checked at half high brick inspection</b>	Fail
Ground/Deck Cladding Clearance	Pass
Additional strapping to wrap <b>All in place</b>	Pass
Batten timber treatment <b>H3.1</b>	Pass
Cavity closers <b>In place</b>	Pass
Battens in place	Pass
Battens structural fixing <b>Not part of this consent</b>	N/A
Cavity spacers	N/A

**Not part of this consent**

Cavity spacers size and slope

N/A

**Not part of this consent**

LBP number

Pass

**124403**

Other

Pass

**Brick rebates have 2 coats of mulseal, DPC window flashings in place as per consented drawings.**





Taken at 1:17 PM on Wednesday 20/11/2019

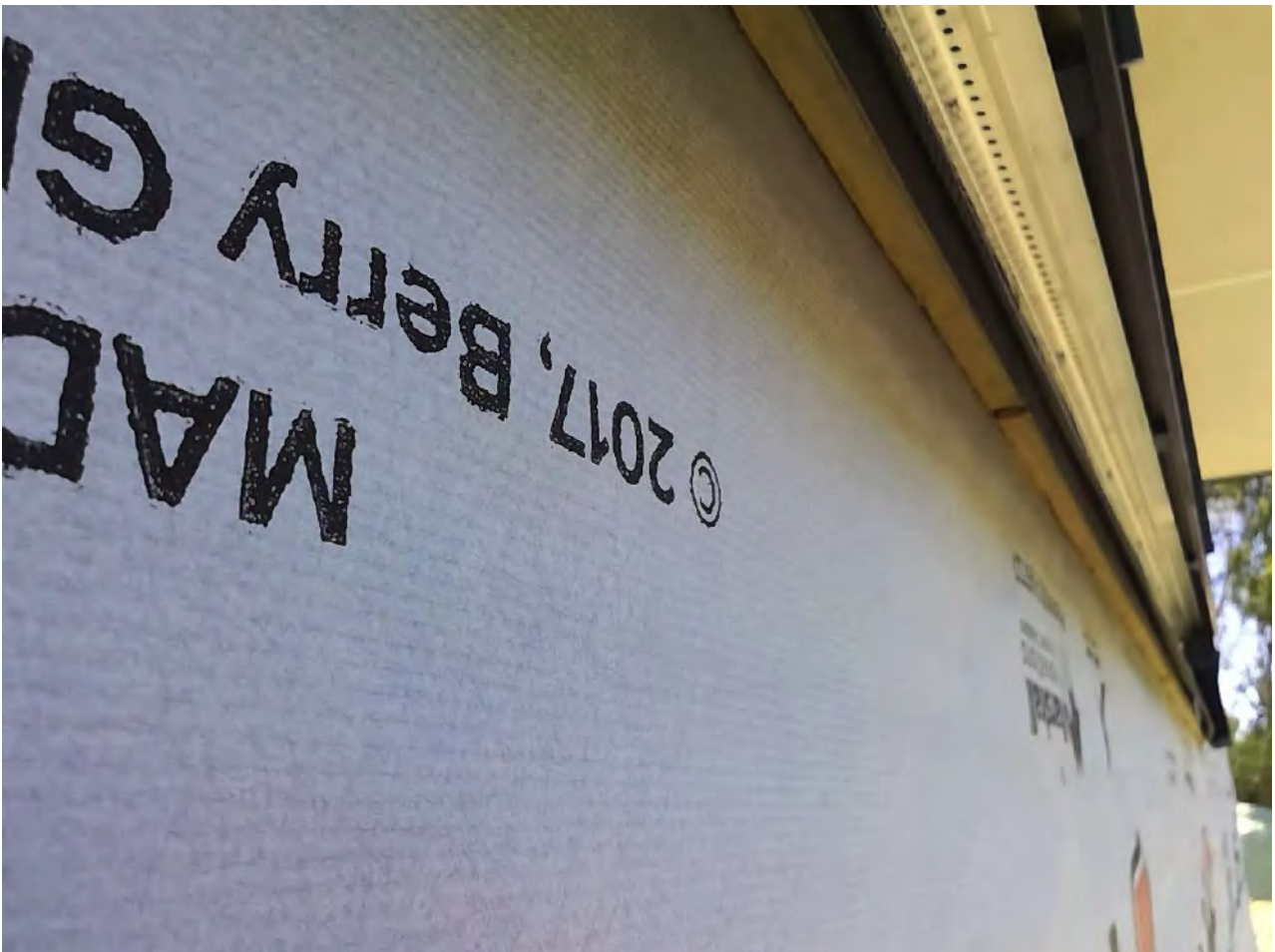


Taken at 1:18 PM on Wednesday 20/11/2019





Taken at 1:18 PM on Wednesday 20/11/2019



Taken at 1:19 PM on Wednesday 20/11/2019





Taken at 1:19 PM on Wednesday 20/11/2019



Taken at 1:20 PM on Wednesday 20/11/2019

## GoGet Inspection Audit Report

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Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Pre Clad**

Inspection Outcome: **Pass**

Inspected By: **Anthony Wilson**

Inspection Date: **3 December 2019 1:30 p.m.**

Duration: **15 minutes**

Inspection Element	Status
General	Pass
Flashing penetrations	Pass
<b>Marshall boot flashings installed</b>	



## GoGet Inspection Audit Report

Consent No: **190682**  
 Applicant: **GJ Gardner Homes Kapiti/Wellington**  
 Site Address: **6 Hadfield Road, Te Horo**  
 Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

Inspection Type: **Pre Wrap**  
 Inspection Outcome: **Fail**  
 Inspected By: **Gareth McCullagh**  
 Inspection Date: **31 October 2019 9:24 a.m.**  
 Duration: **30 minutes**

Inspection Element	Status
General	Fail
Inspection notes	Pass
Drawings	Pass
Additional information/plan	N/A
<b>Not part of this consent</b>	
Fire Separations	N/A
<b>Not part of this consent</b>	
Cladding type identified	Pass
Framing moisture meets cladding requirements	N/A
<b>Not assessed at this inspection</b>	
Stud spacing appropriate for cladding	Pass
<b>400mm centres</b>	
Exterior sheet bracing and angle brace fixing	Pass
<b>Ply bracing in place and nailed fixed as required</b>	
Bottom plate connections	Pass
<b>External plates fixed as per consent with handi bracks fir brace</b>	
<b>All bottom plate connections fixed in compliance with the building consent documentation</b>	
Building wrap type	Pass
Roof Cross Bracing	Pass
<b>Two in place</b>	
Purlin fixing	N/A
<b>Not assessed at this inspection</b>	
Decking substrate	N/A
Top Plate Connection	Pass
<b>Used gang nail plates and straps for gable end</b>	
Lintel Connections	Pass
<b>Strapped as per</b>	
Truss connections	Fail
<b>All external truss fixings as per manufactures design ok to continue but still to check internal trusses</b>	
Column posts	N/A
<b>Not assessed at this inspection</b>	
LBP number	Pass
<b>124403</b>	
Other	Fail
<b>Ok to continue but need to check internal trusses on next inspection</b>	

## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Pre Wrap**  
Inspection Outcome: **Fail**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **31 October 2019**

### Failed Items

#### General

Truss connections

**All external truss fixings as per manufactures design ok to continue but still to check internal trusses**

Other

**Ok to continue but need to check internal trusses on next inspection**

### Passed Items

#### General

Inspection notes

Drawings

Cladding type identified

Stud spacing appropriate for cladding

Exterior sheet bracing and angle brace fixing

Bottom plate connections

**400mm centres**

**Ply bracing in place and nailed fixed as required**

**External plates fixed as per consent with handi bracks fir brace**

**All bottom plate connections fixed in compliance with the building consent documentation**

Building wrap type

Roof Cross Bracing

Top Plate Connection

Lintel Connections

LBP number

**Two in place**

**Used gang nail plates and straps for gable end**

**Strapped as per**

**124403**



## GoGet Inspection Audit Report

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Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Pre Wrap**

Inspection Outcome: **Pass**

Inspected By: **Anthony Wilson**

Inspection Date: **20 November 2019 1:15 p.m.**

Duration: **15 minutes**

Inspection Element	Status
General	Pass
Truss connections	Pass
<b>As per truss plan</b>	
Other	N/A

## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Pre Wrap**  
Inspection Outcome: **Pass**  
Inspected By: **Anthony Wilson**  
Inspection Date: **20 November 2019**

### Passed Items

#### General

Truss connections	<b>As per truss plan</b>
-------------------	--------------------------

Inspection Type: **Pre Clad**  
Inspection Outcome: **Fail**  
Inspected By: **Anthony Wilson**  
Inspection Date: **20 November 2019**

### Failed Items

#### General

Flashing penetrations	<b>Not yet installed, to be checked at half high brick inspection</b>
-----------------------	---

### Passed Items

#### General

Inspection notes	
Drawings	
Additional information/plan	<b>Site note received for internal wall taken out.</b>
Building wrap type	<b>Marshall Tekton</b>
Flexible sealing tape	<b>Super stick with double layer on sills</b>
Head flashings	<b>Windows right up to soffit, no head flashings apart from 1 where gable end is</b>
Sill flashings	<b>Wanz bars in place</b>
Internal/external corner flashings	<b>PVC flashings in place for linea</b>
Jamb flashings	<b>In place, as per consented plans (brick)</b>
Capillary clearances	<b>Drip edges for DPC under windows in place</b>
Ground/Deck Cladding Clearance	
Additional strapping to wrap	<b>All in place</b>
Batten timber treatment	<b>H3.1</b>
Cavity closers	<b>In place</b>
Battens in place	



LBP number

124403

Other

Brick rebates have 2 coats of mulseal, DPC window flashings in place as per consented drawings.

## GoGet Inspection Audit Report

Consent No: **190682**  
 Applicant: **GJ Gardner Homes Kapiti/Wellington**  
 Site Address: **6 Hadfield Road, Te Horo**  
 Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

Inspection Type: **Preline Building**  
 Inspection Outcome: **Fail**  
 Inspected By: **Jeremy Lincoln**  
 Inspection Date: **10 December 2019 3:45 p.m.**  
 Duration: **30 minutes**

Inspection Element	Status
General	Fail
Sighted previous inspection notes	Pass
Conforms with approved drawings	Pass
Confirm additional information/amended plan	N/A
Fire Separations	N/A
Max moisture content	Fail
<b>18-36</b>	
<b>Recheck required.</b>	
<b>Ok to line cieling &amp; 1 side of internals</b>	
Ventilation to rooms	Pass
<b>Window sizes and openings as per consented documentation</b>	
Timber treatment	Pass
<b>H3 bottom plate in service rooms</b>	
<b>All other H1.2</b>	
Lintel/beam size and fixing	N/A
<b>External</b>	
Insulation	Pass
<b>wall R2.2</b>	
<b>Cielings R3.2</b>	
Top plate connection	Pass
<b>external</b>	
Ceiling batten spacing	Pass
<b>600 rondo</b>	
Stud spacing	Pass
<b>400ext</b>	
<b>600ext</b>	
Bracing connections	Pass
<b>All internals GSs</b>	
Air seals	Pass
Bottom plate fixings	Pass
Is the building weathertight	Pass
Grade of timber framing	Pass
<b>Msg8</b>	
Framing cut outs	Pass
wet area substrate	Pass
<b>Ensuite only</b>	
insert or inbuilt fireplace	N/A
LBP number	Pass
<b>124403</b>	



Other  
Other

N/A  
N/A



**plate stiffener**

Taken at 3:43 PM on Tuesday 10/12/2019



**metal corners to shower**

Taken at 3:44 PM on Tuesday 10/12/2019





**metal corner to shower wall**  
Taken at 3:44 PM on Tuesday 10/12/2019

## GoGet Inspection Audit Report

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Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Preline Building**

Inspection Outcome: **Fail**

Inspected By: **Jeremy Lincoln**

Inspection Date: **17 December 2019 11:19 a.m.**

Duration: **15 minutes**

Inspection Element	Status
General	Fail
<b>Moisture check only</b>	
Sighted previous inspection notes	N/A
Conforms with approved drawings	N/A
Confirm additional information/amended plan	N/A
Fire Separations	N/A
Max moisture content	Fail
<b>Bed 4</b>	
<b>Recheck at postline</b>	
<b>Still high</b>	
Ventilation to rooms	N/A
Timber treatment	N/A
Lintel/beam size and fixing	N/A
Insulation	N/A
Top plate connection	N/A
Ceiling batten spacing	N/A
Stud spacing	N/A
Bracing connections	N/A
Air seals	N/A
Bottom plate fixings	N/A
Is the building weathertight	N/A
Grade of timber framing	N/A
Framing cut outs	N/A
wet area substrate	N/A
insert or inbuilt fireplace	N/A
LBP number	N/A
Other	N/A
Other	N/A



## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Preline Building**  
Inspection Outcome: **Fail**  
Inspected By: **Jeremy Lincoln**  
Inspection Date: **10 December 2019**

### Failed Items

#### General

Max moisture content	<b>18-36</b> <b>Recheck required.</b>
	<b>Ok to line cielings &amp; 1 side of internals</b>

### Passed Items

#### General

Sighted previous inspection notes	
Conforms with approved drawings	
Ventilation to rooms	<b>Window sizes and openings as per consented documentation</b>
Timber treatment	<b>H3 bottom plate in service rooms</b> <b>All other H1.2</b>
Insulation	<b>wall R2.2</b> <b>Cielings R3.2</b>
Top plate connection	<b>external</b>
Ceiling batten spacing	<b>600 rondo</b>
Stud spacing	<b>400ext</b> <b>600ext</b>
Bracing connections	<b>All internals GSs</b>
Air seals	
Bottom plate fixings	
Is the building weathertight	
Grade of timber framing	<b>Msg8</b>
Framing cut outs	
wet area substrate	<b>Ensuite only</b>
LBP number	<b>124403</b>

## SITE NOTICE

---

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

---

Inspection Type: **Preline Building**  
Inspection Outcome: **Fail**  
Inspected By: **Jeremy Lincoln**  
Inspection Date: **17 December 2019**

### Failed Items

#### General

Max moisture content

#### Moisture check only

**Bed 4**  
**Recheck at postline**  
**Still high**



## GoGet Inspection Audit Report

---

Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Preline Building**

Inspection Outcome: **Pass**

Inspected By: **Gareth McCullagh**

Inspection Date: **20 December 2019 8:46 a.m.**

Duration: **15 minutes**

Inspection Element	Status
General	Pass
<b>Moisture check only</b>	
Max moisture content	Pass
<b>moisture content 16-19%</b>	

## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Preline Building**  
Inspection Outcome: **Pass**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **20 December 2019**

### Passed Items

General	<b>Moisture check only</b>
Max moisture content	<b>moisture content 16-19%</b>

Inspection Type: **Postline / Wet area Pre Application**  
Inspection Outcome: **Pass**  
Inspected By: **Gareth McCullagh**  
Inspection Date: **20 December 2019**

### Passed Items

General	
Sighted previous inspection notes	
Conforms with approved drawings	
Sheet bracing	<b>All gs1 in place</b>
Sheet fixings	<b>All brace sheets screwed as required and standard gib also fixed</b>
Other	<b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>
Wet area substrate system	<b>Aqua line and fixed at 100mm centres</b>
LBP number	



## GoGet Inspection Audit Report

---

Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Preline Plumbing**

Inspection Outcome: **Pass**

Inspected By: **Alan Tinney**

Inspection Date: **27 November 2019 1:26 p.m.**

Duration: **30 minutes**

Inspection Element	Status
General	Pass
Sighted previous inspection notes	Pass
Conforms with approved drawings	Pass
Confirm additional information/amended plan	Pass
Plumber	Pass
<b>Splash</b>	
Soil pipe size and test	N/A
Pipes fixed/supported	Pass
System used	Pass
<b>G13</b>	
TPR line	Pass
Inbuilt S/W pipes tested	N/A
Vents terminated	Pass
Pressure test	Pass
Waste pipe size and test	Pass
<b>40</b>	
Floor wastes	N/A
Shut off valves	Pass
Fire wraps and collars	N/A
LBP number	N/A
<b>17910</b>	
Other	N/A



Taken at 1:19 PM on Wednesday 27/11/2019



Taken at 1:19 PM on Wednesday 27/11/2019





Taken at 1:19 PM on Wednesday 27/11/2019



Taken at 1:20 PM on Wednesday 27/11/2019





Taken at 1:20 PM on Wednesday 27/11/2019



Taken at 1:20 PM on Wednesday 27/11/2019





Taken at 1:20 PM on Wednesday 27/11/2019



Taken at 1:21 PM on Wednesday 27/11/2019



Taken at 1:21 PM on Wednesday 27/11/2019



Taken at 1:21 PM on Wednesday 27/11/2019





Taken at 1:22 PM on Wednesday 27/11/2019



Taken at 1:22 PM on Wednesday 27/11/2019



Taken at 1:22 PM on Wednesday 27/11/2019



Taken at 1:25 PM on Wednesday 27/11/2019





Taken at 1:25 PM on Wednesday 27/11/2019

## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Preline Plumbing**  
Inspection Outcome: **Pass**  
Inspected By: **Alan Tinney**  
Inspection Date: **27 November 2019**

### Passed Items

#### General

Sighted previous inspection notes	
Conforms with approved drawings	
Confirm additional information/amended plan	
Plumber	<b>Splash</b>
Pipes fixed/supported	
System used	<b>G13</b>
TPR line	
Vents terminated	
Pressure test	
Waste pipe size and test	<b>40</b>
Shut off valves	



## GoGet Inspection Audit Report

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Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Pre-Slab Building**

Inspection Outcome: **Fail**

Inspected By: **Gareth McCullagh**

Inspection Date: **1 October 2019 1:33 p.m.**

Duration: **30 minutes**

Inspection Element	Status
General	Fail
Engineers details required	Fail
<b>Ridraft design still to supply site notes</b>	
Rebate for brick veneer	Pass
Ground clearance	Pass
Concrete cover	Pass
Driveway S/W control	Pass
Sand blinding	Pass
Slab thickenings	Pass
<b>Thickenings in place</b>	
Vapour barrier	Pass
<b>In and taped</b>	
Bottom plate fixings	N/A
<b>Not assessed at this inspection</b>	
Steel reinforcing	Fail
<b>Not yet completed engineer to inspect</b>	
Bar chairs	Fail
DPC penetrations taped	Pass
<b>All penetrations taped as required</b>	
Minimum floor level	Pass
Registration numbers	N/A
Siting	Pass
Sub slab insulation	N/A
In-slab heating	N/A
LBP number	Pass
<b>102284</b>	
Other	Fail
<b>Also engineer added driven piles as part of design need sets</b>	

## GoGet Inspection Audit Report

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Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Pre-Slab Building**

Inspection Outcome: **Pass**

Inspected By: **Gareth McCullagh**

Inspection Date: **3 March 2020 9:51 a.m.**

Duration: **0 minutes**

Inspection Element	Status
General	Pass
Engineers details required	Pass
<b>Ridraft design still to supply site notes. Supplied at final stage</b>	
Steel reinforcing	Pass
<b>Not yet completed engineer to inspect</b>	
<b>All steel work placed and tied as per consented documentation</b>	
Bar chairs	Pass
<b>Bar chairs placed as required</b>	
Other	Pass
<b>Also engineer added driven piles as part of design need sets</b>	
<b>All aspects relating to this inspection have been assessed and checked against the consented documentation and deemed to comply.</b>	

---

### Documentation

Drainage (Form 126) for stormwater installation	Received
Plumbing (Form 125) for pressure test and installation piped services	Received
Septic tank warranty	Received
<b>PS3 from installer</b>	



## GoGet Inspection Audit Report

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Consent No: **190682**

Applicant: **GJ Gardner Homes Kapiti/Wellington**

Site Address: **6 Hadfield Road, Te Horo**

Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**

---

Inspection Type: **Pre-Slab Plumbing**

Inspection Outcome: **Pass**

Inspected By: **Jon Moser**

Inspection Date: **30 September 2019 3:50 p.m.**

Duration: **45 minutes**

Inspection Element	Status
General	Pass
Secondary flow path	N/A
Pipe material <b>100mm UPVC primed and glued</b>	Pass
Pipe protection <b>Placed in sand binding. 150mm sleeves thru slab.</b>	Pass
TPR line <b>100mm gully in HWC space. Tank on tray. Controlled heat source.</b>	Pass
Plumbing layout <b>Layout differs from approved plans. Copy of new layout provided and taken from site as approved layout.</b>	Pass
Pipes supported	N/A
Wastes and drains <b>Laid to appropriate falls 100mm pipe. Junctions in place and vents to be positioned at laundry tub and kitchen sink per layout. ORG by garage and to be charged by hose tap.</b>	Pass
Water/air <b>Air test of all branches.</b>	Pass
Leak check <b>Bubble checked . Held at end of tube as required.</b>	Pass
Registration numbers <b>Registered drainlayer Sam Butters 18420</b> <b>Certifying drainlayer Blair Browne 20707</b>	Pass
Other	N/A
Site Inspection	N/A

## SITE NOTICE

Consent No: **190682**  
Applicant: **Adam Beattie**  
Site Address: **6 Hadfield Road, Te Horo**  
Work Type: **New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage**  
Building Category: **R1**

Inspection Type: **Pre-Slab Plumbing**  
Inspection Outcome: **Pass**  
Inspected By: **Jon Moser**  
Inspection Date: **30 September 2019**

### Passed Items

#### General

Pipe material	<b>100mm UPVC primed and glued</b>
Pipe protection	<b>Placed in sand binding. 150mm sleeves thru slab.</b>
TPR line	<b>100mm gully in HWC space. Tank on tray. Controlled heat source.</b>
Plumbing layout	<b>Layout differs from approved plans. Copy of new layout provided and taken from site as approved layout.</b>
Wastes and drains	<b>Laid to appropriate falls 100mm pipe. Junctions in place and vents to be positioned at laundry tub and kitchen sink per layout. ORG by garage and to be charged by hose tap.</b>
Water/air	<b>Air test of all branches.</b>
Leak check	<b>Bubble checked . Held at end of tube as required.</b>
Registration numbers	<b>Registered drainlayer Sam Butters 18420 Certifying drainlayer Blair Browne 20707</b>



## KAPITI COAST DISTRICT COUNCIL

Consent No: 190682

Building Category: R1

Site Address: 6 Hadfield Road, Te Horo

Owner/Agent: GJ Gardner Homes Kapiti/Wellington

---

### Inspections

The following inspections are required:

- 1 Pre-Slab Building
- 1 Pre-Slab Plumbing
- 1 Drainage
- 1 Preline Building
- 1 Postline / Wet area Pre Application
- 1 Pre Wrap
- 1 Pre Clad
- 1 Brick Veneer
- 1 Wet Area Post-application
- 1 Preline Plumbing
- 1 Final Inspection
- 11 Total Inspections

### Documentation

The following documentation is required:

- Application for CCC
  - Electrical safety certificate
  - As-built drainage plan
  - Drainage (Form 126) for stormwater installation
  - Plumbing (Form 125) for pressure test and installation piped services
  - Construction review PS4 statement for structural engineering
  - Membrane applicator certificates - internal wet area
  - Timber framing and truss certification
  - Roof product manufacturers warranty
  - Record of Work
  - Water tank warranty
  - Septic tank warranty
  - Other (specify)
- Hamish Wells of Hamish Wells Engineer Ltd to Inspect: Site Prep, Piling and RibRaft Pre-pour
- PS3 from installer
- PS3 or installers certificate from Internal Membrane Installer

### Building Practitioners

- Carpentry 1
- Foundations 1
- Bricklaying and Blocklaying 1
- Roofing 1
- Plumber

Drainlayer  
Electrician



# GoGet Processing Summary Report

Consent No: 190682

Site Address: 6 Hadfield Road, Te Horo

Description: New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage

Checklist/Elements	Status	Notes	Processed By
<u>Pre-Application Record</u>	N/A		John Peterson
<u>Vetting</u>	Pass		Joy Ma, Leanna Hutchinson
Application documentation	Pass		JMA
Application type	Pass	The application is for a building consent.	JMA
Application form signed	Pass	The owners match those listed on the CT. The application form is signed by the owner or by an agent nominated by the owner.	JMA
Proof of ownership	Pass	A certificate of title dated within the last three months.	JMA
Drawings and plans	Pass	Detailed plans are provided that clearly show existing building and the proposed modification or new build.	JMA
Site specific specifications	Pass	Specifications provided that are relevant to the proposed works. Specifications do not contradict the plans. Specifications clearly identify chosen products, and do not show a range of possible options.	JMA
Compliance documentation	Pass	Relevant documentation is shown for: - B1: the truss manufacturer, including a PS1; - B1: bracing calculations; - B2: appraisals for specific products, including all membranes and specific cladding systems; - E2: risk matrix; - E2: cladding specifications and maintenance requirements where relevant; - H1: energy efficiency compliance report or calculation; - Firefighting water tanks	JMA
Specific engineered design	Pass	The design involves specific engineering design and: - a PS1 has been provided. - the designer is a CPEng 186323	JMA
Building act	Pass		JMA
S71 Natural Hazard	N/A		JMA
S71-72 assessment	N/A		JMA
S71-72 Recommendation	N/A		JMA
S 84 - Restricted building work	Pass	A certificate of design work has been provided by each of the designers contributing to the restricted building work.	JMA
S 112 or 133AT - Alterations to existing buildings	N/A		JMA
S 115 - Change of use	N/A		JMA
S 118 - Access and facilities for persons with disabilities	N/A		JMA
S 363 - Public use prior to issuing CCC	N/A		JMA
Any outstanding CCC's	N/A		JMA
Decision- s71-74	N/A		JMA
Waivers and Modifications	N/A		JMA
Multi Use	N/A		JMA
Payment	Pass		JMA, LHU
Payment requested	Pass		JMA
Payment received	Pass		JMA, LHU
<u>Planning</u>	N/A		John Peterson

Checklist/Elements	Status	Notes	Processed By
<u>Specified Systems Compliance</u>	N/A		John Peterson
<u>Environmental Health</u>	N/A		John Peterson
<u>Quick Consent</u>	N/A		Jade Spiers-Allan
<u>B1 - Structure</u>	Pass		Jade Spiers-Allan
Verification method	Pass		JSA
Structural review	Pass	The proposed building work has had a specialist structural DESIGN. SED foundations.	JSA
Structural risk assessment	Pass	The building work contains SED. The engineering has been assessed against structural policy, and given the scope of the engineering and the evidence provided, the risk is not considered to be high enough to require structural review.	JSA
Engineer	Pass	The engineer is working within their scope. Hamish Wells on behalf of Hamish Wells Engineer Ltd. Civil and Structural Engineer - current Engineering NZ registry  The PS1 identifies the engineer, their CPEng number is: #186323  To Kapiti Coast District Council in respect of Rib Raft Foundation Design B1 and B2 VM1 and VM4 sheets numbered 1-6 Engaged to provide design and supervision  subject to site verification of the following design assumptions: NZS3604:2011 to be confirmed at the time of earthworks indemnity insurance to \$200,000	JSA
Scope	Pass	To Kapiti Coast District Council in respect of Rib Raft Foundation Design B1 and B2 VM1 and VM4 sheets numbered 1-6 Engaged to provide design and supervision	JSA
Monitoring requirements	Pass	Hamish wells has also provided a site investigation report and scala penetrometer testing and results Please supply an inspection schedule from Hamish Wells in respect of his Engineer Design and site preparation confirmation of the building platform as per his scala penetrometer results. --- Response - JSA 12 Sep 2019 9:28am --- See attached updated engineering Inspections: Site prep, piling, RibRaft prepour	JSA
<u>Request for Further Information:</u>			
Request:		1. Please supply an inspection schedule from Hamish Wells in respect of his Engineer Design and site preparation confirmation of the building platform as per his scala penetrometer results.	JSA
Response:		<i>See attached updated engineering Inspections: Site prep, piling, RibRaft prepour</i>	JSA
Structural proprietary systems	Pass	The building work contains SED. The following elements are proprietary systems, and compliance with B1 requirements has been ascertained by manufacturer's tables / producer statements. RibRaft Slab - as per Firth RibRaft and Hamish Wells SED drawings	JSA
NZS 3604	Pass		JSA
Scope	Pass	The building is within the scope and limitation of NZS 3604 with SED foundations.  Checked Under 10m high - 1 storey Checked Floor loads 2kpa	JSA



Checklist/Elements	Status	Notes	Processed By
Good ground	Pass	<p>Checked foundations on site in relationship to sloping ground in compliance with NZS3604 fig 3.1 Datum heights clearly shown on plans : driven peg = 20.5 MSL approx, FGL = 22.5m approx</p> <p>Geotechnical investigation supplied from Landlink Ltd Report in correspondence with the resource consent conditions and scala penetrometer testing and results carried out by Engineer Hamish Wells in correspondence with his foundation design.</p> <p>Geotech investigation found natural ground to be suitable for standard house foundations as per NZS3604 however recommended site specific foundation investigations and design once platform excavated and conditions have been checked 2m into ground.</p> <p>Hamish Wells later carried out scala penetrometer testing which resulted in:  Site has unsuitable materials (clay and or soft silts) and does not comply with NZS3604 sec 3 good ground requirements. Due to the contours there will be earthworks required to build a building platform, all poor materials can be removed and replaced with good hard fill under Engineer supervision. Engineer to confirm site preparation with a site retest report on completion. Later concluded with Ribraft slab foundation as it has a lower soil bearing requirement than standard slab on ground system in compliance with NZS3604</p>	JSA
Site requirements	Pass	<p>as per resource consent conditions -</p> <p>Onsite WW to be as per Landlink Ltd report dated 21/08/2019</p> <p>Onsite water storage shall be 30,000litres min 50,000 recommended in addition to SW attenuation</p> <p>Firefighting requirements shall be provided as per NZ fire service firefighting water supplies code of practice SNZ PAS 4509:2008</p> <p>distances to boundaries - All OK disposal field shown 2m from boundary</p>	JSA
Deck structure	N/A		JSA
Foundations and sub-floor framing	Pass		JSA
Piles	Pass	SED 175 H5 driven piles to practical refusal under Engineer supervision, as detailed on Engineer drawing's.	JSA
Foundation walls	N/A		JSA
Bearers	N/A		JSA
Stringers	N/A		JSA
Sub-floor bracing	N/A		JSA
Moisture control and access	N/A		JSA
Floors	Pass		JSA
Suspended timber floors (ground)	N/A		JSA
Suspended timber floors (first floor and above)	N/A		JSA
Flooring	Pass	flooring will be concrete	JSA
Concrete slab	Pass	Special Engineer Designed RibRaft Slab	JSA
		Slab DPM detailed - require specifications/product type Slab thickness as per Engineer and Firth RR - 85mm	

Checklist/Elements	Status	Notes	Processed By
		<p>Granular fill as per Engineer - compacted hardfill to bring to subgrade 100mm min AP40/60 with 25mm or 50mm sand blinding</p> <p>Slab thickenings footings meet Engineers requirements</p> <p>Steel reinforcing detailed and compliant ( supplementary bars, sizes, lapps, centres ) detailed on plans</p> <p>Construction cuts required and correctly located (shrinkage control)</p> <p>Finished floor levels as per NZS cl 7.5.2</p> <p>Concrete strength correct for zone - 20mpa all ok for Zone C</p> <p>Bottom plate fixings for external walls all ok as per NZS 3604 cl 7.5.12 / 6.11.9.1 as detailed sheet 10</p> <p>RFI:</p> <p>Please supply the manufacturer's information for the DPM</p> <p>Please show the location of the loadbearing walls on the foundation plan and any corresponding slab thickening's as per the truss design.</p> <p>--- Response - JSA 12 Sep 2019 9:30am ---</p> <p>2. See attached email with DPM details - AGPAC 250 Micron heavy duty polythene black</p> <p>3. See attached updated engineering - shown on amended SED drawings</p>	
<u>Request for Further Information:</u>			
Request:	2. Please supply the manufacturer's information for the DPM		JSA
	3. Please show the location of the loadbearing walls on the foundation plan and any corresponding slab thickening's as per the truss design.		
Response:	2. See attached email with DPM details - AGPAC 250 Micron heavy duty polythene black		JSA
	3. See attached updated engineering - shown on amended SED drawings		
Walls	Pass		JSA
Studs	Pass	Exterior and internal load bearing walls noted to be up to 2.4m - 90x45 SG8 H1.2 @ 400crs	JSA
Lintels	Pass	Lintels over openings in wall framing have been sized appropriately given the building elements they support, their loaded dimension, and their span by Design IT with Lumberlok lintel fixing schedule supplied in specifications and lintel fixings as per Mitek preaniler lintel layout.	JSA
Plates	Pass	<p>Fixings are detailed to prevent uplift.</p> <p>bottom and top plate fixings provided on plans and with MiTek truss preaniler layout - Lumberlok alternative for stud to top plate</p>	JSA
Bracing	Pass	Correct parameters have been used for calculating wall bracing demand. This includes considerations around wind, earthquakes, cladding types, and building characteristics.	JSA
		<p>ALONG</p> <p>wind demand = 1191 achieved = 2537</p> <p>EQ demand = 1788 achieved = 2526</p> <p>ACROSS</p> <p>wind demand = 1319 achieved = 2042</p> <p>EQ demand = 1788 achieved = 2124</p>	



Checklist/Elements	Status	Notes	Processed By
		<p>Distribution of bracing as per NZS3604</p> <p>Bracing elements do not exceed 150BU's/m for concrete slab construction All OK</p> <p>Bracing elements are located in all external corners where possible in compliance with NZS3604</p> <p>Bracing lines are spaced no more than 6m apart</p> <p>No bracing elements located in wet area/behind showers All OK</p> <p>Exterior walls are 15BU/m</p> <p>GS1-N and EPB1 fixing data sheets supplied</p> <p>Please amend bracing plan bottom left hand corner to read Very High wind zone</p> <p>--- Response - JSA 12 Sep 2019 9:31am ---</p> <p>See Page 8 attached - All OK</p>	
<u>Request for Further Information:</u>			
Request:	4. Please amend bracing plan bottom left hand corner to read Very High wind zone		JSA
Response:	See Page 8 attached - All OK		JSA
Posts	N/A		JSA
Roof structure	Pass		JSA
Framed roof	N/A		JSA
Truss roof	Pass	<p>MiTek prenailed truss manufactured trusses @ 400crs job no. BL171576 site and job specific for roof pitch 25 degrees, metal tiled roof cladding, ceiling 13mm GIB board restrained @ 600crs wind zone VH.</p> <p>Strongback cross section and fixing detail supplied.</p> <p>Truss fixings supplied.</p> <p>Roof structure made up of 6 hips and 6 valleys</p> <p>90x45 outriggers on flat fixed back to last truss over top of gable truss. Fixings in compliance with NZS3604 table 10.10</p> <p>600mm soffit overhang</p> <p>50x40 H1.2 tile battens fixed with 4/50x2.8 hot dipped galv flat head nails per tile to NZS4217 requirements</p>	JSA
Eaves and gable verges	Pass	Eaves and gable verges are supported by rafters, purlins or outriggers that are sized appropriately given the permitted spans.	JSA
Purlins / tile battens	Pass	Correct fixings are specified given the uplift loads expected.	JSA
		<p>Please supply the tile batten spacing's on the plans specific for VH wind zone.</p> <p>--- Response - JSA 12 Sep 2019 9:32am ---</p> <p>See Page 5 attached. Batten spacings are irrelevant for wind zones, as they are all 370mm no matter what wind zone. All OK</p>	
<u>Request for Further Information:</u>			
Request:	5. Please supply the tile batten spacing's on the plans specific for VH wind zone.		JSA
Response:	See Page 5 attached. Batten spacings are irrelevant for wind zones, as they are all 370mm no matter what wind zone. All OK		JSA
Bracing	Pass	Adequate bracing is provided for the roof given the roof pitch and area. Bracing is provided by: hip and/or valley rafters and metal strap roof plane braces where shown on roof plan	JSA

Checklist/Elements	Status	Notes	Processed By
Ceilings	Pass	Ceilings are supported by allowed members, with ceiling battens sized appropriately given their span and spacing. Openings in the ceiling are bounded by trimming joists sized adequately given their span. Water tanks in the ceiling are given appropriate support.  13mm GIB board fixed @ 600crs, ceiling hatch location shown on plans.	JSA
Verandah beams	Pass	Please detail on the plans, the entry beam across the front porch as shown on the truss plan; member size, treatments, fixing's in compliance with NZS3604 --- Response - JSA 12 Sep 2019 9:34am --- See attached updated F&T details covered by MiTEK pre-nailer truss manufacturer's. 2/140x45 H1.2 MSG8 beam with type F lintel fixing details as per Lumberlok lintel fixing schedule All OK.	JSA
<u>Request for Further Information:</u>			
Request:	6. Please detail on the plans, the entry beam across the front porch as shown on the truss plan; member size, treatments, fixing's in compliance with NZS3604		JSA
Response:	See attached updated F&T details covered by MiTEK pre-nailer truss manufacturer's. 2/140x45 H1.2 MSG8 beam with type F lintel fixing details as per Lumberlok lintel fixing schedule All OK.		JSA
Snow loading	N/A		JSA
External stairs	Pass		JSA
External stairs	Pass	Bedroom 5 appears to have stairs where there is the swinging door as shown on the floor plan. Please confirm if these are stairs or not, if so sufficient details in compliance with D1/AS1 will need to be supplied. Also confirm the "BAR" will this be an additional kitchenette of some sort? --- Response - JSA 12 Sep 2019 9:35am --- Bedroom 5 has no stairs showing on plan - the swing door is into a cupboard with a shelf. No kitchenette is to be installed as per the plan All OK clarification made	JSA
<u>Request for Further Information:</u>			
Request:	7. Bedroom 5 appears to have stairs where there is the swinging door as shown on the floor plan. Please confirm if these are stairs or not, if so sufficient details in compliance with D1/AS1 will need to be supplied. Also confirm the "BAR" will this be an additional kitchenette of some sort?		JSA
Response:	Bedroom 5 has no stairs showing on plan - the swing door is into a cupboard with a shelf. No kitchenette is to be installed as per the plan All OK clarification made		JSA
3kPa floor loads	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>B2 - Durability</u>	Pass		Jade Spiers-Allan
B2 prompts	Pass		JSA
Material compatibility	Pass	Adjoining materials are compatible.	JSA
Concrete and concrete masonry	Pass	Concrete strength and cover is appropriate for the exposure zone.	JSA
Timber treatment	Pass	The wood-based building components required to achieve 50 year durability comply with table 1 NZS 3602 as modified by B2/AS1. The wood-based building components required to achieve 15 year durability comply with table 2 NZS	JSA



Checklist/Elements	Status	Notes	Processed By
		3602 as modified by B2/AS1.	
Steel fixings and fastenings	Pass	Steel fixings are specified where required to meet durability requirements.	JSA
Engineered elements	Pass	The durability aspects of all of the elements designed by the client's structural engineer have been satisfactorily checked for compliance to B2 in respect to B1 structure.	JSA
Plumbing materials	Pass	Given the water supply and drainage principles used in the plumbing design appropriate materials are used for water supply and drainage pipes. all information in project master specifications	JSA
Limited life consent	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>C1-6 - Protection From Fire</u>	Pass		Jade Spiers-Allan
C/AS1 - Residential and outbuildings	Pass		JSA
Fire cells, systems, and resistance ratings	Pass	Type 1 smoke alarms are shown on the plans in accordance with the requirements of F7/AS1. Location shown within 3m of all bedrooms.	JSA
Means of escape	Pass	An escape route leading to a place of safety is provided, with the length of the route not exceeding the length allowed given the type of fire safety system provided. DEOP <25m	JSA
Control of internal fire and smoke spread	N/A		JSA
Control of external fire spread	N/A		JSA
Firefighting	N/A		JSA
Prevention of fire occurring	N/A		JSA
C/AS* - Large multi-residential, commercial, and vehicle storage	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>D1 - Access Routes</u>	N/A		Jade Spiers-Allan
Access routes	N/A		JSA
Ramps	N/A		JSA
Stairs	N/A		JSA
Handrails	N/A		JSA
Accessible car parks	N/A		JSA
Accessible building entries	N/A		JSA
Accessible places of assembly	N/A		JSA
Accessible accommodation units	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>D2 - Mechanical Installations For Access</u>	N/A		Jade Spiers-Allan
<u>E1 - Surface Water</u>	Pass		Jade Spiers-Allan
Drainage design	Pass		JSA
Connections	Pass	Stormwater to connect to 1x30,000 litre stormwater tank for fire fighting connection and 2x 25,000 litre RX plastic water tanks - domestic tanks for household use with 100mm overflow pipe to natural swale. RX tanks manufacturer's specifications supplied.	JSA
		Overflow from tanks to natural swale outfall shall	

Checklist/Elements	Status	Notes	Processed By
		be via rock dissipator to remove the velocity and damage associated with fast moving water as noted on the drainage plan All OK	
Verification method	N/A		JSA
Soak pits	Pass		JSA
Field testing	N/A		JSA
Soak pit design	Pass	mini soak pit 600mm deep filled with rocks to take overflow from HWC fitted with vermin proof cowl	JSA
Acceptable solution	Pass		JSA
Scope	Pass	The site is within the area, location, and site history requirements of E1/AS1.	JSA
Floor level	Pass		JSA
Minimum finished floor level	Pass	The slab and/or suspended timber floor is: 2000mm from datum peg talem at top of drive 300mm from FGL to FFL as noted on cross section of slab	JSA
Stormwater drainage	Pass		JSA
Size and gradient	Pass	The stormwater drains are adequately sized given their gradient and catchment area. The gradient meets or exceeds the minimum requirements. 100mm @ 1:60 for SW drain most likely fall will be less than this however meets compliance	JSA
Sumps	N/A		JSA
Roof catchment	Pass		JSA
Downpipes	Pass	The downpipe size is adequate given the roof pitch and plan area of the roof catchment area. Proposed 5 x 80mm dia marley down pipes. Roof catchment area = 271m <sup>2</sup> /25 degrees x 1.23 = 333 downpipe catchment area 100m <sup>2</sup> roof catchment / downpipe catchment = 333/100 = 4 DP's required All OK	JSA
Gutters	Pass	Gutters have an adequate cross sectional area given the rainfall intensity, plan area of the roof catchment area, and the pitch of the roof. rain intensity calculations supplied in specifications with OSWW report	JSA
		Colorsteel spouting and fasica system. Colorsteel gutter = catchment capacity = 6300m <sup>2</sup>	
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>E2 - External moisture</u>	Pass		Jade Spiers-Allan
Acceptable solution	Pass		JSA
Scope	Pass	The building work is within the scope of E2/AS1.	JSA
Risk matrix	Pass		JSA
Score	Pass	A risk matrix score of 6 has been calculated for the worst case elevation.	JSA
Wall cladding	Pass	Given the risk matrix score it is appropriate to use Brick Veneer on 40mm cavity and JH Linea Weatherboard on 20mm cavity	JSA
Roof cladding	Pass		JSA
General	Pass	An appropriate roofing underlay is used given the type roofing. Thermakraft 215 roof underlay under pressed metal tile roof cladding Gutters and downpipes are adequately sized, and where necessary, to calculations as laid out in E1/AS1.	JSA



Checklist/Elements	Status	Notes	Processed By
		<p>Roof cladding ridge details supplied and show compliance with E2.3.2 and as per cladding type, metal tiled - angel trim showing 35mm min cover</p> <p>Roof cladding Barge details supplied and show compliance with E2.3.2 and flashing cover as per table 7 - 90mm flashing overhang all ok for VH wind zone and suitable for metal tile</p> <p>Sighted valleys details supplied and show compliance with E2.3.2 - 250mm gutter width 50mm min depth All in compliance with E2</p> <p>Eaves showing 50mm overhang into gutter min is 40mm for metal tile All OK</p>	
		<p>Please supply the roof cladding specifications/durability coating specs</p> <p>Please supply roof penetration details in compliance with E2 for metal tiled roof cladding</p> <p>Please supply details of the valley board complete with substrate thickness and treatment in compliance with E2 and B2</p> <p>--- Response - JSA 12 Sep 2019 9:36am ---</p> <p>8. See attached roof specification manual (this file is 29MB so can I please get an upload link as per the automated email I received - I have left everything else attached here)</p> <p>9. See Page 5 attached - fig 29 supplied All OK</p> <p>10. See Page 13 attached - H3.2 150mm x 25mm gutter support boards</p>	
<u>Request for Further Information:</u>			
Request:		<p>8. Please supply the roof cladding specifications/durability coating specs</p> <p>9. Please supply roof penetration details in compliance with E2 for metal tiled roof cladding</p> <p>10. Please supply details of the valley board complete with substrate thickness and treatment in compliance with E2 and B2</p>	JSA
Response:		<p>8. See attached roof specification manual (this file is 29MB so can I please get an upload link as per the automated email I received - I have left everything else attached here)</p> <p>9. See Page 5 attached - fig 29 supplied All OK</p> <p>10. See Page 13 attached - H3.2 150mm x 25mm gutter support boards</p>	JSA
Cladding junctions	Pass	The gutter to wall junction shows an appropriate kick out flashing, with fall and a stop end to divert water away from the wall cladding.	JSA
Masonry tiles	N/A		JSA
Pressed metal tiles	Pass	The pitch of the metal tile roof is appropriate given the type of the metal profile and the rafter length. Details, including flashing sizes and material compatibility are appropriate for the ridge, barge, eave, apron, and roof/wall junctions. Valley and parallel internal gutters have an adequate width and show appropriate clearances and cover.	JSA
Profiled metal	N/A		JSA
Membrane roofs	N/A		JSA
Wall cladding	Pass		JSA
General	Pass	<p>An appropriate wall underlay is shown. Tekton wall underlay BRANZ appraisal no. 548</p> <p>40 below window flashing tape - codemark no. CMA CM40098</p> <p>Sika boom airseal BRANZ appraisal no. 452</p> <p>The building is in a very high wind zone or above.</p> <p>Head, sill and jamb flashing details supplied and</p>	JSA

Checklist/Elements	Status	Notes	Processed By
		<p>show compliance with E2.3.2 - all ok for brick veneer and Linea cladding's - sill support bar shown on plans.</p> <p>Sighted vermin-proofing above window and door heads and at the base of a drained cavity in compliance with E2/AS1 fig 66</p> <p>Penetrations through exterior wall details supplied and show compliance with E2.3.2 - supplied for brick veneer</p> <p>Exterior Cladding to soffit detail supplied and show compliance with E2.3.2 as being met</p> <p>Exterior cladding joints detailed and show compliance with E2.3.2 as being met - Linea boxed corner and internal corner as per specs</p> <p>Exterior cladding joints and junctions with dis similar products and show compliance with E2.3.2 - internal corner brick to weatherboard detail supplied</p> <p>vents for brick veneer shown in correct locations - top of soffit, base of cladding, window head,</p>	
		<p>Window head flashing in a very high wind zone must have a seal between the underside of the head flashing and top of the window flange as per E2/AS1 cl 9.1.10.4 and fig 71(c) - please clearly detail this on the plans.</p> <p>Please confirm window joinery is suitable for very high wind zone in compliance with NZS4211</p> <p>Please detail a back flashing in place for external/internal corner junctions to provide additional deflection against wind driven rain (brick/linea corner)</p> <p>Please detail sill vents to the brick veneer window sill in compliance with E2/AS1 fig 73c</p> <p>--- Response - JSA 12 Sep 2019 9:39am ---</p> <p>11. As noted on Page 11 - All OK</p> <p>12. See attached from window supplier - All OK</p> <p>13. See Page 10 attached - detailed All OK</p> <p>14. See Page 10 - masonry notes added to plans All OK</p>	
<u>Request for Further Information:</u>			
Request:		<p>11. Window head flashing in a very high wind zone must have a seal between the underside of the head flashing and top of the window flange as per E2/AS1 cl 9.1.10.4 and fig 71(c) - please clearly detail this on the plans.</p> <p>12. Please confirm window joinery is suitable for very high wind zone in compliance with NZS4211</p> <p>13. Please detail a back flashing in place for external/internal corner junctions to provide additional deflection against wind driven rain (brick/linea corner)</p> <p>14. Please detail sill vents to the brick veneer window sill in compliance with E2/AS1 fig 73c</p>	JSA
Response:		<p>11. As noted on Page 11 - All OK</p> <p>12. See attached from window supplier - All OK</p> <p>13. See Page 10 attached - detailed All OK</p> <p>14. See Page 10 - masonry notes added to plans All OK</p>	JSA
Threshold junctions	Pass	The junction for the membrane deck shows adequate height to the base of the door structure to avoid ponding and adequate separation between the walking surface and the door joinery to allow for drainage.	JSA
Cladding junctions	Pass	Where different claddings abut, adequate details	JSA



Checklist/Elements	Status	Notes	Processed By
		are shown of the junction, with necessary building elements shown as required by the relevant technical information.	
Masonry veneer	Pass	The masonry veneer height does not exceed the limits allowable under E2/AS1. The bottom of the masonry veneer cladding has adequate clearance to paved and unpaved surfaces. Details are shown for the relevant base of cladding detail to the ground or foundation walls. Pipe penetrations through the masonry veneer show adequate flashing tape and/or a flange plate. Window head, jamb, and sill details are shown, with adequate consideration of the relevant building elements, including requirements for dimensioning, clearance, flashing, and raking windows where relevant. No masonry veneer located to top of windows therefore no steel lintels required	JSA
Stucco	N/A		JSA
Timber weatherboards	N/A		JSA
Fibre cement weatherboards	Pass	Window head, jamb, and sill details are shown, with adequate consideration of the relevant building elements, including requirements for dimensioning, clearance, flashing, and raking windows where relevant. Doorsill details are shown, with adequate consideration of the relevant building elements, including requirements for dimensioning, clearance, flashing, and junctions to the floor / deck structure. External and internal corners are detailed, with the correct flashings shown given the junction type and wind zone. Soffit junctions are shown, with the correct flashing where the soffit is exposed. Manufacturer's specifications also supplied for additional reference	JSA
Profile metal wall cladding	N/A		JSA
Fibre cement sheet	N/A		JSA
Plywood sheet	N/A		JSA
EIFS	N/A		JSA
Wall tanking	N/A		JSA
Parapets	N/A		JSA
Decks	N/A		JSA
Manufacturer's details	Pass		JSA
Roof claddings	Pass	Supplied	JSA
Wall claddings	Pass	The manufactured cladding proposed has been sighted against a BRANZ appraisal or similar. It is used within the scope outlined, and details shown on the consent drawings match those provided by the manufacturer and covered by the appraisal. The bottom of the cladding has adequate clearance to paved and unpaved surfaces.	JSA
Re-cladding	N/A		JSA
Timber joinery	N/A		JSA
Skylights	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>E3 - Internal Moisture</u>	Pass		Jade Spiers-Allan
E3 prompts	Pass		JSA

Checklist/Elements	Status	Notes	Processed By
Moisture control	Pass	There is an adequate combination of thermal resistance, ventilation, and space temperature control.	JSA
Overflow	N/A		JSA
Impervious surfaces	Pass	Details have been provided for surfaces to be impervious, easily cleaned, and for the prevention of water penetration into concealed spaces where the surface is adjacent to sanitary fixtures and appliances or likely to be splashed.  Sighted wet areas floors in compliance with E3 cl 3.3.1 Sighted wet areas walls in compliance with E3 cl 3.3.1 proposed tiled shower to ensuite and acrylic shower to main bathroom. Tiled shower to have Davco WPM behind - BRANZ appraisal no. 609 Sighted all water splash areas wall and floors in compliance with E3 cl 3.0 GIB aqualine to walls and ceilings and tiled floors - no membrane required in water splash areas  Sighted junctions of shower trays to wall linings as per E3 cl 3.3.4 Sighted enclosures to showers being impervious and at least 1.8m high or 300mm above the rose head in compliance with E3/AS1 cl 3.3.3. showing 1:50 fall to waste even though enclosed All OK	JSA
Proprietary shower tray/walls	Pass	A proprietary shower tray and/or walls is proposed with sufficient details to show impervious and easily cleaned surfaces. acrylic shower based to tiled wall concrete floor detailed on plans - shower recess as per Engineer drawings.	JSA
Tiled shower	Pass	A tiled shower / wet area is proposed, and sufficient details of substrate, membrane, and details are provided. There is adequate membrane coverage to the wet area.  acrylic shower base/tiled wall, internal corner detail, drainage waste detailed and mixer wall penetration detail shown and in compliance	JSA
Level access shower	N/A		JSA
Wet area membrane	Pass	Please detail Davco waterproofing membrane on the shower detail plans as i note it states "liquid flash" or supply liquid flash manufacturer's specifications --- Response - JSA 12 Sep 2019 9:39am --- See Page 12 - All OK	JSA
<u>Request for Further Information:</u>			
Request: 15. Please detail Davco waterproofing membrane on the shower detail plans as i note it states "liquid flash" or supply liquid flash manufacturer's specifications			JSA
Response: See Page 12 - All OK			JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>F1 - Hazardous Agents On Site</u>	N/A		Jade Spiers-Allan
<u>F2 - Hazardous Building Materials</u>	Pass		Jade Spiers-Allan
Asbestos	N/A		JSA
Glazing	Pass		JSA
Manifestation	Pass	safety glass now noted on elevations where required	JSA



Checklist/Elements	Status	Notes	Processed By
Glazing requirements	Pass	for glazing that is subject to human impact and glazing within 2m of a wet area. Please supply a window/door schedule in order to assess specific glazing as being safety glazed in compliance with NZS4223.3:2016 (windows subject to human impact and windows within 2000mm of the floor in a wet area) --- Response - JSA 12 Sep 2019 9:40am --- Noted on Page 6 - correct windows noted as safety glass All OK	JSA
<u>Request for Further Information:</u>			
Request: 16. Please supply a window/door schedule in order to assess specific glazing as being safety glazed in compliance with NZS4223.3:2016 (windows subject to human impact and windows within 2000mm of the floor in a wet area)			JSA
Response: Noted on Page 6 - correct windows noted as safety glass All OK			JSA
Bathrooms	Pass	Glazing in bathrooms, including glazing in the shower enclosure, is specified to be compliant with NZS 4223.3. as noted on the elevations now.	JSA
Balustrades	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>F3 - Hazardous Substances And Processes</u>	N/A		Jade Spiers-Allan
<u>F4 - Safety From Falling</u>	N/A		Jade Spiers-Allan
<u>F5 - Construction and Demolition Hazards</u>	N/A		Jade Spiers-Allan
<u>F6 - Visibility In Escape Routes</u>	N/A		Jade Spiers-Allan
<u>F7 - Warning Systems</u>	Pass		Jade Spiers-Allan
F7 prompts	Pass		JSA
System type (excluding simple residential situations)	Pass	The system type(s) used in the building are: Type 1 - Domestic smoke alarm system.	JSA
Domestic alarms	Pass	Domestic alarms are proposed, and are able to be tested and have a hush facility. Alarms are located: within 3.0m of each sleeping space; and are audible to sleeping occupants. - section 3.0 F7/AS1	JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>F8 - Signs</u>	N/A		Jade Spiers-Allan
<u>F9 Means of Restricting Access to Residential Pools</u>	N/A		Jade Spiers-Allan
<u>G1 - Personal hygiene</u>	Pass		Jade Spiers-Allan
Provision of sanitary fixtures	Pass		JSA
General sanitary fixture requirements	Pass	An adequate number of sanitary fixtures with appropriate space dimensions have been provided given the building use, user group, occupancy, and type of fixtures provided.	JSA
Privacy	Pass		JSA
Location	Pass	As sanitary fixtures in a household unit, there is at least one door provided between the toilets and the food preparation / storage areas.	JSA
Line of sight	N/A		JSA
Lobbies	N/A		JSA
Accessible toilets	N/A		JSA

Checklist/Elements	Status	Notes	Processed By
Accessible showers	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>G2 - Laundering</u>	Pass		Jade Spiers-Allan
G2 prompts	Pass		JSA
Provision of laundry spaces	Pass	An adequate number of laundering facilities, with a tub or washing machine and sufficient activity space, have been provided given the building use and the building occupancy. Location in garage	JSA
Accessible laundries	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>G3 - Food Preparation And Prevention Of Contamination</u>	Pass		Jade Spiers-Allan
Domestic kitchen facilities	Pass		JSA
Activity space and functionality	Pass	The domestic kitchen provides space for a cooker, perishable food storage, a sink, sufficient food preparation area, and adequate plan area to allow for activity space.	JSA
Interior linings	Pass	Surface linings adjacent to kitchen appliances and facilities are impervious and can be easily cleaned and maintained in a hygienic condition.	JSA
Commercial facilities	N/A		JSA
Accessible kitchen facilities	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>G4 - Ventilation</u>	Pass		Jade Spiers-Allan
G4 prompts	Pass		JSA
Natural ventilation	Pass	Sufficient natural ventilation is provided to occupied spaces by openable windows and/or doors of an adequate area.	JSA
Mechanical ventilation	Pass	Sufficient mechanical ventilation is provided to occupied spaces by an extract with an adequate air flow rate. Range hoods/extracts with an appropriate air flow rate are provided to kitchen spaces. extractor fans detailed to ensuite, bathroom and rangehood to be ducted through the ceiling and out the soffit	JSA
Gas fuelled appliances	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>G5 - Interior Environment</u>	N/A		Jade Spiers-Allan
<u>G6 - Airborne And Impact Sound</u>	N/A		Jade Spiers-Allan
<u>G7 - Natural Light</u>	Pass		Jade Spiers-Allan
G7 prompts	Pass		JSA
Means of providing natural light	Pass	There are windows to habitable spaces that have an area no less than 10% of the floor area.	JSA
Visual awareness	Pass	At least 50% of the glazed area providing natural light is clear glazing falling within the visual awareness zone.	JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA



Checklist/Elements	Status	Notes	Processed By
<u>G8 - Artificial Light</u>	N/A		Jade Spiers-Allan
<u>G9 - Electricity</u>	Pass		Jade Spiers-Allan
G9 prompts	Pass		JSA
Energy works certificate	Pass	An energy works certificate will be required upon completion.	JSA
Electrical switches and outlets	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>G10 - Piped Services</u>	N/A		Jade Spiers-Allan
<u>G11 - Gas As An Energy Source</u>	N/A		Jade Spiers-Allan
<u>G12 - Water Supplies</u>	Pass		Jade Spiers-Allan
Water supply	Pass		JSA
Potable water	Pass	Sighted water supply pipe work to all new fixtures sized as per G12 table 3 & 4 as noted on the drainage plan: 20mm for main and to HWC 15mm to all other branches 15mm to exterior taps kitchen hot water supply to be 10mm if over 12m in length but must be under 25m long  Please detail the type of filtration system which will be used to make the water supply fit for human consumption, also show this on the drainage plan as being pumped back to house. --- Response - JSA 12 Sep 2019 9:41am --- Noted on Page 2, Spec attached water supply to house via a puretec hybrid water filter system All OK	JSA
<u>Request for Further Information:</u>			
Request:	17.	Please detail the type of filtration system which will be used to make the water supply fit for human consumption, also show this on the drainage plan as being pumped back to house.	JSA
Response:	Noted on Page 2, Spec attached water supply to house via a puretec hybrid water filter system All OK		JSA
Backflow prevention	N/A		JSA
Non-potable supply	N/A		JSA
Freezing zones	Pass	Noted on drainage plan all exposed hot and cold water pipes to be lagged if in frost prone area	JSA
Water tanks	Pass		JSA
Rural water supply	Pass	Water supply - from roof. Taken to 1 x 30,000 litre stormwater tank for fire fighting requirements (additional water for fire fighting supplied from community fire fighting tank on road) overflow from this tank to 2 x 25,000 litre water tanks with divertron 1200x submersible pump. Overflow from this into natural swale with 100mm overflow pipe. RX water tank manufacturer's specifications supplied Resource consent condition satisfied - fire fighting requirements shall be provided as per NZ fire service fire fighting water supplies code of practice SNZ PAS 4509:2008 - additional documents supplied in support including initial draft of drainage plan which was sent to FENZ and approved as per their letter supplied also. Resource consent condition satisfied - Onsite water storage shall supply min 30,000 litres 50,000 recommended - in addition with SW attenuation. 2 x 25,000 litres in addition to SW tank = 50,000 All OK	JSA

Checklist/Elements	Status	Notes	Processed By
Community care water supply	N/A		JSA
Overflow	Pass	Adequately sized overflow pipes are provided to the tanks given the rate of the inlet flow as per onsite waste water design	JSA
Structural support	N/A	under ground buried	JSA
Hot water	Pass		JSA
Water heater type	Pass	Hot water is supplied via a(n): HWC	JSA
Installation	Pass	Please supply the manufacturer's installation specifications for the proposed HWC complete with the internal schematic set up --- Response - JSA 12 Sep 2019 9:42am --- See attached hot water cylinder specification Rheem mains pressure electric hot water heaters specs supplied	JSA
<u>Request for Further Information:</u>			
Request: 18. Please supply the manufacturer's installation specifications for the proposed HWC complete with the internal schematic set up			JSA
Response: See attached hot water cylinder specification Rheem mains pressure electric hot water heaters specs supplied			JSA
Structural support	Pass	Please detail the seismic restraints to the HWC --- Response - JSA 12 Sep 2019 9:42am --- See Page 2 All OK	JSA
<u>Request for Further Information:</u>			
Request: 19. Please detail the seismic restraints to the HWC			JSA
Response: See Page 2 All OK			JSA
Water temperature	Pass	Please note on the drainage plan the HWC to be no less than 65 degrees at the cylinder to prevent against legionella bacteria and also the temperature delivered to sanitary fixtures as being no more than 55 degrees in compliance with G12 --- Response - JSA 12 Sep 2019 9:43am --- Noted on Page 2 All OK	JSA
<u>Request for Further Information:</u>			
Request: 20. Please note on the drainage plan the HWC to be no less than 65 degrees at the cylinder to prevent against legionella bacteria and also the temperature delivered to sanitary fixtures as being no more than 55 degrees in compliance with G12			JSA
Response: Noted on Page 2 All OK			JSA
Solar hot water	N/A		JSA
Wetback hot water	N/A		JSA
Accessible water supply	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>G13 - Foul Water</u>	Pass		Jade Spiers-Allan
Drainage design	Pass		JSA
Compliance path	Pass	A means of compliance has been clearly stated in the consent documents. AS/NZS3500.2  On-site wastewater disposal site evaluation sewage treatment and effluent disposal design  On-Site Effluent Treatment National Testing Programme (OSET NTP) Performance certificate RX Plastics Airtech 9000 On-Site Domestic Wastewater treatment system carried out by Blair Browne managing director of streamline	JSA



Checklist/Elements	Status	Notes	Processed By
		plumbing. Design capacity 2000 litres per day results - aerated multi stage treatment plant with compensated dripper irrigation line for distribution field. irrigation field top be installed at SW/SE sides of the property with dripper lines staked to the ground and run through a cleared natural scrub area along the boundary set back 2 m. shown on plans 10m x 30m dispersal field.	
		design loadings no of rooms - 5 ppl - 6 water supply - tank wastewater flow - 200l per person per day 6 x 200 = 1200 litres per day All OK	
		Producer statement and specifications for Airtech 9000 AWTS system supplied All OK	
Connections	N/A		JSA
Acceptable solution	N/A		JSA
AS/NZS 3500.2	Pass		JSA
Drainage principles	Pass	The discharge pipe layout, sizes, and falls are appropriate given types of sanitary fixtures, the fixture loading, and the developed lengths of pipe runs. note to have 65dia pipes at 1:40 fall and 80/100 @ 1:60 All OK All other branch drains are under 10m so therefore are vented All OK	JSA
		Please supply the pipe sizes clearly labelled on each fixture on the drainage plan Please detail from the drain terminal vent, 10m, in order to see that all fixtures are vented (concerned about bedroom 5 WC as I am certain this is over 10m away from drain TV - additional TV may be needed here unless proven otherwise and also tub in garage - even if tub is just within 10m I would consider adding an AAV on tub) Please detail inspection point locations on the drainage plan Please confirm on the plans the height of the gully above the ground in compliance with AS/NZS3500.2 cl 4.6.6.6 --- Response - JSA 12 Sep 2019 9:48am --- 21. Sizes noted on Page 2 - WC's need to be 100mm please note 22. TV Added Page 2 - additional 50mm vent added to tub, this can serve bedroom 5 WC also All OK 23. See Page 2 - noted 24. Note on Page 2 - noted	
<u>Request for Further Information:</u>			
Request:	21. Please supply the pipe sizes clearly labelled on each fixture on the drainage plan		JSA
	22. Please detail from the drain terminal vent, 10m, in order to see that all fixtures are vented (concerned about bedroom 5 WC as I am certain this is over 10m away from drain TV - additional TV may be needed here unless proven otherwise and also tub in garage - even if tub is just within 10m I would consider adding an AAV on tub)		
	23. Please detail inspection point locations on the drainage plan		
	24. Please confirm on the plans the height of the gully above the ground in compliance with AS/NZS3500.2 cl 4.6.6.6		

Checklist/Elements	Status	Notes	Processed By
<i>Response: 21. Sizes noted on Page 2 - WC's need to be 100mm please note</i>			JSA
<i>22. TV Added Page 2 - additional 50mm vent added to tub, this can serve bedroom 5 WC also All OK</i>			
<i>23. See Page 2 - noted</i>			
<i>24. Note on Page 2 - noted</i>			
Elevated drainage principles	N/A		JSA
Single stack	N/A		JSA
Single stack variations	N/A		JSA
Fully vented	Pass	Gully traps are shown where required, with at least one gully serving as an overflow relief gully with adequate height difference to the lowest sanitary fixture. Fixture and branch vent pipes are shown where required to ensure the functionality of water traps and the drainage system.	JSA
Fully vented modified	N/A		JSA
Pumping systems	N/A		JSA
AS/NZS 3500.5	N/A		JSA
Hydraulic design	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>G14 - Industrial Liquid Waste</u>	N/A		Jade Spiers-Allan
<u>G15 - Solid Waste</u>	N/A		Jade Spiers-Allan
<u>H1 - Energy Efficiency</u>	Pass		Jade Spiers-Allan
H1 prompts	Pass		JSA
Small building envelope thermal performance	Pass	The building has been assessed as compliant with H1 using the: calculation method, as modified by H1/AS1.  reference building heat loss = 479.4 proposed building heat loss = 425 All OK  summary R values in compliance with NZS4218 roof - R3.2 batts walls R2.2 batts floor - ribraft insulation data sheet supplied in specs All OK glazing - double glazing total heat gain = 54.4  insulation between garage and habitable areas, min 25mm gap between insulation and roof underlay All OK	JSA
Large building envelope performance	N/A		JSA
Hot water system efficiency	Pass	There is adequate thermal insulation to the hot water supply to the sink, with the pipe run not exceeding allowable limits. see project master specifications , lagging where required in frost areas	JSA
Artificial lighting	N/A		JSA
Other compliance paths	N/A		JSA
Alternative solution	N/A		JSA
<u>S67 - Waivers And Modifications</u>	N/A		Jade Spiers-Allan
<u>S75 - Build over 2 allotments</u>	N/A		Jade Spiers-Allan
<u>S112 and S133 AT - Alterations To Existing Buildings</u>	N/A		Jade Spiers-Allan
<u>S115 and S133 AN- Change Of Use</u>	N/A		Jade Spiers-Allan



Checklist/Elements	Status	Notes	Processed By
<u>S116A - Subdivision Code Compliance Requirements</u>	N/A		Jade Spiers-Allan
<u>S363 - Certificate For Public Use</u>	N/A		Jade Spiers-Allan
<u>Restricted Building Work</u>	Pass		Jade Spiers-Allan
Primary structure	Pass		JSA
Foundations and sub-floor framing	Pass	Engineer Designed Hamish Wells CPEng #186323 civil and structural current	JSA
Walls	Pass	framing and lintels by prenailer LBP #111338 Bill Francis - Design 2 active	JSA
Roof	Pass	LBP #111338 Bill Francis - Design 2 active truss manufacturer	JSA
Columns and beams	N/A		JSA
Bracing	Pass	LBP #111338 Bill Francis - Design 2 active	JSA
Other	N/A		JSA
External moisture	Pass		JSA
Damp proofing	Pass	LBP #111338 Bill Francis - Design 2 active DPM to slab	JSA
Roof cladding	Pass	LBP #111338 Bill Francis - Design 2 active pressed metal roof tiles	JSA
Ventilation system	Pass	LBP #111338 Bill Francis - Design 2 active brick veneer and linea cavity system	JSA
Wall cladding	Pass	LBP #111338 Bill Francis - Design 2 active brick veneer and linea cavity system	JSA
Waterproofing	Pass	LBP #111338 Bill Francis - Design 2 active wet area shower	JSA
Other	N/A		JSA
Fire safety	Pass		JSA
Emergency warning systems	Pass	smoke detectors only LBP #111338 Bill Francis - Design 2 active	JSA
Evacuation and fire service operation systems	N/A		JSA
Suppression or control systems	N/A		JSA
Other	N/A		JSA
<u>Reviews</u>	N/A		John Peterson

I am satisfied on reasonable grounds that the provisions of the Building Code will be met if the building work in relation to the attached application is properly completed in accordance with the attached plans and specifications.

Signed: \_\_\_\_\_ Date: 12 September 2019 2:21 pm  
John Peterson

## KAPITI COAST DISTRICT COUNCIL

Consent No: 190682

Building Category: R1

Site Address: 6 Hadfield Road, Te Horo

Owner/Agent: GJ Gardner Homes Kapiti/Wellington

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### Inspections

The following inspections are required:

- 1 Pre-Slab Building
- 1 Pre-Slab Plumbing
- 1 Drainage
- 1 Preline Building
- 1 Postline / Wet area Pre Application
- 1 Pre Wrap
- 1 Pre Clad
- 1 Brick Veneer
- 1 Wet Area Post-application
- 1 Preline Plumbing
- 1 Final Inspection
- 11 Total Inspections

### Documentation

The following documentation is required:

- Application for CCC
  - Electrical safety certificate
  - As-built drainage plan
  - Drainage (Form 126) for stormwater installation
  - Plumbing (Form 125) for pressure test and installation piped services
  - Construction review PS4 statement for structural engineering
  - Membrane applicator certificates - internal wet area
  - Timber framing and truss certification
  - Roof product manufacturers warranty
  - Record of Work
  - Water tank warranty
  - Septic tank warranty
  - Other (specify)
- Hamish Wells of Hamish Wells Engineer Ltd to Inspect: Site Prep, Piling and RibRaft Pre-pour
- PS3 from installer
- PS3 or installers certificate from Internal Membrane Installer

### Building Practitioners

- Carpentry 1
- Foundations 1
- Bricklaying and Blocklaying 1
- Roofing 1
- Plumber



Drainlayer  
Electrician

# CODE COMPLIANCE CERTIFICATE

Section 95 Building Act 2004 [Form 7 – Building (forms) Regulations 2004]



Consent No: 190682

The Building			
Street address of building:	6 Hadfield Road, Te Horo	Building name:	N/A
Current, Lawfully established, use:	Residential Dwelling	Location of building within site/block number:	Central
Level/unit number:	Single Level	Intended life of the building if 50 years or less:	-
Legal description of land where building is located:	LOT 3 DP 531543	Year first constructed:	
The Owner			
Name of owner:	Beattie Laura Michelle & Beattie Adam James	Street address /registered office:	N/A
Contact person:	As above	Phone numbers:	
Mailing address:	31 Wood Leigh Paraparaumu Beach Paraparaumu 5032	Landline:	-
Email address:	-	Mobile:	027 682 2999
Website:	-	Daytime:	-
		After hours:	-
		Facsimile number:	-
First point of contact for communications with the Kapiti Coast District Council:			
Full Name: GJ Gardner Homes Kapiti/Wellington Mailing Address: PO Box 65, Paraparaumu 5254 Phones:: 04 296 1248 Email: julieanne.mollet@gjgardner.co.nz			
Building Work			
Building Consent No:	190682	Issued by:	Kapiti Coast District Council
Project Description:	New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage		

## Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that:

- (a) the building work complies with the building consent;

Michelle Salmon –  
Building Inspections Team Leader  
On behalf of **Kapiti Coast District Council**

Date: 31 March 2020





## Statement of Compliance with the NZ Building Code

**Consent No: 190682**

**ISSUED BY: Kapiti Coast District Council**

### PROJECT

Site Address: 6 Hadfield Road, Te Horo  
Legal Description: LOT 3 DP 531543  
Work Description: New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage  
Building Category: R1

### OWNER

Name(s): Adam Beattie  
Address: 49 Saunders Close, Whitby, Porirua

- [ P ] Application for CCC received and accepted
- [ P ] Consent description accurate and reflects amendments (if relevant).
- [ P ] Confirm owner named on Building Consent application is current owner
- [NA] Confirm new owner details and evidence of ownership are correctly documented
- [ P ] Confirm all required inspections completed and documented in GoGet
- [NA] If inspection(s) have been missed, have they been compensated for?
- [ P ] If supervision was required for any inspection - did it occur?
- [ P ] Work in accordance with approved consent and approved amendments
- [NA] Have any notices to fix been uplifted?
- [ P ] Supporting documentation required in building consent addenda received
- [ P ] Quality assurance documentation
- [ P ] Restricted building work
- [ P ] Additional information required and received  
plan of brace change in garage -bar room
- [NA] Compliance schedule issued
- [NA] Earthquake prone building
- [NA] Swimming Pool details updated
- [NA] Warnings and Bans
- [ P ] Approve to issue Code Compliance Certificate if all fees paid
- [NA] Approve to issue Certificate for Public Use if all fees paid
- [NA] Approve to issue Certificate of Acceptance if all fees paid
- [NA] Supervision review

#### NOTES:

Inspections Prepaid:

Inspections Done:

#### LICENSED BUILDING PRACTITIONERS:

Designer 1

Designer 2 RA338

Carpentry 1 BP124403

Foundations 1	BP102284
Bricklaying and Blocklaying 1	BP111559
Roofing 1	BP116537

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On review of the documentation and inspection notes it can be considered on reasonable grounds that all work has been completed in compliance with the building consent.

Signed:

Date: 3 March 2020

Name: Gareth McCullagh

Position: Building Officer



# CODE COMPLIANCE CERTIFICATE

Section 95 Building Act 2004 [Form 7 – Building (forms) Regulations 2004]



Consent No: 190682

The Building			
Street address of building:	6 Hadfield Road, Te Horo	Building name:	N/A
Current, Lawfully established, use:	Residential Dwelling	Location of building within site/block number:	Central
Level/unit number:	Single Level	Intended life of the building if 50 years or less:	-
Legal description of land where building is located:	LOT 3 DP 531543	Year first constructed:	
The Owner			
Name of owner:	Beattie Laura Michelle & Beattie Adam James	Street address /registered office:	N/A
Contact person:	As above	Phone numbers:	
Mailing address:	31 Wood Leigh Paraparaumu Beach Paraparaumu 5032	Landline:	-
Email address:	-	Mobile:	027 682 2999
Website:	-	Daytime:	-
		After hours:	-
		Facsimile number:	-
First point of contact for communications with the Kapiti Coast District Council:			
Full Name: GJ Gardner Homes Kapiti/Wellington Mailing Address: PO Box 65, Paraparaumu 5254 Phones:: 04 296 1248 Email: julianne.mollet@gjgardner.co.nz			
Building Work			
Building Consent No:	190682	Issued by:	Kapiti Coast District Council
Project Description:	New 5 bedroom, 2 bathrooms, 4 toilets, 2 living areas, double internal garage		

## Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that:

- (a) the building work complies with the building consent;

Michelle Salmon –  
Building Inspections Team Leader  
On behalf of **Kapiti Coast District Council**

Date: 31 March 2020



# DRAINAGE PLAN NOTES:

- All Plumbing and Drainage to be in accordance with AS/NZS 3500.2 for ground floor systems and for single stack systems
- Plumber/drainlayer to fill out producer statement and return to council with an as built drainage plan
- pipes to be inspected before covering with sand
- A tempering valve is required to be installed on the hot water service
- No pipes at any point exceed 10m in length from dn 100 vented drain
- Non-potable supply appropriately protected from cross connection hazards & is identified by appropriate signage
- HWC to be no less than 65 degrees at the cylinder to prevent against legionella bacteria.
- Water temperature delivered to sanitary fixtures to be no more than 55 degrees in compliance with G12

## PIPE GRADIENTS

- Minimum grades for drains and discharge pipes
- 65° & less = 1 in 40
- 80° & 100° = 1 in 60

## HOT & COLD WATER

- All hot & cold water pipes in house to be run in Dux Secura Polybutylene plumbing system
- 20mm for Main and to HWC
- 15mm to all other branches
- 15mm to exterior taps
- Kitchen hot water supply pipe to be 10mm if over 12m in length but must be under 25m long

OVERFLOW RELIEF GULLY HEIGHT CLEARANCE TO COMPLY WITH AS3500.2 CL 4.6.6.6 & CL 4.6.6.7

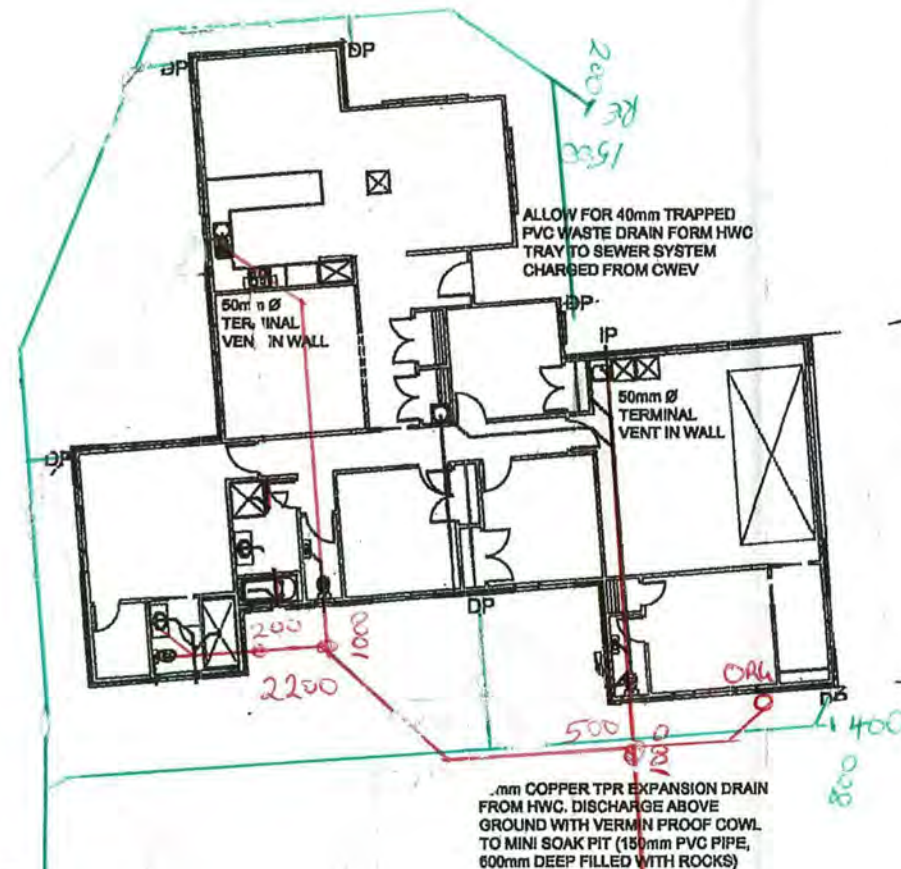
150mm BELOW THE LOWEST FIXTURE & 75mm ABOVE THE IMPERMEABLE SURFACE

Laid by  
STREAMLINE PLUMBING  
AND DRAINAGE  
DANIEL HOLLAND  
REV # 240  
ON 9/10/2019  
IN 100mm S&B  
PVC PIPE.

## NOTES:

ALL SEWER & STORMWATER PIPES TO BE 100mm Ø  
ALL PIPE WORK ABOVE SLAB TO BE 40mm Ø  
WC WASTE PIPE TO BE 100mm Ø

ALL EXPOSED HOT & COLD WATER PIPES TO BE LAGGED IF IN FROST PRONE AREA



NOTE:  
WATER SUPPLY TO HOUSE  
VIA A PURETEC HYBRID  
WATER FILTER SYSTEM

2 x 25000lt STORMWATER  
TANKS WITH DIVERTRON  
1200x SUBMERSIBLE PUMP

OVERFLOW FROM TANKS TO  
NATURAL SWALE.  
OUTFALL SHALL BE VIA ROCK  
DISSIPATER TO REMOVE THE  
VELOCITY & DAMAGE ASSOCIATED  
WITH FAST MOVING WATER

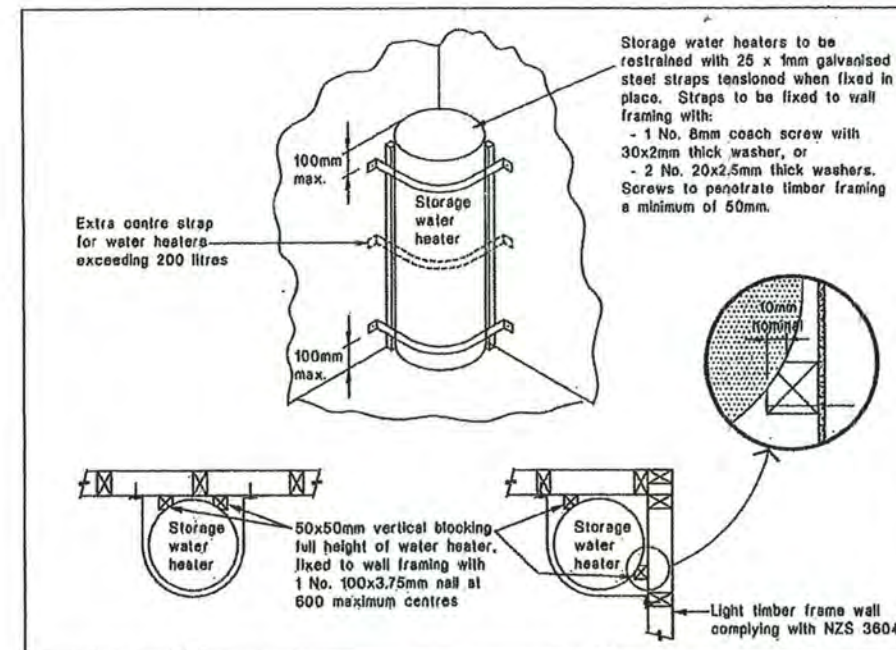
1 x 30000lt STORMWATER TANK FOR FIRE  
FIGHTING REQUIREMENTS (ADDITIONAL  
WATER FOR FIRE FIGHTING SUPPLIED FROM  
COMMUNITY FIRE FIGHTING TANK ON ROAD).  
OVERFLOW TO HOUSE TANKS

NOTE:  
THE FIRE FIGHTING HYDRANT IS TO BE  
POSITIONED 6m MIN FROM DWELLING TO  
ENABLE FIREMEN ACCESS TO THE HYDRANT  
SHOULD THE BUILDING ITSELF BE ON FIRE

NOTE:  
DRIVEWAY TO BE FORMED WITH  
PERMEABLE MATERIAL

ALLOW FOR 4.5m x 11m HARD  
STANDING AREA IN FRONT OF GARAGE  
FOR FIRE FIGHTING APPLIANCES

HARD METAL ACCESS  
FOR FIRE TRUCK



## Revisions:

AUGUST 2 / 2019 rev A  
SEPTEMBER 6 / 2019 rev B

## CONSENT PLANS

Project:  
**NEW  
DWELLING**  
LOT 3 HADFIELD ROAD  
PEKA PEKA

Client:  
**BEATTIE**

Drawing Title:  
**DRAINAGE PLAN**

Designer:  
**COASTAL  
ARCHITECTURE LTD.**  
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Paraparaumu  
New Zealand  
Tel: 04 296 1248  
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Design:  
MB  
Drawn:  
BF  
Scale:  
as shown

Job:  
980060  
Page of:  
2  
Rev:  
B



**G.J. Gardner** HOMES  
New Zealand's favourite home builders

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