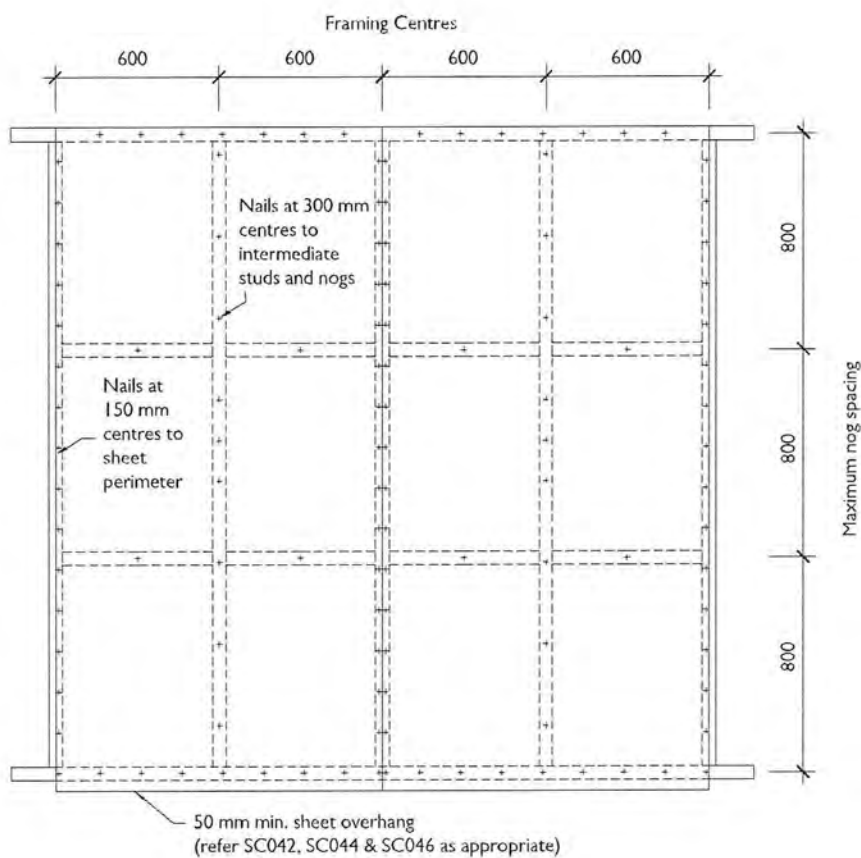


SC003: Shadowclad® Fastener Layout



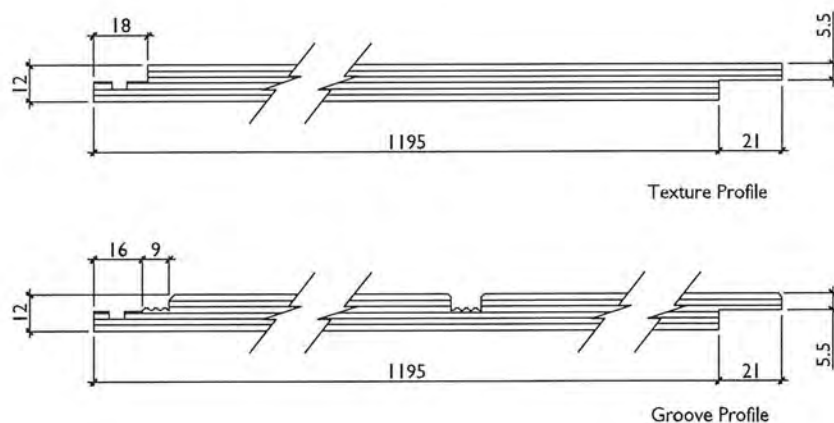
4.9 VERTICAL SHEET JOINTS

Shadowclad sheets have a built-in shiplap joint and weather groove on the long edges of all sheets.

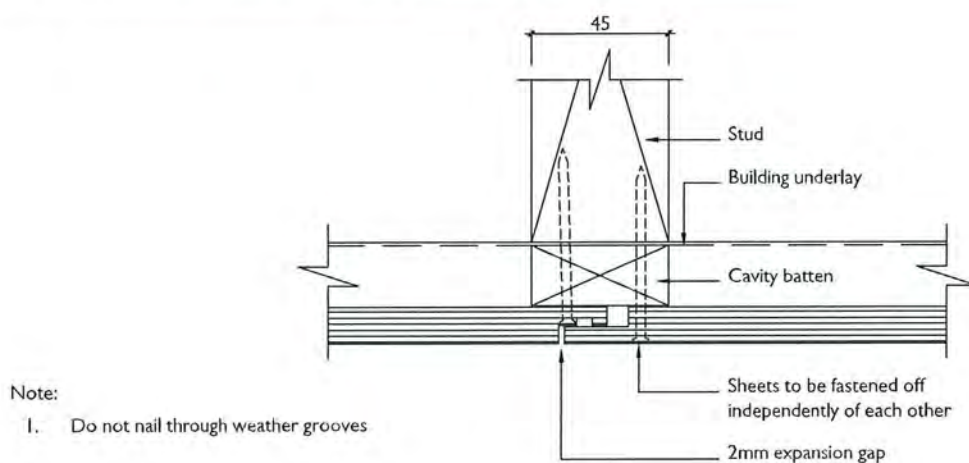
Treat all cut edges with a suitable brush on preservative treatment such as Holdfast® Metalex™ Clear:

When installing Shadowclad Groove profile sheets, use a 9mm temporary spacer in the groove alongside shiplap joint to establish correct expansion gap.

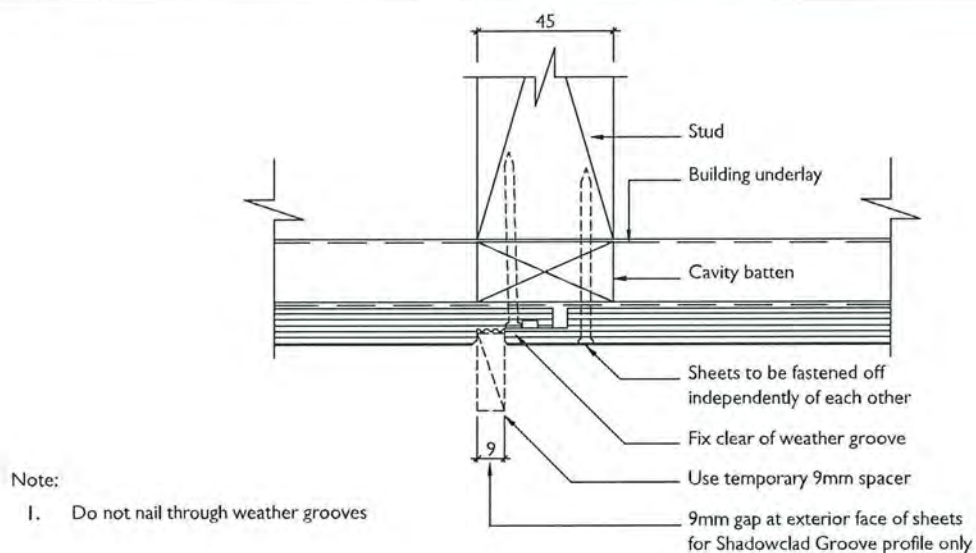
SC004: Shadowclad® Texture and Groove Sheet Dimensions



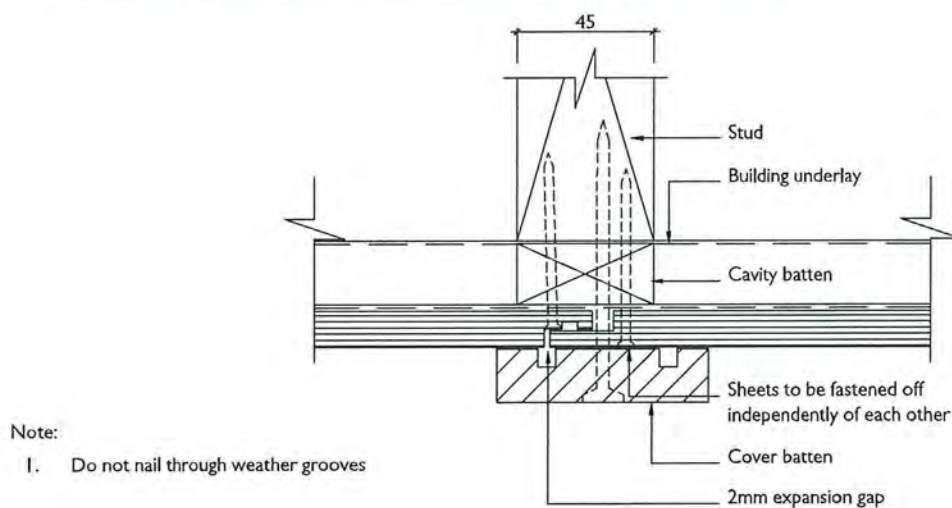
SC006: Shadowclad® Texture Vertical Joint (Cavity)



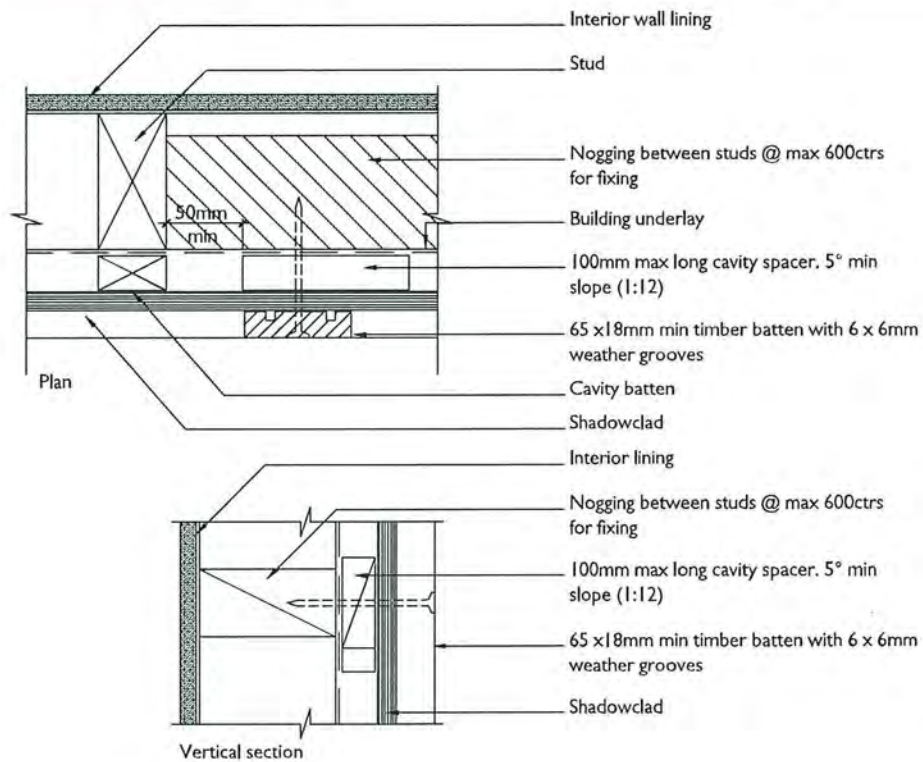
SC008: Shadowclad® Groove Vertical Joint (Cavity)



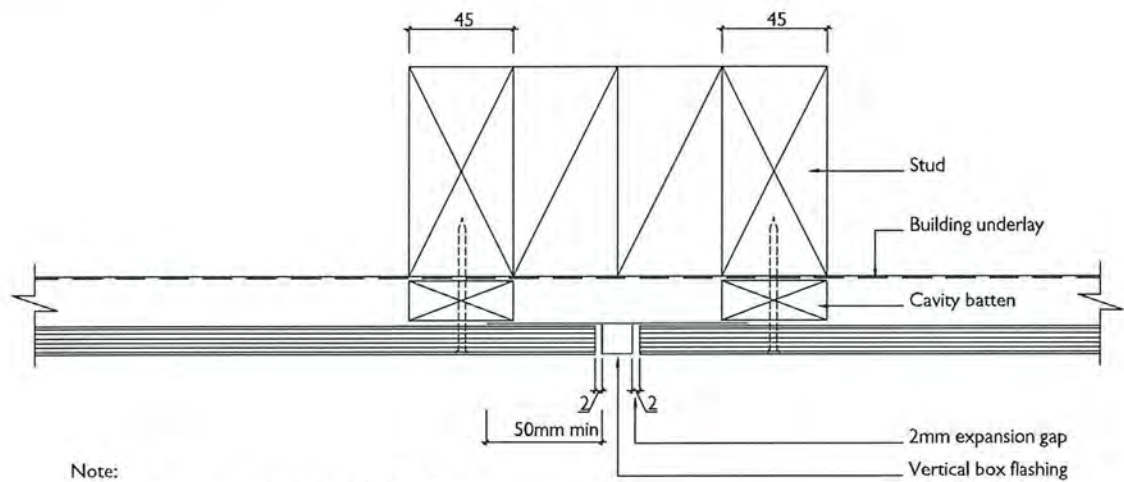
SC010: Shadowclad® Vertical Joint with Optional Cover Batten (Cavity)



SC012: Shadowclad® Nogging for Vertical Cover Batten Between Studs (Cavity)



SC014: Shadowclad® Vertical Joint with Top Hat Flashing (Cavity)



4.10 HORIZONTAL SHEET JOINTS

At floor joist level a horizontal joint must be provided to accommodate the movement resulting from timber joist shrinkage and settlement.

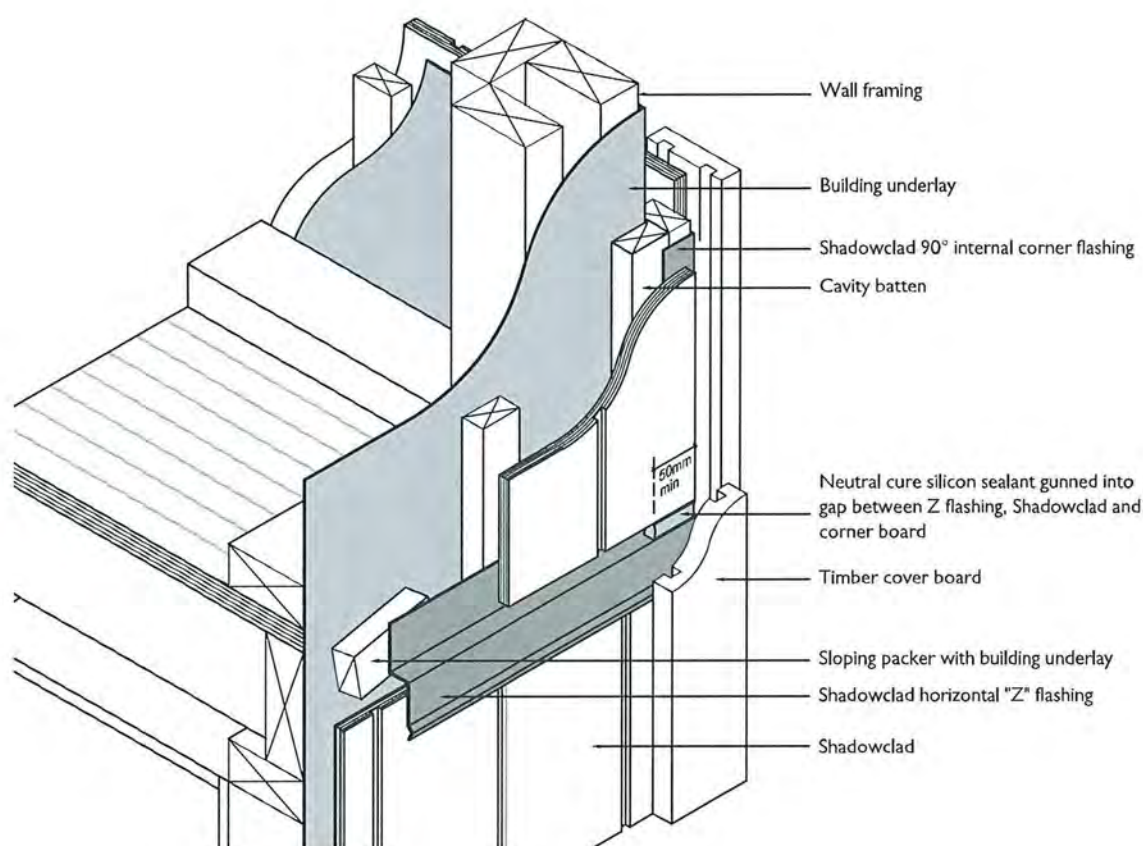
A Shadowclad™ horizontal 'Z' flashing should be used for horizontal sheet joints.

Acceptable Solution E2/AS1 requires drained cavities to be limited to a height of two storeys.

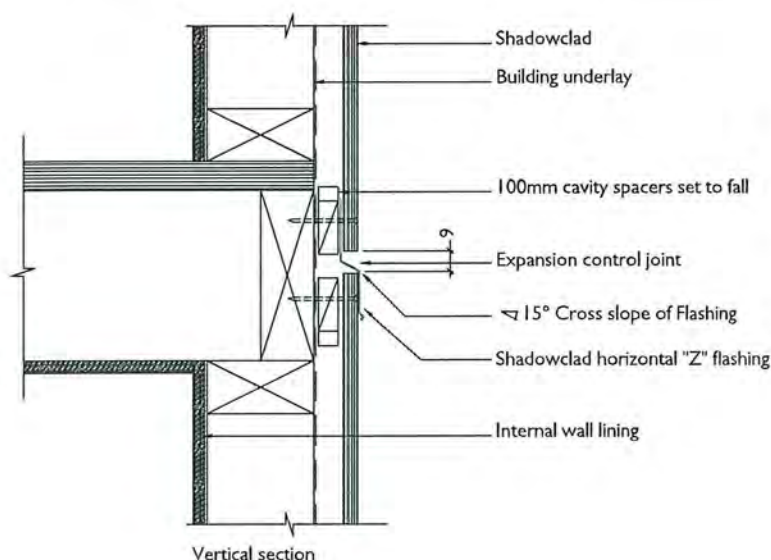
If aluminium 'Z' flashings are being used, all butt joints must include proprietary back flashings. Stainless steel flashings should be lapped by a minimum 150 mm at joints.

A 50 mm strip of neutral cure silicon (refer General Silicon Sealing of Horizontal 'Z' Flashings detail below) or stop ends (as applicable) required at all 'Z' flashing terminations excluding terminations at Shadowclad metal corner flashings.

Shadowclad® General Silicon Sealing of Horizontal 'Z' Flashings



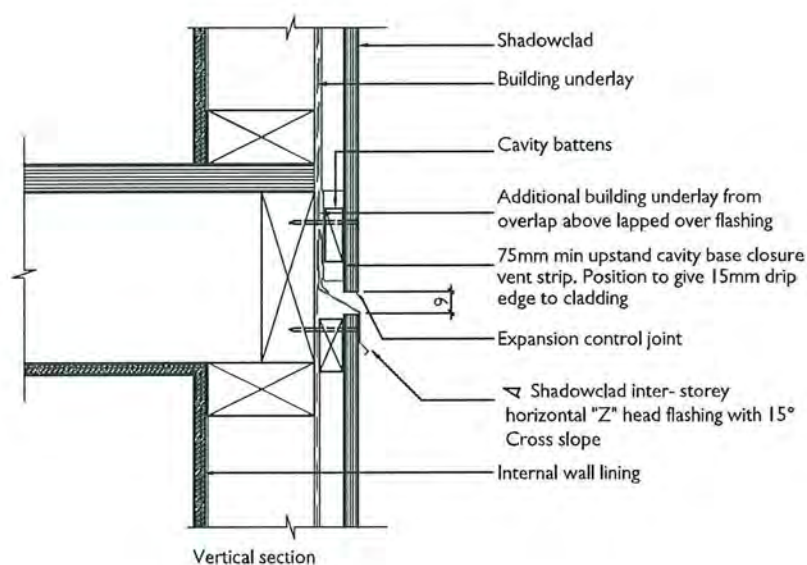
SC016: Shadowclad® Mid Floor Horizontal Joint (Cavity)



Note:

1. 50mm strip of neutral cure silicon sealant must be provided at the termination point of all Z flashings at windows, corner boxes, etc.
2. Detail is only suitable for drained cavities up to two storeys or 7m in height. For drained cavities over two storeys or 7m in height refer to detail SC018 Horizontal Joint - Non Continuous (Cavity)
3. Back flashings or 150mm overlap required at all horizontal flashing butt joints
4. Treat all Shadowclad cut edges with Holdfast® Metalex® Clear

SC018: Shadowclad® Mid Floor Horizontal Joint – Non Continuous (Cavity)

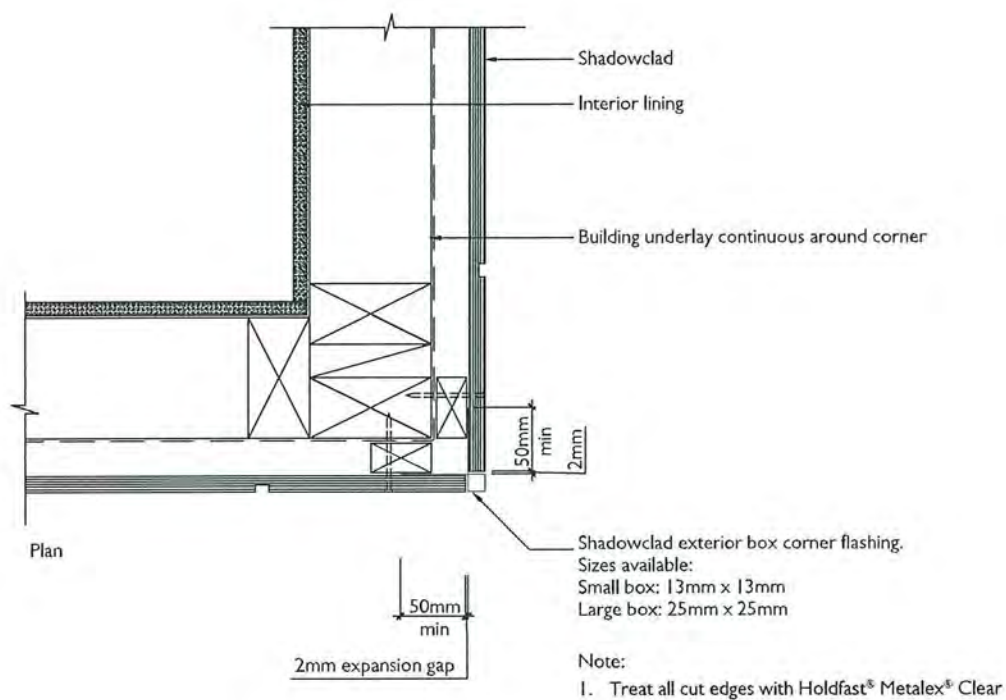


Note:

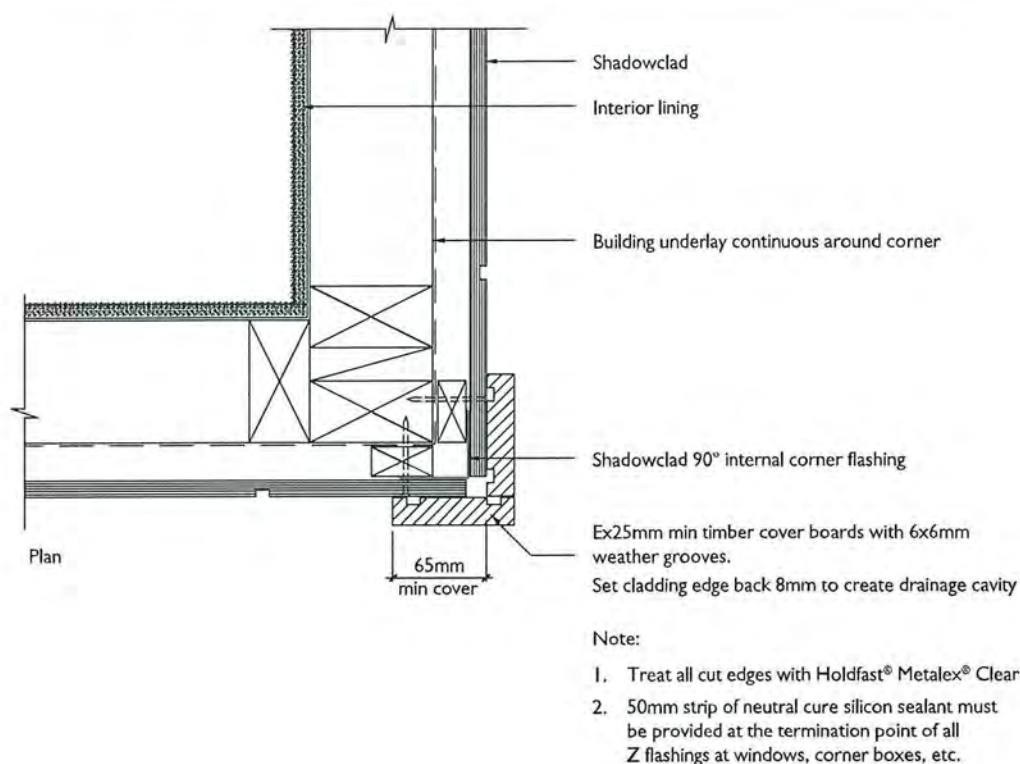
1. Stop ends must be provided at the termination point of all inter-storey Z flashings.
2. Detail SC016 Mid Floor Horizontal Joint (Cavity) may be used for continuous cavity up to two storey or 7 m in height
3. Back flashings or 150mm overlap required at all horizontal flashing butt joints.
4. Treat all Shadowclad cut edges with Holdfast® Metalex® Clear

4.11 EXTERNAL CORNERS

SC020: Shadowclad® External Corner with External Box Flashing (Cavity)

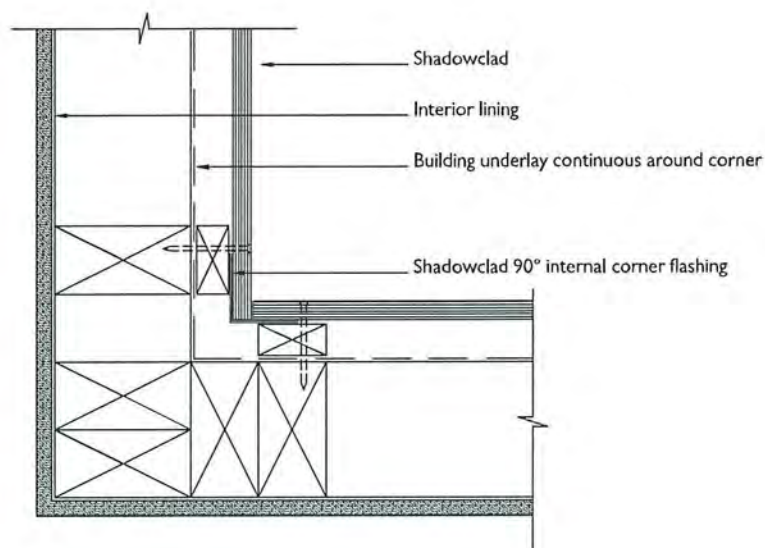


SC022: Shadowclad® External Corner with Cover Boards (Cavity)



4.12 INTERNAL CORNERS

SC024: Shadowclad® Internal Corner with 90° Flashing (Cavity)

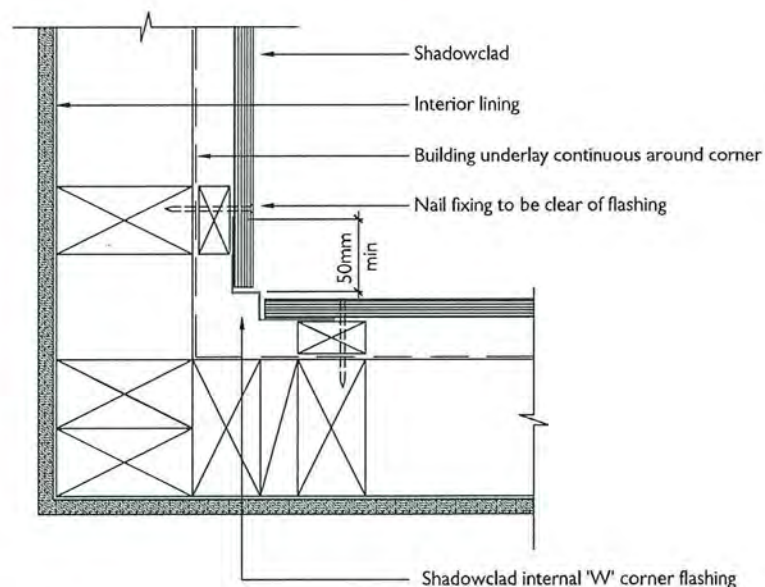


Plan

Note:

- I. Treat all cut edges with Holdfast® Metalex® Clear

SC026: Shadowclad® Internal Corner with W Flashing (Cavity)



Plan

Shadowclad internal 'W' corner flashing

Sizes available:

Small 'W': 13mm x 13mm

Large 'W': 25mm x 25mm

Note:

- I. Treat all cut edges with Holdfast® Metalex® Clear

4.13 SHADOWCLAD™ FLASHING JUNCTION POINTS

Flashings should have expansion joints where necessary to provide adequate allowance for thermal expansion as set out below.

- Expansion joints to be provided for joined flashings with a combined length exceeding 8 metres
- Where both ends of a flashing are constrained, allowance should be made for expansion

Cavity Base Closure

Fix Shadowclad cavity base closures to bottom plates through the upstand with 40 x 2.5mm, hot dipped galvanised or stainless steel (as appropriate) flat head nails at 300mm centres.

The cavity base closure should be positioned to allow a minimum drip edge to the wall cladding of 15mm at the base of walls, and 15mm above window head flashings.

Internal and External Flashings

Internal and external angles and 'Z' flashings can be nominally fixed with hot dipped galvanised or stainless steel (as applicable) flat head nails and then permanently fixed with the Shadowclad fasteners penetrating the flashing wings/upstands.

Horizontal 'Z' Flashings

Horizontal aluminium 'Z' flashings should be butted together with a back flashing to create a weathertight joint.

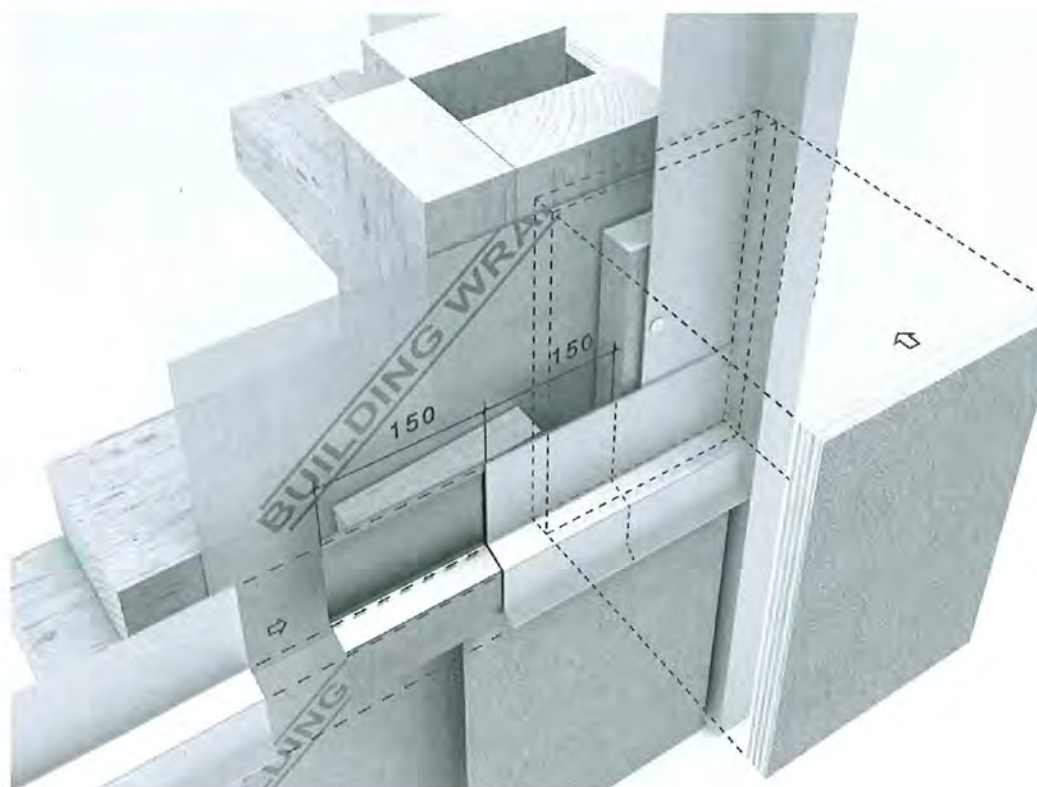
Stainless steel back flashings should overlap by a minimum of 150 mm at joints to create weathertight joints where horizontal flashings meet.

'Z' Flashings Terminations

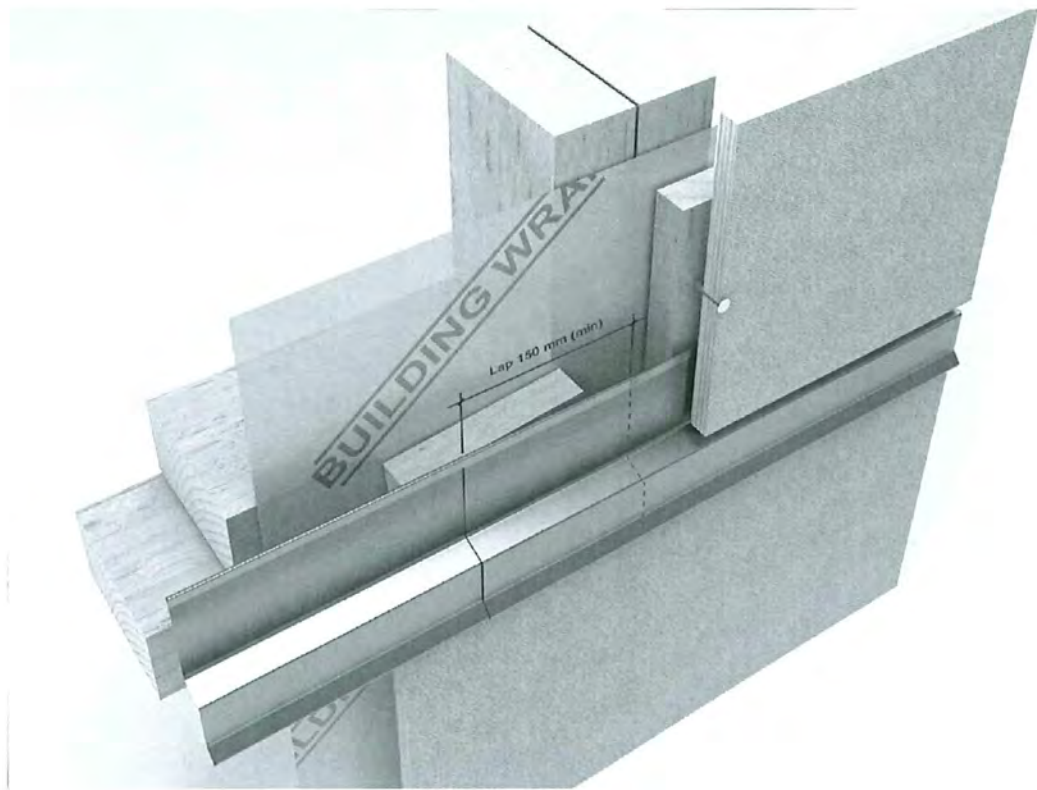
Where inter-storey 'Z' flashings terminate stop ends must be installed.

A 50 mm strip of neutral cure silicon (refer General Silicon Sealing of Horizontal 'Z' Flashings detail page 21) or stop ends (as applicable) required at all 'Z' flashing terminations excluding terminations at Shadowclad metal corner flashings.

Shadowclad™ Aluminium Flashing Junctions and Connections (Cavity)



Shadowclad® Stainless Steel 'Z' Flashing Joins (Cavity)

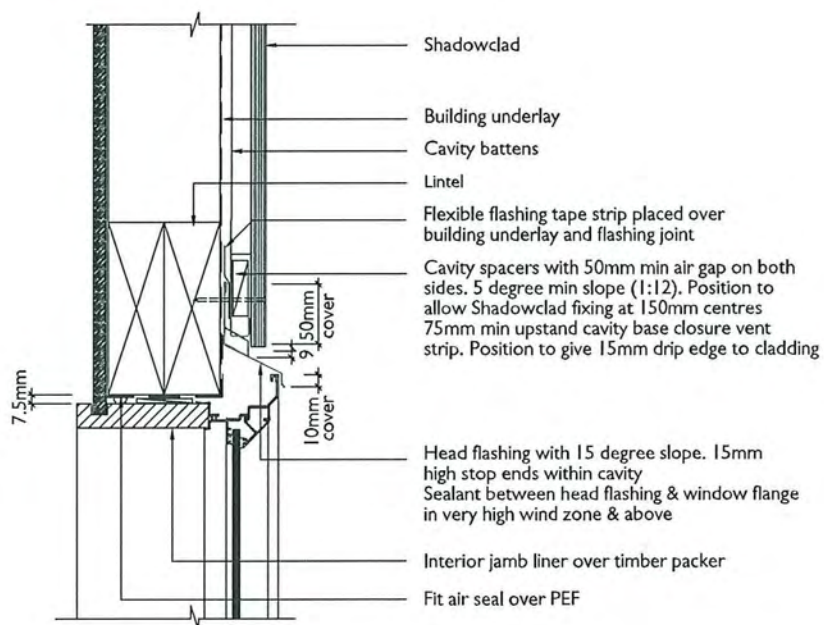


4.14 WINDOW PENETRATIONS

Window joinery flashings (ie head and sill flashings) should be sourced from the joinery fabricator to meet the requirements of Acceptable Solution E2/AS1 or an Alternative Solution such

as the Window Association of New Zealand Window Installation System (WANZ WIS) which can be downloaded at www.wanz.org.nz.

SC028: Shadowclad® Window Head Detail (Cavity)

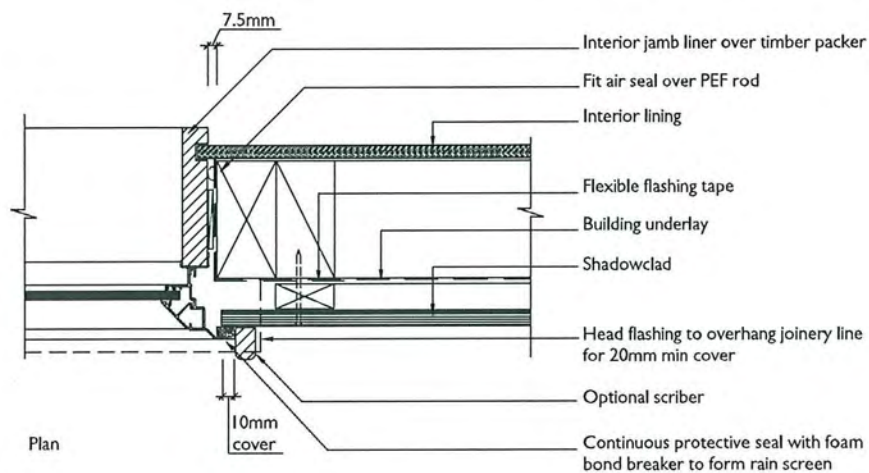


Note:

1. Treat all cut edges with Holdfast® Metalex® Clear
2. Stop ends to head flashing terminations

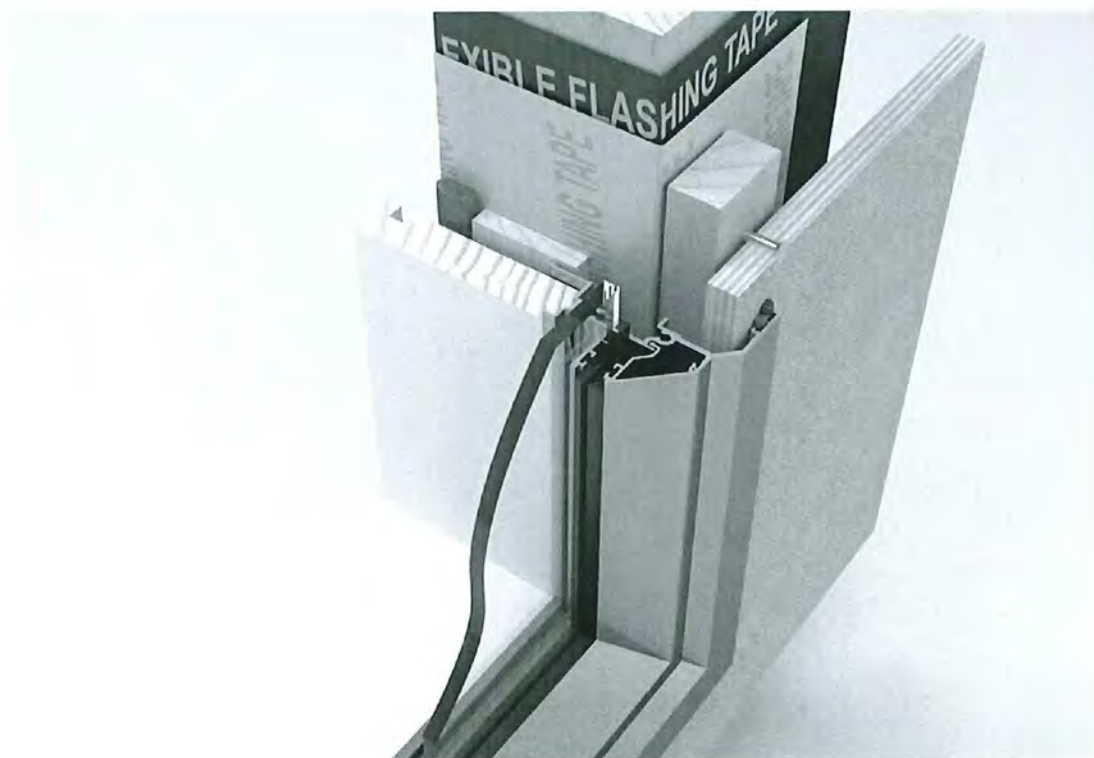


SC030: Shadowclad® Jamb Detail (Cavity)

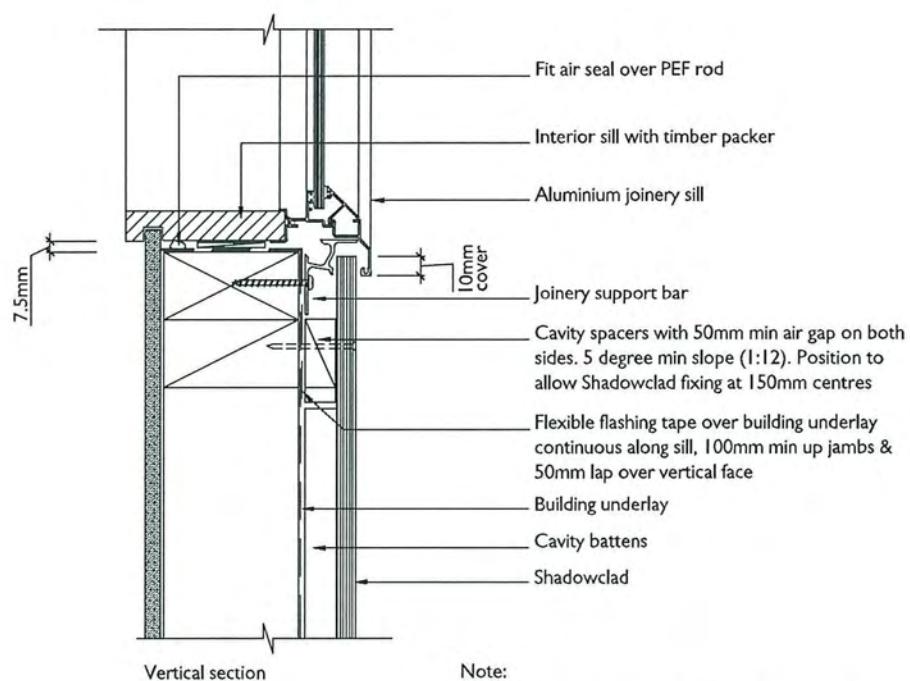


Note:

1. Treat all cut edges with Holdfast® Metalex® Clear
2. 50mm strip of neutral cure silicon sealant must be provided at the termination point of all Z flashings at windows, corner boxes, etc.

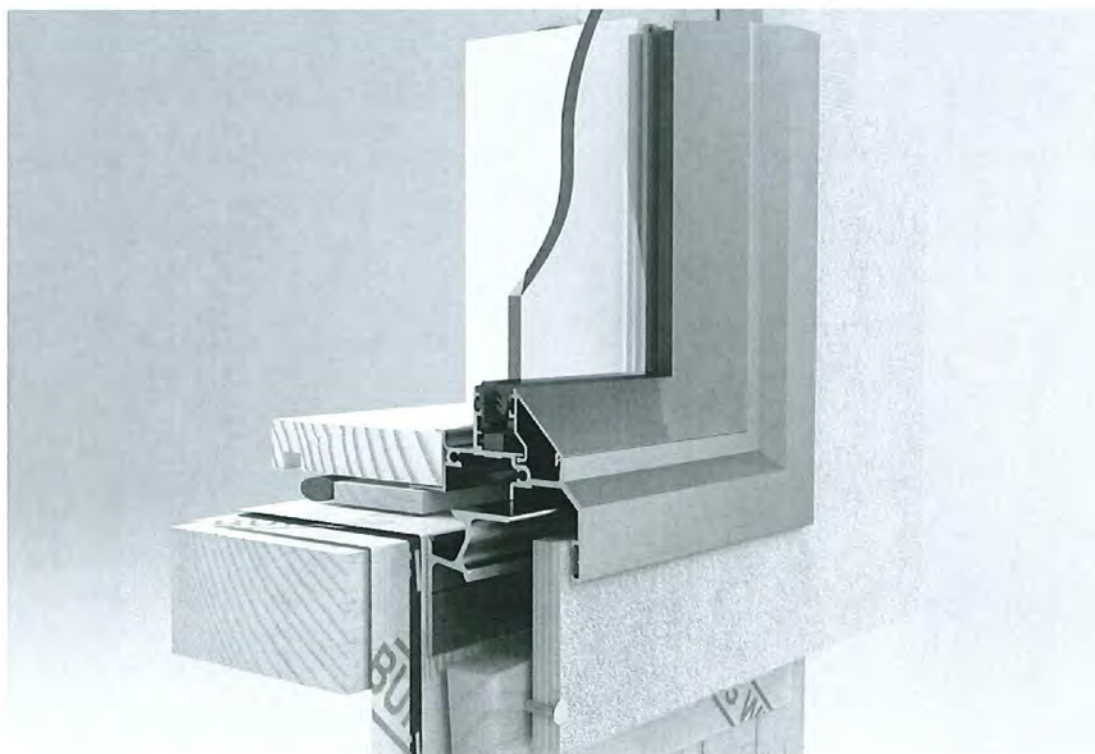


SC032: Shadowclad® Window Sill Detail (Cavity)



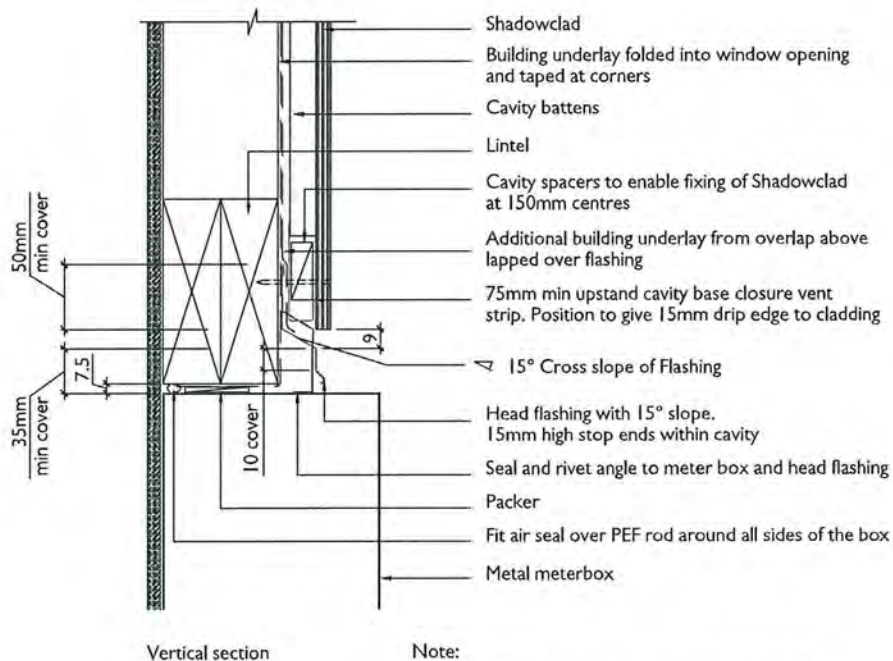
Note:

- I. Treat all cut edges with Holdfast® Metalex® Clear

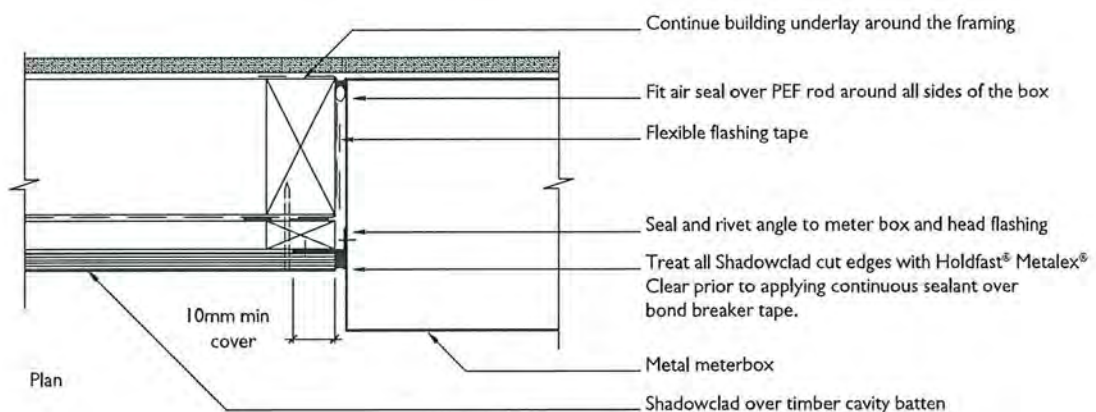


4.15 WALL PENETRATIONS

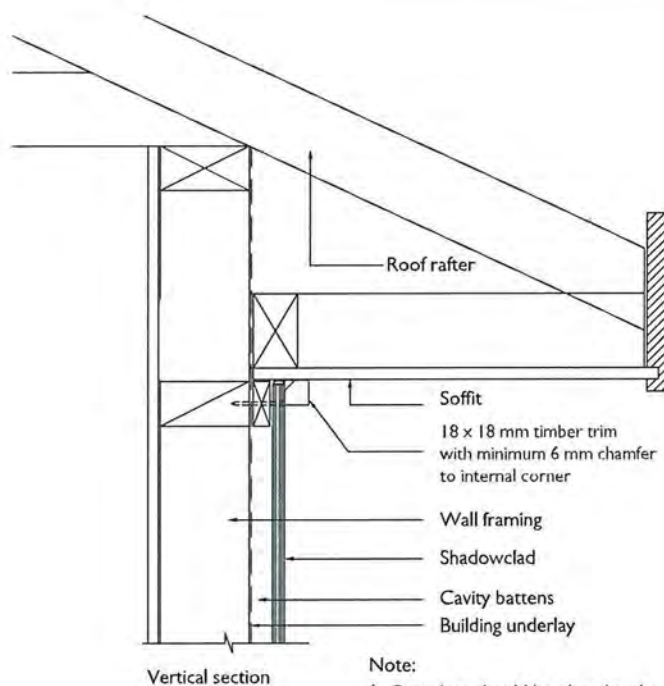
SC034A: Shadowclad® Meterbox Vertical Cross Section (Cavity)



SC034B: Shadowclad® Meterbox Horizontal Cross Section (Cavity)



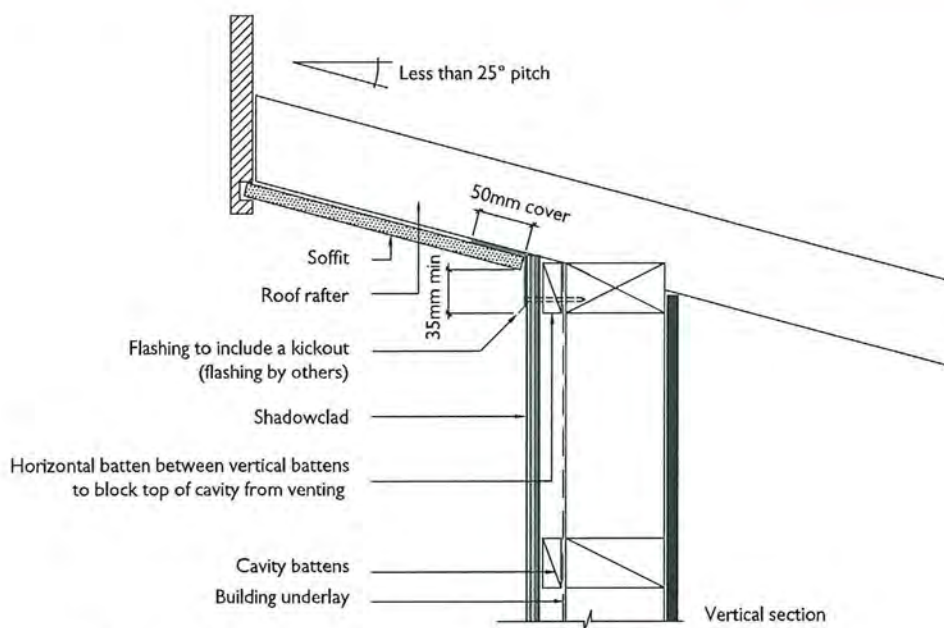
SC036: Shadowclad® Soffit Detail (Cavity)



Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with Holdfast® Metalex® Clear

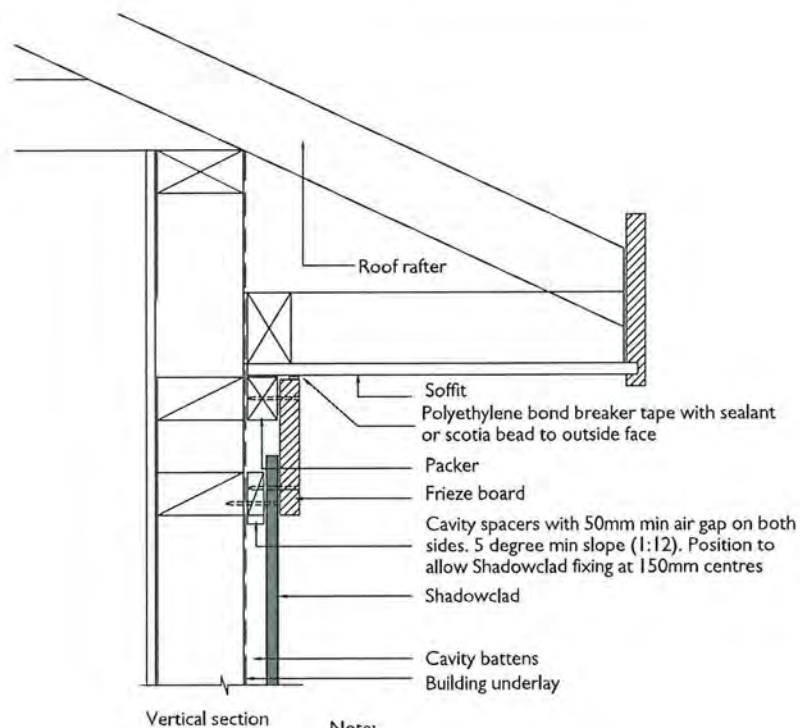
SC036A: Shadowclad® Alternative Soffit Detail (Cavity)



Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with Holdfast® Metalex® Clear

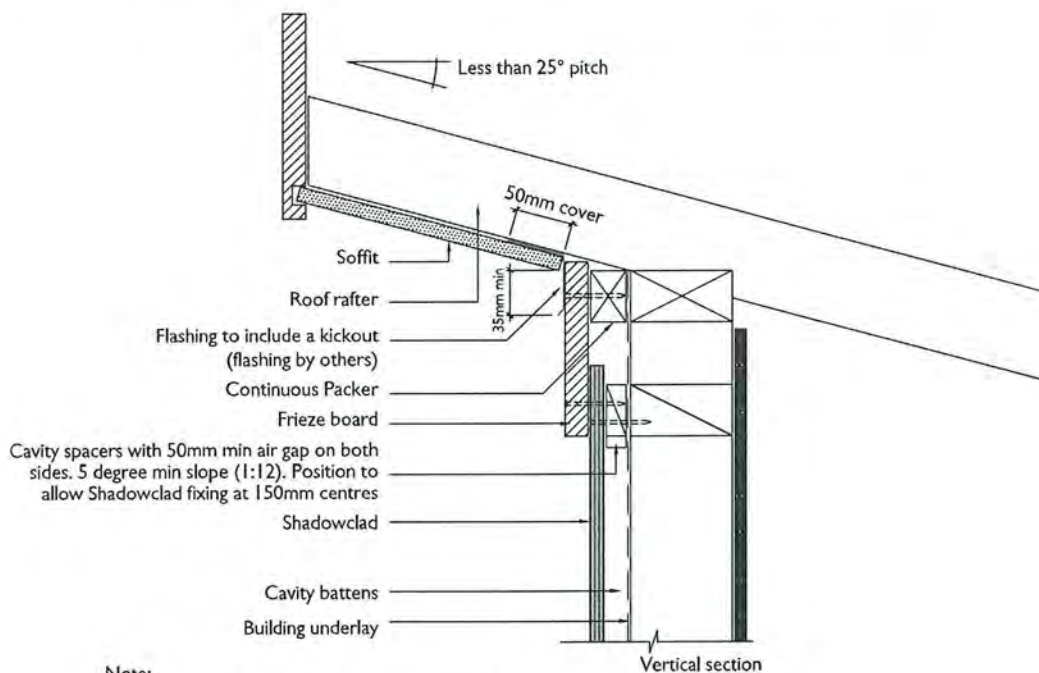
SC038: Shadowclad® Soffit Alternative Detail (Cavity)



Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with Holdfast® Metalex® Clear

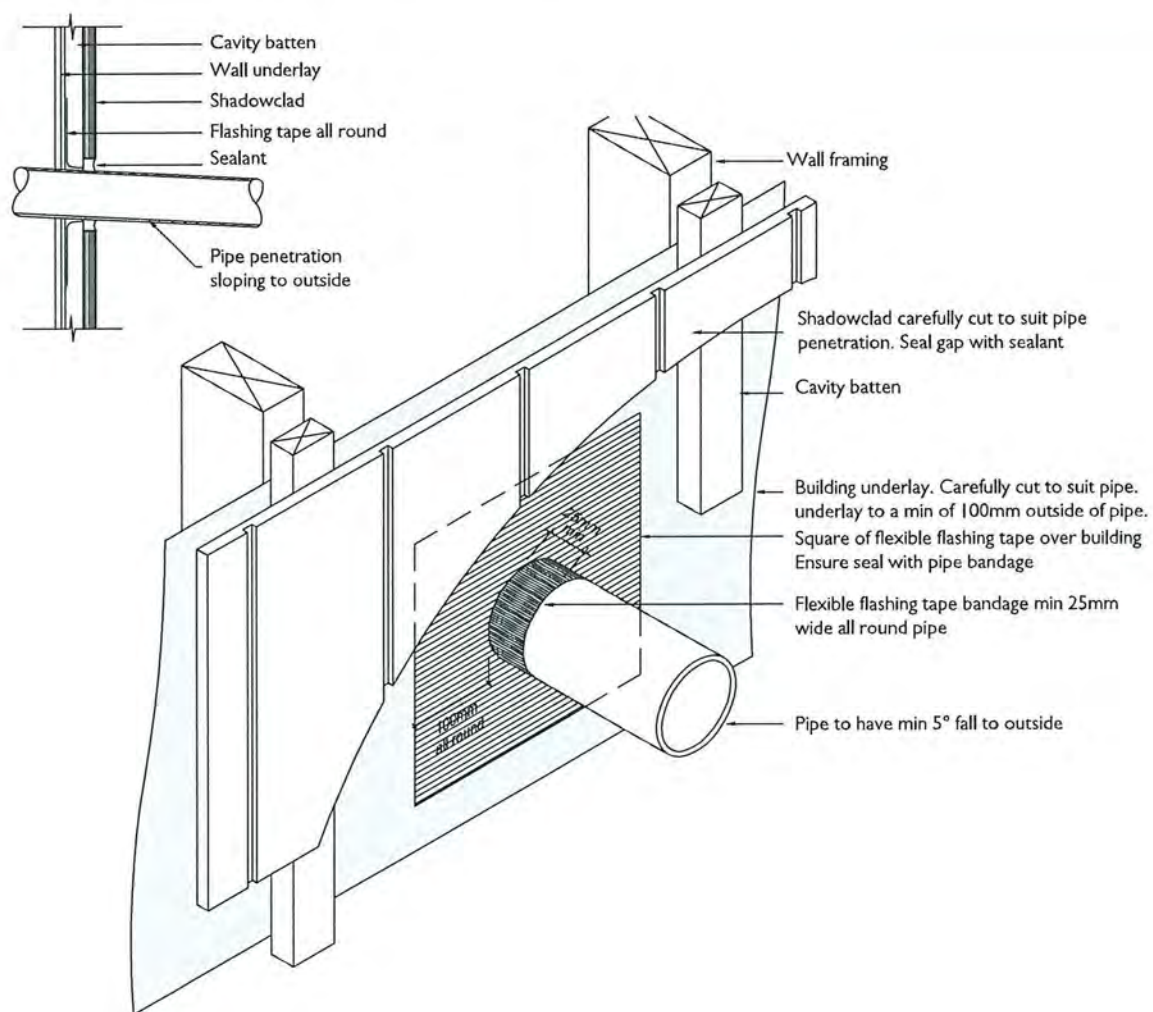
SC038A: Shadowclad® Alternative Soffit Detail (Cavity)



Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with Holdfast® Metalex® Clear

SC040: Shadowclad® Pipe Penetration (Cavity)



4.16 SHEET CLEARANCES

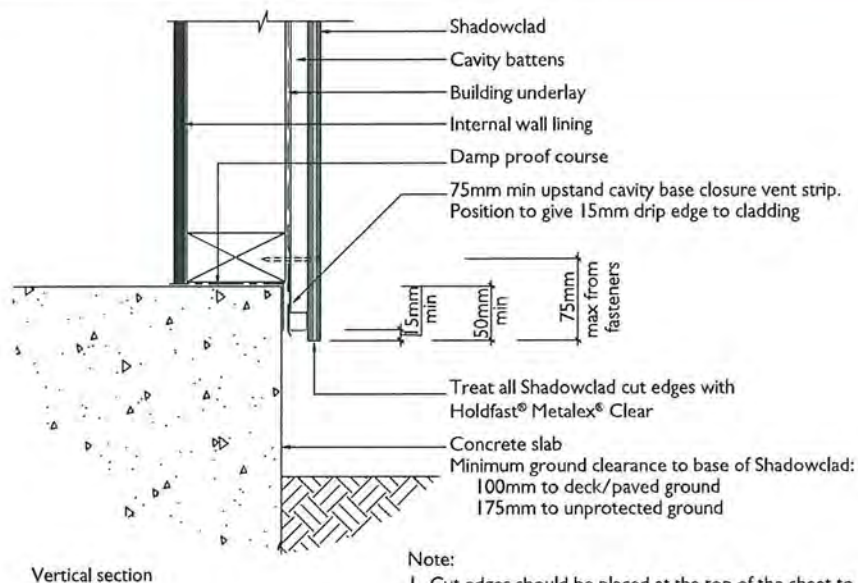
Ground Clearances

Shadowclad must overhang the bottom plate on a concrete slab by a minimum of 50mm as required by NZS 3604 and E2 - External Moisture. Maximum distance from the bottom of the sheet to the fixing shall not exceed 75mm.

The bottom edge of the Shadowclad sheet must be a minimum of 50mm above decks and verandahs, 100mm above paved ground and a minimum of 175mm above unprotected ground.

For garage door openings, refer Paragraph 9 "Openings to garages" in Acceptable Solution E2/AS1.

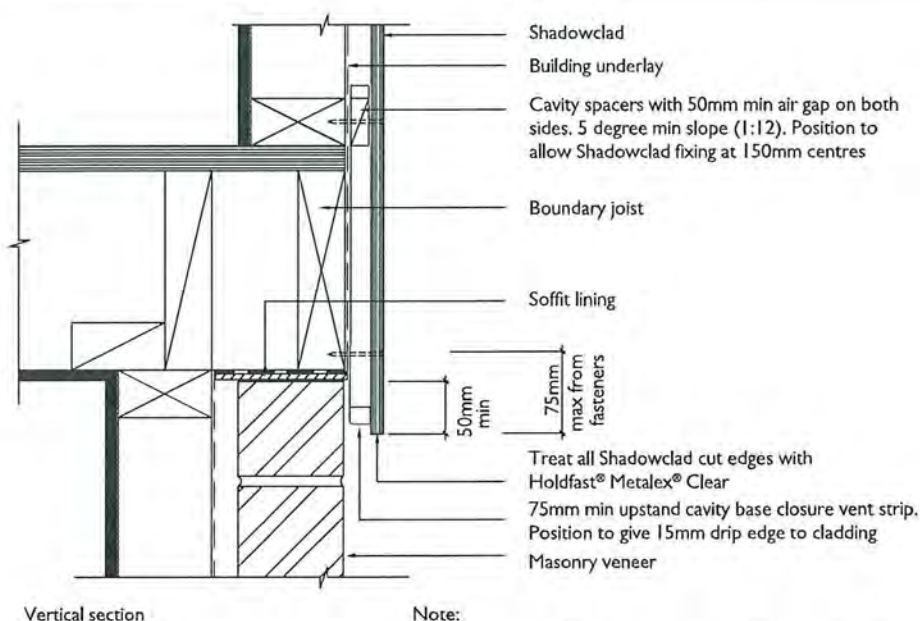
SC042: Shadowclad® Overhangs and Ground Clearances (Cavity)



Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with Holdfast® Metalex® Clear

SC044: Shadowclad® Upper Storey to Masonry Lower Storey (Cavity)

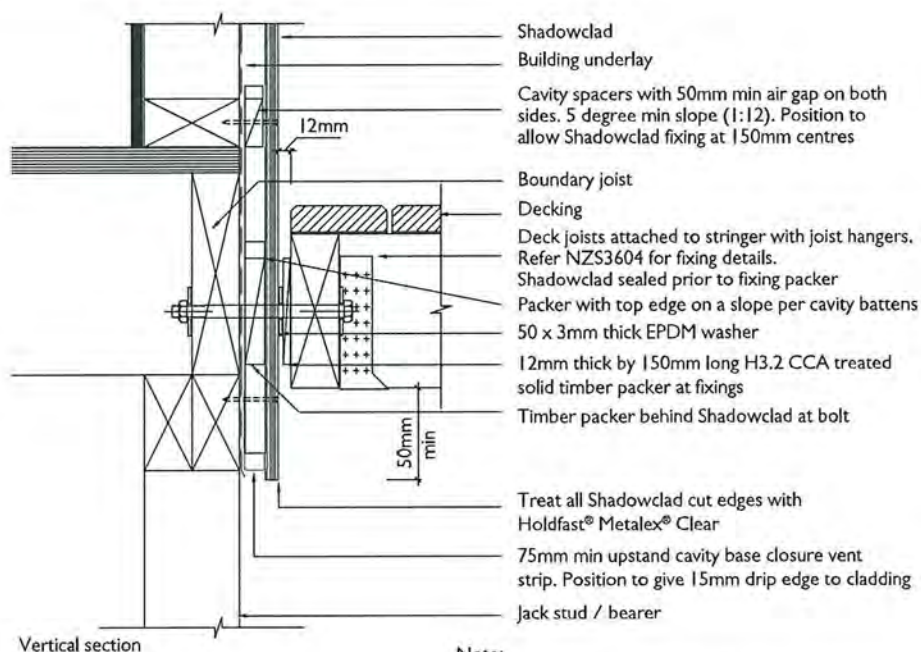


Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with Holdfast® Metalex® Clear

4.17 OTHER DETAILS

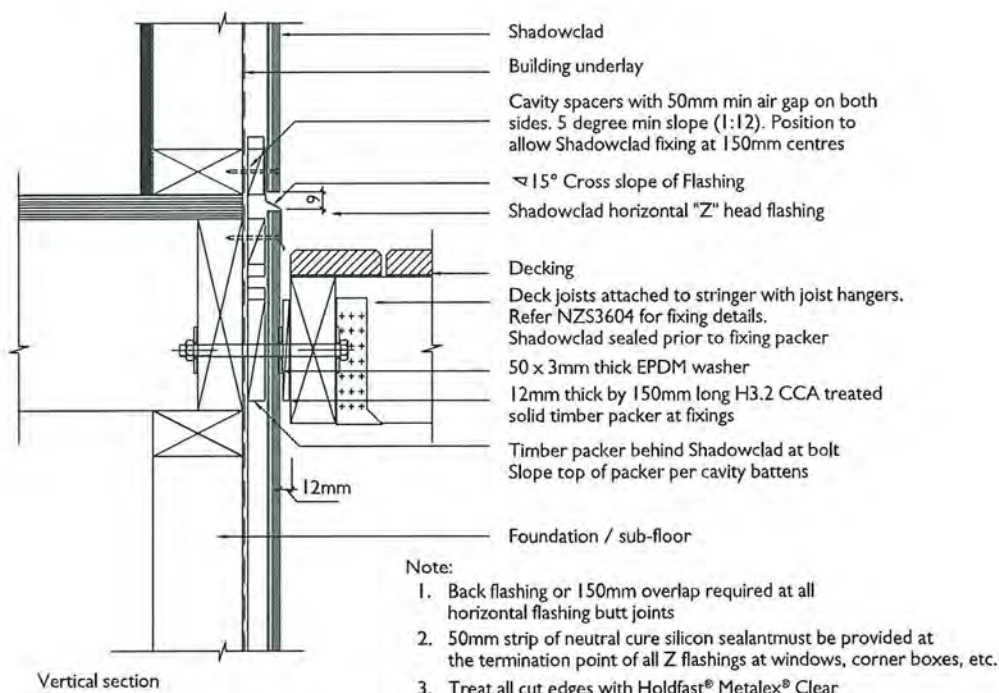
SC046: Shadowclad® Timber Ground Floor to Non-Cantilevered Deck (Cavity)



Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with Holdfast® Metalex® Clear

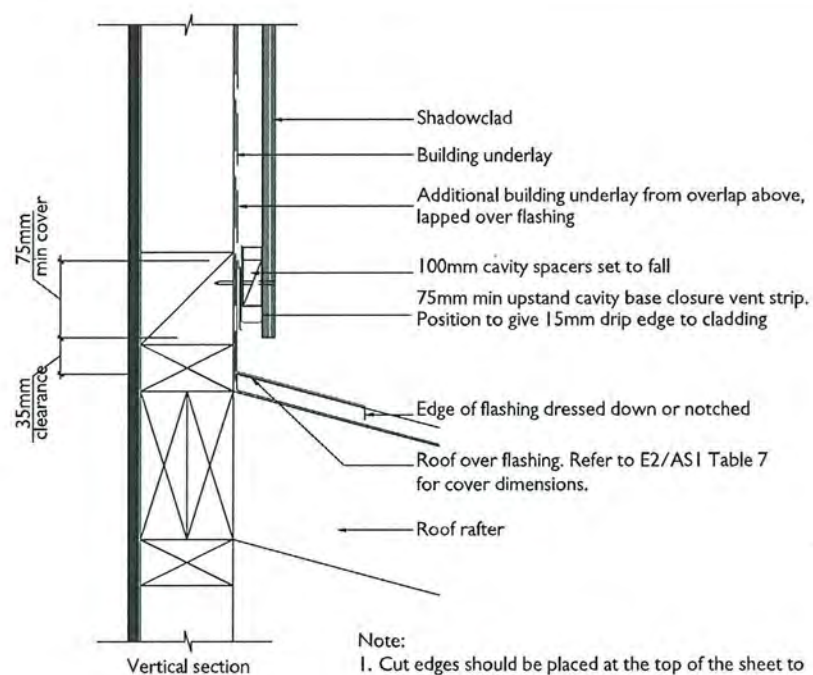
SC048: Shadowclad® Mid Floor to Non-Cantilevered Deck (Cavity)



Note:

1. Back flashing or 150mm overlap required at all horizontal flashing butt joints
2. 50mm strip of neutral cure silicon sealant must be provided at the termination point of all Z flashings at windows, corner boxes, etc.
3. Treat all cut edges with Holdfast® Metalex® Clear

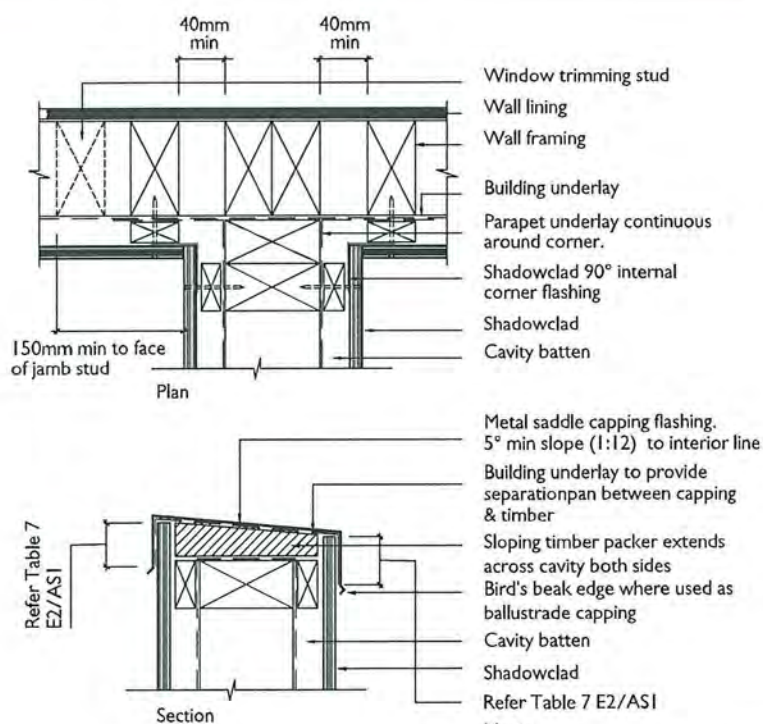
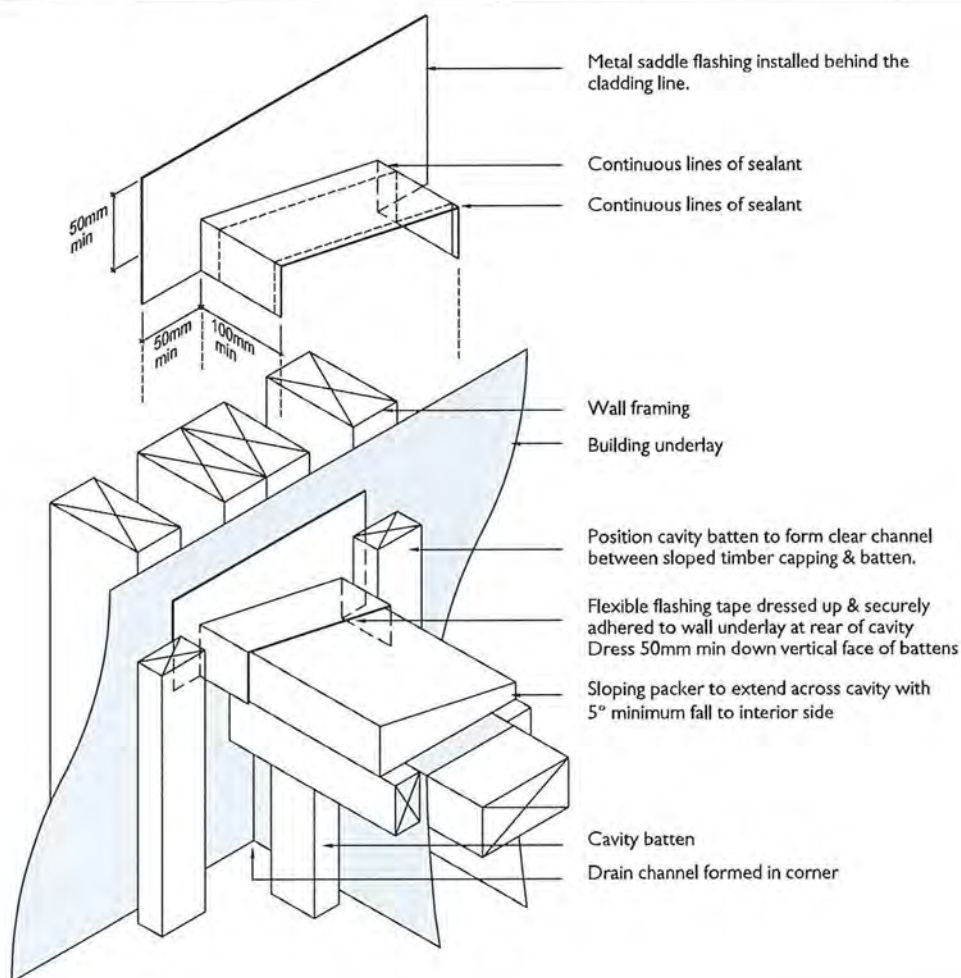
SC050: Shadowclad® Basic Apron Flashing (Cavity)



Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with Holdfast® Metalex® Clear

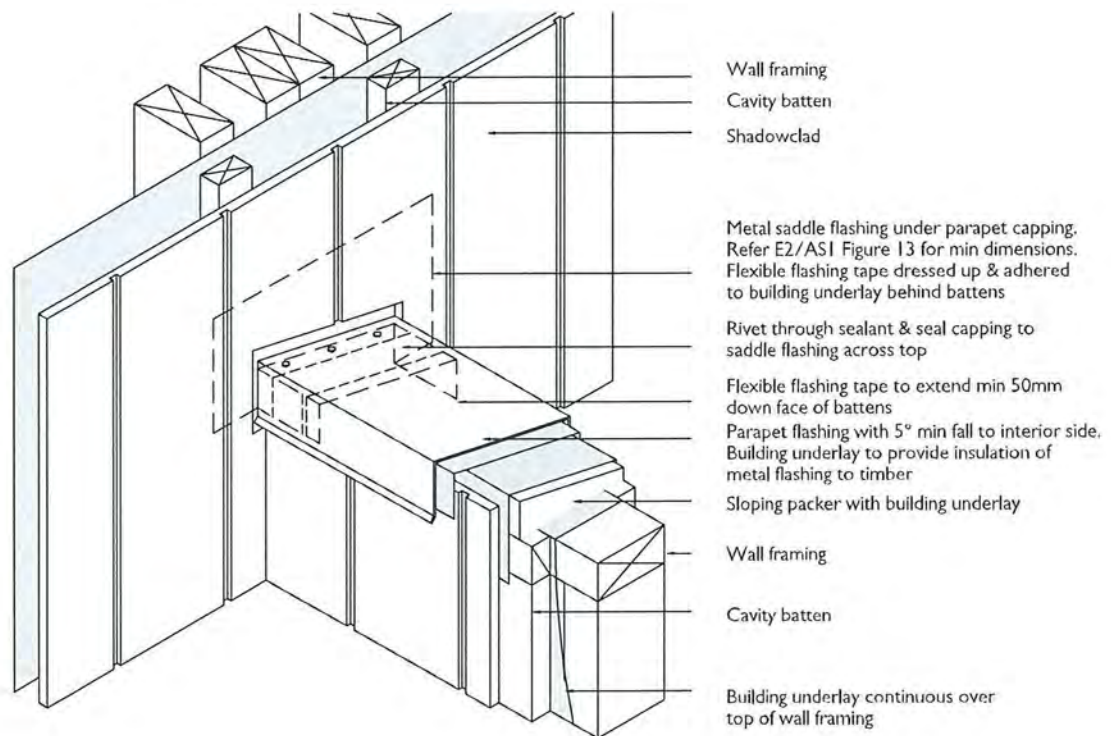
SC052: Shadowclad® Balustrade to Wall Junction (Cavity)



Note:

1. Treat all cut edges with Holdfast® Metalex® Clear

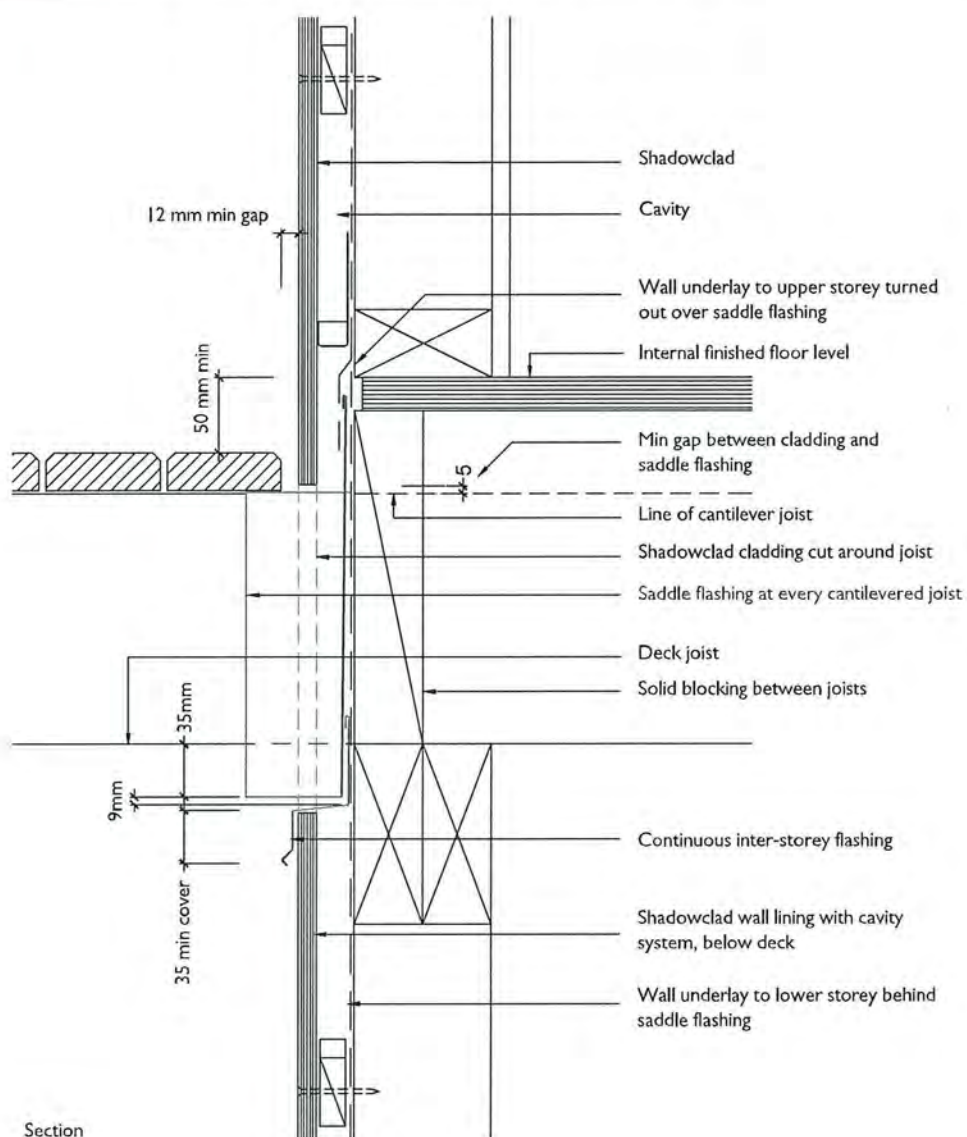
SC054: Shadowclad® Balustrade to Wall Junction (Cavity)



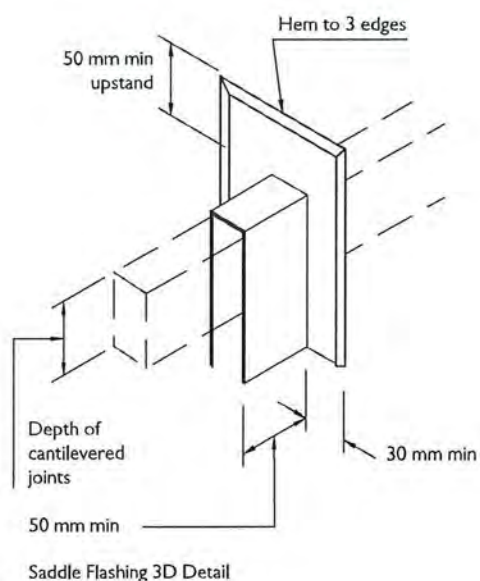
Note:

- I. Treat all cut edges with Holdfast® Metalex® Clear

SC056: Shadowclad® Junction with Wall for Cantilevered Deck (Cavity)



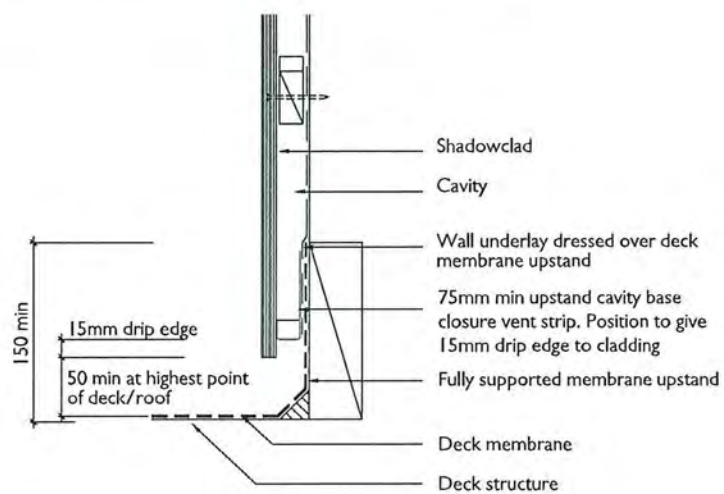
Section



Note:

1. Building wrap at back of cavity shall be taped around joist penetration
2. The back of the saddle flashing shall be positioned behind the cladding
3. Saddle flashing terminates over inter-story flashing
4. Treat all cut edges with Holdfast® Metalex® Clear

SC058: Shadowclad® Detailing for Enclosed Balustrade (Cavity)



Note:

1. Cut edges should be placed at the top of the sheet to avoid rain drips soaking into cut end grains
2. Treat all cut edges with Holdfast® Metalex® Clear

5.0 COATING & APPLICATION – EXTERIOR CLADDING

5.1 SURFACE PREPARATION

- Shadowclad is manufactured, treated and stored in dry conditions at CHH Woodproducts manufacturing facilities. The H3 treatment provides temporary repellence to mould prior to on site coating, however it remains the applicators responsibility to ensure the surface is dry and free from dust and mould prior to coating
- If Shadowclad has been exposed to external weathering for over 3 months wash surfaces with a mild detergent solution to remove any dirt, dust, mould or sea spray prior to coating
- If recoating, remove loose, flaking or unsound coatings and wash walls prior to recoating
- The Shadowclad surface must be dry prior to applying any surface coating

5.2 COATING APPLICATION

- If sheets feel greasy to touch, separate and place in a dry, well ventilated area to allow any residual solvents from the treatment process to flash off prior to applying coatings
- Panels are envelope treated. Sheet cuts **must** have a brush on treatment applied such as Holdfast® Metalex® Clear prior to applying coatings
- Coatings should be applied by brush to ensure adequate coating film build is achieved. Application via roller or spray is not recommended
- Shadowclad Natural panels should be coated within 3 months of installation
- Priming of sheet edges and on the rear of the sheet to a height of 150mm is considered good practice, and required at the base of all sheets
 - Shadowclad Ultra sheets are coated on the rear to a height of 150mm (min.) to meet this requirement
- A minimum total coating system film build of 90 microns is recommended when painting or using film forming stains, including a minimum 30 micron thickness per coat
- For detailed advice on surface preparation, coating product suitability and general coating practice always refer to the coating manufacturer prior to application

5.3 COATING SELECTION

The following coating information should be treated as a generic guide to coating systems typically used with Shadowclad exterior cladding. The selection, application and maintenance of coatings is the responsibility of building owners and the professionals that they engage. For advice on specific coating products and their suitability for use on Shadowclad always refer to the coating manufacturer.

It is important to note regardless of the cladding materials selected there will always be a level of coating maintenance required to ensure the cladding material is sufficiently protected from the elements and maintains the desired appearance.

Paints & Film Forming Stains

Three coats (1 undercoat, 2 top coats) of a good quality, 100% acrylic paint system with a light reflectance value (LRV) of 50% or greater (i.e. light colours) which is regularly maintained will provide the highest level of protection and durability for Shadowclad and is likely to require the least amount of coating maintenance over the life of the cladding.

Dark colours (LRV of below 50%) may still be used, however they are likely to increase heat and stress on the panel surface, reducing the panels overall lifespan and increasing the level of coating maintenance required to maintain an acceptable visual appearance.

Some film forming stains (i.e. coatings with the consistency of paint but with an appearance similar to penetrating stains) may offer similar protection qualities to paints however advice and assurance should be sought from the coating manufacturer as to their suitability for use with Shadowclad prior to application.

Where paints or film forming stains are to be used, Shadowclad Ultra is recommended. Shadowclad Ultra features a factory applied performance coating which in most cases eliminates the use of time consuming wet primers. (See Table 9)

Shadowclad Natural can also be used with paint however a conventional wet primer is required as part of the coating manufacturers overall system specification.

Penetrating Stains

Penetrating stains show the natural texture and character of timber and are widely used on Shadowclad exterior cladding.

Penetrating stains offer less protection for panels from exterior weathering than paints and film forming stains which are considerably thicker in surface film build. Due to their translucency, penetrating stains are likely to require additional coating maintenance during the panel's life to maintain an acceptable visual appearance.

Penetrating stains should only be used on Shadowclad Natural and are not recommended for use on Shadowclad Ultra.

CHH Woodproducts does not recommend the use of linseed oil based coating which have the potential to promote mould growth in this product.

Clear Coatings & Uncoated Shadowclad®

If Shadowclad is left uncoated or is clear coated in exterior applications the long term aesthetics of the board will be significantly reduced. While the product will meet durability and weathertightness requirements under E2/AS1 a high visual appearance will not be achieved in the long term.

Face Checking

Face checks are lengthwise separations of wood fibres in the face veneer of the plywood. They result from the normal swelling and shrinking of wood as it gains and loses moisture which is exacerbated by darker colours. It is important to realise that these checks are superficial, being confined to the face veneer. They do not alter the structural integrity of the plywood in any way. If you are the specifier, it is important to discuss these issues with your client before finalising colour choice. If checking occurs, repaint with a good quality, 100% acrylic exterior house paint in accordance with the manufacturer's instructions, thoroughly working paint into the face checks with a paint brush.

Table 9

Coating System for Shadowclad® Ultra

Within 3 months of erection	Ensure the panel is clean and dry prior to top coating. Top coat with two coats of premium 100% acrylic exterior house paint.
OR	
Within 3 to 6 months of erection	Wash the surface with a mild detergent solution to remove any chalky material prior to top coating. Top coat with two coats of premium 100% acrylic exterior house paint.

Note: For best results

i/ allow 24 hours between coats

ii/ use a light coloured paint system, LRV above 50%

iii/ Recommend panel be washed down (prior to painting) to remove any sea salt spray or dirt deposits

iv/ Minimum total coating film build of 90 microns is recommended, including a minimum 30 microns per coat

5.4 COATING REQUIREMENTS IF RUN OFF IS USED FOR DRINKING WATER

Chemical manufacturers recommend that any run-off from treated surfaces should not be used for drinking water; Unsealed (eg unpainted) plywood claddings should not be used in situations where run-off directly from such claddings

is collected in water tanks for drinking water. Ensure selected coatings act as a sealant and refer to the coating manufacturer's Material Safety Data Sheets to confirm specified coatings are suitable for use in these applications.

6.0 MAINTENANCE

All cladding materials, including Shadowclad, require careful and regular product maintenance by the building owner throughout the cladding's normal service life to ensure long term durability and to maintain visual aesthetics.

Claddings:

At a minimum, Shadowclad should be maintained by:

- Regularly washing it down (at least annually) with a mild detergent or solution to remove surface dirt, moss, mould, and sea spray
- Inspect on at least a yearly basis paying particular attention to sheet joints, corners and bases
- Keep dirt, soil or leaf build-up at least 150 mm away from the base of panels
- Clean spouting and downpipes as required, so that stormwater is not overflowing onto the cladding
- Repaint as soon as the first sign of coating deterioration is identified in accordance with the coating manufacturer's specifications (including edges and sheet bottoms)
- Panel recoating requirements may vary depending on climate, orientation to the sun, coating type and coating colour selected
- Maintain the exterior envelope and connections including joints, penetrations, flashings, heat pumps, and sealants that may provide a means of moisture entry beyond exterior cladding to comply with the requirements of the NZBC Clause E2 - External Moisture
- Prune back vegetation which is close to or touching the building as well as ensuring the NZBC ground clearance requirements are maintained especially where gardens are concerned
- DO NOT use water blasters to wash down the cladding

Flashings:

- Flashings should be periodically cleaned on a similar basis to the glass in windows
- Clean Shadowclad™ flashings with a diluted solution of mild liquid detergent avoiding excessively hot solutions. Use a soft bristle brush. DO NOT use abrasive tools or cleaners on the coating
- After cleaning, rinse thoroughly with fresh water. DO NOT use strong solvent type cleaners. Where the use of solvents is required, such as cleaning paint spills, use nothing other than methylated spirit. Ensure contact time is as short as possible, and rinse the solvent cleaner thoroughly from the surface with copious amounts of quality drinking water
- Where cavity base closures are installed, ensure drainage holes are kept clear

7.0 FREQUENTLY ASKED QUESTIONS

Q: Where can Shadowclad be used?

A: Shadowclad can be used as both exterior cladding or as an internal lining (moisture free areas only). For interior linings untreated Shadowclad should be used. For exterior cladding H3 treated Shadowclad is required.

Q: Do I have to re-treat cut edges of Shadowclad panels?

A: H3 treated Shadowclad is envelope preservative treated. All cuts made in treated plywood **must** have a brush on preservative treatment applied fully to the cut area. CHH Woodproducts recommends the use of Holdfast® Metalex® Clear.

Q: When used as an exterior cladding what are the durability expectations of Shadowclad?

A: Under the NZBC Shadowclad (when used as an exterior cladding) is required to meet a 15 year minimum durability level.

To achieve a 15 year durability Shadowclad must be:

- H3 preservative treated
- Uncoated Shadowclad will meet the durability and weathertightness requirements, but a high visual appearance will not be achieved in the long term
- Coated with a good quality penetrating stain, film forming stain or paint system
- Coatings must be regularly maintained as part of a normal building maintenance program throughout the life of the building

Shadowclad is not recommended to be left uncoated when used as an exterior cladding

Note – durability according to the NZBC refers to the products ability to continue to perform its primary function as protection for the building structure. Appearance including the performance of the coating product is not covered under the NZBC durability requirements.

Q: Can Shadowclad, when used as an exterior cladding, be coated in dark colours?

A: Dark colours (coatings with an LRV of below 50%) will achieve a 15 year durability however customers must expect an increased level of recoat and general product maintenance compared to where light coating colours are used.

The greatest level of cladding protection and least amount of coating maintenance can be achieved by using a good quality paint system (applied as per the coating manufacturers specifications) with an LRV of 50% or greater and a minimum total coating system film build of 90 microns, including a minimum 30 micron thickness per coat.

For further information on coatings always refer to the applicable coating manufacturer's specification material

Q: Does Shadowclad comply with the NZBC Requirements?

A: Shadowclad has been tested in accordance with E2/M1 and AS/NZS 4284 "Testing of Building Facades" for compliance with the NZBC requirements and has been BRANZ appraised for use in cavity fix construction.

Q: In the Shadowclad™ exterior flashing range can I colour the flashings to match the colour of my building?

A: Shadowclad aluminium exterior flashings are available in either anodised or mill finishes. Anodised flashings are silver in colour and can be installed immediately. Mill finished flashings can be powder coated to specific colours by the customer.

Q: Does face checking affect the performance of Shadowclad?

A: Face checks are lengthwise separations of wood fibres in the face veneer of the plywood. They result from the normal swelling and shrinking of wood as it gains and loses moisture which is exacerbated by darker coloured coatings. These checks are superficial, being confined to the face veneer. They do not alter the structural integrity of the plywood in any way.

8.0 REFERENCES AND SOURCES OF INFORMATION

- New Zealand Building Code (NZBC)
- AS/NZS 2269:2012 "Plywood Structural"
- AS/NZS 1604.3:2010 "Specification for Preservative Treatment, Part 3: Plywood"
- NZS 3602:2003 "Timber and Wood-Based Products for use in Buildings"
- AS/NZS 4284:2008 "Testing of Building Facades"
- NZS 3603:1993 "Timber Structures Standard"
- NZS 3604:2011 "Timber Framed Buildings"
- AS 3715:2002 "Metal Finishing – Thermoset powder coating for architectural application of aluminium and aluminium alloys"
- NZBC Clause 'E1/AS1 – Surface Water'
- NZBC Clause 'E2/AS1 – External Moisture'
- NZBC Clause 'E3/AS1 – Internal Moisture'
- NZBC Clause 'B2/AS1 – Durability'
- Product Technical Statement
– Shadowclad for Cavity Construction
- Ecoply® Specification and Installation Guide
- Ecoply Barrier Specification and Installation Guide
- CHH Woodproducts technical notes – downloadable from www.chhwoodproducts.co.nz/document-library
- Material Safety Data Sheets
 - MSDS Azole Treated Plywood, LVL & Joists
 - MSDS CCA Treated Plywood & Joist
 - MSDS Stainless Steel flashings
- Producer Statement Aluminium Flashing
- Window Association of New Zealand (www.wanz.org.nz)
- APA (www.buildabetterhome.org)
- EWPA (www.ewp.asn.au)
- BRANZ Appraised 764 – Shadowclad Cavity Fixed Cladding System
- BRANZ Recommendations for Building Maintenance

Standards can be purchased online at www.standards.co.nz

Building Code Compliance Documents can be downloaded free of charge at www.dbh.govt.nz

Line drawings within this literature can be downloaded from www.chhwoodproducts.co.nz/document-library

9.0 LIMITATIONS

The information contained in this document is current as at September 2015 and is based on data available to CHH Woodproducts at the time of going to print.

All photographic images are intended to provide a general impression only and should not be relied upon as an accurate example of Shadowclad products installed in accordance with this document or the NZBC compliance documents.

This publication replaces all previous CHH Woodproducts design information and literature relating to Shadowclad structural plywood products and flashings. CHH Woodproducts reserves the right to change the information contained in this document without prior notice. It is your responsibility to ensure that you have the most up to date information available, including at the time of applying for a building consent. You can call toll free on 0800 326 759 or visit www.chhwoodproducts.co.nz to obtain current information.

CHH Woodproducts has used all reasonable endeavours to ensure the accuracy and reliability of the information contained in this document. However, to the maximum extent permitted by law, CHH Woodproducts assumes no responsibility or liability for any inaccuracies, omissions or errors in this information nor for any actions taken in reliance on this information.

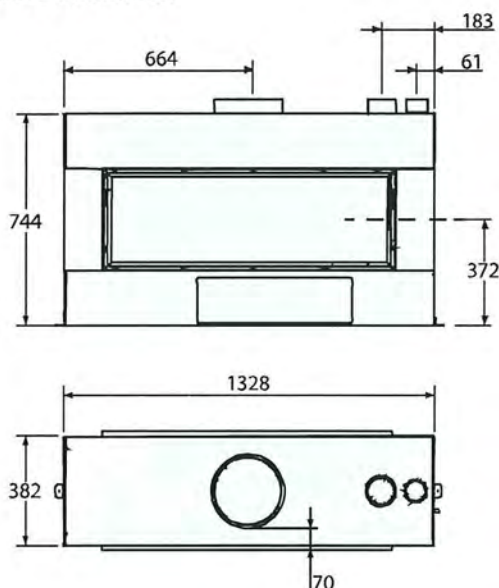
SHADOWCLAD® KEY INSTALLATION & DESIGN POINTS

EXTERIOR CLADDING APPLICATIONS

The following tasks are provided to installers to point out key installation and design factors when used as an exterior cladding. These do not detract from the requirements to read and understand this literature as a whole.

Task	Tick when checked
Prior to Specification and Installation	
Read the Shadowclad Specification and Installation Guide in its entirety	☐
Framing Plan	
Framing setout drawings to suit Shadowclad fixing and installation guidelines	☐
Sheet Cuts	
Coat all sheet cuts with a preservative timber treatment such as Holdfast® Metalex® Clear	☐
After applying Holdfast® Metalex® Clear, apply the surface coating (e.g. paint or stain) to cut edges	☐
Place uncut edge to bottom	☐
Fastener Material Type	
Galvanised fasteners or better used (Stainless steel annular groove nails required in sea spray zones and with H3.2 CCA treated Shadowclad Ultra)	☐
Sheet Fastener Pattern	
Around sheet edge – maximum 150mm centre spacing	☐
Within sheet body – maximum 300mm centre spacing	☐
Horizontal Sheet Joints	
Minimum 9mm separation gap between sheets above all Horizontal Z flashings	☐
Prime the bottom of the sheet edge and 150mm up the back (rear) of the sheets	☐
50 mm strip of neutral cure silicon sealant or stop ends at all Z flashing terminations excluding terminations at Shadowclad™ metal corner flashings	☐
Back flashings or 150 mm overlap to all flashing butt joints	☐
Expansion Gaps Between Sheets (Vertical Sheet Joints)	
Texture Profile Sheets - 2mm gap between vertical edges of sheets	☐
Groove Profile Sheets - 9mm gap (i.e. full groove space) between vertical edges of sheets	☐
Note: Expansion gaps required between vertical edges of sheets to accommodate natural expansion and contraction of sheets	
Ground Clearances	
Paved/ Sealed Ground - minimum 100mm distance from the ground to sheet bottom	☐
Broken Ground - minimum 175mm distance from the ground to sheet bottom	☐
Prime the bottom of the sheet 150mm up the back (rear) of the sheet	☐

Refer to the current Shadowclad Specification and Installation Guide for full installation specifications and suggested details

**Appliance Information****Product Dimensions****Gas Specifications**

Heat Output	8kW*
Gas Input / Consumption	33MJ/hr*
Gas Connection	Lower right side of appliance, 1/2" BSP
Gas Type	Natural Gas / LPG (NZ) / Propane (Aus)
Operating Pressure	0.76kPa NG / 1.96kPa LPG or Propane
Inlet Gas Pressure	1.13kPa to 5.0kPa NG 2.75kPa to 5.0kPa LPG or Propane
Power Requirement	3 pin earthed 230V power outlet to be within 1.0m of right side of the appliance

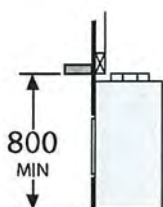
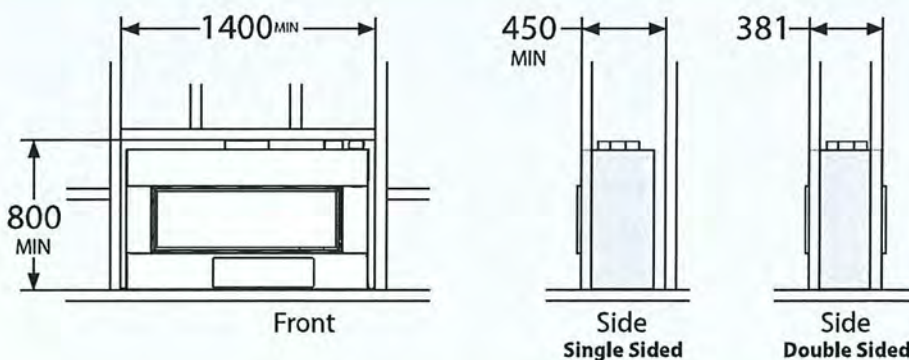
* Internal results pending confirmation from test laboratory

Cavity Information**Minimum Cavity Dimensions (mm):**

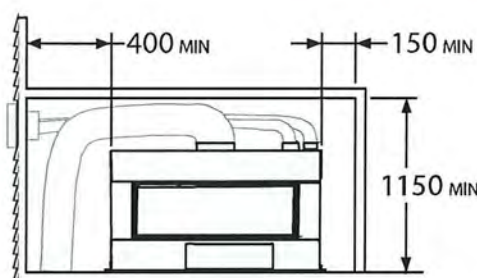
The appliance must be installed prior to and behind the finished wall surface. Take into account any plaster board, tiles or any other finishing surface that may be intended for the finished wall surface.

Wall finishing materials must not encroach upon the minimum cavity clearances shown.

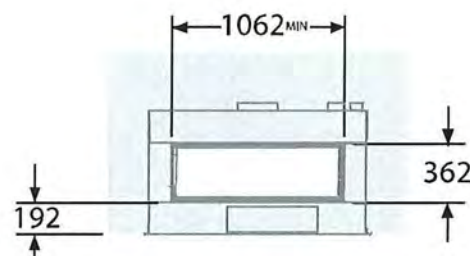
The wall board that lines the outside of the opening can be normal plaster board and does not need to be non-combustible.



Mantle Clearances (mm)



'Hutch' style cavity minimum dimensions (mm)



Wall opening size for frameless / no fascia (mm)

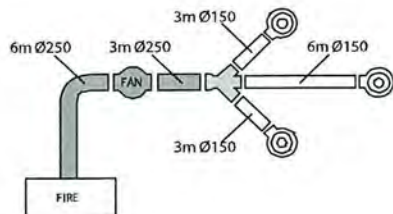
Ducting information:

This gas fire features a small network of ducting situated either in the ceiling or under the floor to distribute the heat generated by this fireplace.

#906660
Escea DX Ducting
Ceiling Outlet Kit



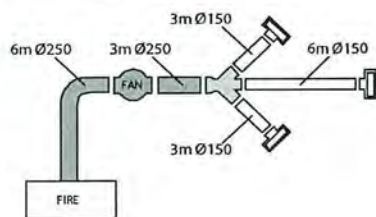
#906640
Escea DX Ducting
Fan Unit



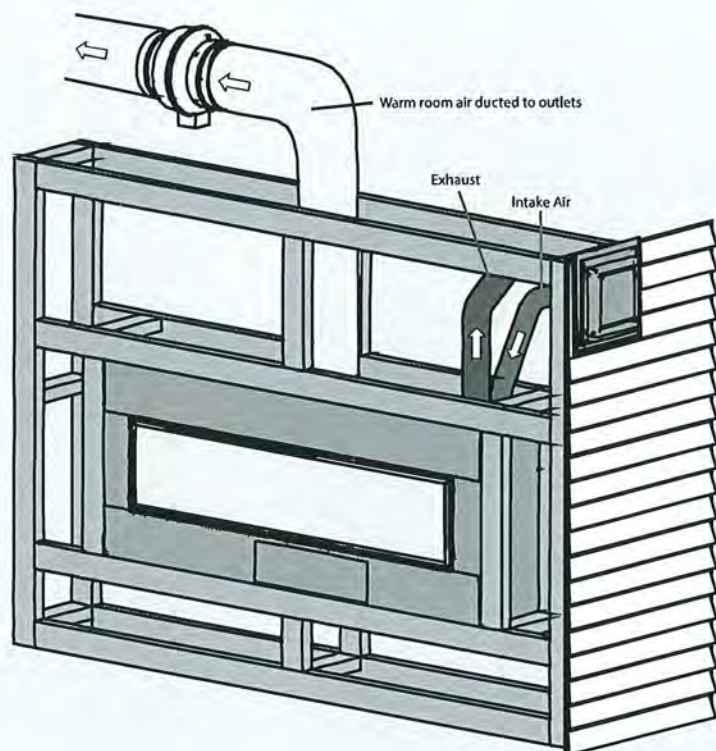
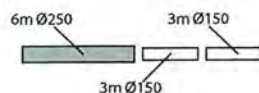
#906650
Escea DX Ducting
Flooring Outlet Kit



#906640
Escea DX Ducting
Fan Unit

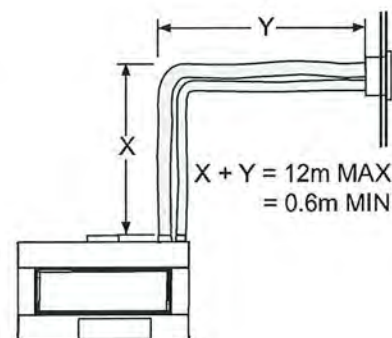
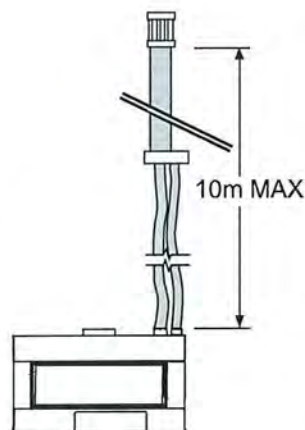


#906661
Escea DX Ducting
Extension Kit



Flue information:

There are two basic types of flue configuration, using a vertical powerflue cowl, or a horizontal powerflue cowl. The horizontal offset of the terminal can be any amount up to the total flue length shown. You cannot flue down, ie allow the terminal to be lower than the outlet on the appliance.



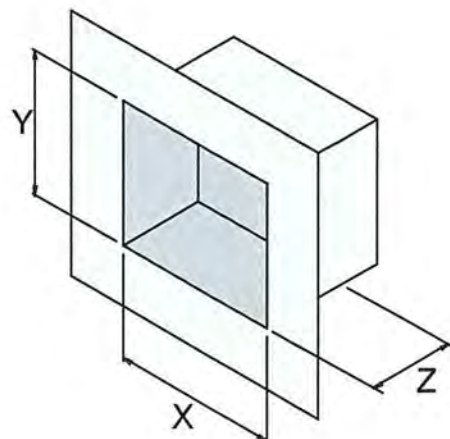
Cavity Size for Horizontal Powerflue:

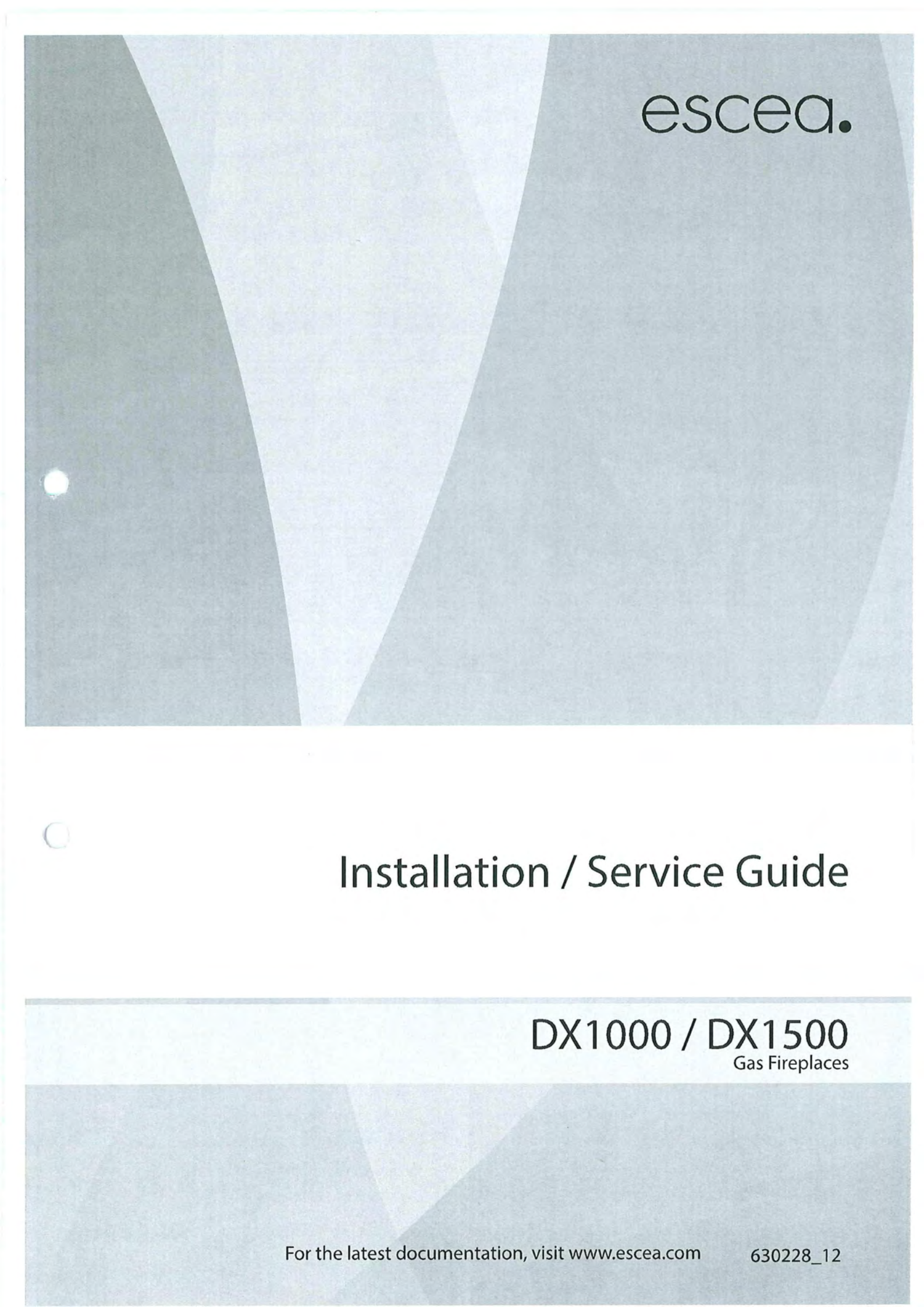
When cutting the hole in the outside wall, be mindful of how the installation Horizontal Powerflue Wall Terminal will be finished, the installation must be weatherproof.

Ideal hole/cavity size for Horizontal Powerflue

X	298mm
Y	298mm
Z	175mm

* Note, Z dimension does not include allowance for flue which exists here as shown in the above diagrams. If the flue is exiting the powerflue and immediately going downwards, Z dimension will need to be at least 400mm to allow for the flue and flue bend radius.





escea.

Installation / Service Guide

DX1000 / DX1500
Gas Fireplaces

Important:

The appliance shall be installed in accordance with;

- This installation instruction booklet
- Local gas fitting regulations
- Municipal building codes
- Electrical wiring regulations
- Any other relevant statutory regulations.
- AS/NZS 5601.1 Gas Installations

This appliance is not intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely.

Young children should be supervised to ensure that they do not play with the appliance.

Manufactured by: Escea Ltd, PO Box 5277 Dunedin NZ, Ph: +64 3 478 8220

For contact details of your local Escea distributor or dealer please visit:

www.escea.com info@escea.com

WARNING:

Failure to follow these instructions could cause a malfunction of this appliance, which could result in death, serious bodily injury, and/or property damage. Failure to follow these instructions may also void your fire insurance and/or warranty.

This appliance must not be modified.

**THIS APPLIANCE MUST BE FITTED WITH AN ESCEA REMOTE ROOM AIR FAN
AND SUITABLE RETURN AIR VENTILATION**

THIS APPLIANCE MUST BE FITTED WITH AN ESCEA REMOTE FLUE FAN

THE TERMINAL MUST ALWAYS VENT DIRECTLY OUTDOORS

Who can install this product:

Installation must be carried out by a qualified and registered installer who, on completion of the installation, must issue a:

AUS: Certificate of Compliance

NZ: Energy Work Certificate

in accordance with national and/or local codes. If these are not issued then the Escea warranty may be void.

Warranty Repair and Annual Servicing:

Warranty repair work must be carried out by a recognised Escea gas fireplace technician. It is recommended that recognised Escea Gas Fireplace Technicians are also used to carry out annual servicing requirements (particularly during the warranty period). For contact details of authorised Escea Gas Fireplace Technicians in your area, please contact the retailer from whom the appliance was purchased.

General installation information:

This appliance must be installed according to these instructions and in compliance with all relevant building, gas fitting, electrical and other statutory regulations (eg. AS/NZS 5601.1). Any shortcomings in the appliance and flue installation will be the responsibility of the installer, and Escea will not be accountable for any such failings or their consequences.

Once this appliance is installed it cannot be removed without disturbing the wall lining.

This DX Series fireplaces has been dispatched from the factory set as a single sided version. This can be converted into a double sided appliance by using the Double Sided Conversion Kit available from your Escea distributor. Conversion details are shown in Section E.

An electrician is required to install a 3pin power socket – Section C

A	Installation Process and Product Description	6
A1	Recommended Installation Process:	6
A2	Product Description	6
A3	Product Dimensions	7
B	Creating the Cavity	8
B1	Cavity Shape	8
B2	Designing the Cavity	8
B3	Flue Configuration (For less than 4m length)	9
B4	Flue Configuration (For more than 4m length)	10
B5	Framing Dimensions	11
B6	Cavity Base	11
B7	Hearth	11
B8	Wall Linings	11
B9	Fascia	12
B10	Mantle Clearance	12
B11	Television Clearances	12
B12	Ducting	13
B13	Duct Fan mounting	14
C	Installing the Electricity and Gas to the Appliance	15
C1	Power Supply	15
C2	Network Cable	15
C3	Gas Pipe Sizing	16
C4	Gas Pipe Position	16
C5	Gas Isolating Valve	16
D	Installing the Flue	17
D1	Installing the Horizontal Powerflue Wall Terminal option	17
D2	Installing the Vertical Powerflue Roof Terminal option	18
D3	Installing in Accordance with Relevant Codes	19
D4	Creating the Hole in the Outside Wall	20
D5	How to flash the Horizontal Powerflue	21
D6	How to flash the Vertical Powerflue	21
D7	Running the Flue	22
D8	Running the Powerflue Electrical Cable	22
E	Installing the Appliance	23

E1	Double Sided conversion	23
E2	Installing the Appliance	24
E3	Connecting the Flue	24
E4	Connecting the Network Cable	24
E5	Removing (and replacing) the Glass	25
E6	Remove the Fuelbed Tray & Burners	25
E7	Gas Type Conversion	26
E8	Checking the Gas Operating Pressure	28
E9	Operating the Appliance	29
E10	Auxillary On/Off button	30
E11	Home Automation Setup	30
E12	Reinserting fuel bed and ceramic glass	31

Finishing the Installation 32

F1	Crystalite, Coal, or Driftwood Fuel Bed Installation	32
F2	Log and cone Fuel Bed (Woodland Selection)	32
F3	Wall lining	33
F4	Fitting the Fascia Panels	34
F5	Locating Wall Mount Cradle for Wireless Control	35
F6	Operating the Appliance	35
F7	Normal Operating Sounds and Smells	37

G Installation Checklist 38

S Service Manual 39

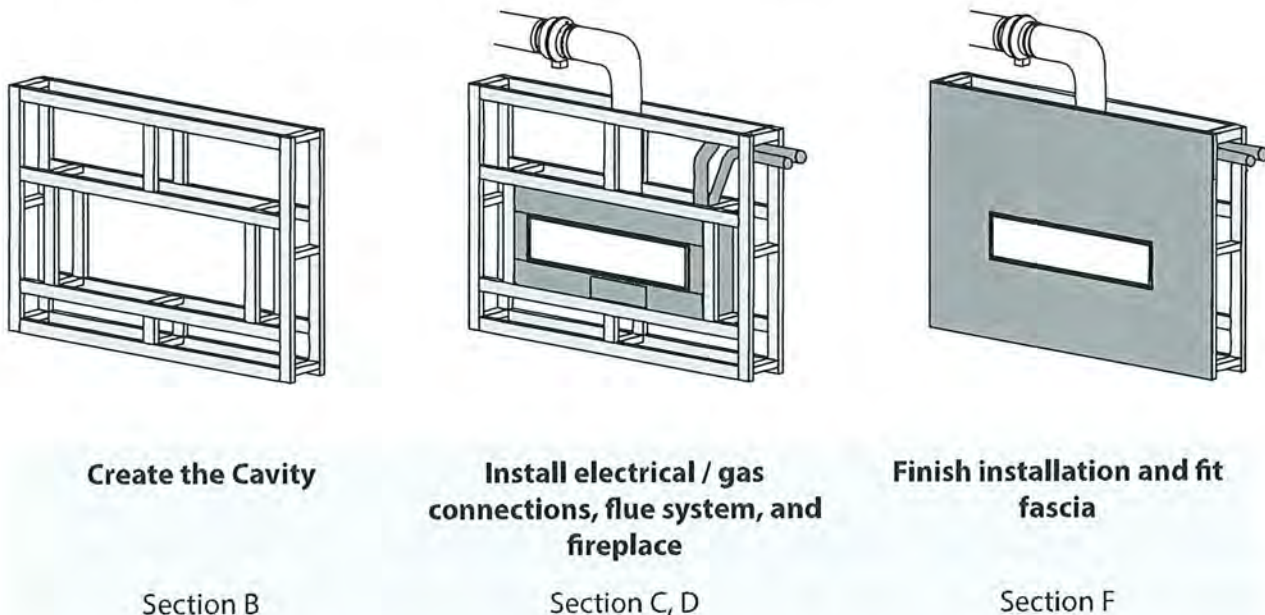
S1	Annual service procedure	39
S2	Error Codes	40
S3	Cleaning the Fuel bed and Glass	42
S4	Checking Operating Pressure	43
S5	Replacing a Remote Control	44
S6	Replacing the burners	45
S7	Accessing the control tray	46
S8	Removing the Circuit Board	46
S9	Servicing the Horizontal / Vertical Powerflue	48
S10	Wiring Diagram	49
S11	DX1000 Star Rating Labels	50
S12	DX1500 Star Rating Labels	51

A Installation Process and Product Description

A1 Recommended Installation Process:

The following diagram illustrates the steps required to install your gas fire, and the trades required at each stage.

The sequence in which you choose to do these tasks will vary depending on your individual installation. Please read these instructions carefully before proceeding with the installation. Leave the installation of the optional fascia panels until the very end of the installation and commissioning to avoid damage to the fascia panels.



A2 Product Description

The Escea DX1500 / DX1000 gas fire is a direct vent (fan draught balanced flue), room sealed gas appliance designed to be built into a cavity. This appliance is flued using a co-linear flexible aluminium flue connected to a powerflue terminal.

The hot air from the gas fire is transferred to the room via 250mm ID / 300 mm OD ducting.

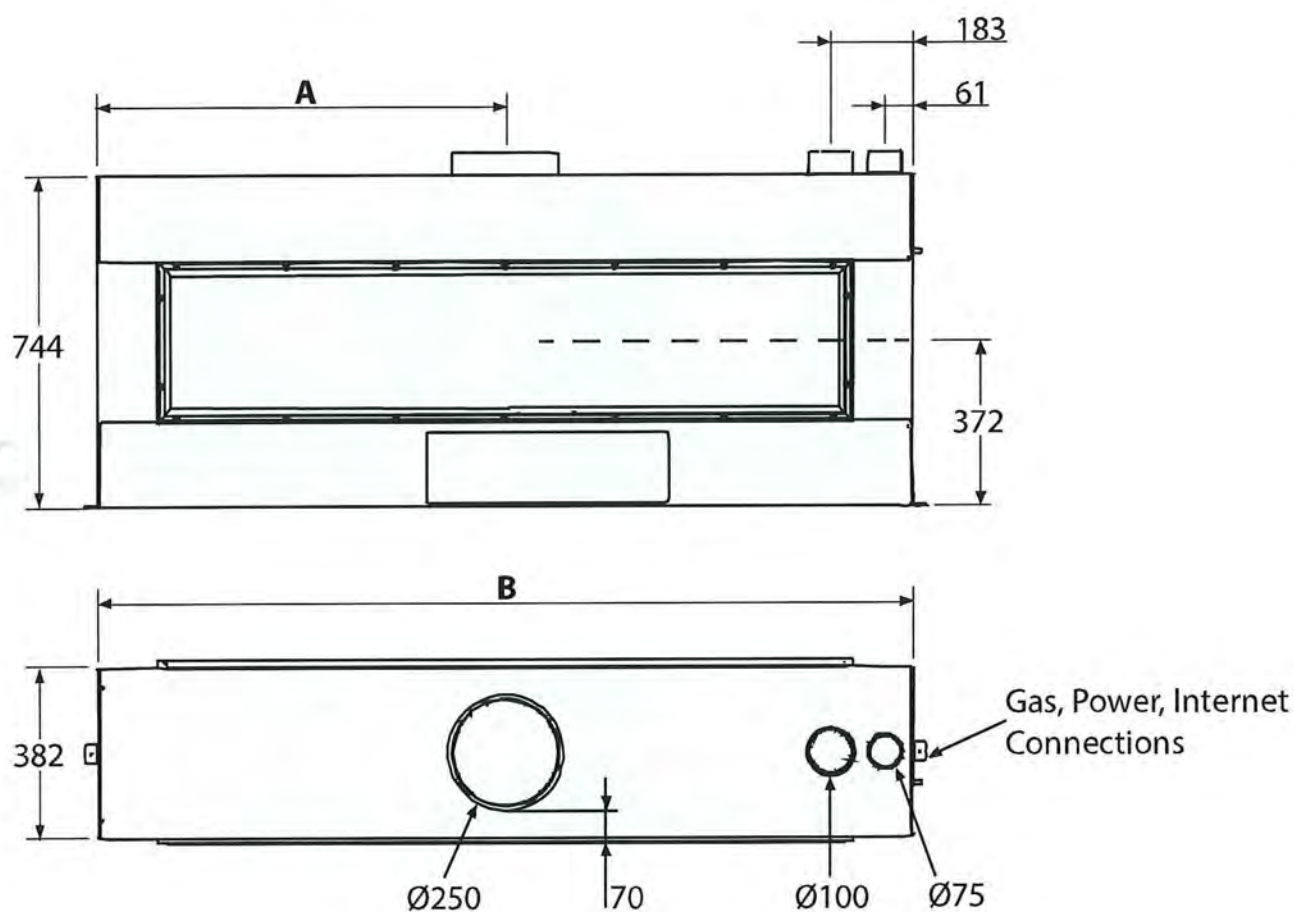
The user will control their fire with the Radio Frequency (RF) remote that will normally be left in its wall mount cradle. In addition to the RF remote it has a single auxiliary On/Off button on the unit. When not in operation it is in a standby mode unless it is physically isolated from the mains supply.

To access the product Dataplate, first remove the fireplace glass, any fuelbed media, the burners and the firebox base. An access panel is located to the side of the bottom of the firebox, the dataplate is located underneath this access panel.

A3 Product Dimensions

NOT TO BE MISTAKEN FOR CAVITY DIMENSIONS

All dimensions are in mm



For more detail, view architectural drawings at www.escea.com

	DX1000	DX1500
A	664mm	914mm
B	1328mm	1828mm

B Creating the Cavity

B1 Cavity Shape

The DX1500 / DX1000 is suitable for timber framed cavities.

Most existing masonry cavities will not be suitable.

The cavity design & shape will be dependent on a number of things:

B2 Designing the Cavity

The following aspects must be considered when designing this installation:

- Appliance physical size
- Single sided or Double sided
- Wall finishing and interaction with appliance
- Positioning of appliance in regards to wall lining (depth into wall)
- Is a Fascia to be used? one side or two sides?
- Exhaust cowl aspect – horizontal / vertical and flue configuration
- Flue exhaust fan noise
- Exhaust cowl access for maintenance
- Duct layout and cavity spaces to run ducting
- Duct fan position
- Access to duct fan for maintenance
- Gas pipe layout
- Gas isolation valve / pressure test point position
- Electrical isolation switch
- Home automation network connections - Ethernet cable layout

**This DX1500 / DX1000 fire is to be installed prior to any wall lining.
The wall lining is the very last task to be completed in this installation.**

The cavity and wall linings may be constructed from standard timber framing materials and do not need to be non-combustible.

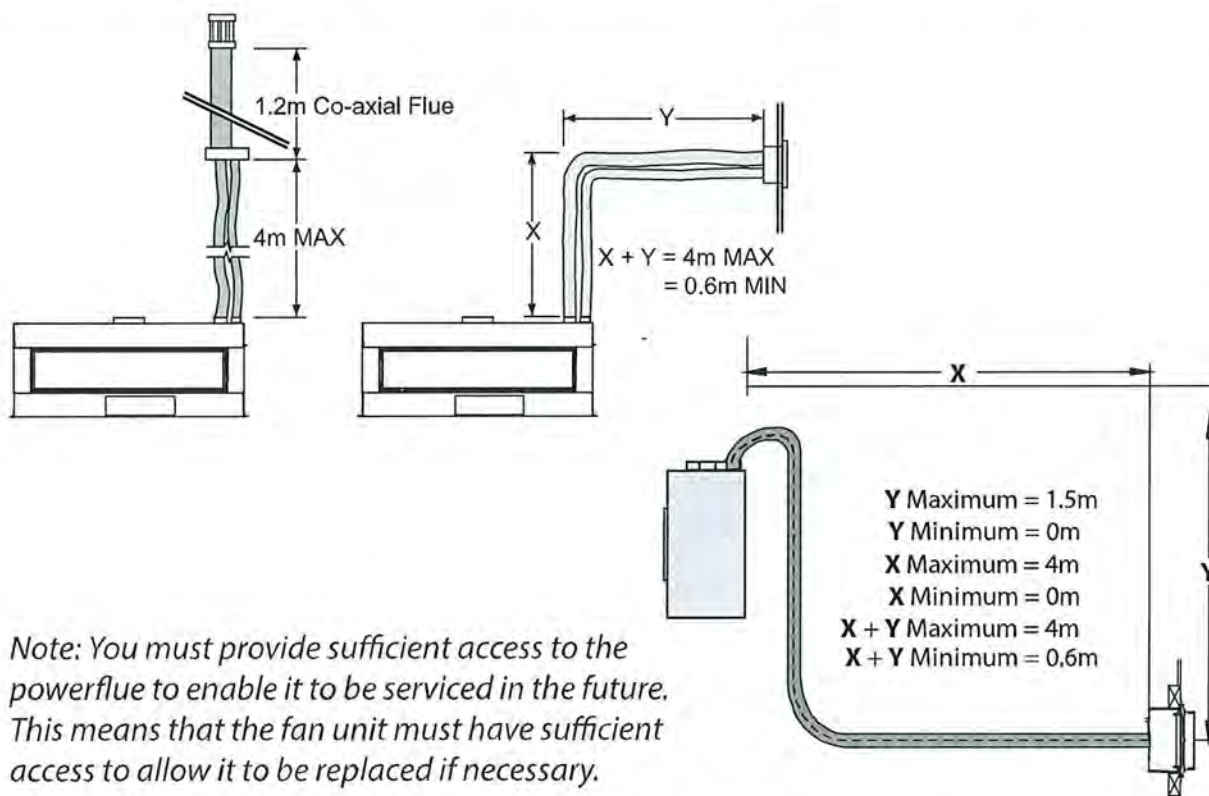
Do not line the top of the cavity.

It is not necessary to line the sides, or back of the cavity.

B3 Flue Configuration (For less than 4m length)

ONLY USE ESCEA APPROVED FLUE COMPONENTS

If your flue system is less than 4m long (as shown in the diagrams below), then a simple flexible flue is required. If you wish to install a longer flue run, up to 12m, see section B4.



The flue must be securely fixed and adequately supported by brackets fastened to the building structure at suitable points to ensure the stability of the flue system. Any joints within the flue system must be sealed adequately, with a sealing agent used if necessary. The flue system for the DX1500 / DX1000 is zero rated, so no spaces are required between the flue and any timber framing.

Horizontal Flue option

Minimum: 600mm flue length

Maximum: Total flue length 4m

Note: All sections of horizontal flue if flexible must be sloped back toward the fire at a rate of no less than 20mm per metre, to allow any condensation to run back into the appliance.

Vertical Flue option

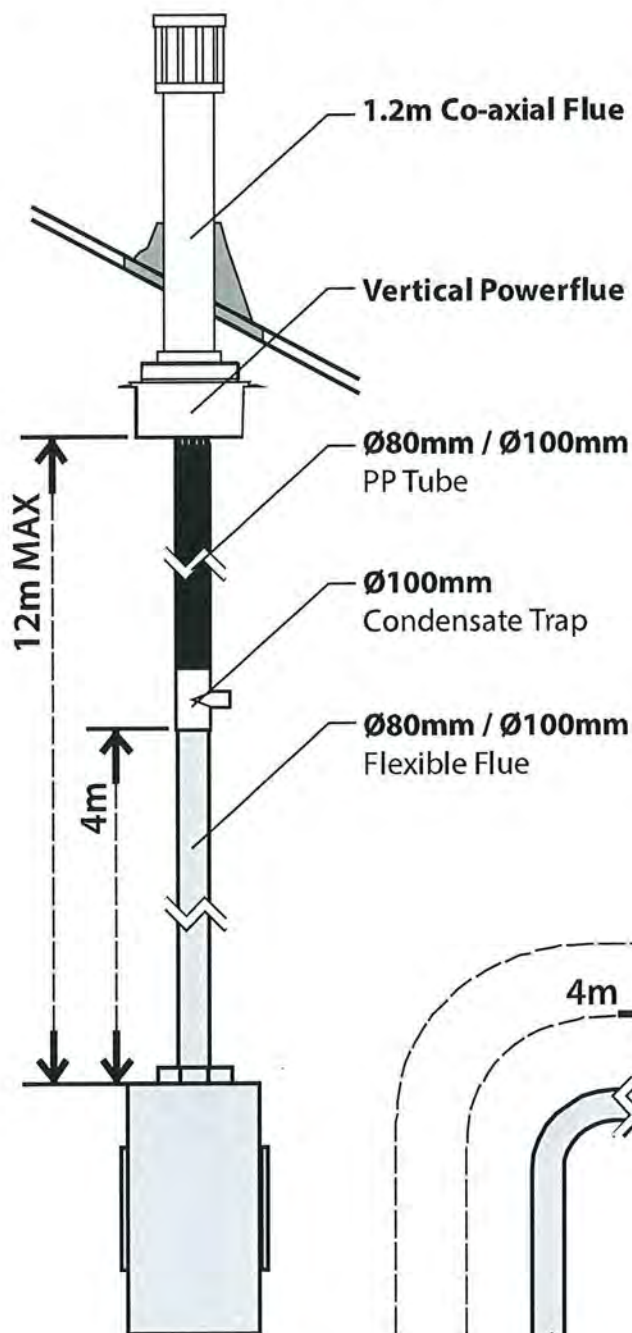
Minimum: 600mm flue length

Maximum: Total flue length 5.2m

For flue installation, see section D

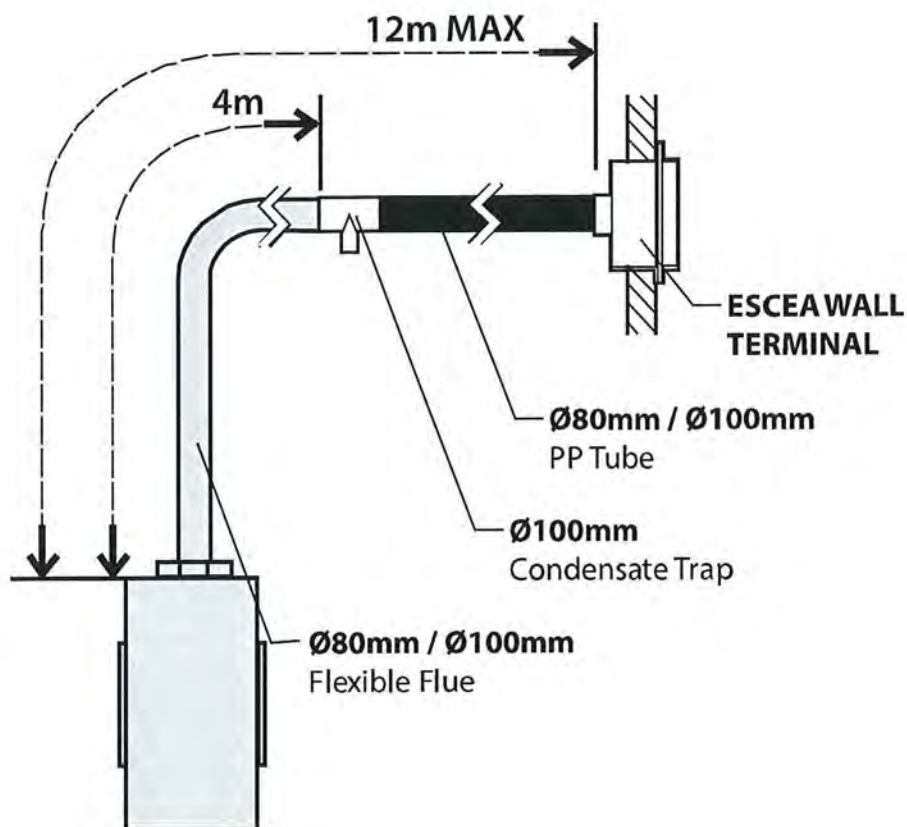
B4 Flue Configuration (For more than 4m length)

If your flue system is greater than 4m long (as shown in diagrams below), then a flexible flue with condensate trap and rigid PolyPro tube flue lengths is required. (For less than 4m flue runs, see section B3)

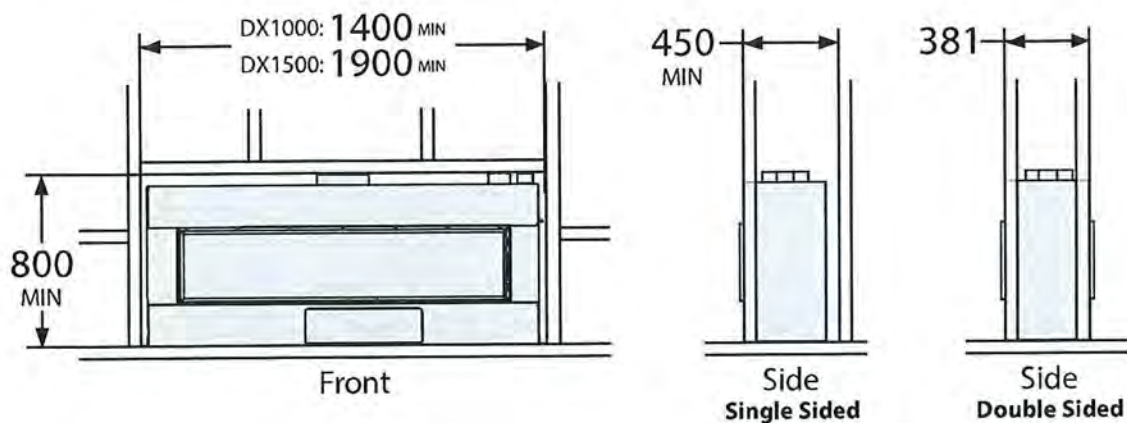


**FOR MORE INFORMATION ON
INSTALLATION OF THE POLYPRO
FLUE, SEE 'POLY PRO FLUE
INSTALLATION INSTRUCTIONS'
AVAILABLE ON:
WWW.ESCEA.COM
OR SUPPLIED WITH THE FLUE.**

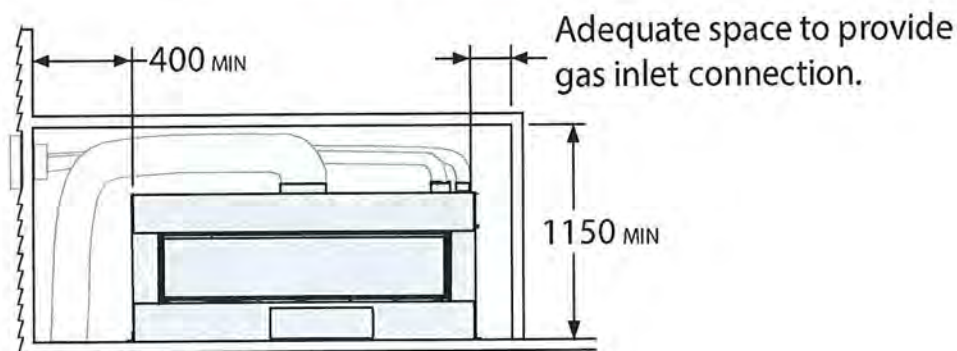
**FOR POLY PRO COMPONENT GUIDES,
THESE ARE AVAILABLE ON:
WWW.ESCEA.COM
TITLED:
HORIZONTAL FLUE COMPONENT
GUIDE &
VERTICAL FLUE COMPONENT GUIDE**



B5 Framing Dimensions



Guidelines for Framing Dimensions - Bench top / Hutch style



B6 Cavity Base

This appliance **MUST** be fully supported on its base, over the entire area of the underside of the appliance. The base must also be level and strong enough to support the total product weight, which is approximately **100kg** (DX1000) or **120kg** (DX1500).

B7 Hearth

No hearth is required

B8 Wall Linings

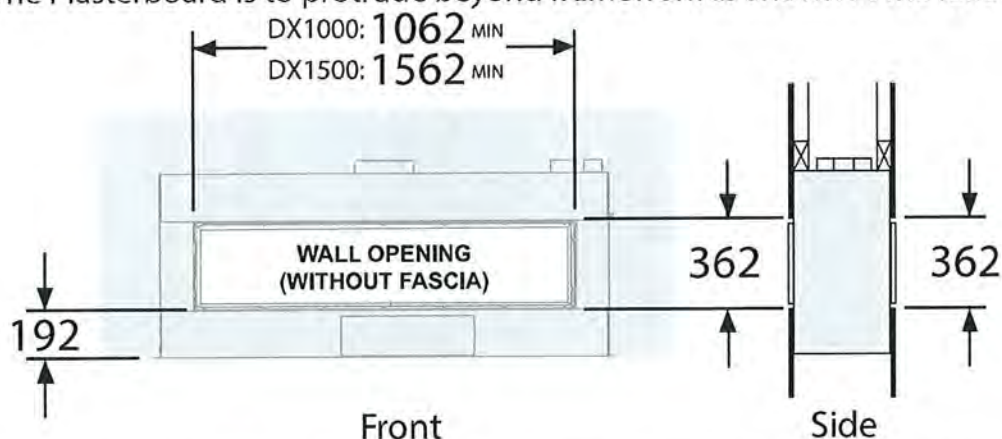
The appliance must be installed prior to and behind the finished wall surface. Take into account any plaster board, tiles or any other finishing surface that may be intended for the finished wall surface. Wall finishing materials must not encroach upon the minimum cavity clearances given in previous sections. The wall board that lines the outside of the opening can be normal plaster board and does not need to be non-combustible.

Note: The final wall lining must not encroach within the specified dimensions in this section or section B8. These dimensions indicate the opening required in any wall lining.

These dimensions are for DX1500 / DX1000 without fascia, if using a fascia then please check the following section of this manual for separate wall lining dimensions.

If not using a fascia, ensure the edge of the wall lining is finished in a tidy manner.

The Plasterboard is to protrude beyond framework as shown in the following diagram.



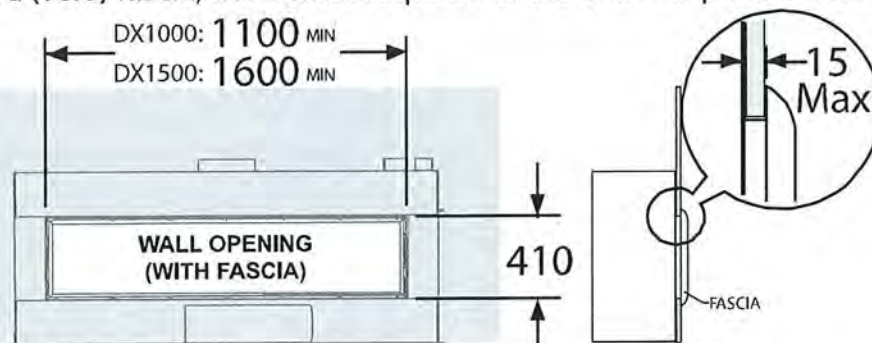
Note: The wall lining directly above the appliance will get warm and hence may discolour paint finishes that are susceptible to temperature damage or distort vinyl wall coverings. For durability of finishes and surfaces you should contact the relevant manufacturer for their specification and avoid materials with temperature ratings less than 80deg C.

Note that a 20mm or less wall lining must be used when installing a DX-series fireplace without a velo fascia. For wall linings of a total thickness of 10mm or larger, a "Linear Trim" may be purchased to cover any exposed wall lining. A 9mm wall lining is recommended for ease of installation.

B9 Fascia

Velo Fascia

If using a (velo) fascia, the cutout required in the finished plaster board dimensions are:



Note that a 15mm or less wall lining must be used when installing a DX-series fireplace with a velo fascia, as this is the maximum distance the velo fascia can sit off the front face of the fire as shown. For wall linings of a total thickness of 10mm or larger, a "Linear Trim for velo fascia" may be purchased to cover any exposed wall lining.

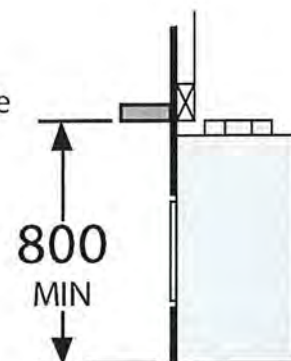
Linear Trim

For 10mm-20mm wall linings, an optional "Linear Trim" can be used to cover any unwanted exposed wall lining and/or act as a slimline fascia.

B10 Mantle Clearance

Please refer to the diagram. Mantles or protruding ledges above the heater must not be installed lower than the dimension shown.

Note: dimension from base of appliance.



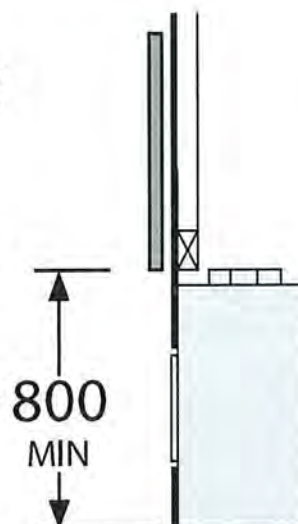
B11 Television Clearances

The following are the recommended minimum clearances for the location of any electrical equipment (such as a Plasma TV, LCD TV or home theatre system) above an Escea DX Series gas fire.

Note: The above television clearance recommendations are to be treated as a suggestion of a suitable installation only. It is the responsibility of the end user to check the installation instructions of their electrical appliances to ensure that the location in relation to the gas fire is suitable. Escea in no way guarantees or takes responsibility that the above installation suggestion will be suitable for all electrical or home entertainment appliances.

Note: Dimension from base of appliance.

For installations with a recessed TV above, allow at least 300mm above the top of the appliance to allow for Duct and flue routing.



B12 Ducting

Note: The duct fan must be installed in a location accessible for service or replacement, a service hatch (to allow for access) may be required.

This gas fire requires a small network of ducting situated in either the ceiling or under the floor to distribute heat generated by the appliance.

A centrifugal fan (separate purchase) is connected to the duct system and this draws air through the appliance where it is heated, and then distributes it via the ducting network. The centrifugal fan is powered by the appliance. **When placing outlets in rooms other than the room the appliance is installed, it is important to allow for return air to equalise pressure between the rooms.**

Caution: Provision must always be made for return air from heated rooms e.g. undercut doors or natural leakage.

WARNING: OVERHEATED ROOMS ARE NOT SAFE FOR INFANTS

DX fires require a minimum of three outlets in the ducting system to be fully open at all times. At least two of those outlets must be present in the same room that the fire resides in. There can be a maximum of 5 outlets for the DX1000 and 8 outlets for the DX1500. A standard duct kit (separate purchase) has provision for the three minimum outlets - You can use your own ductwork and outlets, but you must ensure they are rated to temperatures of at least 90 degrees Celsius and have an appropriate R-value.

Ductwork must be adequately sized to avoid excess backpressures. Inadequate duct sizes will cause unnecessary fan noise and premature fan failure.

We recommend removing the close flaps from at least three of the duct outlets to prevent unnecessary back pressure and fan noise.

Ductwork must not be crushed or exposed to excessive heat sources.

Note: If duct backpressure is too great, the appliance can shut down due to overheating.

This ducting fan will generate mechanical noise. Ideally it must be installed in a position where noise will not interfere with daily activities. All air ducts will make noise no matter how well the system is designed. Increasing the number of outlets is a simple strategy to reduce this noise.

A

B

C

D

E

F

G

SERVICE

For installations with the duct fan installed in the appliance cavity we recommend:

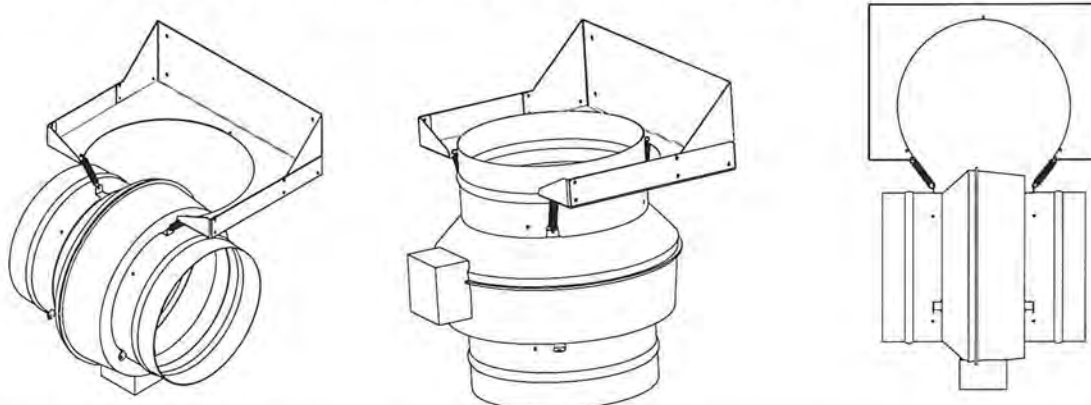
- Contact Escea's free Architectural Advice Service at aa@escea.com and forward them a copy of the intended design for comment.
- The cavity to be clad with sound gib.
- The fan to be wrapped in a sound absorbing material.
- The system be tested for sound related issues before it is enclosed. Please contact Escea for more information at this stage if advice is needed.
- The duct fan must be hung on the provided hanger.
- The ducting must always have a "C" shape or an "S" shape to break up the sound waves on both sides of the duct fan.

-The duct fan must be installed in a location accessible for service or replacement, a service hatch (to allow for access) may be required.

-Never place the fan in such a way to result in a straight run to the top of the fire, as the sound of the fan will echo out the front of the fire.

B13 Duct Fan mounting

Using the 3x spring mounts supplied, the duct fan should be installed in one of the following positions as shown below. You must use the spring mounts as this will help decrease noise by not transferring vibration into the walls.



Note: The duct fan must be installed in a location accessible for service or replacement, a service hatch (to allow for access) may be required.

Run the electrical cable from the duct fan to the cavity where the appliance will be installed. Ensure the cable is not draped over or in contact with the outer shell of the appliance or either of the flexi flue tubes and kept clear from any other possible heat sources. Fix it appropriately and allow enough cable loop to prevent tension on the cable plugs. The duct fan unit length is approx 350mm and diameter is approx 340mm.

The duct fan must not be exposed to the outdoors.

END OF SECTION B

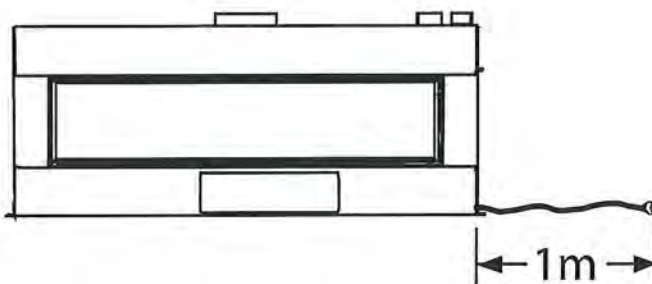
By the end of this section, you should have:

- ☐ A framed, but un-lined, cavity sized to suit your fascia and flue configuration
- ☐ Provision for sufficient access to the powerflue for future servicing

C Installing the Electricity and Gas to the Appliance

C1 Power Supply

While the cavity is being created consideration should be given to appropriate location of a standard 3 pin, EARTHED 230/240V power outlet. This must be within 1.0m of the bottom right of the appliance.

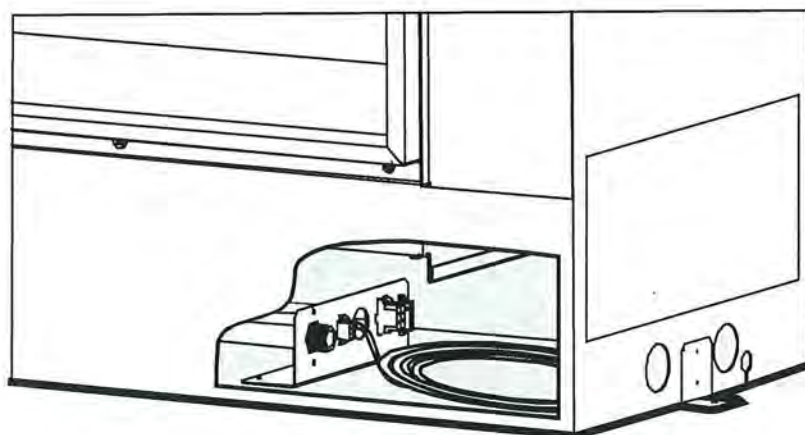


IMPORTANT: Locating the power outlet within the cavity makes the installation very neat but provision **MUST** be made to be able to switch the power supply off and on (electrical isolation switch) and **MUST** be accessible after the heater has been installed. This is normally done by means of a separate switch located outside of the cavity and wired to the plug. This will allow technicians to isolate the power supply before servicing the appliance.

This appliance must not be located immediately below a socket outlet. This appliance will draw a maximum of 2 Amps from a 230/240V supply. No additional power supply is required for the power flue.

C2 Network Cable

A 5 meter length of network (Ethernet) cable has been supplied and is coiled inside the lower right of the fireplace. Access this via the removable access panel, and connect it to the buildings modem.



If you do not wish to connect the fireplace to the modem, the Network / Ethernet cable should be run to somewhere accessible by a service technician, such as a cupboard.

C3 Gas Pipe Sizing

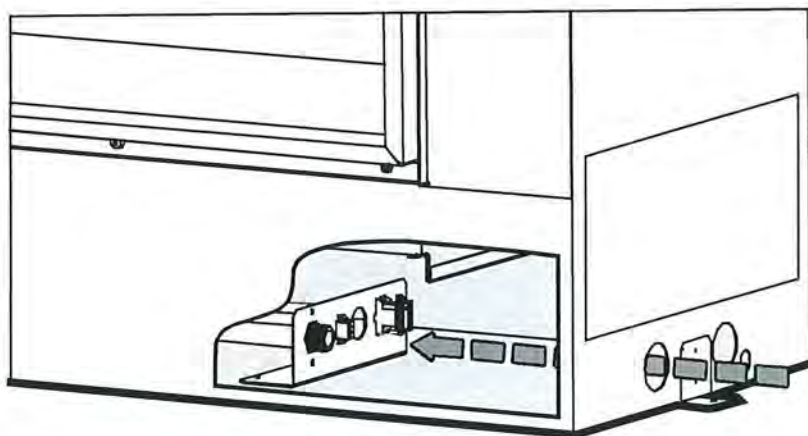
Gas pipe should be sized as per the requirements of AS/NZS 5601.1. The pipe sizing must be sufficient to deliver the following volume of gas to the heater with all other gas appliances in the home running at the same time:

DX1500 Gas Consumption = 42MJ/hr

DX1000 Gas Consumption = 33MJ/hr

C4 Gas Pipe Position

The gas connection is inside the appliance and is ½" male BSP on the lower right of the appliance as shown. Access is through the bottom of the firebox.



C5 Gas Isolating Valve

A gas isolating valve must be installed in the gas line as close to the appliance as possible. Fix it in a convenient position to allow it to be closed off quickly and easily during normal operation. Take into consideration access to this valve once the wall linings are on. This will also allow for easier servicing in the future.

END OF SECTION C

By the end of this section, you should have:

- ☐ An unlined cavity with 230/240V AC supply that the appliance can be plugged into
- ☐ An electrical isolating switch that is accessible once the appliance is installed
- ☐ A suitably sized gas supply to the right hand side of the appliance with a pressure test point, ready to be connected once installed
- ☐ Network cable installed, ready for plugging into appliance, regardless of being connected to internet router/network or not

A

B

C

D

E

F

G

SERVICE

D Installing the Flue

Note: The appliance is designed to operate using the approved flexible flue supplied by Escea. Using other brands of flue may affect the appliance warranty.

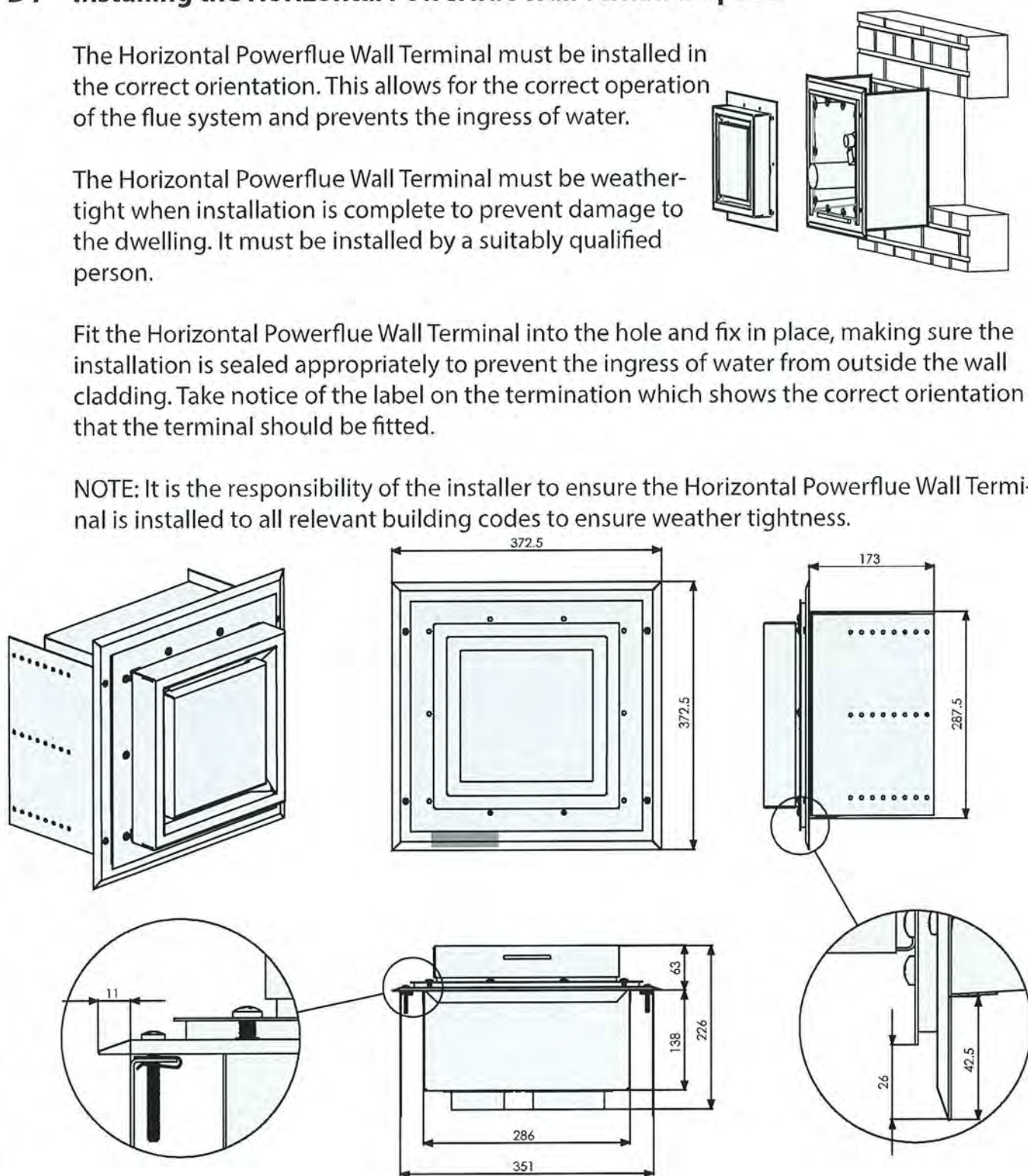
D1 Installing the Horizontal Powerflue Wall Terminal option

The Horizontal Powerflue Wall Terminal must be installed in the correct orientation. This allows for the correct operation of the flue system and prevents the ingress of water.

The Horizontal Powerflue Wall Terminal must be weather-tight when installation is complete to prevent damage to the dwelling. It must be installed by a suitably qualified person.

Fit the Horizontal Powerflue Wall Terminal into the hole and fix in place, making sure the installation is sealed appropriately to prevent the ingress of water from outside the wall cladding. Take notice of the label on the termination which shows the correct orientation that the terminal should be fitted.

NOTE: It is the responsibility of the installer to ensure the Horizontal Powerflue Wall Terminal is installed to all relevant building codes to ensure weather tightness.



D2 Installing the Vertical Powerflue Roof Terminal option

The vertical flue option is designed to have the box containing the fan and electricals mounted within the roof space of the house, and the vertical 200mm diameter twin wall flue penetrate through the roof. The standard kit comes with 1.2m of twin wall flue (post fan). Note total combined maximum vertical flue before the fan must be less than 12metres (max 4m Flexi+ max 8m polypro).

Use standard methods to flash the roof penetration, the installation must be weather proof and conform to all local council standards including powered flue roof termination rules.

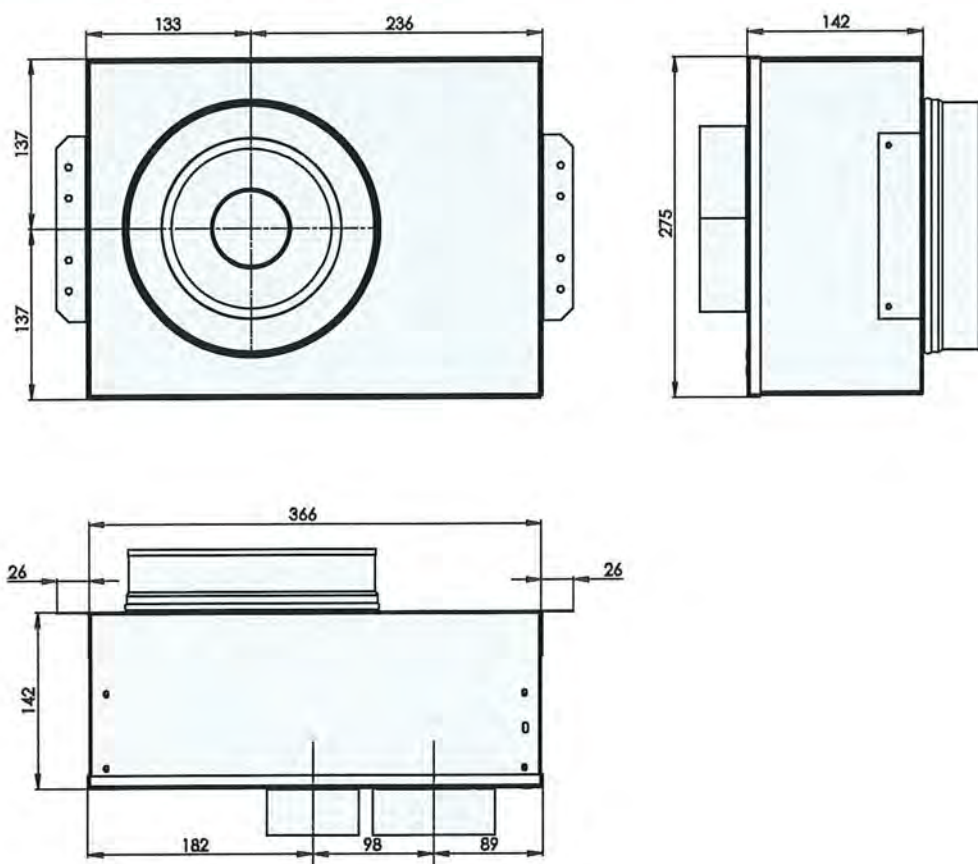
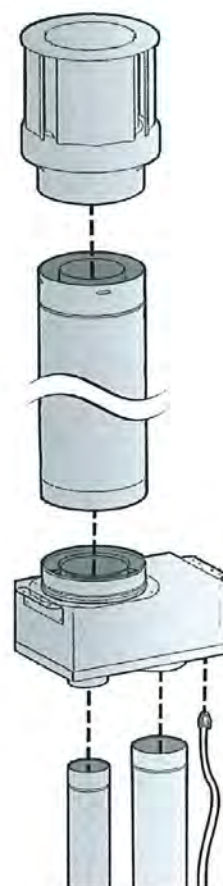
The cowl surround should be fixed in place as shown

Mount the fan assembly box to roof framing using timber or builders strapping, ensuring the flue is vertical and rigidly mounted.

Aim to have the fan box mounted as high as possible, mainly to allow sufficient fall for condensation drainage if the flexi-flue is to run horizontally.

Ensure there is sufficient space below fan box to have access to fit the flexi-flue tubes and to allow flowing bends if required.

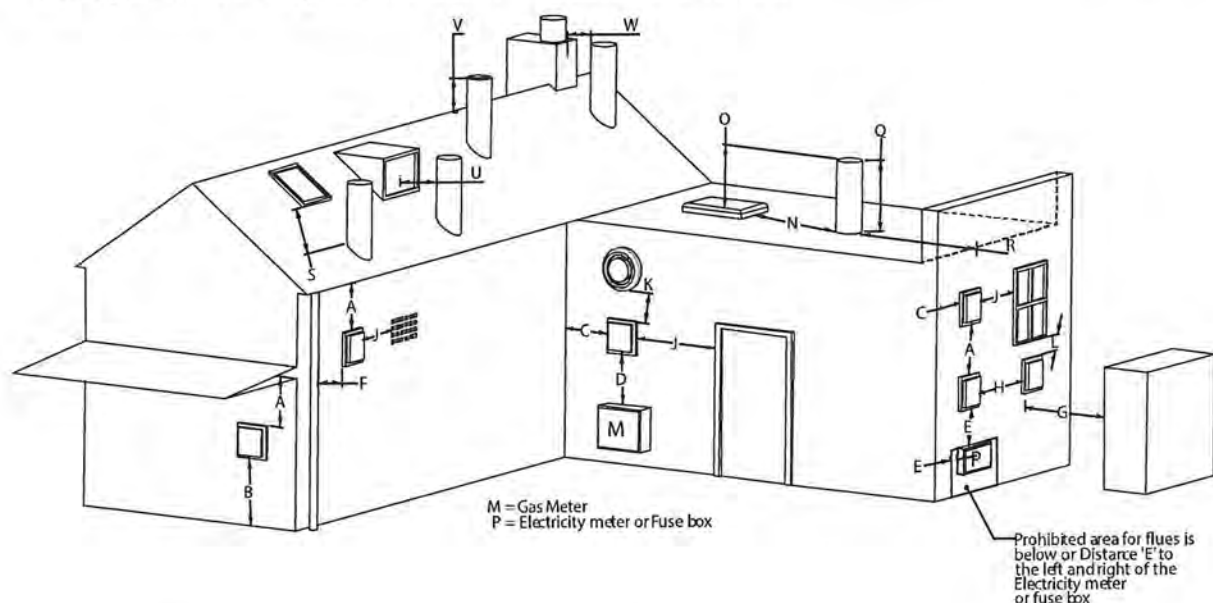
Note: The vertical powerflue and the flexi flue connections must be installed in a location accessible for service or replacement, a service hatch or removable flashing to allow for access may be required.



D3 Installing in Accordance with Relevant Codes

The location of the Powerflue Terminal must be installed in accordance with AS/NZS 5601.1 and any other relevant building codes. Avoid installing the Powerflue Terminal in areas exposed to high winds and extreme weather, if possible.

Some of those minimum clearances for a fan assisted terminal are listed below; please refer to AS/NZS 5601.1 Gas installation standard for full guidance on the design of the flue system. Where possible allow a greater clearance.



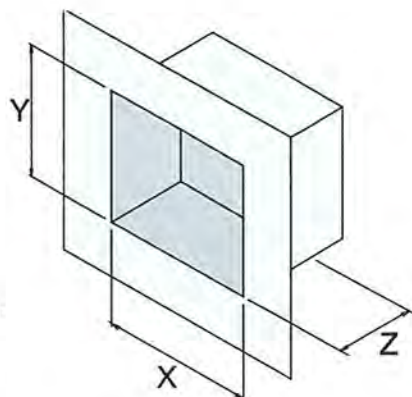
A	Below eaves, balconies and other projections	200mm
B	From the floor, above a balcony or other surface	300mm
C	From a return wall or external corner	300mm
D	From a gas meter or regulator vent	1000mm
E	From electricity meter or fuse box	500mm
F	From a drain pipe or soil stack	75mm
G	Horizontally from any building structure or obstruction	500mm
H	From any other flue terminal or combustion air intake	300mm
J	Horizontally from any openable window, door, non-mechanical air inlet, or any other opening into a building with the exception of sub floor ventilation	300mm
K	From a mechanical air inlet or spa blower	1000mm
L	Vertically below any openable window, door, non-mechanical air inlet, or any other opening into a building with the exception of sub floor ventilation	300mm
N	Horizontally from a roof light	600mm
O	Vertically from a roof light	500mm
Q	Vertically from a flat roof	500mm
R	Horizontally from a vertical structure	500mm
S	Below a roof window	2000mm
T	Above or either side of a roof window	600mm
U	From a dormer window	1500mm
V	Above the apex of the roof (see note 1 on following page)	300mm
W	From an open flue	1500mm

D4 Creating the Hole in the Outside Wall

When cutting the hole in the outside wall, be mindful of how the installation Horizontal Powerflue Wall Terminal will be finished, the installation must be weatherproof.

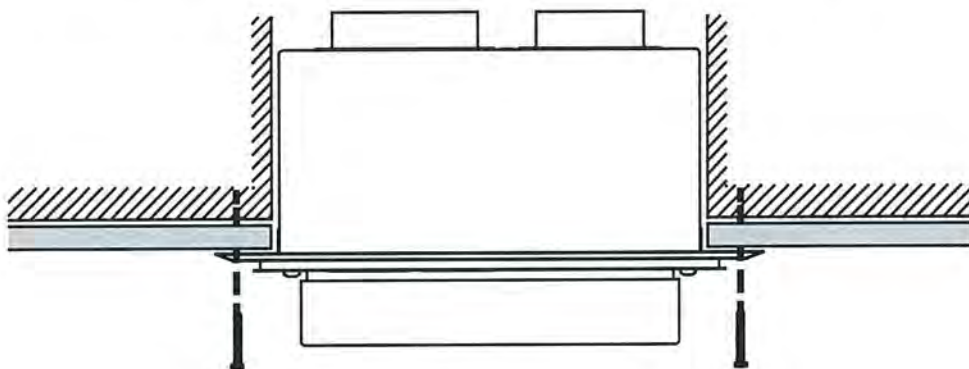
Ideal hole/cavity size for Horizontal Powerflue

X	298mm
Y	298mm
Z	175mm Excluding allowance for flue which exits here

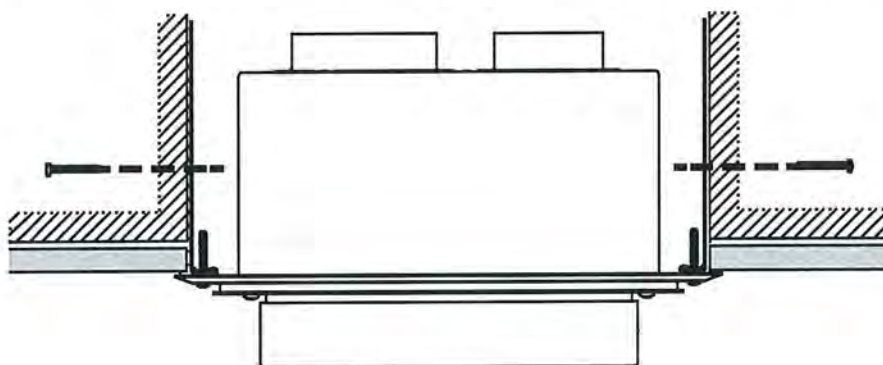


The Horizontal Powerflue Wall Terminal can be attached to the wall in two ways,

A) From the front of the terminal:



B) By attaching the optional Wall Terminal Installation Brackets to the sides of the cavity and attaching the Horizontal Powerflue Wall Terminal to these, from the front:



A

B

C

D

E

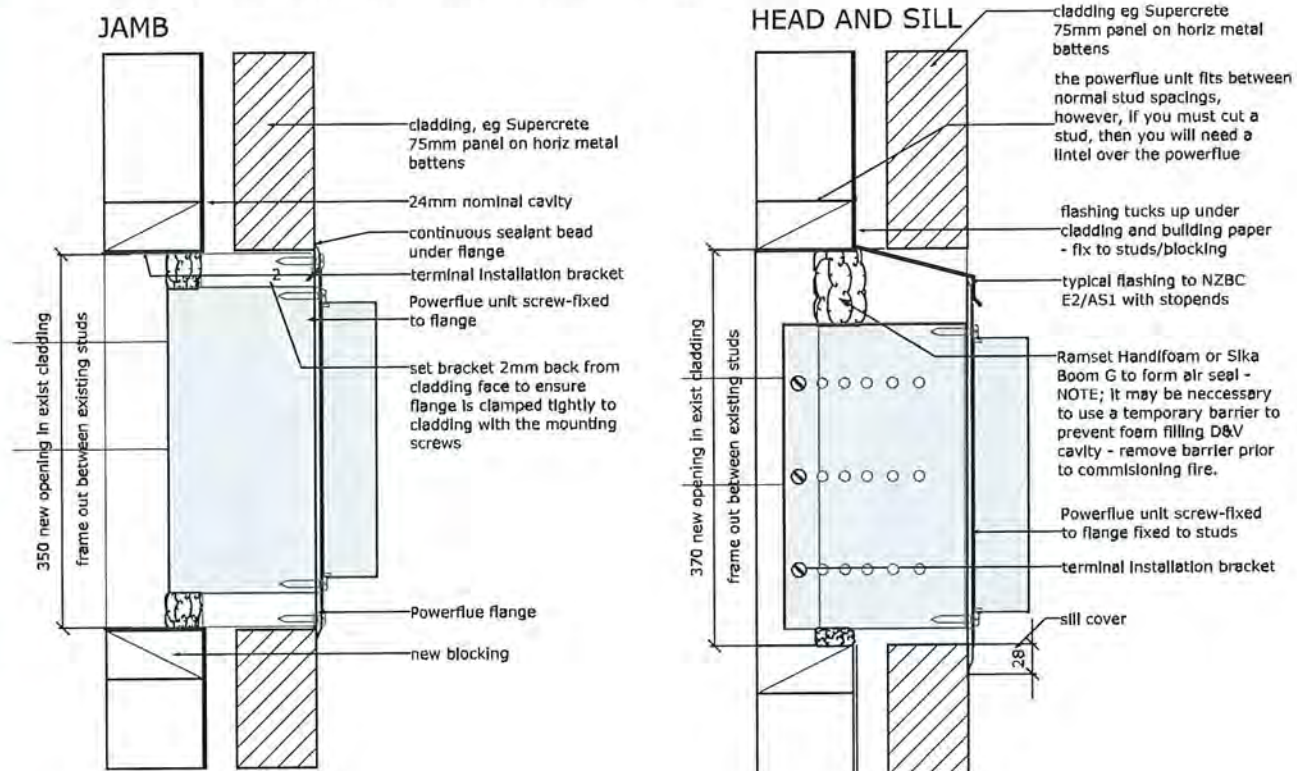
F

G

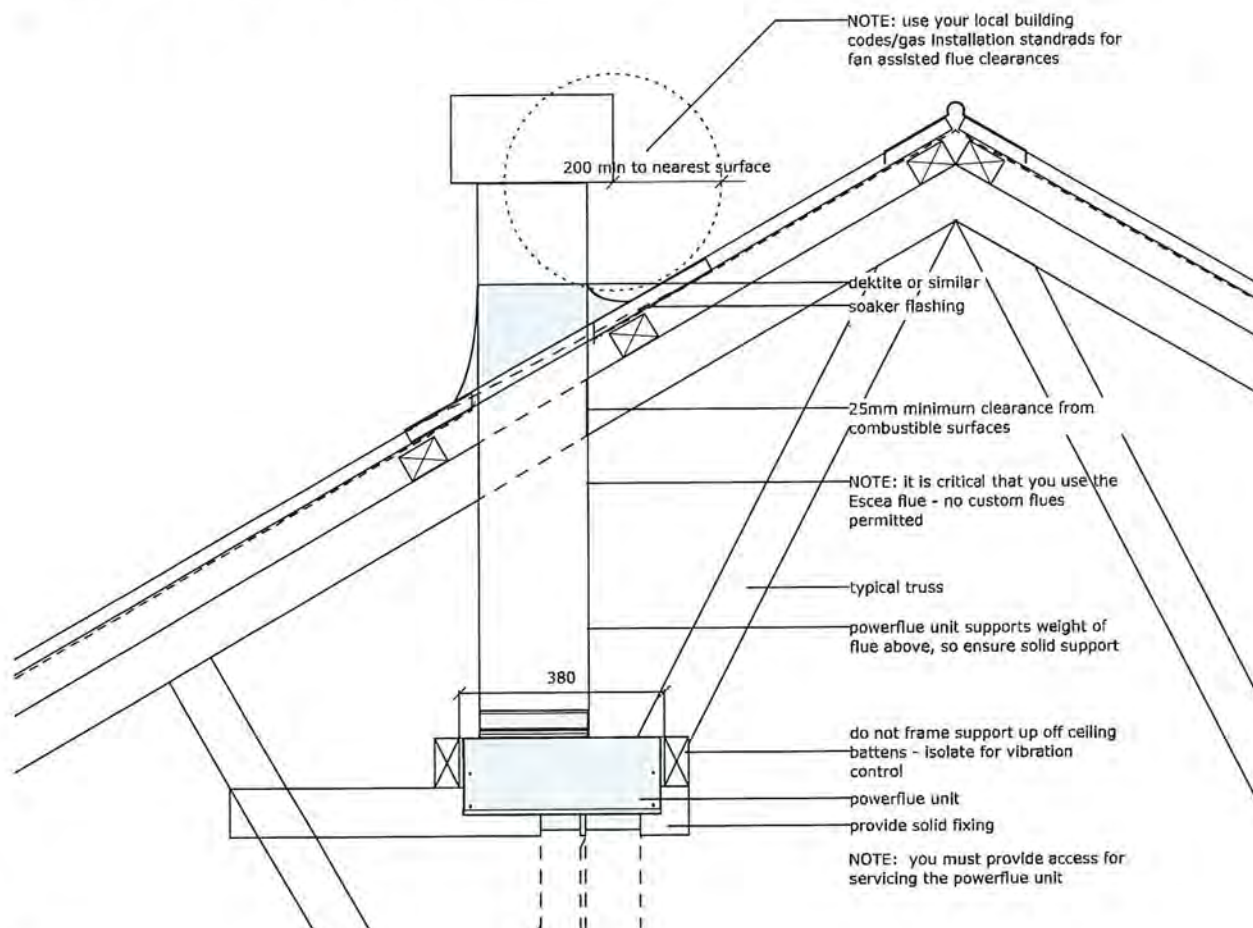
SERVICE

D5 How to flash the Horizontal Powerflue

The following diagrams are excerpts from the escea architect drawings, and are available in full on our website. These diagrams are recommendations, and your installation must comply with any local or national building codes.



D6 How to flash the Vertical Powerflue



D7 Running the Flue

If your flue system is greater than 4m long (as shown in diagrams below), then a flexible flue with condensate trap and rigid PolyPro tube flue lengths is required (see textbox at end of section for more info).

Run the Ø100mm ID and Ø75mm ID (Ø110mm OD & 85mm OD) flexible aluminium hoses from the cavity to the rear of where the Horizontal Powerflue Wall Terminal will be installed in the outside wall. **The flue system for the DX1500 / DX1000 is zero rated, so no spaces are required between the flue and any timber framing.** Allow enough stretch in the flexible aluminium flue to allow it to be able to sit just outside of the wall.

Note: The flexible flue is shipped in a 'compressed' form. Extend it to your desired length by stretching (up to 4m maximum per length).

**FOR MORE INFORMATION ON INSTALLATION OF THE POLYPRO FLUE, SEE 'POLY PRO FLUE INSTALLATION INSTRUCTIONS' AVAILABLE ON:
WWW.ESCEA.COM
OR SUPPLIED WITH THE FLUE.**

**FOR POLY PRO COMPONENT GUIDES, THESE ARE AVAILABLE ON:
WWW.ESCEA.COM
TITLED:
HORIZONTAL FLUE COMPONENT GUIDE &
VERTICAL FLUE COMPONENT GUIDE**

D8 Running the Powerflue Electrical Cable

Note: The Horizontal Powerflue Wall Terminal is powered from the appliance, and must be connected to the appliance with the supplied electrical cable only.

The supplied electrical cable is 7m long with standard 6m flue kits, and flue extension kits also include a Powerflue electrical cable extension.

Run the electrical cable from the cavity where the appliance will be installed to the hole in the outside wall. Ensure the cable is not draped over or in contact with the outer shell of the appliance or either of the flexi flue tubes and kept clear from any other possible heat sources. Fix it appropriately and allow enough cable looped to be able to pull the Horizontal Powerflue Wall Terminal out from the installed position should servicing be required.

END OF SECTION D

By the end of this section, you should have:

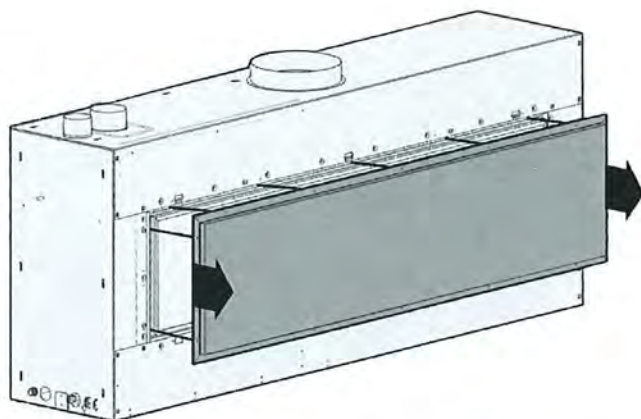
- ☐ A weather-tight Horizontal Powerflue Wall Terminal installation with clearance as specified by AS/NZ5601.1
- ☐ Reasonable access to the outside face for maintenance purposes.
- ☐ Flue attached to the rear of the Horizontal Powerflue Wall Terminal leading back to the appliance.
- ☐ The electrical cable from the Horizontal Powerflue Wall Terminal attached to the rear of the installation and run back to the appliance cavity in an electrically safe manner.

E Installing the Appliance

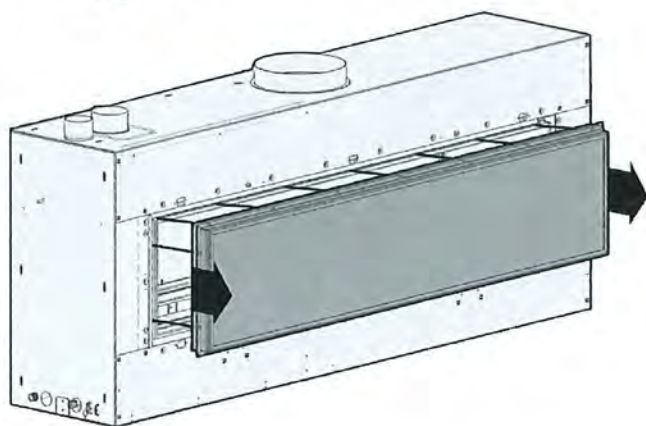
E1 Double Sided conversion

If the appliance is to be double sided, you will have been supplied with an extra glass panel and steel support frame and wall lining trim brackets.

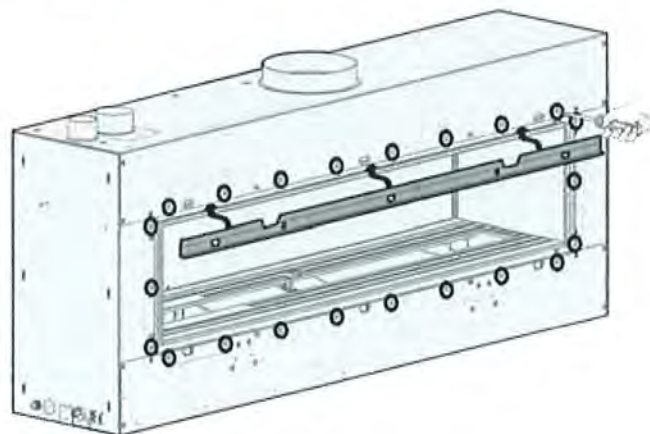
1. On the rear of the appliance, unscrew the outer shell cover and remove it as shown



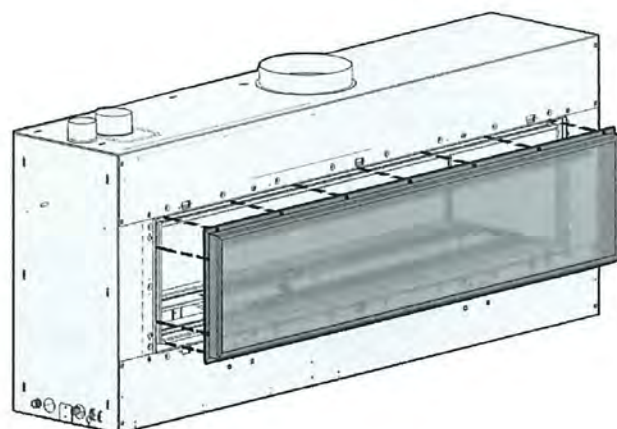
2. Unscrew the Firebox rear panel and remove it. Sometimes extra force may be required to remove this panel as the sealing tape can 'glue' itself to the painted surface.



3. Screw the Wall Lining trim brackets on to the appliance chassis as shown in photo.



4. Carefully install the extra glass panel and frame onto the appliance, ensuring that the glass does not fall from the frame. Tighten the bolts around the outside of the glass retainer until securely fitted.



A

B

C

D

E

F

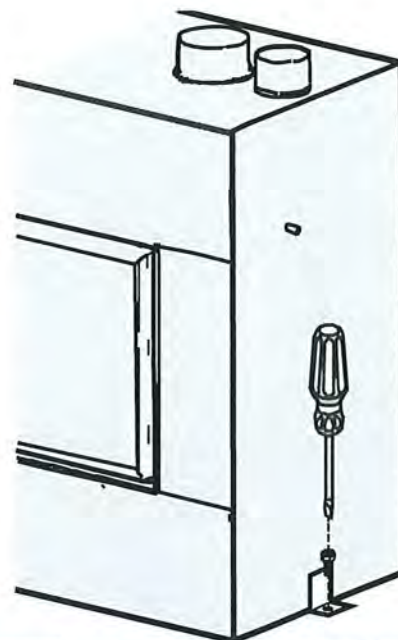
G

SERVICE

E2 Installing the Appliance

Insert the gas fire into the cavity and bolt down in correct position using the brackets on each end of the appliance. It is a requirement that this appliance be securely fastened at the base.

- ☐ On the right hand side of the appliance:
- ☐ Connect the powerflue electrical cable.
- ☐ Connect the Duct fan electrical cable
- ☐ Plug the appliance Mains power electrical cord into the 230/240volt outlet in the cavity.



E3 Connecting the Flue

Access the top of the appliance and connect both the inlet flue (Ø75mm ID / 85mm OD) and the exhaust flue (Ø100mm ID / 110mm OD) to their respective spigots. Tighten the hose clamps onto the spigots. Ensure the flue connection is air tight. Sealant is not required.



WARNING: The flue connection **MUST** be secured with the clips provided and tape **MUST NOT BE USED**. If any of the flue pipe is damaged and integrity compromised then it should not be repaired with tape, it should be replaced.

Connecting the Ducting

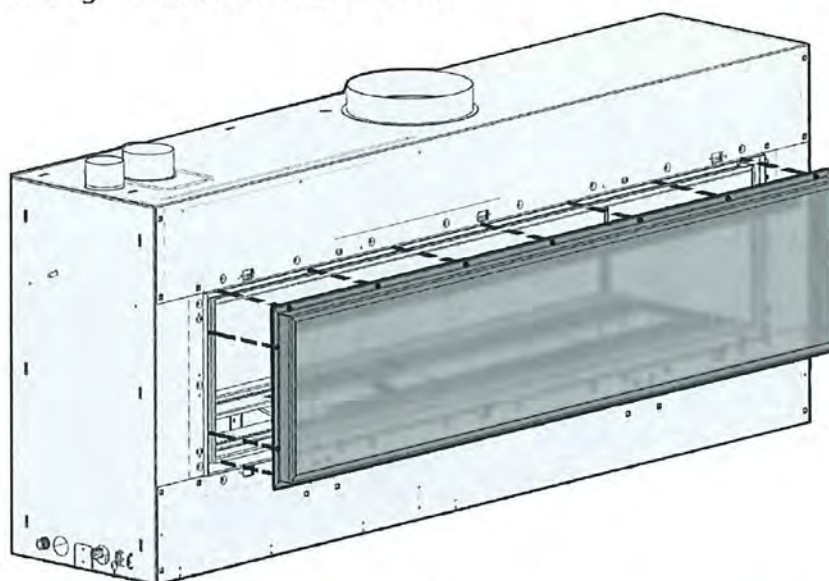
Attach the ducting to the top of the appliance at the 250mm diameter spigot and secure using a clamp or appropriate ducting tape to ensure an airtight joint.

E4 Connecting the Network Cable

A network cable has been attached to the appliance. This must be left accessible even if not being used, to make future servicing or upgrades easier. To access the network cable, open the access hatch on the base of the firebox (underneath the burners) and feed the cable through the holes in the outer chassis where the power and gas lines are.

E5 Removing (and replacing) the Glass

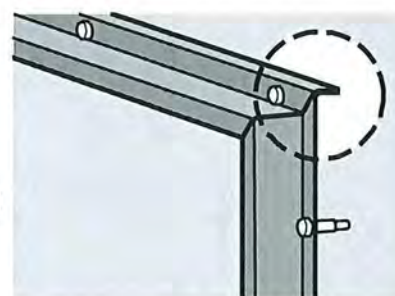
Using the supplied 3mm Allen Key (hex drive) remove the bolts around the glass retainer ensuring that the glass does not fall forward.



Pull the top of the frame toward you slightly and lift the glass and frame out and away from the fire. Place the glass & frame carefully aside.

NOTE WHEN REPLACING THE GLASS:

When replacing the glass, note that the metal flange shown to the right must be on top (not the bottom), or the glass will not fit correctly to the fireplace.



E6 Remove the Fuelbed Tray & Burners

Remove the Fuelbed tray from the fire box, by lifting one end up into the top corner and then out towards you. Take care not to scratch the firebox paint and lift out the burners.



E7 Gas Type Conversion

THIS APPLIANCE IS CONFIGURED TO OPERATE ON NG

If gas type conversion is not required then jump to "checking operating pressure"

Note: Access to the valve and control system can be through either of the 2 hatch panels shown shaded black in the diagram of section E8.

Your gas fire has been supplied with the necessary parts for gas conversion. Follow the steps on the following page to change from NG to ULPG/Propane or vice versa.

WARNING: The regulator that is supplied with the fire **MUST NOT BE REMOVED**.

Removal of the regulator, or replacing it with one not intended for use with this Escea fire, will void the limited appliance warranty.

Turn off power and gas first

Step 1: Ensure power and gas is off. Remove the fascia, glass and fuelbed as per section E6

Step 2: Lift out the two burners and the surrounding perforated grill as per section E7.

Step 3: Remove the screws in the bottom and the inner side of the firebox as per shown.



Remove 'engine' by lifting up and to the left. This is still connected internally to the gas hose and power cables. Place engine just to the left within firebox as shown.



Step 4: Change the two main burner jets with the jets supplied in kitset.

	DX1500	DX1000
NG (Both jets)	Ø2.3mm	Ø1.95mm
Propane / ULPG (Both jets)	Ø1.3mm	Ø1.10mm

Step 5: Remove the regulator screw cap and screw out the nylon adjuster screw to remove the existing spring. Replace the spring with the purple spring supplied in the conversion kit and reassemble the regulator.

Step 6: Cover the existing gas type label with the new gas type label supplied in kitset. Ensure serial number and date of manufacture are still visible. Write your name, company (if appropriate) and date of conversion on new label with permanent marker.

Step 7: Place engine back into firebox. Take care not to pinch any wires. Don't replace the screws at this stage.

Step 8: The burner tubes on both burners have convertible collars. Ensure the collars on both are set to the correct orientation. Place one burner only into position.



ULPG/Propane
11mm hole exposed



NG
3.5mm hole exposed

Step 9: Adjusting the electronic controller for gas type

Ensuring the gas is still OFF, Turn the power ON.

On the remote control, insert the new "AA" size batteries. You should now see the time on the display showing 0:00

Press the MINUS (4), PLUS (8) and FAN BOOST (7) buttons simultaneously (as shown right) until the characters "03" light up on the display. Release the buttons and the remote will count down and display "GO". The screen will then display all characters. This will put the remote into test mode and the two big temperature digits should begin counting from 0 to 99 repeatedly.



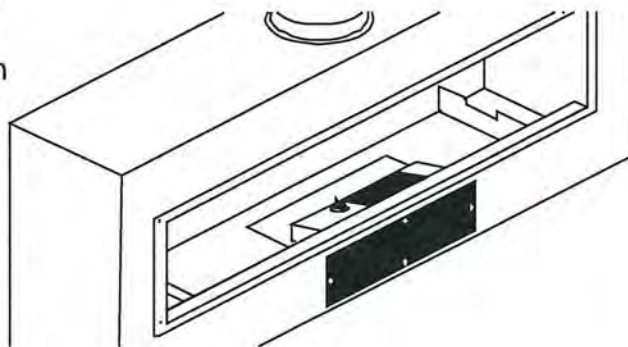
Now hold down the "Timer Select" button and "Activate Timer" button simultaneously, the remote display will show the current configuration of either "nG" for Natural or "LP" for ULPG/Propane. To change this configuration, hold down the same 2 buttons "Timer Select" and "Activate Timer" simultaneously for 5 seconds. This will now have toggled between gas types.

Once you have chosen the correct gas mode, simply press the "⏻" power button once to exit this diagnostics mode.

E8 Checking the Gas Operating Pressure

Note: Access to the valve and control system can be through either of the 2 hatch panels shown shaded black in the diagram to the right.

Note: ensure the thermostat control within the remote does not cause the flame to modulate down by increasing the set temperature and keeping the remote in a cool environment



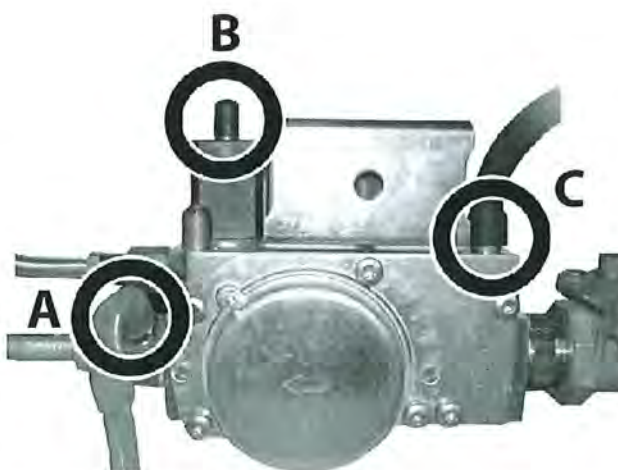
Turn on the gas. Turn the power on.

Check the inlet pressure upstream of the appliance using the test point that you installed earlier.

Note: The regulator that is supplied with the fire **MUST NOT BE REMOVED**. Removal of the regulator, or replacing it with one not intended for use with an Escea fire, will void the limited appliance warranty and may be dangerous.

The gas valve is shown right with

Manometer test points at A and C, and an adjustment point at B.



Gas Pressure Table - **DX1000**

	Gas Type	
	Propane (AUS) or ULPG (NZ)	Natural Gas
Minimum Inlet Pressure - Pre-Regulator	2.75 kPa	1.13 kPa
Maximum Inlet Pressure - Pre-Regulator	5.0 kPa	5.0 kPa
Operating Pressure when on high - (Point A)	2.32 kPa $\pm 5\%$	0.82 kPa $\pm 5\%$
Operating Pressure when on low - (Point A)	0.72 kPa $\pm 5\%$	0.28 kPa $\pm 5\%$
Max operating pressure - at burner jet	2.30 kPa	0.76 kPa
Operating pressure - Post-Regulator (Point C)	2.30 kPa	1.00 kPa

Gas Pressure Table - **DX1500**

	Gas Type	
	Propane (AUS) or ULPG (NZ)	Natural Gas
Minimum Inlet Pressure - Pre-Regulator	2.75 kPa	1.13 kPa
Maximum Inlet Pressure - Pre-Regulator	5.0 kPa	5.0 kPa
Operating Pressure when on high - (Point A)	1.96 kPa $\pm 5\%$	0.76 kPa $\pm 5\%$
Operating Pressure when on low - (Point A)	0.96 kPa $\pm 5\%$	0.28 kPa $\pm 5\%$
Max operating pressure - at burner jet	1.94 kPa	0.75 kPa
Operating pressure - Post-Regulator (Point C)	2.30 kPa	1.0 kPa

If unable to achieve pressures from table in E8:

Adjust point B (shown in section E8) with a 3mm allen key to adjust the LOW setting, and a 2mm allen key to adjust the HIGH setting.

NOTE: Do not use a ball-end allen key. Use only square-end allen keys for adjusting this point.



- ☐ Take black cap off the solenoid
- ☐ Put manometers on points A and C
- ☐ Adjust point C to achieve Operating Pressure (Post-Regulator) from table in section E8
- ☐ Put the fire into flame effect mode using the remote control
- ☐ Adjust the LOW setting (flame effect) using 3mm allen key to achieve values from table in section E8
- ☐ Turn off flame effect using remote, and turn to high
- ☐ Check that the HIGH setting is within 0.05kPa of value in table of section E8., and if not, adjust the HIGH setting using 2mm allen key on point B.

If this does not achieve the correct pressures, do Basic Settings:

- ☐ Using the 2mm allen key, turn **counter-clockwise** until resistance
- ☐ Using the 3mm allen key, turn **counter-clockwise** until resistance
- ☐ Using the 3 mm allen key, turn **1 rotation clockwise**
- ☐ Using the 2mm allen key, turn **2 ½ rotations clockwise**
- ☐ Adjust LOW again with 3mm allen key, and check HIGH as per above directions.

E9 Operating the Appliance

Turn on the fire by pressing the "⏻" power button the remote and within a few seconds the appliance will begin its startup sequence, with a 15 second purge of the flue fan. After purge it will arc. It may take a few attempts to light the first time due to air in the gas line. You may wish to purge the gas line at the valve by bleeding the first test point. This requires a small blade screwdriver.

Once the fire has lit the pilot and main burner you will be able to measure the operating pressure. Set the remote temperature to 30deg by pressing the "+" button. This will allow maximum gas flow into the appliance.

Ensure all other gas appliances within the house are also operating at maximum.

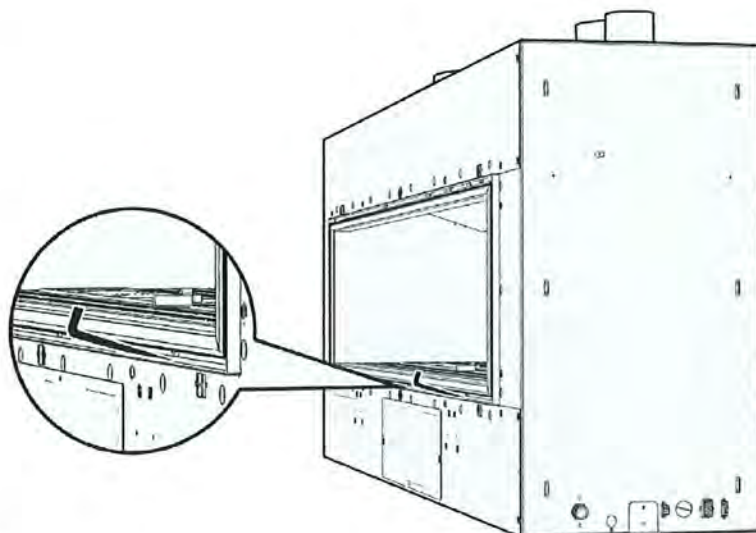
If the operating pressure does not read within 5% of the table above then remove the cap from the gas pressure regulator within the appliance and adjust the threaded spring stop. The true adjusted pressure can only be read with the cap replaced.

Press the "⏻" power button again to shut down the fire.

E10 Auxillary On/Off button

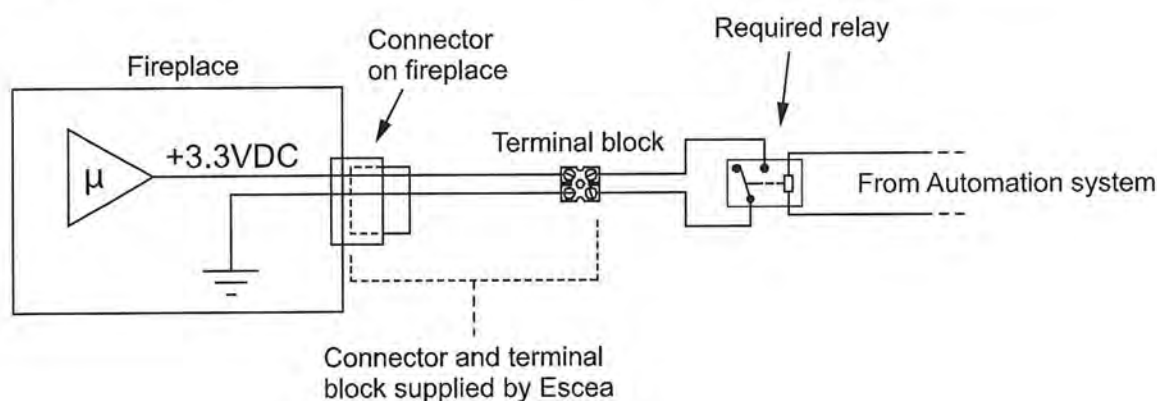
The auxillary on/off button is used to turn the fireplace on without the Remote Control, and also used for "teaching" the fireplace to listen for new remote controls. For information on teaching a new remote control, see section S4 of the service manual at the end of this document.

The auxillary On/Off button is accessed by using an allen-key or thin object to poke through in the location shown to the right.



E11 Home Automation Setup

Escea D-Series fireplaces have a simple interface for connection to a home automation system. Simply put this allows the fireplace to be woken up and started and then shut down. The "Close to wake" connection shown is essentially taking one of the 3.3 volt DC pins on the fireplace micro controller and pulling it down to ground. In order to isolate the fireplace from the automaton system a relay needs to be used as shown. This allows you to use any nominal voltage to drive the relay while keeping the fireplaces 3.3V supply isolated.



Note: you will need to match the relay coil voltage with the voltage from your automaton system.

The Home Automation connection can be found in your fireplace accessory pack and is shown to the right.

This connects to the fireplace via the removable access panel in the bottom right of the fireplace, as shown in section C2.



Home Automation Operation:

Relay closed

The fireplace will start in a medium setting until it receives a signal from the remote control unit (up to 4 minutes). Once the remote has communicated with the fireplace it will turn on and begin operating the fireplace thermostatically. The remote will use whatever temperature the user has previously set and cannot be altered by the home automation system. The fireplace will continue to operate while the relay is closed.

Note: If the fireplace cannot communicate with the remote controller within 10 minutes of the relay contact closure then the fireplace will shut down and return to standby. The remote controller is required to be operating within range of the fireplace for its safe operation.

Relay open

If the fireplace was operating with a closed relay then upon opening the relay contacts the fireplace will shut down and return the remote controller to its standby mode when it next updates (up to 4 minutes). While the relay is open the fireplace will be in standby mode and available for manual operation by the user.

E12 Reinserting fuel bed and ceramic glass

Re-insert the 14 engine screws if removed.

Place the burners and Fuelbed Tray back into position.
If removed, place inspection panel back on.

At this stage you should relight the appliance to confirm correct ignition.

END OF SECTION E

By the end of this section, you should have:

- ☐ The appliance installed in the cavity
- ☐ The appliance fixed to the cavity base and wall lining
- ☐ The appliance plugged into a mains electricity supply
- ☐ The appliance gas supply attached and pressure tested with all other gas appliances running

F Finishing the Installation

F1 Crystalite, Coal, or Driftwood Fuel Bed Installation

If using the crystalight, coal, or driftwood fuel beds, first place all the Crystallite/Coal pieces in a single layer atop the Burners and Fuelbed Tray. Cover the entire area except for the pilot shield, ensuring coverage right up to both glass windows and rear of firebox for single sided.

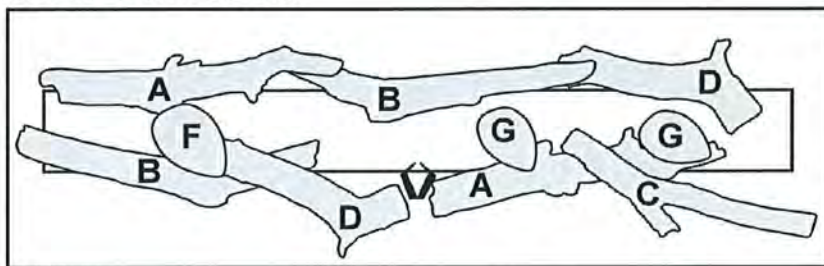
If the Driftwood fuelbed style has been chosen, follow the above directions for placing the Crystallite and then place the Driftwood pieces randomly atop the Crystallite layer. Ensure the wood pieces are spread out across evenly and not over the pilot assembly.

Do not heap or mound any fuelbed. Continue onto following page >

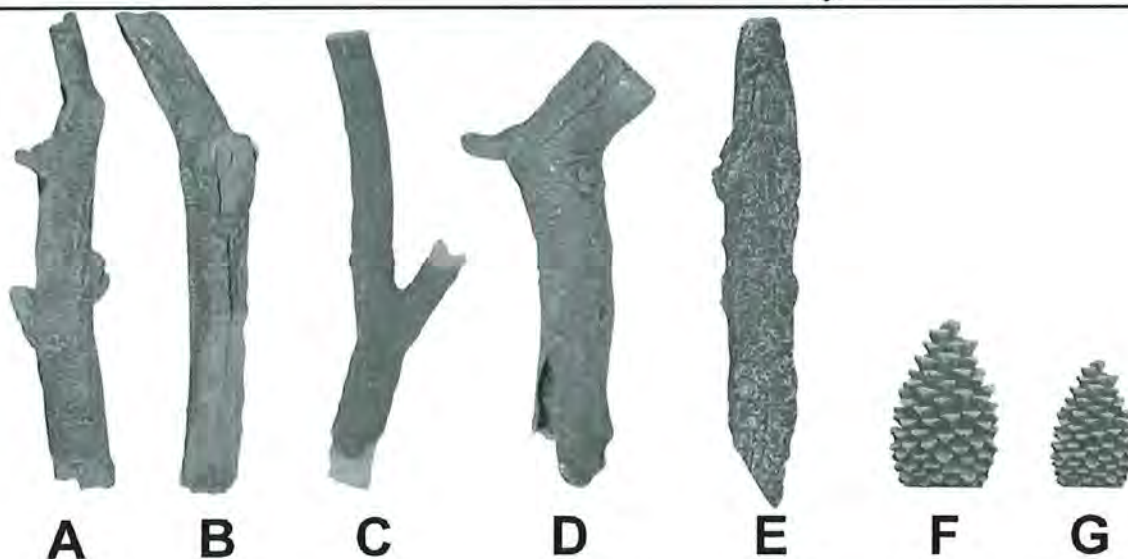
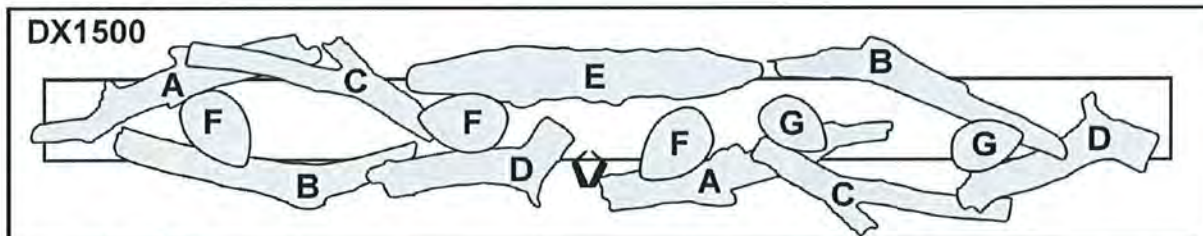
F2 Log and cone Fuel Bed (Woodland Selection)

If using the Logs and cones with Shale (chips) fuel bed, first place the logs and cones in the positions as shown below.

DX1000



DX1500



Once the logs and cones have been correctly positioned, scatter the Shale (chips) fuel bed media evenly across the fire base to cover as much area as possible without obstructing the pilot flame.

For the DX1000 you should use the 7x supplied 600ml bags of shale (chips), and for the DX1500 you should use the 10x supplied bags.

Note: Improper positioning of any fuelbed media may create carbon build-up and will alter the unit's performance. Malfunctioning due to improper fuel media placement will not be covered under warranty.

Reinstall the glass and retainer frame, being careful that the glass does not fall from the frame. Tighten the bolts around the outside of the glass retainer until securely fitted. Do not over-tighten the glass retainer bolts. Just nip them up.

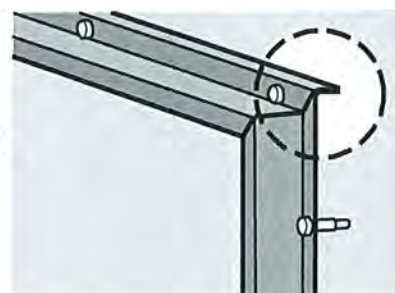
NOTE: If there is any residue left on the glass from the plastic wrap packaging of the fireplace, it must be cleaned using any standard glass cleaner prior to operation.

Note: If the glass gasket requires a replacement, call your nearest Escea agent who will ensure the part is replaced with the correct type. In the event that the glass is broken by impact, purchase the replacement from an authorised Escea agent only.

Confirm the appliance is working correctly by lighting it 2 or 3 times to ensure correct operation & smooth ignition. Also confirm both flue and room duct fans are running correctly.

NOTE WHEN REPLACING THE GLASS:

When replacing the glass, note that the metal flange shown to the right must be on top (not the bottom), or the glass will not fit correctly to the fireplace.



F3 Wall lining

Only after the above list is satisfied, can you commence with the final wall linings. The appliance and all corresponding ducting needs to be adequately covered (both sides if double sided) to prevent plasterboard and building dust from entering the ducting system during completion of the wall lining.

Wall lining cutout dimensions around the glass must be adhered to.

Please refer to section **B8** for wall finishing dimensions surrounding glass.

Ensure the air inlet gap surrounding the glass is maintained. The glass frames must still be able to be removed after wall linings installed.

F4 Fitting the Fascia Panels

To avoid scratches or knocks to the fascia panels of this heater they must be fitted at the complete conclusion of the installation process, after wall linings are in place.

Note: Never ever rub the fascia.

Step 1: Ensure the plastic spacer is placed on the thread of the studs.



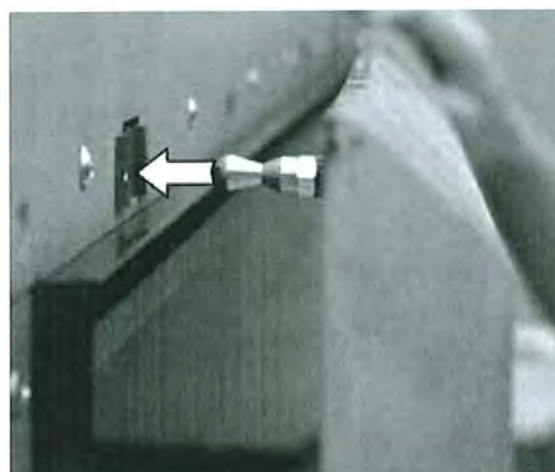
Step 2: Screw and tighten the 4 studs with spacers onto the back of the fascia.



Step 3: Rivet the 4x spring clips onto the chassis of the appliance as shown



Step 4: After the 10-15mm thick wall has been finished, the fascia clips onto the appliance as shown. **Note:** wall linings larger than 10mm may require the 'Linear Trim' available from your local dealer to hide any exposed wall lining.



A

B

C

D

E

F

G

SERVICE

F5 Locating Wall Mount Cradle for Wireless Control

The appliance's remote contains the thermostat that will sense the room temperature and communicate this back to the heater via radio frequency.

A wall mount cradle has been provided for the wireless control and where possible the control should be housed in this cradle.

The location of this cradle should be decided by taking into account the following factors;

- ☐ Simple, convenient access for the user
- ☐ Away from air flow and drafts through the room
- ☐ The parts of the room that people are likely to spend time
- ☐ Away from direct sun light
- ☐ A suitable distance away from the heater
- ☐ Ideally 1.2m to 1.5m from the floor

The radio frequency signal will go through some walls but for best results Escea suggest that the cradle position is less than 10 metres away from the heater.

The best height off the ground to locate the cradle is about chest height. This gives a good average room temperature and easy access for the user.

Please ensure that cradle is screwed firmly onto the wall using the screws provided.



F6 Operating the Appliance

If you haven't done so already, insert the supplied "AA" size batteries, being careful of the polarity.

You should now see on the display of the remote the time showing "0:00".

To turn the fire on, press the "POWER" button once, and within a few seconds the appliance will begin its startup sequence.

NOTE: The appliance begins its startup with a 15 second pre-start purge, where the combustion fan runs on its own to clear the firebox before it tries to ignite. During the pre-purge the remote will alternately show the remote's "Set" temperature and a rotating segment indicator to show that the fire is in start up mode and will try to ignite.

When the appliance has lit, set the room temperature by pressing the 'plus' or 'minus' buttons repeatedly until the display is showing the desired temperature. The remote will then revert back to the 'current' room temperature 30 seconds after making the change.

Run the appliance on full for an hour with the windows and doors open in the dwelling. This will ensure any running-in smells have the chance to dissipate.

The appliance is turned off by pressing the "POWER" button once more. The remote will display the time only.

Run the appliance again and check the operation of the thermostat by increasing and reducing the set temperature. Check the Flame Effect function and the Fan Boost functions work correctly.

For further operation instructions please refer to the User Guide.

Final checklist

- ☐ Run the appliance on full for an hour with the doors & windows open
- ☐ Dwelling owner shown how to operate the appliance correctly
- ☐ Warranty card filled in with installer details and appliance serial number
- ☐ User Guide made available for dwelling owner
- ☐ Plumbing Industry Commission Compliance Certificate given to dwelling owner

A

B

C

D

E

F

G

SERVICE

F7 Normal Operating Sounds and Smells

Note: Each time the fire is lit from cold the glass may fog up with condensation. This is normal and the condensation will disappear within a few minutes once the glass heats up.

Sounds

It is possible that you will hear some sounds from your gas appliance. This is perfectly normal due to the fact that there various types of materials used within your appliance. Listed below are some examples. These are all normal operating sounds and should not be considered as defects in your appliance.

Fan:

Escea gas appliances use electric fans to push heated air into the room. It is not unusual for the fan to make a "whirring" sound when ON. This sound will increase or decrease in volume depending on the speed setting of your fan.

Gas Control Valve:

As the gas control valves turn ON and OFF, a dull clicking sound may be audible, this is the normal operation of a valve. When the fire is switched off after being run for a while, there may be popping and fluttering noises as the residual gas in the burners burns away. These are normal and should be no cause for concern.

Unit Body/Firebox:

Different types and thicknesses of steel will expand and contract at different rates resulting in some "cracking" and "ticking" sounds being heard throughout the heating and cool down processes.

Smells

The first few times the unit is operated, the unit may release an odour and the flames will appear orange caused by the curing of the paint, the burning off of the starch in the gas logs and the oils in the metal. This is a temporary curing process which will disappear with use.

A deposit on the inside of the glass, caused by the starch in the logs, may appear as a build up after several uses. If this film is not removed, it will bake on and may become difficult to remove. When the glass is cold, remove it (see section E5) and clean the inside with a non-abrasive cleaner.

DO NOT ATTEMPT TO CLEAN THE GLASS WHILE IT IS HOT.

UNDER NORMAL USE, NEVER OPERATE THE UNIT WITH THE GLASS REMOVED.

END OF SECTION F

By the end of this section, you should have:

- ☐ A completely fitted fascia
- ☐ The remote control mounted on its cradle on a wall
- ☐ Operated the fire and verified that it lights reliably and safely
- ☐ Run the appliance on full for an hour with the doors & windows open
- ☐ Checked the operation of the thermostat, Flame Effect & Fan Boost functions

G Installation Checklist

Go through the following checklist to ensure you have installed the appliance correctly

- ☐ Correctly sized cavity to suit your fascia and flue configuration
- ☐ Correct clearances to combustibles and mantles around the fascia
- ☐ An electrical isolating switch to the appliance, accessible after finished installation
- ☐ Correctly sized gas supply with a pressure test point, ensuring adequate supply with all other gas appliances in the dwelling running
- ☐ A weather-tight installed Horizontal or Vertical Powerflue Terminal with clearance as specified by AS/NZ5601.1
- ☐ If chosen, reasonable access to the outside face of the Horizontal Powerflue Wall Terminal for maintenance purposes and flue attached to the rear of the Horizontal Powerflue Wall Terminal leading back to the appliance (and similar for Vertical Powerflue Terminals)
- ☐ The electrical cable from the Powerflue Terminal attached correctly and run back to the appliance cavity in an electrically safe manner
- ☐ The appliance fixed to the cavity base
- ☐ The appliance plugged into a mains electricity supply
- ☐ All gas joints and pressure points leak tested, and suitable leak detection solution and drop tests completed on gas pipework
- ☐ Fuel bed correctly installed
- ☐ Glass correctly fitted
- ☐ Operated the fire and verified that it lights reliably and safely
- ☐ Appliance functions checked, including thermostat operation, Flame Effect and Fan Boost
- ☐ Data label marked up with correct gas type, and dated by installer if converted during installation

A

B

C

D

E

F

G

SERVICE

S Service Manual

IMPORTANT:

- This appliance must be serviced every 12 months.
- Any service operation should be carried out only by a suitably qualified and trained person.
- Gas and electricity supply **MUST** be isolated before any service operation is carried out on this appliance.
- This manual should be left with the appliance.
- **DO NOT MODIFY THIS APPLIANCE.**

S1 Annual service procedure

- ☐ Isolate power and gas supply to fire.
- ☐ Remove front glass and clean inside of glass.
- ☐ Remove fuel bed and brush off any soot.
- ☐ Clean electrode and pilot hood of any carbon build up and ensure correct gaps between electrode and pilot hood
- ☐ Remove burners and blow compressed air through the burner ports.
- ☐ Remove jets and clean injector hole with solvent.
- ☐ Vacuum any dust from the cavity that houses the fan and from the underside of the fire box around the valve and solenoids.
- ☐ Test all joints for gas tightness.
- ☐ Reassemble heater and check that operating pressure is correct.
- ☐ Check glass sealing tape and replace if necessary.
- ☐ Check to make sure that flue system is intact and not in any way blocked.
- ☐ Trial heater with several start/stop cycles and trial fan-boost, flame effect only and thermostat modes to ensure that all modes function correctly.

To access the product Dataplate, first remove the fireplace glass, any fuelbed media, the burners and the firebox base. An access panel is located to the side of the bottom of the firebox, the dataplate is located underneath this access panel.

S2 Error Codes

This gas fire has been designed to show error codes to help explain and identify any fault situation that occurs. These codes will appear on the wireless remote control in the form of a large letter "E" with a number beside it. Codes can normally be reset by turning the heater off then on again at the wall.

The following table shows what each code means and possible ways to rectify the situation. In the case of persistent or repeated shutdown errors, action must be taken immediately to find and repair the fault.

Error Code	Suggested action
 Electronics Over Temp	• Excess lint and dust build-up on the PCB / Controller. • Possibly fascia panels installed incorrectly resulting in restricted air flow. • Ensure correct gaps are present around glass. • Room air fans may be slowed or stalled. Remove firebox, check that fans are plugged in, cleaned, and free turning. • (DX only) check that the duct fan is not reversed and blowing "into" the fireplace instead of out from the fireplace. Note: This error has a permanent lock out and will require the unit to be reset after the initial error (turning the power to the fire off "at the wall" then on again after a few seconds).
 Lame Failure or Power Flue trip	The fire has tried to light three times and failed. • Check gas supply and check other gas appliances to see if they are affected. If you have two separate LPG cylinders, switch over to the full bottle or contact your gas supplier. You may need to retry igniting the fire a few times after re-establishing gas supply. • Check correct gas pressure to the appliance with all other appliances running. • Check the electrode placement in relation to the pilot flame. Ensure it is well enveloped in flame as per the diagram in the installation instructions. Ensure no small coals have dropped onto the ignition electrodes between the burners. • Ensure the electrode is not contacting any metalwork including the burners and has the correct air gap. • Check that the electrical power cable between the appliance and the power-flue wall terminal is connected and not damaged. • Check that the fan inside the powerflue wall terminal is running during startup. This fan may need servicing if it is slowed or stalled.

A



Appliance Over
Temperature
Sensor Trip

The bimetallic snap disk mounted on the exhaust collector box has tripped. The possible causes for this could include:

- Possibly fascia panels installed incorrectly resulting in restricted air flow.
- Room air fans may be slowed or stalled. Check that fans are plugged in, cleaned, and free turning
- The regulator being set too high resulting in excess heat build-up.
- The inlet flue not being connected and the appliance drawing warm air from the cavity. Check flues are securely connected at both ends.
- Incorrect Jetting

B



Valve Solenoid
Check Failure

The valve solenoids have failed the pre-ignition test. This is to detect a faulty valve solenoid. However, it is possible a wire has dislodged.

- Check that the connections to each solenoid are secure and in place. It may be that the connections on the ends of the wires need to be tightened a little (e.g. with a pair of pliers) to ensure a robust connection to the valve terminal.
- Disconnect and reconnect the firebox connectors ensuring they are firmly pushed into place.
- It could also be that one of the solenoids on the valve inside the fire has failed. If this is the case the valve will need to be replaced.

C

D



Remote Cannot
communicate
with fire

The remote cannot communicate with the fire. Reasons for this could include:

- The fire being turned off "at the wall" i.e. a loss of power to the fire or the remote is outside of its effective radio frequency range (too far away from the fire). Typical remote range is 1m to 10m.
- Ensure there is power to the fire by pressing the auxiliary on/off (red) button on the fire, then press the on/off button on the remote to clear the error.

E

F



Duct Air Over-
temp

The hot air duct temperature sensor has detected excessive heat at the duct outlet.

- Ensure that there are at least TWO air vents installed and open in the same room as the fireplace
- Ensure the duct fan is operating when the fireplace is running. If not check that the duct fan cord is plugged into the fireplace.

G



Combustion Air
Flow Error

- Check whether the pressure switch is activating at startup (there is an orange indicator LED in the control tray). If not check the pressure switch electrical connection is correct.
- Check that the hoses are connected at both ends. Ensure the hoses are not kinked.
- Ensure the pressure switch is mounted vertically and the diaphragm is operational. The grey hose should be connected to the low pressure port and the translucent to the high pressure port
- Check that both flues are securely connected at both ends to the appliance and the powerflue wall terminal and that the flue is not damaged

S3 Cleaning the Fuel bed and Glass

ALWAYS USE GLOVES WHEN HANDLING THE FASCIA AND GLASS.
NEVER RUB THE FASCIA.

The outside of the fascias must only be cleaned with a clean damp cloth, dry off after cleaning. The high temp silver powder coating that is used on Escea fascia parts contains certain amounts of aluminium that when rubbed too hard will oxidise leaving a black smudge that cannot be removed. Always clean when cold.

This is a service procedure that will need to be carried out whenever soot builds up on fuelbeds and/or inside of glass.

If soot build up becomes excessive or regular then one of the following actions may be required;

- Reset gas pressure, pressure may be too high;
- Reposition fuelbed, check with specific fuelbed instructions for details;
- Clear any blockage from primary aeration port of burner;
- Check flue tube is not damaged or disconnected.
- Check exhaust fan is operating and cowl is not blocked in any way.

Step 1: Remove fascia panel (if fitted) by pulling it from the wall.

Step 2: Removing the Glass

Using the supplied 3mm Allan Key (hex drive) unscrew the bolts around the glass retainer.



Take care that the glass and frame does not fall forward at this stage. Pull the top of the frame toward you slightly and lift the glass and frame out and away from the fire. Ensure to hold on the glass, and take care that the glass does not fall from the frame. Place the glass & frame carefully aside - This is a two person lift.

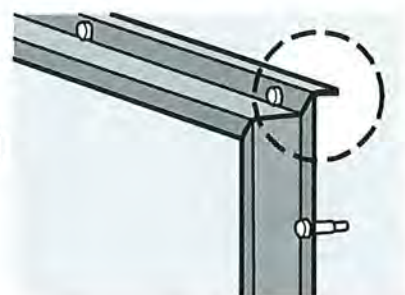
Step 3: Take out fuel bed and gently clean away any soot from fuelbed with a soft hearth brush. The burner tops and fuel media tray can be vacuumed to remove any excess material.

Step 4: Clean the inside and outside of glass with normal glass cleaning products. Use a CLEAN DRY cloth only. Stubborn marks may be cleaned with a ceramic glass cleaner.

Step 5: Reinstall fuel media and glass and test run heater.

NOTE WHEN REPLACING THE GLASS:

When replacing the glass, note that the metal flange shown to the right must be on top (not the bottom), or the glass will not fit correctly to the fireplace.



A

B

C

D

E

F

G

SERVICE

S4 Checking Operating Pressure

WARNING: The regulator that is supplied with the fire **MUST NOT BE REMOVED**. Removal of the regulator, or replacing it with one not intended for use with an Escea fire, will void the limited appliance warranty.

By law, the original installer has supplied a test point prior to the appliance. With all gas appliances within the house running on full, including this DX1500, check the inlet pressure upstream of the appliance. It must conform with the table in section E8.

To check the operating pressure, with one burner removed only place your Manometer hose onto the jet spigot as shown. Ensure you place the manometer well away from the other burner as this will get hot.

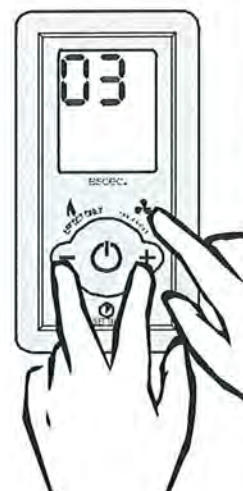


S5 Replacing a Remote Control

If the wireless control becomes lost or damaged, a new one can be ordered from any Escea retail agent. When you have the new remote, the following procedure needs to be followed to "teach" the remote to only communicate with that fire.

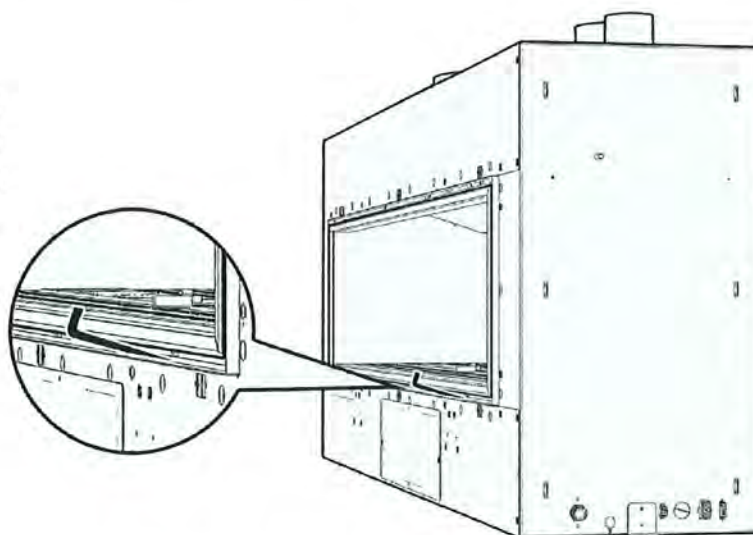
1. Ensure the fire and remote are set to "Off" (only the time is displayed on the remote).

2. While the remote is in its "OFF" mode with only the time showing on the display, press the MINUS, PLUS and FAN BOOST buttons simultaneously (as shown right) until the characters "03" light up on the display. Release the buttons and the remote will count down and display "GO". The screen will then display all characters and should be reading 00. This will put the remote into test mode. Note: if the digits start counting then the remote is already paired.



3. Press and hold the – (minus) button until the two large temperature digits reading 00 start to flash slowly. Release the – (minus) button. The remote control is now ready to be addressed to the fire.

4. Press and hold the red auxiliary on/off button on the fireplace for a minimum of ten seconds, or until the two large temperature digits start counting upwards from 00 to 99 repeatedly.



Note: Pressing the red auxiliary button on/off button will start the fire. Once the remote control is counting the fire can be turned off by pressing the red auxiliary button again.

5. Press the large power button in the middle of the remote control to exit the test mode and return to normal operation. The remote should only be displaying the time. Check the fire will start using the remote control by pressing the large power button. Turn it off again using the remote control.

6. The fire is now re-addressed to the remote control.

A

B

C

D

E

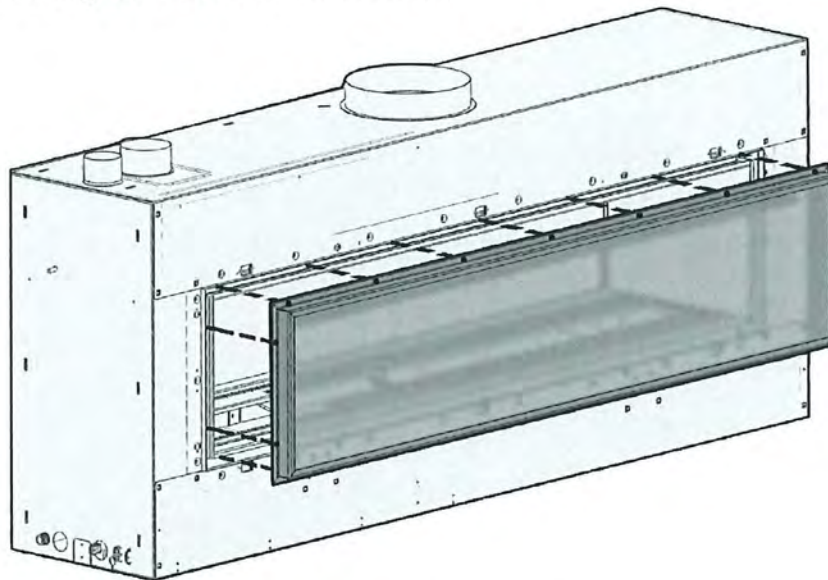
F

G

S6 Replacing the burners

If a fascia is fitted, remove this first.

Using the supplied 3mm Allen Key (hex drive) remove the bolts around the glass retainer ensuring that the glass does not fall forward.



Pull the top of the frame toward you slightly and lift the glass and frame out and away from the fire. Place the glass & frame carefully aside.

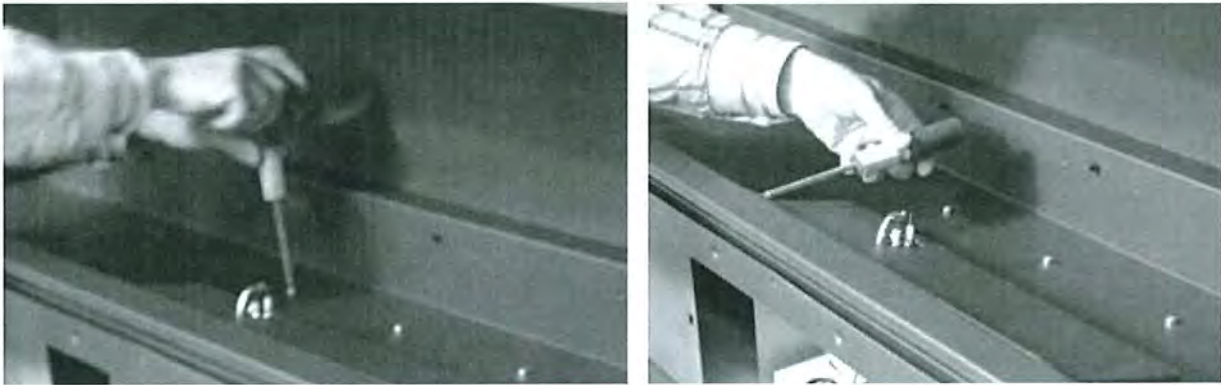
Remove all of the fuelbed, taking care not to damage any logs or media.

Remove the Fuelbed tray from the fire box, by lifting one end up into the top corner and then out towards you. Take care not to scratch the firebox paint and lift out the burners.



S7 Accessing the control tray

Remove the screws in the bottom and the inner side of the firebox as per shown.



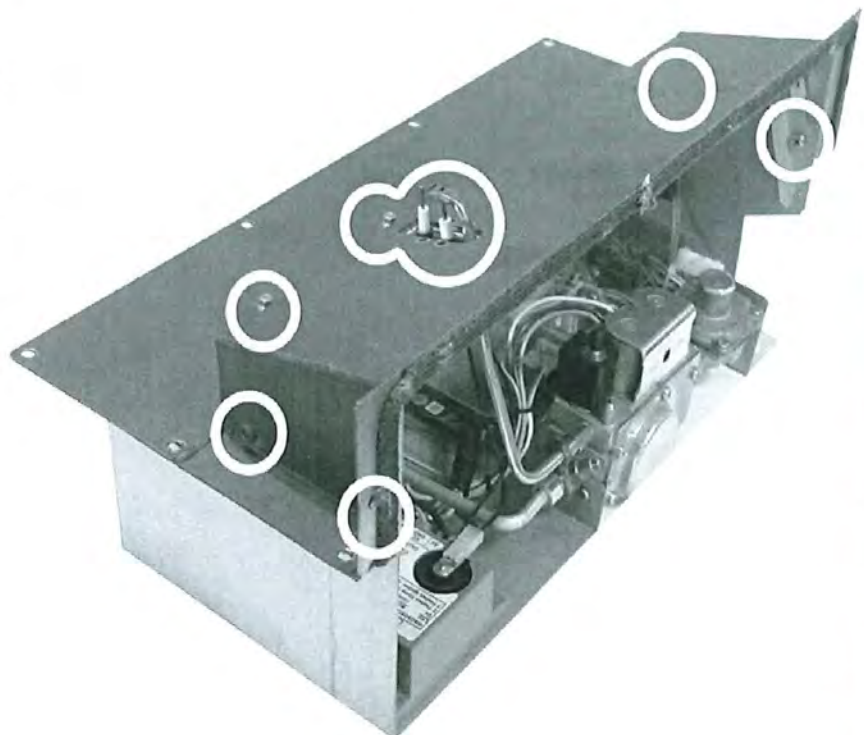
Remove the 'engine' by lifting up and to the left. This is still connected internally to the gas hose and power cables. Place engine just to the left within firebox as shown.



S8 Removing the Circuit Board

Step 1: Remove the Pilot cover and 2 jets circled to the right.

Step 2: Remove the 4 screws circled to the right from the inside and lift the cover upwards to remove it. This will give you easier access to the circuit board.



A

B

C

D

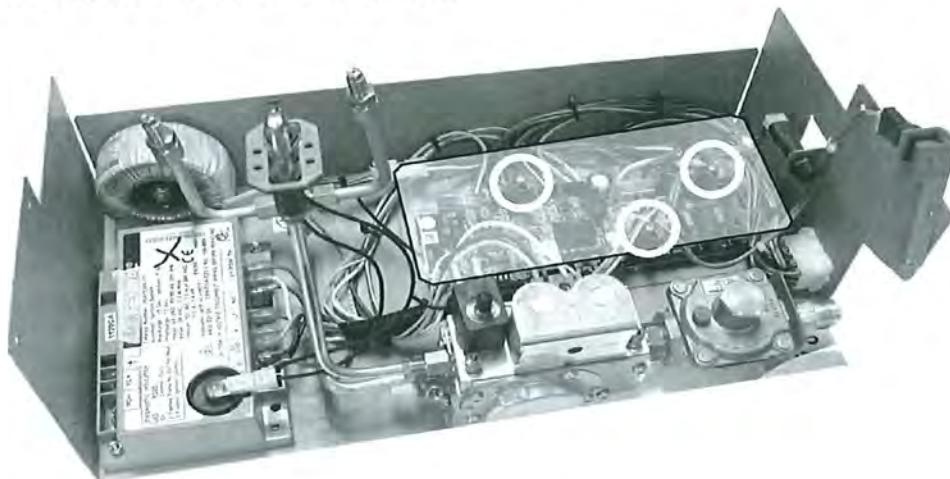
E

F

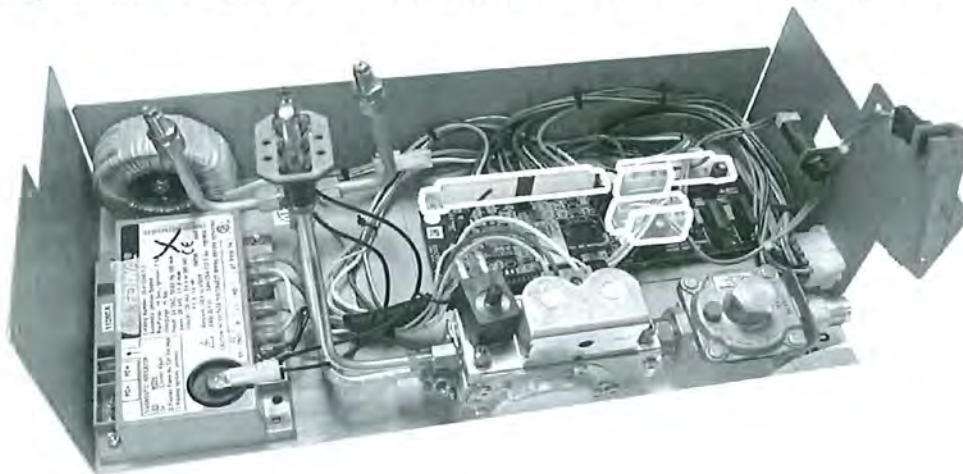
G

SERVICE

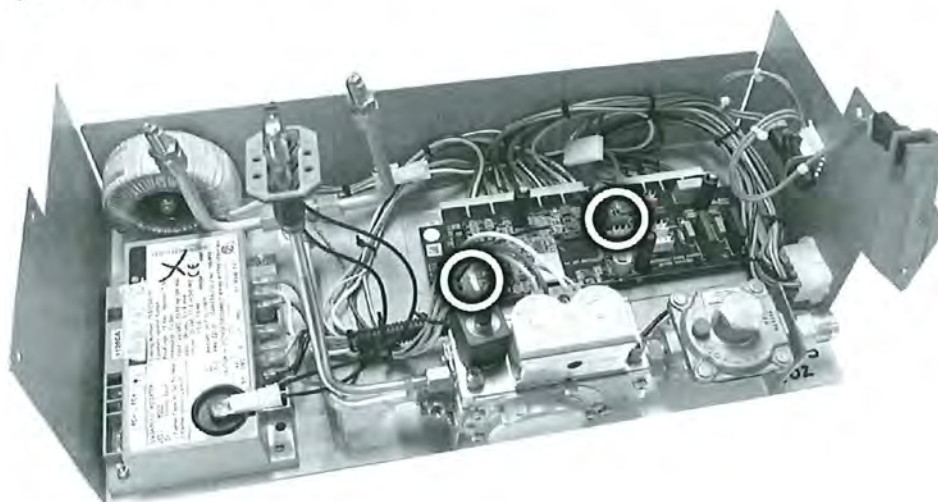
Step 3: Remove the clear plastic insulation cover from ontop of the circuit board by removing the screws circled below.



Step 4: Remove all 5 connections to the circuit board as highlighted below.



Step 5: Remove any screws securing the circuit board to the base and remove the circuit board. Take care that the black spacers underneath the board stay in place until the board is replaced.



Replace the circuit board (if applicable) and reverse these steps to re-assemble the Engine.

A

B

C

D

E

F

G

SERVICE

S9 Servicing the Horizontal / Vertical Powerflue

Ensure the power to the Powerflue is off by disconnecting the power to the appliance inside. If the appliance has been running, allow the Powerflue to cool before attempting to service it.

Servicing a horizontal Powerflue:

If the Powerflue needs servicing, the fan can be accessed from the outside of the installation for Horizontal termination, and accessed from within the roof space for Vertical termination.

Undo the screws on the outside of the Powerflue box and separate the two parts, giving you access to the fan inside.

Removing this plate gives complete access to the fan for servicing or replacement. Check that all the seals are still intact. Check the fan electrical terminals, motor and impellor are not corroded. Ensure there is no signs of leakage in or around the terminal.

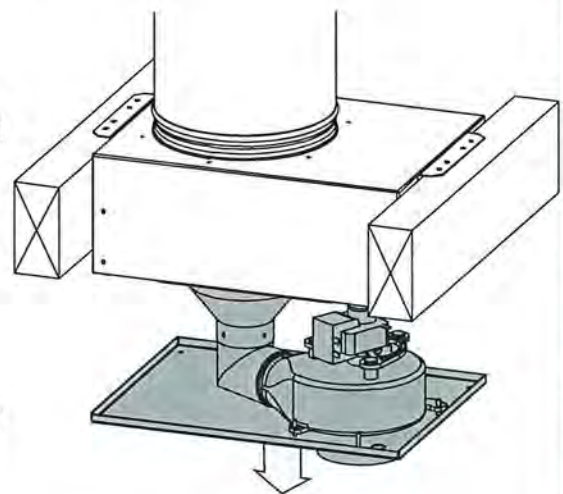
When reassembling the powerflue, line up the round silicon grommets with the outlet tube of the fan and push the cowl back into place. Ensure all seals are still in place and replace all of the screws to hold the cowl in the correct position.

Servicing a vertical Powerflue:

If the vertical Powerflue needs servicing the fan can be accessed without disturbing the final twin walled flue length or roof terminal.

To gain access to the fan and electrical terminals remove the eight screws that hold the base of the Powerflue to the lid, making sure to support the base while removing the screws.

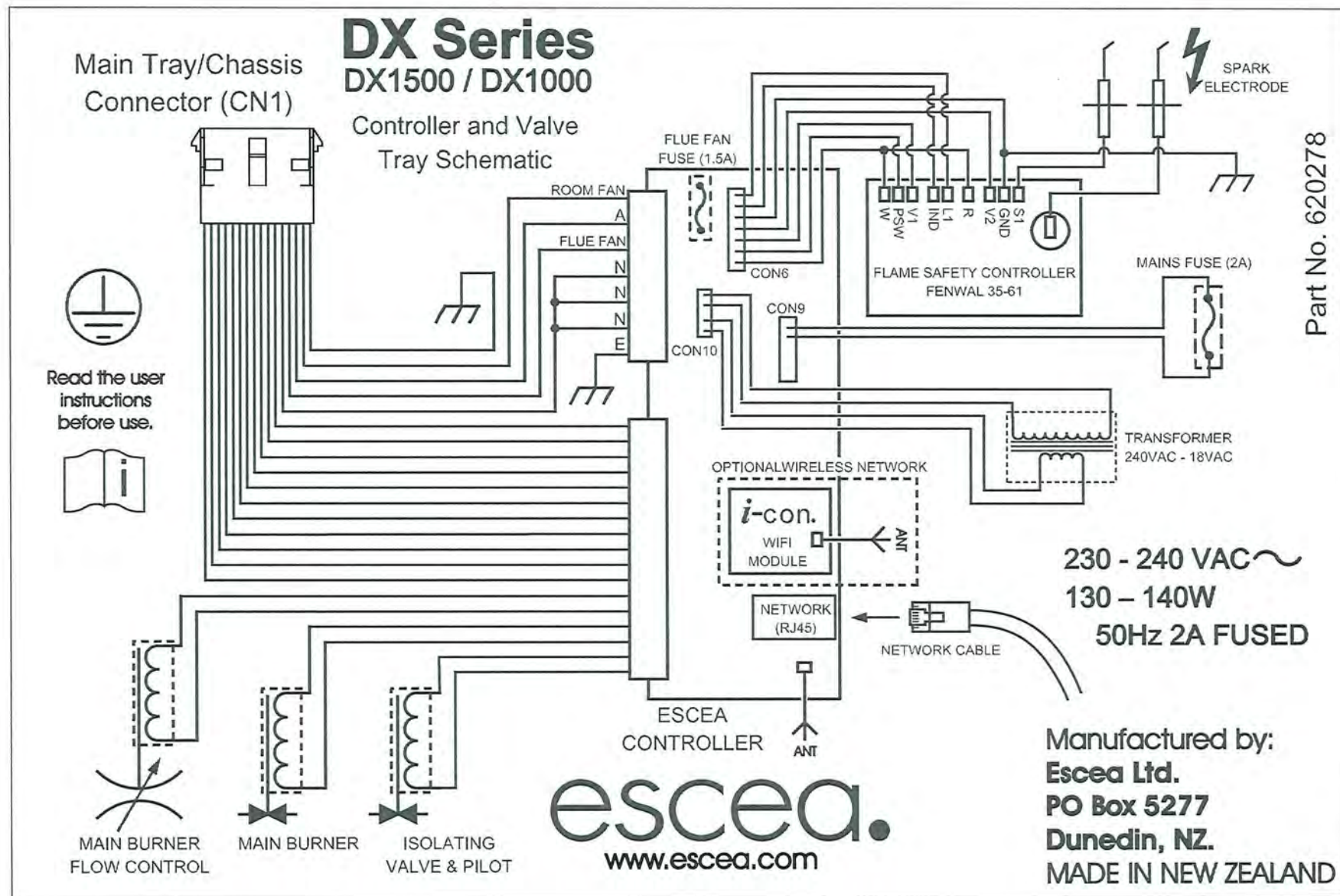
Note: When inspecting or working on the Powerflue take care not to damage the two flexible flue pipes that connect to the Powerflue base.

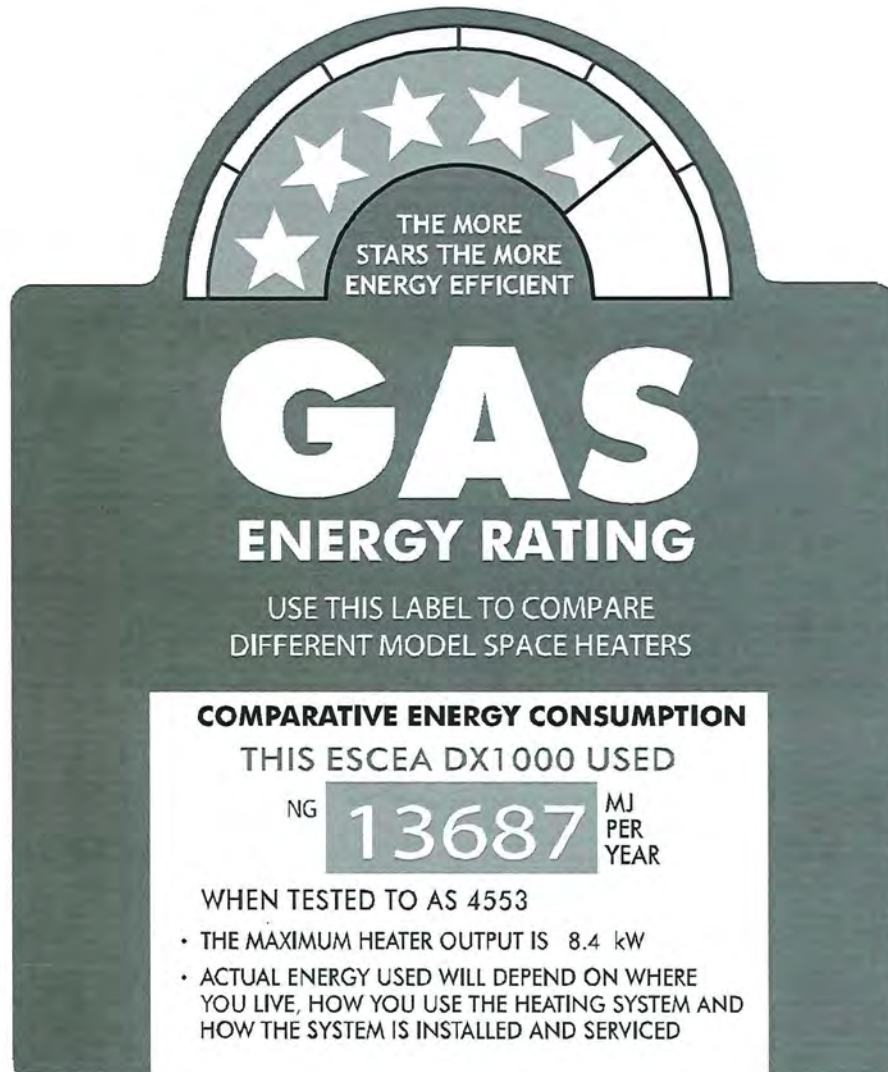


Once the base has been removed clean away any dust or debris found and check that the fan electrical terminals, motor and impellor are not corroded. Also check for signs of leakage in or around the Powerflue.

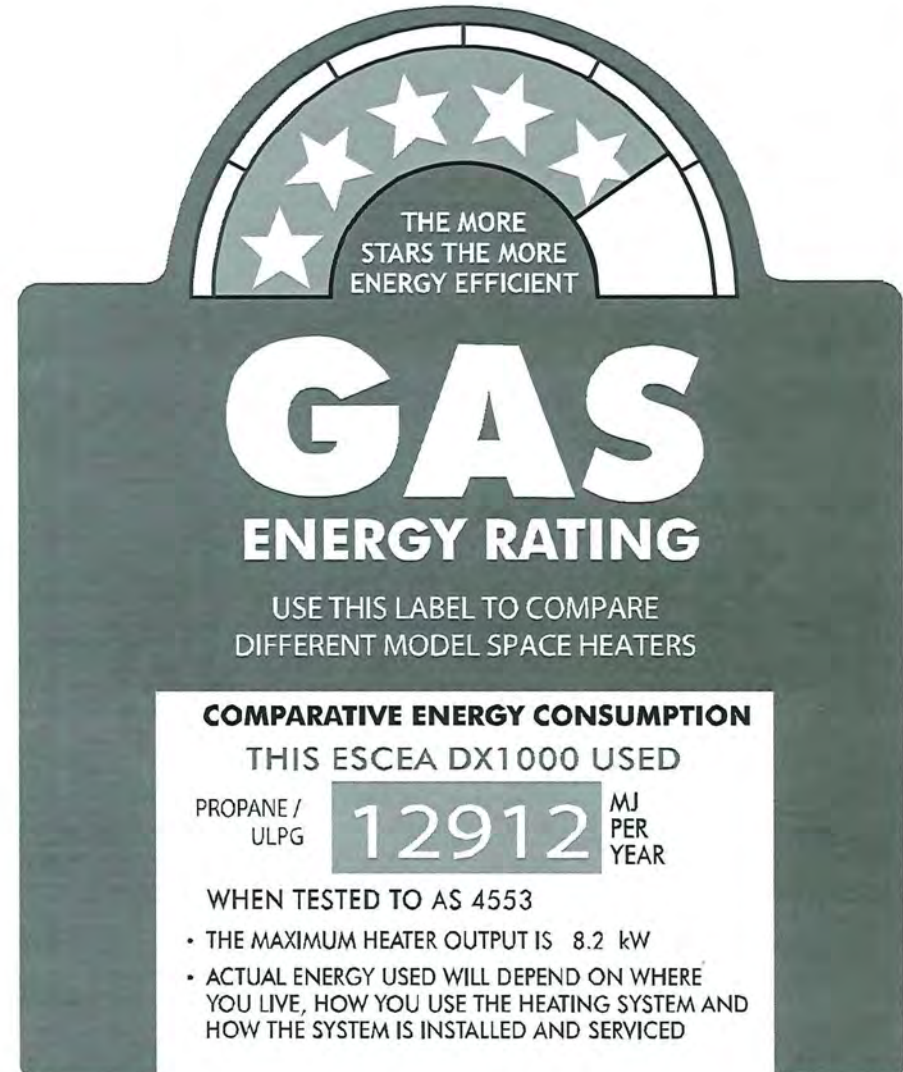
When reassembling the Powerflue support the base under the lid and replace the 8 securing screws. After assembly check that the two flexible flue pipes are sealed and not damaged and that the twin walled final flue length and roof terminal are still sealed.

Note : Take care not to trap any wires between the base and lid of the Powerflue when reassembling.



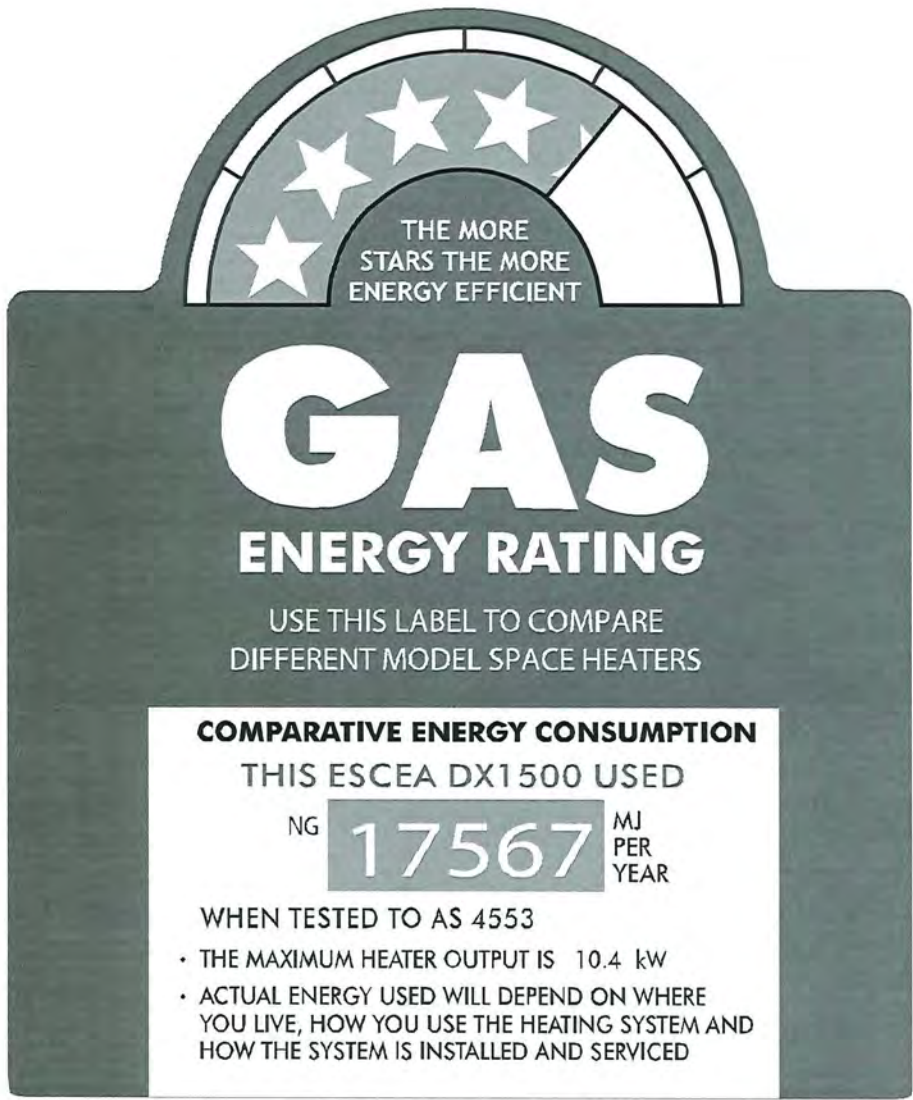


DX1000 Natural Gas

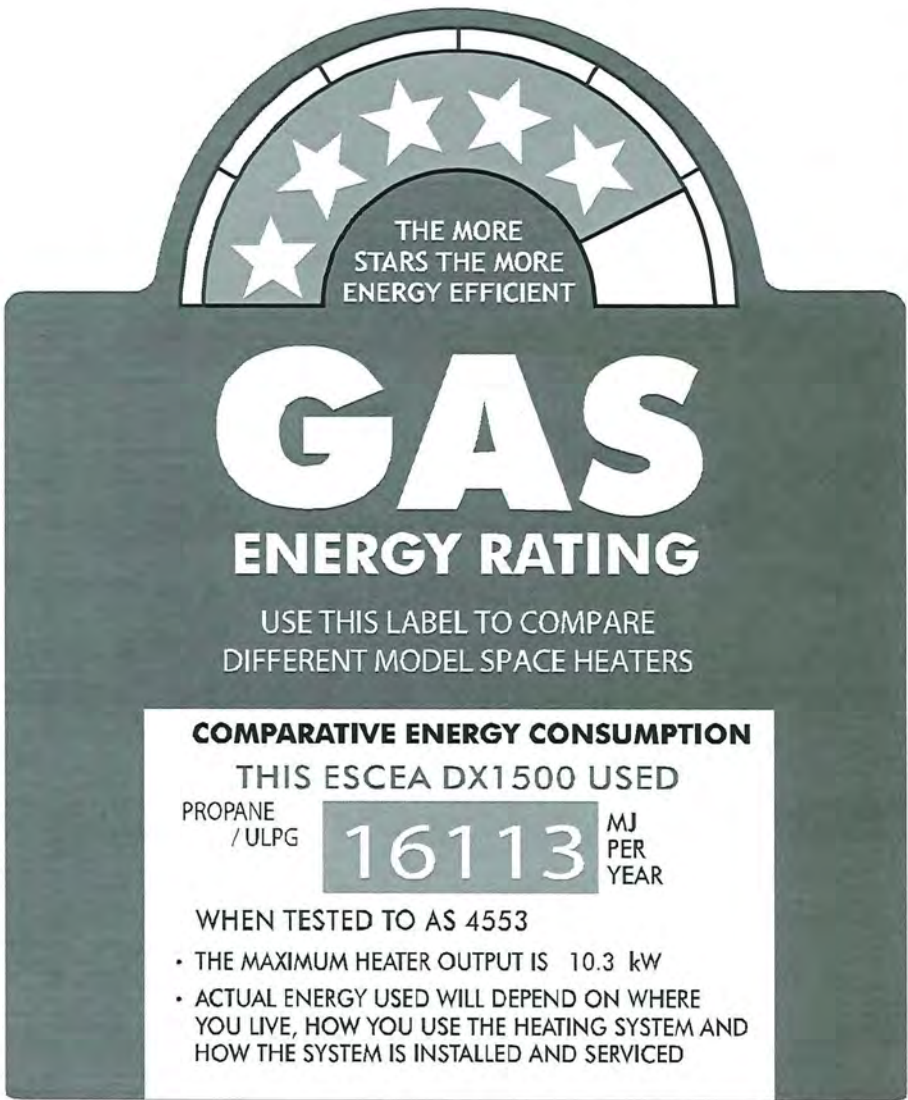


DX1000 Propane / ULPG





DX1500 Natural Gas



DX1500 Propane / ULPG

The logo for escea. is displayed in a lowercase, sans-serif font. It is positioned in the upper right area of a decorative header section. This section features a background of overlapping, semi-transparent geometric shapes in various shades of blue and grey, creating a modern, abstract look. On the left side of this header, there are two circular punch holes.

escea.

Extended Flue Run Manual

SUITABLE FOR: **DX1000, DX1500, DL850 & DL1100**
NZ & AUS EDITION

Contents

	PAGE
1 Description.	2
2 Available Flue Packs:	3
3 Vertical Flues over 4 meters (maximum 12 m length).	4
4 Horizontal Flues over 4 meters (maximum 12m length).	6
5 Wall Bracket fixing (wood)	8
6 Wall Bracket fixing (Brick/concrete)	8
7 Notes on Assembling the Polypropylene flue:	8
8 Condensate control	9
9 Internal Condensate disposal.	10
10 External Condensate Disposal	12
11 Additional Important notes:	13

1 Description.

The Escea Polypropylene flue is a ridged pipe, co-linear push fit flue system with an Ø80mm inlet pipe and an Ø100mm exhaust pipe.

The Polypropylene flue system is ONLY for use on the DL and DX range of Escea fires.

The Polypropylene Flue system is available as an add-on to the initial 4 meters of Aluminium flexi flue.

Read all of these instructions prior to commencing the installation of the flue.

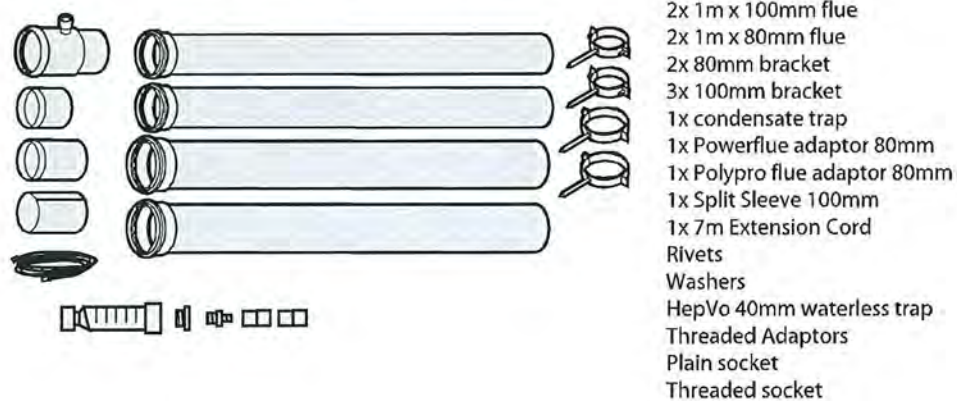
Considerations when running a flue longer than 4 metres:

- The first four meters of flue must be Flexible aluminium.
- Any length over four meters must be in Escea Polypropylene Co-linear flue
- The flue will be a considerable weight and need supporting/securing at one meter intervals.
- The appliance will generate considerable condensate which will require disposal (see notes in section 8)
- The waterless trap MUST be installed in a vertical position
- Maximum bends allowed in the polypropylene flue is FOUR (either 45° or 90°).
- The Polypropylene flue can have an external temperature of approx. 85°C – ensure the correct clearance from heat sensitive materials.

WARNING – ONLY TO BE INSTALLED BY A SUITABLY QUALIFIED PERSON.

2 Available Flue Packs:

906609 - Escea D Series Poly Pro Flue Starter Kit (2m Ext)



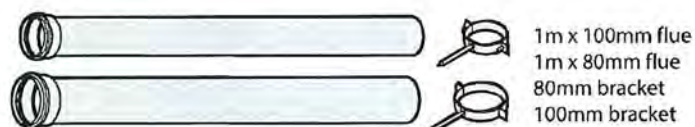
906610 - Escea D Series Poly Pro 90° Elbow Kit



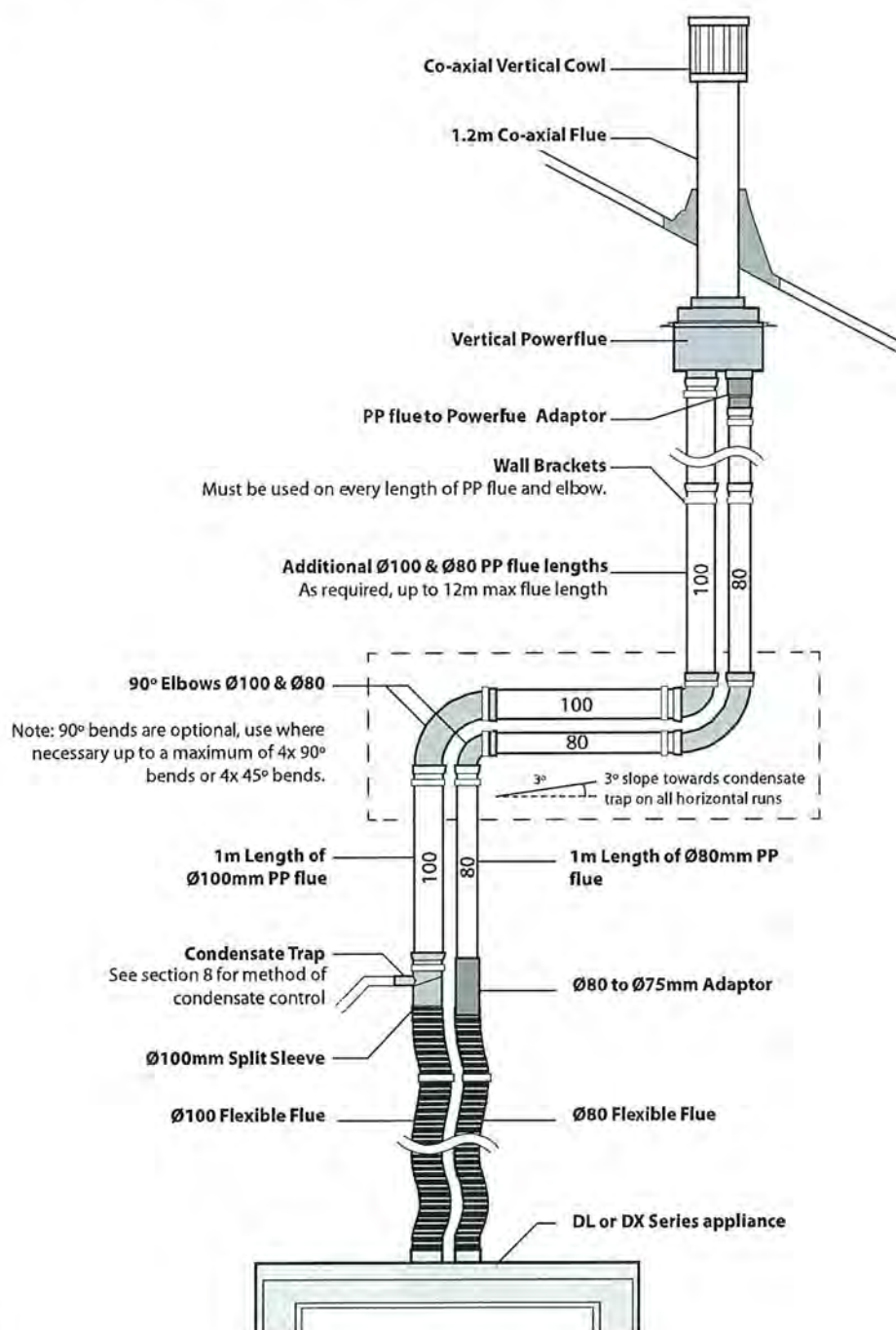
906610 - Escea D Series Poly Pro 45° Elbow Kit



906612 - Escea D Series Poly Pro Flue 1m Ext kit



3 Vertical Flues over 4 meters (maximum 12 m length).



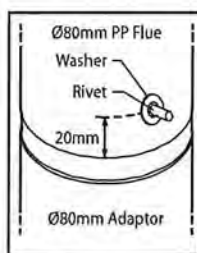
IMPORTANT NOTE: To ensure the flexi flue seals correctly, fully extend the corrugations of the last 300mm of the flexible aluminium flue at each end prior to clamping to the appliance and the flue adaptor.

- The 4 meter aluminium flue length is connected at one end to the appliance and the other to the polypro flue. The aluminium flue should be supported along its length at one meter intervals. The supports are needed to prevent weight and load being transferred to the next component in the flue.

- The aluminium inlet flue (Ø75mm) is connected directly onto the Ø80mm flue adaptor, secured in place by the Flue clamp and two rivets (by drilling 2 x Ø3.5mm holes 180° apart through the flue clamp, flexi flue and adaptor - see diagram to the right).



- Push the adaptor fully home into the Poly pro flue and secure into position by drilling 2 x Ø3.5mm holes (180° apart) 20mm from the end of the poly Pro then use the two rivets and washers provided (see diagram).



- The split steel sleeve is wrapped around the Ø100 inlet of the Condensate Trap and the Aluminium Exhaust Flue (Ø100mm) is connected to the Condensate trap by using the Flue clamp and two rivets (by drilling 2 x Ø3.5mm holes 180° apart - see diagram). The Condensate trap is then secured to the Ø100mm polypropylene flue. *Note: The condensate drain exit tube must be in a downward position and the Flue support Brackets are to be used on all Poly Pro flue components.*

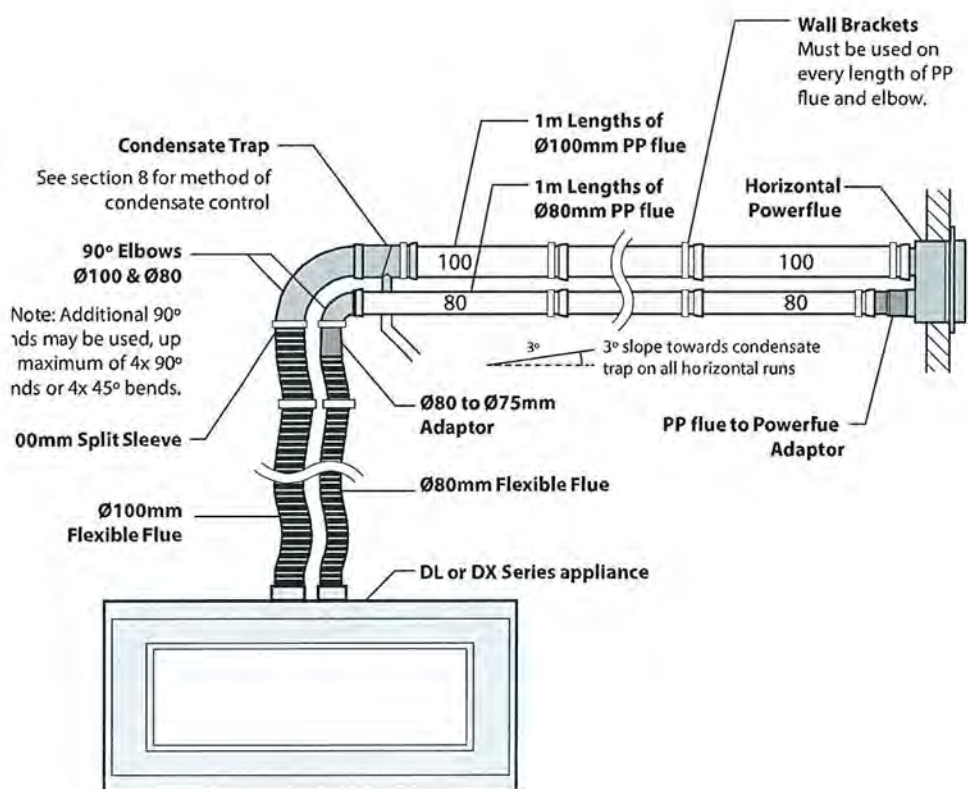
NOTE: Collection and disposal of the condensate is an important part of the appliance installation. Attention should be paid to section 8 of this manual regarding condensate control.

- The polypropylene flue lengths and elbows push together and then must be securely supported with wall brackets –one bracket per length or elbow. These clamps serve two purposes :
 - 1) To hold the pipe at its required angle and
 - 2) To ensure the flue pipes remain inserted together.

NOTE: All horizontal lengths of polypropylene Ø100mm exhaust flue **MUST** have a fall back towards the appliance of at least 3°.

- The Ø100mm polypropylene flue pushes directly onto the Powerflue with the final length of Ø100mm flue length being secured in position with a wall bracket.
- The final length of Ø80mm PolyPro flue fits into an adaptor which will then fit directly onto the Powerflue, with the PolyPro flue being secured in position with a wall bracket.

4 Horizontal Flues over 4 meters (maximum 12m length).



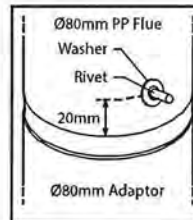
IMPORTANT NOTE: To ensure the flexi flue seals correctly, fully extend the corrugations of the last 300mm of the flexible aluminium flue at each end prior to clamping to the appliance and the flue adaptor.

- The 4 meter aluminium flue length is connected at one end to the appliance and the other to the polypro flue. The aluminium flue should be supported along its length at one meter intervals. The supports are needed to prevent weight and load being transferred to the next component in the flue.

- The aluminium inlet flue (Ø75mm) is connected directly onto the Ø80mm flue adaptor, secured in place by the provided Flue clamp and two rivets (by drilling 2 x Ø3.5mm holes 180° apart through the flue clamp, flexi flue and adaptor, see diagram).



- Push the adaptor fully home into the Poly pro flue and secure into position by drilling 2 x Ø3.5mm holes (180° apart) 20mm from the end of the poly Pro then use the two rivets and washers provided (see diagram).



- The split steel sleeve is wrapped around the Ø100 inlet of the Condensate Trap and the Aluminium Exhaust Flue (Ø100mm) is connected to the Condensate trap by using the Flue clamp and two rivets (by drilling 2 x Ø3.5mm holes 180° apart - see diagram). The Condensate trap is then secured to the Ø100mm polypropylene flue.

Note: The condensate drain exit tube must be in a downward position and the Flue support Brackets are to be used on all Poly Pro flue components.

NOTE: Collection and disposal of the condensate is an important part of the appliance installation. Attention should be paid to section 8 of this manual regarding condensate control.

- The polypropylene flue lengths and elbows push together and then must be securely supported with wall brackets –one bracket per length or elbow. These clamps serve two purposes:
i) to hold the pipe at its required angle and
ii) to ensure the flue pipe remain inserted together.

NOTE: All horizontal lengths of polypropylene Ø100mm exhaust flue MUST have a fall back towards the appliance of at least 3°.

- The final length of Ø100mm polypropylene flue pushes directly onto the Powerflue being secured in position with a wall bracket.
- The final length of Ø80mm polypropylene flue fits into an adaptor which will then fit directly onto the Powerflue, with the flue being secured in position with a wall bracket.

5 Wall Bracket fixing (wood)

The wall bracket has a shaft that should be fixed securely before offering up the flue section for assembly.

The wall bracket shaft should be fixed into wood by :

1. Mark out the run of the flue including the 3° fall back to the condensate trap.
2. Drill a Ø6mm pilot hole into the wood in the required position.
3. Unscrew the shaft from the bracket and drive the shaft partially into the wood (approx. 25mm).
4. Re-attached the bracket and use this to rotate the shaft, screwing it in to the desired height.
5. Align the bracket with the flue direction

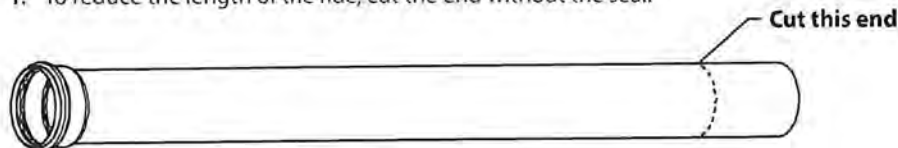
6 Wall Bracket fixing (Brick/concrete)

The wall bracket has a shaft that should be fixed securely before offering up the flue section for assembly. The wall bracket shaft should be fixed into brick or concrete by :

1. Mark out the run of the flue including the 3° fall back to the condensate trap.
2. Fix a suitably sized plastic wall plug into the brick or concrete in the required position (noting the length of the wall bracket shaft).
3. Unscrew the shaft from the bracket and drive the shaft partially into the wall plug (approx. 25mm).
4. Re-attached the bracket and use this to rotate the shaft, screwing it in to the desired height.
5. Align the bracket with the flue direction.

7 Notes on Assembling the Polypropylene flue:

1. To reduce the length of the flue, cut the end without the seal.



2. Ensure that any cut edges are completely deburred and file a slightly bevel lead-in on the outer edge – failure to do so may damage the inner seal and create a leak path.
3. To assist assembly of the flue lengths wet the inner seal with water.
4. Once assembled check that the flue inner seal has not been pushed out of position.

8 Condensate control

Condensate Drain

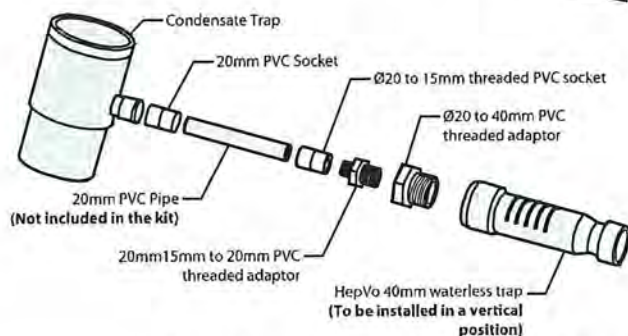
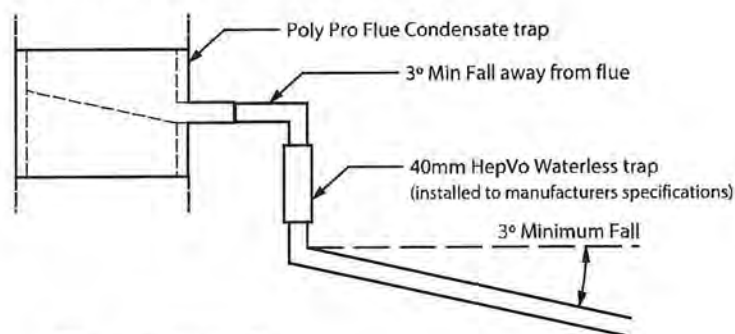
On long flue lengths (over 4 metres) the D Series fires may generate condensate continuously at a rate of up to 0.5 litres per hour. The control of this condensate is important to both the function of the appliance and the integrity of the building therefore the condensate must be drained to a suitable discharge point.

Condensate is a by-product of the products of combustion and is mildly acidic therefore copper tube and/or fittings **MUST NOT** be used as they will corrode. Instead solvent sealed PVC plastic pipes and fittings together with sealed PVC threaded joints should be used.

Condensate control installation

Note: Consideration should be made to the latest edition of AS/NZS 3500 and the prevention of the condensate freezing in cold conditions.

Initial condensate removal from the flue



The above components (with the exception of the Ø20mm pipe) are included in the Escea PolyPro starter kit. You will also need PVC cement and, depending on the particular install, Ø20mm elbows. This will allow the waterless trap to be connected to the Ø100mm condensate trap in a vertical position.

NOTE: The waterless trap must be installed in a vertical position, and the PVC sockets must be sealed with PVC cement.

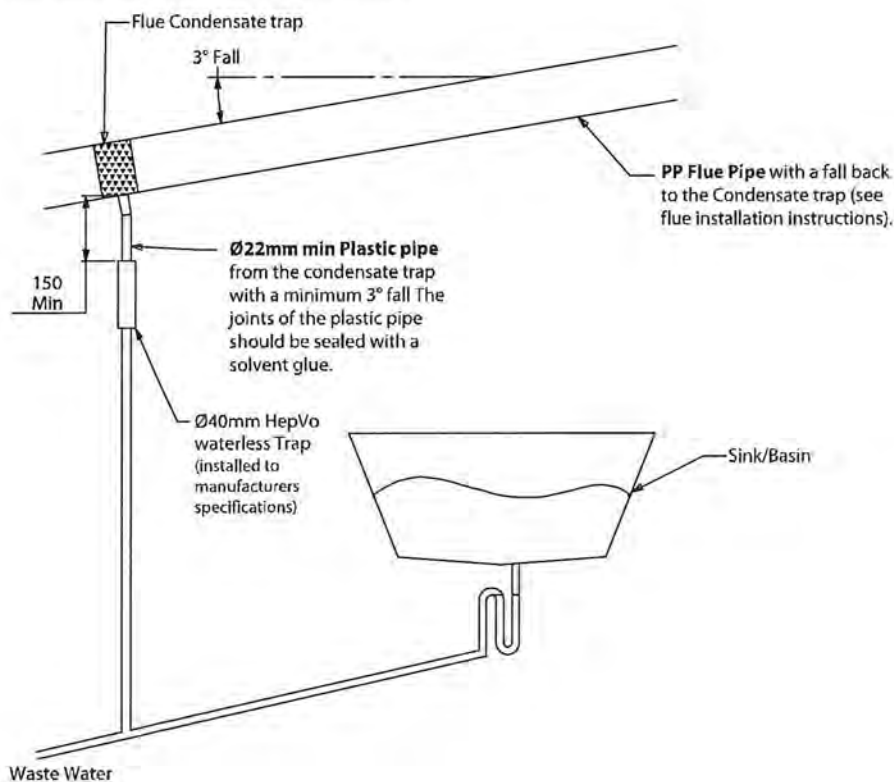
9 Internal Condensate disposal.

Wherever possible, the condensate drainage pipe should be terminated at a suitable internal foul water discharge point such as an internal soil and vent stack or an internal kitchen or bathroom waste pipe, washing machine waste pipe, etc.

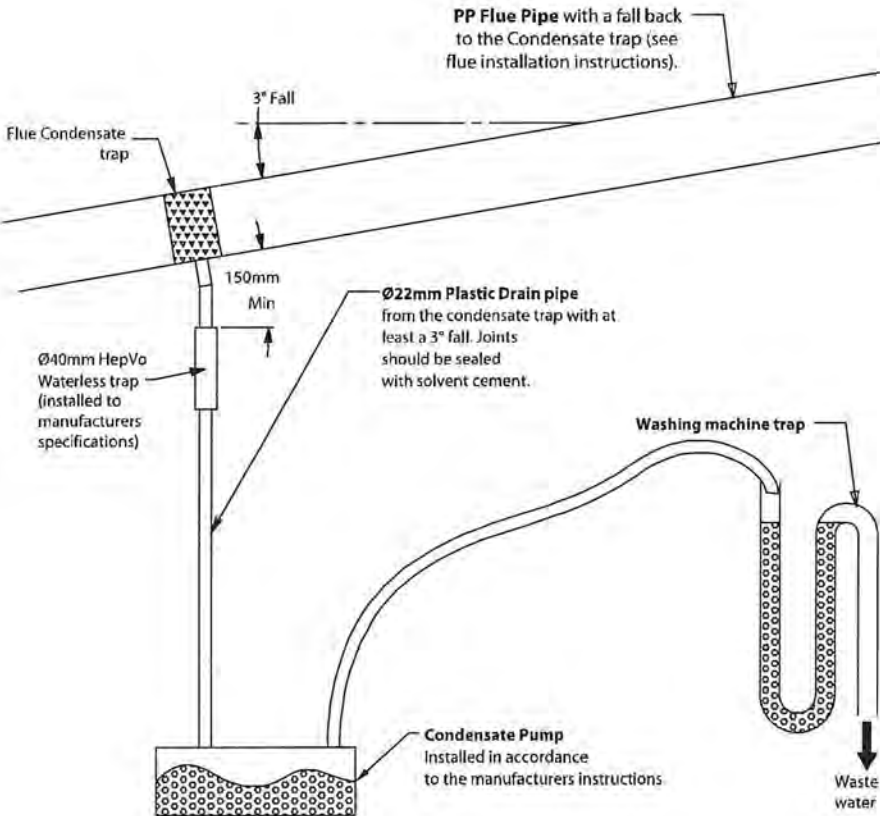
A suitable permanent connection to the foul waste pipe should be used.

The possibility of waste pipes freezing downstream of the connection point should be considered when determining a suitable connection point - e.g. a slightly longer pipe run to an internal soil stack may be preferable to a shorter run connecting into a kitchen waste pipe discharging directly through the wall to an external drain.

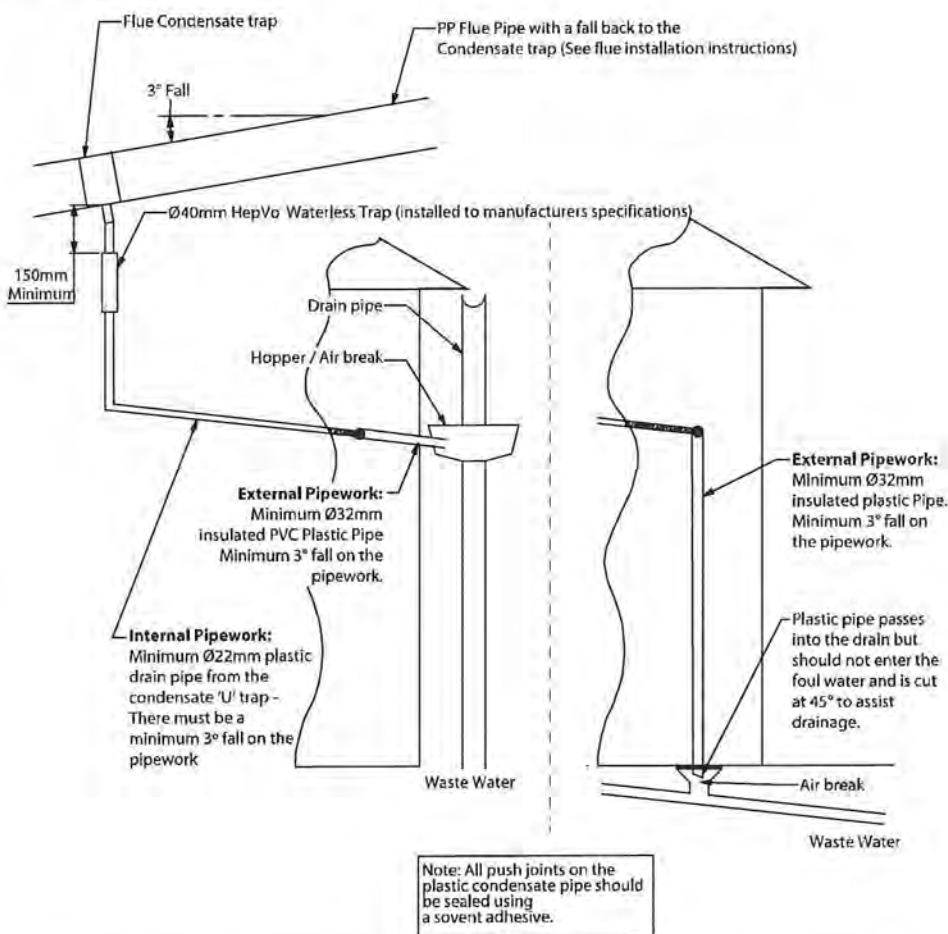
Internal Condensate Disposal Option 1



Internal Condensate disposal Option 2



10 External Condensate Disposal



The use of an externally-run condensate drainage pipe, terminating at a suitable foul water discharge point or purpose-designed soak-away is acceptable, however if this termination method is chosen then the following measures should be adopted

- The pipe should be run internally as far as possible before going externally and the pipe diameter should be increased to a minimum of 32mm outside diameter before it passes through the wall (this is to reduce the possibility of freezing in extended periods of cold weather).
- The external run should be kept as short as possible, taking the most direct and "most vertical" route possible to the discharge point, with no horizontal sections in which condensate might collect.

- The external pipe should be insulated using suitable waterproof and weatherproof insulation.

The condensate discharge must adhere to the following points:

- Suitable points of discharge are deemed to be foul water pipes (not cast iron), sewers and pits.
- DO NOT discharge onto walkways, electrical connections, earth stakes, copper pipes, concrete paths, ponds or in any way that compromises the fabric of a building.

11 Additional Important notes:

- Internal condensate drainage pipes run in unheated areas such as roof spaces, basements and garages should be treated as external pipework.
- If the condensate drainage pipework is connected directly to an internal soil stack or rainwater downpipe a visible air break (such as a tundish) should be placed in the condensate line to prevent 'reverse flow' and foul water entering the appliance, followed by 75mm U trap.
- When a rain water downpipe is used as the termination an air break must be installed between the condensate drainage pipe and the downpipe to avoid reverse flow of rainwater into the fire should the downpipe itself become blocked or frozen
- Consideration should be given to wind chill and all external pipes that terminate at ground level should pass into the grate.



BRANZ Appraised
Appraisal No.294 [2009]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
No. 294 (2009)**

This Appraisal replaces BRANZ
Appraisal No. 294 (2006) issued
22 November 2006.

**GIB® EZYBRACE™
SYSTEMS**

Winstone Wallboards Ltd
P O Box 12 256
Penrose
Auckland 1642

Tel: 09 633 0100

Fax: 09 633 0101

Helpline Tel: 0800 100 442

Helpline Fax: 0800 229 222

Web: www.gib.co.nz

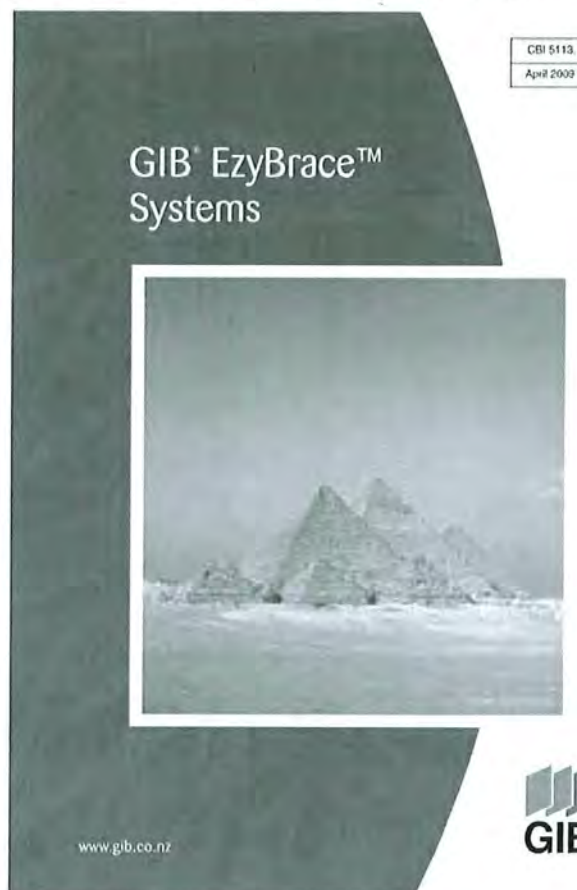
Email: info@gib.co.nz



BRANZ
BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand
Tel: +64 4 237 1170
Fax: +64 4 237 1171
www.branz.co.nz



1.1 GIB® EzyBrace™ Systems are a range of wall and ceiling bracing systems based on the use of GIB® Braceline®, GIB® Standard plasterboard and other GIB® plasterboards. GIB® EzyBrace™ Systems are used to resist earthquake and wind loads on timber frame buildings designed and constructed in accordance with NZS 3604. The GIB® EzyBrace™ FP software provides an electronic means of calculating bracing demand and resistance.



2.1 GIB® EzyBrace™ Systems and the GIB® EzyBrace™ FP software have been appraised for the design and use of interior wall and ceiling bracing systems in buildings within the scope limitations of NZS 3604.

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the GIB® EzyBrace™ Systems, if designed, used, installed and maintained in accordance with the statements and conditions of this Certificate, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. GIB® EzyBrace™ Systems meet the requirements for loads arising from self-weight, earthquake, wind and impact [i.e. B1.3.3 (a), (f), (h) and (j)]. See Paragraphs 8.1 - 8.11.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years. GIB® EzyBrace™ Systems meet this requirement. See Paragraphs 9.1 - 9.4.

Clause C3 SPREAD OF FIRE: Performance C3.3.1, C3.3.2 and C3.3.5. GIB® Braceline® meets these requirements by providing fire and smoke protection. See Paragraph 11.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. GIB® EzyBrace™ Systems meet 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.

3.3 GIB® EzyBrace™ Systems are for use to satisfy the bracing demand requirements of Section 5 of NZS 3604 which is a NZBC Compliance Document.

4.1 The GIB® plasterboards and accessories used with the GIB® EzyBrace™ Systems and supplied or specified by Winstone Wallboards Ltd are as follows:

GIB® Plasterboards

- **GIB Braceline®**

GIB Braceline® is a high-density fibreglass reinforced paper-bound gypsum-plaster core sheet lining material. GIB® Braceline® is available in 10 mm and 13 mm thicknesses. The sheets have a taper on the two long sheet edges. GIB Braceline® has a sheet width of 1200 mm and is available in lengths of 2400 mm, 2700 mm, 3000 mm, 3600 mm and 4800 mm. The nominal weights are 9 kg/m² and 12.5 kg/m² for 10 mm and 13 mm thick sheets respectively. GIB Braceline® face paper is a light blue in colour.

- **GIB® Standard plasterboard**

GIB® Standard plasterboard is a paper-bound gypsum-plaster core sheet lining material. GIB® Standard plasterboard is available in 10 mm and 13 mm thicknesses and a sheet width of 1200 mm and 1350 mm (GIB® Wideline). The sheets have a taper on the two long sheet edges. The 10 mm thick sheets are also available with a square edge. Sheets are available in various lengths from 2400 mm to 6000 mm. The nominal weights are 7 kg/m² and 8.7 kg/m² for 10 mm and 13 mm thick sheets respectively. GIB® Standard plasterboard face paper is a light buff colour.

4.2 In specific situations as specified in the Technical Literature substitution is permitted with GIB Fyrelite®, GIB Noiseline®, GIB Toughline®, GIB Aqualine®, GIB Ultralite® and GIB Ultralite® PLUS.

Fastenings

- GIB® Grabber® Drywall screws for fixing to timber:
6g x 32 mm.
- GIB® Grabber® Braceline Screw:
7g x 32 mm.
- GIB® Nail:
30 x 2.8 mm.
- GIB Braceline® Nail 35 mm long.
- GIB® Grabber® screws for fixing light gauge steel battens:
8g x 32 mm.

Ceiling Diaphragms

4.3 Ceiling diaphragms are constructed using timber, or GIB® Rondo™, or similar metal ceiling batten systems. The perimeter of the ceiling diaphragm is fixed to GIB® Rondo™ perimeter channel, or alternatively, to an additional ex150 x 40 mm timber plate fixed to the top plate.

Adhesive and Sealants

- GIBFix® Wood Bond (Acrylic)
- GIBFix® All-Bond (Solvent)

GIB® Accessories and GIB® Jointing Compounds

- As specified in the GIB® Site Guide Technical Literature.

Plywood

- Plywood must be a minimum of 7 mm thick complying with AS/NZS 2269 D-D Grade Structural.
- Plywood fixings are 30 x 2.8 mm hot-dipped galvanised or stainless steel flat-head nails.

Fasteners, braces and connections

- GIB® HandiBrac™, galvanised steel 90 x 62 x 54 x 1.55 mm thick angle bracket.
- GIB® HandiBrac™ Washer, 50 x 60 x 5 mm thick electroplated.
- GIB® HandiBrac™ Fixings, 8 Type 17 screws 5 x 35 mm.
- Coach screws 12 mm x 150 mm and 50 x 50 x 3 mm washer hot-dipped galvanised for fixing to timber floors.

- Cast-in bolts M12 x 150 mm minimum and 50 x 50 x 3 mm washers for fixing to concrete floors. Proprietary fixings with a minimum characteristic strength of 15kN may be used.
- Shot fired fasteners minimum 75 mm x 3.8 mm with 16 mm discs for fixing GS1a and GS2 internal line bracing elements to concrete slabs.
- Galvanised or Stainless steel strap 25 x 0.9 mm top and bottom plate connections.
- Strap fixings 30 x 2.5 mm hot-dipped galvanised or stainless steel flat-head nails.

Note: For corrosion protection requirements refer to NZS 3604 Section 4.

Handling and Storage

5.1 The best results are achieved when GIB® plasterboards are treated as a finishing material and protected from damage. Sheets must be stacked flat and kept dry at all times. For limits on stack heights see the GIB® Site Guide. Sheets must be carried on edge and not dragged.

5.2 All accessories must be kept dry.

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

General

7.1 The GIB® EzyBrace™ Systems Technical Literature contains design procedures and a manual calculation method for bracing demand calculated in accordance with NZS 3604 Section 5.5. Refer to NZS 3604 Bracing Demand Tables 5.5 - 5.10 for 2 kPa floor loads and Tables 14.1 - 14.3 for 3 kPa floor loads. The tabulated BU/m ratings given in Tables 1 and 2 of this Appraisal are for manual calculations and are conservative and have been rounded. The Technical Literature provides methods to distribute the bracing units in walls to resist forces in order to meet the requirements of NZS 3604 and a method for modifying the wall bracing demand for alternative wall heights. The use of ceiling diaphragms is also defined in the Technical Literature.

GIB® EzyBrace™ FP Software

7.2 GIB® EzyBrace™ FP Software has been assessed as part of this Appraisal.

7.3 The bracing demand calculations contained in GIB® EzyBrace™ FP Software are based on first principles engineering and calculate wind and earthquake demand based on the building parameters entered. Resulting bracing demand calculations are project specific and can differ from values derived using NZS 3604 wind and earthquake demand tables. The BU/m ratings for various GIB® EzyBrace™ Systems embedded in the software increase with wall length and are higher than those given in Tables 1 and 2 of this Appraisal.

Table 1: 10 mm GIB® plasterboard BU ratings

GIB® EzyBrace™ Systems 2009					
Type	L (m) minimum	Lining	Other Requirements	BU/M	
				W	EQ
GIB® Standard					
GS1(10)	0.4	10 mm GIB® Standard Plasterboard one face	n/a	60	55
	1.2			70	55
GS2(10)	0.6	10 mm GIB® Standard Plasterboard both faces		75	70
	1.8			90	80
GIB Braceline®					
BL1(10)	0.4	GIB Braceline® one face	Hold-Downs	120	100
	1.2			135*	100
BLP	0.4	GIB Braceline® one face plywood other		135*	135*
	0.9			150*	150*
BLG	0.6	GIB Braceline® one face GIB® Standard other		145*	135*
	1.2			150*	135*

Table 2: 13 mm GIB® plasterboard BU ratings

GIB® EzyBrace™ Systems 2009					
Type	L (m) minimum	Lining	Other Requirements	BU/M	
				W	EQ
GIB® Standard					
GS1(13)	0.4	13 mm GIB® Standard Plasterboard one face	n/a	60	60
	1.2			70	60
GS2(13)	0.6	13 mm GIB® Standard Plasterboard both faces		75	70
	1.8			90	85
GIB Braceline®					
BL1(13)	0.4	13 mm GIB Braceline® one face	Hold-Downs	140*	130*
	1.2	Fixed with GIB® Grabber® Braceline screw only		150*	130*

Notes:

The BU/m ratings are conservative. Using the GIB® EzyBrace™ FP software will deliver higher ratings.

* **Timber Floors** - Winstone Wallboards Ltd recommend a limit of 120 BU/m for NZS 3604 timber floors unless specific engineering

* ensure that uplift forces generated by elements rated higher than 120 BU/m can be resisted by floor framing.

* where linings are specified on both faces, each face must be fastened as a bracing element.

7.4 GIB® EzyBrace™ Systems are for use in dry, internal situations only.

7.5 GIB® Plasterboards must not be exposed to temperatures of 52°C or greater for prolonged periods. Refer to appliance and fitting manufacturers for installation details.

Framing

7.6 Timber framing grade, spacing and construction must comply with NZS 3604. Timber treatment must comply with NZS 3602.

7.7 GIB® EzyBrace™ Systems Technical Literature recommends the use of kiln-dried machine stress-grade framing timber. The minimum actual framing dimensions are 90 x 35 mm for external walls and 75 x 35 mm for internal walls.

7.8 Joints in the top plates of bracing panels must be tied together with 3kN and 6 kN top plate connectors using 2.5 x 0.9 mm galvanised mild steel strap, 3 nails each side of joint for 3kN and 6 nails each side of joint for 6kN.

7.9 On occasions, properties additional to bracing may be required of the plasterboard lining. Table 3 gives permitted GIB® plasterboard substitutions.

Structure

Bracing

8.1 The bracing units achieved (wind and earthquake) published for manual calculations in GIB® EzyBrace™ Systems are given in Table 1 and Table 2.

8.2 The bracing unit ratings embedded in the GIB® EzyBrace™ FP software are less conservative and vary with wall length.

8.3 The GIB® EzyBrace™ Systems Technical Literature provides comprehensive construction and panel hold-down details. These include bottom plate fixings using bolts (concrete) or coach screws (timber) and the GIB® HandiBrac™ or nailed stud-to-plate straps.

8.4 The bracing units are derived from BRANZ P21 test method based on a wall height of 2.4 m. For greater wall heights the bracing rating is calculated by multiplying the appropriate value shown in Table 1 and Table 2 by a factor $f=2.4$ and divided by the wall height in metres. Walls lower than 2.4 m shall be rated as if they were 2.4 m high.

Table 3: Permitted Substitutions

PERMITTED GIB® PLASTERBOARD SUBSTITUTIONS IN GIB® EZYBRACE™ SYSTEMS													
GIB® EzyBrace™ Systems have been tested and appraised using only the products specified above. Occasionally additional properties may be required from bracing elements which need to be provided by a different GIB® plasterboard product. The following chart provides acceptable substitution options													
Specified Board	Permitted alternative GIB® plasterboards												
	GIB® Standard		GIB Ultralite®		GIB Braceline® GIB Noiseline®		GIB Aqualine®		GIB Toughline®	GIB Fyrelite®			
	10	13	10	13	10	13	10	13	13	10	13	16	19
10 mm GIB® Standard	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
13 mm GIB® Standard	x	✓	x	✓	x	✓	x	✓	✓	x	✓	✓	✓
10 mm GIB Braceline®	x	x	x	x	✓	✓	✓	Note 1	✓	x	✓ Note 2		
13 mm GIB Braceline®	x	x	x	x	x	✓	x	Note 1	✓	x			
13 mm GIB Ultralite®	As GIB Ultralite® is the only product with Pearlcoat paper it cannot be substituted												
NOTE 1	Use GIB Braceline® nails or screws at 100 mm centres to the perimeter of the bracing element starting at 50 and 100 mm from the element corners. The element must be 900 mm or longer.												
NOTE 2	The fastener type and length must be as specified for the relevant FRR system. Fastening centres are at 100 mm around the perimeter of the bracing element starting at 50 and 100 mm from the element corners. The element must be 900 mm or longer.												

Ceiling Diaphragms

8.4 GIB® ceiling diaphragms are used to space bracing lines further apart than 6 m. The basic shape of a ceiling diaphragm must be rectangular and the length must not exceed twice the width.

8.5 10 mm or 13 mm GIB® Standard Plasterboard ceiling diaphragms are limited to not being steeper than 25° to the horizontal and not exceeding 7.5 metres in length.

8.6 GIB® Ultralite® ceiling diaphragms are limited to not being steeper than 25° to the horizontal and not exceeding 10 m in length.

8.7 GIB® Braceline® ceiling diaphragms are limited to not being steeper than 25° to the horizontal and not exceeding 15 m in length or not being steeper than 45° to the horizontal and not exceeding 7.5 m in length.

Openings in Bracing Elements

8.8 Openings are allowed within the middle third of bracing elements (length and height walls, length and width ceilings). The opening dimension in either direction must not exceed one third of the element height (width). Small openings of 90 x 90 mm or less may be placed anywhere except within 90 mm of the edge of the bracing element.

Water-splash Areas

8.9 GIB® EzyBrace™ Systems must not be located in shower cubicles or behind baths and the like. GIB® EzyBrace™ Systems may be used in water-splash areas provided they are protected as required by NZBC Clause E3.

Impact Resistance

8.10 GIB® plasterboards provide adequate resistance to soft body impact, based upon experience of use in domestic and light commercial applications.

Durability

9.1 GIB® EzyBrace™ Systems, including linings and their fixings have a serviceable life of at least 50 years. The ability of the systems to remain durable is dependent on them remaining dry in service, and being maintained in accordance with this Certificate.

Maintenance

9.2 The building must be maintained weatherproof and GIB® Plasterboard must be protected from external and internal moisture in accordance with NZBC Clauses E2 and E3.

9.3 Holes resulting from damage to the lining, up to 100 x 100 mm square, will have no significant effect on the performance of the bracing panel. Such holes may be repaired by patching, stopping and finishing as appropriate. Independent expert advice must be sought to assess the effect and repair of larger areas of damage.

9.4 Bracing elements require no ongoing maintenance, apart from decoration and the repair of any damage.

Outbreak of Fire

10.1 Separation or protection must be provided to GIB® Plasterboard from heat sources such as stoves, heaters, flues and chimneys.

10.2 NZBC Acceptable Solution C/AS1, Part 9 and Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

Spread of Fire

11.1 10 mm and 13 mm GIB® Braceline® may substitute for 10 mm and 13 mm GIB® Fyrelite® respectively in all fire resistant wall construction. Refer to GIB® Fire Rated Systems Technical Literature.

Internal Moisture

12.1 GIB® Plasterboard must be used in dry internal situations, and must not be used where likely to be exposed to liquid water, or where extended exposure to humidity above 90% RH is expected, e.g., such as may be expected in sauna rooms, commercial kitchens and the like.

Installation Skill Level Requirement

13.1 Installation of GIB® EzyBrace™ Systems can be carried out by any competent building contractor.

General

14.1 GIB® EzyBrace™ Systems must be installed in accordance with the Technical Literature. For inspection, reference must be made to the Technical Literature.

Cutting

14.2 GIB® plasterboard is easily cut by scoring the face paper with a sharp short-bladed trimming knife, and then snapping a plasterboard away from the cut face and cutting the back paper or by sawing. Use of a metal straightedge facilitates clean straight cuts. Cut edges can be tidied up by using a knife. Paper dags should be removed.

Health and Safety

14.3 Dust resulting from the sanding of stopping and finishing compounds may be a respiratory irritant, and the use of a suitable facemask is recommended.

Framing

14.4 To achieve an acceptable decorative finish, GIB® Site Guide specifies that walls must not be lined unless the moisture content of timber framing is less than 18%.

Sheet Fixing

14.5 GIB® EzyBrace™ System plasterboards are fixed at 150 mm centres (Note variation for GIB Aqualine®) around the perimeter framing of the wall bracing element. Fixing to other framing is either mechanical or by using GIBFix® Adhesives. Corner fixings must be 50 mm away from the sheet corner. GIB® EzyBrace™ System elements and ceiling diaphragms require a special fastening pattern with fasteners spaced at 50 mm, 100 mm and 150 mm from the corner and there-after at 150 mm.

14.6 The GIB® EzyBrace™ Systems requirements for horizontal or vertical sheet installation must be met. Full sheets must be used wherever possible. Fixings must be no closer than 12 mm from the paper-bound sheet edge, and no closer than 18 mm from a cut edge, and driven at right angles to the sheet until the head is seated in a slight dimple just below the surface of the paper liner. Fixings must not be over-driven.

14.7 Where GIB Aqualine® substitutes for GIB Braceline®, bracing elements must be longer than 900 mm and the bracing element perimeter fasteners must be spaced at 100 mm centres following using the corner pattern described in 14.5.

14.8 13 mm GIB® Braceline® must only be fixed with GIB® Grabber® Braceline Screws.

14.9 Plywood is nail fixed at 150 mm centres around the perimeter of each sheet and at 300 mm centres to intermediate framing.

14.10 Where a bracing element is also used as a fire-rated element, the method of fixing (including the length of the fixing specified) for the fire-rated element must be used, but the perimeter fixings of the bracing element must be at 150 mm centres. In two-layer systems the inner layer must be used for bracing.

Jointing and Finishing

14.11 All bracing element joints must be reinforced with paper tape and finished in accordance with GIB® Site Guide.

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

Tests

15.1 Bracing tests were carried out by Winstone Wallboards Ltd and BRANZ in accordance with BRANZ Technical Paper P21 to determine the performance of GIB® EzyBrace™ Systems when the building is subjected to lateral wind or earthquake loading. Nail and screw slip tests were carried out by BRANZ and Winstone Wallboards Ltd. The Winstone Wallboard's test facilities, procedures and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

16.1 The GIB® EzyBrace™ System FP Software has been assessed by BRANZ and found to be satisfactory.

16.2 The GIB® EzyBrace™ Systems and GIB® Site Guide Technical Literature have been examined by BRANZ and found to be satisfactory.

16.3 Site visits were carried out by BRANZ to assess the practicability of the installation of the systems, and to view completed installations.

16.4 An assessment was made of the durability of the systems by BRANZ technical experts and found to be satisfactory.

16.5 The properties of Winstone Wallboards Ltd GIB® plasterboards have been assessed for the following properties, MOR, MOE, paper tensile strength, paper shear strength, nail pull resistance, Hunter hardness, inspection for fungal spores, hard and soft body impact tests.

Quality

17.1 Winstone Wallboards Ltd's manufacturing process and details of the quality and composition of the materials, have been examined by BRANZ and found to be satisfactory.

17.2 The quality management systems of Winstone Wallboards Ltd have been assessed and registered by TELARC as meeting the requirements of ISO 9001, Registration No. 581.

17.3 Winstone Wallboards Ltd is responsible for the quality of the product supplied.

17.4 The quality of the application and finish on site is the responsibility of the installation and stopping contractors.

17.5 Designers are responsible for the design of buildings.

17.6 Building owners are responsible for the maintenance in accordance with the instructions of Winstone Wallboards Ltd.

Sources of Information

- AS/NZS 2269: 1994 Structural plywood.
- AS/NZS 2588: 1998 Gypsum Plasterboard.
- BRANZ Technical Paper P21:1979 (revised 1982, 1987, 1988) A wall bracing test and evaluation procedure.
- BRANZ Technical Recommendation No. 10 - December 1991, Supplement to P21: An evaluation method of P21 test results for use with NZS 3604: 1990.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3604: 1999 Timber framed buildings.
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition May 2007.
- The Building Regulations 1992, up to, and including August 2008 Amendment.



In the opinion of BRANZ, GIB® EzyBrace™ Systems 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 Winstone Wallboards 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. Winstone Wallboards Ltd:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
3. 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.
4. 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 Winstone Wallboards Ltd.
5. 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.
6. BRANZ provides no certification, guarantee, indemnity or warranty, to Winstone Wallboards Ltd or any third party.

For BRANZ

P Burghout
Chief Executive

Date of issue: 3 April 2009



BRANZ Appraised

Appraisal No.427 [2007]

BRANZ Appraisals

Technical Assessments of products
for building and construction

BRANZ APPRAISAL No. 427 (2007)

Amended 31 January 2012

GIB AQUALINE® WET AREA SYSTEMS

Winstone Wallboards Limited

P O Box 12 256

Penrose

Auckland 1642

Tel: 09 633 0100

Fax: 09 633 0101

Helpline Tel: 0800 100 442

Helpline Fax: 0800 229 222

Web: www.gib.co.nz

Email: info@gib.co.nz



BRANZ

BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand

Tel: +64 4 237 1170

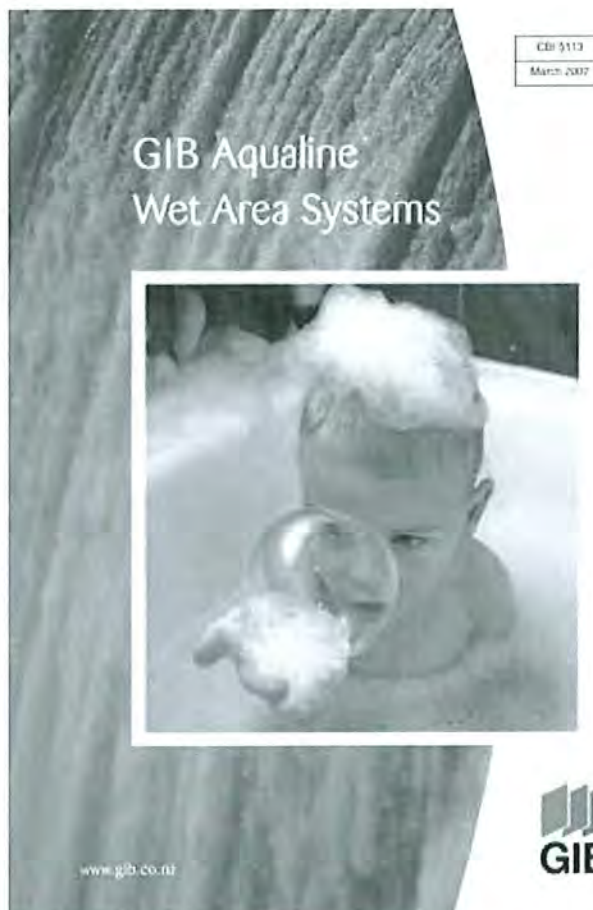
Fax: +64 4 237 1171

www.branz.co.nz



1.1 GIB Aqualine® Wet Area Systems are for the interior lining of timber and steel frame walls and ceilings in wet areas such as bathrooms, laundries, kitchens and toilets where a water resistant lining material is desirable.

1.2 GIB Aqualine® Wet Area Systems are based on 10 mm and 13 mm thick GIB Aqualine® water resistant plasterboard.



2.1 GIB Aqualine® Wet Area Systems have been appraised for use as a wet area wall and ceiling lining in buildings within the following scope:

- on framed walls and ceilings within the scope limitations on NZS 3604; and,
- on timber and light gauge steel framed walls and ceiling subject to specific design; and,

2.2 GIB Aqualine® may also be used to substitute for some other GIB® Plasterboards in fire-rated, sound-rated and bracing-rated wall and floor/ceiling constructions.

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the GIB Aqualine® Wet Area Systems, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. GIB Aqualine® Wet Area Systems meet the requirements for loads arising from self-weight, earthquake, wind and impact [i.e. B1.3.3 (a), (f), (h) and (j)]. See Paragraphs 8.1 - 8.3.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.1 (c) 5 years. GIB Aqualine® Wet Area Systems meet these requirements. See Paragraphs 9.1 - 9.5.

Clause C3 SPREAD OF FIRE: Performance C3.3.1, C3.3.2, and C3.3.5. GIB Aqualine® Wet Area Systems meet these requirements by providing passive fire and smoke protection.

Clause E3 INTERNAL MOISTURE: Performance E3.3.4, E3.3.5 and E3.3.6. GIB Aqualine® Wet Area Systems meet these requirements. See Paragraphs 13.1 - 13.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. GIB Aqualine® Wet Area Systems meet this requirement and will not present a health hazard to people.

Clause G6 AIRBORNE AND IMPACT SOUND: Performance G6.3.1 and G6.3.2. GIB Aqualine® Wet Area Systems meet the requirements. See Paragraph 14.1.

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

4.1 The GIB® plasterboards and accessories used in the GIB Aqualine® Wet Area System and supplied or specified by Winstone Wallboards Limited are as follows:

GIB Aqualine®

2 GIB Aqualine® is a paper-bound, modified water-resistant gypsum-plaster core sheet lining material. The sheets have a taper on the two long sheet edges. GIB Aqualine® is available in 10 mm and 13 mm sheet thicknesses, a sheet width of 1200 mm and in lengths of 2400 mm, 2700 mm, 3000 mm and 3600 mm. The maximum weights are 7.8 kg/m² and 10.2 kg/m² for 10 mm and 13 mm thick sheets respectively. GIB Aqualine® face paper is green in colour.

Fastenings

- GIB® Grabber® High Thread Drywall screws for fixing to timber:
6g x 25 mm and 32 mm.
- GIB® Grabber® Self Tapping Drywall screws for fixing to light gauge steel:
6g x 25 mm and 32 mm.
- GIB® Nails
30 mm and 40 mm x 2.8 mm

Adhesive and Sealants

- GIBFix® One (Acrylic)
- GIBFix® All-Bond (Solvent)

GIB® Accessories and GIB® Jointing Compounds

- As specified in the GIB Aqualine® Wet Area Systems and GIB® Site Guide Technical Literature.

Finishes

4.3 Finishes such as tiling, flexible sheet vinyl, paints and wallpapers have not been assessed and are outside the scope of this Appraisal.

Handling and Storage

5.1 The best results are achieved when GIB Aqualine® is treated as a finishing material and protected from damage. Sheets must be stacked flat and kept dry at all times. For limits on stack heights see the GIB® Site Guide. Sheets must be carried on edge and not dragged.

5.2 All accessories must be kept dry.

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the GIB Aqualine® Wet Area System. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

General

7.1 GIB Aqualine® provides a water-resistant lining as a base for finishing systems in wet areas such as bathrooms, toilets, laundries and kitchens. The typical finishes are ceramic tiles and flexible sheet vinyl to walls and paint, and wallpaper to walls and ceilings.

7.2 GIB Aqualine® must not be used in the following situations:

- For bracing applications in shower areas or adjacent baths (See Paragraphs 7.4 and 8.2).
- In areas of high humidity (above 90% RH) or continually wet such as group showers, steam rooms, or swimming pools.
- Installed over a vapour barrier.
- Applied directly to masonry, concrete or solid plaster.
- Applied over other sheet lining materials.
- Used externally of the building envelope.
- Exposed to temperatures of 52°C or greater for prolonged periods. (Refer to appliance and fitting manufacturer's for installation details.)

7.3 GIB Aqualine® may be substituted for some other GIB® Plasterboard products in specific GIB® Bracing Systems, GIB® Fire Rated Systems, GIB® Noise Control Systems and GIB Ultraline® PLUS Lining System.

Wet Areas

7.4 Wet areas are spaces where sanitary fixture and sanitary appliances are located such as bathrooms, toilets, laundries and kitchens. There are two general categories of wet areas as follows:

1. Water Splash – These are areas subject to intermittent splashing of water such as around baths, vanities, tubs and sinks.
2. Shower Areas – These are areas subject to frequent and heavy water splash such as enclosed showers, unenclosed shower zones and showers over baths.

7.5 Both the above wet area categories must be finished with surfaces and joints that are impervious and easily cleaned. Shower areas must additionally be waterproof. This can be achieved using proprietary rigid shower lining systems, flexible vinyl shower wall finish, or tiling. Tiled shower areas must include a wet area waterproofing membrane system under the tiles.

Intertenancy Walls – Wet Areas

7.6 Intertenancy drywall constructions that incorporate fire resistance and noise control must be protected from water splash. In shower areas GIB Aqualine® must not be substituted for other GIB® Plasterboards but must be an extra lining layer. Refer to the GIB Aqualine® Wet Area Systems Technical Literature.

Tiling

7.7 GIB Aqualine® is suitable as a substrate for tiling up to the following weights:

- 10 mm GIB Aqualine® up to 20kg/m²
- 13 mm GIB Aqualine® up to 32kg/m².

Note: Most ceramic and porcelain wall tiles weigh less than 20kg/m². For further information on tiling consult the BRANZ Good Practice Guide – Tiling.

Framing

7.8 Supporting framing must comprise one of the following subject to the minimum sizes, dwang centres and all other frame requirements of GIB Aqualine® Wet Area Systems Technical Literature:

- Timber framing must be designed and constructed in accordance with NZS 3604, or to a specific design using NZS 3603 and AS/NZS 1170.
- Steel framing must be designed to withstand loads in accordance with AS/NZS 1170.

Structure

Bracing

8.1 GIB Aqualine® can be used in place of GIB® Standard plasterboard in GIB® bracing elements. GIB Aqualine® can be used in place of GIB Braceline® in GIB® bracing elements 900 mm or longer, provided the perimeter of the element is fixed with GIB Braceline® Nails or GIB Braceline® screws at 100 mm centres, using the GIB Braceline® corner fixing pattern.

8.2 GIB Aqualine® must not be used for bracing in shower areas or behind baths.

Impact Resistance

8.3 GIB® plasterboards provide adequate resistance to soft body impact, based upon experience of use in domestic and light commercial applications.

Durability

Serviceable Life

9.1 GIB Aqualine® has a serviceable life of at least 15 years as a fully protected shower or water splash lining. As a general wall and ceiling lining GIB Aqualine® will have a serviceable life in excess of 50 years. The ability of GIB Aqualine® to remain durable is dependent on being protected and remaining dry in service, and being maintained in accordance with this Appraisal.

Maintenance

9.2 The building must be maintained weathertight and all lining systems protected from internal and external moisture.

9.3 Finishes to water splash and shower areas, including tiles, grout, waterproof membranes, sealants and flexible sheet vinyl must be checked to ensure the integrity of the system is maintained. They must be repaired or replaced if necessary. When repairing or replacing finishes, the GIB Aqualine® substrate must be checked for defects and repaired or replaced, as required.

9.4 For flexible sheet vinyl, particular attention must be paid to joints especially at corners. Checks should be made to ensure the vinyl has not been punctured. Where damage has occurred, repairs must be made immediately.

9.5 Impact damage to GIB Aqualine® plasterboard, resulting in small holes and cracks, may be patched, stopped and finished. For larger areas of damage, expert advice on repair must be sought from Winstone Wallboards Ltd.

Outbreak of Fire

10.1 Separation or protection must be provided to GIB Aqualine® Wet Area Systems from heat sources such as stoves, heaters, flues and chimneys.

10.2 NZBC Acceptable Solution C/AS1, Part 9 and Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

Spread of Fire

11.1 When 10 mm GIB Aqualine® is substituted into fire rated systems in place of 10 mm GIB Fyreline®, the FRR of that system will be maintained. Similarly, the FRR is maintained when 13 mm GIB Aqualine® is substituted for 13 mm GIB Fyreline®.

Flame Barrier

12.1 Where flame barriers are required by Acceptable Solution C/AS1 Table 6.3, GIB Aqualine® is a suitable material to provide a 10 minute flame barrier, provided all sheet joints are formed over framing, or backblocked with GIB® plasterboard.

Internal Moisture

13.1 When installed in accordance with this Appraisal, GIB Aqualine® Wet Area Systems will provide wall surfaces adjacent to sanitary fixtures and sanitary appliances that are impervious and easily cleaned.

13.2 The construction methods meet with the internal moisture requirements of the NZBC Acceptable Solution E3/AS1.

13.3 To minimise internal condensation, adequate levels of ventilation and thermal resistance must be provided to all spaces where moisture may be generated.

Airborne and Impact Sound

14.1 When GIB Aqualine® is substituted into GIB® Noise Control systems in place of the equivalent thickness GIB® Standard plasterboard or GIB Fyreline®, the STC and IIC rating of that system will be maintained. When GIB Aqualine® is substituted in place of the equivalent thickness GIB Noiseline®, a small performance loss may occur.

Installation Skill Level Requirement

15.1 Installation of GIB Aqualine® Wet Area Systems can be carried out by any competent building contractor.

General

16.1 GIB Aqualine® Wet Area Systems must be installed in accordance with the Technical Literature. For inspection, reference must be made to the Technical Literature.

Cutting

16.2 GIB Aqualine® is easily cut by scoring the face paper with a sharp short-bladed trimming knife, and then snapping the plasterboard away from the cut face and cutting the back paper or by sawing. Use of a metal straightedge facilitates clean straight cuts. Cut edges can be tidied up by using a knife. Paper dags should be removed.

Health and Safety

16.3 Dust resulting from the sanding of stopping and finishing compounds may be a respiratory irritant, and the use of a suitable facemask is recommended.

Framing

16.4 To achieve an acceptable decorative finish, GIB Aqualine® Wet Area Systems and the GIB® Site Guide specifies that walls must not be lined unless the moisture content of timber framing is less than 18%. Winstone Wallboards Limited recommend a moisture content of 8–12% where buildings are to be air conditioned or centrally heated.

Fixing Sheets

Non-Tiled Areas

17.1 GIB Aqualine® sheets may be installed vertically or horizontally. Sheets are fixed with GIB® Grabber® screws or GIB® Nails at 300 mm centres around the perimeter of the sheet, and with GIBFix® adhesive on all intermediate studs and dwangs. Adhesive must not be used under fasteners. A 5-10 mm gap must be left between the floor and the bottom of the sheet.

Tiled Areas

17.2 Control joints must be provided at maximum 4 m centres.

Internal corners in shower areas must be reinforced with a minimum 32 x 32 x 0.55 mm galvanised metal angle prior to lining the walls.

17.3 GIB Aqualine® sheets may be installed vertically or horizontally. Sheets are fixed with GIB® Grabber® screws at 100 mm centres to perimeter of wall and to all intermediate studs. Adhesive must not be used in place of screws.

Ceilings

17.4 Supports of timber or steel battens or ceiling joists must be 450 centres for 10 mm GIB Aqualine®, or 600 mm centres for 13 mm GIB Aqualine®.

17.5 GIB Aqualine® sheets must be fixed with GIB® Grabber® screws at 600 mm centres around perimeter and at 200 mm centre along supports. Alternatively, sheets are screw fixed at 600 mm centres along the supports and GIBFix® adhesive fixed at 200 mm centre between.

Penetrations and Sealants

18.1 All cut-outs for pipe penetrations must be made neatly using a hole saw. Cut-outs should be made approximately 12 mm diameter greater than the pipe.

18.2 A bead of silicone sealant must be placed to the full thickness of the GIB Aqualine® sheet around all pipe penetrations, at bath rims and preformed shower bases and where an impervious junction is required at the floor/wall line.

18.3 In tiled areas, a bead of silicone sealant 6 mm wide must also be placed to the full thickness of the tiles where the above situation occurs. The sealant manufacturer's technical literature must be followed for installation.

Jointing and Finishing

19.1 Jointing must be carried out in accordance with GIB® Site Guide Technical Literature.

19.2 Tiled shower areas must incorporate a waterproofing membrane over GIB Aqualine®. Waterproofing membranes are outside the scope of this Appraisal and must otherwise be specified and approved.

Investigations

20.1 The GIB Aqualine® Wet Area Systems and GIB® Site Guide Technical Literature have been examined by BRANZ and found to be satisfactory.

20.2 Site visits were carried out by BRANZ to assess the practicability of the installation of the systems, and to view completed installations.

20.3 An assessment was made of the durability of the systems by BRANZ technical experts and found to be satisfactory.

20.4 Winstone Wallboards Limited GIB® plasterboards have been assessed for the following properties: MOR, MOE, paper tensile strength, paper shear strength, nail pull resistance, Hunter hardness, inspection for fungal spores, hard and soft body impact tests.

Quality

21.1 Winstone Wallboards Limited's manufacturing process and details of the quality and composition of the materials, have been examined by BRANZ and found to be satisfactory.

The quality management systems of Winstone Wallboards Limited have been assessed and registered by TELARC as meeting the requirements of ISO 9001, Registration No. 581. Winstone Wallboards Limited is responsible for the quality of the product supplied.

21.2 The quality of the application and finish on site is the responsibility of the installation, stopping and finishing contractors.

21.3 Designers are responsible for the design of buildings.

21.4 Building owners are responsible for the maintenance in accordance with the instructions of Winstone Wallboards Limited.

Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2588: 1998 Gypsum Plasterboard.
- NZS 3602: 2003 Timber and wood-based products for use in building.
- NZS 3603: 1993 Timber structures standard.
- NZS 3604: 2011 Timber-framed buildings.
- BRANZ Good Practice Guide - Tiling, March 2004.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- The Building Regulations 1992, up to, and including October 2004 Amendment.



BRANZ

In the opinion of BRANZ, GIB Aqualine® Wet Area Systems 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 the Client, Winstone Wallboards 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. The Client:
 - 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.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ makes no representation 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 the Client.
5. 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.

For BRANZ

P Robertson
Chief Executive

Amendment No. 1, dated 29 April 2010.

This Appraisal has been amended to include a new adhesive, GIBFix® One, and to update reference to AS/NZS 1170.

Amendment No. 2, dated 31 January 2012.

This Appraisal has been amended to update reference to NZS 3604: 2011.

Date of issue: 4 April 2007



BRANZ Appraised

Appraisal No. 470 [2011]

GRIPSET® 38 AND GRIPSET® 2P WET AREA MEMBRANES

Appraisal No. 470 [2011]

This Appraisal replaces BRANZ
Appraisal No. 470 [2005].

Amended 01 April 2016.



BRANZ Appraisals

Technical Assessments of products
for building and construction.



Waterproofing Systems

NZ Ltd

4 Malvern Road
Penrose
Auckland

Tel: 09 579 1460

Fax: 09 579 1461

www.waterproofing.co.nz



BRANZ

BRANZ

1222 Moonshine Rd,
RD1, Porirua 5381
Private Bag 50 908
Porirua 5240,
New Zealand
Tel: 04 237 1170
branz.co.nz

Product

- 1.1 Gripset® 38 and Gripset® 2P Wet Area Membranes are liquid-applied waterproofing membranes for use under vinyl, ceramic or stone tile finishes in internal wet areas.

Scope

- 2.1 Gripset® 38 and Gripset® 2P Wet Area Membranes have been appraised for use as waterproofing membranes for internal wet areas of buildings, within the following scope:
- on floor substrates of concrete, 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 vinyl, ceramic or stone tile finishes; and,
 - where floors are designed and constructed such that deflections do not exceed 1/360th of the span.
- 2.2 The use of Gripset® 38 and Gripset® 2P Wet Area Membranes on concrete slabs where hydrostatic or vapour pressure is present from below 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 are specific to each building, and therefore the responsibility of the building designer and building contractor and are outside the scope of this Appraisal.
- 2.4 The vinyl, ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.5 The membranes must be installed by trained applicators, approved by Waterproofing Systems NZ Ltd.



Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Gripset® 38 and Gripset® 2P Wet Area Membranes 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. Gripset® 38 and Gripset® 2P Wet Area Membranes meet this requirement. See Paragraph 9.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.6. Interior wet area floors and walls incorporating Gripset® 38 and Gripset® 2P Wet Area Membranes will meet this requirement. See Paragraphs 11.1 - 11.7.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Gripset® 38 and Gripset® 2P Wet Area Membranes meet 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 Materials supplied by Waterproofing Systems NZ Ltd are as follows:

- Gripset® 38 is a styrene-butadiene copolymer-based, one-part, ready-to-use, liquid-applied membrane supplied as a beige thixotropic paste in 20 litre pails.
- Gripset® 2P is a quick drying, latex based, two-part, flexible, cementitious-based, liquid-applied membrane. It is supplied as Gripset® 2P liquid in 15 litre pails and Gripset® 2P powder in 18.75 kg bags. When dry, the membrane is light grey in colour.
- duroPRIME™ is a multi-purpose, two-in-one primer and waterproof bonding agent. It is used to prime substrates prior to the application of the membranes. It is supplied as a white coloured liquid in 20 litre pails.
- Reinforcing Fabric (RF) - The reinforcing fabric is a 100% non-woven polypropylene used as reinforcement flashing fabric in Gripset® 38 and Gripset® 2P membranes. The fabric has a weight of 40 g/m² and is available in rolls 100 m long x 100 mm and 200 mm wide.
- Elastofabric Tapes and Corners - Elastomeric bond-breaker tapes are used at movement and expansion joints, and elastomeric formed corner sections for use at internal and external corner wall/floor junctions as set out in Technical Literature. The tapes are available in rolls 10 m long x 120 mm wide. The corner sections are approximately 150 mm long and are available for internal corner/floor junctions (90°) and external corner/floor junctions (270°).
- SB Sealant is an elastomeric, single component, moisture curing sealant, multi-purpose construction sealant used for forming the bond breaker joints at junctions under the membrane. The sealant can be used in conjunction with backing rods where required. It is available in 600 ml sausages for use in a caulking gun.
- Laticrete 4-XLT is a polymer-modified, flexible, quick-drying tile adhesive used to adhere tiles to the membranes. It is available in 20 kg bags and must be mixed with clean water.

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 materials in the original unopened packaging have a shelf life of 12 months from date of manufacture. Once opened, the materials must be used within 3 months.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for reference to the current Technical Literature for the Gripset® 38 and Gripset® 2P Wet Area Membranes. 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. The Gripset® 38 and Gripset® 2P Wet Area Membranes listing on the BRANZ website excludes specific details. These details have not been assessed by BRANZ and are outside the scope of the Appraisal.

Design Information

General

- 7.1 Gripset® 38 and Gripset® 2P Wet Area Membranes 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 Gripset® 2P is designed to be used where a quicker curing time is required, such as in cool or humid conditions.
- 7.3 The membranes must be protected from physical damage by the application of vinyl, ceramic or stone tile finishes.
- 7.4 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 Tiling Good Practice Guide.
- 7.5 Timber framing 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 AS/NZS 1170. 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 supporting the substrates must be constructed such that deflections do not exceed $1/360^{\text{th}}$ of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.

Substrates

Fibre Cement Compressed Sheet/Fibre Cement Sheet Tile Underlay

- 8.1 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. Fibre cement sheet tile underlay must be suitable for use in internal wet areas. Installation must be in accordance with the instructions of the manufacturer.

Concrete and Concrete Masonry

- 8.2 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, concrete slab-on-ground to NZS 3604, and concrete masonry to NZS 4229 and NZS 4230.

Wet Area Wall Linings

- 8.3 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588 and be suitable for use in internal wet areas.
- 8.4 Fibre cement sheet must be suitable for use in wet areas and comply with the requirements of AS 2908.2.

Durability

Serviceable Life

- 9.1 The Gripset® 38 and Gripset® 2P Wet Area Membranes, 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 vinyl or tile finish remains intact. Regular checks must be made of vinyl and 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 vinyl or tiles, grouts and sealants.
- 10.2 In the event of damage to the membranes, the vinyl or 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 vinyl, ceramic or stone tile finishes must be kept clean.

Internal Moisture

- 11.1 Gripset® 38 and Gripset® 2P Wet Area Membranes 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 Gripset® 38 and Gripset® 2P Wet Areas Membranes 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 vinyl, 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 – 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.

Installation Information

Installation Skill Level Requirement

- 12.1 Installation of the membranes must be completed by trained applicators, approved by Waterproofing Systems NZ Ltd.
- 12.2 Installation of substrates must be completed by tradespersons with an understanding of internal wet area construction, in accordance with instructions given within the Waterproofing Systems NZ Ltd Technical Literature and this Appraisal.

Preparation of Substrates

- 13.1 Substrates must be dry, clean and stable before installation commences, with surfaces that are even and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents.
- 13.2 The relative humidity of concrete substrates must be 75% or less before membrane application. The concrete can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin No. 585.
- 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 Elastofabric bond breaker joint system or RF underflashing installed as set out in the Technical Literature.
- 13.4 Substrates must be primed with duroPRIME™ and allowed to dry fully 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 Gripset® 2P liquid and Gripset® 2P powder must be mixed and left to stand for 5 minutes before re-mixing, then applying. Gripset® 38 must be thoroughly stirred before application.
- 14.3 The membrane must be applied in a minimum of two coats at the rates set out in the Technical Literature to give a total minimum finished thickness of 1.2 mm. Subsequent coats must be applied in an opposite direction to the previous coat.
- 14.4 Application can be made by roller (medium/long nap), brush (long bristle), or a non-edge serrated flat steel trowel.
- 14.5 Elastofabric tapes and corners must be used at junctions as set out in the Technical Literature.
- 14.6 Clean up may be undertaken with water.

Tiling

- 15.1 The membranes must be fully cured before tiling. The cured membranes 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 Tiling Practice Guide. The compatibility of the tile adhesive must be confirmed with the adhesive manufacturer or Waterproofing Systems NZ Ltd, if using other than Laticrete 4-XLT tile adhesive.

Inspections

- 16.1 Critical areas of inspection are:
 - Construction of substrates, including crack control and installation of under flashings 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.

Health and Safety

- 17.1 Safe use and handling procedures for the membranes are provided in the Technical Literature. The materials must be used in conjunction with the relevant Material Safety Data Sheet.

Basis of Appraisal

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

Tests

- 18.1 The following testing of Gripset® 38 has been undertaken by the following organisations:
 - Amdel Limited, Australia – water absorption; tensile strength and elongation; shore A hardness; water vapour transmission; accelerated weathering and low temperature flexibility.
 - CSIRO, Australia – mass per unit area and gravimetric thickness; tensile strength and elongation at break; tensile strength and elongation at break after UV exposure, including immersion in water, bleach and detergent; loss on heating; moving joint test and cyclic strain.
 - Test methods and results have been reviewed by BRANZ and found to be satisfactory.
- 18.2 The following testing of Gripset® 2P has been undertaken by Amdel Limited, Australia – wet area durability testing in accordance with AS/NZS 4858 covering immersion in water, bleach, detergent, and heat ageing; UV ageing; water absorption; low temperature flexibility and water vapour transmission. Test methods and results have been reviewed by BRANZ and found to be satisfactory.
- 18.3 The following testing of Elastofabric has been undertaken by Amdel Limited, Australia – wet area durability testing in accordance with AS/NZS 4858 covering immersion in water, bleach, detergent, and heat ageing; cyclic movement; low temperature flexibility; water absorption and water vapour transmission.

Test methods and results have been reviewed by BRANZ and found to be satisfactory.
- 18.4 Although not required by the standard AS/NZS 4858 as water vapour transmission testing had already shown compliance, additional testing of Gripset® 38 and Gripset® 2P was also undertaken by Amdel Limited for suitability over particleboard in accordance with AS/NZS 4858, Appendix C, and found to be satisfactory.
- 18.5 Testing of DuroFIX® has been undertaken by Amdel Limited, Australia for tile adhesion shear strength to both membranes in accordance with ATM D2919-01 before and after heat ageing and water immersion. Test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 19.1 An assessment was made of the durability of the Gripset® 38 and Gripset® 2P Wet Area Membranes by BRANZ technical experts.
- 19.2 Site visits have been carried out by BRANZ to assess the practicability of installation and to examine completed installations.
- 19.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 20.1 The manufacture of the membranes 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.
- 20.2 The quality management system of the membrane's manufacturer has been assessed and found to be satisfactory.
- 20.3 The quality of supply of the membrane system to the market is the responsibility of Waterproofing Systems NZ Ltd.
- 20.4 Quality on site is the responsibility of the trained applicators, approved by Waterproofing Systems NZ Ltd.
- 20.5 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, Waterproofing Systems NZ Ltd and this Appraisal.
- 20.6 Building owners are responsible for the maintenance of the tiling or stone finishing systems in accordance with the instructions of Waterproofing Systems NZ Ltd.

Sources of Information

- AS 2908.2 – 2000 Cellulose-cement products – flat sheet.
- AS 3740 – 2010 Waterproofing of domestic areas.
- AS 3958.1 – 1991 Guide to the installation of ceramic tiles.
- ASTM D2919-01 Standard test method for determining durability of adhesive joints stressed in shear by tension loading.
- AS/NZS 2270: 2002 Structural design actions.
- AS/NZS 4858: 2004 Wet area membranes.
- NZS 3101: 2006 The design of concrete structures.
- NZS 3604: 2011 Timber-framed buildings.
- NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230: 2004 Code of practice for the design of masonry structures.
- BRANZ Bulletin Number 585 Measuring Moisture in Timber and Concrete, June 2015.
- BRANZ Good Practice Guide – Membrane Roofing, October 2015.
- BRANZ Good Practice Guide – Tiling, April 2015.
- 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.

Amendment No. 2, dated 29 May 2014.

This Appraisal has been amended to remove particleboard and plywood as substrates.

Amendment No. 3, dated 24 November 2014.

This Appraisal has been amended to change the marketing name.

Amendment No. 4, dated 26 January 2015

This Appraisal has been amended to change the front cover image.

Amendment No. 5, dated 01 April 2016.

This Appraisal has been amended to update the Appraisal Holder.



In the opinion of BRANZ, Gripset® 38 and Gripset® 2P 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 Waterproofing Systems 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. Waterproofing Systems NZ Ltd:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by Waterproofing Systems 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 Waterproofing Systems NZ Ltd or any third party.

For BRANZ



Pieter Burghout

Chief Executive

Date of Issue:

29 March 2011



BRANZ Appraised

Appraisal No.615 [2008]

BRANZ Appraisals

Technical Assessments of products
for building and construction

BRANZ APPRAISAL No. 615 (2008)

Amended 1 March 2011

FAST WRAP BUILDING WRAP

Paul Industries
PO Box 308
Tauranga

Tel: 07 578 8209
Fax: 07 928 5244

Web: www.paulindustries.co.nz



BRANZ
BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand
Tel: +64 4 237 1170
Fax: +64 4 237 1171
www.branz.co.nz



1.1 Fast Wrap is a synthetic building wrap for use as a wall wrap under wall claddings on timber and steel framed buildings. The product is manufactured from an ultra-violet (UV) light resistant non-woven, spun-bonded polypropylene and is coloured beige.



2.1 Fast Wrap has been appraised for use as a wall wrap 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 and non-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 NZS 3604; and,
- situated in NZS 3604 Building Wind Zones up to, and including 'Very High'.

2.2 Fast Wrap has been appraised for use as a wall wrap 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; and,
- with masonry veneer; and,
- situated in NZS 3604 Building Wind Zones up to, and including 'Very High'.

2.3 Fast 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 Fast Wrap into their design in accordance with the declared properties and the instructions of Paul Industries.

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Fast 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. Fast 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, Fast Wrap will contribute to meeting this requirement. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Fast 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.

4.1 Fast Wrap is a beige, UV stabilised, non-woven spun-bonded polypropylene.

4.2 The product is supplied in rolls 1,370 m wide x 36.5 and 73 m long and 2,740 m wide x 18.5 and 36.5 m long. The product is printed with the Fast Wrap logo repeated along the length of the roll. The rolls are wrapped in clear polythene film.

Accessories

4.3 Accessories used with Fast 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.
- Building wrap support - 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.

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

Timber and Steel Framing

7.1 Studs must be provided at maximum 600 mm centres. Dwangs must be fitted flush between the studs at maximum 1200 mm centres.

General

7.2 Fast Wrap is intended for use as an alternative to conventional building papers which are fixed over timber or 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 Fast Wrap must not be exposed to the weather or ultra violet light for a total of more than 42 days before being covered by the wall cladding.

7.5 Fast Wrap is suitable for use under wall claddings as a wall wrap as called up in NZBC Acceptable Solution E2/AS1, Table 23 on timber framed buildings including non-absorbent metal based wall claddings such as sidings or metal based weatherboards in direct fixed installations. Fast Wrap is suitable for use under cavity based wall claddings as an absorbent synthetic wall wrap as called up in NZS 2295, Table 2.4 on steel framed buildings. 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	> 100 g/m ²	Pass
Vapour Resistance	< 7 MN s/g	0.223 MN s/g
Water Resistance	> 20 mm	Pass
pH of Extract	> 6 and < 9	7.15
Shrinkage	< 0.5%	-0.10 % (stretched)
Mechanical	Edge tear and tensile strength	Edge tear (Average): Machine direction = 164 N Cross direction = 97 N Tensile strength (Average): Machine direction = 3.4 kN/m Cross direction = 1.95 kN/m
Air Barrier	Air resistance: > 0.1 MN s/m ³	Average 0.120 MN s/m ³ Fast Wrap is suitable for use as an air barrier.

7.6 In cavity installations where the cavity battens are installed at greater than 450 mm centres, the building wrap must be supported between the battens to prevent the wrap 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

7.7 Fast 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 wrap must be supported with 75 mm galvanised mesh 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.

7.8 Fast 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 Fast Wrap is suitable for use in all Building Wind Zones of NZS 3604 up to, and including, 'Very High'.

Durability

9.1 Fast 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, e.g. behind masonry veneer, 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 42 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, Fast Wrap is expected to have a serviceable life equal to that of the cladding.

Control of Internal Fire and Smoke Spread

10.1 Fast Wrap has an AS 1530 Part 2 Flammability Index of 4 and meets the requirements of NZBC Acceptable Solution C/AS1 Part 6, Table 6.2 for surface finish requirements for suspended flexible fabrics, and therefore it may be used with no restrictions in all buildings.

Outbreak of Fire

11.1 Fast Wrap must be separated from fireplaces, heating appliances, flues and chimneys in accordance with the requirements of NZBC Acceptable Solution C/AS1 Part 9 for the protection of combustible materials.

External Moisture

12.1 Fast Wrap must only be used behind claddings that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1, or claddings covered by a valid BRANZ Appraisal.

12.2 Fast Wrap, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding system's compliance with NZBC Clause E2.

Installation Skill Level Requirements

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

Wrap Installation

14.1 Fast Wrap must be fixed to all framing members at maximum 300 mm centres with large-head clouts 20 mm long, 6-8 mm staples, self drilling screws or proprietary wrap fixings. The membrane must be pulled taut over the framing before fixing.

14.2 Fast 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 150 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 wrap 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 wrap may be cut off flush with the internal face of the wall frame.

14.4 Fast Wrap can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.7(e).

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 Fast 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 Fast Wrap installations.

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

Tests

15.1 The following tests have been carried out on Fast Wrap in accordance with NZBC Acceptable Solution E2/AS1, Table 23: tensile strength, edge-tear resistance and resistance to water vapour transmission in accordance with AS/NZS 4200.1, shrinkage in accordance with AS/NZS 4201.3, resistance to water penetration in accordance with AS/NZS 4201.4, surface water absorbency in accordance with AS/NZS 4201.6, pH of extract in accordance with AS/NZS 1301.421s and air resistance to BS 6538.3. A range of these tests were completed before and after Fast Wrap was exposed to ultra-violet light.

15.2 The flammability index of Fast Wrap has been tested in accordance with AS/NZS 1530.2.

Other Investigations

- 16.1 A durability opinion was given by BRANZ technical experts.
- 16.2 An evaluation of the expected performance of Fast Wrap in direct contact with metal wall cladding has been completed by BRANZ.
- 16.3 Site inspections were carried out by BRANZ to assess methods used for the installation of Fast Wrap.
- 16.4 The marketer's Technical Literature, including installation instructions, has been examined by BRANZ and found to be satisfactory.

Quality

- 17.1 The manufacture of Fast Wrap has not been examined by BRANZ, but details of the methods adopted for quality control and the quality of the materials used, have been obtained and found to be satisfactory.
- 17.2 The quality of supply to the market is the responsibility of Paul Industries.
- 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 Paul Industries.
- 17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Paul Industries.

Sources of Information

- AS 1530.2 - 1993 Test for flammability of materials.
- AS/NZS 1301.421s: 1988 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 4201.3: 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: 1999 Timber Framed Buildings.
- NZS 3604: 2011 Timber-Framed Buildings.
- Compliance Document for the New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005.
- New Zealand Building Code Handbook, Department of Building and Housing, Third Edition May 2007.
- The Building Regulations 1992 up to, and including, August 2008 amendment.

Amendment No. 1, dated 3 November 2009.

This Appraisal has been amended to change the cover image and include the Appraisal Holders web address.

Amendment No. 2, dated 1 March 2011.

This Appraisal has been amended to cover the use of Fast Wrap in direct contact with metal based wall cladding.



BRANZ

In the opinion of BRANZ, Fast Wrap 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 Paul Industries, 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. Paul Industries:
 - 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.
3. 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.
4. 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 Paul Industries.
5. 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.
6. BRANZ provides no certification, guarantee, indemnity or warranty, to Paul Industries or any third party.

For BRANZ

C Preston
Chief Executive

Date of issue: 7 August 2008



BRANZ Appraised

Appraisal No.715 [2011]

BRANZ Appraisals

Technical Assessments of products
for building and construction

BRANZ APPRAISAL No. 715 (2011)

Amended 3 September 2013

FAST WRAP FLAMESPEC SS ROOF UNDERLAY

Paul Industries
PO Box 308
Tauranga

Tel: 07 578 8209
Fax: 07 928 5244

Email: paulindustries@clear.net.nz



BRANZ
BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand
Tel: +64 4 237 1170
Fax: +64 4 237 1171
www.branz.co.nz



1.1 Fast Wrap FlameSpec SS Roof Underlay is a synthetic building underlay for use under roof claddings. The products consist of a micro-porous water resistant film laminated to two layers of non woven spun-bonded polyolefin.



FlameSpec SS

SYNTHETIC SELF SUPPORT ROOFING UNDERLAY

2.1 Fast Wrap FlameSpec SS Roof Underlay has been appraised for use as a self-supporting roof underlay on 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 masonry tile roof cladding; and,
- with metal tile and profiled metal roof cladding; and,
- situated in NZS 3604 Wind Zones up to, and including 'Extra High'.

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Fast Wrap FlameSpec SS Roof Underlay, 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. Fast Wrap FlameSpec SS Roof Underlay meets these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the roof cladding system, Fast Wrap FlameSpec SS Roof Underlay will contribute to meeting this requirement. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Fast Wrap FlameSpec SS Roof Underlay 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.

4.1 Fast Wrap FlameSpec SS Roof Underlay is a synthetic building underlay for use under roof claddings. The product consists of a micro-porous water resistant film laminated to two layers of non woven spun-bonded polyolefin. Fast Wrap FlameSpec SS Roof Underlay is coloured grey on the top face and white on the bottom face.

4.2 Fast Wrap FlameSpec SS Roof Underlay is supplied in rolls 1.250 m wide x 40 m long. The product is printed with the Fast Wrap logo repeated along the length of the roll. The rolls are wrapped in clear polythene film.

Accessories

4.3 Accessories used with Fast Wrap FlameSpec SS Roof Underlay which are supplied by the installer are:

Fixings - stainless steel staples, clouts, screws or proprietary underlays fixings, or other temporary fixings to attach the roof underlay to the framing.

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.

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Fast Wrap FlameSpec SS Roof Underlay. 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.

Timber and Steel Framing

7.1 Timber and steel roof framing must be provided in accordance with the requirements of the NZBC and the roof cladding manufacturer.

General

7.2 Fast Wrap FlameSpec SS Roof Underlay is intended for use as an alternative to conventional kraft paper roof underlays, which are fixed over timber or steel framed roofs in order to limit the entry of wind into the roof cavity, and to assist in the moisture management of the roof cladding system.

7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the roof weathertight and some wetting of the underlying structure is always possible before the roof cladding is installed. Hence, the entire building must be closed-in and made weatherproof before moisture sensitive materials such as ceiling linings and insulation materials are installed.

7.4 Fast Wrap FlameSpec SS Roof Underlay must not be exposed to the weather or ultra violet light for a total of more than 7 days before being covered by the roof cladding.

7.5 Fast Wrap FlameSpec SS Roof Underlay is suitable for use under roof claddings on buildings as a roof underlay as called up in NZBC Acceptable Solution E2/AS1, Table 23. Refer to Table 1 for the material properties of the Fast Wrap FlameSpec SS Roof Underlay.

Table: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Roof Underlays Properties	Property Performance Requirement	Results
Absorbency	$\geq 100 \text{ g/m}^2$	Pass
Vapour Resistance	$\leq 7 \text{ MN s/g}$	Pass
Water Resistance	$\geq 100 \text{ mm}$	Pass
pH of Extract	≥ 6 and ≤ 9	Pass
Shrinkage	$\leq 0.5\%$	Pass
Mechanical	Edge tear and tensile strength	Edge tear (Average): Machine direction = 229 N Cross direction = 145 N Tensile strength (Average): Machine direction = 4.47 kN/m Cross direction = 2.80 kN/m

7.6 Fast Wrap FlameSpec SS Roof Underlay is suitable for use at pitches less than 8° (minimum 3°). When used at pitches less than 8°, Fast Wrap FlameSpec SS Roof Underlay must be installed horizontally with the upper sheets lapped over lower sheets. At pitches greater than 8°, Fast Wrap FlameSpec SS Roof Underlay can be installed vertically or horizontally. Fast Wrap FlameSpec SS Roof Underlay must span no greater than 1200 mm in one direction.

Structure

8.1 Fast Wrap FlameSpec SS Roof Underlay is suitable for use in all Wind Zones of NZS 3604 up to, and including, 'Extra High'.

Durability

9.1 Fast Wrap FlameSpec SS Roof Underlay meets code compliance with NZBC Clause B2.3.1 (a), not less than 50 years for roof underlays used where the roof cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry roof tile cladding, and code compliance with NZBC Clause B2.3.1 (b), 15 years for roof underlays used where the roof 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 7 days, and provided the roof cladding is maintained in accordance with the cladding manufacturer's instructions and the roof cladding remains weather resistant, Fast Wrap FlameSpec SS Roof Underlay is expected to have a serviceable life equal to that of the roof cladding.

Control of Internal Fire and Smoke Spread

10.1 Fast Wrap FlameSpec SS Roof Underlay 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 Fast Wrap FlameSpec SS Roof Underlay 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 Fast Wrap FlameSpec SS Roof Underlay must only be used under roof claddings that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1, or roof claddings covered by a valid BRANZ Appraisal.

12.2 Fast Wrap FlameSpec SS Roof Underlay, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding system's compliance with NZBC Clause E2.

Installation Skill Level Requirements

13.1 Installation must always be carried out in accordance with the Fast Wrap FlameSpec SS Roof Underlay Technical Literature and this Appraisal, by competent tradespersons with an understanding of roof underlay installation.

Underlay Installation

14.1 Fast Wrap FlameSpec SS Roof Underlay must be fixed at maximum 300 mm centres to all framing members with large-head clouts 20 mm long, 6-8 mm stainless steel staples, self drilling screws or proprietary underlay fixings. The membrane must be pulled taut over the framing before fixing.

14.2 Fast Wrap FlameSpec SS Roof Underlay may be run vertically or horizontally at roof pitches greater than 8° and must be laid horizontally at roof pitches less than 8°. It must extend from the ridge and overhang the fascia board by 20-25 mm. Vertical laps must be no less than 150 mm wide. Horizontal laps must also be no less than 150 mm, with the direction of the lap ensuring that water is shed to the outer face of the underlay. End laps must be made over framing and be no less than 150 mm wide.

14.3 When fixing the product in windy conditions, care must be taken due to the large sail area created.

14.4 Any damaged areas of Fast Wrap FlameSpec SS Roof Underlay, 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

14.5 The Technical Literature must be referred to during the inspection of Fast Wrap FlameSpec SS Roof Underlay installations.

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

Tests

15.1 The following tests have been carried out on Fast Wrap FlameSpec SS Roof Underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23: tensile strength, edge-tear resistance and resistance to water vapour transmission in accordance with AS/NZS 4200.1, shrinkage in accordance with AS/NZS 4201.3, resistance to water penetration in accordance with AS/NZS 4201.4, surface water absorbency in accordance with AS/NZS 4201.6 and pH of extract in accordance with AS/NZS 1301.421s. A range of these tests were completed before and after Fast Wrap FlameSpec SS Roof Underlay was exposed to ultra-violet light.

15.2 The Flammability Index of Fast Wrap FlameSpec SS Roof Underlay has been evaluated in accordance with AS 1530.2.

Other Investigations

16.1 A durability opinion has been given by BRANZ technical experts.

16.2 An evaluation of the expected performance of Fast Wrap FlameSpec SS Roof Underlay in direct contact with metal roof cladding has been completed by BRANZ.

16.3 The practicability of installation of Fast Wrap FlameSpec SS Roof Underlay has been assessed by BRANZ and found to be satisfactory.

16.4 The Technical Literature, including installation instructions, has been examined by BRANZ and found to be satisfactory.

Quality

17.1 The manufacture of Fast Wrap has not been examined by BRANZ, but details of the methods adopted for quality control and the quality of the materials used, have been obtained and found to be satisfactory.

17.2 The quality of supply to the market is the responsibility of Paul Industries.

17.3 Building designers are responsible for the design of the building, and for the incorporation of the roof underlay into their design in accordance with the instructions of Paul Industries.

17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Paul Industries.

Sources of Information

- AS 1530.2: 1993 Test for Flammability of Materials.
- AS/NZS 1301.421s: 1988 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 4201.3: 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.
- AS/NZS 4534:2006 Zinc and zinc/aluminium-alloy coatings on steel wire.
- 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.



BRANZ

In the opinion of BRANZ, Fast Wrap FlameSpec SS Roof Underlay 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 Paul Industries, 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. Paul Industries:
 - 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 Paul Industries.
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 Paul Industries or any third party.

For BRANZ

P Burghout
Chief Executive

Date of issue: 8 March 2011

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 3 September 2013.

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



BRANZ Appraised

Appraisal No.764 [2011]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
No. 764 (2011)**

SHADOWCLAD® VENTILATED CAVITY CLADDING SYSTEM

**Carter Holt Harvey Woodproducts
New Zealand**
Private Bag 92-106
Auckland

Tel: 09 636 7016

Fax: 09 633 1582

Web:

www.chhwoodproducts.co.nz



BRANZ
BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand
Tel: +64 4 237 1170
Fax: +64 4 237 1171
www.branz.co.nz



1.1 Shadowclad® Ventilated Cavity is a cavity-based external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

1.2 The system consists of Shadowclad® sheets, timber cavity battens, flashings and accessories and is finished with either an acrylic paint system, penetrating, or film forming stain.

1.3 Shadowclad® Ventilated Cavity incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall frame with a nominal 21 mm drained cavity.



2.1 Shadowclad® Ventilated Cavity 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 Shadowclad® Ventilated Cavity has also been appraised as an external wall cladding for specifically designed 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,
- situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5 kPa.

2.3 Shadowclad® Ventilated Cavity is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. (*The Appraisal of Shadowclad® Ventilated Cavity relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone or wind pressure.*)

2.4 Shadowclad® Ventilated Cavity has also been appraised for use as wall bracing systems for timber framed buildings within the scope of NZS 3604.

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Shadowclad® Ventilated Cavity, 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. Shadowclad® Ventilated Cavity meets the requirement 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 – 9.4.

Clause B2 DURABILITY: Performance B2.3.1(a), at least 50 years, B2.3.1(b), 15 years, B2.3.1(c) 5 years and B2.3.2. Shadowclad® Ventilated Cavity meets these requirements. See Paragraphs 10.1 – 10.7.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. Shadowclad® Ventilated Cavity meets this requirement. See Paragraphs 14.1 – 14.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Shadowclad® Ventilated Cavity 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.

3.3 Shadowclad® Ventilated Cavity is used to satisfy the bracing demand requirements of Section 5 of NZS 3604 which is an NZBC Compliance Document.

4.1 System components and accessories supplied by Carter Holt Harvey Woodproducts New Zealand are as follows:

Shadowclad® Sheets

- Shadowclad® sheets are nominal 12 mm thick structural plywood sheets manufactured from New Zealand pinus radiata veneers. They are 1216 mm wide and either 2440 mm or 2745 mm long. They have a textured surface finish on the exposed face.
- Shadowclad® sheets are available as either Shadowclad® Natural or Shadowclad® Prime finish. Shadowclad® Natural is an uncoated panel for use with penetrating stains, film forming stains and paints. Shadowclad® Prime has a factory applied powder coat exterior primer for use with paints and film forming stain topcoats. Shadowclad® Prime is not suitable for use with penetrating stains.
- Shadowclad® Natural and Shadowclad® Prime are both available as Texture and Texture Groove surface finish. Texture Groove has 9 mm wide by 5 mm deep grooves at 150 mm centres running vertically down the outside face of the sheet.
- Shadowclad® sheets are available as Hazard Class H3.1 treated or Hazard Class H3.2 CCA treated. (Note: H3.2 CCA treatment is available for Shadowclad® Prime finished products only.)

Accessories

- Shadowclad® flashings: horizontal 'Z' flashing, inter-storey 'Z' flashing, internal 90° angle, internal 'W' angle, large internal 'W' angle, external box angle, large external box angle and flat flashing for vertical negative detail. Shadowclad® flashings are manufactured from extruded aluminium.
- Exterior Battens: 65 mm wide x 18 mm thick timber batten, dressed or bandsawn, treated to Hazard Class H3.1.

- Cavity battens: nominal 47 mm wide x 21 mm thick or 75 mm wide x 21 mm thick merchant grade timber treated to Hazard Class H3.1.
- Cavity vent strip – manufactured from aluminium, available in 3600 mm lengths.

4.2 Accessories used with Shadowclad® Ventilated Cavity which are supplied by the building contractor are:

- Shadowclad® sheet fixings: 60 x 3.15 mm hot-dip galvanised or ring shank stainless steel flat head nails, 8 gauge x 65 mm AS 3566 Corrosion Class 4 mechanically zinc plated wood screws or 8 gauge x 65 mm stainless steel wood screws. (Note: Stainless steel fixings must be Grade 316 and hot-dip galvanising must comply with AS/NZS 4680).
- Cavity batten fixings: 50 x 2.8 mm hot-dip galvanised or stainless steel ring shank flat head nails.
- Flexible wall underlay: building paper or wrap complying with NZBC Acceptable Solution E2/AS1 Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlay.
- Rigid wall underlay: 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 flashing tape: flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1 Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- Window and door trim cavity air seal: air seals complying with NZBC Acceptable Solution E2/AS1 Paragraph 9.1.6, or self-expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal suitable for use around window, door and other wall penetration openings.
- 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.
- 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.
- Bracing panel end stud connection: GIB® HandiBrac™ galvanised steel 90 x 62 x 54 x 1.55 mm thick angle bracket, GIB® HandiBrac™ 50 x 60 x 5 mm thick electroplated washer and GIB® HandiBrac™ fixings, 8 Type 17 screws 5 x 35 mm.
- Timber floor end stud hold down: 12 mm x 150 mm hot-dipped galvanised coach screws.
- Concrete floor end stud hold down: cast-in bolts M12 x 150 mm minimum or proprietary fixings with a minimum characteristic strength of 15 kN.

Finishing System Specification

4.3 Paint and stain systems are not supplied by Carter Holt Harvey Woodproducts New Zealand and have not been assessed by BRANZ and are therefore outside the scope of this Appraisal.

4.4 All exposed faces, including top edges at sills and all bottom edges of Shadowclad® sheets must be finished with a latex exterior paint system complying with any of Parts 7, 8, 9, or 10 of AS 3730, or at least two coats of a film forming or penetrating stain to protect the Shadowclad® and give the desired finish colour to the exterior walls.

(Note: For Shadowclad®, Carter Holt Harvey Woodproducts New Zealand recommends using paints and stains with a Light Reflective Value (LRV) of greater than or equal to 40%.)

Handling and Storage

5.1 Handling and storage of all materials supplied by Carter Holt Harvey Woodproducts New Zealand or the building contractor, whether on site or off-site, is under the control of the building contractor. Shadowclad® sheets must be stacked flat, clear of the ground on at least three evenly spaced timber bearers. They must be kept dry at all times either by storing within an enclosed building or under cover when stored externally. Care must be taken to avoid damage to edges, ends and the primed surfaces.

5.2 Accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Shadowclad® Ventilated Cavity. 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.

Framing

Timber Treatment

7.1 Timber wall framing behind Shadowclad® Ventilated Cavity must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

7.2 Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. In all cases studs must be at maximum 600 mm centres. Dwalgs must be fitted flush between the studs at maximum 800 mm centres.

7.3 Additional framing may be required at soffits, internal and external corners and window and door openings for the support and fixing of cavity battens and Shadowclad® Ventilated Cavity.

7.4 Timber wall framing and cavity battens must have a maximum moisture content of 20% at the time of the cladding application. *(Note: If Shadowclad® is fixed to framing with a moisture content of greater than 20% problems may occur at a later date due to excessive timber shrinkage.)*

General

8.1 When Shadowclad® Ventilated Cavity is used for specifically designed buildings up to 2.5 kPa design differential ULS wind pressure, only the weathertightness aspects of the cladding and maximum framing centres are within the scope of this Appraisal. All other aspects of the building need to be specifically designed and are outside the scope of this Appraisal.

8.2 Punchings in the cavity vent strip provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3(b).

8.3 The ground clearance to finished floor levels as set out in NZS 3604 must be adhered to at all times. At ground level paved surfaces, such as footpaths, must be kept clear of the bottom edge of the cladding system by a minimum of 100 mm, and unpaved surfaces by 175 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Table 18.

8.4 At balcony, deck or roof/wall junctions, the bottom edge of Shadowclad® Ventilated Cavity must be kept above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.

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 cavity and the flashing to the opening.

8.7 Where the system abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. These details have not been assessed and are outside the scope of this Appraisal.

Inter-storey Junctions

8.8 Inter-storey junctions must be constructed in accordance with the Technical Literature. Inter-storey 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 Shadowclad® Ventilated Cavity is approximately 6.6 kg/m² at equilibrium moisture content. The system is therefore considered a lightweight cladding in terms of NZS 3604.

Impact Resistance

9.2 Shadowclad® Ventilated Cavity has good resistance to impact loads likely to be encountered in normal residential use. The likelihood of impact damage to Shadowclad® Ventilated Cavity when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers should be considered for vulnerable areas.

Wind Zones

9.3 Shadowclad® Ventilated Cavity is suitable for use in all Building 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 design differential ULS wind pressure where buildings are specifically designed.

Table 1: Bracing Ratings for Shadowclad® Ventilated Cavity

Specification No.	Minimum Wall Length	Lining Requirements	BU's/m Wind	BU's/m EQ
SC1	0.6 m	Shadowclad® one side	105	120

Bracing

9.4 When used in accordance with this Appraisal and the Technical Literature, Shadowclad® Ventilated Cavity can be used to meet the wall bracing element requirements of NZS 3604, for timber framed buildings not requiring specific design. The Technical Literature contains details of the construction of the bracing system and the bracing unit ratings achieved for this system. The bracing ratings are also given within Table 1. 60 x 3.15 mm ring-shanked stainless steel nails must be used when Shadowclad® Ventilated Cavity is used as bracing.

Durability

10.1 Shadowclad® Ventilated Cavity meets the performance requirements of NZBC Clause B2.3.1 (a), not less than 50 years when the system is used as a bracing system, the performance requirements of NZBC Clause B2.3.1 (b), 15 years for the Shadowclad® and flashings when used as a non-structural cladding and the performance requirements of NZBC Clause B2.3.1 (c), 5 years for the exterior paint system where used.

10.2 Shadowclad® Ventilated Cavity must be installed with stainless steel nails when used as a bracing element.

Serviceable Life

10.3 For Shadowclad® Ventilated Cavity installations to achieve a serviceable life of 50 years, Shadowclad® Prime must be used, and they must be finished with two top coats of 100% acrylic paint with a light reflectance value (LRV) of 40% or greater and be maintained in accordance with this Appraisal to ensure the Shadowclad® sheets and fixings remain dry in service. Shadowclad® Ventilated Cavity must be painted as soon as practicable following installation.

10.4 Shadowclad® Ventilated Cavity installations finished with penetrating stain or non-penetrating film forming stain, are expected to have a serviceable life of at least 15 years provided they are maintained in accordance with this Appraisal.

Note: This opinion only covers serviceability with regards to structural and weathertightness performance. It does not cover appearance, which may deteriorate significantly, especially when proper and regular maintenance is not carried out.

10.5 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, Shadowclad® sheets must be fixed with stainless steel fasteners.

10.6 When using CCA treated Shadowclad® aluminium extrusions must be coated in accordance with the requirements of NZBC E2/AS1 Table 20, and are not suitable for use in NZS 3604 Corrosion Zone D where stainless steel must be used.

10.7 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres, and contamination from agricultural chemicals or fertilisers can convert a mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of Shadowclad® sheets in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604 Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

11.1 Regular maintenance is essential to ensure the performance requirements of the NZBC are continually met and to ensure the maximum serviceability of the system.

11.2 Regular cleaning (at least annually) of the paint coating is required to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent. Paint systems must be recoated at approximately 7 – 10 yearly intervals in accordance with the paint manufacturer's instructions. Penetrating and non-penetrating stains must be recoated every 2 – 3 years in accordance with the stain manufacturer's instructions.

11.3 Annual inspections must be made to ensure that all aspects of the cladding system, including the selected finishing 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 relevant manufacturer's instructions.

11.4 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the system. *(Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of Shadowclad® Ventilated Cavity installations.)*

Control of External Fire Spread

12.1 Shadowclad® Ventilated Cavity is considered to meet the performance provisions of NZBC C3.3.5 for use as an external wall cladding system when restricted to:

- Single storey buildings 1 m or more from the boundary for all purpose groups.
- Buildings up to 7 m high, 1 m or more from the boundary, for all purpose groups other than SC and SD.
- Fully sprinklered buildings up to 10 m high, 1 m or more from the boundary for all purpose groups other than SC, SD, SA and SR.
- Buildings containing purpose group SH, with a building height less than 10 m and located 1 m or more from the boundary.

(Note: The scope of this Appraisal limits building heights to 10 m in accordance with the limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1(a). The building heights referenced in Paragraph 12.1 above are as defined in the Definitions Section of the Fire Safety Clauses of the NZBC.)

Outbreak of Fire

13.1 Shadowclad® Ventilated Cavity must be separated from chimneys and flues in accordance with the requirements of Acceptable Solution C/AS1 Part 9, for the protection of combustible materials.

External Moisture

14.1 Shadowclad® Ventilated Cavity, when installed in accordance with this Appraisal and the Technical Literature will prevent the penetration of moisture that could cause undue dampness or damage to building elements.

14.2 The cavity must be sealed off from the roof and sub-floor space to meet code compliance with NZBC Clause E2.3.5.

14.3 Shadowclad® Ventilated Cavity allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with Clause E2.3.6.

14.4 The details given in the Technical Literature for weather sealing are based on the principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.

14.5 Shadowclad® Ventilated Cavity, where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirements for junctions, penetrations, etc to remain weather resistant.

Internal Moisture

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

Water Vapour

15.2 Shadowclad® Ventilated Cavity is not a barrier to the passage of water vapour, and when installed in accordance with this Appraisal will not create a risk of moisture damage resulting from condensation.

Installation Skill Level Requirements

16.1 Installation and finishing of Shadowclad® Ventilated Cavity must be completed by competent, experienced tradespersons with an understanding of cavity installation, in accordance with instructions given within the Shadowclad® Ventilated Cavity Technical Literature and this Appraisal.

Shadowclad® Ventilated Cavity 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 manufacturers' instructions prior to the installation of the cavity battens and the rest of the Shadowclad® Ventilated Cavity system. Flexible building underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75 mm minimum at horizontal joints and 150 mm minimum over studs at vertical joints. Generic rigid underlay 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 Batten Installation

17.2 The cavity battens must be installed over the building underlay to the wall framing at maximum 300 mm horizontal centres where the studs are at 600 mm centres or at 400 mm centres when studs are at 400 mm centres.

17.3 When the cavity battens are part of a structural bracing system they must be fixed in place with 50 x 2.8 mm hot-dip galvanised or stainless steel ring shank flat head hand driven nails at 150 mm centres when over studs, and to the top and bottom plates and dwangs when between studs. The nail fixings must be staggered 12 mm either side of the batten centre line.

17.4 When the cavity battens are not under a structural bracing system they are fixed in place with 50 x 2.8 mm hot-dip galvanised or stainless steel ring shank flat head nails at 300 mm centres when over studs or plates, and to the top and bottom plates and dwangs when between studs.

Shadowclad® Sheet Installation

17.5 Shadowclad® sheets may be cut on site by power or hand saw. Holes and cut-outs may be formed by using a hole saw.

17.6 Shadowclad® sheets must be dry prior to installation. Before the sheets are installed, cut edges must be sealed with a brush-on timber preservative. The bottom edges and back of the Shadowclad® sheets to a height of 150 mm must be primed or stain coated at ground level and where the sheets are installed above apron flashings on roofs.

17.7 Shadowclad® sheets must be installed starting at the bottom of the wall. The bottom of the Shadowclad® sheets must overhang the bottom plate by a minimum of 50 mm.

17.8 Before the Shadowclad® sheets are installed, the corner detail must be prepared to suit the selected option, e.g. external box angle or boxed corner. The necessary flashings must be installed before commencing sheet fixing.

17.9 The Shadowclad® sheets are fixed with 60 x 2.8 mm hot dip galvanised or ring shanked stainless steel flat head nails, or 8 gauge x 65 mm mechanically zinc plated or stainless steel wood screws at 150 mm centres around the edge of the sheets starting at the corners and at 300 mm centres in the body of the sheet. The fasteners must be no closer than 7 mm to the sheet edges, and on the rebated edge the fasteners must be inside the weather groove.

Aluminium Joinery Installation

17.10 Aluminium joinery and associated head flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5 – 10 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.

Finishing

17.11 The coating manufacturer's instructions must be followed at all times for application of the paint or stain finish. Shadowclad® Sheets must be painted or stained as soon as practicable following fixing and must be clean and dry before commencing. If Shadowclad® sheets are exposed to the weather for more than 3 months, the surfaces must be washed with a mild detergent solution to remove any dirt, dust, mould or sea spray prior to coating. Allow the recommended drying time between coats and follow the temperature limitations for application.

17.12 Coatings should be applied by brush to ensure adequate coating film build is achieved. Application via roller or spray is not recommended.

Inspection

17.13 The Technical Literature must be referred to during the inspection of Shadowclad® Ventilated Cavity installations.

Health and Safety

18.1 Cutting of Shadowclad® sheets must be carried out in well ventilated areas and eye and hearing protection must be worn.

18.2 Safe use and handling procedures for the components that make up Shadowclad® Ventilated Cavity are provided in the relevant manufacturer's Technical Literature.

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 Shadowclad® Ventilated Cavity was based on testing and evaluation of all details within the scope and as stated within this Appraisal. Shadowclad® Ventilated Cavity details were tested to E2/VM1. The testing assessed the performance of the foundation detail, window head, jamb and sill details, vertical and horizontal Shadowclad® joints, 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 Acceptable Solution E2/AS1 for cavity-based plywood claddings.
- Wind face load and fastener slip testing for Shadowclad® Ventilated Cavity. BRANZ determined design wind suction pressures, and by comparing these pressures with the NZS 3604 design wind speeds and AS/NZS 1170 pressure coefficients, the fixing requirements given in the Technical Literature were confirmed as suitable for timber framed walls.
- P21 testing of Shadowclad® Ventilated Cavity was carried out by BRANZ and expert opinion given to confirm the wall bracing ratings given in the Technical Literature.

Other Investigations

20.1 Structural and durability opinions have been provided by BRANZ technical experts.

20.2 The performance and testing of plywood wall cladding products in New Zealand and Australia has been considered, including the structural and weathertightness performance, durability and non-hazardous nature.

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

20.4 The Technical Literature for Shadowclad® Ventilated Cavity has been examined by BRANZ and found to be satisfactory.

Quality

21.1 The manufacture of Shadowclad® has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

21.2 The quality of materials, components and accessories supplied by Carter Holt Harvey Woodproducts New Zealand is the responsibility of Carter Holt Harvey Woodproducts New Zealand. The quality control system for the manufacture of Shadowclad® has been assessed and registered as meeting the requirements of AS/NZS 2269 by the Engineered Wood Products Association of Australasia, Certificate No. 911 and ISO 9001 by TELARC, Certificate No. 130.

21.3 The quality control system for the timber treatment of Shadowclad® has been assessed and registered as meeting the requirements of the AsureQuality Timber Treatment Programme for treated timber by the New Zealand Timber Preservation Council Inc., Licence Number 46 for CCA treatment by Carter Holt Harvey and Licence Number 149 for H3.1 LOSP treatment by North Sawn treatment BOP Ltd.

21.4 Quality of installation on site of components and accessories supplied by Carter Holt Harvey Woodproducts New Zealand and the building contractor is the responsibility of the installer.

21.5 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing solutions and joinery, building underlays, flashing tapes, cavity battens, airseals and Shadowclad® sheets in accordance with the instructions of Carter Holt Harvey Woodproducts New Zealand.

21.6 Building owners are responsible for the maintenance of Shadowclad® Ventilated Cavity in accordance with the instructions of Carter Holt Harvey Woodproducts New Zealand.

Sources of Information

- AS 3730 Guide to the properties of paints for buildings.
- AS/NZS 1170:2002 Structural design actions.
- 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 3604:2011 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 (including Amendment 5, 1 August 2011).
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
- The Building Regulations 1992.



BRANZ

In the opinion of BRANZ, Shadowclad® Ventilated Cavity Cladding System is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Carter Holt Harvey Woodproducts 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. Carter Holt Harvey Woodproducts 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 Carter Holt Harvey Woodproducts 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 Carter Holt Harvey Woodproducts New Zealand or any third party.

For BRANZ

P Burghout
Chief Executive

Date of issue: 23 December 2011



BRANZ Appraised

Appraisal No.775 [2012]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
No. 775 (2012)**

3M ALL WEATHER FLASHING TAPE 8067

3M New Zealand Ltd
PO Box 33246
Takapuna
Auckland 0740

Tel: 0800 474787
Web: www.mmm.com



BRANZ
BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand
Tel: +64 4 237 1170
Fax: +64 4 237 1171
www.branz.co.nz



1.1 3M All Weather Flashing Tape 8067 is a flexible flashing tape for use around framed joinery openings as a secondary weather resistant barrier.

1.2 The tape is installed into and around the framed joinery opening over the building underlay and exposed frame to cover both the face and edge of the opening framing. 3M All Weather Flashing Tape 8067 is also used at joinery heads to seal flashing upstands to the building underlay.



2.1 3M All Weather Flashing Tape 8067 has been appraised as a flexible flashing tape for use around window and door joinery openings for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- with wall cladding systems complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal that specifies a flexible flashing tape; and,
- with flexible building underlays compatible with the flashing tape; and,
- situated in NZS 3604 Wind Zones up to, and including, 'Extra High'.

2.2 3M All Weather Flashing Tape 8067 has also been appraised as a flexible flashing tape for use around window and door joinery openings for steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, with regards to building height and floor plan area; and,
- constructed with steel 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,
- with wall cladding systems covered by a valid BRANZ Appraisal that specifies a flexible flashing tape; and,
- with flexible building underlays compatible with the flashing tape and steel frame; and,
- situated in NZS 3604 Wind Zones up to, and including, 'Extra High'.

(Note: 3M All Weather Flashing Tape 8067 can be used with rigid air barrier systems that don't require a flexible wall underlay, but this aspect has not been addressed by this Appraisal and is outside its scope.)

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, 3M All Weather Flashing Tape 8067, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1(b), 15 years and B2.3.2. 3M All Weather Flashing Tape 8067 meets these requirements. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. 3M All Weather Flashing Tape 8067 contributes to meeting this requirement. See Paragraphs 7.1 - 7.4 and 11.1 - 11.3.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. 3M All Weather Flashing Tape 8067 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. See Paragraph 7.1.

4.1 3M All Weather Flashing Tape 8067 is a pressure sensitive self-adhering tape with a release backing paper for use as a flexible flashing tape around window and door penetration openings in accordance with NZBC Acceptable Solution E2/AS1. The tape is supplied in rolls 152 and 76 mm wide x 22.8 m long.

Handling and Storage

5.1 Handling and storage of all materials supplied by 3M New Zealand Limited, whether on or off site, is under the control of the installer. 3M All Weather Flashing Tape 8067 must be protected from damage and weather. Rolls must be stored under cover, in clean, dry conditions away from direct exposure to sunlight.

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the 3M All Weather Flashing Tape 8067. 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.

General

7.1 3M All Weather Flashing Tape 8067 meets the requirements of AC148: 2001 which is an alternative solution to the version of AC148 referenced by NZBC Acceptable Solution E2/AS1 Paragraph 9.1.5(b). Two layers of 3M All Weather Flashing Tape 8067 must be installed on the horizontal sill surface. This installation method is an alternative solution to the installation method shown within NZBC Acceptable Solution E2/AS1, Figures 72(a) and 72(b).

7.2 The use of flexible flashing systems around window and door joinery openings is critical to assist the overall weathertightness performance of window and door joinery installations.

7.3 3M All Weather Flashing Tape 8067 is designed to prevent air leakage and water penetration around window and door openings at framing junctions (e.g. at the sill trimmer and opening stud junction), and to keep any water that gets past the cladding, or through the joinery, from direct contact with the framing timber.

7.4 3M All Weather Flashing Tape 8067 is not designed to overcome poor detailing and workmanship of the window or door joinery installation. The system must not be considered in isolation, but be considered as part of the wall cladding system. 3M All Weather Flashing Tape 8067 is designed to be used in conjunction with air seals and joinery flashing systems, not as a substitute.

7.5 When the 3M All Weather Flashing Tape 8067 is used in conjunction with LOSP (light organic solvent preservative) treated timber, the solvent from the timber treatment must be allowed to evaporate (generally at least one week) prior to the installation of the system.

7.6 3M All Weather Flashing Tape 8067 must not be exposed to the weather or ultra-violet light for longer than the permitted exposure of the selected flexible building wrap (typically 42 to 60 days) up to a maximum of 90 days.

Durability

8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement, and the ability to detect failure of the 3M All Weather Flashing Tape 8067 both during normal use and maintenance of the building.

Serviceable Life

8.2 Provided it is not exposed to the weather or ultra-violet light for a total of more than 90 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, 3M All Weather Flashing Tape 8067 is expected to have a serviceable life equal to that of the cladding.

Maintenance

9.1 No maintenance is required for 3M All Weather Flashing Tape 8067. Regular checks, at least annually, must be made of the junctions between the joinery and wall cladding to ensure that they are maintained weathertight and that the primary means of weather resistance for the junction e.g. flashing, sealant, etc continues to perform its function, to ensure that water will not penetrate the cladding.

Outbreak of Fire

10.1 3M All Weather Flashing Tape 8067 must be separated from chimneys and flues in accordance with the requirements of NZBC Acceptable Solution C/AS1 Part 9 for the protection of combustible materials.

External Moisture

11.1 Where a cladding manufacturer specifies the use of generic flashing tapes around window and door joinery openings at framing junctions as part of their system, or they specify the use of flexible flashing tapes that comply with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.5(b), 3M All Weather Flashing Tape 8067 may be used.

11.2 Where a cladding manufacturer specifies the use of flexible flashing tapes to seal the upstands of head flashings to the building underlay in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3, 3M All Weather Flashing Tape 8067 may be used.

11.3 Where a cladding manufacturer specifies the use of flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11 to seal around pipes and services penetrations (in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.3), 3M All Weather Flashing Tape 8067 may be used.

Installation Skill Level Requirements

12.1 Installation of the 3M All Weather Flashing Tape 8067 must be completed by tradespersons with an understanding of flexible flashing tape systems, in accordance with instructions given within the 3M All Weather Flashing Tape 8067 Technical Literature and this Appraisal.

General

13.1 The selected flexible building underlay must be installed in accordance with the manufacturer's instructions, and must completely cover the joinery opening. The underlay is then cut at a 45° angle away from each corner of the opening so the flaps can be folded into the opening and secured to the interior face of the timber framing.

13.2 Before the 3M All Weather Flashing Tape 8067 is applied, the substrate surfaces must be clean, dry and free from any surface contaminants such as frost, dust and grease that may cause loss of adhesion.

Internal Corner Gusset

13.3 Cut a 150 mm long x 76 mm wide strip of 3M All Weather Flashing Tape 8067 for each of the bottom and top internal corners of the opening. Fold in half lengthways and after removing the backing strip, install tight into the corner starting flush with the back of the opening. Apply pressure to the tape to ensure adequate adhesion is achieved. The overhanging section of tape at the front of the opening must then be pulled over and adhered to the outside face of the building underlay sealing the corner junction.

Sill Tape

13.4 A length of 152 mm wide 3M All Weather Flashing Tape 8067 must then be cut to the length of the sill. The tape is aligned flush with the interior face of the opening and is applied along the entire length of the sill. The overhanging tape is then folded onto the face of the building underlay. Ensure that adequate adhesion of the tape is achieved and that the tape is installed tight into the sill/jamb junction. A second layer of 76 mm wide 3M All Weather Flashing Tape 8067 must then be installed along the entire length of the sill. The tape is installed flush with the exterior face of the opening. This is a mandatory requirement for horizontal surfaces to ensure nail penetrations self seal. *(Note: 3M All Weather Flashing Tape 8067 does not need to be applied to the sills of window and door openings that finish on a concrete slab. Refer to the Technical Literature for guidance.)*

Jamb / Sill

13.5 Measure vertically up the jamb from the internal corner of the sill allowing minimum 50 mm cover onto the building underlay (minimum 100 mm overall). Cut a 152 mm wide piece of 3M All Weather Flashing Tape 8067 to this measurement for each jamb. Remove the backing strip and install starting tight into the sill/jamb junction. Align flush with the interior face of the opening and fold the overhanging tape onto the face of the building underlay.

Jamb / Head

13.6 Measure vertically down the jamb from the jamb/head junction allowing minimum 50 mm cover onto the building underlay (minimum 100 mm overall). Cut a 152 mm wide piece of 3M All Weather Flashing Tape 8067 to this measurement for each jamb and the same for the lintel on each side of the opening. Remove the backing strip and install starting tight into the jamb/head junction. Align flush with the interior face of the opening and fold the overhanging tape onto the face of the building underlay.

(Note: Where flexible building underlay is not used, such as with some proprietary Rigid Air Barrier systems, all exposed timber around the opening must be protected with 3M All Weather Flashing Tape 8067.)

13.7 After installation of the window or door joinery head flashing, a continuous length of 75 mm wide 3M All Weather Flashing Tape 8067 can be used to seal the head flashing upstand to the building underlay.

13.8 3M All Weather Flashing Tape 8067 must not be stretched. To avoid wastage, the tape can be lapped 100 mm minimum onto itself without reducing the performance of the 3M All Weather Flashing Tape 8067.

13.9 If the 3M All Weather Flashing Tape 8067 is exposed to the weather or UV light for more than 90 days, then it must be replaced with new material.

Installation Temperature

13.10 The 3M All Weather Flashing Tape 8067 must not be installed where the ambient air and substrate temperatures are less than -5°C. *(Note: 3M New Zealand Ltd approve the installation of 3M All Weather Flashing Tape 8067 within the temperature range of -18°C to +49°C. This has not been addressed by this Appraisal and is outside its scope.)*

Inspections

13.11 The Technical Literature must be referred to during the inspection of 3M All Weather Flashing Tape 8067 installations.

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

Tests

14.1 Testing of 3M All Weather Flashing Tape 8067 has been completed by BRANZ to the requirements of ICC Evaluation Service Acceptance Criteria for Flashing Materials AC148: 2001. The adhesion of 3M All Weather Flashing Tape 8067 to black bituminous Kraft building paper complying with the requirements of NZBC Acceptable Solution E2/AS1, Table 23 and selected other synthetic building underlays has been tested and found to be satisfactory.

Other Investigations

15.1 An assessment was made of the durability of the 3M All Weather Flashing Tape 8067 by BRANZ technical experts.

15.2 The practicability of installation was reviewed by BRANZ and found to be satisfactory.

15.3 The Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

16.1 The manufacture of the 3M All Weather Flashing Tape 8067 has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory.

16.2 The quality of supply to the market is the responsibility of 3M New Zealand Ltd.

16.3 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and building underlays in accordance with the instructions of the designer.

16.4 The quality of installation, handling and storage on site is the responsibility of the installer in accordance with the instructions of 3M New Zealand Ltd.

Sources of Information

- ICC Evaluation Service, Inc, AC148 Acceptable Criteria for Flashing Materials, July 2001.
- 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).
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
The Building Regulations 1992.



In the opinion of BRANZ, 3M All Weather Flashing Tape 8067 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 3M New Zealand 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. 3M New Zealand 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 3M New Zealand 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 3M New Zealand Limited or any third party.

For BRANZ

P Burghout
Chief Executive

Date of issue: 6 August 2012

Memorandum from licensed building practitioner: Certificate of design work

Section 45 and section 30C, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

THE BUILDING

Street address: 2 Kanuka Close

Suburb: Ferndale Subdivision

Town/City: Waikanae

Postcode:

THE OWNER(S)

Name(s): David Reid Homes - Showhome

Mailing address: PO Box 148 Paraparaumu 5254

Suburb:

PO Box/Private Bag:

Town/City:

Postcode:

Phone number:

Email address: tim.sunderland@davidreidhomes.co.

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies ☒

- ☐ **sole** designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design work myself – no other person will be providing any additional memoranda for the project
- ☐ **lead** designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and **no other** person will be providing any additional memoranda for the project
- ☒ **lead** designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the **other** designers will provide their own memorandum relating to their specific RBW design
- ☐ **specialist** designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)

I Peter Davis carried out / supervised the following design work that is restricted building work

PRIMARY STRUCTURE: B1

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☐ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
All RBW design work relating to B1 ☐ ☒		☐ Carried out ☐ Supervised	
Foundations and subfloor framing ☒ ☐		☐ Carried out ☒ Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☒ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Walls ☒ ☐		☐ Carried out ☒ Supervised	
Roof ☒ ☐		☐ Carried out ☒ Supervised	
Columns and beams ☐ ☒		☐ Carried out ☐ Supervised	
Bracing ☐ ☒		☐ Carried out ☐ Supervised	
Other ☐ ☒		☐ Carried out ☐ Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☒ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2			
All RBW design work relating to E2 ☒ ☐		☐ Carried out ☒ Supervised	
Damp proofing ☐ ☐		☐ Carried out ☐ Supervised	
Roof cladding or roof cladding system ☐ ☐		☐ Carried out ☐ Supervised	
Ventilation system (for example, subfloor or cavity) ☐ ☐		☐ Carried out ☐ Supervised	
Wall cladding or wall cladding system ☐ ☐		☐ Carried out ☐ Supervised	
Waterproofing ☐ ☐		☐ Carried out ☐ Supervised	
Other ☐ ☐		☐ Carried out ☐ Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☒ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
FIRE SAFETY SYSTEMS: C1 - C6			
Emergency warning systems Evacuation and fire service operation systems ☒ Suppression or control systems ☐ Other		☐ Carried out ☒ Supervised	
Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.			

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: **Peter Davis**

LBP or Registration number: **BP103740**

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

Design Entity or Company (optional): **ADarchitecture Ltd**

Mailing address (if different from below):

Street address/Registered office: **45B Te Roto Drive**

Suburb: **Paraparaumu**

Town/City: **Paraparaumu**

PO Box/Private Bag: **1585**

Postcode: **5252**

Phone number: **04 298 5662**

Mobile: **021 328 471**

After hours:

Fax:

Email address: **peter.d@adarchitecture.nz**

Website:

DECLARATION

I, **Peter Davis**, LBP, state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW:

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

Signature:



Date:

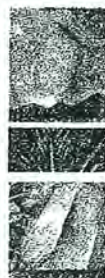
20-06-2016



60045
Kapiti Coast District Council
Private Bag 601
Paraparaumu 5254

Tel. (04) 296 4700
Fax (04) 296 4830
or 0800 486 486

E: kapiti.council@kapiticoast.govt.nz
W: www.kapiticoast.govt.nz



**CONSENT NOTICE
PURSUANT TO SECTION 221 OF
THE RESOURCE MANAGEMENT ACT 1991**

**IN THE MATTER OF A PLAN LODGED FOR
DEPOSIT UNDER NUMBER 409302
AND RESOURCE CONSENT NO. RM 070273**

**(BEING THE SUBDIVISION OF PART LOT 6 DP 20118),
AT 148 – 158 NGARARA ROAD, WAIKANAE
FOR FERNDAL TRUST**

The Regional Regulatory Titles Officer at Wellington

PURSUANT to Section 221 of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that it has consented to the subdivision and that the following conditions are to be complied with on a continuing basis:

1. With respect to Lots 32 to 35, 37, 42 to 54, 56 and 57 inclusive: Within the attenuation and ponding areas of the respective allotments as identified in the schedule below, the following restrictions/obligations apply:
 - No Earthworks are permitted as the existing landform must be retained;
 - No buildings may be erected or established;
 - The continued efficient operation of any attenuation and/or pond facility must be ensured on a continuing basis.

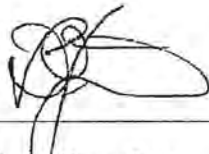
Schedule:

- Lot 32 areas marked as S and AE on DP 409302
- Lot 33 area marked as R on DP 409302
- Lot 34 area marked as Q on DP 409302
- Lot 35 area marked as P on DP 409302
- Lot 37 area marked as O on DP 409302
- Lot 42 area marked as Z on DP 409302
- Lot 43 area marked as Y on DP 409302
- Lot 44 area marked as X on DP 409302
- Lot 45 area marked as W on DP 409302
- Lot 46 area marked as V on DP 409302
- Lot 47 area marked as U on DP 409302
- Lot 48 areas marked as T and AF on DP 409302
- Lot 49 area marked as H on DP 409302
- Lot 50 area marked as H on DP 409302
- Lot 51 area marked as J on DP 409302
- Lot 52 area marked as K on DP 409302
- Lot 53 area marked as L on DP 409302
- Lot 54 area marked as AA on DP 409302
- Lot 56 area marked as M on DP 409302
- Lot 57 area marked as N on DP 409302

2. With respect to Lots 1 to 62 inclusive: Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the Geotechnical Earthworks Report prepared by Connell Wagner Limited (reference 153C) dated 23 December, 2008 and submitted to Council in relation to application No. RM070273. A copy of the report is available in Council's Office at any time the office is open to the public.
3. With respect to Lots 1 to 62 inclusive: Each residential lot shall have a stormwater design prepared by a suitably qualified person submitted to Council for approval prior to any application for a building consent. The approved design shall be submitted with the building consent application. The design shall incorporate, as a minimum, stormwater attenuation devices and on-site soakage systems capable of dealing with the 1 in 10 year event where there is a secondary overflow path, or the 1 in 100 year event where there is no secondary overflow path. The approved design must be implemented and maintained in full working order on a continuing basis. Stormwater shall not discharge from the residential properties onto properties adjoining the development.
4. With respect to Lots 1 to 62 inclusive: Each residential allotment shall have a greywater dispersal device approved by Council installed at the time of any dwelling construction, unless a report acceptable to Council prepared by a suitably qualified person shows that this is impracticable because of the particular site conditions.

Any greywater dispersal device shall be maintained in good operating order in accordance with the manufacturer's requirements.
5. With respect to Lots 1 to 62 inclusive: Each residential lot that cannot comply with the requirement above regarding the installation of a greywater dispersal device shall be required to have a water supply restricted to no more than 1000 litres per day (0.0116 litres per second).

Issued in respect of application No. RM 070273 on this 5th day of June, 2009.



David Wayne Gair
AUTHORISED OFFICER



Colin John Bridges
AUTHORISED OFFICER

00046



COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952



Guaranteed Search Copy issued under Section 172A
of the Land Transfer Act 1952

R. W. Muir
Registrar-General
of Land

Identifier **434060**
Land Registration District **Wellington**
Date Issued 06 July 2009

Prior References

WN48B/879

Estate	Fee Simple
Area	987 square metres more or less
Legal Description	Lot 6 Deposited Plan 409302

Proprietors

Ferndale Development Limited

Interests

7983109.1 Mortgage to ANZ National Bank Limited - 7.11.2008 at 3:52 pm
8217543.1 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 6.7.2009 at 1:32 pm
Land Covenant in Easement Instrument 8217543.4 - 6.7.2009 at 1:32 pm
Fencing Covenant in Deed 8217543.8 - 6.7.2009 at 1:32 pm (subject to section 6(2) Fencing Act 1978)

**NOTE:**

Lots 100, 101, 102 & 103 are to vest as Recreation Reserve in the Kapiti Coast District Council.

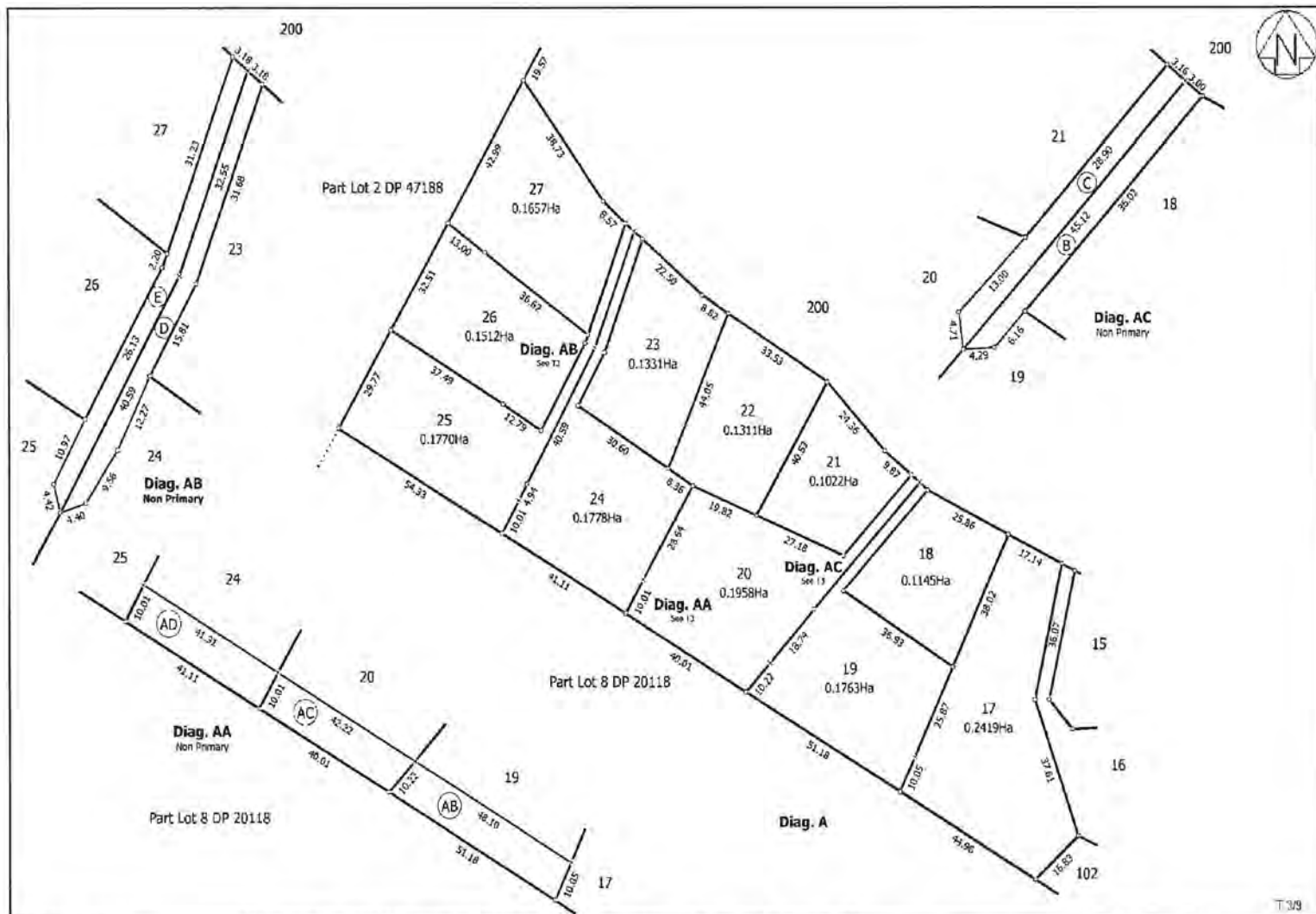
Lot 200 is to vest as road in the Kapiti Coast District Council.



T 1/9

Land District: Wellington	Lots 1-62, Lots 100-103 and Lot 200 Being a Subdivision of Part Lot 6 DP 20118	Surveyor: Craig William Hurford Firm: Aurecon (Wellington)	Digital Title Plan DP 409302 Deposited on: 6/07/2008
Digitally Generated Plan Generated on: 05/03/2008 1:28pm Page 7 of 15			





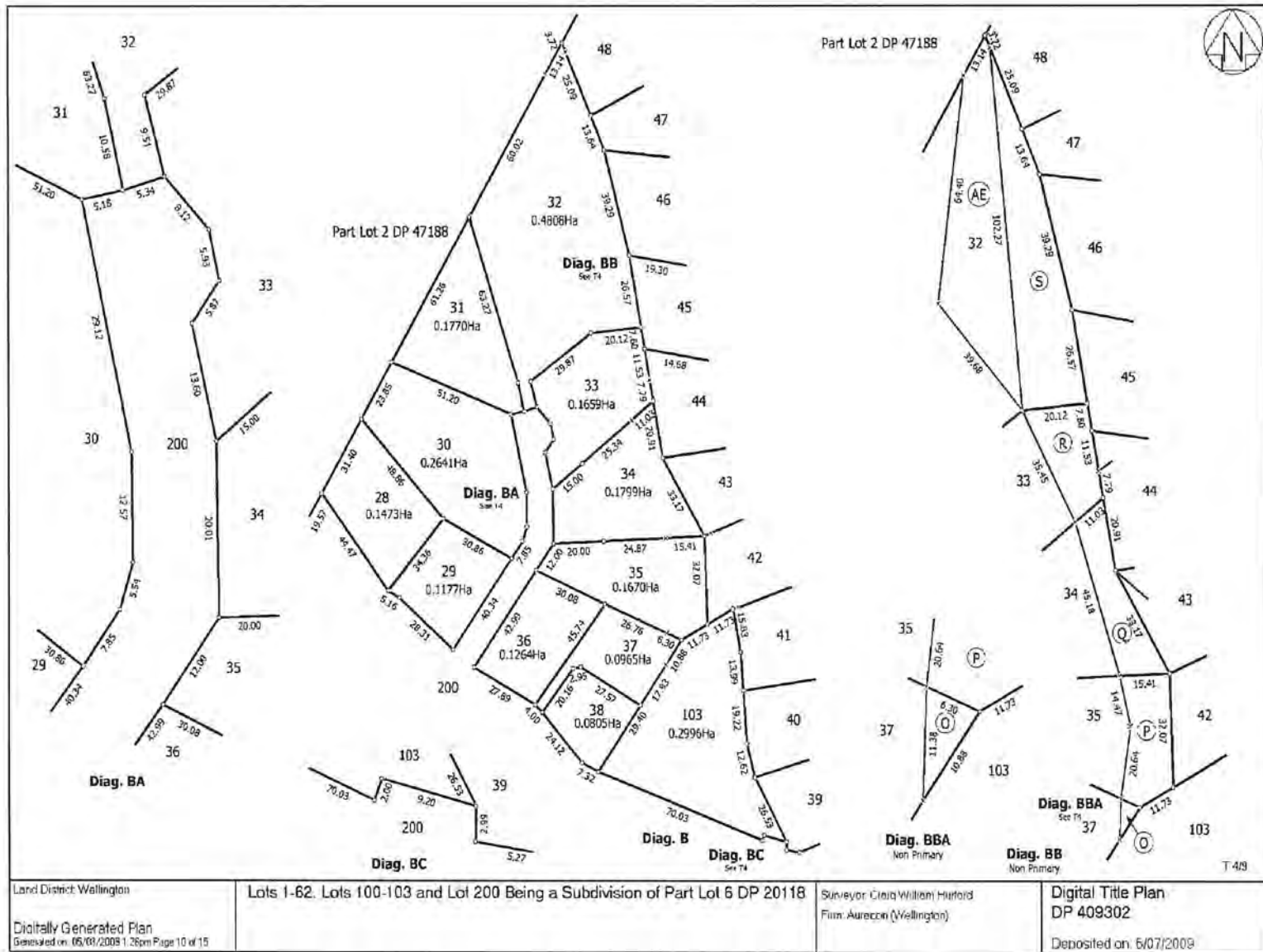
Land District: Wellington

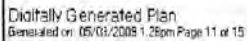
Lots 1-62, Lots 100-103 and Lot 200 Being a Subdivision of Part Lot 6 DP 20118

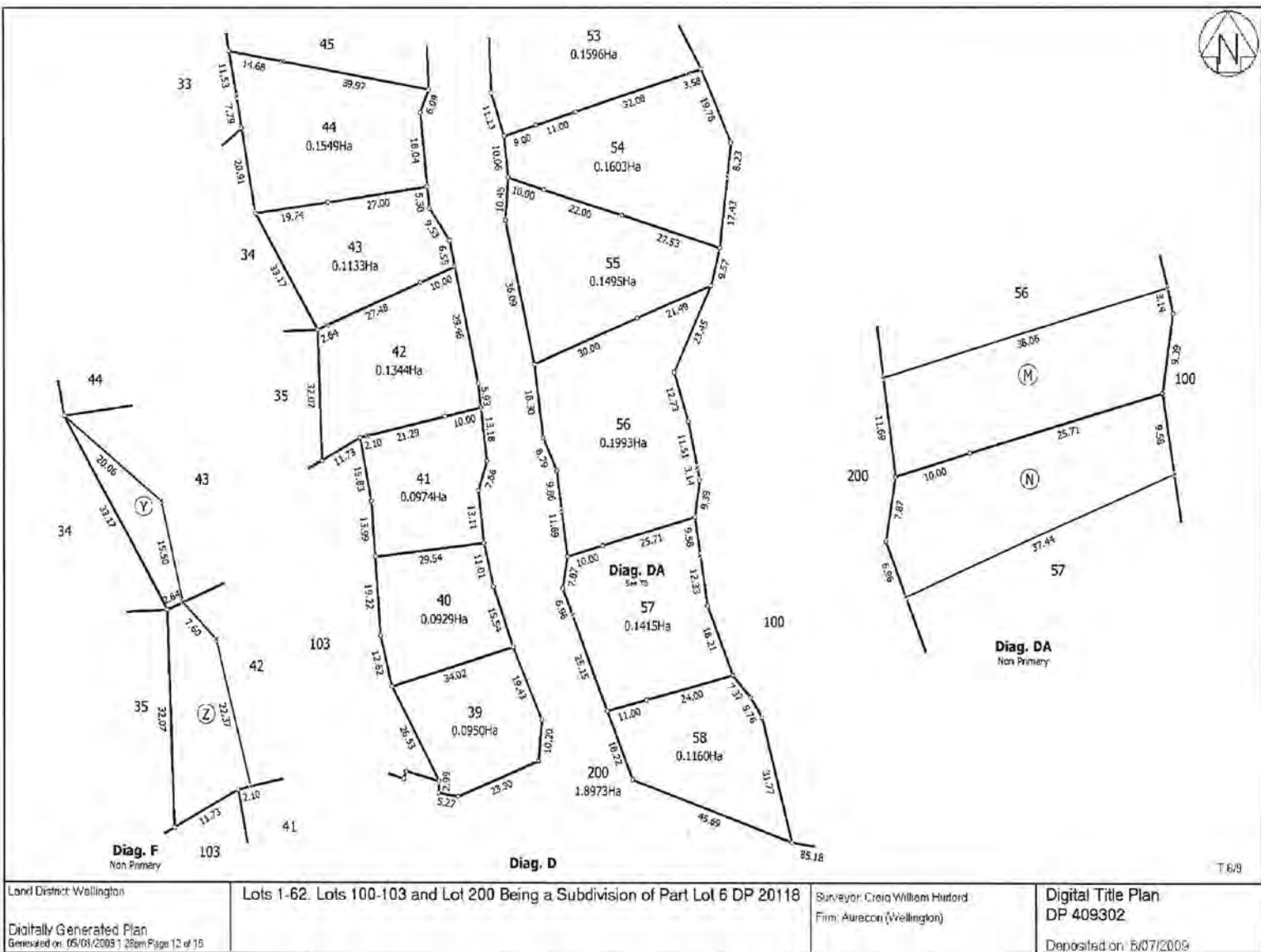
Surveyor: Craig William Hurford
Firm: Aurecon (Wellington)Digital Title Plan
DP 409302

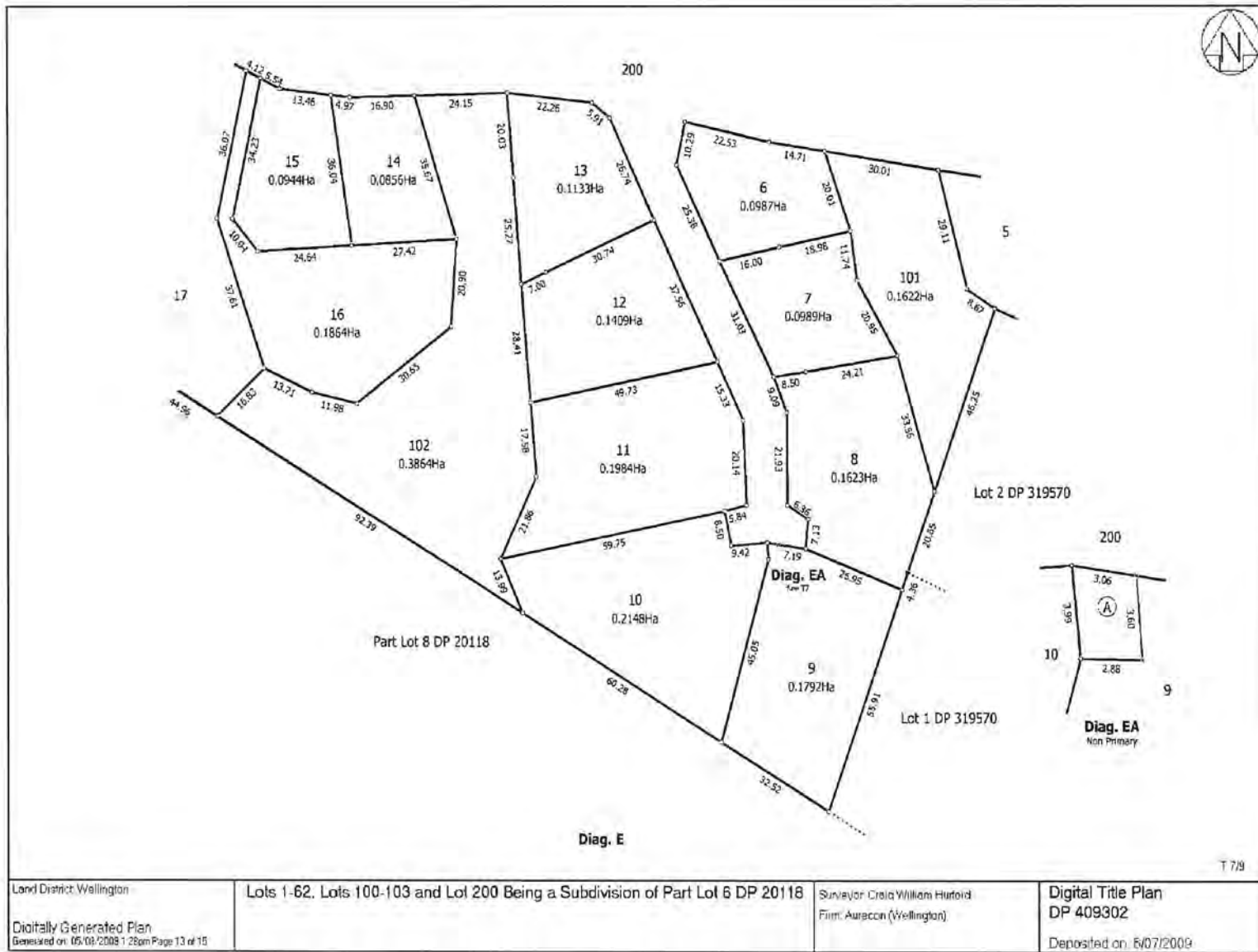
Deposited on: 6/07/2009

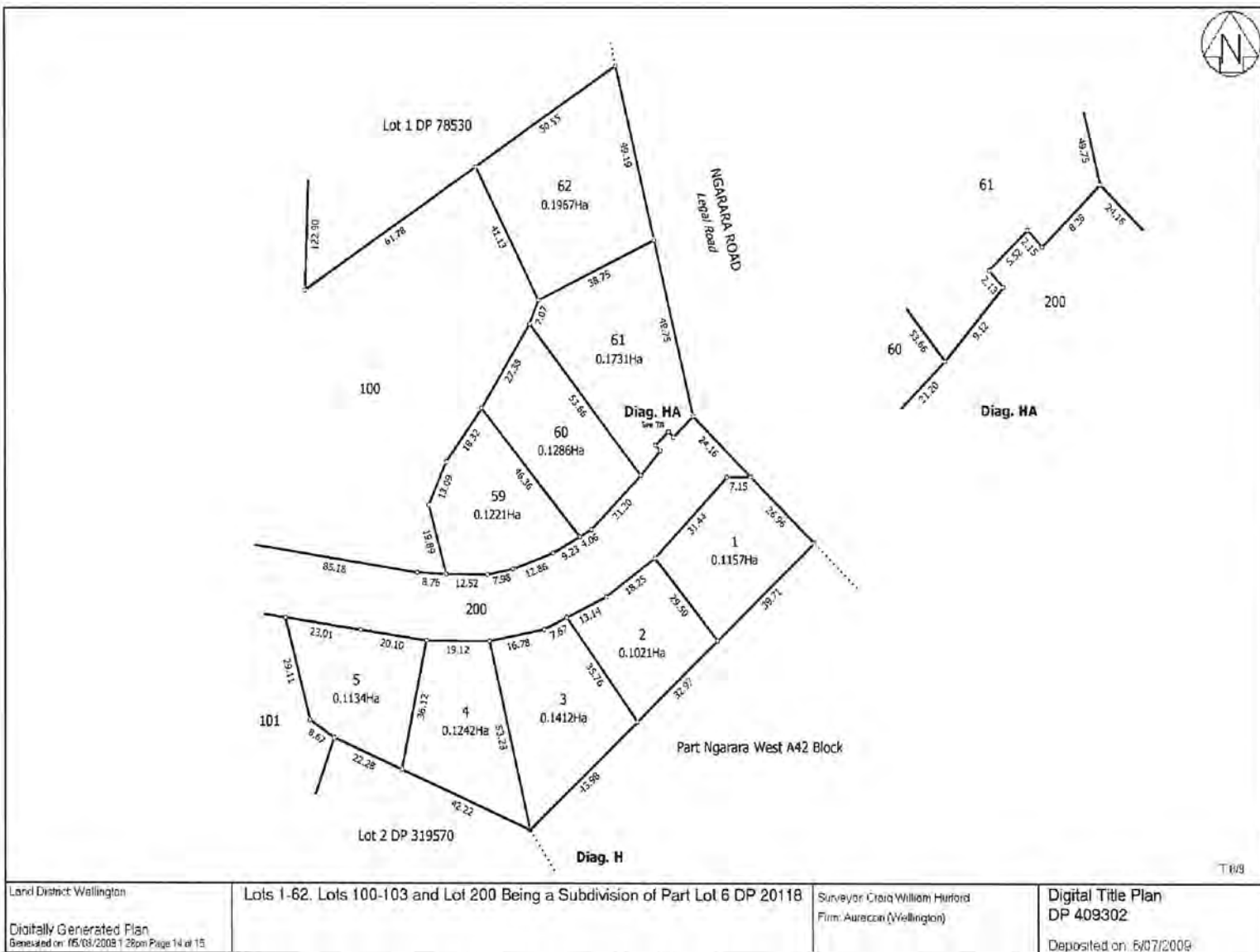
Digitally Generated Plan
Generated on: 05/08/2009 1:28pm Page 9 of 15

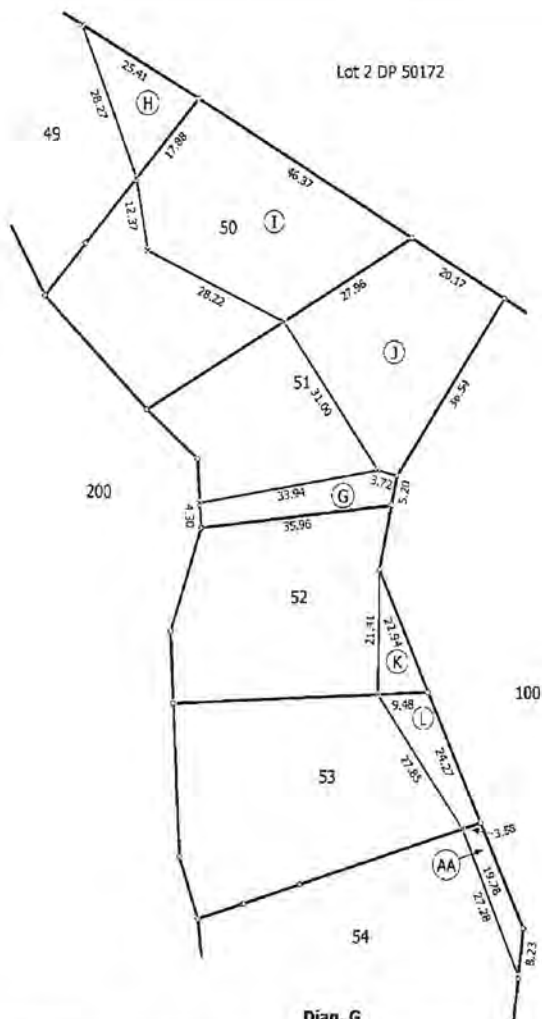












Diag. G
Non Primary

T 9/9

Land District: Wellington	Lots 1-62, Lots 100-103 and Lot 200 Being a Subdivision of Part Lot 6 DP 20118	Surveyor: Craig William Hurford Firm: Aurecon (Wellington)	Digital Title Plan DP 409302 Deposited on: 6/07/2009
Digitally Generated Plan Generated on: 05/08/2009 1:28pm Page 15 of 15			



View Instrument Details

Instrument No. 8217543.1
Status Registered
Date & Time Lodged 06 Jul 2009 13:32
Lodged By Stevenson, Jane Marce
Instrument Type Consent Notice under s221(4)(a) Resource Management Act 1991

Land Information
Toitu te
whenua
New Zealand



Affected Computer Registers	Land District
-----------------------------	---------------

434055	Wellington
434056	Wellington
434057	Wellington
434058	Wellington
434059	Wellington
434060	Wellington
434061	Wellington
434062	Wellington
434063	Wellington
434064	Wellington
434065	Wellington
434066	Wellington
434067	Wellington
434068	Wellington
434069	Wellington
434070	Wellington
434071	Wellington
434072	Wellington
434073	Wellington
434074	Wellington
434075	Wellington
434076	Wellington
434077	Wellington
434078	Wellington
434079	Wellington
434080	Wellington
434081	Wellington
434082	Wellington
434083	Wellington
434084	Wellington
434085	Wellington
434086	Wellington
434087	Wellington
434088	Wellington
434089	Wellington
434090	Wellington
434091	Wellington
434092	Wellington
434093	Wellington
434094	Wellington
434095	Wellington

Affected Computer Registers	Land District
434096	Wellington
434097	Wellington
434098	Wellington
434099	Wellington
434100	Wellington
434101	Wellington
434102	Wellington
434103	Wellington
434104	Wellington
434105	Wellington
434106	Wellington
434107	Wellington
434108	Wellington
434109	Wellington
434110	Wellington
434111	Wellington
434112	Wellington
434113	Wellington
434114	Wellington
434115	Wellington
434116	Wellington

Annexure Schedule: Contains 2 Pages.

Signature

Signed by Jane Maree Stevenson as Territorial Authority Representative on 06/07/2009 01:21 PM

*** End of Report ***

Jeremy Lincoln

From: Tom Pearson <Tom.P@adarchitecture.nz>
Sent: 29 JUN 2016 Wednesday, 29 June 2016 4:07 p.m.
To: Jeremy Lincoln
Cc: Jon Ambler
Subject: BC160475
Attachments: 10029_DRH_Lot6_Ferndale_REV_A.pdf



Hi Jeremy

As discussed, the issues you asked to be address were;

- 1, Sheet A18 – H3.2 Bearer. – **Has been changed to H4**
- 2, Specifications for Laundry Vent. – **Laundry Vent addressed on sheet A09**
- 3, The horizontal battens on the cladding – **Horizontal Battens have been removed.**
- 4, a PS1 for the Stormwater soakpit from Cutriss – **As per your discussions with Tim Sunderland this is no longer required.**

Regards,

Tom Pearson
Junior Architectural Technician

ADarchitecture
tel (04) 298 5662 ext. 21
www.adarchitecture.nz

CHECKSHEET: SINGLE RESIDENTIAL DWELLING AND ACCESSORY BUILDING

30048

Kāpiti Coast
DISTRICT COUNCIL
Te Huri Whakamuri, Ka Tītiro Whakamuri

Including single stand-alone dwellings, dwelling additions and/or alterations, re-piling, garages, decks, gazebos, sheds, retaining walls etc.

29 JUN 2016
BY: *SM*

* PTOFF Missing
Details 22/06/16

Kapiti Coast District Council,
175 Rimu Road, Paraparaumu 5032
Private Bag 60601, Paraparaumu 5254
For enquiries, phone 04 296 4700

Address of Project: 2 Kanuka Close Ferndale Waikanae

This checklist shows you the information that has to be supplied with your building consent application. Please attach **2 copies** of the following information (unless otherwise specified) with your completed Building Consent Application Form.

Please tick relevant box in the Customer Use column as you attach the information. If the box is not relevant to your application, write NA across the box. Please check each section carefully and complete those sections that are relevant to your project.

Once you have attached all the required information, please check for completeness as an incomplete application or lack of any supporting information **will mean that your application cannot be accepted for processing.**

An Application Form is attached to this checklist — Please include this checklist with your application.

Customer Use	1	GENERAL Complete this section for all applications	For Office Use Only
☒	a	Building Consent Application Form (1 copy) Completed and signed by the owner or by an agent on behalf of the owner	☒
☒ ☐	b	Proof of Ownership (1 copy) One recent copy of current certificates/s of title (not older than 3 months) AND where applicable one copy of purchase agreement (if recently purchased) or one copy of relevant portions of current lease.	☒ ☐
☒	c	Locality Plan (1:500) showing: Physical location of the subject building in relation to streets or landmarks, north point, name of building and lot and DP number.	☒
☒	d	Restricted Building Work Does the application involved restricted building work? ☒ Yes ☐ No If Yes, provide certificate(s) of design work and advise Council of your Licensed Building Practitioner(s) as per the Advise of Licensed Building Practitioners Guidance sheet.	☒
☒	e	Inspections and Monitoring Details of proposed inspection regime including monitoring by council officers and other professionals e.g. architects, engineers, surveyors and certification to be supplied on completion.	☐
☒	f	Site Plan (1:100) showing: Dimensions of all boundaries, north point, finished floor levels, site area, street name and number, lot and DP number, outline of building, distance to boundaries and the position of swimming or spa pools, ground contours (extended to boundaries) and/or levels and designated wind zone of the site (e.g. specific design, very high, high, medium or low). In addition, if a site is identified as being subject to flooding, ponding, on an overflow path, river or stream corridor, or other natural hazards, indicate on plans proposed design will mitigate natural or created hazards. Additional information is available on these sites by request from Kapiti Coast District Council.	☒
☒	g	Application Fee Applications will not be accepted without payment of the appropriate fees? Fees payable are set out in the published fee schedule of the council that has jurisdiction over the project site.	☒

For Office Use Only: Building Consent Officer: Application Accepted? ☒ Yes ☐ No

Give reason: *Documentation appears complete*

Name:

Jeremy

Date:

20/6/16

Signature:

[Signature]

2 CHANGE OF USE			
Complete for all existing buildings where the proposal involves forming a household unit where one did not exist before Example: the conversion of a garage or shed into a residential unit			
☐	a	Assessment of the Building for Compliance with the Building Code Section 115(a) of the Building Act 2004 requires that the building, in its new use, complies fully with all clauses of the Building Code.	☐
☐	b	Reasonably Practicable The above assessment must relate to all building code clauses. If the proposal is for the project to meet anything less than full compliance with any clauses, your application must clearly state your reasoning, with supporting documentation, and show how you will meet the highest level of compliance that can be considered reasonably practicable.	☐
3 FOUNDATIONS / FLOOR			
Complete for all new buildings, for existing buildings where the footprint of the building will change or where an additional storey is being added			
☒	a	Foundation Plan (1:100 / 1:50) showing: • Dimensions of all new foundations • Sub-floor, including bracing • Footing details • If a concrete slab, show basic details including reinforcing and contractions joints • Piles and footing • If the addition is an upper storey show details on upgrading existing foundations, joints, piles etc • Indicate ventilation to sub floor spaces	☒
☐	b	Subfloor Bracing Provide subfloor bracing plan and calculations for all piled structures. Where the structure is specifically engineered, this should be included with the structural calculations. Subfloor bracing plan and calculations are required where an additional storey is to be added	☐
4 CONSTRUCTION			
Complete for all new structures or alterations to existing structures			
☒	a	Existing Floor Plan (1:100 / 1:50) showing: (For additions and alterations only) • All levels • All designated spaces • All removals • Sanitary fixtures • Smoke detectors	☒
☒	b	Proposed Floor Plans (1:100 / 1:50) showing: • Room dimensions • Location of partitions • All designated spaces • All floors (new or altered) • Location of sanitary fixtures • Stairs, barriers, handrails, floor joists and beams • Floor joist layout for each level with timber floors • Smoke detectors • Note where wall will form part of the swimming pool fence	☒
☒	c	Pre-nail Truss and Frames • Specific design wall framing requires clarification • Truss layout must be supported by design certification and design of fixing details, including consideration of load paths to ground • Lintels carrying point loads, such as from girder trusses, require specific engineering design	☒

☒	d	Wall Bracing Plan (1:100 / 1:50) showing: - Bracing details and calculations for wall bracing (also required for existing lower storeys where an additional storey is being added) - Sub-floor bracing for decks projecting more than 2m from the house - Location, type and number of bracing elements to indicate compliance with NZS 3604:2011 (include calculations) - If the bracing was specifically designed by a structural engineer, provide calculations (required for specific design wind zones and lateral distribution of upper floor loads where lower storey bracing is provided in walls beyond the upper storey footprint)	☒
☒	e	Sections and Details (1:50 / 1:20 / 1:10) showing: - Foundation details involving reinforcing and connections - Stairs, handrails, decks and decking - Insulation systems and materials to floors, walls and roof - Barriers providing safety from falling. Specific engineering design required where detail does not comply with NZBC B1/AS2 - Framing sizes, beams, lintels - Roof cladding, eaves, fascias, gutters - Flashings to openings - Fire rated systems on all walls – closer than 1 metre to boundary - Stud heights of rooms and total height from lowest ground floor level to top of ridge - Window and door installation details - Retaining wall details e.g. type, height of retained ground, relationship to boundary, waterproof membrane and proposed drainage	☒
☐	f	Fire Report For domestic dwellings of 4 storeys or more, or buildings providing more than one household unit	☒
	5	EXTERNAL Complete for new buildings or existing buildings with alternations to the external shell	
☒	a	Elevations (1:100 / 1:50) showing: Accurate lines from boundary to boundary on each elevation, relevant District Plan daylight control lines, the maximum height on each elevation, location of door and window openings, fixed and opening sashes, sill heights, floor levels in relation to ground levels, exterior cladding nominated to all elevations, down pipes and spouting, ventilators to sub-floor area (suspended floors only)	☒
☒	b	Risk Assessment (<i>Risk matrix in E2/AS1 may be used for buildings within scope</i>) Consider exposure, design and detailing to support appropriate selection of cladding	☒
☒	c	Cladding Details (1:50 / 1:20 / 1:10) Provide details around all penetrations, joinery and other junctions at a level appropriate to the level of risk e.g. roof/wall, balcony/wall, junction of different types of cladding, back flashing details for cavity systems	☒
☒	d	Production Certification Supply copies of product certificates relied on as compliance documents	☒
☐	e	Alternative Solutions If the proposal uses products or systems that are not covered in the Acceptable Solutions of clause E2 of the Building Code provide supporting current information including test results (fully signed reports), case studies, expert opinion (including evidence of experience/qualification, basis for forming opinion and statement of independence) etc to demonstrate compliance	☐
	6	SERVICES Complete for all projects with new installations or alteration of plumbing or drainage services	
☒	a	Plumbing and Drainage Plan 1:100 / 1:50) showing: <i>Note: if you have supplied drainage details for surface water disposal on the site plan, no drainage plan is required.</i> - Sizes of pipe work and drains - Fixtures and fittings, hot water system(s) - If the building is more than one storey with sanitary fittings on upper floors, provide an isometric layout showing wastes, pipes and falls - Drainage layout with inspection bends and junctions indicated for both sewer and stormwater - Any other drainage on site including council mains and retaining wall field drains - Ventilation of sanitary rooms - Calculations for sizing of down pipes - Gully traps including overflow relief gullies	☒

7		STRUCTURAL Complete for all projects incorporating specific structural design	
☒	a	Structural Calculations If any design work required the services of a structural engineer, attach 2 copies of the calculations with this. The calculations must be prefaced with information explaining the design philosophy and justification of assumptions and methodologies used in analysis	☒
☒	b	Expert Opinion (Producer Statements) If this application for consent relies on any expert opinion including Producer Statements certifying compliance with the New Zealand Building Code, a copy must be attached with this application. (Note all structural Producer Statements are required to have accompanying calculations.)	☒
8		SPECIFICATIONS Complete for all applications <i>Note: the specification must be specific to the project and cover all aspects of the proposed work</i>	
☒	a	Specification: General • Elements of structure (size, spacing, timber treatment) • Finish or fixings to meet durability requirements • Plumbing and drainage materials and design that installation is to comply with • Wet area surfaces • Ventilation systems • Flooring slip resistance for access routes • Glazing • Type of smoke detectors (including existing smoke detectors where they will remain)	☒
☒	b	External Claddings For each of the following claddings provide details of the product name, manufacturer, maintenance requirements and warranties offered • Building wraps • Wall claddings • Roof claddings • Membranes (roof and decks) • Tanking • Joinery	☒
9		DEMOLITION / REMOVAL Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings	
☐	a	Means of Barricading the Site Provide details of temporary barriers, gates which swing inwards or other means of restricting public access to the area	☐
☐	b	Proposed Tipping Location for Demolition Materials (address/landfill)	☐
☐	c	Hazardous Building Material Provide safety plan detailing the safe handling and disposal of hazardous materials	☐
☐	d	Site Management Plan Covering Management to control silt runoff, noise and dust	☐
☐	e	Proposed Destination for Relocate Building	☐
☐	f	Access To and From the Site (including use of kerb crossings)	☐
☐	g	Specify Termination of Existing Services • Water • Sewer • Stormwater 	☐

☐	<h> Details About the Building such as: Number of storeys, type of materials the building is constructed (Photographs of the building would be useful) </h>	☐
--------------------------	---	--------------------------

	Note: You will need to contact the relevant service authorities specified below to advise them of the extent of your work: • electricity, • gas, • drainage, • water, • transport, • telecommunications, • cable television, or • any other services that may be affected. Transportation of Relocated Building You will be required to contact and provide details to Councils Transportation and Traffic Department.	
10	OTHER APPROVALS Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings	
☐	Please check Territorial Authority regarding the requirement for other approvals required and fees payable. These may include: • Consents under the Resource Management Act • Approvals under bylaws including earthworks, vehicle crossings, road openings and water connections. Show the location of swimming or spa pools on the property and describe how compliance with the Fencing of Swimming Pools Act will be achieved.	☐

The issue of a building consent does not relieve the owner of any duty or responsibility under any other Act.

PLUMBING & DRAINAGE NOTES:

- THIS PAGE IS TO BE READ IN CONJUNCTION WITH SHEET 02 - CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION
- THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH BRANZ PLUMBING AND DRAINAGE GUIDE SECTION D AS/NZS 3500 PART 2 FOR GROUND FLOOR SYSTEMS, SINGLE STACK RESIDENTIAL SYSTEMS AND SECTION F DRAINAGE REQUIREMENTS
- CONFIRM POSITION OF LATERALS & MAINS ON SITE
- PROVIDE 22500 litre WATER STORAGE TANK WITH PUMP SUPPLY TO WC CISTERNS AND EXTERIOR HOSE TAPS - LOCATION TO BE CONFIRMED BY CLIENT
- ALL PIPES FROM WATER TANK SUPPLYING WC AND EXTERIOR TAPS TO BE CLEARLY LABELLED AS SUCH
- INSTALL SIGNS AT EXTERIOR TAPS TO SHOW WATER NOT FIT FOR DRINKING
- HOT WATER SUPPLY PIPES FROM WATER HEATER SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH NZS 4305
- ALL TILED WET AREA SHOWERS TO HAVE AQUATITE WET WALL CADDY SYSTEM INSTALLED TO PENETRATIONS

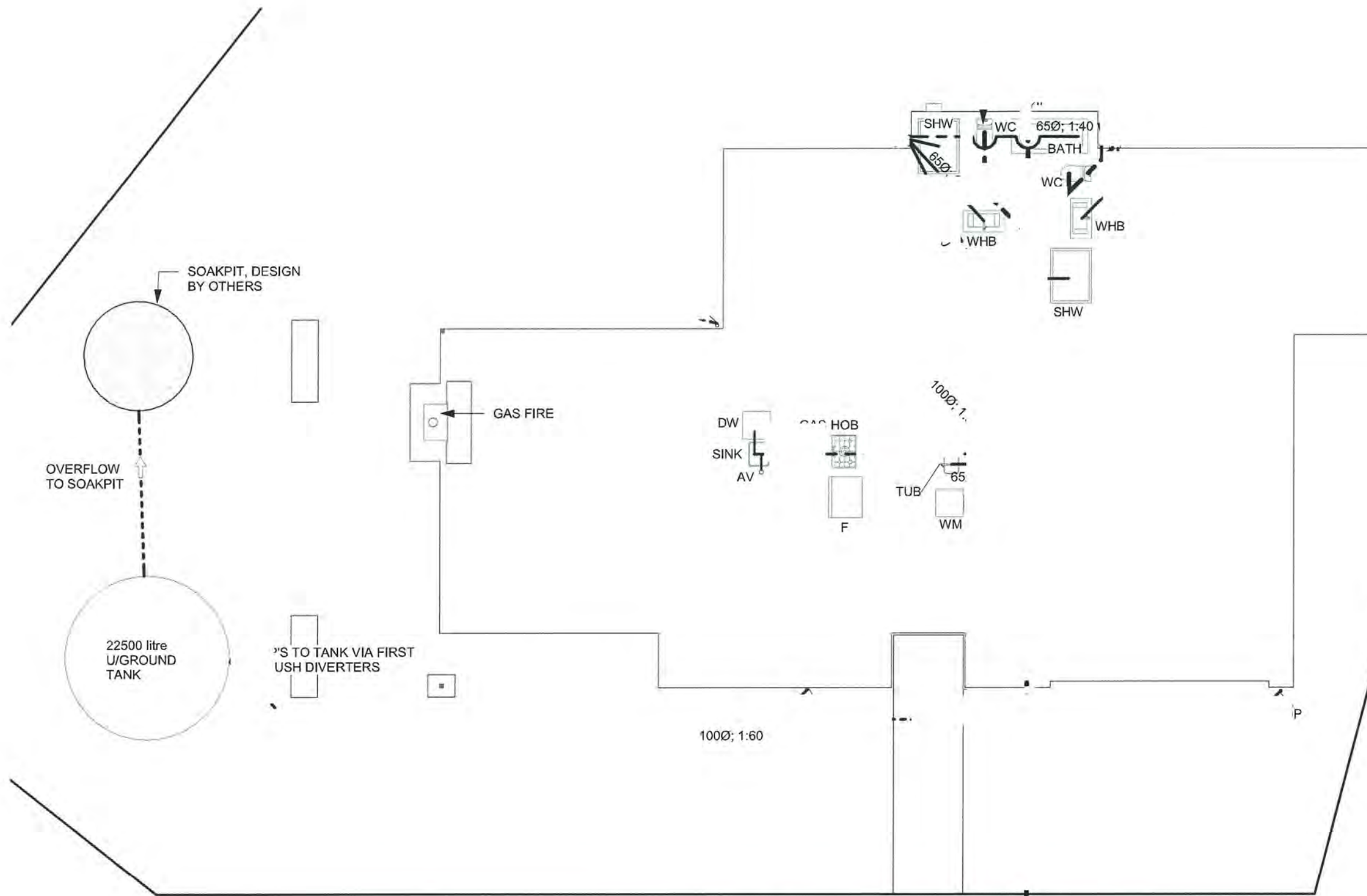
PLUMBING KEY

BATH	= BATH	= 4FU
BG	= BATHROOM GROUP	= 6FU
DW	= DISHWASHER	= 3FU
SHW	= SHOWER	= 2FU
SINK	= SINK	= 3FU
TUB	= LAUNDRY TUB	= 5FU
WC	= TOILET	= 4FU
WHB	= WASH HAND BASIN	= 1FU
WM	= WASHING MACHINE	= 5FU

DP	= DOWNPIPE
DV	= DRAIN VENT
HT	= HOSE TAP
IP	= INSPECTION POINT
AAV	= AIR ADMITTANCE VALVE
FWG	= FLOOR WASTE GULLY
HWC	= HOT WATER CYLINDER
ORG	= OVERFLOW RELIEF GULLY

MAXIMUM NUMBER FIXTURE UNITS FOR VENTED 100Ø DRAIN LAID 1 IN 60 = 165
REFER TO TABLE 4.3 AS/NZS 3500.2 FOR OTHER GRADIENTS.

PIPE GRADIENTS
MINIMUM GRADES FOR DRAINS & DISCHARGE PIPES:
65Ø & LESS = 1 IN 40
80Ø & 100Ø = 1 IN 60



DRAINAGE PLAN
1 : 100

Drainlayer/Plumber please provide a neat asbuilt plan to Council showing water sewer and stormwater and under floor drainage.BC160475



ADarchitecture
Applied Design
Email: info@adarchitecture.nz
Web: www.adarchitecture.nz

- **Kapiti Office** - Phone: (04) 298 5662
Smarter Building Centre
45B Te Roto Drive, Paraparaumu
- **Wellington Office** - Phone: (04) 232 4258
Level 9 Crowe Horwath House

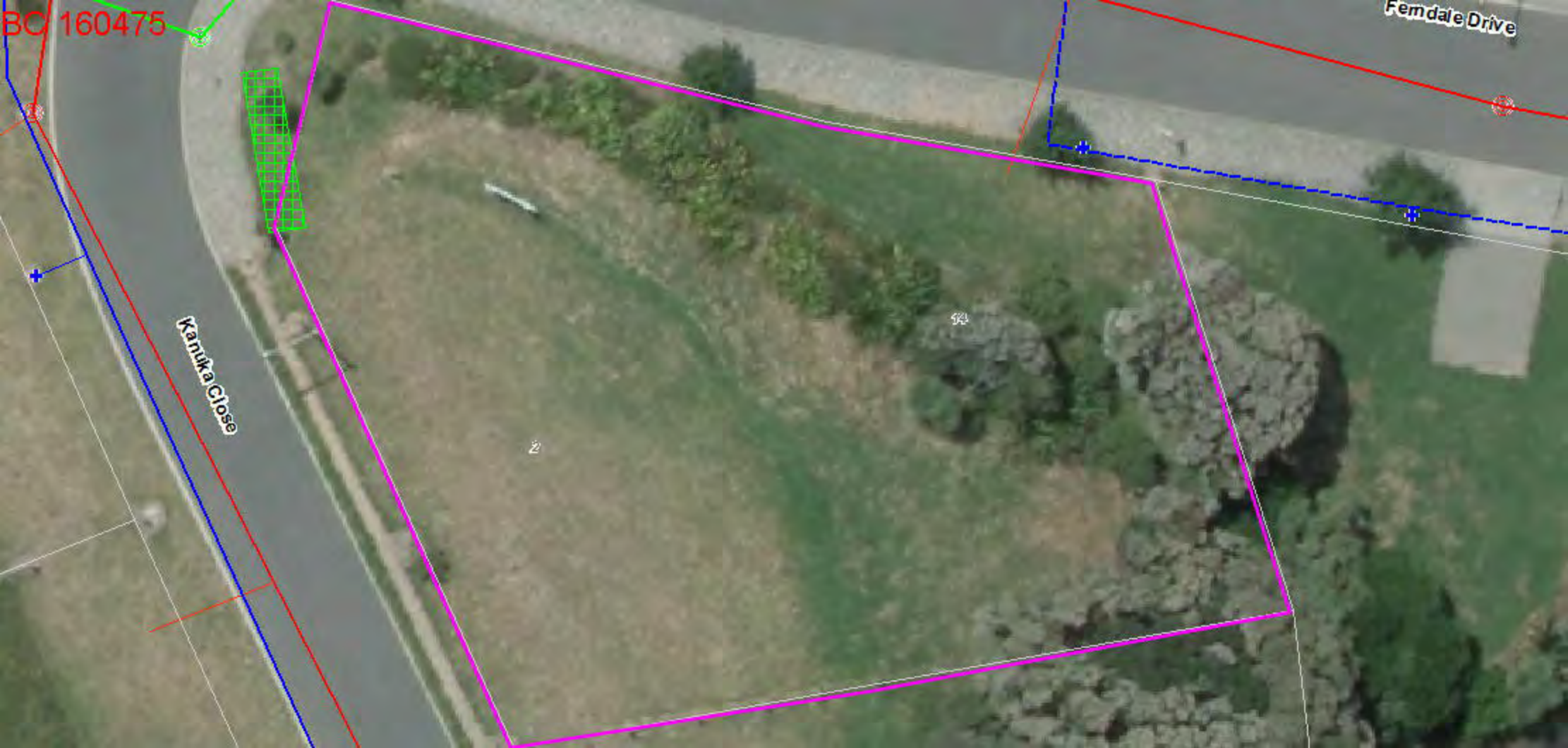
Proposed House
for
David Reid Homes
2 Kanuka Close
Waikanae

Rev	Date	Description
DRAINAGE PLAN		
BUILDING CONSENT		
Job	Date	Sheet Rev.
10029	JUN2016	A06

BC 160475

Femdale Drive

Kanuka Close



BUILDING CONSENT PRODUCTION CHECKLIST



Proposal: <u>New Dwelling</u>		BC: <u>160475</u>
Address: <u>14 Ferndale Dr</u> <u>Waikeke</u>		Category: <u>2</u>
		Residential: ☒ Commercial: ☐
Officer:	Date:	

Key	
N/A ☐	Not Applicable to this application. (The deletion of whole sections as N/A is permitted. For alternatives comment below each section).
No ☐	Plans, specifications & documentation not complying with the Building Code &/or Bld Act (The reason specified alongside each prompt)
Yes ☐	Plans, specifications & documentation complying with Category Bld Code &/or Bld Act (The reason specified alongside each prompt)

Site Plan (NZS 3604 Sec 3.4, 4, 5 Code clB1, B2, E1, E2, F1 & F2 Sect. 72, 75 BA04)			
N/A	No	Yes	Comments
☒	☐	☐	Wind zone High V/ High Specific (GIS) Site specific (3604)
☒	☐	☐	Flooding / ponding hazards (GIS)
☒	☐	☐	Slippage / fault line hazards (GIS)
☒	☐	☐	Erosion, river & coastal hazards (GIS)
☒	☐	☐	Subsidence / soft soil hazards (Site inspection notes) <u>Pass - compacted sand</u>
☒	☐	☐	Corrosion zone Zone D or Zone C
☒	☐	☐	Soil contamination (F1/GIS)
☐	☐	☒	Distances to boundaries / siting (District plan) <u>no boundaries located - peps</u>
☐	☐	☒	Floor levels / contours (E2/AS1 & NZS 3604 E1) <u>FFL = 15.25, contours 10 - 15</u>
☒	☐	☐	Two or More Allotments (Sec 75 - 83 Bld Act)
☒	☐	☐	Noise / sound insulation (airport & highway)
☐	☐	☒	CT/221 notice reviewed <u>Refer to consent notice # RM 070 273</u>
☒	☐	☐	Outstanding Building Consents, No CCC
			BC:
			BC:
Additional comments:			

Ambiguity / Contradictions			
N/A	No	Yes	Comments
☐	☐	☐	Manufacturers Specs
☐	☐	☐	Engineer compared with Designer/Arch
☐	☐	☐	Any Other contradictions
Additional comments:			

Commercial Fire report (C/M1, C/As1, C/AS2, C/A34, C/AS4, C/AS5, C/AS6, C/AS7, F6, F7, F8)			
N/A	No	Yes	Comments
☐	☐	☐	Referral to NZFS Fire Engineering unit
Additional Comments:			

Kapiti Coast District Council
Private Bag 601
Paraparaumu 5254

Tel. (04) 296 4700
Fax (04) 296 4830
or 0800 486 486

E: kapiti.council@kapiticoast.govt.nz
W: www.kapiticoast.govt.nz



**CONSENT NOTICE
PURSUANT TO SECTION 221 OF
THE RESOURCE MANAGEMENT ACT 1991**

**IN THE MATTER OF A PLAN LODGED FOR
DEPOSIT UNDER NUMBER **409302**
AND RESOURCE CONSENT NO. **RM 070273****

**(BEING THE SUBDIVISION OF PART LOT 6 DP 20118),
AT 148 – 158 NGARARA ROAD, WAIKANAE
FOR FERNDAL TRUST**

The Regional Regulatory Titles Officer at Wellington

PURSUANT to Section 221 of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that it has consented to the subdivision and that the following conditions are to be complied with on a continuing basis:

1. With respect to Lots 32 to 35, 37, 42 to 54, 56 and 57 inclusive: Within the attenuation and ponding areas of the respective allotments as identified in the schedule below, the following restrictions/obligations apply:
 - No Earthworks are permitted as the existing landform must be retained;
 - No buildings may be erected or established;
 - The continued efficient operation of any attenuation and/or pond facility must be ensured on a continuing basis.

Schedule:

- Lot 32 areas marked as S and AE on DP 409302
- Lot 33 area marked as R on DP 409302
- Lot 34 area marked as Q on DP 409302
- Lot 35 area marked as P on DP 409302
- Lot 37 area marked as O on DP 409302
- Lot 42 area marked as Z on DP 409302
- Lot 43 area marked as Y on DP 409302
- Lot 44 area marked as X on DP 409302
- Lot 45 area marked as W on DP 409302
- Lot 46 area marked as V on DP 409302
- Lot 47 area marked as U on DP 409302
- Lot 48 areas marked as T and AF on DP 409302
- Lot 49 area marked as H on DP 409302
- Lot 50 area marked as H on DP 409302
- Lot 51 area marked as J on DP 409302
- Lot 52 area marked as K on DP 409302
- Lot 53 area marked as L on DP 409302
- Lot 54 area marked as AA on DP 409302
- Lot 56 area marked as M on DP 409302
- Lot 57 area marked as N on DP 409302

2. With respect to Lots 1 to 62 inclusive: Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the Geotechnical Earthworks Report prepared by Connell Wagner Limited (reference 153C) dated 23 December, 2008 and submitted to Council in relation to application No. RM070273. A copy of the report is available in Council's Office at any time the office is open to the public.
3. With respect to Lots 1 to 62 inclusive: Each residential lot shall have a stormwater design prepared by a suitably qualified person submitted to Council for approval prior to any application for a building consent. The approved design shall be submitted with the building consent application. The design shall incorporate, as a minimum, stormwater attenuation devices and on-site soakage systems capable of dealing with the 1 in 10 year event where there is a secondary overflow path, or the 1 in 100 year event where there is no secondary overflow path. The approved design must be implemented and maintained in full working order on a continuing basis. Stormwater shall not discharge from the residential properties onto properties adjoining the development.
4. With respect to Lots 1 to 62 inclusive: Each residential allotment shall have a greywater dispersal device approved by Council installed at the time of any dwelling construction, unless a report acceptable to Council prepared by a suitably qualified person shows that this is impracticable because of the particular site conditions.

Any greywater dispersal device shall be maintained in good operating order in accordance with the manufacturer's requirements.
5. With respect to Lots 1 to 62 inclusive: Each residential lot that cannot comply with the requirement above regarding the installation of a greywater dispersal device shall be required to have a water supply restricted to no more than 1000 litres per day (0.0116 litres per second).

Issued in respect of application No. RM 070273 on this 5th day of June, 2009.



David Wayne Gair
AUTHORISED OFFICER

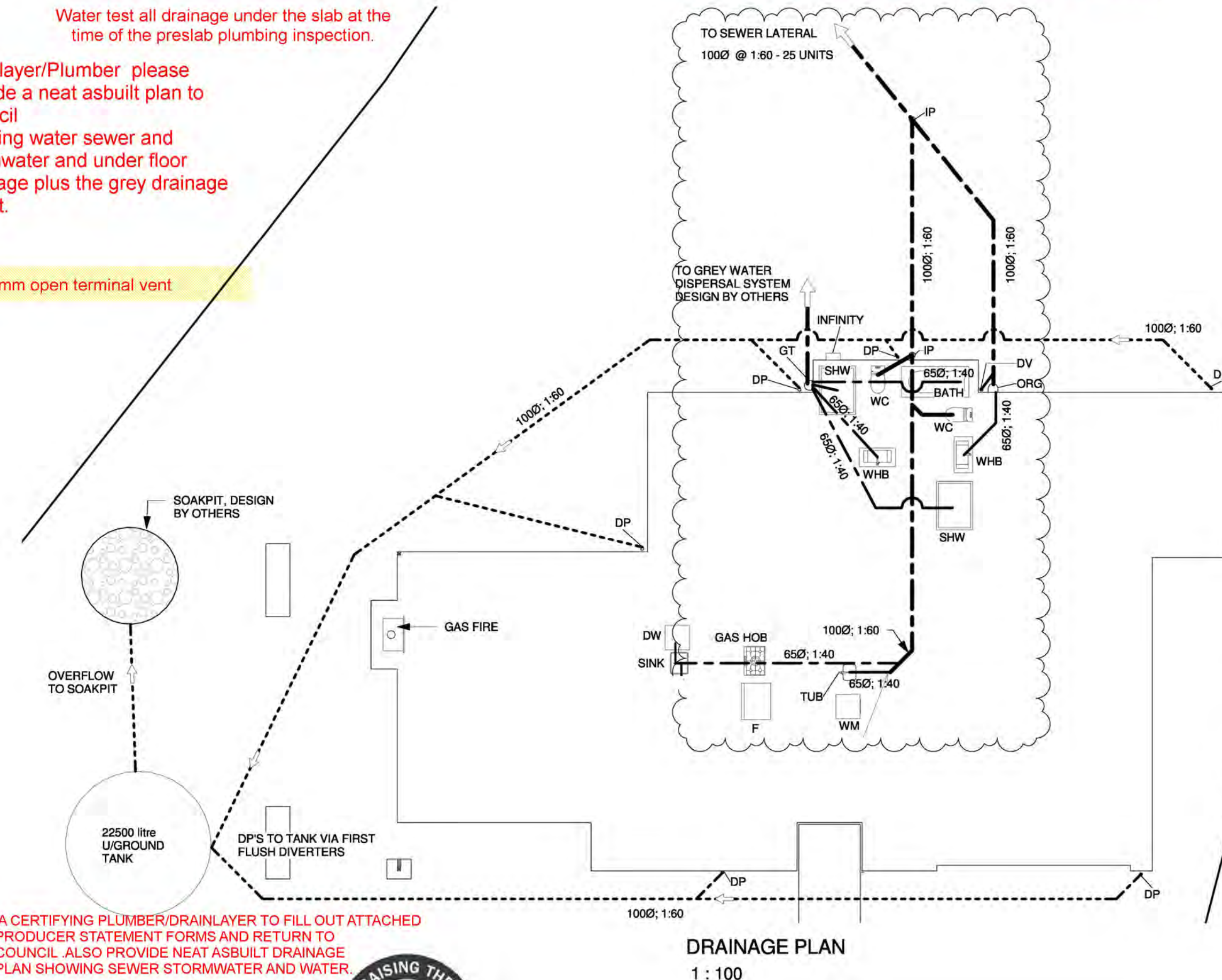


Colin John Bridges
AUTHORISED OFFICER

BC 160475 revised plan supplied 5/8/2016

Drainlayer/Plumber please provide a neat asbuilt plan to Council showing water sewer and stormwater and under floor drainage plus the grey drainage layout.

an 50mm open terminal vent



☒ **Kapiti Office** - Phone: (04) 298 5662
Smarter Building Centre
45B Te Roto Drive, Paraparaumu

☐ **Wellington Office** - Phone: (04) 232 4258
Level 9 Crowe Horwath House

Proposed House
for
David Reid Homes
2 Kanuka Close
Waikanae

PLUMBING & DRAINAGE NOTES:

- THIS PAGE IS TO BE READ IN CONJUNCTION WITH SHEET 02 - CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION
- THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH BRANZ PLUMBING AND DRAINAGE GUIDE SECTION D AS/NZS 3500 PART 2 FOR GROUND FLOOR SYSTEMS, SINGLE STACK RESIDENTIAL SYSTEMS AND SECTION F DRAINAGE REQUIREMENTS
- CONFIRM POSITION OF LATERALS & MAINS ON SITE
- PROVIDE 22500 litre WATER STORAGE TANK WITH PUMP SUPPLY TO WC CISTERNS AND EXTERIOR HOSE TAPS - LOCATION TO BE CONFIRMED BY CLIENT
- ALL PIPES FROM WATER TANK SUPPLYING WC AND EXTERIOR TAPS TO BE CLEARLY LABELLED AS SUCH
- INSTALL SIGNS AT EXTERIOR TAPS TO SHOW WATER NOT FIT FOR DRINKING
- HOT WATER SUPPLY PIPES FROM WATER HEATER SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH NZS 4305
- ALL TILED WET AREA SHOWERS TO HAVE AQUATITE WET WALL CADDY SYSTEM INSTALLED TO PENETRATIONS

PLUMBING KEY

BATH	= BATH	= 4FU
BG	= BATHROOM GROUP	= 6FU
DW	= DISHWASHER	= 3FU
SHW	= SHOWER	= 2FU
SINK	= SINK	= 3FU
TUB	= LAUNDRY TUB	= 5FU
WC	= TOILET	= 4FU
WHB	= WASH HAND BASIN	= 1FU
WM	= WASHING MACHINE	= 5FU
DP	= DOWNPIPE	
DV	= DRAIN VENT	
HT	= HOSE TAP	
IP	= INSPECTION POINT	
AAV	= AIR ADMITTANCE VALVE	
FWG	= FLOOR WASTE GULLY	
HWC	= HOT WATER CYLINDER	
ORG	= OVERFLOW RELIEF GULLY	

MAXIMUM NUMBER FIXTURE UNITS FOR
VENTED 100Ø DRAIN LAID 1 IN 60 = 165
REFER TO TABLE 4.3 AS/NZS 3500.2 FOR
OTHER GRADIENTS.

PIPE GRADIENTS

MINIMUM GRADES FOR DRAINS & DISCHARGE PIPES:
 65Ø & LESS = 1 IN 40
 80Ø & 100Ø = 1 IN 60

THE BUILDER IS TO ENSURE
THAT
PROPOSED FOUNDATION
HEIGHT WILL ALLOW A
SATISFACTORY DRAINAGE
CONNECTION TO THE
COUNCILS SEWER.

E	Date	Description
Rev	Date	Description

DRAINAGE PLAN

BUILDING CONSENT

Job	Date	Sheet	Rev.
10029	AUG2016	A06	E

SITE NOTES
THIS PAGE IS TO BE READ IN CONJUNCTION
WITH SHEET 02 - CONSTRUCTION NOTES
FOR ADDITIONAL INFORMATION

LEGAL DESCRIPTION:
LOT 6
DP 409302

SITE AREA = 987m²

SITE COVERAGE (MEASURED OVER
CLADDING AND INCLUDING VERANDAHS) =
236.4m² = 23.95%

SITE FEATURES:
PLANNING ZONE = RESIDENTIAL
WIND ZONE = HIGH
EXPOSURE ZONE = C
EARTHQUAKE ZONE = 3
SOIL CLASS = REFER ENGINEERS
DOCUMENTATION
SNOW ZONE = N1 (0 - 400m ALTITUDE)
CLIMATE ZONE = 2
HAZARD ZONE = NO KNOWN HAZARDS

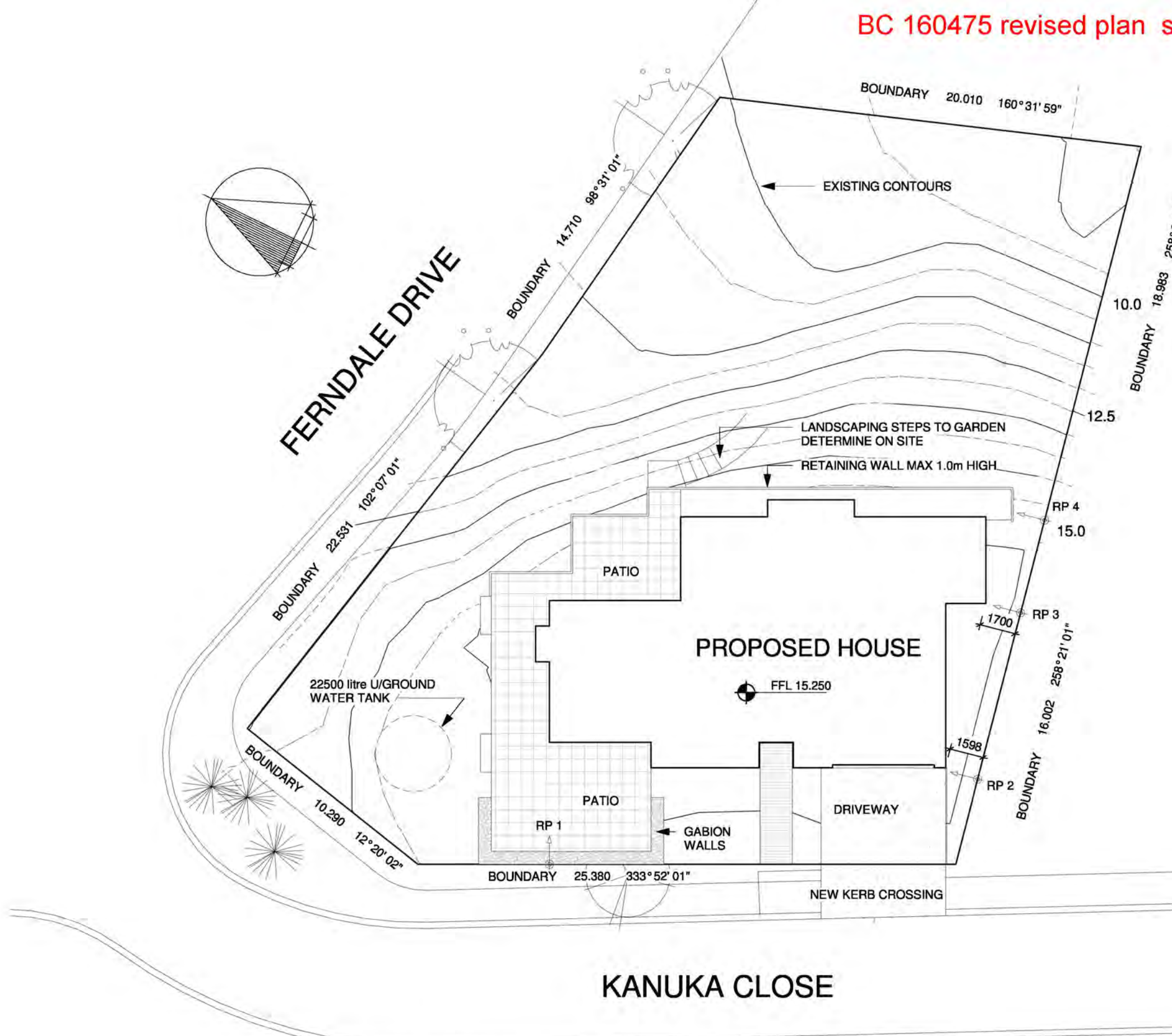
**APPROVED BY
PLANNING**
Jill Burke
8/07/2016

**APPROVED
BY
PLUMBING
AND
DRAINAGE**
Simon C
5/8/2016

**APPROVED
BY BUILDING**
Colin Clench
5/08/2016

BOUNDARY LINES

The Owner/Builder is responsible for
clearly defining the site boundary lines
and pegs. This may require a survey.
NOTE: established fences are not
necessarily on the site boundary.



ADarchitecture
Applied Design
Email: info@adarchitecture.nz
Web: www.adarchitecture.nz

Kapiti Office - Phone: (04) 298 5662
Smarter Building Centre
45B Te Roto Drive, Paraparaumu
Wellington Office - Phone: (04) 232 4258
Level 9 Crowe Horwath House

Proposed House
for
David Reid Homes
2 Kanuka Close
Waikanae

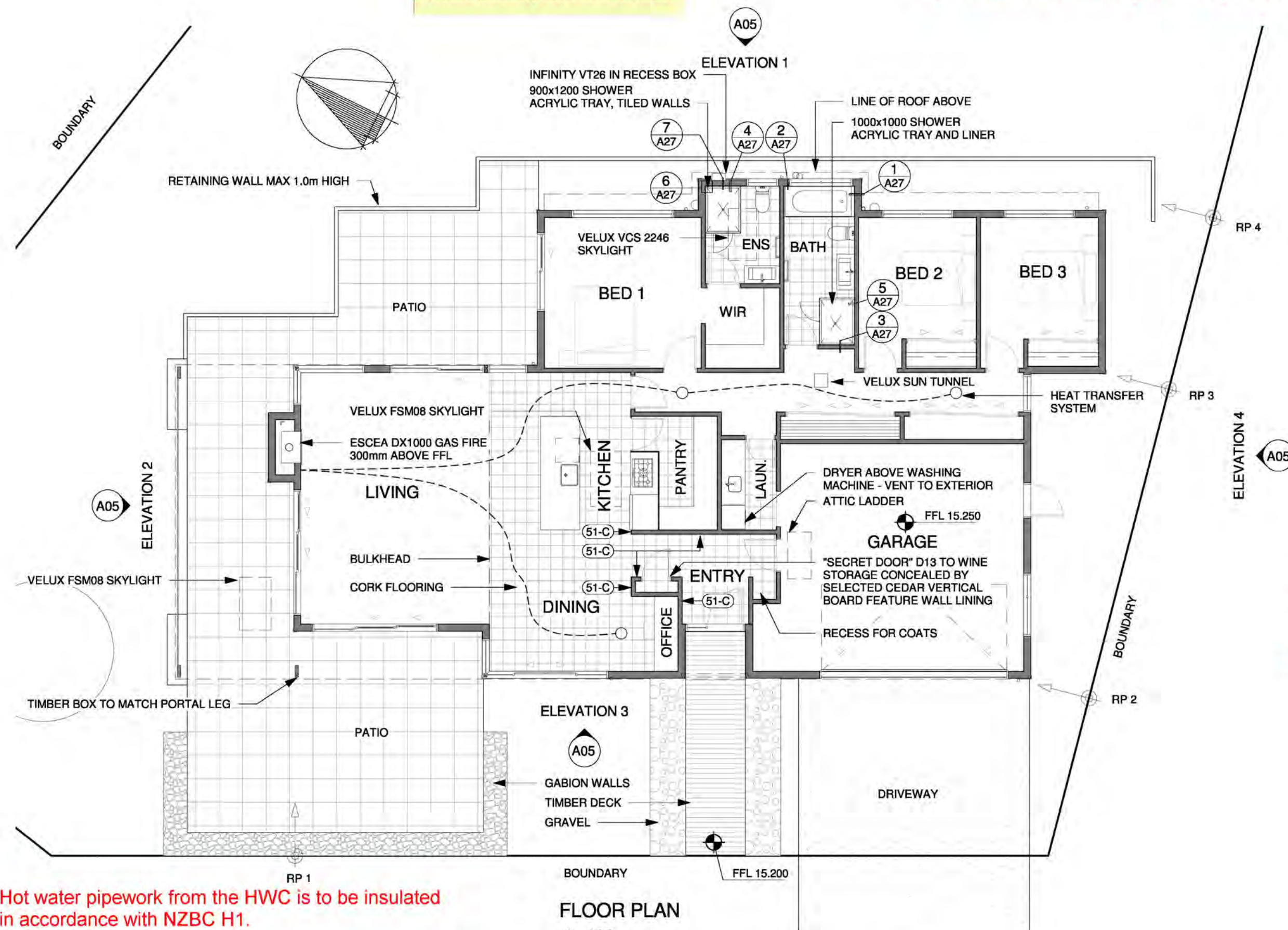
Rev	Date	Description
-----	------	-------------

SITE PLAN

BUILDING CONSENT

Job	Date	Sheet	Rev.
10029	AUG2016	A03	

A preline plumbing inspection required.



CONSTRUCTION NOTES

- THIS PAGE IS TO BE READ IN CONJUNCTION WITH SHEET 02 - CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION
- 13mm GIB STANDARD CEILINGS ON 70x35 TIMBER BATTENS (13mm AQUALINE TO BATHROOMS AND ENSUITES)
- 10mm GIB WALL LININGS (10mm AQUALINE TO BATHROOMS AND ENSUITES)
- 9mm VILLABOARD WALL LININGS TO TILED SHOWER AREAS
- 9mm STRANDBOARD WALL LININGS TO GARAGE
- SQUARE STOP SCOTIA DETAIL THROUGHOUT
- BA85x12 BEVEL EDGE PRE-PRIMED MDF SKIRTINGS (PINE TO WET AREAS, GARAGE)
- SLIMLINE REVEALS TO WINDOWS AND DOORS REBATED FOR WALL LININGS
- PANTRY PARTITION WALL AND DOOR INTEGRAL WITH KITCHEN JOINERY, BY KITCHEN MANUFACTURER (DOOR 810w 2200h)
- RINNAI INFINITY VT26 GAS WATER HEATING SYSTEM IN RECESS BOX, TO MANUF SPEC.
- ALL FLOOR FINISHES TO COMPLY WITH NZBC D1 FOR SLIP RESISTANCE
- ALL VENT OUTLETS DUCTED THROUGH WALLS ARE TO HAVE WEATHERPROOF GRILLES AND RAIN DEFLECTORS INSTALLED
- ALL VENT OUTLETS DUCTED THROUGH SOFFITS ARE TO HAVE WEATHERPROOF GRILLES INSTALLED

KEYNOTE LEGEND

51-C	SELECTED CEDAR VERTICAL BOARD FEATURE WALL LINING, NOTE THIS CONCEALS "SECRET DOOR" D13
------	---

A certifying gas fitter is to provide a compliance certificate to council.

All frost prone pipes are to be lagged with a suitable type of insulation

Hot water pipework from the HWC is to be insulated in accordance with NZBC H1.

FLOOR PLAN
1 : 100FLOOR AREA = 201.6m² OVER FRAMING (203.8m² OVER CLADDING)

ADarchitecture
Applied Design
Email: info@adarchitecture.nz
Web: www.adarchitecture.nz

- **Kapiti Office** - Phone: (04) 298 5662
Smarter Building Centre
45B Te Roto Drive, Paraparaumu
- **Wellington Office** - Phone: (04) 232 4258
Level 9 Crowe Horwath House

Proposed House
for
David Reid Homes
2 Kanuka Close
Waikanae

B	11/07/16	Client Changes
Rev	Date	Description

FLOOR PLAN

BUILDING CONSENT

Job	Date	Sheet	Rev.
10029	AUG2016	A04	B