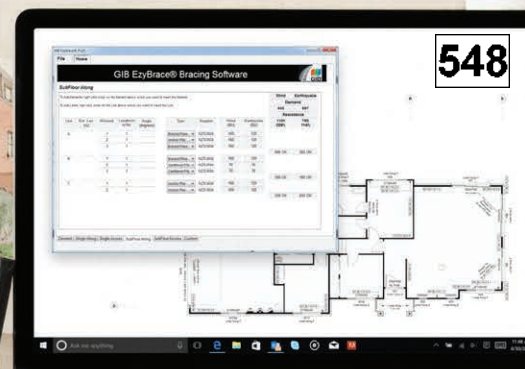




# EzyBrace<sup>®</sup> Systems

Specification and installation manual

BC250172  
Received by  
Kapiti Coast District Council  
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CBI 5113

AUGUST 2016

## **NATIONAL SUPPORT**

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## **GIB® HELPLINE**

0800 100 442

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549

Based on learnings derived from the 2011 Canterbury earthquakes GIB EzyBrace® Systems have been updated to offer improved design flexibility and further simplification of the bracing design and build process.

#### NEW GIB EZYBRACE® 2016 DESIGN SOFTWARE

- Improved user interface with simplified bracing design process.
- Increased functionality including exterior line check function, easy insert/deletion of bracing elements and built in software help function.
- Includes the new GIB® Bracing element GS2- NOM
- Allows the GIBFix® Framing System to be used in GIB EzyBrace® designs.

#### NEW GIB® BRACING ELEMENT GS2- NOM

- Allows internal walls lined with GIB® plasterboard on both sides and fastened off as per the standard fixing requirements of the current GIB® Site Guide to contribute to bracing resistance.
- Potentially reduces the amount of fasteners<sup>1</sup>
- Encourages more even bracing distribution throughout the building.

<sup>1</sup> Actual savings dependent on building and bracing design

#### UPDATE TO OPENINGS IN BRACING ELEMENTS AND CEILING DIAPHRAGMS

- Large hole specification updated to use a more conservative methodology.
- Guidance included for fireplace flues and range hoods.

#### NEW – GIBFIX® FRAMING SYSTEM

- Reduced potential for fastener pop and joint cracking as a result of timber frame movement.
- Reduced potential for on-site call backs.
- Improved thermal performance.
- Reinforced plasterboard junctions.

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## GIB EzyBrace® Systems — August 2016

Winstone Wallboards Ltd accepts no liability if GIB EzyBrace® Systems are not designed and installed in strict accordance with instructions contained in this publication.

### USE ONLY THE CURRENT SPECIFICATION

This publication may be superseded by a new publication at any time. Winstone Wallboards accepts no liability for reliance upon publications that have been superseded. Check for the current publication at [gib.co.nz/library](http://gib.co.nz/library) before using this publication. If you are unsure whether this is the current publication, call the GIB® Helpline on 0800 100 442.

GIB EzyBrace® 2011 software and specification literature remains valid until further notice.

### PATENTS

GIBFix® Framing System and GIB EzyBrace® Systems, including componentry and design method, have patents pending (NZ Patent Number 596691, NZ Patent 709159 pending) and design and other IP rights reserved.

## Beware of substitution

The performance of GIB® Systems are very sensitive to design detailing and construction practices. All GIB® Systems have been developed specifically for New Zealand conditions and independently tested or assessed to ensure the required level of performance. It is important to use only GIB® branded components where specified and to closely follow the specified design details and construction practices, to be confident that the required level of performance and quality is achieved on site.

For further information call our GIB® Helpline on 0800 100 442.

GIB EzyBrace® Systems have been designed and tested using only the products specified. When additional GIB® plasterboard properties are required the table below provides acceptable alternative options.

Specified GIB® plasterboard	Acceptable alternative GIB® plasterboards								
	GIB® Standard	GIB Ultraliner®	GIB Braceline/Noiseline®	GIB Aqualiner®	GIB Toughliner®	GIB Fyreliner®			
						10mm	13mm	16mm	19mm
GIB® Standard		OK	OK	OK	OK	Note 1 and 3			
GIB Braceline®	X	X		Note 2	OK	X	Notes 1, 2 and 3		

**Note 1** The fastener type and length must be as required for the relevant FRR system using the perimeter fixing pattern illustrated for the relevant bracing specification.

**Note 2** The element must be 900mm or longer. Decrease perimeter fastener centres to 100mm. The bracing corner fastening pattern, as illustrated for the relevant specification applies to all four corners of the element. Panel hold-down fixings are required.

**Note 3** Specify traditional wall framing layout (see figure 1) where a Fire Resistance Rating (FRR) is required.

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## Scope of use

This document is a guide to wall bracing of light timber frame (LTF) buildings constructed in accordance with NZS3604:2011 Timber Framed Buildings and presents a simple and efficient method for calculating and incorporating bracing resistance. This information draws on recent experiences from seismic activity in New Zealand and seeks to minimise earthquake damage to plasterboard linings in LTF buildings.

This document outlines the main principles of bracing design and construction using GIB® plasterboard products and systems. Further detailed information can be found in the GIB® Bracing Supplement by visiting [gib.co.nz/library](http://gib.co.nz/library). This 'live' on-line document is updated continuously in response to market feedback and Winstone Wallboards' development initiatives.

## Finish quality — framing and substrates

Home owners are increasingly demanding a high quality of interior finish. Finish quality is heavily influenced by the substrate to which linings are fixed. Detailed information on 'Levels of Finish' is given in AS/NZS 2589 and the latest version of the GIB® Site Guide.

## New GIBFix® Framing System

With increased NZ Building Code requirements and growing customer demand for thermal efficiency and high quality interior finishes, traditional framing practices present problems such as multiple framing members at wall intersections creating thermal 'bridges' and cavities where insulation cannot be installed effectively.

Figure 1 shows a traditional wall framing layout. Figure 2 shows the alternative GIBFix® Framing System layout.

Multiple timber framing members also take longer to dry resulting in an increased risk of fastener pops and blemishes resulting from timber frame movement.

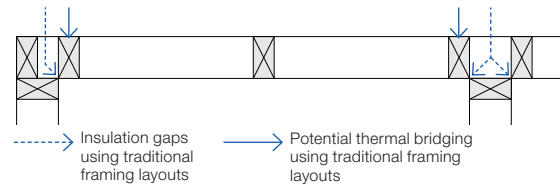
The GIBFix® Framing System offers better thermal efficiencies and minimises potential joint imperfections resulting from interior linings being fixed to multiple timber framing members.

The GIBFix® Framing System can be used in conjunction with GIB EzyBrace® Systems.

Bracing resistance is not affected by the GIBFix® Framing System if the use of this alternative timber framing layout is preferred. Refer to the GIBFix® Framing System literature for more information.

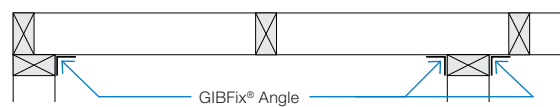
Bracing ratings apply whether fixing is directly into timber or into the metal components, provided correct construction details, fastener types and centres are applied.

FIGURE 1: TRADITIONAL WALL FRAMING LAYOUT



GFS004

FIGURE 2: GIBFix® FRAMING SYSTEM (ALTERNATIVE LAYOUT)



GFS005

## NEW GS2-NOM Bracing Element

The new GS2-NOM bracing element allows most homes to be braced with a single lining type and less fixings so that a high quality finish is maintained throughout.

GS2-NOM permits the contribution of 'nominally fixed' internal walls. Higher performance elements are commonly specified on external walls and where limited wall area is available or adjacent to significant openings.

Winstone Wallboards recommends the use of the GIBFix® Framing System in conjunction with GS2-NOM elements. Key benefits of this approach include:

- Reduced potential for fastener pop and joint cracking of plasterboard linings.
- Enhanced thermal performance.
- Allows internal walls lined with GIB® plasterboard on both sides and fastened off as per the standard fixing requirements of the current GIB® Site Guide to contribute bracing resistance.
- Potentially reduces the amount of fasteners!
- Encourages more even bracing distribution throughout the building.

1. Actual savings dependent on building and bracing design.

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## Compliance with the NZ Building Code

### NZBC CLAUSE B1 – STRUCTURE

The design and material specification for steel and timber framing used in conjunction with this literature must be in accordance with the performance requirements of NZBC Clause B1. GIB EzyBrace® Systems comply with the requirements of NZS 3604:2011, when designed and installed in accordance with this publication and relevant technical literature. NZS 3604:2011 is an acceptable solution to NZBC Clause B1.

### NZBC CLAUSE B2 – DURABILITY

Under normal conditions of dry internal use GIB EzyBrace® Systems have a service life in excess of 50 years and satisfy the requirements of NZBC Clause B2. When in conditions of dry internal use, the components specified in this literature satisfy the requirements of NZBC Clause B2.

GIB® EzyBrace® Systems must not be specified in areas where 15 year durability applies and where linings are subject to direct water pressure, e.g. shower cubicle or shower over bath situations.

### NZBC CLAUSE F2 – HAZARDOUS BUILDING MATERIALS

Under normal conditions of use, during handling, installation or serviceable life, the products detailed in GIB EzyBrace® Systems do not constitute a health hazard and meet the provisions of the NZBC Clause F2.

### NZBC CLAUSE H1 – ENERGY EFFICIENCY

Buildings must be constructed to achieve an adequate degree of energy efficiency and the building envelope must provide adequate thermal resistance. The required thermal resistance (R-value) of timber framed external walls depends on climate zone but is commonly in the range from R 1.9 to R 2.0.

## CAD design details

Where applicable drawings related to GIB EzyBrace® Systems have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box. CAD design details can be found at [gib.co.nz/library](http://gib.co.nz/library).

## Appraisal

GIB EzyBrace® Systems 2016 have been appraised by the Building Research Association of New Zealand (BRANZ), Appraisal No. 928 (2016) GIB EzyBrace® Systems, 2016.

It is of prime importance to comply with the details of design, construction and workmanship in this document.

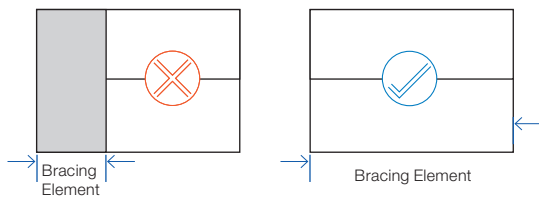
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## Bracing resistance

### WALL BRACING LAYOUT

When designing the bracing layout, carefully consider the final finished appearance and utilise full wall lengths where possible, avoiding unnecessary fastenings in the centre of a clear wall. Using the available wall length provides additional bracing and achieves improved aesthetics.

FIGURE 3: WALL BRACING LAYOUT



### BRACING DISTRIBUTION

Distribute bracing by drawing a grid pattern of bracing lines along and across the building. Bracing lines must coincide as much as possible with the wall bracing elements. Pairs of elements may be counted on a single line provided they are no more than 2 metres apart and parallel. See figure 4.

Locate bracing evenly throughout the building and as close as practical to corners of external walls.

Space bracing lines no more than:

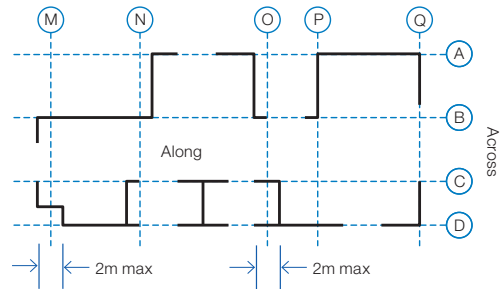
- 6 metres for standard construction with any GIB® plasterboard ceiling, or
- 7.5 metres where dragon ties in accordance with NZS3604:2011 have been installed, or
- 12 metres with a GIB® plasterboard ceiling diaphragm.

The construction of ceiling diaphragms is described in detail on p.18–20.

NZS3604:2011 requires that no bracing line shall have a capacity less than the greater of:

- 100 Bracing Units (BUs), or
- 15 x the external wall length (BUs) for bracing lines coinciding with external walls, or
- 50% of the total demand (D) divided by the number of lines (n) in the direction being considered (BUs).

FIGURE 4: BRACING GRID LAYOUT



The NZS3604 'rules' are merely minimum guidelines and compliance with them does not in itself ensure even distribution. The designer is responsible for checking distribution. Poor distribution can cause torsional effects and localised or more significant damage in an earthquake event.

### GIB EZYBRACE® SYSTEMS

The GIB EzyBrace® Specification Numbering System (and sub-components thereof) is protected by copyright and makes specification and identification of GIB EzyBrace® Systems transparent.

- 'GS' stands for GIB® Standard.
- 'BL' for GIB Braceline®.
- 'P' for plywood.
- '1' and '2' for linings one or both sides.
- 'N' stands for 'no specific panel hold-down fixings'.
- 'H' stands for 'specific panel hold-down fixing' required.
- 'NOM' stands for 'nominal plasterboard fixing'. This refers to the standard fixing method used to install plasterboard as shown in the current GIB® Site Guide.

Where specific hold-down fixings are specified, refer to p.15-16. GIB HandiBrac® is fully contained within the framing cavity and does not interfere with lining installation and quality of finish.

Where no specific hold-down fixings are required, the minimum NZS3604:2011 bottom plate fixings apply.

Full bracing element construction details are provided in this technical literature.

Further general design and construction information can also be found in our GIB® Bracing Supplement by visiting [gib.co.nz/library](http://gib.co.nz/library).

### Specifying GIB EzyBrace® elements (minimum wall length 400mm)

Inside lining external walls.	Nominate available lengths of wall as GS1-N elements. Use BL1-H if higher ratings are required. If the other side of the frame is lined with plywood consider GSP-H or BLP-H elements or use alternative proprietary bracing systems.
Internal walls (only one side available for bracing).	Nominate available lengths of wall as GS1-N elements. Use BL1-H if higher ratings are required.
Internal walls (both sides available for bracing).	Nominate available length of wall as GS2-NOM elements. Change to GS1-N if higher ratings are required. Change to GS2-N if higher ratings are required. Change to BLG-H for even higher ratings. Consider GSP-H or BLP-H if the opposite side is lined with plywood.



## Bracing demand

### GIB EZYBRACE® CALCULATOR

The GIB EzyBrace® calculator is a software tool to determine the wind and earthquake bracing demand and to design the bracing resistance for light timber-framed buildings constructed in accordance with NZS 3604:2011.

The updated GIB EzyBrace® calculator combines an up-to-date user-friendly interface with the latest knowledge relating to the performance of GIB® plasterboard in light timber-framed structures when subjected to high winds or earthquakes. The calculator can be down-loaded free of charge by visiting [gib.co.nz/ezybrace](http://gib.co.nz/ezybrace) and can be installed on either Microsoft® or Apple® Mac environments.

### DEMAND

Wind and Earthquake 'Demand' calculates the forces a structure must be able to resist during its 'design life'. The GIB EzyBrace® calculator's Demand sheet determines the number of Bracing Units required depending on building location, building dimensions and materials used. The Demand sheet closely follows the familiar format of our Excel based GIB EzyBrace® calculator, and includes additional features such as a pop-up help facility explaining required input.

Bracing resistance sheets ('tabs') are added depending on the building specification entered. For example, subfloor bracing resistance tabs only show when a 'subfloor' foundation type has been selected.

The Demand sheet gives the designer the option to select a longer earthquake return period which represents a higher earthquake design force. The default for buildings constructed in accordance with NZS3604:2011 is an earthquake that has a 10% chance of being exceeded within the assumed 50 year 'design life' of a light timber framed residential structure, a 'return period' of 500 years.

Many commercial and public buildings are designed for the more stringent requirement of a 10% probability of exceedance in a 100 or 250 year life expectancy.

A screen shot of the GIB EzyBrace® 2016 Demand Sheet and Help Facility is shown in figure 5.

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FIGURE 5: GIB EZYBRACE® 2016 — DEMAND CALCULATION SHEET AND 'POP UP' HELP FACILITY

**GIB EzyBrace® Bracing Software**

**Job Details**

State: A Job  
 Date and Number: 188 Job Street  
 Lot and DP Number: Lot 321 DP 518  
 City/Town/District: Johnson  
 Designer: AR Christchurch  
 Company: jobs Limited  
 Date: 1/18/16

**Building Specification**

Number of Storeys: Single  
 Floor Loading: 2.0 kPa  
 Foundation Type: Slab

**Single**

Ceiling Weight: 7 Light  
 Rafter Weight: 8 Light  
 Rafters on Roof Spacing: 100  
 Roof Pitch: 25  
 Roof Height above Eaves (m): 1.5  
 Building Height to Apex (m): 4.5  
 Ground to Lower Floor (m): 0.2  
 Sill Height (m): 2.4  
 Building Length (m): 18  
 Building Width (m): 18  
 Building Area (m<sup>2</sup>): 188

**Building Location**

Wind Zone or Current Authority: Not Available  
 Wind Region: A  
 Lee Zone: 0  
 Ground Roughness: Urban  
 Site Exposure: Sheltered  
 Topography Class: T1

Earthquake Zone: 3  
 Soil Type: G & S (Deep to Very Soft)  
 Annual Prob. of Exceedance (1 in 500 (NZS3604:2011 Default))

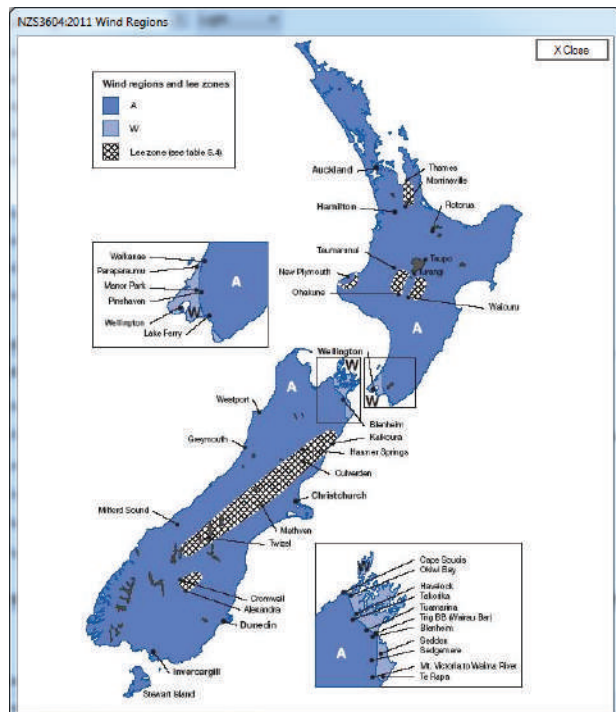
**Bracing Units required for Wind**

	Along	Across
Single Level	258	222

**Bracing Units required for Earthquake**

	Along and Across
Single	264

Demand: Single Along | Single Across | Custom



Download GIB EzyBrace® 2016 design software from [gib.co.nz/ezybrace](http://gib.co.nz/ezybrace)



## Software functionality

Innovations adopted in the GIB EzyBrace® 2016 bracing 'resistance' calculation sheets include the ability to easily add and delete lines and elements during calculations.

The software compares bracing resistance achieved with demand and for wall bracing lines incorporating external walls, the external wall length can now be entered to check minimum

bracing units required on that line. The NZS 3604:2011 rules and associated software output are not the only check.

Designers must additionally check the building layout to ensure adequate bracing distribution.

Figures 6 and 7 show screen shots of the Wall and Subfloor Resistance Sheets respectively.

FIGURE 6: GIB EZYBRACE® 2016 — WALL BRACING RESISTANCE CALCULATION SHEET

Line	Ext. Len (m)	Element	Length (m)	Angle (degrees)	Stud Ht. (m)	Type	Supplier	Wind (BU)	Earthquake (BU)
a	11.25	1	0.5		2.44	GSP-H	GIB®	53	58
		2	1.1		2.44	GS1-N	GIB®	72	65
		3	0.6		2.44	GSP-H	GIB®	67	73
b	6.41	1	1.2		2.44	GS1-N	GIB®	81	71
		2	0.6		2.44	GS1-N	GIB®	34	35
		3	4		2.44	GS2-NOM	GIB®	197	197
c		1	3.2		2.44	GS2-NOM	GIB®	157	157
d		1	7.9		2.44	GS2-NOM	GIB®	309	309
e	17.9	1	0.6		2.44	BL1-H	GIB®	58	60
		2	0.6		2.44	BL1-H	GIB®	58	60
		3	0.8		2.44	CS1-N	GIB®	48	46
		4	2.1		2.44	GS1-N	GIB®	143	124
		5	1.2		2.44	EP1-1.2	CHH	142	159

Wind Demand	Earthquake Demand
682	880
Resistance	Resistance
1499	1492
220%	170%

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FIGURE 7: GIB EZYBRACE® 2016 — SUBFLOOR BRACING RESISTANCE CALCULATION SHEET

Line	Ext. Len (m)	Element	Length (m) or No.	Angle (degrees)	Type	Supplier	Wind (BU)	Earthquake (BU)
A		1	1		Braced Piles	NZS3604	160	120
		2	1		Anchor Pile	NZS3604	160	120
		3	1		Braced Piles	NZS3604	160	120
B		1	1		Braced Piles	NZS3604	160	120
		2	1		Cantilever Pile	NZS3604	70	30
		3	1		Cantilever Pile	NZS3604	70	30
C		1	1		Anchor Pile	NZS3604	160	120
		2	1		Anchor Pile	NZS3604	160	120

Wind Demand	Earthquake Demand
428	687
Resistance	Resistance
1100	780
258%	114%

Download GIB EzyBrace® 2016 design software from [gib.co.nz/ezybrace](http://gib.co.nz/ezybrace)



## Software functionality

Custom elements can be entered by accessing the 'custom' tab as shown in figure 8.

FIGURE 8: GIB EZYBRACE® 2016 — CUSTOM ELEMENTS SHEET

Supplier	System	Min. Length m	Yield kN/m	EQ kN/m	Element Height Dependant	Element Foundation Dependant	Import Proprietary Custom Elements:
Custom1	CU1-0.4	0.4	80	95	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom1	CU1-0.6	0.6	95	105	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom1	CU1-1.2	1.2	120	135	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom2	CU2-0.4	0.4	90	98	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom2	CU2-0.6	0.6	127	136	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Custom2	CU2-1.2	1.2	164	135	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Engineer	Portal	1	300	300	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Note: Values and systems shown in Custom Elements Sheets are for illustrative purposes only.

Help can be accessed by pressing the ? symbol which displays a window with further information.

The GIB EzyBrace® 2016 software has a number of options that can be accessed via the File tab at the top left hand corner of the window. The options include: New, Save, Save As, Open, Recent and Print.

- The New option closes any opened job ready for the input of a new job.
- The Save option saves the currently opened job to the same filename and the Save As option saves the job to a new filename.

- The Open option prompts for the name of an existing job.
- The Recent option displays a list of the ten latest jobs and allows for the selection of one of these jobs to be opened.
- The Print option displays the print screen. In this screen, a print preview is displayed. The print preview can be copied to the clipboard by clicking the right-hand mouse button. Also on the print screen is the option to choose which pages are to be printed and the option to print the output to a portable data format, PDF, file.
- The Print Screen View is shown in figure 9.

FIGURE 9: GIB EZYBRACE® 2016 — PRINT SCREEN VIEW

Download GIB EzyBrace® 2016 design software from [gib.co.nz/ezybrace](http://gib.co.nz/ezybrace)

Demand Calculation Sheet	
<b>Job Details</b>	
Name:	Example
Project Number:	100 Job Street
Lot and DP Number:	Lot 100 DP 9001
City/Street Name:	Seaside District
Designer:	G. B. Seaside
Company:	1234 Ltd
Date:	1/1/13
<b>Bracing Specification</b>	
Number of Braces:	1
Floor Level top:	2.0Pa
Foundation Type:	Shallow
<b>Bracing Details</b>	
Cladding Height:	1.0Pa
Roof Height:	1.0Pa
Roof to Roof Space:	NA
Roof Pitch:	20
Roof Height above Ground (m):	2.0
Building Height to Apex (m):	5
Building to Lower Floor (m):	0.5
Average Wind Height (m):	2.44
Building Length (m):	17.0
Building Width (m):	10.0
Building Floor Area (m <sup>2</sup> ):	170
<b>Bracing Location</b>	
Wind Zone + High:	Earthquake Zone 1
Site Type:	C (Medium)
Annual Prob. of Exceedance:	1 in 50 (0.020000000000000004)
<b>Bracing Units required for Wind</b>	
Along	Across
Single Level	682 808
<b>Bracing Units required for Seismicity</b>	
Along & Across	
Single Level	177

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## GIB® plasterboard linings

When fixing part sheets of GIB® plasterboard, a minimum sheet width of 300mm applies for bracing elements. Horizontal fixing is recommended. If fixing vertically, full height sheets shall be used where possible. Where sheet end butt joints are unavoidable they must be formed over nogs or over the studs and fastened at 200mm centres. Alternatively, and preferably, sheet end butt joints may be back-blocked.

When a GIB® Bracing element has been designated for a section of wall, BU ratings cannot be increased by incorporating additional proprietary bracing elements within that same section of wall.

### LIMITATIONS

- GIB® plasterboard must be stacked flat and protected from the weather.
- GIB® plasterboard must be handled as a finishing material.
- GIB® plasterboard in use must not be exposed to liquid water or be installed in situations where extended exposure to humidities above 90% RH can reasonably be expected.
- GIB EzyBrace® Systems must not be used in showers or behind baths.
- It is highly recommended not to install GIB® plasterboard in any situation where external claddings are not in place or the property is not adequately protected from the elements.
- If GIB® plasterboard is installed under these conditions, the risk of surface defects such as joint peaking or cracking is greatly increased.

## GIB EzyBrace® Systems in water-splash areas

When GIB® plasterboard is installed in locations likely to be frequently exposed to liquid water it must have an impervious finish. Examples are adhesive fixed acrylic shower linings or ceramic tiles over an approved waterproof membrane over GIB Aqualine®. The NZBC requires 15 years durability in these situations. Bracing elements are required to have a durability of 50 years. Bracing elements are not to be located in shower cubicles or behind baths because of durability requirements, the likelihood of renovation, and practical issues associated with fixing bracing elements to perimeter framing members. Otherwise GIB EzyBrace® Systems can be used in water-splash areas as defined by NZBC Clause E3, provided these are maintained impervious for the life of the building.

For further design details refer to the current GIB Aqualine® Wet Area Systems literature.

## Renovation

When relining walls during the process of renovation, ensure that bracing elements are reinstated (check the building plans).

## Openings in bracing elements

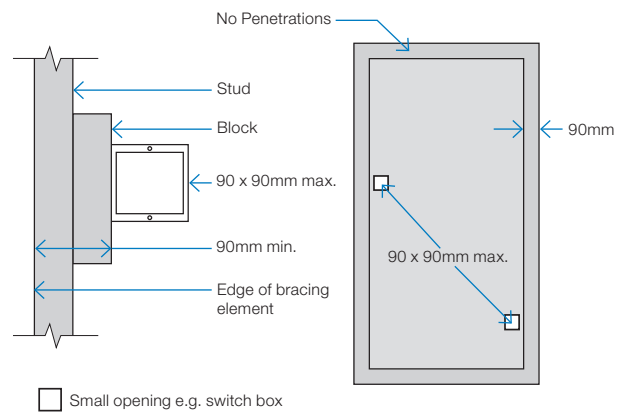
### SMALL OPENINGS

Small openings (e.g. power outlets) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the braced element. A block may need to be provided alongside the perimeter stud as shown below.

### LARGE OPENINGS

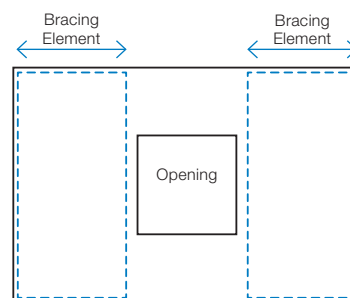
Openings above 90 x 90mm such as switch boards, recessed cabinets and TV's etc. should be placed outside of the bracing element or locate bracing on the other side of the wall framing.

FIGURE 10: SMALL OPENINGS IN BRACING ELEMENTS



GEB001

FIGURE 11: LARGE OPENINGS AND BRACING ELEMENTS



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## Timber framing

General framing requirements such as grade, spacings and installation shall comply with the provisions of NZS 3604:2011. To achieve the published bracing performance the minimum actual framing dimensions are 90 x 45mm for external walls and 70 x 45mm for internal walls.

As a minimum the use of Kiln Dried Stress Graded timber for all wall, roof and mid-floor framing members is recommended.

## GIBFix® Framing System (alternative layout)

Practices recommended as part of the GIBFix® Framing System aim to increase timber framing efficiencies, reduce reliance on unnecessary framing at wall junctions and minimise surface imperfections that commonly arise from constructing plasterboard junctions over multiple timber members. GIBFix® Angles fixed to a single timber framing member are introduced to tie together plasterboard junctions, improving seismic resilience and decrease the risk of future defects due to timber movement. The GIBFix® Framing System can be used in conjunction with the GIB EzyBrace® System.

Note: GIBFix® Angles and 32mm x 7g GIB® Grabber® Dual Thread Screws may also be used in traditional wall framing layouts and in GIB EzyBrace® Systems.

When the GIBFix® Framing System is used a minimum of 2 equally spaced nogs for walls between 2.4m and 3m in height are required at corners and wall junctions.

When used in GIB EzyBrace® systems GIBFix® Angles must run from top to bottom on all applicable studs. If 2 GIBFix® Angles are required on a stud they must be overlapped by a minimum of 300mm with 2/32mm 7g GIB® Grabber® Dual Thread Screws penetrating through both GIBFix® Angles.

For full specification details refer to GIBFix® Framing System literature available at [gib.co.nz/gibfix](http://gib.co.nz/gibfix).

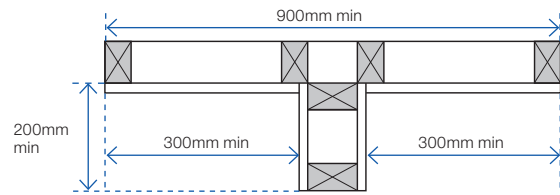
## Guidelines for intersection walls

GIB® Bracing Elements may have intersecting walls with a minimum length of 200mm. Fasteners are required around the perimeter of the bracing element. Vertical joints at T-junctions shall be fixed and jointed as specified for intermediate sheet joints. The bracing element length must be no less than 900mm.

Where a Wall Bracing Element is interrupted by a T-junction the element is deemed to be continuous for the whole length (900mm minimum in the example illustrated).

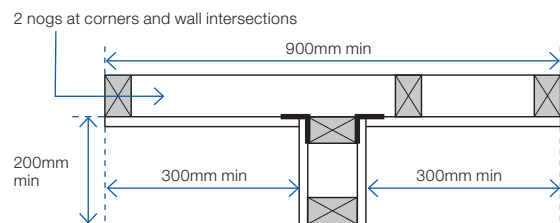
When fixing part sheets of GIB® plasterboard to the side of a T-junction, a minimum width of 300mm applies for bracing elements. See figures 12 and 13.

FIGURE 12: WALL INTERSECTION (TRADITIONAL WALL FRAMING)



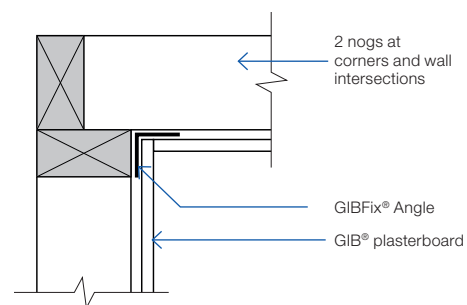
GEB002

FIGURE 13: WALL INTERSECTION (GIBFIX® FRAMING SYSTEM)



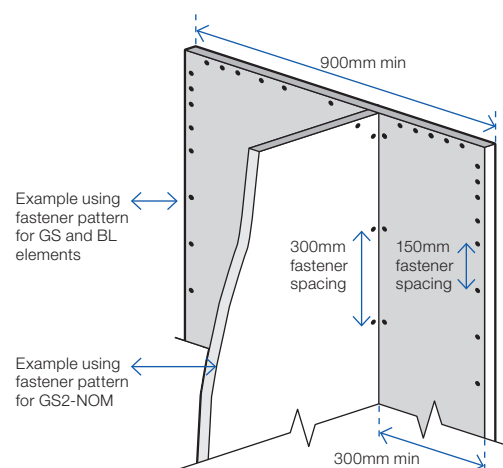
GEB003

FIGURE 14: CORNER INTERSECTION (GIBFIX® FRAMING SYSTEM)



GFS001

FIGURE 15: WALL INTERSECTION FASTENER PLACEMENT



Junction

Min 32mm x 6g GIB® Grabber® High Thread or 32mm x 7g GIB® Grabber® Dual Thread Screws @ 300mm ctrs each side.

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## Top plate connections

For top plate connections refer to NZS3604:2011 section 8.7.3.

## Parapets and gable end walls

Bracing elements must be fixed from top plate to bottom plate. Fixing to a row of nogs is not acceptable unless either:

A continuous member such as an ex 90 x 45mm ribbon plate is fixed across the studs just above a row of nogs at the ceiling line, as shown in figure 16.

or

GIBFix® Angle as shown in figure 17. The angle is fixed to a row of nogs with 30 x 2.5mm galv flat head nails or 32mm x 7g GIB® Grabber® Dual Thread Screws at 300mm centres.

## Bottom plate fixing

### TIMBER FLOOR

For elements with an 'N' specification use 2/100 x 3.75mm hand or 3/90 x 3.15mm power-driven nails at 600mm centres.

In addition, for elements with an 'H' specification, use GIB HandiBrac® panel hold-down fixings at each end of the bracing element, see p.16.

### CONCRETE FLOOR – EXTERNAL WALL BRACING ELEMENTS

For bracing elements with an 'N' specification fix external wall plates in accordance with NZS 3604:2011.

Use GIB HandiBrac® panel hold-down fixings at each end of bracing elements with an 'H' specification and minimum intermediate fixings as required by NZS 3604:2011.

### CONCRETE FLOOR – INTERNAL WALL BRACING ELEMENTS

For bracing elements with an 'N' specification fix plates in accordance with NZS 3604:2011 or use 75 x 3.8mm shot-fired fasteners with 16mm discs spaced at 150 and 300mm from end-studs and 600mm centres thereafter.

For bracing elements with an 'H' specification use GIB HandiBrac® panel hold-down fixings at each end of the element and minimum intermediate fixings as required by NZS 3604:2011.

FIGURE 16: PARAPETS AND GABLE ENDS WITH RIBBON PLATE

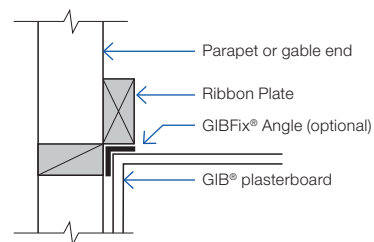
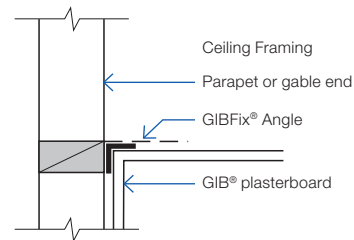


FIGURE 17: PARAPETS AND GABLE ENDS WITH GIBFIX® ANGLE



GFS003

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### BOTTOM PLATE FIXINGS FOR GIB® BRACING ELEMENTS

Brace type	Concrete slabs		Timber floors
	External wall	Internal wall	External and Internal walls
GS1-N	As per NZS 3604:2011. No specific additional fastening required.	As per NZS 3604:2011. Alternatively use 75 x 3.8mm shot-fired fasteners with 16mm discs, 150mm and 300mm from each end of the bracing element and at 600mm thereafter.	Pairs of 100 x 3.75mm flat head hand driven nails or 3/90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011.
GS2-N	Not applicable.		
GS2-NOM			
GSP-H BL1-H BLP-H	Intermediate fastenings to comply with NZS 3604:2011  In addition: GIB HandiBrac® fixings or metal wrap-around strap fixings and bolt as illustrated on p.15 and 16.		Pairs of 100 x 3.75mm flat head hand driven nails or 3/90 x 3.15mm power driven nails at 600mm centres in accordance with NZS 3604:2011.  In addition: GIB HandiBrac® fixings or metal wrap-around strap fixings and bolt as illustrated on p.15 and 16.
BLG-H	Not applicable	As for GSP-H, BL1-H, BLP-H on concrete slab as illustrated on p.15 and 16.	

## Bracing strap installation

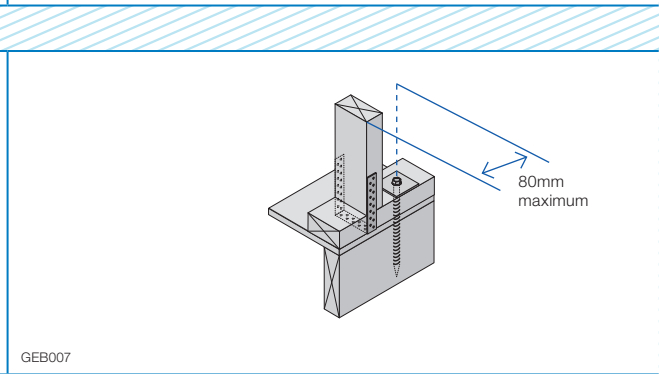
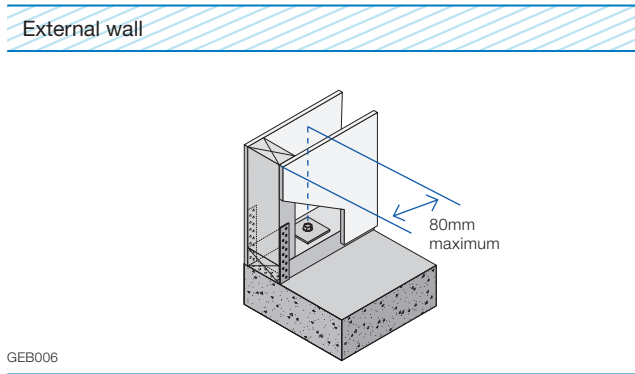
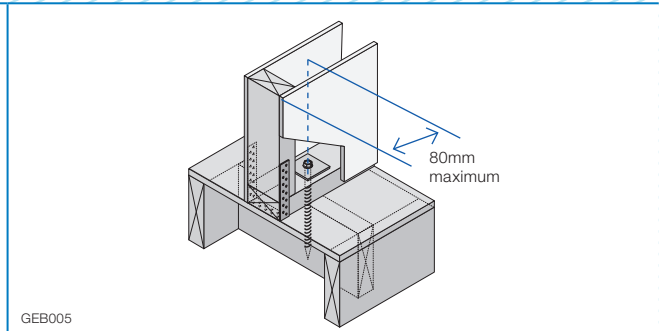
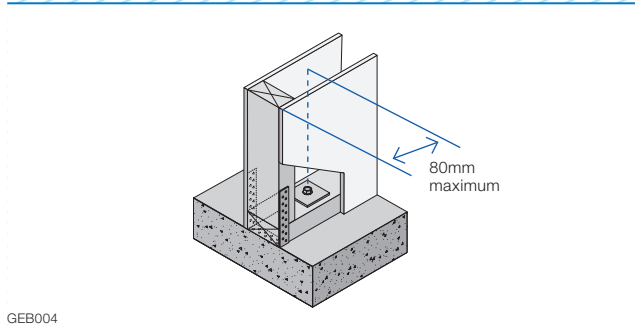
Care needs to be taken with the installation of the bracing strap. It should be checked in to be flush with the face of the stud providing a flat substrate for the plasterboard and

positioned in such a way that the corner fastenings of the bracing element are not affected by it. Keeping the strap to the edge of the end stud as shown will allow the corner fastenings to be installed without having to penetrate the bracing strap.

Concrete floor	Timber floor
----------------	--------------

400 x 25 x 0.9mm galvanised strap to pass under the plate and up the other side of the stud. Six 30 x 2.5mm flat head galvanised nails to each side of the stud. Three 30 x 2.5mm flat head galvanised nails to each side of the plate. Hold down bolt with 50 x 50 x 3mm washer to be fitted within 80mm of the end of the element.

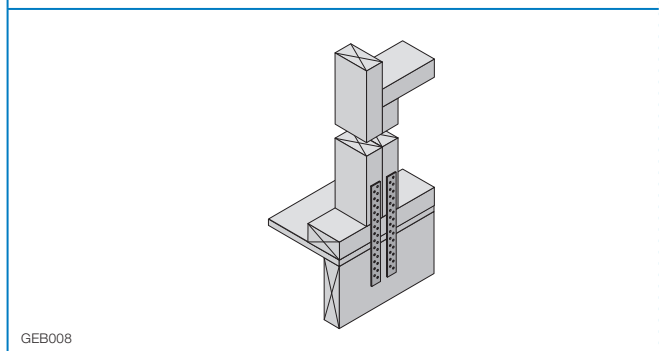
Internal wall	External wall
---------------	---------------



Note: Where applicable drawings have been produced for CAD design. These are identified by a unique number in the bottom corner of each detail box that can be found at [gib.co.nz/library](http://gib.co.nz/library).

2/300 x 25 x 0.9mm galvanised straps with six 30 x 2.5mm flat head galvanised nails to each stud and into the floor joist and three nails to the plate. Block to nog fixed with 3/100 x 3.75mm nails to stud.

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Hold-down fastener requirements	
---------------------------------	--

Concrete floor	Timber floor
A mechanical fastening with a minimum characteristic uplift capacity of 15kN fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element.	12 x 150mm galvanised coach screw fitted with a 50 x 50 x 3mm square washer within 80mm of the ends of the bracing element

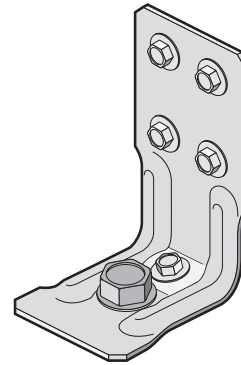


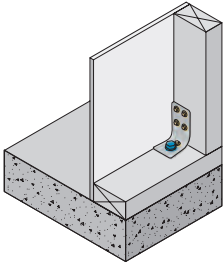
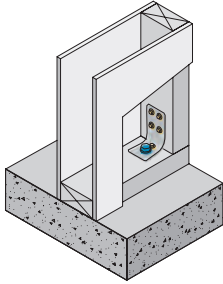
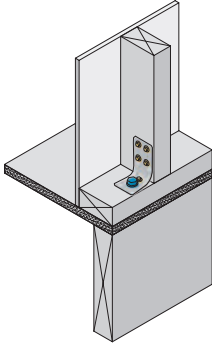
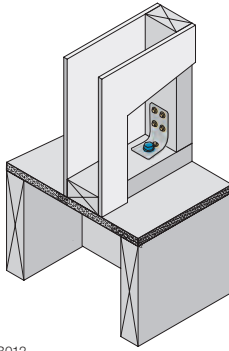
## GIB HandiBrac® installation

Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested by Winstone Wallboards for use in GIB EzyBrace® elements that require hold-downs. The GIB HandiBrac® is a substitute for bottom plate hold-down straps.

- Quick and easy to fit.
- May be fitted at any stage before lining.
- Framing face is clear to allow flush lining.
- Easily inspected.

The GIB HandiBrac® with BOWMAC® blue head screw bolt is suitable for timber and concrete floors constructed in accordance with NZS 3604:2011.



Concrete floor		Timber floor	
External walls	Internal walls	External walls	Internal walls
 <p>GEB009</p>	 <p>GEB010</p>	 <p>GEB011</p>	 <p>GEB012</p>
Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate.	Position GIB HandiBrac® at the stud/plate junction and at mid-width of plate.	Position GIB HandiBrac® flush with the outside stud face, as close as practicable to the centre of the boundary joist.	Position GIB HandiBrac® in the centre of floor joist or full depth solid block.
Hold-down fastener requirements			
A mechanical fastening with a minimum characteristic uplift capacity of 15kN or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.		12 x 150mm galvanised coach screw or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.	

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# GIB HandiBrac<sup>®</sup> placement with GIBFix<sup>®</sup> Framing System for concrete floors

Figure 18 shows the preferred positioning of the GIB HandiBrac<sup>®</sup> panel hold-down brackets within the GIBFix<sup>®</sup> Framing System layout and where they are required by bracing systems with an 'H' in the specification code.

Note that, in corners and at wall junctions, a single GIB HandiBrac<sup>®</sup> can serve 'H' type bracing elements in both directions, but additional intermediate concrete anchors may need to be installed to meet the minimum requirements of NZS 3604:2011 for bottom plate fixing.

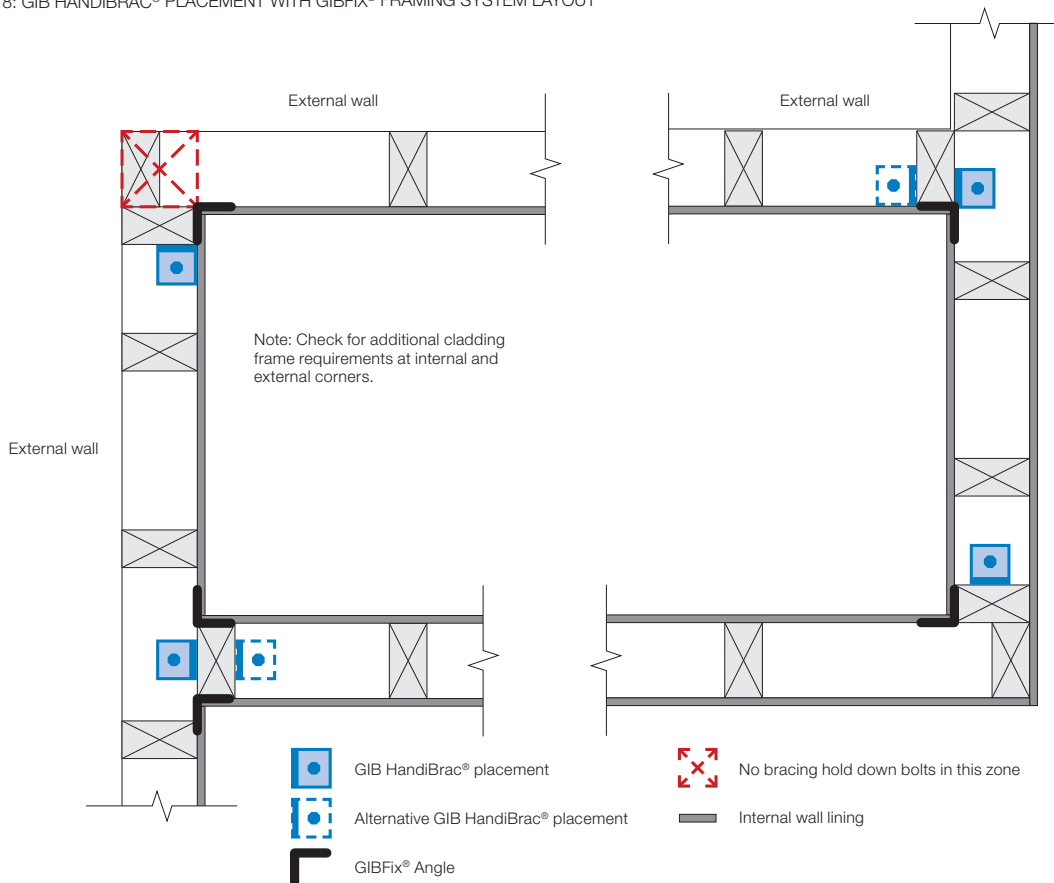
The GIB HandiBrac<sup>®</sup> is fixed to the stud which has the GIBFix<sup>®</sup> Angle.

For bracing elements with sheet material both sides of the wall connect corner studs using 8/90mm gun nails as shown in figure 19.

### TIMBER FLOORS

For timber floors bolt fixing in to solid joist or block is required, as shown on p 15.

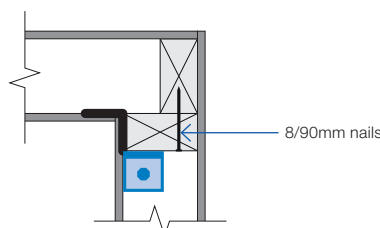
FIGURE 18: GIB HANDIBRAC<sup>®</sup> PLACEMENT WITH GIBFIX<sup>®</sup> FRAMING SYSTEM LAYOUT



GEB013

FIGURE 19: STUD CONNECTION FOR 'H' TYPE BRACING ELEMENTS WITH SHEET MATERIAL BOTH SIDES

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GEB014

## Ceiling diaphragms

GIB® plasterboard ceiling diaphragms are stiff and strong horizontal elements which effectively transfer loads to bracing walls. They themselves do not have a bracing unit rating but are used when bracing lines exceed 6m separation. The basic shape of a ceiling diaphragm is square or rectangular. Protrusions are permitted but cut-outs are not. The length of a ceiling diaphragm shall not exceed twice its width. Dimensions are measured between supporting bracing lines. Supporting bracing lines shall have a bracing capacity no less than the greater of 100 bracing units or 15 bracing units per metre of diaphragm dimension, measured at right angles to the line being considered, see figure 21.

## Limitations for GIB® plasterboard ceiling diaphragms

Ceiling diaphragms may be constructed using any GIB® plasterboard provided perimeter fixing is at;

150mm centres for: Diaphragms up to 7.5m in length, no steeper than 15°.

100mm centres for: Diaphragms up to 7.5m in length, no steeper than 45°. Diaphragms up to 12m in length, no steeper than 25°.

Diaphragms outside these parameters must be specifically designed.

### General fixing requirements for GIB® Ceiling Diaphragms:

- Linings must be installed over the entire area of the diaphragm.
- Fastening must be no less than 12mm from sheet edges and not less than 18mm from sheet ends.
- Sheets must be supported by framing members (e.g., ceiling battens) spaced at no more than 500mm centres for 10mm GIB® plasterboard and at no more than 600mm centres for 13mm GIB® plasterboard.
- Sheets within the diaphragm area may be fastened and finished conventionally in accordance with the publication entitled, "GIB® Site Guide". All joints shall be GIB® Joint Tape reinforced and stopped. It is recommended that sheet butt joints are formed off framing and back-blocked (see "GIB® Site Guide").
- Use full width sheets where possible. At least 900mm wide sheets with a length not less than 1800mm shall be used. Sheets less than 900mm wide but no less than 600mm may be used provided all joints with adjacent sheets are back-blocked (see "GIB® Site Guide" and figure 22).
- Fasteners are placed at the specified centres around the ceiling diaphragm with the corners fastened using the GIB EzyBrace® fastener pattern.

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FIGURE 20: PROTRUSIONS AND CUTOUTS

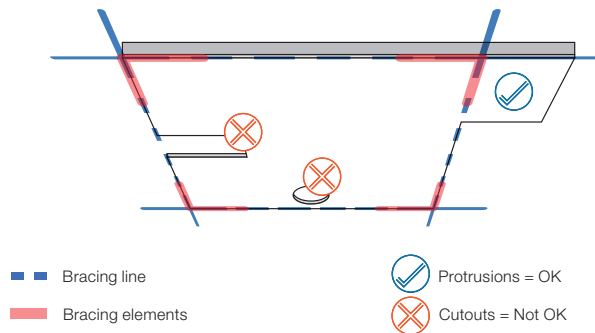


FIGURE 21: DIAPHRAGM BRACING LINING SPACINGS

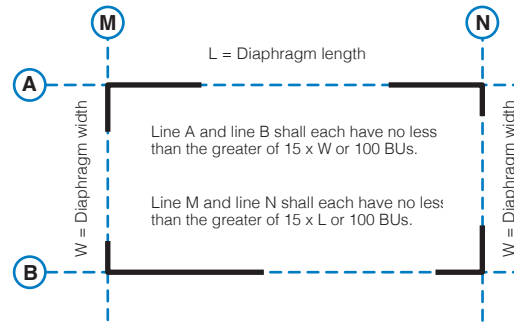
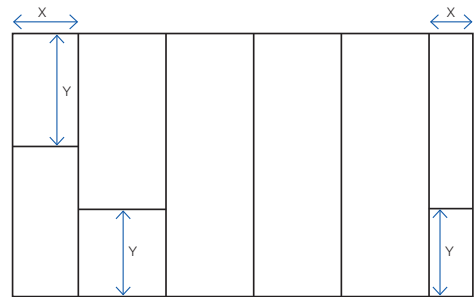
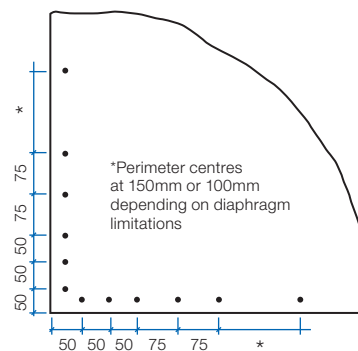


FIGURE 22: GIB® CEILING DIAPHRAGM SHEET WIDTHS AND LENGTHS



X = 900mm min or 600–900mm Y = 1800mm min sheet lengths min provided all adjacent joints at ends of ceiling diaphragms are back-blocked.

FIGURE 23: GIB EZYBRACE® FASTENER PATTERN



Unless stated all fastener spacings are maximums.

GEB015

## Ceiling battens in ceiling diaphragms

Ceiling diaphragms may be constructed using steel or timber ceiling battens.

Battens shall be spaced at a maximum of:

- 500mm for 10mm GIB® plasterboard.
- 600mm for 13mm GIB® plasterboard.

Timber battens shall be fixed in accordance with the requirements of NZS 3604:2011.

Metal battens shall be GIB® Rondo® battens with two external flanges of 8mm to allow direct screw fixing to roof framing.

GIB® Rondo® metal battens shall be fixed with 2/32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws to supporting framing.

GIB® Rondo® metal battens must be fixed directly to the roof framing. If a clip system has been used, a timber block (min 300mm) or a continuous timber member can be fixed alongside the bottom chord to permit a direct connection to the batten, see figure 26.

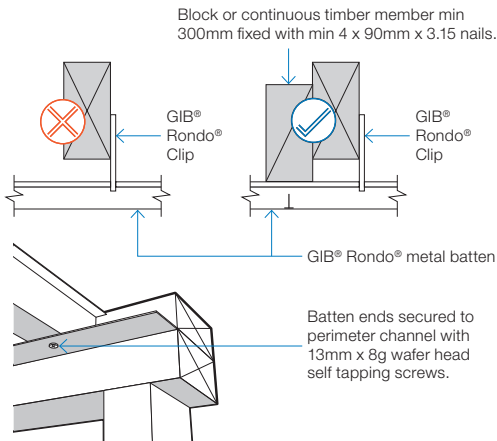
For GIB® Rondo® metal battens, a GIB® Rondo® metal channel or metal angle is required at the perimeter of the diaphragm. The perimeter channel shall be fastened to the top plate with 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screw at 300mm centres maximum.

Linings are fastened to metal using 25mm x 6g GIB® Grabber® Self Tapping screws and to timber framing using 32mm x 6g GIB® Grabber® High Thread screws. Alternatively 32mm x 7g GIB® Grabber® Dual Thread screws can be used in both cases. Fastener centres are specified on p.18.

Coved ceiling diaphragms can be achieved by using nominally 32 x 32 x 0.55mm proprietary galvanised metal angles ("back-flashing") at the changes in direction. These angles shall be:

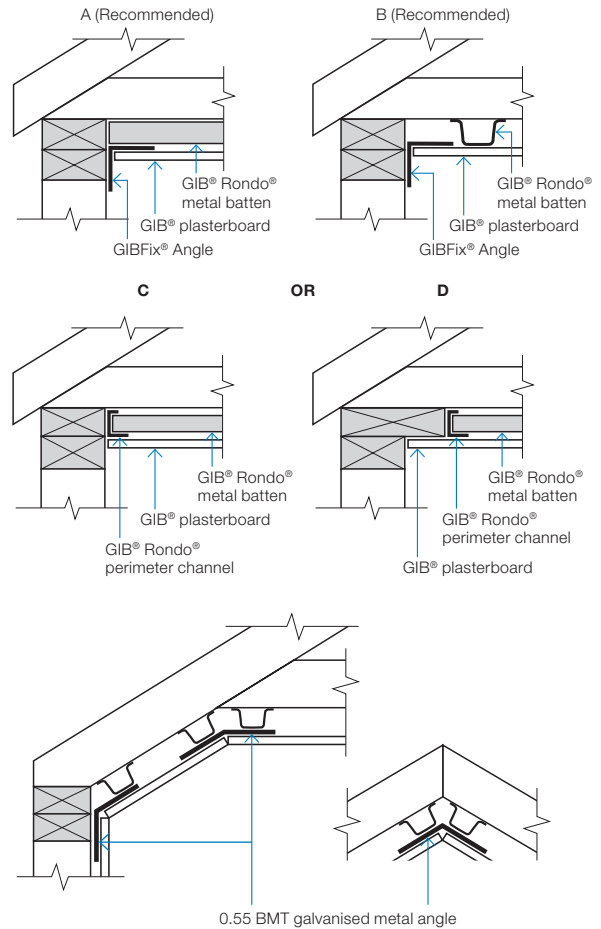
- Fastened at 300mm on each edge to metal battens using 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screws.
- Fastened to timber framing using 32mm x 7g GIB® Grabber® Dual Thread screws when linings are installed.

FIGURE 26: GIB® RONDO® METAL CEILING BATTEN INSTALLATION



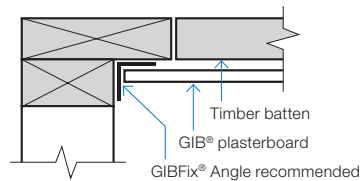
GEB016

FIGURE 27: GIB® RONDO® METAL CEILING BATTENS WITH CORNER ANGLES



GEB017

FIGURE 28: TIMBER CEILING BATTENS\*



GEB018

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## Openings in ceiling diaphragms

### SMALL OPENINGS

Small opening (e.g. down lights) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the ceiling diaphragm.

### LARGE OPENINGS

Openings are allowed within the middle third of the diaphragms length and width. Fixing of sheet material to opening trimmers shall be at 150mm centres. Neither opening dimension shall exceed a third of the diaphragm width. Larger openings or openings in other locations require specific engineering design.

Where fireplace flue or range hood openings are required in a ceiling diaphragm use a galvansed metal backing plate as shown in figure 25, with a maximum hole diameter of 350mm.

Figure 25 can also be used for range hood openings in walls.

For information on openings in ceiling diaphragms contact the GIB® Helpline on 0800 100 442.

FIGURE 24: LARGE OPENINGS IN CEILING DIAPHRAGMS

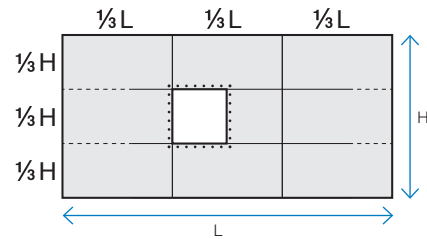
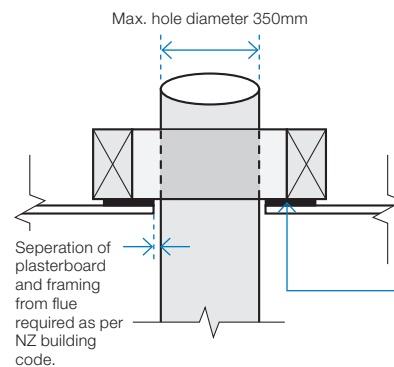
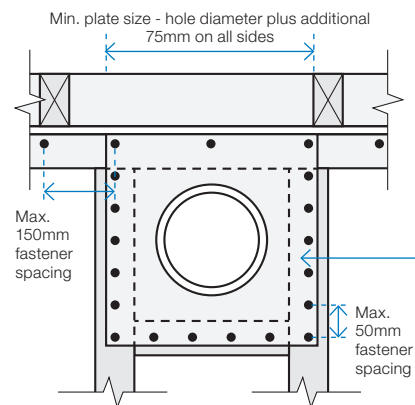


FIGURE 25: FIREPLACE FLUES AND RANGE HOOD OPENINGS

#### Section view



#### Plan view



Plasterboard ceiling not shown in plan view

**Steel plate**  
0.55 BMT  
Galvanised sheet  
Max. opening  
350mm diameter.  
Installed prior to  
GIB® plasterboard.

**Framing**  
90 x 45mm framing  
trimmed to provide  
extra fixing.

**GIB® plasterboard ceiling**  
Installed over the  
steel plate and into  
framing using a  
minimum of 32mm  
x 6g GIB® Grabber  
High Thread or  
32mm x 7g GIB®  
Grabber Dual Thread  
screws at 50mm  
max centre spacing.

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## Length of GIB EzyBrace® elements ('N' Type)

The length of GIB EzyBrace® elements with an 'N' extension (requiring standard NZS3604:2011 plate connections) can be taken as the full frame length measured from the outside of the end-stud to the opening face as illustrated in figures 29-32.

'N' type GIB EzyBrace® elements are identified by GIB® specification numbers GS1-N, GS2-N and GS2-NOM

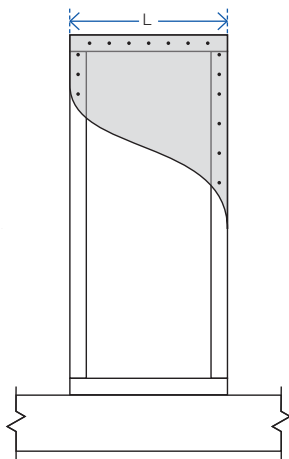
The dimension 'L' shall not be less than 400mm.

Perimeter bracing fixing for linings of both 'H' and 'N' type elements is along the top and bottom plates, end stud, and doubling stud immediately adjacent to the opening.

Fastener spacings and diagram scales shown in Figures 29-32 are indicative only. Refer to p.23-30 for construction details.

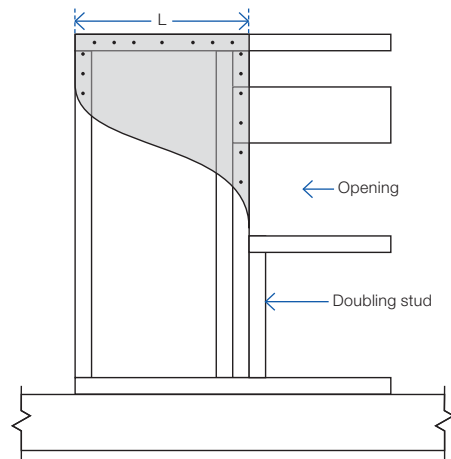
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FIGURE 29: GS BRACING ELEMENTS (OPTION A)



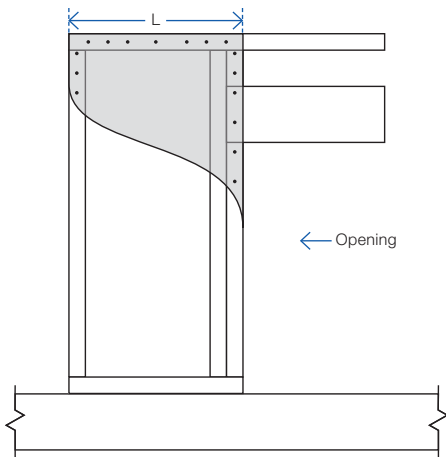
GS1-N, GS2-N elements  
 'L' indicates the length of the bracing element

FIGURE 30: GS BRACING ELEMENTS (OPTION B)



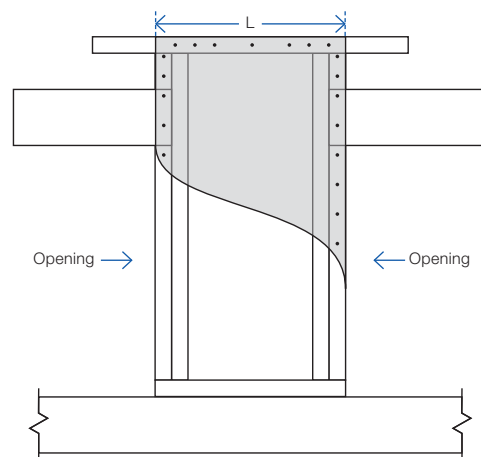
GS1-N, GS2-N elements  
 'L' indicates the length of the bracing element

FIGURE 31: GS BRACING ELEMENTS (OPTION C)



GS1-N, GS2-N elements  
 'L' indicates the length of the bracing element

FIGURE 32: GS BRACING ELEMENTS (OPTION D)



GS1-N, GS2-N elements  
 'L' indicates the length of the bracing element

## Length of GIB EzyBrace® elements ('H' Type)

GIB EzyBrace® elements with an 'H' extension (requiring special panel hold-down fixings) can be used when the dimension 'L' as illustrated in figures 33–36 is 400mm or more.

'H' type GIB EzyBrace® elements are identified by GIB® specification numbers GSP-H, BL1-H, BLG-H and BLP-H.

The length of an 'H' type element is not only determined by the sheet material, but also by the placement of the hold-down fixings.

Hold-down fixings cannot be placed closer together than what is shown for the standard panel in figure 33.

Hold-down fixings can be placed under windows provided sill trimming studs beneath the opening are connected to the bracing element using 8/90mm gun nails, as illustrated in figure 34.

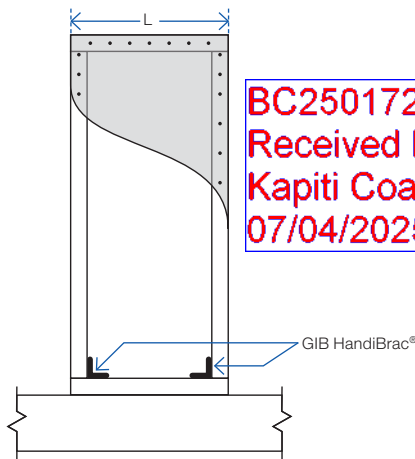
Spike doubling stud to trimming stud using a minimum of 2/90mm gun nails at 600mm centres. Lintel straps (where required for wind uplift) should be checked in and be located away from the bracing element fasteners.

Perimeter bracing fixing for linings of both 'H' and 'N' type elements is along the top and bottom plates, end stud, and doubling stud immediately adjacent to the opening as indicated in figures 34-36.

When using bracing straps, installed in accordance with p.17, fix the strap to the same framing member as shown for the GIB Handibrac® below, and install the adjacent anchor bolt in the same position as the GIB Handibrac® bolt.

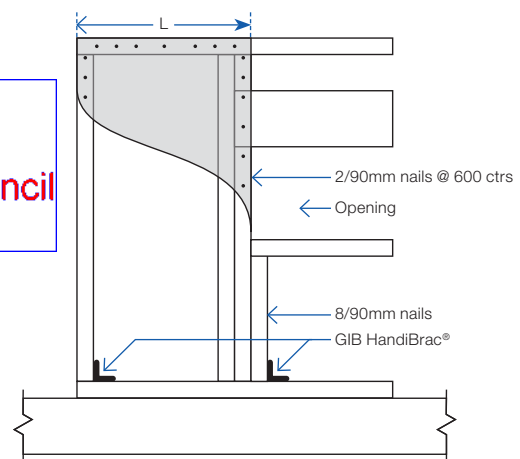
Fastener spacings and diagram scales shown in figures 33–36 are indicative only. Refer to p.23–30 for construction details.

FIGURE 33: BL BRACING ELEMENTS (OPTION A)



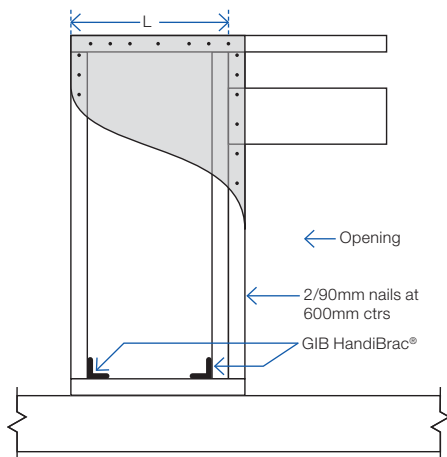
'H' type elements with specific hold downs  
'L' indicates the length of the bracing element

FIGURE 34: BL BRACING ELEMENTS (OPTION B)



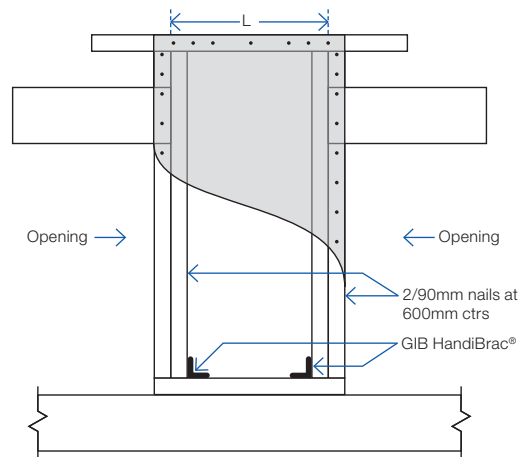
'H' type elements with specific hold downs  
'L' indicates the length of the bracing element

FIGURE 35: BL BRACING ELEMENTS (OPTION C)



'H' type elements with specific hold downs  
'L' indicates the length of the bracing element

FIGURE 36: BL BRACING ELEMENTS (OPTION D)



'H' type elements with specific hold downs  
'L' indicates the length of the bracing element

## GIB EzyBrace® Systems specification GS1-N

Specification code	Minimum length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard to one side only

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centres thereafter.

External Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for external wall bottom plate fixing.

### WALL LINING

- Any 10mm or 13mm GIB® plasterboard lining.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

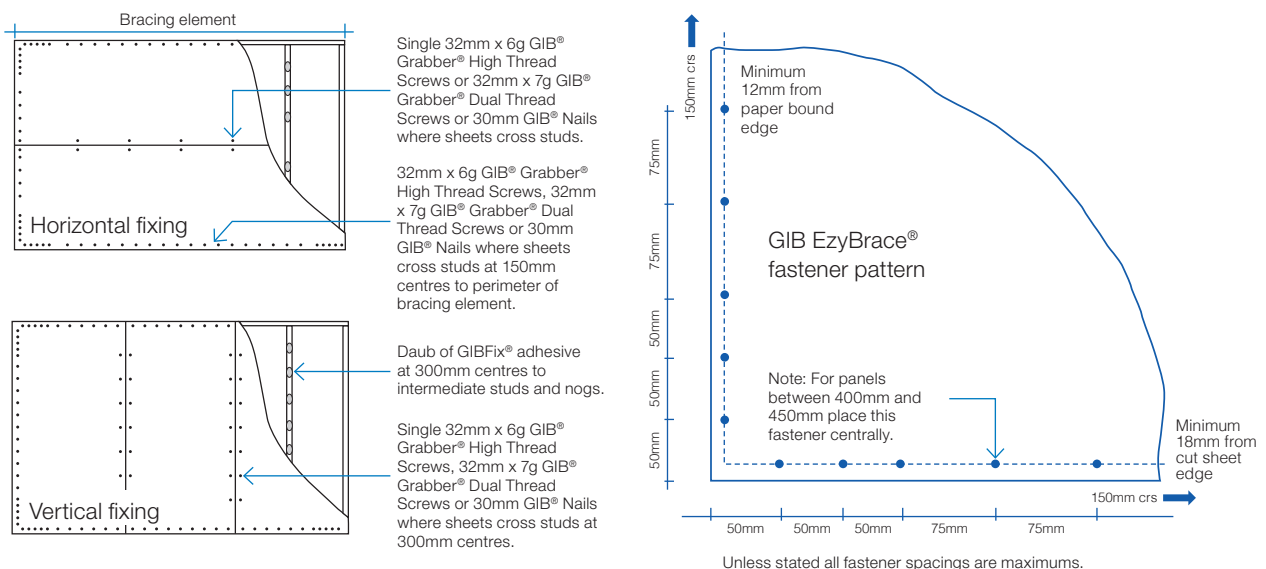
#### Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.

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## GIB EzyBrace® Systems specification GS2-NOM

Specification code	Minimum length (m)	Lining requirement
GS2-NOM	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Pairs of hand driven 100mm x 3.75mm nails at 600mm centres; or three power driven 90mm x 3.15mm nails at 600mm centres.

#### Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75mm x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

### WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Angle use 32mm x 7g GIB® Grabber® Dual Thread Screws.

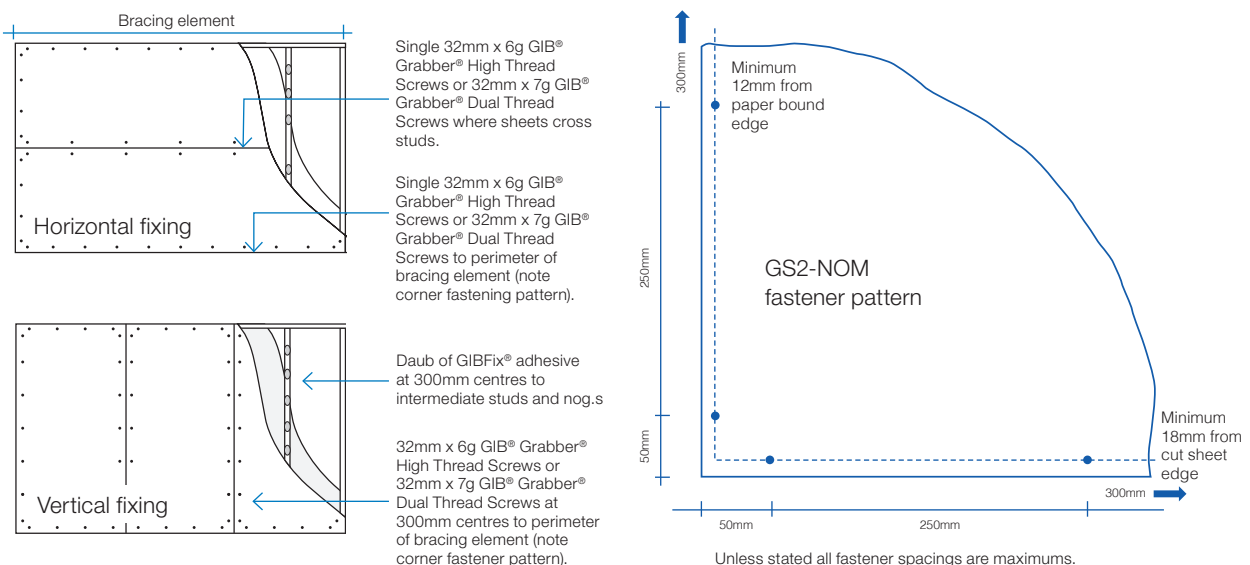
#### Fastener centres

50, 300mm from each corner and 300mm maximum thereafter around the perimeter of the bracing element. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.

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**GS2-NOM ADHESIVE FIXING OPTION AT DOOR JAMBS**

As an alternative to using screw fixings, a continuous 6-10mm bead of solvent based GIBFix® All-Bond can be applied along the full height studs immediately adjacent to an internal door opening and at the door lintel or head trimmer. The lining is then bedded into the adhesive and installed into the rebated jamb, as shown in figure 38.

This solvent based adhesive option may only be used with GS2-NOM specification and is designed to reduce popping of fasteners around door openings on internal walls.

FIGURE 37: SCREW FIX FOR OPENINGS

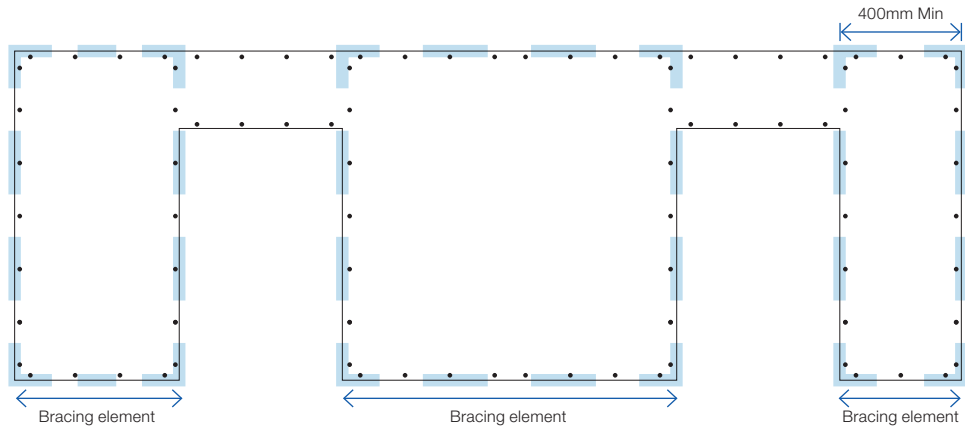
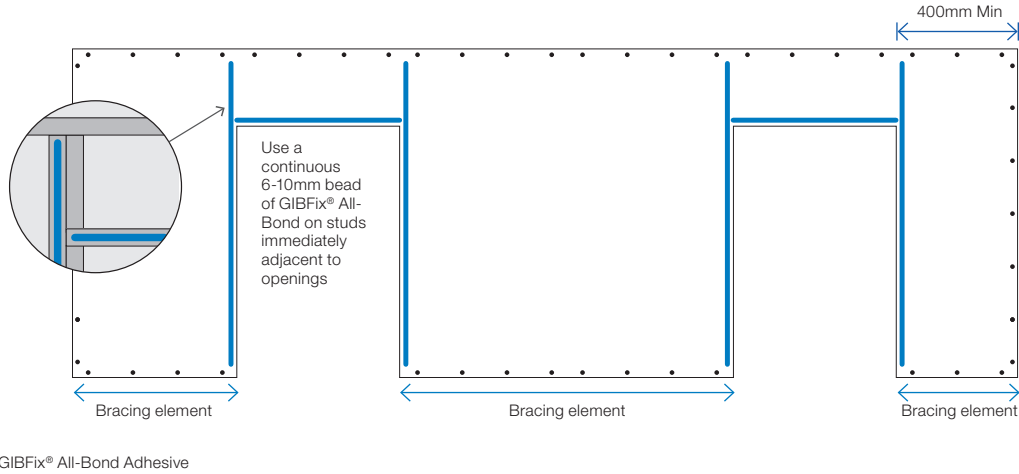
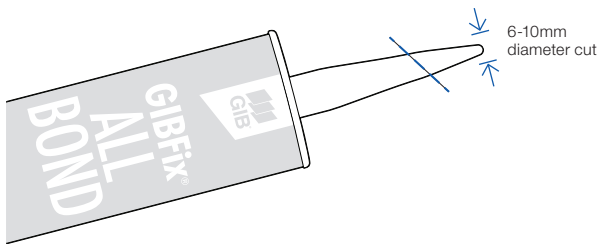


FIGURE 38: SCREW AND ADHESIVE FIX FOR OPENINGS



ADHESIVE NOZZLE APERTURE



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## GIB EzyBrace® Systems specification GS2-N

Specification code	Minimum length (m)	Lining requirement
GS2-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber Floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

### WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

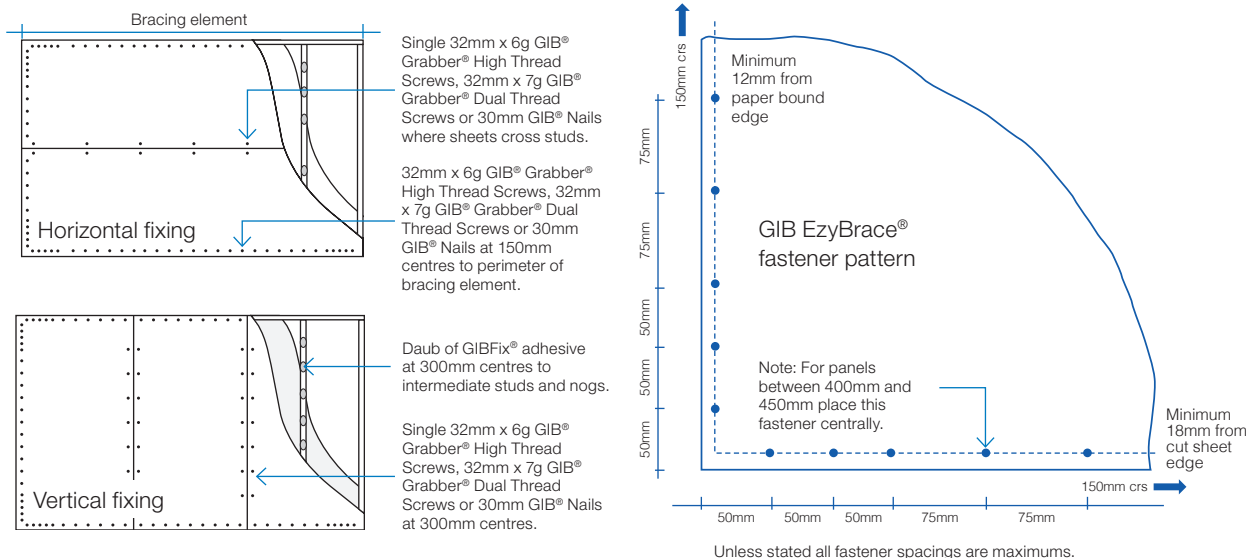
#### Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.

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## GIB EzyBrace® Systems specification GSP-H

Specification Code	Minimum length (m)	Lining requirement	Other requirements
GSP-H	0.4	Any 10mm or 13mm GIB® plasterboard lining to one side of framing and minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. With the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

### WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally, with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails.

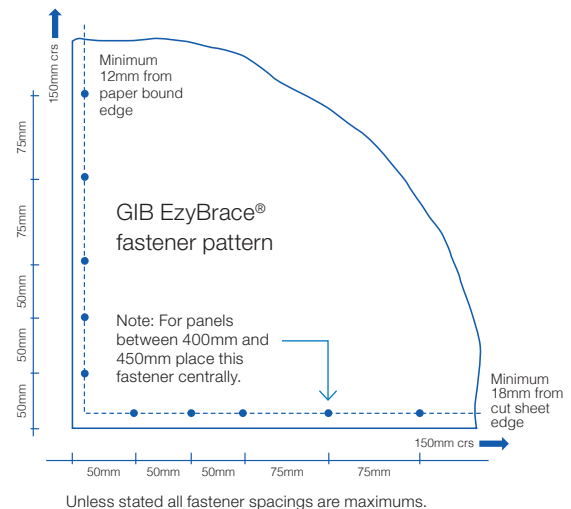
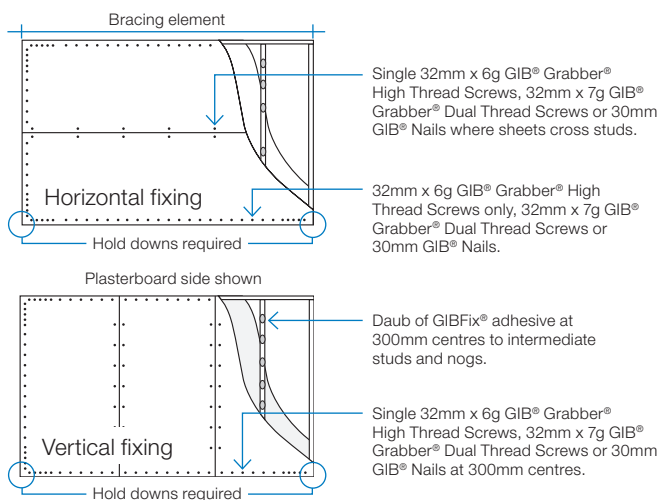
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails.

#### Fastener centres

GIB® plasterboard side: 50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate sheet joints. Place daubs no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



## GIB EzyBrace® Systems specification BL1-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BL1-H	0.4	10mm or 13mm GIB Braceline® to one side only	Hold downs

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

### WALL LINING

- A layer of 10mm or 13mm GIB Braceline®
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

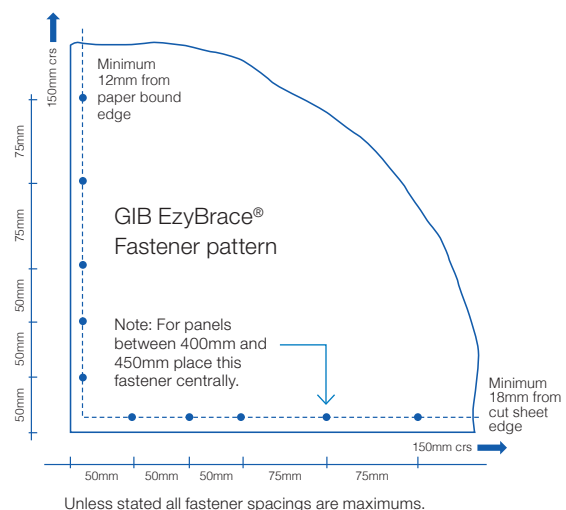
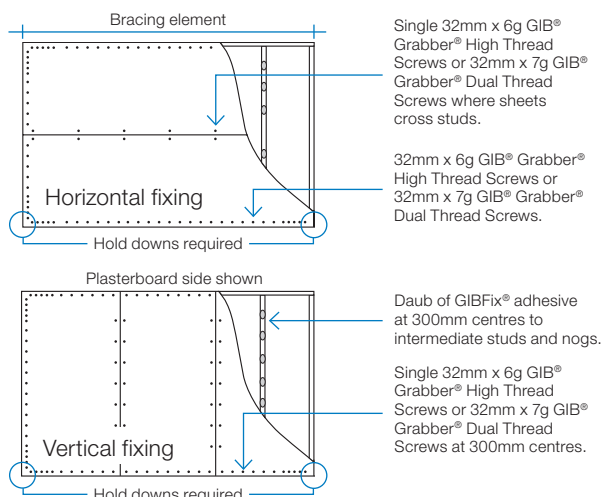
#### Fastener centres

50,100,150, 225, 300mm from maximum each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the sheet joint. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.

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## GIB EzyBrace® Systems specification BLG-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLG-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus any 10mm or 13mm GIB® plasterboard to the other side	Hold downs

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems 2011 or GIB® Site Guide. Hold down length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

### WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus any 10mm or 13mm GIB® plasterboard lining to the other side.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Other side: 32mm x 6g GIB® Grabber® High Thread Screws, 30mm GIB Nails or 32mm x 7g GIB® Grabber® Dual Thread Screws.

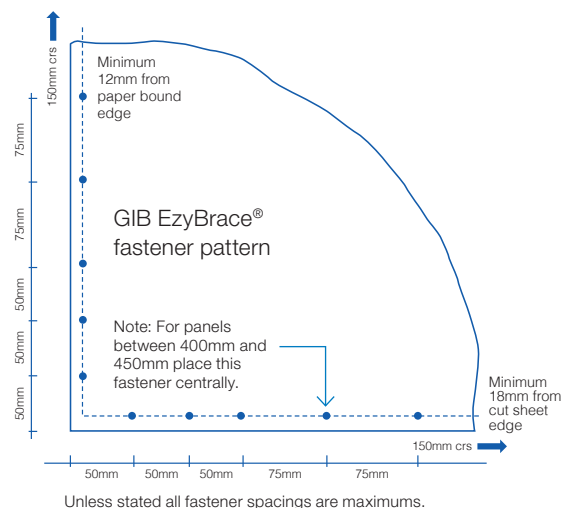
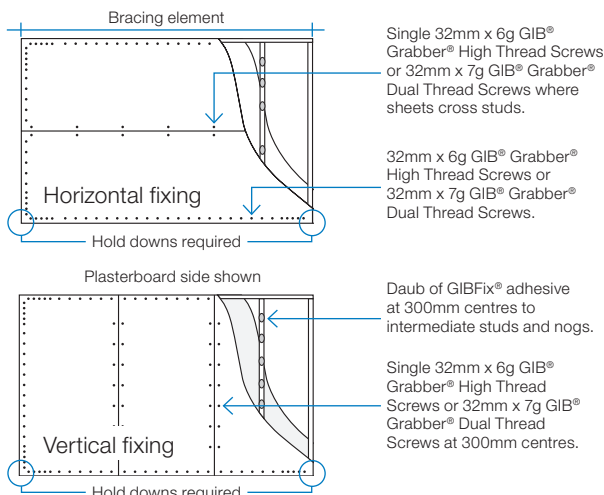
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

#### Fastener centres

50,100,150, 225, 300mm maximum from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

## GIB EzyBrace® Systems specification BLP-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLP-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure; B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Use panel hold downs at each end of the bracing element. The GIB® HandiBrac is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. With the length of the bracing element bottom plates are to be fixed in accordance with the requirements of AS/NZ 2269/0 :2012.

### WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZS 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally.
- Plywood is to be fixed vertically with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

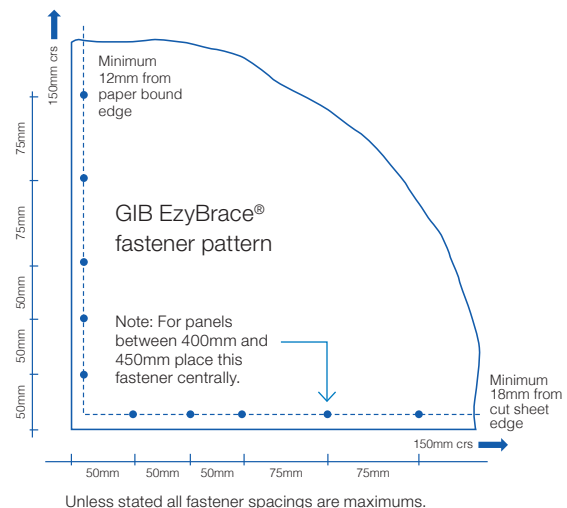
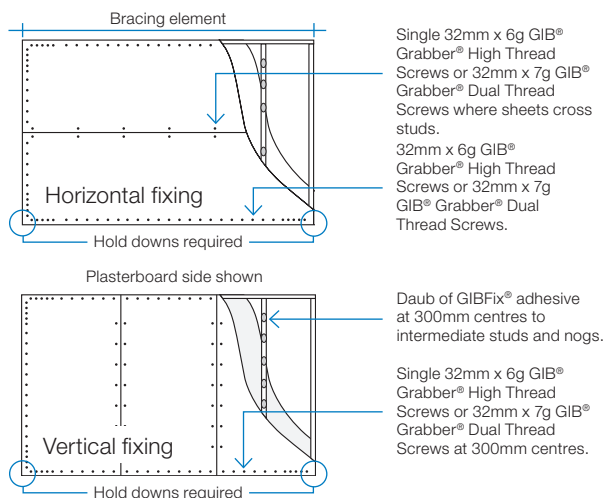
GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

#### Fastener centres

GIB® Plasterboard side: 50,100,150, 225, 300mm from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



Winstone Wallboards is committed to protecting the environment. Environmental matters are integrated into all business activities:

- Our operations strive to exceed all environmental regulatory requirements at all times.
- Protection of the environment is a day to day responsibility that we all must accept.
- We allocate appropriate management time and resources to address relevant environmental issues and continuously improve our activities in that area.
- We will achieve our standards of performance through positive action, employee involvement and constant communication with our neighbours, local authorities and customers.

Minimise on-site waste when designing and/or installing GIB® Systems. For larger projects give consideration to our cut-to-length service to reduce waste. GIB® plasterboard off-cuts, if separated from other waste building materials, can be readily recycled.

For larger projects waste can be diverted to compost manufacturers who grind up the GIB® plasterboard and use it in compost. For smaller projects, the GIB® plasterboard can be ground up and spread around the building site.

#### GLOBAL GREENTAG<sup>CERT™</sup>

The Global GreenTag<sup>Cert™</sup> certified eco-label acknowledges product as meeting the GreenRate Standard set by Global GreenTag<sup>Cert™</sup>.

GIB® plasterboard has a Level B green rating.

#### DECLARE CERTIFICATION

Declare is a database of non-toxic, sustainably sourced building products.

Many GIB® plasterboard products including GIB® Standard, GIB Braceline®, GIB Noiseline® and GIB Aqualine® have achieved Red List Free status in Declare certification.

For more information on Winstone Wallboards sustainability commitments visit [gib.co.nz](http://gib.co.nz).

#### COPYRIGHT

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Winstone Wallboards asserts its moral rights and reserves all other intellectual property rights in the materials contained in this brochure and related to GIBFix® Framing System and GIB EzyBrace® Systems.

#### TRADEMARKS

The names GIB®, GIB Fyreline®, GIB Ultraline®, GIB Braceline®, GIB Toughline®, GIB Noiseline®, GIB Aqualine®, GIB Nail®, GIB Tradeset®, GIB Plus 4®, GIB-Cove®, GIB Lite Blue®, GIBFix®, the colour mauve for GIB Toughline®, GIB HandiBrac®, GIB EzyBrace®, the colour blue for GIB Braceline®, the colour pink for GIB Fyreline®, the colour green for GIB Aqualine®, and the shield device are registered trademarks of Fletcher Building Holdings Limited.

#### PATENTS

GIBFix® Framing System and GIB EzyBrace® Systems, including componentry and design method, have patents pending (NZ Patent Number 596691, NZ Patent 709159 pending) and design and other IP rights.

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**FOR MORE INFORMATION VISIT**

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**OR CALL THE GIB® HELPLINE**

0800 100 442



# Product and System Warranty



580

## WE ARE 100% BEHIND OUR PRODUCTS AND SYSTEMS

If any of our products or systems\* fail to perform as claimed or an issue associated with any GIB® product or system does occur, Winstone Wallboards will work with the relevant parties to help resolve the issue.

## YOU'RE PROTECTED WITH GIB® PLASTERBOARD SYSTEMS



BRANZ Appraised  
Appraisal No. 427 [2021], 940 [2022],  
928 [2021], 394 [2017], 289 [2024],  
1048 [2019]

For over 95 years, building professionals have relied on GIB® plasterboard systems. Locally made for local conditions, they meet or exceed the New Zealand building code, are BRANZ appraised and are backed by full technical information and support to give complete confidence in using GIB® Plasterboard Systems\*.

\*When installed and maintained strictly in accordance with the relevant Winstone Wallboards literature current at the time of installation and under normal conditions of dry internal use.

Winstone Wallboards is committed through its heavy investment in quality management and technical support to ensure that GIB® products and systems perform as claimed. Comprehensive statements of 'fitness for purpose', functional performance and code compliance (including durability) are contained in GIB® literature and in the relevant BRANZ Appraisal.

## SYSTEM AND PRODUCT COMPONENTS

A system is a group of related product components that interact to perform a task. Ensure the full GIB® building system, including the appropriate GIB® branded products, are specified and installed. This will ensure performance is not compromised and that any failure that is attributable to GIB® products and/or systems will be supported. Winstone Wallboards is unable to support system performance where substitute products are used as these have not been tested by us as part of our systems and we cannot be responsible for the ongoing quality and performance of these products.

## PRODUCT AND SYSTEM WARRANTY

The Winstone Wallboards warranty covers GIB® products and/or systems for a minimum of 10 years from the date of purchase. Individual GIB® products are always covered by the GIB® product warranty even if these are not used as part of a full GIB® system. Winstone Wallboards warrants that GIB® products will be free from defects caused by factory workmanship or materials and, subject to compliance with the conditions attached, that the product or system will perform to the extent set out in relevant Winstone Wallboards published literature current at the time of installation. Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law. This Product and System Warranty is transferable to subsequent owners of the building.

## NZ BUILDING CODE CLAUSE B2 - DURABILITY

The Building Code sets the required durability standard for specific elements of building work. Clause B2 Durability aims to ensure that building elements and buildings are durable enough so all other objectives of the Building Code are satisfied throughout the life of the building, without the need for reconstruction or major renovation.

## GIB® SYSTEMS DURABILITY

The following systems have, unless stated otherwise in the technical literature, a serviceability life in excess of that stated and satisfy the requirements of NZBC Clause B2 Durability.

### 15 YEARS

- GIB Aqualine® Wet Area Systems

### 50 YEARS

- GIB® Fire Rated Systems
- GIB EzyBrace® Systems
- GIB X-Block® Systems
- GIB Noise Control® Systems

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**CONDITIONS OF WARRANTY:**

This warranty is subject to the following conditions:

- (a) Receipt of your written claim as soon as practicable but in any event within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation. We may also request written proof of purchase as a condition to considering your claim;
- (b) The project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code, and in compliance with other regulations and standards that apply to the project;
- (c) This warranty only applies to the initial application of the product and/or system where used and maintained in accordance with the relevant Winstone Wallboards product and/or system literature (including GIB® Site Guide instructions, GIB® Systems details and GIB® Plasterboard Lining Systems Care and Maintenance document), other manufacturers' instructions (where applicable if the GIB® products and/or systems are attached to, or dependent on, other manufacturers' products) and good trade practices current at the time of installation, under normal conditions of dry internal use, and does not apply to reuse of any product after initial installation;
- (d) If a claim under this warranty is covered, we will work with you to find a solution, which might involve product replacement and assistance with replacement work. Any recoating of GIB® products may result in slight colour differences between the original and replacement GIB® products. Depending on the situation, notwithstanding the foregoing, Winstone Wallboards will, at its option, (1) supply replacement product, (2) rectify the affected product or (3) pay for the cost of the replacement of the affected product.

Winstone Wallboards will not be liable for any losses or damages arising as a result of the breach of warranty or the defective product or systems, other than as set out in this paragraph (d);

- (e) This warranty does not apply to, and Winstone Wallboards will not be liable for, any claims, damages or defects arising from or in any way attributable to events outside of Winstone Wallboards' control including, but not limited to, poor workmanship and poor design or detailing, settlement or structural movement and/or movement of materials to which the product is attached or dependent on, performance of paint/coatings applied to the product, normal wear and tear, organisms or growths on or within the product, or any acts of God;
- (f) To the extent permitted by law, all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded.

**Before using this publication check whether it is the current publication by calling the GIB® Helpline weekdays on 0800 100 442 or visit [gib.co.nz](http://gib.co.nz)**

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**Note: To obtain copies of Winstone Wallboards Ltd literature or BRANZ Appraisals, please contact the GIB® Technical Helpline 0800 100 442 or download from [gib.co.nz](http://gib.co.nz).**

**Related BRANZ Appraisals can also be downloaded from [www.branz.co.nz/appraisals](http://www.branz.co.nz/appraisals).**

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**GIB**<sup>®</sup>

# Wet Area Systems

Specification and installation manual

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## **NATIONAL SUPPORT**

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## **GIB® HELPLINE**

0800 100 442

**583**

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# RESIDENTIAL AND NON-RESIDENTIAL APPLICATIONS. BATHROOMS, LAUNDRIES, TOILETS AND KITCHENS.

Protection from internal moisture is an important consideration when designing interior lining systems for homes, multi-unit apartments, educational, healthcare and commercial applications.

The New Zealand Building Code sets out minimum standards for wet area spaces in residential dwellings. However, often higher levels of performance and protection from internal moisture is demanded.

The GIB® Wet Areas System specification and installation manual provides internal lining options and details for specifiers, builders and building owners.

## USE ONLY THE CURRENT SPECIFICATION

This manual supersedes the publication GIB Aqualine® Wet Area Systems March 2007. Winstone Wallboards Ltd accepts no liability for reliance upon publications that have been superseded.

If you are unsure whether this is the current publication, call the GIB® Helpline on 0800 100 442 or go to [gib.co.nz](http://gib.co.nz)

## BEWARE OF SUBSTITUTION

The performance of GIB® Wet Area Systems requires accurate design detailing and construction practices. All GIB® Systems have been developed specifically for New Zealand conditions and independently tested, assessed or appraised, to ensure the required level of performance. It is important to use GIB® components where specified and to closely follow the specified design details and construction practices, to be confident that the required level of performance and quality is achieved on site.

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## This publication

This publication is a best practice guide to the design and construction of wall and ceiling linings in wet areas with intermittent water exposure within residential and non-residential buildings, as covered by NZ Building Code Clause E3 Internal Moisture.

The information is designed to be helpful to designers, contractors and home-owners wishing to achieve a result that is easy to incorporate into modern design, simple and clear to construct, and that will satisfy the needs, requirements and expectations of both the NZ Building Code and the end user.

Wet areas in the home often require relatively frequent and expensive renovation or repair, often because of the ingress of water to the structure of the building.

To form a complete wet area system it is important to specify compatible materials and systems, designed to cope with conditions that are common in wet areas, and to ensure correct installation using best practice.

### WET AREAS

Generally, wet areas are described as spaces to where fresh water is reticulated, such as bathrooms, toilets, laundries and kitchens. Within wet areas the following requirements apply;

1. NZBC Clause E3.3.4 states that wall surfaces adjacent to sanitary fixtures or sanitary appliances must be impervious and easily cleaned.
2. NZBC Clause E3.3.6 states that surfaces of building elements likely to be splashed must be constructed in a way that prevents water splash from penetrating behind linings or into concealed spaces.

NZ Building Code Clause E3 also refers to other requirements not covered in this publication, such as ventilation, condensation control and overflow management. Ongoing maintenance of wet areas is also important to maximise service life.

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### GIB AQUALINE®, GIB TOUGHLINE® AQUA AND GIB WEATHERLINE®

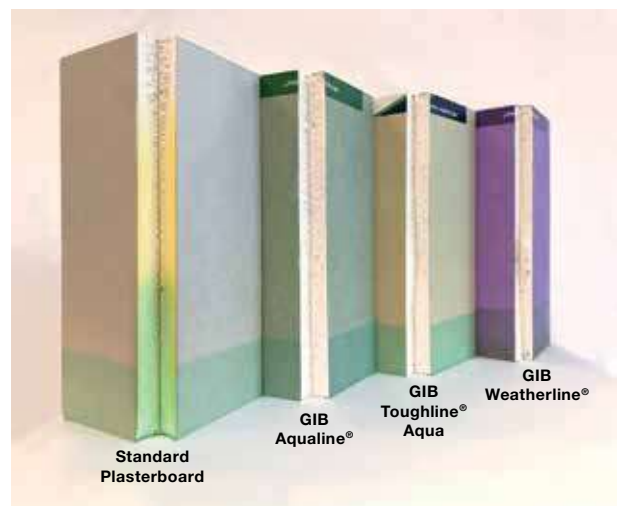
Although able to cope with infrequent short-term exposure, standard gypsum plasterboard will have a shortened life expectancy when frequently exposed to water or a high moisture environment.

The NZ Building Code does not call for water resistant linings in wet areas but it is desirable to specify lining materials which will maintain their integrity longer when exposed more frequently to moisture, and to one-off events such as leaks or flooding.

GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® feature a water-resistant polymer impregnated core, designed for wet area applications. These core formulations not only resist penetration of moisture through the lining into the framing behind, but also resist water “wicking” up the core, a common cause of long-term damage where a water-resistant lining has not been used.

### WATER ABSORPTION TEST

The illustrations below show how GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® compare with standard plasterboard after soaking for two-hours in green dye.



### WHERE TO USE GIB® WET AREA LININGS

In order to prolong the life expectancy of the space it is highly desirable to include wet area linings in situations where there is an increased risk of water or moisture damage. Applications include walls and ceilings in bath and shower rooms, and walls in laundries, toilets and kitchens.

### BENEFITS

- Water resistant and durable linings help protect against water damage
- Proven substrate for paint, wallpaper, waterproofing membranes, tiles, sheet vinyl and rigid sheet shower linings
- Suitable for both residential and non-residential applications
- Dimensionally stable and an excellent substrate for ceramic tiles
- Conventional jointing methods
- Easy to cut and form openings
- Contains glass fibres and other additives to increase strength and fire resistance
- May be used in GIB® Bracing, GIB® Fire Rated and GIB Noise Control® Systems (see Compliance with the NZ Building Code, Clauses B1, C3 and G6). Consult the appropriate GIB® literature for installation details

### HANDLING AND STORAGE

- GIB® plasterboard must be stored under cover, stacked flat and clear of the floor with sufficient support to avoid sagging
- GIB® plasterboard must be handled as a finishing material

### LIMITATIONS

- GIB® wet area linings must not be used for bracing purposes in shower cubicles or above baths. For more information refer to page 9 of this manual
- Do not use GIB® wet area linings where exposed for extended periods to humidity levels above 90% RH, such as in group shower or steam rooms, or where exposed to moisture and chlorine rich environments such as in indoor swimming pools
- GIB® wet area linings used in a bathroom or other high humidity environment must not be directly applied to solid plaster (gypsum or cement), wood-based sheet linings or similar materials, masonry or concrete, without strapping or steel furring channels
- GIB® wet area linings must not be installed over a vapour barrier or a wall acting as a vapour barrier
- Cracked or damaged sheets must never be used
- GIB Aqualine® or GIB Toughline® Aqua must not be used in external applications
- GIB® plasterboard must not be exposed to temperatures in excess of 52°C for prolonged periods. Heat-generating devices may include halogen lighting, cooking elements, radiant heating, solid fuel exhausts and fire surrounds. Consult the appliance manufacturer for installation details

**Table 1: GIB® Wet Area linings sheet dimensions and weights**

Product	Sheet face colour	Thickness (mm)	Sheet width (mm)	Edge Type	Sheet length (mm)						Max. Weight (kg/m <sup>2</sup> )
					2400	2450	2700	3000	3600	4800	
GIB Aqualine®	Green	10	1200	TE/TE							8.0
			1200	TE/SE							
			1350	TE/SE							
		13	1200	TE/TE							11.0
GIB Toughline® Aqua	Mauve	13	1200	TE/TE							11.4
GIB Weatherline®	Purple	10	1200	SE/SE							9.0
		13	1200	SE/SE							11.5

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## BOARD SUBSTITUTION OPTIONS

Acceptable GIB Aqualine® alternatives	
10mm GIB Aqualine® can be replaced with:	10mm GIB Weatherline® 13mm GIB Toughline® Aqua
13mm GIB Aqualine® can be replaced with:	13mm GIB Weatherline® 13mm GIB Toughline® Aqua

GIB® Wet Area System construction details in this manual refer to the use of GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® sheets may also be used in place of GIB Aqualine®.

### FLEXIBLE SHEET VINYL – SHOWERS AND OTHER WET AREAS

- GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® are suitable substrates for flexible vinyl wall finishes in wet areas of residential, commercial or institutional buildings
- Framing requirements and installation procedures are presented in this literature, except that the lining gap at the floor is no more than 5mm when a pencil cove detail is used
- The installation of galvanised steel reinforcing angles behind internal lining corners is recommended for sheet vinyl applications in showers or shower over bath situations
- The lining must be jointed and stopped to a paint quality finish (Level 4) – trowel marks can telegraph even through a commercial grade 2mm vinyl
- A commercial grade vinyl is recommended in commercial or institutional bathrooms and showers
- In areas directly exposed to liquid water, all joints in flexible sheet vinyl must be heat welded
- Installation of flexible vinyl must be carried out strictly in accordance with the specifications provided by the suppliers/ manufacturers of the vinyl

### RIGID SHEET SHOWER LININGS

- The wall surface must be free of dust before installation of the lining
- Avoid lining joints as much as possible and where necessary flush with plaster to achieve a level surface
- Do not pre-seal or paint areas which are to be covered by the rigid shower linings
- The suppliers of thin (usually 2-3mm) and rigid acrylic shower linings commonly recommend direct adhesive fixing to wall linings using solvent-based adhesives
- Care must be taken to ensure that rooms are adequately ventilated
- Water temperature changes will cause movement of the thin acrylic sheet, which in turn will stress the adhesive and wall lining substrate
- Consult the supplier of the shower lining for full installation details
- Suppliers of rigid sheet acrylic shower linings recommend a minimum of 24 hours for the adhesive to cure fully prior to the shower being put into service

### WATERPROOF MEMBRANE SYSTEMS AND TILING

- A waterproof membrane system must be applied to lining materials used as a substrate for ceramic tiles in a shower or shower over bath situation
- The wall surface in a shower or shower over bath situation is not complete and ready for tiling until coated with a waterproof membrane system over the lining and once penetrations for shower mixers, taps and associated fittings are sealed
- The installation of galvanised steel reinforcing angles behind internal lining corners is required for tiled wall applications in showers or shower over bath situations
- In-situ waterproofing membrane materials manufactured to AS/NZS 4858:2004 “Wet Area Membranes” are recommended and must be applied to manufacturer’s recommendations. Typically, these types of membrane systems are not suitable for paint and wallpaper finishes
- Waterproof membrane systems must be fully cured and dry prior to application of tiling adhesives
- Preformed sheet membranes are also available and may be more suitable where curing times or specialist skills are an issue
- The details shown in this manual are generic in nature. For accurate detailing, follow the specifications provided by the supplier of the proprietary waterproof membrane system

For further information on tiling consult the BRANZ Good Practice Guide – Tiling.

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## PENETRATIONS AND SEALANTS

As leaks and water ingress typically occur at junctions between building elements and at penetrations, it is essential that particular attention is given to these details at the time of installation. Lack of attention to detail can result in water damage that could remain undetected for a long time.

- Ensure that all cut-outs for pipe penetrations are made neatly, and slightly oversize, with a hole saw. These penetrations should be of a diameter no more than 12mm greater than that of the pipe
- Shower mixer and tap penetrations should be sealed with an appropriate flange system to prevent the passage of moisture into the wall cavity. Refer to New Zealand Building Code Clause E3 Internal Moisture November 2020 for examples of acceptable options
- Sealants should be of a mould inhibiting type and be paintable. Neutral cure silicones will generally meet these requirements
- Surfaces should be dry and free from dust before application, a minimum of a 4mm joint width provided and the depth should not exceed the width
- Apply a bead of sealant to the full depth of the lining in the following locations:
  - Around all tap/pipe bodies
  - The gap between the bath rim and the bottom edge of the wet area lining
  - Between the upstand of preformed shower bases and the bottom edge of the lining
  - Where an impervious junction is required at the floor/wall line, carefully seal the gap between the bottom edge of the board and the finished floor. Leave a 5-10mm gap at the bottom of the wall lining for this purpose, ensuring the gap is free from dirt and dust
- Do not locate shower heads or taps on fire rated or intertenancy walls. Should this be unavoidable always use tested and approved proprietary penetration seals

## RENOVATIONS

Bathrooms, kitchens and laundries are the most renovated rooms in the house, partly due to fashion considerations and partly because of damage sustained by ingress of water and moisture.

When renovating these rooms it is often easier and more cost-effective to remove the existing linings and replace them. This allows for a new start in the room and offers sound substrates for new surfaces such as tiling and painting, where otherwise flaking paint or damaged plasterboard may compromise good and sound finish or practice. At the very least re-lining will:

- Allow for inspection of framing where damage may have occurred and provide the opportunity to repair such damage
- Allow plumbing and electrics to be checked and altered or replaced where required
- Provide the opportunity to install thermal and acoustic insulation, water-resistant linings, and propriety plumbing penetration flange systems where appropriate
- Make the job easier

## MAINTENANCE

Lack of maintenance is frequently the cause of premature and often expensive failure of components and building elements within wet areas.

It is important to regularly inspect and repair any potential problem before it becomes expensive to reinstate. Good maintenance should include:

- Ongoing ventilation. At the very least, good passive ventilation (e.g. window vents); but good active ventilation (e.g. extraction fans) of an appropriate size for the room is recommended
- Impervious coatings and surfaces should be checked for wear and damage and maintained and re-coated before ingress of water to the substrate occurs
- Regular cleaning with appropriate cleaners so that build-up of matter, such as mould, is well controlled
- Sealants at junctions and penetrations should be checked for adhesion on a regular basis and replaced where adhesion failure to substrates occurs
- Where pipe leaks have become evident, however small, they should be repaired promptly and any area around such leaks dried out completely before any other repairs are carried out

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## Compliance with the NZ Building Code

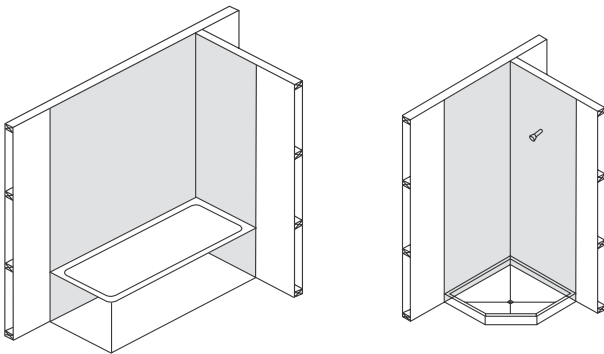
### STRUCTURE – CLAUSE B1

The design and material specification for steel and timber framing used in GIB® Wet Area systems must be in accordance with the performance requirements of NZ Building Code Clause B1 (Structure).

Bracing elements are required to have a durability of 50 years. GIB® bracing elements are not to be located in shower cubicles or behind baths because of durability requirements, the likelihood of renovation, and practical issues associated with fixing bracing elements to perimeter framing members, such as at bath and shower tray locations.

Otherwise, GIB® Bracing Systems can be used in water-splash areas, provided these are maintained impervious for the life of the building.

GIB Aqualine®, GIB Toughline® Aqua and GIB Weatherline® can be used in place of GIB® Standard plasterboard in GIB® bracing elements. They can also be used in place of GIB Braceline® in GIB® bracing elements 900mm or longer, provided the perimeter of the element is fixed with GIB® Grabber 32mm x 6g screws at 100mm centres, using the GIB Braceline® corner fixing pattern. Refer to the GIB® Bracing System literature.



**No bracing in the shaded areas.**

### DURABILITY – CLAUSE B2

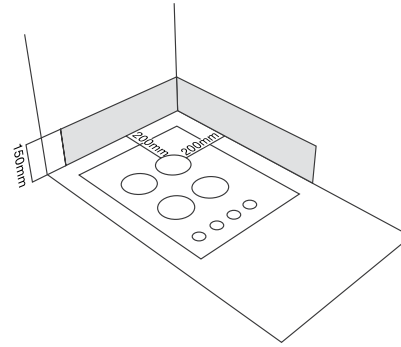
When installed and maintained in accordance with this literature, GIB® Wet Area systems tiled or vinyl covered have a serviceable life of at least 15 years. They comply with the requirements of NZ Building Code Clause B2 (Durability) for use in wet areas directly exposed to liquid water, e.g. showers, showers over baths and splash-backs.

When used as a general wet area lining and maintained under normal dry internal conditions, GIB® Wet Area Systems have a serviceable life of at least 50 years and comply with NZ Building Code Clause B2 (Durability) for use within toilets, kitchens, bathrooms and laundries not directly exposed to liquid water.

### FIRE AFFECTING AREAS BEYOND THE SOURCE – CLAUSE C3

GIB® Fire Rated Systems provide passive fire protection in accordance with the requirements of NZ Building Code Clause C3. When GIB Aqualine® or GIB Toughline® Aqua is substituted into fire rated systems in place of the equivalent thickness GIB Fyrelite®, the Fire Resistance Rating (FRR) of that system will be maintained.

The protection of combustible surfaces surrounding gas cooking appliances is covered by the latest version of AS/NZS 5601.1.



As a guide the following options are acceptable for wall surfaces within 200mm of the periphery of a gas element to a height of 150mm above the element for the full dimension (width and depth) of the cooktop surface area:

- 5mm tiles on GIB® plasterboard
- 5mm toughened glass on GIB® plasterboard
- or any system that can be demonstrated to meet the specific requirements of AS/NZS 5601.1

GIB® plasterboard products must not be exposed to temperatures in excess of 52°C for sustained periods. Check with the appliance manufacturer that this requirement will be met. It would be unusual for surfaces outside 200mm to exceed 52°C for sustained periods.

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### INTERNAL MOISTURE – CLAUSE E3

The New Zealand Building Code Clauses that relate to wall surfaces are;

E3.3.4 - Wall surfaces adjacent to sanitary fixtures or sanitary appliances must be impervious and easily cleaned.

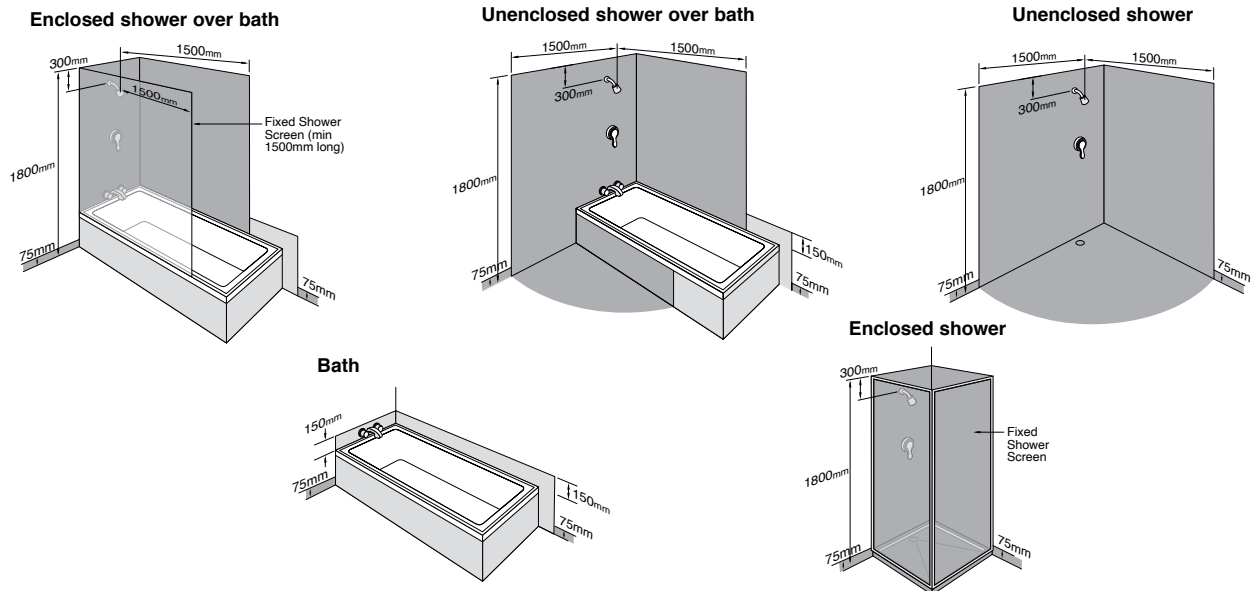
E3.3.5 - Surfaces of the building elements likely to be splashed or become contaminated in the course of the intended use of the building, must be impervious and easily cleaned.

E3.3.6 - Surfaces of building elements likely to be splashed must be constructed in a way that prevents water splash from penetrating behind linings or into concealed spaces.

New Zealand Building Code Acceptable Solution E3/AS2 substantially refers to the Waterproof Membrane Association Incorporated (WMAI) Code of Practice for Internal Wet Area Membrane Systems (IWAM), August 2020.

The IWAM Code of Practice refers to wet area membranes and over-surfaces that are easy to clean and suggests an extent as outlined below for a typical bathroom application. For further details refer to the IWAM Code of Practice which also lists suitable rigid sheet materials and tiling membranes.

Shaded areas in the diagrams below represent the minimum extent of wall surfaces requiring impervious sheet materials or waterproof membrane systems prior to tiling.



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**HAZARDOUS BUILDING MATERIALS – CLAUSE F2**

At no stage during its serviceable life does GIB Aqualine® constitute a health hazard. It therefore meets the provisions of NZ Building Code Clause F2 (Hazardous Building Materials). Dust resulting from the sanding of stopping compounds may be a respiratory irritant and the use of a suitable facemask is recommended.

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**VENTILATION – CLAUSE G4**

NZ Building Code Clause G4 (Ventilation) requires buildings to have a means of collecting or otherwise removing steam generated from laundering, utensil washing, bathing or showering. To prolong the life of interior linings and surface finishes and to minimise the risk of moisture related problems such as condensation and mould growth, adequate heating, thermal insulation and mechanical ventilation must be provided in kitchens, bathrooms and laundries.

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**AIRBORNE AND IMPACT SOUND – CLAUSE G6**

GIB® Noise Control Systems can be used to provide ratings for Sound Transmission Class (STC) and Impact Insulation Class (IIC) in accordance with the requirements of NZ Building Code Clause G6 (Airborne and Impact Sound). When GIB Aqualine®, GIB Toughline® Aqua or GIB Weatherline® is substituted into GIB® Noise Control systems in place of the equivalent thickness GIB® Standard plasterboard or GIB Fyrelite®, the STC and IIC rating of that system will be maintained. When GIB Aqualine®, GIB Toughline® Aqua or GIB Weatherline® is substituted in place of the equivalent thickness GIB Noiseline®, a small performance loss may occur. For further information refer to the GIB Noise Control® Systems literature or contact the GIB® Helpline 0800 100 442.

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## TIMBER WALL FRAMING

Framing dimensions must comply with the requirements of NZS 3604:2011.

- The moisture content of timber framing shall be 18% or less at the time of lining
- Studs shall be spaced at 600mm centres maximum for both 10mm and 13mm GIB® plasterboard
- Nogs to be evenly spaced with a maximum spacing of 1350mm. Alternatively, nogs may be staggered 150mm maximum either side of a horizontal joint line
- Nogs are not required behind horizontal joints except in shower situations or specific fire or noise control systems

## FASTENERS

- Minimum 32mm x 6g GIB® Grabber® High Thread screws.

## FASTENER CENTRES

- 300mm centres to top and bottom plates and to perimeter studs
- Single fasteners to each stud where the horizontal joint crosses the studs

- Place fasteners 12mm from sheet edges and 18mm from sheet ends
- Daubs of GIBFix® adhesive at 300mm centres to intermediate studs
- Do not place adhesive at sheet edges or under fasteners. Sheet edges at door or window openings can be adhesive fixed unless forming part of the perimeter of a bracing element

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

## LINING

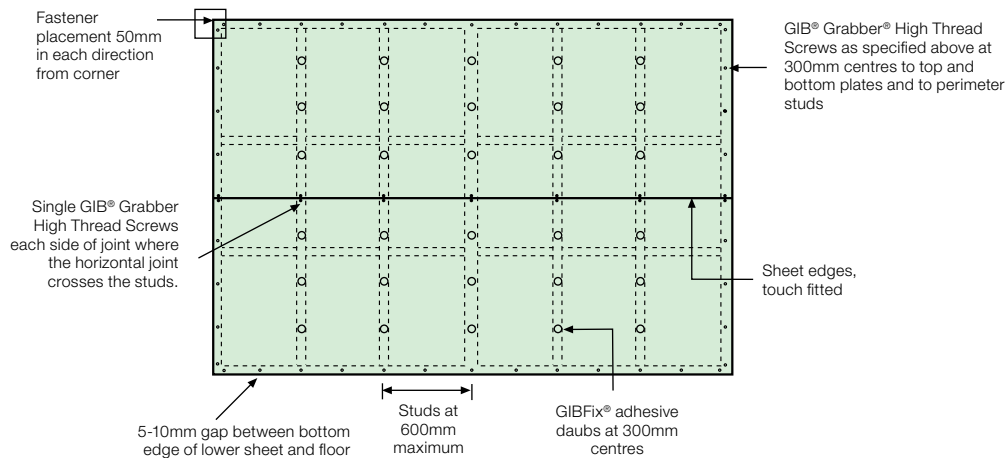
- Use minimum 10mm GIB® plasterboard
- Install the sheets leaving a 5-10mm gap at the floor line to allow for movement of the framing members and to allow for cleaning dirt and rubbish before sealing
- Sheets to be touch fitted.

## JOINTING

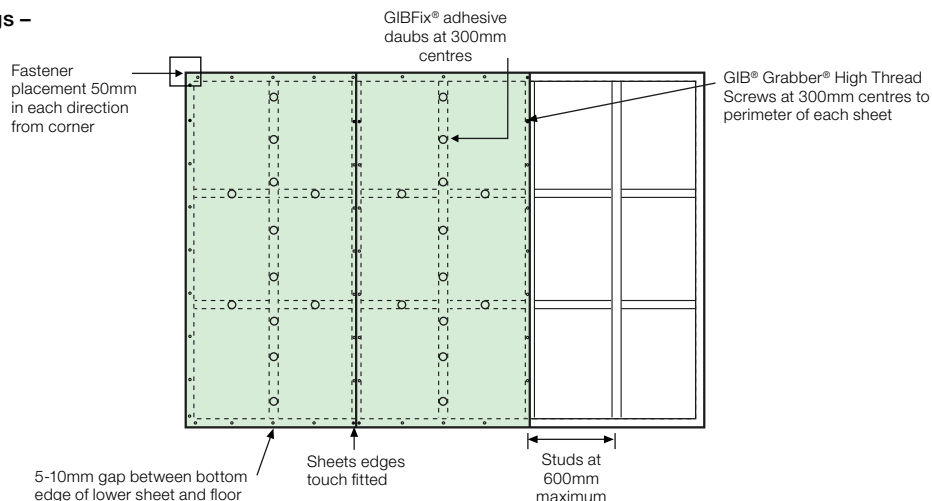
- Jointing shall be carried out in accordance with the instructions in the GIB® Site Guide.

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### Fastening the Linings – Horizontal Fixing Only



### Fastening the Linings – Vertical Fixing Only



## STEEL WALL FRAMING

The minimum sheet thickness for fixing on light gauge 0.55mm base metal thickness (BMT) steel framing is 13mm GIB® plasterboard. For bracing, noise control or fire rating applications consult the relevant GIB® technical publication.

Steel frame for residential construction is in accordance with NZBC B1/AS1 9.1 NASH Standard Part 2 Light Steel Framed Buildings, or by specific design. 10mm GIB plasterboard is commonly used on minimum 0.75mm BMT residential steel framing.

## FASTENERS

- Minimum 25mm x 6g GIB® Grabber® Self Tapping Screws.

## FASTENER CENTRES

- 300mm centres to top and bottom channels and to end studs
- Single screws to each stud where the horizontal joint crosses the studs
- Place fasteners 12mm from sheet edges and 18mm from sheet ends

- Daubs of GIBFix® All-Bond adhesive or screws at 300mm centres to intermediate studs
- Do not place adhesive at sheet edges or under fasteners.
- Sheet edges at door or window openings can be adhesive fixed.

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

## LINING

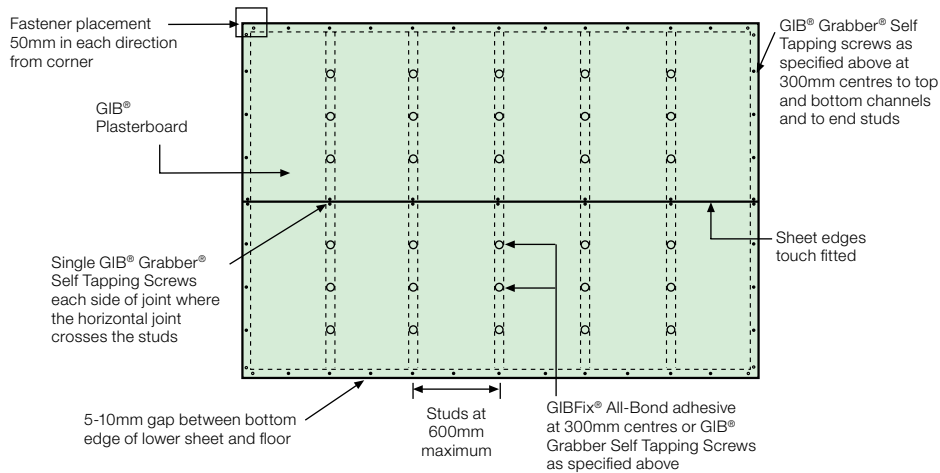
- Lay the sheets, leaving a 5-10mm gap at the floor line.  
Note: If friction fitted steel studs have been used, sheets must be fitted hard to the floor. Ensure floor is cured and dry
- Sheets to be touch fitted.

## JOINTING

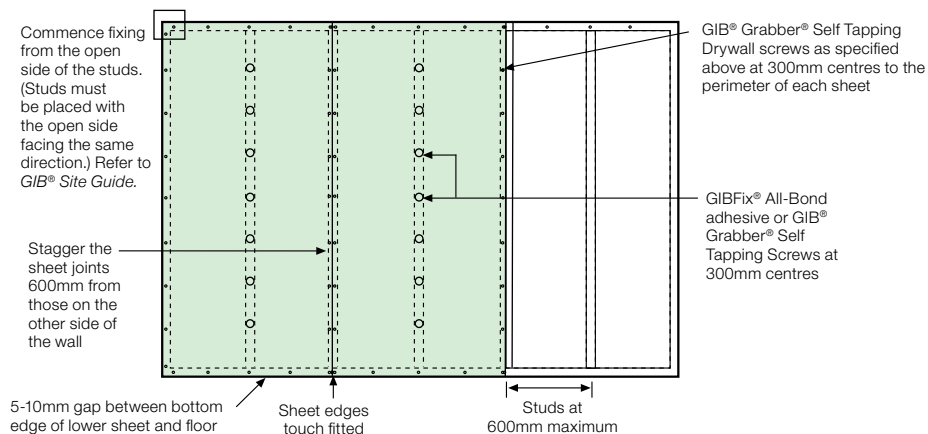
- Jointing shall be carried out in accordance with the instructions in the GIB® Site Guide

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### Fastening the Linings – Horizontal Fixing Only



### Fastening the Linings – Vertical Fixing Only



### TIMBER WALL FRAMING

Framing dimensions and spacing must be appropriate for the tile weight and comply with the requirements of NZS 3604:2011 Timber Framed Buildings, or relevant specific design Standard.

### NOGS

For impact protection in shower cubicles or shower over bath situations it is important that all sheet joints are made on solid framing. This may require vertical fixing or the installation of additional noggs. Also provide noggs:

- Adjacent to each pipe penetration and behind sink and tub flashings
- Between all studs above bath flanges and preformed shower bases

### CORNER REINFORCING

- Prior to lining in tiled areas (shower cubicles and shower over bath only) the internal corners shall be reinforced with a minimum
- 32 x 32 x 0.55mm NZ18 or 45 x 45 x 0.55mm GIBFix® Angle. Angles need to be temporarily held in place until secured by the lining fixings.

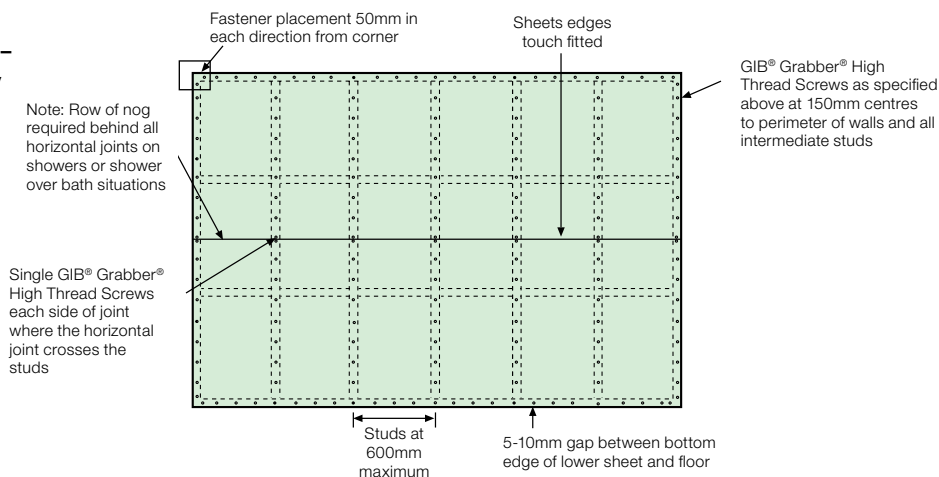
### FASTENERS

- Minimum 32mm x 6g GIB® Grabber® High Thread Screws

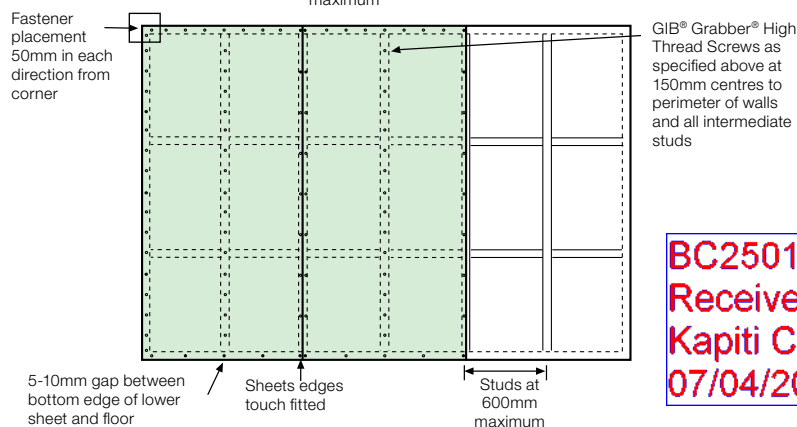
### FASTENER CENTRES

- 150mm centres to perimeter of wall and all intermediate studs
- Adhesive is not to be used in place of mechanical fasteners
- Place fasteners 12mm from sheet edges and 18mm from sheet ends

### Fastening the Linings – Horizontal Fixing Only



### Fastening the Linings – Vertical Fixing Only



- Single fasteners to each stud where the horizontal joint crosses the studs
- Where relevant, fastener lengths must comply with the requirements of GIB® Fire Rated Systems or GIB® Noise Control Systems

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

### LINING AND TILE WEIGHTS

- Use minimum 10mm GIB® plasterboard
- For maximum permitted tile weights refer to pg 16 of this manual
- GIB® Wet Area linings may be fixed vertically or horizontally
- Sheets are touch fitted
- Provide a 5-10mm gap at the wall/floor junction and between the bottom edge of the lining and any bath rim or preformed shower base to allow for placement of sealant
- Do not tile on the resilient side of GIB Rail® or STWC Acoustic Clip (ST001) and channel noise control system
- GIB® Wet Area linings are suitable for tiling full height of walls, but if a wall is to be partially tiled (e.g. half high), only the area of wall under the tiles needs to be fixed as required for tiled areas. The remainder of the wall may be fixed as for non-tiled areas

### JOINTING

- Jointing shall be carried out in accordance with the instructions of the GIB® Site Guide

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## STEEL WALL FRAMING

Framing dimensions and spacing must be appropriate for the tile weight and comply with the requirements of NASH Standard Part 2:2019 Light Steel Framed Buildings, or relevant specific design Standard.

- Linings are placed hard to floor, bedded into a sealant bead
- Steel framing for tiling to have a minimum base metal thickness (BMT) of 0.75mm

## NOGS

For impact protection in shower cubicles or shower over bath situations it is important that all sheet joints are made on solid framing. This may require vertical fixing or the installation of additional noggs. Also provide noggs:

- Adjacent to each pipe penetration and behind sink and tub flashings
- Between all studs above bath flanges and preformed shower bases

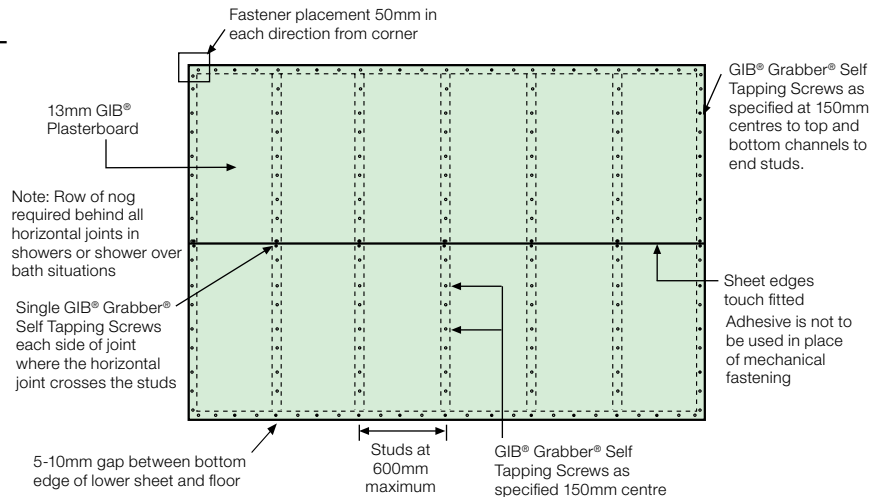
## CORNER REINFORCING

- Prior to lining in tiled areas (shower cubicles and shower over bath only) the internal corners shall be reinforced with a minimum
- 32 x 32 x 0.55mm NZ18 or 45 x 45 x 0.55mm GIBFix® Angle. Angles need to be temporarily held in place until secured by the lining fixings

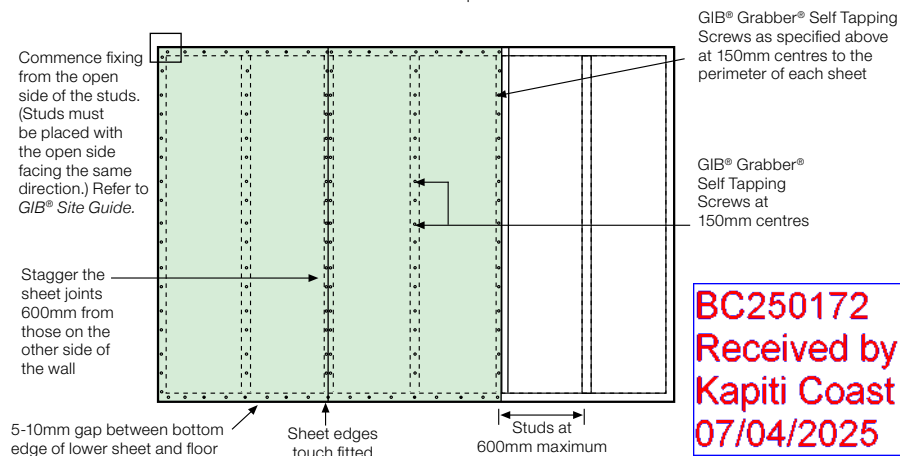
## FASTENERS

- Minimum 32mm x 6g GIB® Grabber® Self Tapper screws

### Fastening the Linings – Horizontal Fixing Only



### Fastening the Linings – Vertical Fixing Only



## FASTENER CENTRES

- 150mm centres to perimeter of wall and all intermediate studs
- Adhesive is not to be used in place of mechanical fasteners
- Single screws to each stud where the horizontal joint crosses the studs
- Place fasteners 12mm from sheet edges and 18mm from sheet ends.

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

## LINING AND TILE WEIGHTS

- Use minimum 13mm GIB® plasterboard
- For maximum permitted tile weights refer to pg 16 of this manual
- GIB® Wet Area linings may be fixed vertically or horizontally
- Sheets are touch fitted
- Provide a 5-10mm gap at the wall/floor junction and between the bottom edge of the lining and any bath rim or preformed shower base to allow for placement of sealant
- Do not tile on the resilient side of GIB Rail® or STWC Acoustic Clip (ST001) and channel noise control system
- GIB® Wet Area linings are suitable for tiling full height of walls, but if a wall is to be partially tiled (e.g. half high), only the area of wall under the tiles needs to be fixed as required for tiled areas. The remainder of the wall may be fixed as for non-tiled areas

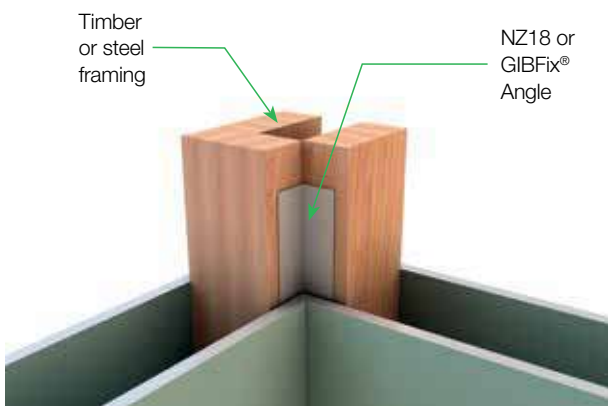
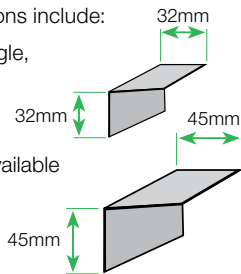
## JOINTING

- Jointing shall be carried out in accordance with the instructions of the GIB® Site Guide

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### METAL ANGLES FOR TILED INTERNAL CORNERS

- Prior to lining in tiled areas (shower cubicles and shower over bath only) the internal corners shall be reinforced with a minimum 32 x 32 x 0.55mm galvanised metal angle.
- Suitable GIB® metal angle options include:
  - GIB® Rondo® NZ18 metal angle, available length: 3.0m
  - GIBFix® Angle metal angle, available lengths: 2.4m and 2.7m
- Angles need to be temporarily held in place until secured by the lining fixings
- Minimum height of the metal angle is 1800mm



### WATERPROOF MEMBRANE SYSTEMS

A waterproof membrane system must be applied to all lining materials used as a substrate for ceramic tiles in a shower or shower over a bath application, or any other tiled application exposed to frequent water splash.

For further information see p10.

### TILES AND TILE WEIGHTS

In areas likely to be directly exposed to water, tiles may be ceramic, porcelain or stone must comply with the over-surface finish requirements of the IWAM Code of Practice and be bedded with a suitable tile adhesive on the waterproof membrane system. See page 10 for the minimum extent of wall surfaces requiring impervious sheet materials or waterproof membrane systems prior to tiling.

Smaller mosaic tiles are often lighter, but the integrity of grout joints might be more prone to impact, whilst heavier tiles are larger and have less and deeper grout and sealant joints. For more information also see AS 3958:2007 Ceramic tiles – Guide to the installation of ceramic tiles.

**Table 2: Recommended maximum tile weights**

Maximum Tile Weights for GIB Aqualine®, GIB Toughline® Aqua or GIB Weatherline®			
Stud Centre (maximum)	Fasteners Centre (maximum)	Lining Thickness	Tile Weight
600mm maximum	150mm maximum	10mm	26kg/m <sup>2</sup>
		13mm	40kg/m <sup>2</sup>

### ADHESIVE AND GROUT WEIGHTS

The weight of adhesive and grout can vary depending on the type of tile and the installation process used. The maximum tile weights stated in table 2 are conservative and refer to the tile weight excluding grout and adhesive used. An additional 3kg/m<sup>2</sup> has been factored into tile adhesion testing on top of the above stated tile weights to account for adhesive and grout weight used during the installation of the tile.

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### CEILING FRAMING

Framing dimensions and spacing must comply with the requirements of NZS 3604:2011, NASH for steel or relevant NZ Standard.

For noise control or fire rating applications consult the relevant GIB® technical publication.

### FASTENERS

- Steel battens – 25mm x 6g GIB® Grabber® Self Tapping screws
- Timber battens or Joists – 32mm x 6g GIB® Grabber® High Thread screws

### ADHESIVES

- Steel battens - GIBFix® All-Bond
- Timber battens - GIBFix® All-Bond or GIBFix® One

### FASTENERS CENTRES

- Single screws to the edges and centre of the sheets across each batten
- Single screw at 600mm maximum to the perimeter of the ceiling
- Screws to be 12mm from sheet edges
- Daubs of adhesive at 200mm centres between the screws
- Do not place adhesive at sheet edges or under fasteners, this may lead to screw pops

### LINING

- The lining shall be fixed at right angles to the battens or joists
- Commence fixing from the centre of the sheets outwards.
- Sheets to be touch fitted
- Use long length sheets to minimise sheet end butt joints.
- Back-block sheet end butt joints
- See GIB® Site Guide for sheet edge backblocking requirements

### BATTEN SPACINGS

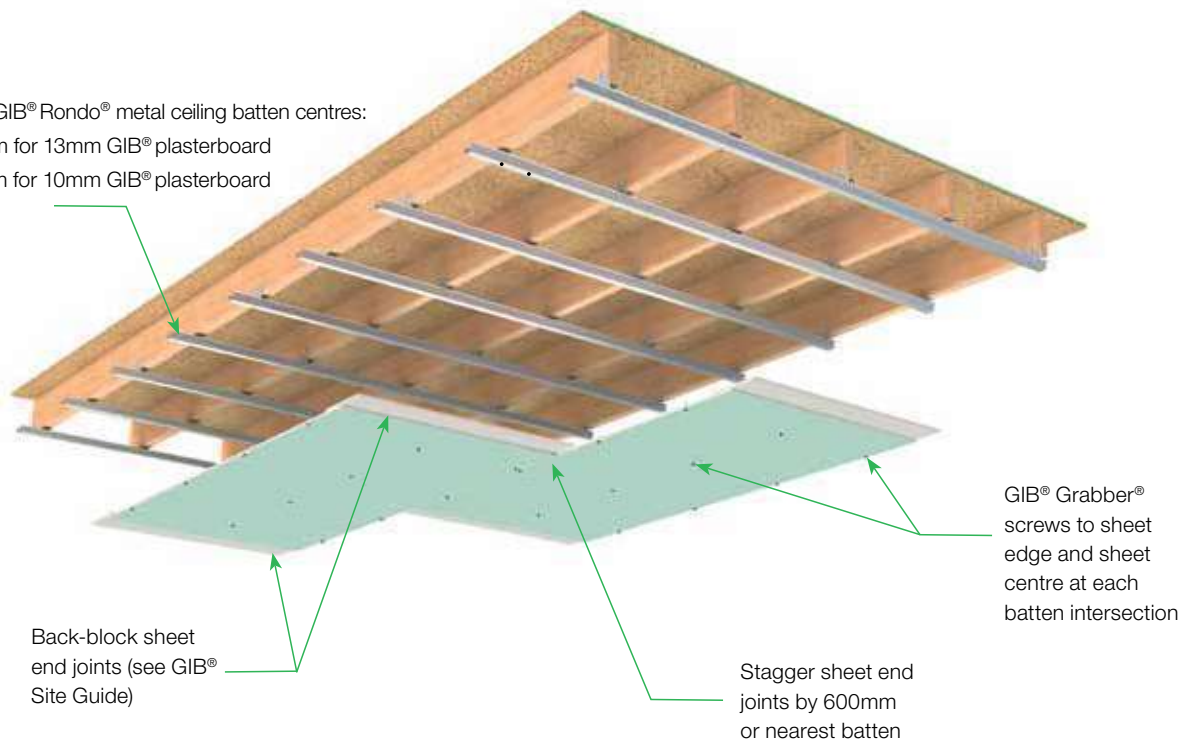
- 13mm GIB® plasterboard – 600mm centres maximum
- 10mm GIB® plasterboard – 450mm centres maximum

### JOINTING

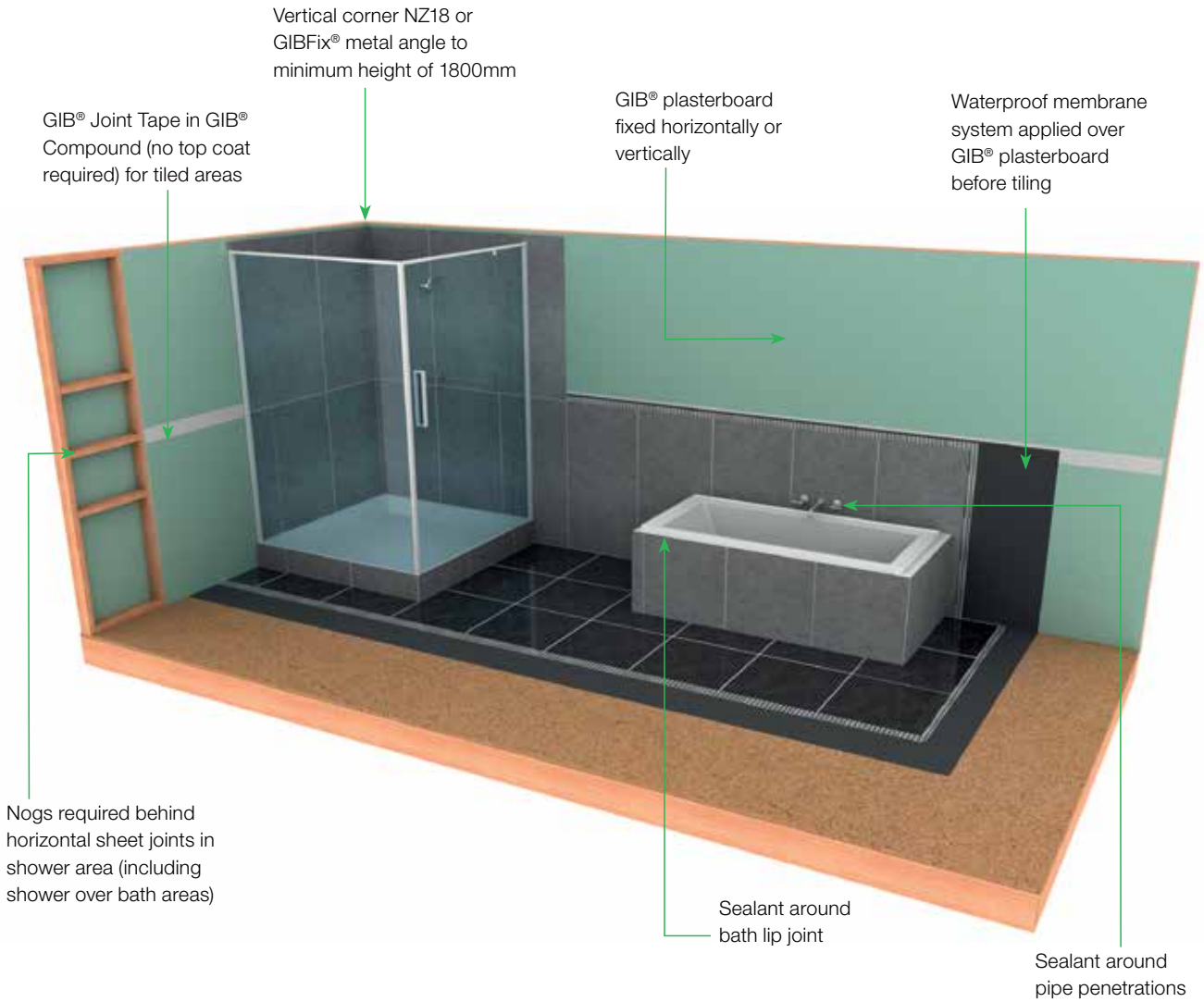
- All sheet joints must be paper tape reinforced and stopped in accordance with instructions in the GIB® Site Guide
- Do not fix tiles to GIB® plasterboard ceilings

Maximum GIB® Rondo® metal ceiling batten centres:

- 600mm for 13mm GIB® plasterboard
- 450mm for 10mm GIB® plasterboard

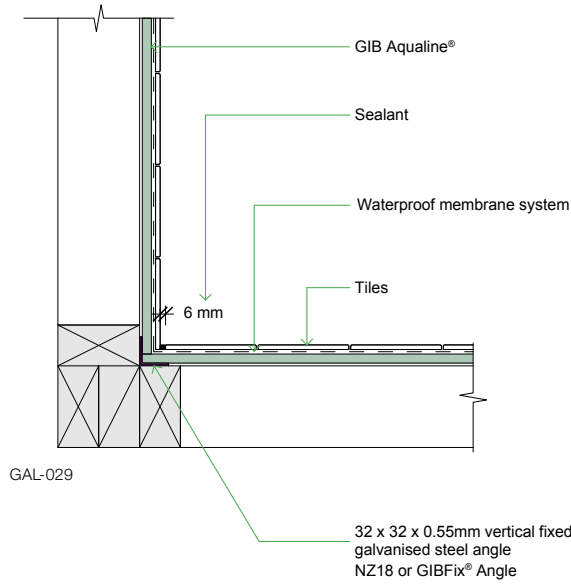


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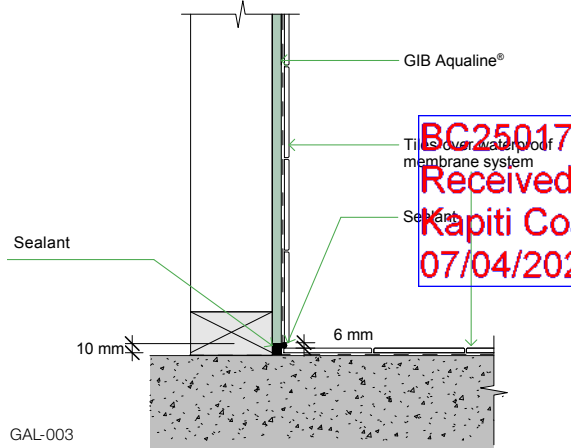


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**A: TILED INTERNAL CORNER**

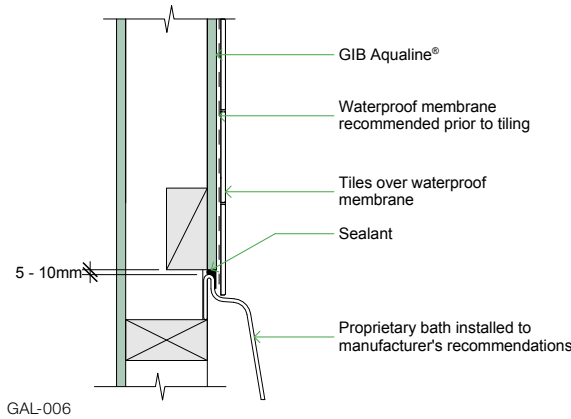


**B: CERAMIC FLOOR LINING JUNCTION**

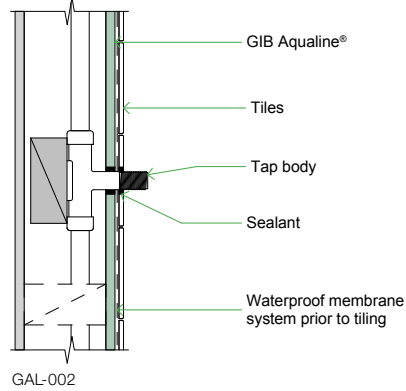


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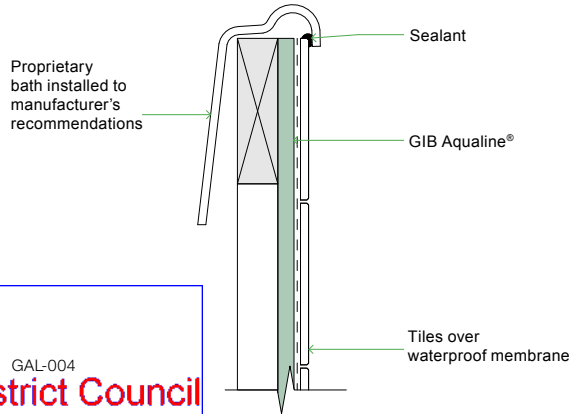
**C: BATH LINING JUNCTION**



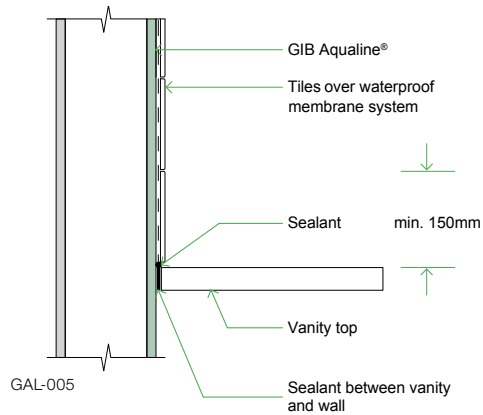
**D: SEALING WET AREA PENETRATION**



**E: BATH CRADLE LINING DETAIL**



**F: VANITY TOP LINING JUNCTION**

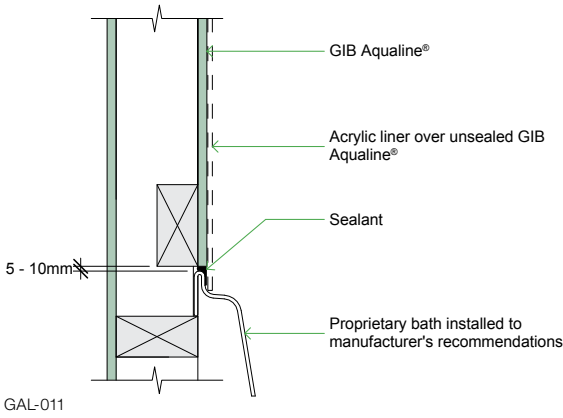


**G: SHOWER MIXER PENETRATION IN WET WALL LININGS**

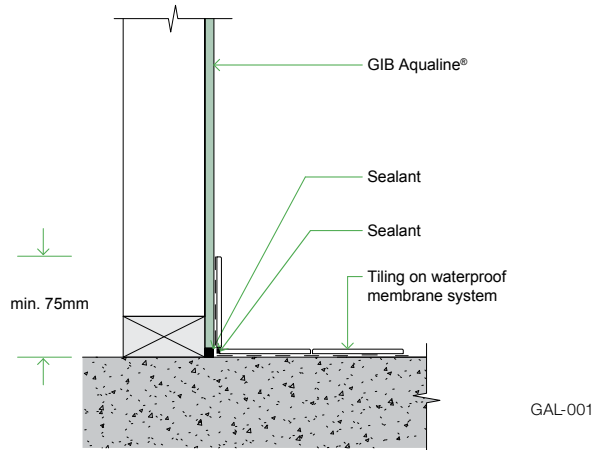
Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.



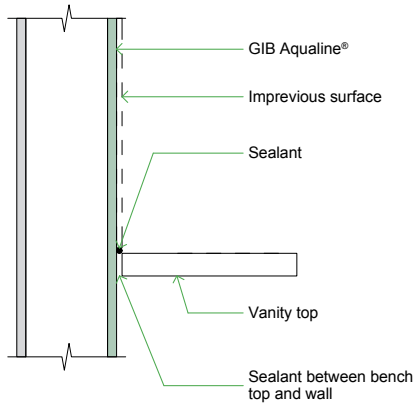
**A: BATH LINING JUNCTION**



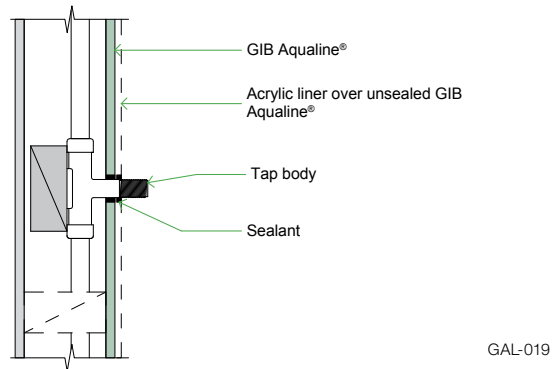
**D: CERAMIC FLOOR SKIRTING LINING JUNCTION**



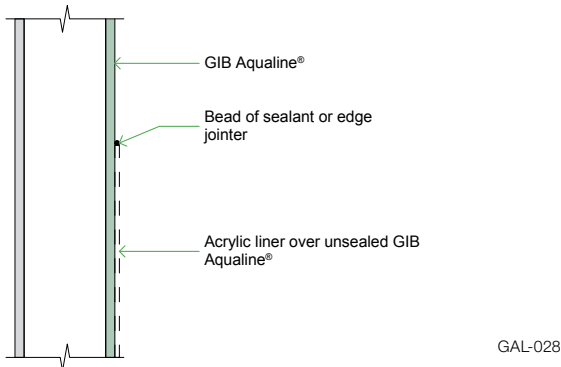
**B: VANITY TOP LINING JUNCTION**



**E: SEALING SEMI WET AREA PENETRATION**



**C: UNSEALED PLASTERBOARD LINING**



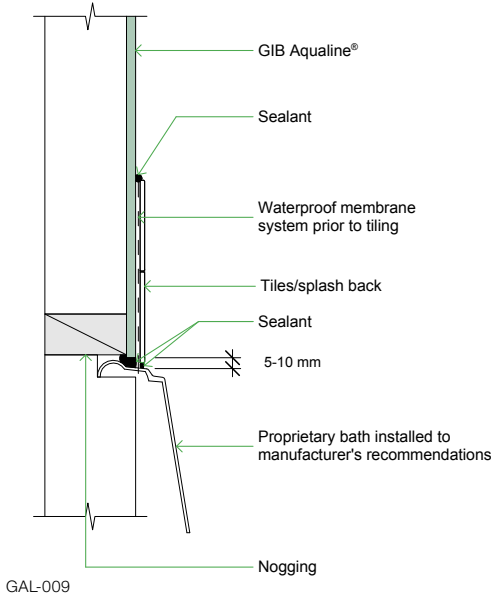
**F: SHOWER MIXER PENETRATION IN WET WALL LININGS**

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.

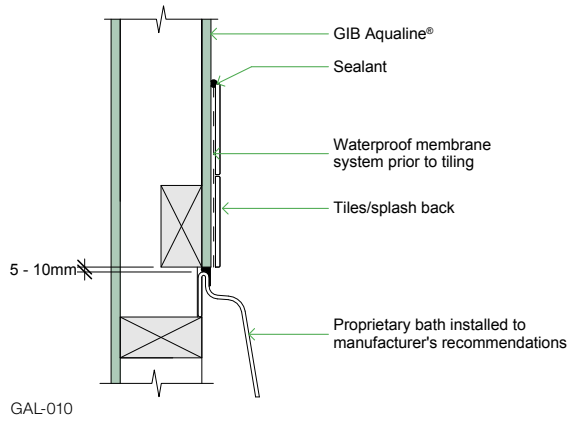


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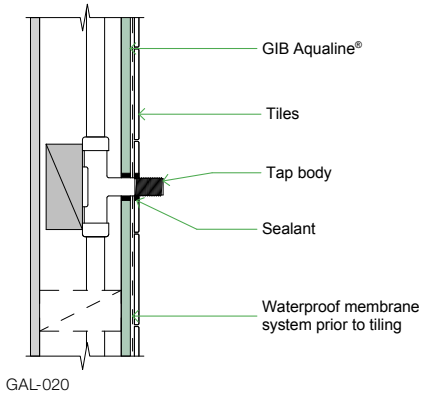
**A: BATH LINING JUNCTION**



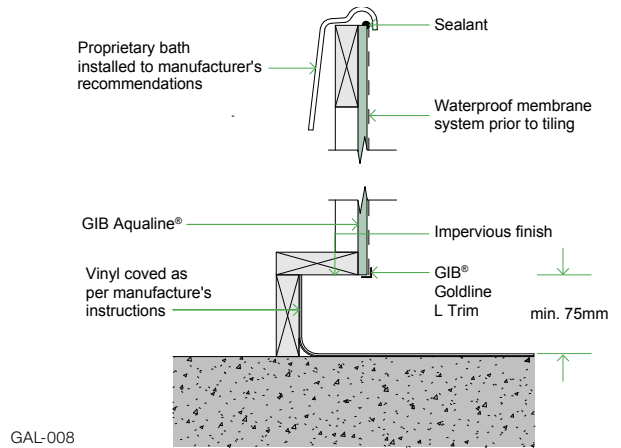
**D: BATH LINING JUNCTION**



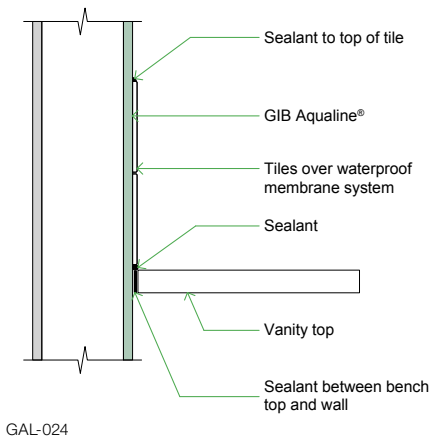
**B: SEALING SEMI WET AREA PENETRATION**



**E: CRADLE VINYL LINING JUNCTION**

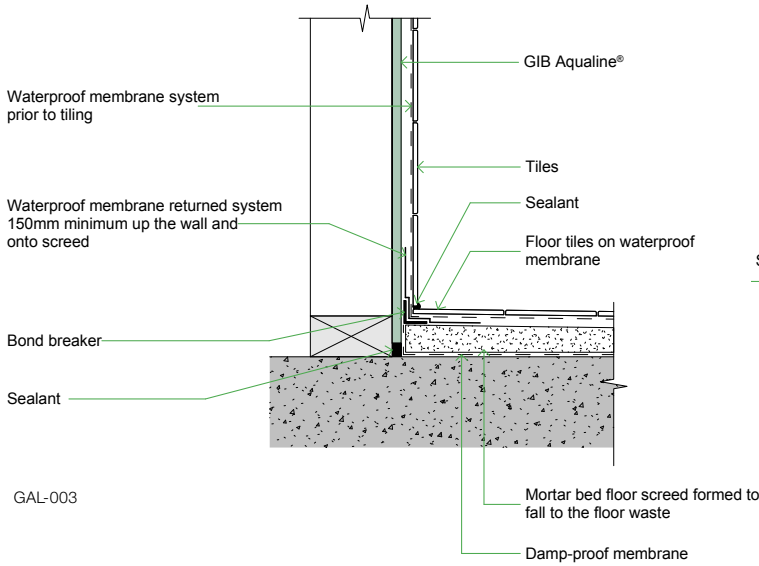


**C: VANITY TOP LINING JUNCTION**

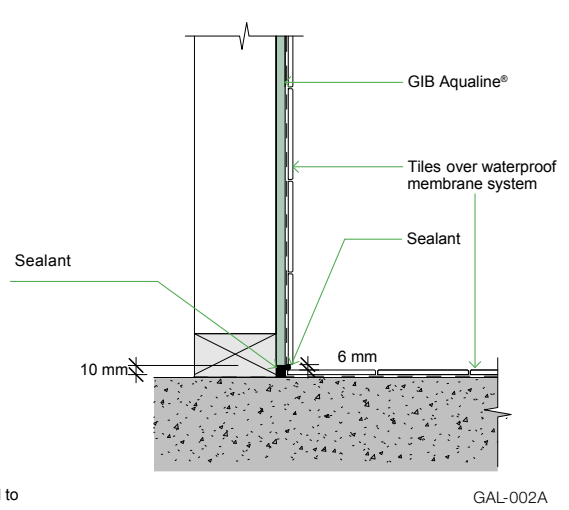


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**A: MORTAR UNDER CERAMIC FLOOR LINING JUNCTION**



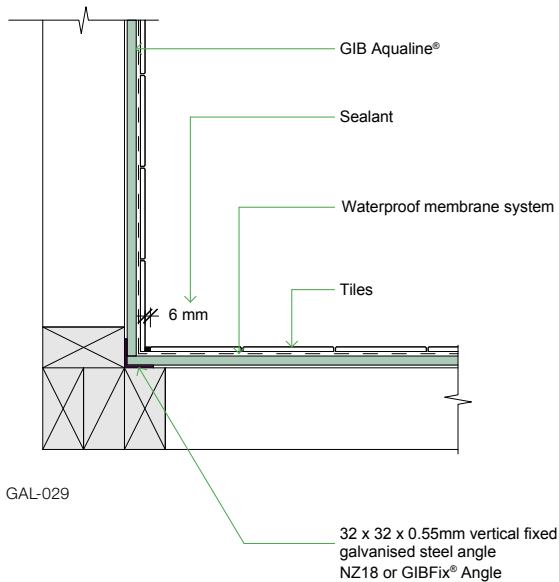
**C: CERAMIC FLOOR LINING JUNCTION**



**PREFORMED SHOWER BASE JUNCTIONS**

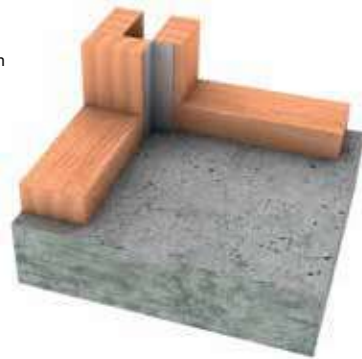
Refer to the shower base manufacturer for proprietary shower tray installation detailing including wet wall lining junction detailing.

**B: TILED INTERNAL CORNER**



**D: TILED INTERNAL CORNER METAL ANGLE POSITION**

Refer to page 16 of this publication for specification and installation guidance.



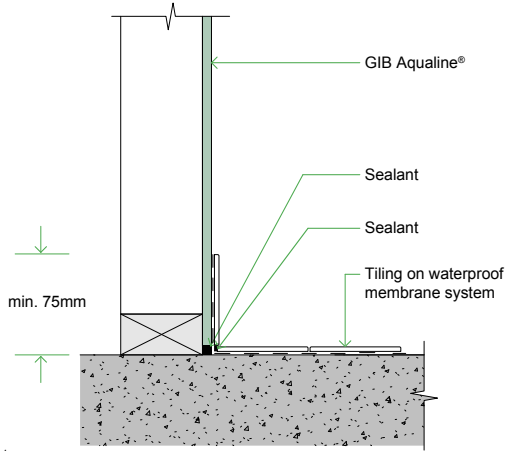
**E: SHOWER MIXER PENETRATION IN WET WALL LININGS**

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.



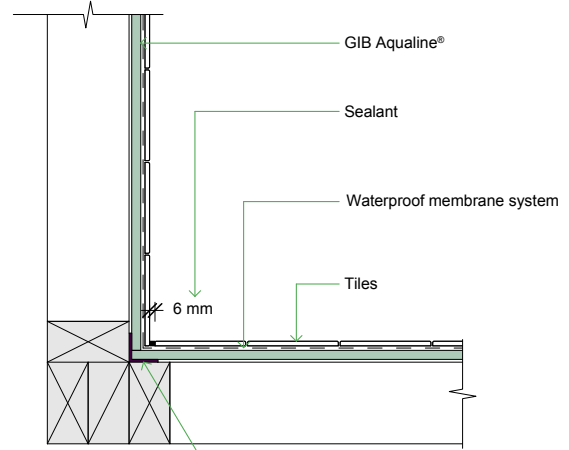
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**A: CERAMIC FLOOR SKIRTING LINING JUNCTION**



GAL-001

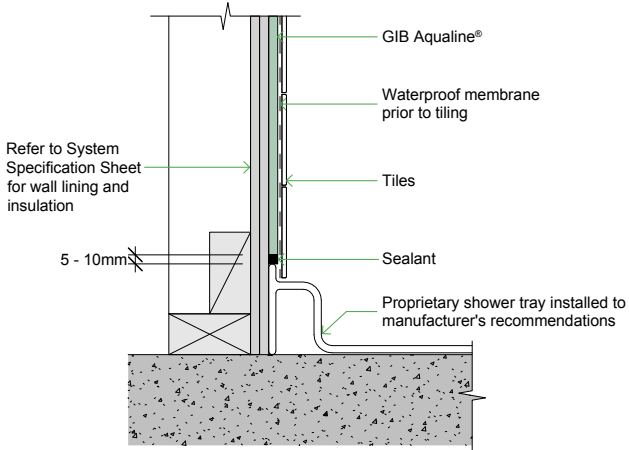
**C: TILED INTERNAL CORNER**



GAL-029

32 x 32 x 0.55mm vertical fixed galvanised steel angle NZ18 or GIBFix® Angle

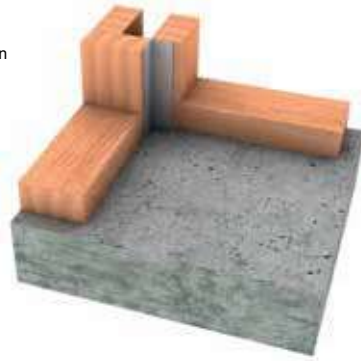
**B: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION**



GAL-016

**D: TILED INTERNAL CORNER METAL ANGLE POSITION**

Refer to page 16 of this publication for specification and installation guidance.



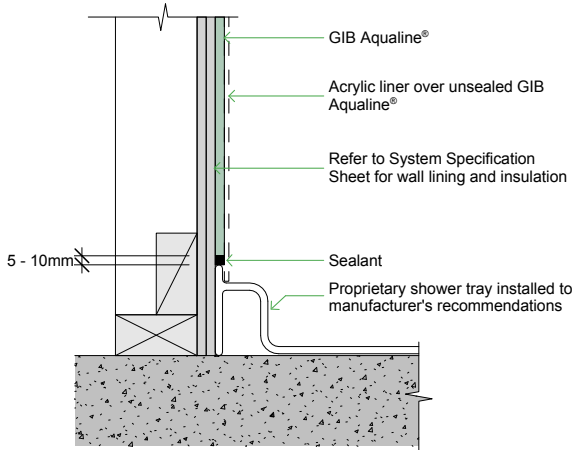
**E: SHOWER MIXER PENETRATION IN WET WALL LININGS**

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.



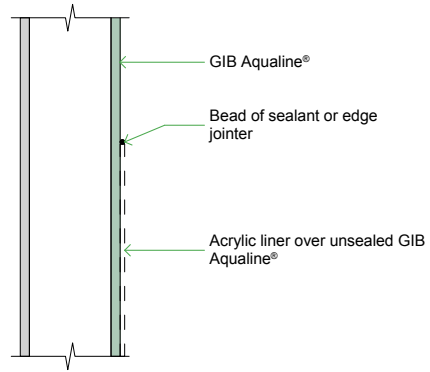
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**A: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION**



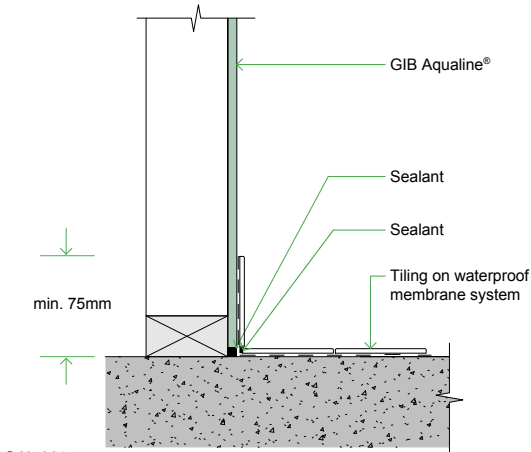
GAL-015

**C: UNSEALED PLASTERBOARD LINING**



GAL-028

**B: CERAMIC FLOOR SKIRTING LINING JUNCTION**



GAL-001

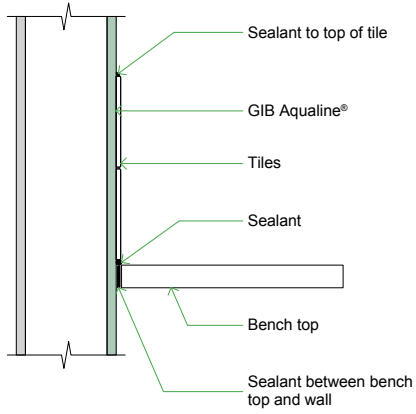
**D: SHOWER MIXER PENETRATION IN WET WALL LININGS**

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.



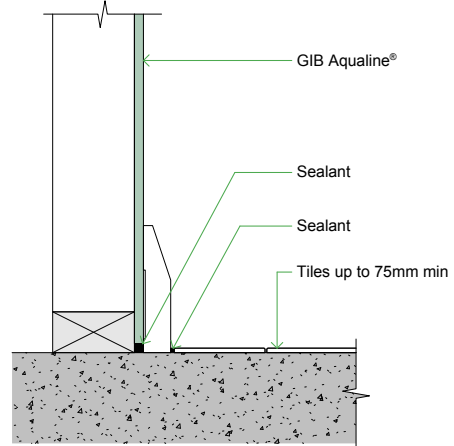
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**A: BENCH TOP LINING JUNCTION**



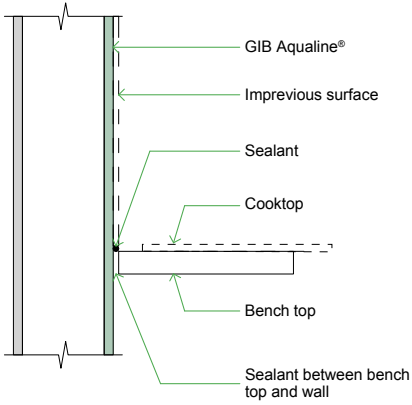
GAL-024

**CERAMIC FLOOR SKIRTING LINING JUNCTION**



GAL-001A

**B: COOKTOP LINING JUNCTION**

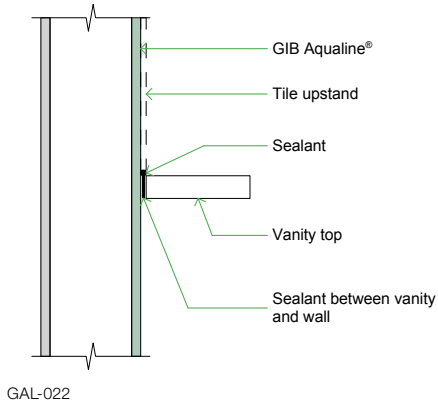


GAL-023B

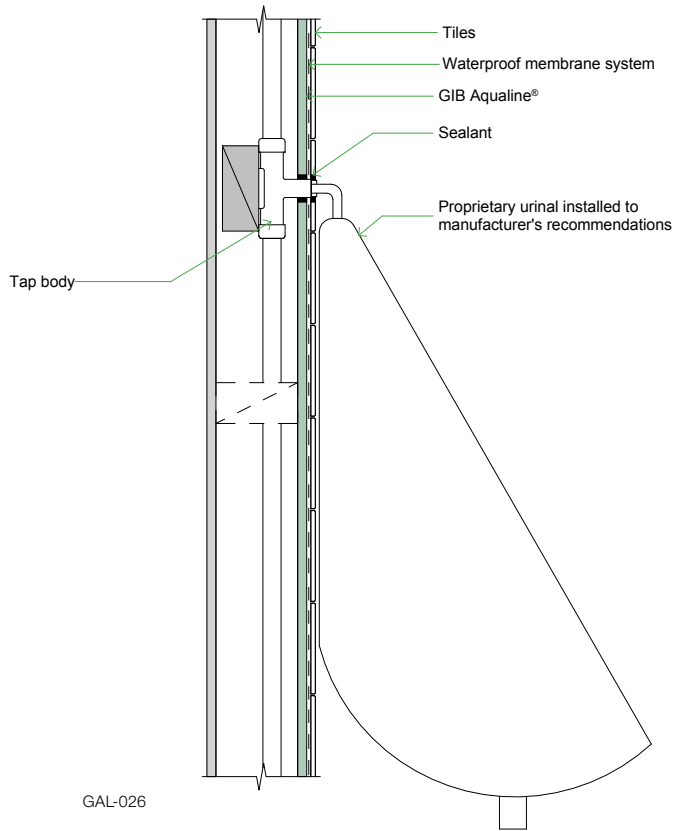
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A: VANITY TOP LINING JUNCTION



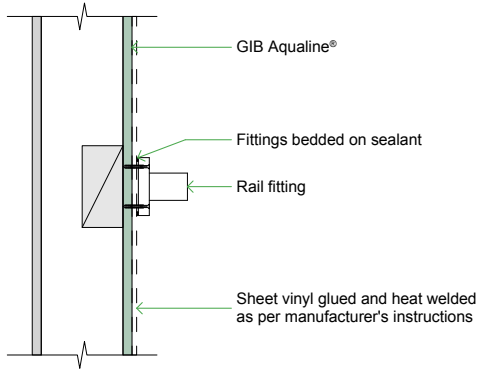
B: SEALING WET AREA PENETRATION LINING JUNCTION



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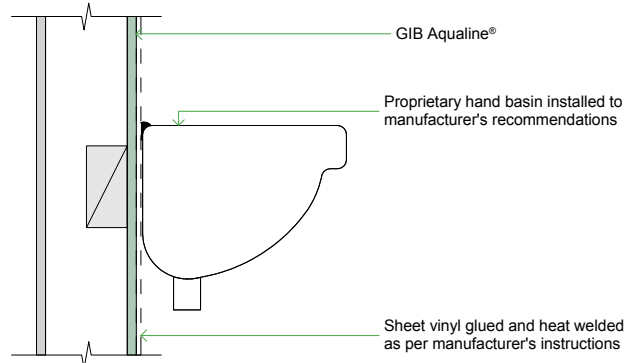


**A: SURFACE MOUNTED WITH NOG**



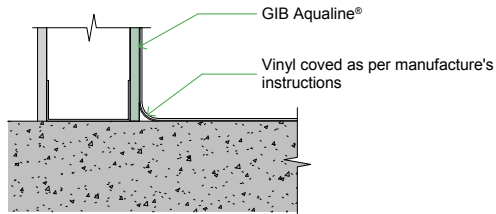
GAL-027

**C: BASIN LINING JUNCTION**



GAL-025

**B: VINYL FLOOR LINING JUNCTION**

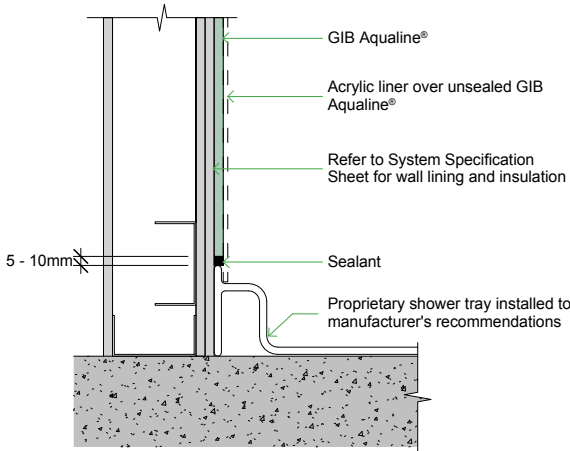


GAL-006A



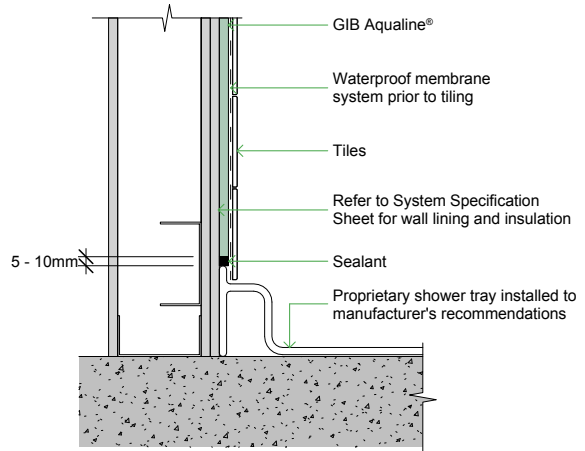
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**A: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION**



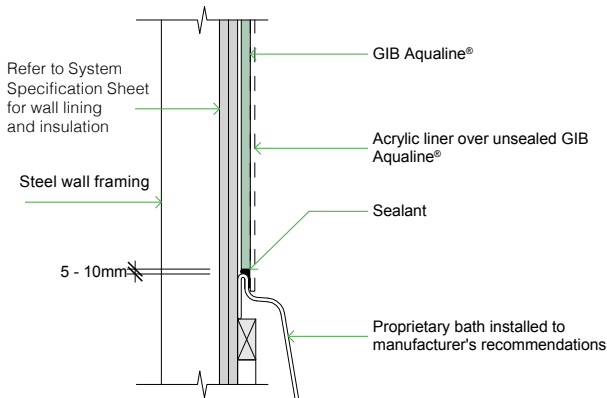
GAL-017

**C: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION**



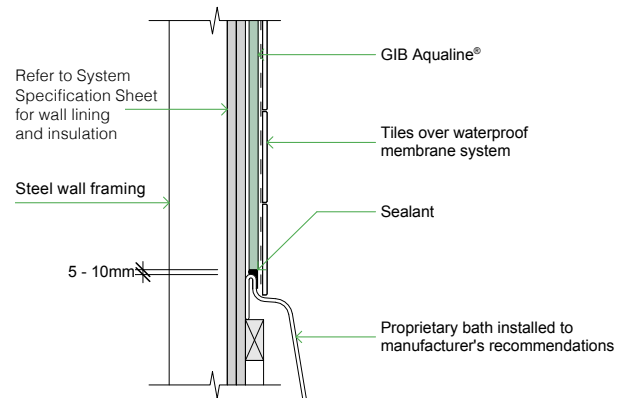
GAL-018

**B: BATH DOUBLE LINING JUNCTION**



GAL-013

**D: BATH DOUBLE LINING JUNCTION**



GAL-014

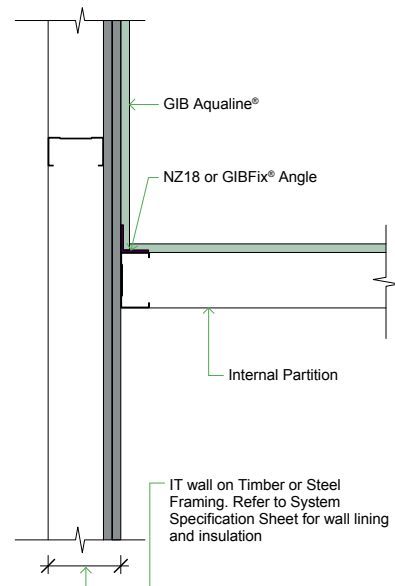
**GIB® WET AREA SYSTEMS FIRE RESISTANCE AND NOISE CONTROL PERFORMANCE**

Given recesses required for shower trays, bath upstands, etc., and the likelihood of renovations during the service life of the building, it is recommended that GIB® Wet Area linings in water splash areas are installed in addition to and over required fire and noise control systems in commercial or multi-residential applications.

Do not tile on the resilient side of a GIB Rail® or Acoustic Resilient Mount (ST-001) and channel noise control system.

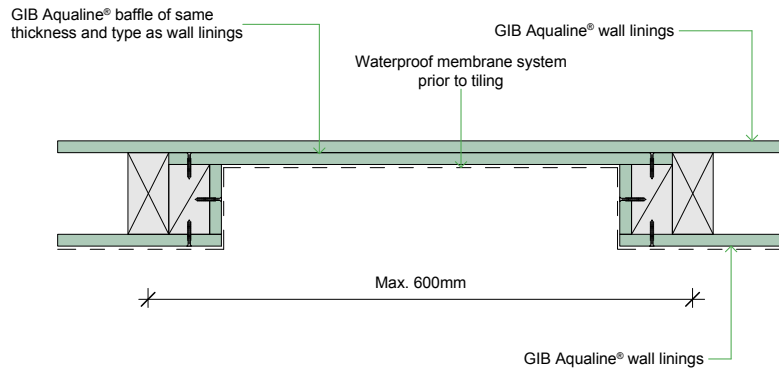
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**E: INTERTENANCY WALL AND WET AREA WALL JUNCTION**

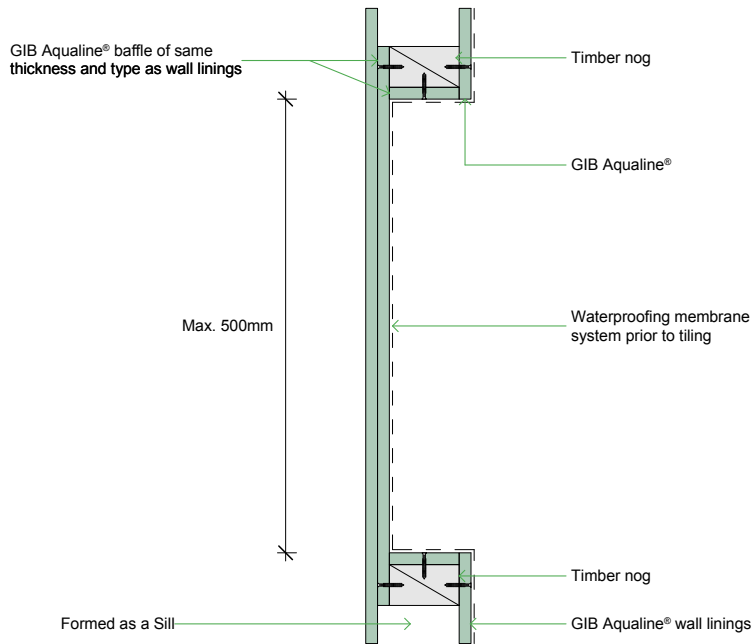


GAL-031C

TIMBER FRAME TILE RECESS



*Larger recesses can be accommodated depending on specific framing layout provided 500mm is not exceeded in at least one direction.*

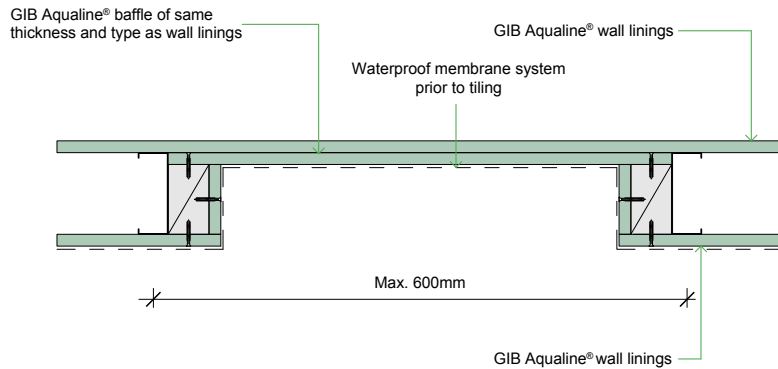


GAL-029B

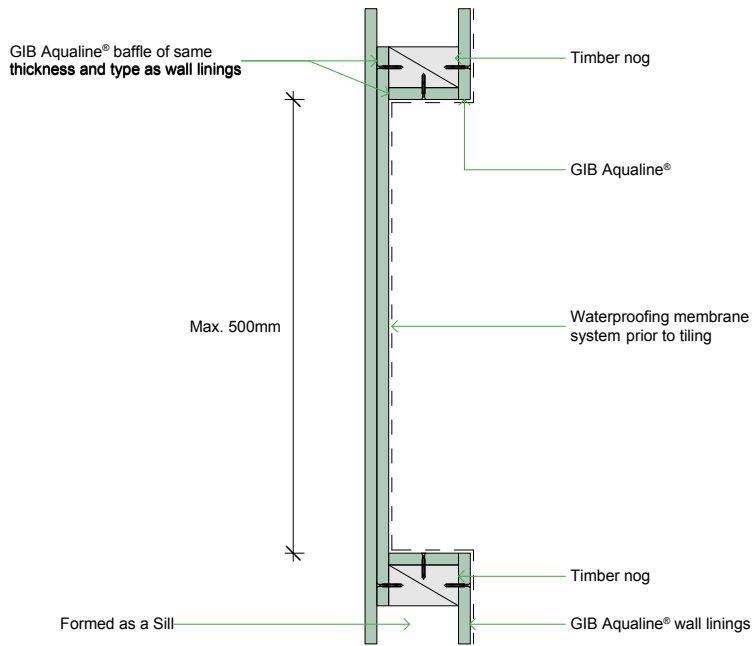
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STEEL FRAME TILE RECESS



Larger recesses can be accommodated depending on specific framing layout provided 500mm is not exceeded in at least one direction.



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# GIB® Wet Area Systems, February 2021

## LIMITATIONS

Winstone Wallboards Ltd accepts no liability if the GIB® Wet Area Systems and junction details are not installed in strict accordance with instructions contained within this publication.

## USE ONLY THE CURRENT SPECIFICATION

This publication may be superseded by a new publication. Winstone Wallboards accepts no liability for reliance upon publications that have been superseded. You should check the GIB® website to ensure you are using the current publication. If you are unsure whether this is the current publication, simply call the GIB® Helpline on 0800 100 442.

## SUBSTITUTION

GIB® Wet Area Systems have been specifically designed and tested to achieve the stated performance levels. To maintain the GIB® Product and System Warranty, all system components detailed in this publication must be used when specifying and installing GIB® Wet Area Systems.

## TRADEMARKS

The names GIB®, GIB Fyreline®, GIB Ultraline®, GIB Toughline®, GIB Braceline®, GIB Noiseline®, GIB Aqualine®, GIB Weatherline®, GIB Tradeset®, GIB Plus 4®, GIB-Cove®, GIB Lite Blue®, GIBFix®, GIB® Quiet Stud®, GIB Rail®, GIB Barrierline®, GIB X-Block®, GIB Fire Soundseal®, GIB Clip®, the colour mauve for GIB Toughline®, the colour blue for GIB Braceline®, GIB Noiseline®, the colour pink for GIB Fyreline®, the colour green for GIB Aqualine®, the colour purple for GIB Weatherline® and the shield device are registered trademarks of Fletcher Building Holdings Limited.

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**FOR MORE INFORMATION VISIT**

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

**OR CALL THE GIB® HELPLINE**

0800 100 442

## 5123LS Strandboard Timber Board Linings By Laminex



### Laminex New Zealand

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### SUPPORTING DOCUMENTS

#### Strandboard Lining Technical Manual

Ref 74848. Uploaded 1 Sep 2023

Purpose: Installation

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## Product description

Strandboard® is a versatile reconstituted wood panel manufactured entirely from renewable plantation Pinus Radiata timber. It is designed specifically for a range of building and furniture, and joinery applications.

Strandboard® is identified by its characteristic wood strand surface. The resin used has been developed to resist the effects of moisture in areas of high humidity.

### Uses:

- Wall and ceiling linings
- Partitions – in general areas including changing rooms and toilets
- Flooring overlays
- General cabinet carcass work
- Wall bracing

## Product details

### Durability

When stored, handled, installed and maintained in accordance with this document, Strandboard® will meet the provisions of NZBC B2.3.1(c) for five years (dependent on end use).

### Limitations

#### Strandboard®:

- Is recommended for dry interior use only and must not be used in an external situation.
- Must not be used for a flush plaster stopped jointing system, to be subsequently wallpapered or painted (exceptions to this may apply to proprietary glued drywall partition systems).
- Ceiling lining installations exposed on the upper face to elevated temperatures and low humidity conditions in roof spaces, must have insulation placed directly on the upper surface and have adequate provision for air change within the roof space.
- All panels laid over exposed rafters/purlins, must be paint sealed on all edges and both faces after conditioning and prior to installation to reduce moisture and humidity uptake during construction and building occupation.
- Surfaces facing the habitable space must be coated or covered prior to occupation of the building (refer to finishing section for more information).
- The application of water based spray-on textured coatings must not be used.

#### Strandboard® MUST NOT be used for:

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

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

#### Product care and handling

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

- Due to the uptake of airborne moisture, permanent board distortion may occur if Strandboard® is placed in close proximity to framework with moisture content exceeding 18%.
- Attention to storage, regular stock rotation, preconditioning at the installation point and provision of adequate joint clearances will help accommodate any board movement.

### Storage

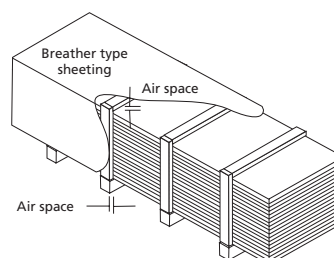
Correct storage procedure will eliminate sagging and permanent distortion of sheets.

- Store away from heat and direct sunlight.
- The panels must be flat stacked on evenly placed level bearers clear of dry ground, or on a dry concrete floor.
- Bearers must be of uniform thickness and must extend across the full width of the pack (refer figure 1).
- Strandboard® panels must be protected from the weather. A breather type cover must be supported clear of the top and sides of the panels using battens to allow air to circulate freely (refer figure 1).

### Stock rotation

The uptake of atmospheric moisture into board edges which causes edge peaking will be minimised by regular stock turn. Cut plastic strapping as soon as practicable to avoid edge indentations. Avoid storing close to doorways adjacent to external atmosphere.

Figure 1



Stack panels using equally spaced bearers and, if necessary, a breather type cover for weather protection (note: provision for air circulation).

## Composition

Strandboard® is composed of engineered wood strands bonded under heat and pressure.

### Bonding adhesives

Strandboard® is bonded with a non-formaldehyde pMDI resin system. The resulting Strandboard® sheets are sanded and ready for use.

### Moisture

Strandboard® must not be exposed to water or high humidity situations such as shower enclosures, steam rooms and saunas (refer limitations).

As with most wood based products, Strandboard® is subject to minor dimensional variations due to changes in relative humidity resulting in expansion and shrinkage.

### Identification

Board size, classification and production batch number are denoted on the packaging banner.

Table 1

Strandboard® 12mm product range (nominal)		
Panel sizes (mm)	3600 x 1200	2400 x 1200
Thickness (mm)	12	12
Weight (kg) per m <sup>2</sup>	8.19	8.19
Weight (kg) per panel	35.4	23.6
Panels per pack	50	50
Weight (kg) per pack	1775	1185

Table 2

Physical properties (value ex-press)	
Density (kg/m <sup>3</sup> ) (nominal)	660
MoR (Mpa) (minimum)	18
MoE (Mpa) (minimum)	2900
Internal bond (kPa) (minimum)	500
24 hour thickness swell (%) (maximum)	20

Table 3

Tolerances (ex factory)	
Dimensions	Target
Length	+/- 2mm per metre with a 5mm maximum
Width	+/- 2mm per metre with a 5mm maximum
Thickness	+/- 0.2mm
Squareness	≤ 2mm per metre difference in the diagonals

### Heat

Precautions must be taken to ensure that Strandboard® is kept well clear of nearby heat sources, such as free standing fireplaces, space heaters, ovens, cooking elements, etc.

The structural life of Strandboard® may be impaired if surface temperatures exceed 50°C. Manufacturers of heat appliances must be consulted to ascertain the clearances or protection required to ensure 50°C is not exceeded.

### Formaldehyde

Strandboard® is classified as Super E Zero (SE0) when tested in accordance with AS/NZS 4266.1: 2017 Formaldehyde Emission - Desiccator Method, similar classification as solid untreated wood. The resin used to manufacture Strandboard® is non-formaldehyde based. Despite that, low levels of formaldehyde gas naturally present in the wood may be released from the product under some conditions. Formaldehyde is classified as a known carcinogen. However, in well ventilated areas the concentration of formaldehyde is unlikely to exceed the World Health Organisation Standard of 0.1 ppm for the general environment.

Table 4

Thermal resistance of Strandboard	
Thermal conductivity (w/m °C)	0.11
Thermal resistance (m <sup>2</sup> °C/w)	0.11

Table 5

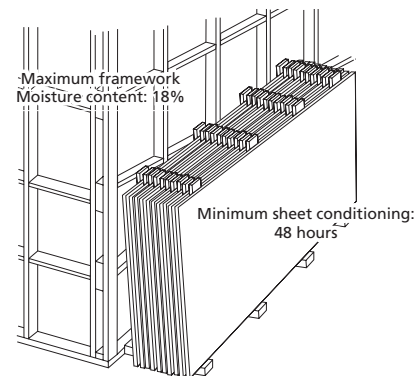
Strandboard acoustic performance	
Strandboard Sound Transmission Class (STC)	Test Method
25dB	ISO 10140-2

## Design considerations

Attention to site storage, pre-conditioning at the point of installation and provision of specified edge clearances will reduce the effects of moisture uptake after installation and minimise panel movement.

Panel conditioning of raw board prior to installation is of utmost importance, especially during periods of high rainfall and accompanying high humidity (refer figure 2).

Figure 2



### Wall and ceiling lining

Strandboard® must not be placed in close proximity to framework with moisture contents in excess of 18% (refer figure 2).

### Framework setout

Allow for the stud, purlin, rafter, beams etc, to accommodate a 2mm expansion gap at Strandboard® panel joints. This is especially relevant where large areas or long walls are to be covered (refer figure 3a). For negative detailing, allow an 8mm gap on a pre-painted stud (refer figure 3b).

#### Note:

Ensure sheets are pre-conditioned prior to being sealed.

Figure 3a

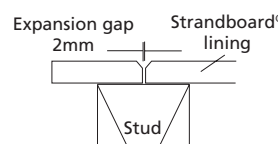


Figure 3b

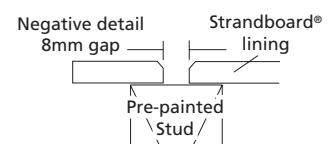


Table 6

Framework support centres (maximum spacing)			
Wall lining (mm)		Ceiling lining (mm)	
Stud centres	Dwang centres	Joist/truss/batterns	Dwang centres
400	1200	400/450	1200
450	1200	600	1200
600	800	900	600
–	–	1200	600

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**Exposed beam ceilings**

- Pre-condition all sheets, and then prime all surfaces and edges prior to fixing ceiling sheets.
- Weather protection is essential to avoid exposure to inclement conditions during the construction period.
- Where practicable, install exposed interior ceiling lining progressively with the exterior roof covering. The preferred method of installation is to fix after the roof is in place.
- Skillion roofs require special care. Maintain an air gap between the top of the insulation and underside of the roofing underlay, from the soffit to the ridge. This gap allows air circulation to regulate humidity and temperature.

**Flooring overlays**

When upgrading existing wooden floors, Strandboard® may be used as a substrate for other floor finishes.

Preparation guidelines are:

- The existing floor should be sanded level.
- Using a staggered sheet layout pattern, preconditioned Strandboard® boards must be fixed combining a nail and full spread adhesive application.
- For full instructions refer to the flooring overlays section of the Strandfloor® Technical Manual.

**Table 7**

Nailing schedule	
Nail size* (mm)	40 x 2.5
Screw Size	8g x 40mm
Fixing centres (mm) edges	150
Fixing centres (mm) intermediate	200
From sheet edge (mm)	10

\*All fastenings must be corrosive resistant.

**Wall bracing values**

Wall bracing tests have been carried out for 12mm Strandboard®. Please refer table 8 bracing values.

**Table 8**

Wall bracing information	
Bracing units (BU) per metre	12mm
Wind	110
Earthquake	125

**Notes:**

- Nails to be 40 x 2.8mm galvanised flathead at 150mm centres around the perimeter and at 300mm centre up any intermediate stud.
- Tested panel on one side of framing only – no consideration given to other lining material.
- Minimum braced wall length to be 600mm.
- End tie downs to be 6kN.
- At least one row of dwangs (nogs) are required.
- The bracing units shown are for a 2.4m high wall. For walls greater than 2.4, the bracing units shall be reduced on a pro-rata basis as per NZS 3604.
- Gun fired nails (FRH) or screws (8g) of equal or longer length are acceptable as an alternative.
- Fixing using gun fired nails is approved. Wind rating is 55BU/m.
- 12kN tie downs for concrete floors.
- Elastomeric wood panel adhesive in dabs @ 300mm centres required. Avoid glue & fixing in same location.

**Openings in bracing elements**

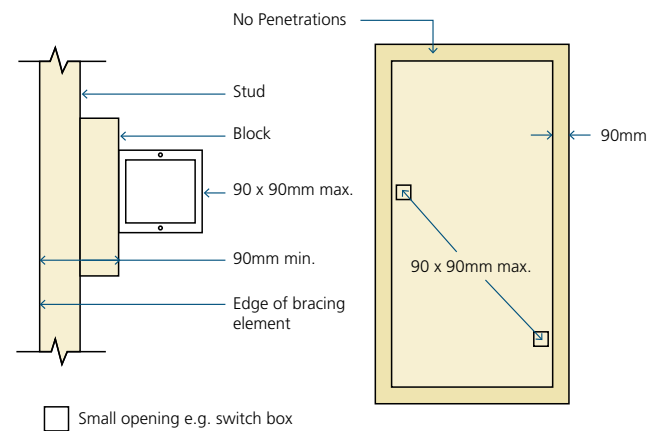
**Small openings**

Small openings (e.g. power outlets) of 90 x 90mm or less may be placed no closer than 90mm to the edge of the braced element. A block may need to be provided alongside the perimeter stud as shown below.

**Large openings**

Openings above 90 x 90mm such as switch boards, recessed cabinets and TV's etc. should be placed outside of the bracing element or locate bracing on the other side of the wall framing.

**Figure 4**



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## Working characteristics

Strandboard® can be easily machined, grooved and routed in any direction. To avoid break-outs use a fine toothed hand saw or circular saw adjusted to protrude just through the board surface and apply only nominal pressure when using power drills. Tungsten-tipped machine tools are recommended for volume production.

### Note:

For best results, ensure hand and machine tools are sharp. Always use approved Personal Protective Equipment (PPE) such as gloves, safety footwear, dust masks and safety glasses.

### Fixing

- The installation of linings must not begin until the building is closed in and waterproof.
- A 3mm sheet edge clearance is advisable for all sheet sizes during wet winter months or in extremely humid conditions.
- Board surfaces should be primed or clear sealed immediately after fixing, to minimise the effects of atmospheric moisture, or direct sunlight and to resist marking during construction activities.

## Finishing

All surfaces will require sanding prior to finishing.

### Stopping

Fill fastening holes with a water based filler or solvent-based wood dough tinted as required for the specific coating applications.

### Clear finishing

Best results are achieved by employing a professional painter who should follow the coating manufacturers instructions. Consult with the coating supplier for professional advice and recommendations for preparation and application of their coatings.

### Painting

Acrylic primer coatings will provide a more textured surface than solvent based paint systems. Strandboard® is a good substrate for most paint, stain and oil applications.

## Red List Free

Strandboard® is declared as Red List Free in the Declare Products Database. This is a globally recognised nutrition label for the building products industry, formed as part of the Living Building Challenge. Red List Free products have all ingredients disclosed in the Declare database and none of those ingredients appear on the Living Building Challenge Red List.

## Health and safety

Health and safety precautions must be taken when working with wood products.

- Exposure to wood dust and/or to formaldehyde may cause irritation to the eyes, respiratory system and skin, and may cause sensitisation resulting in asthma, and by skin contact resulting in dermatitis.
- Wood dust is classified as a known carcinogen. Repeated inhalation of wood dust over many years may cause nasal cancer.
- Formaldehyde is classified as a known carcinogen.
- Work areas must be well ventilated and kept clean. Sawing, sanding and routing equipment should be fitted with dust extractors such that dust levels are kept within standards outlined by Worksafe Australia, Worksafe New Zealand or the specific country of use. If not, wear a dust mask conforming with AS/NZS 1715 and AS/NZS 1716 and eye protection conforming with AS/NZS 1337.
- Offcuts, shavings and dust must be disposed of in a manner which avoids the generation of dust and in accordance with the requirements of local waste authorities.
- In end use applications, all product surfaces exposed to occupied space must be sealed.

For further information and safety data information, please phone Laminex New Zealand™ customer services 0800 303 606.

## Liability

Laminex New Zealand™ will not be liable to any person if the instructions as to storage, use and installation of Strandboard® as outlined in this brochure are not complied with.

Any proprietary products referred to in this brochure must be used in accordance with the relevant manufacturer's instructions. Laminex New Zealand™ accepts no liability for these proprietary products.

Nothing contained in this paragraph or elsewhere in this brochure affects any rights a person may have under the Consumer Guarantees Act 1993.

This brochure supersedes all previous issues. All Acts, Codes and Standards referred to in this brochure are the current editions at the date of brochure publication.

## Technical support

As not all product use options can be described in this brochure, additional end use and specifying information is available.

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**Laminex™**  
NEW ZEALAND

# 5431S Strandfloor Timber Floors By Laminex



## Laminex New Zealand

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### SUPPORTING DOCUMENTS

#### BRANZ Appraisal 676 Strandfloor Flooring V2021

Ref 91605. Uploaded 17 Oct 2024

Purpose: Performance

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**BRANZ Appraised**  
Appraisal No. 676 [2021]

**STRANDFLOOR®  
FLOORING**



**strandfloor®**  
square edge



**strandfloor®**  
tongue&groove

**Appraisal No. 676 [2021]**

This Appraisal replaces BRANZ  
Appraisal No. 676 [2016]

### BRANZ Appraisals

Technical Assessments of  
products for building and  
construction.

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NEW ZEALAND

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



### Product

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

### Scope

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

### Building Regulations

#### New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Strandfloor® Flooring, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

**Clause B1 STRUCTURE:** Performance B1.3.1, B1.3.2 and B1.3.4. Strandfloor® Flooring meets the requirements for loads arising from self-weight, imposed gravity loads arising from use, earthquake, wind and impact [i.e. B1.3.3 (a), (b), (f), (h), and (j)]. See Paragraphs 8.1-8.8.

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

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

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## Technical Specification

### Strandfloor® Sheets

- 4.1 Strandfloor® sheet flooring is manufactured from strands of radiata pine. The wood strands are bonded with a pMDI resin and contain a mineral wax-based water repellent throughout the thickness of the sheet. At manufacture, the sheets have an average density of 680 kg/m<sup>3</sup> and average moisture content of 10%. The sheets are identified by the product name printed on one face.
- 4.2 Strandfloor® sheet flooring material is a wood-based high density board which has a plain wood colour. Strandfloor® Square Edge is square edged and has a nominal thickness of 20 mm.
- 4.3 Strandfloor® Tongue & Groove has a nominal thickness of 20 mm, with the long edges factory grooved with a 4.5 mm wide and 9.5 mm deep slot, and fitted on one side with a rigid opaque white polypropylene tongue. This forms a tongue & groove (shear key) joint between adjacent sheets.
- 4.4 Strandfloor® is manufactured to the following tolerances:
- Thickness ±0.2 mm.
  - Length and width ±1.5 mm.
  - Squareness 0.5 mm/m.
  - Sheet edges 1 mm/m maximum deviation from the line.
- 4.5 The product is available as set out in Table 1 and Table 2.

**Table 1: Strandfloor® Square Edge**

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

\*Made to order.

**Table 2: Strandfloor® Tongue & Groove**

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

### Accessories

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

## Handling and Storage

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

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## Technical Literature

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

## Design Information

### General

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

### Strandboard™ Tongue & Groove Diaphragm Floors

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

### Subfloor Ventilation

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

### Concrete Floors

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

### Finishing

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

### **Wet Areas**

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

### **Exposure**

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

## **Structure**

### **Density**

- 8.1 Strandfloor® Square Edge and Strandfloor® Tongue & Groove sheets have a density of approximately 680 kg/m<sup>3</sup>.

### **Loads**

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

### **Structural Diaphragms**

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

### Heat

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

### Durability

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

### Serviceable Life

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

### Maintenance

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

### Prevention of Fire Occurring

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

### Fire Affecting Areas Beyond the Fire Source

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

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### Hazardous Building Materials

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

### Energy Efficiency

- 14.1 For the purposes of calculating the building performance index of the building envelope (refer to NZBC Clause H1.3.2) the R-value of Strandfloor® 20 mm sheets should be taken as 0.17 m<sup>2</sup>K/W.

## Installation Information

### Installation Skill Level Requirements

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

### General

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

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

### Finishing

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

### Health and Safety

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

## Basis of Appraisal

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

### Tests

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

### Other Investigations

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

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### Quality

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

### Sources of Information

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

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In the opinion of BRANZ, **Strandfloor® Flooring** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Laminex New Zealand**, and is valid until further notice, subject to the Conditions of Appraisal.

### Conditions of Appraisal

1. This Appraisal:
  - a) relates only to the product as described herein;
  - b) must be read, considered and used in full together with the Technical Literature;
  - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
  - d) is copyright of BRANZ.
2. **Laminex New Zealand**:
  - a) continues to have the product reviewed by BRANZ;
  - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
  - c) abides by the BRANZ Appraisals Services Terms and Conditions;
  - d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
  - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
  - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
  - c) any guarantee or warranty offered by **Laminex New Zealand**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Laminex New Zealand** or any third party.

For BRANZ



**Chelydra Percy**


Chief Executive

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# 6221B Bostik Tiling & Waterproofing Solutions

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## SUPPORTING DOCUMENTS

### **Branz Appraisal 745 Dampfix Gold Interior Waterproofing Membrane**

Ref 90979. Uploaded 30 May 2024

Purpose: Performance

### **Technical Data Sheet**

Ref 52717. Uploaded 19 Aug 2022

Purpose: Performance

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**BRANZ Appraised**  
Appraisal No. 745 [2023]

## DAMPFIX GOLD INTERIOR WATERPROOFING MEMBRANE

**Appraisal No. 745 [2023]**

This Appraisal replaces BRANZ  
Appraisal No. 745 [2017]



### BRANZ Appraisals

Technical Assessments of  
products for building and  
construction.



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### Product

- 1.1 Dampfix Gold Interior Waterproofing Membrane is a liquid-applied waterproofing membrane for use under ceramic or stone tile finishes in internal wet areas.

### Scope

- 2.1 Dampfix Gold Interior Waterproofing Membrane has been appraised for use as a waterproofing membrane for internal wet areas of buildings, within the following scope:
  - on floor substrates of concrete, flooring grade particleboard, plywood, fibre cement compressed sheet and fibre cement sheet tile underlay, and on wall substrates of concrete, concrete masonry, wet area fibre cement sheet lining systems and wet area plasterboard lining systems; and,
  - when protected from physical damage by ceramic or stone tile finishes; and,
  - where floors are designed and constructed such that deflections do not exceed 1/360<sup>th</sup> of the span.
- 2.2 The use of Dampfix Gold Interior Waterproofing Membrane on concrete slabs where hydrostatic or vapour pressure is present is outside the scope of this Appraisal.
- 2.3 Movement and control joints in the substrate must be carried through the membrane and tile finish. The design and construction of the substrate and movement and control joints is specific to each building, and is therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.
- 2.4 The ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.5 The membrane must be installed by trained applicators, approved by Bostik New Zealand Ltd.

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## Building Regulations

### New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Dampfix Gold Interior Waterproofing Membrane, 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 and B2.3.2. Dampfix Gold Interior Waterproofing Membrane meets this requirement. See Paragraph 9.1.

**Clause E3 INTERNAL MOISTURE:** Performance E3.3.6. Interior wet area floors and walls incorporating Dampfix Gold Interior Waterproofing Membrane meet this requirement. See Paragraphs 11.1-11.7.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Dampfix Gold Interior Waterproofing Membrane meets this requirement and will not present a health hazard to people.

## Technical Specification

4.1 Materials supplied by Bostik New Zealand Ltd are as follows:

- **Dampfix Gold Interior Waterproofing Membrane** - an elastomeric, one-part, water-based, fibre reinforced polyurethane waterproofing membrane. It is supplied as a gold colour liquid in 15 L pails.
- **ASA Multiprime** - a synthetic, latex-based primer for a variety of porous substrates. It is supplied as an opaque pink liquid in 1, 5 and 20 L containers.
- **Bostik Ultra NP Primer 2 Part** - a two-part water-based epoxy primer for non-porous substrates. It is supplied in a 4 L kit and is a uniform greenish colour when mixed.
- **ASA Neutral Cure Silicone** - a flexible, neutral cure silicone for use as an expansion joint filler or bondbreaker. It is supplied as a white or coloured paste in 300 ml cartridges.

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## Handling and Storage

5.1 All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and freezing conditions. The membrane products have a shelf life of 12 months from date of manufacture in the original unopened packaging. Once opened, the products must be used within 3 months.

## Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Technical Data Sheet, Dampfix Gold, Water Based Polyurethane Liquid Waterproofing Membrane, Version 9, Issue date: 4 March 2020.
- Bostik New Zealand - Detailed drawings for wet areas, January 2023.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

## Design Information

### General

- 7.1 Dampfix Gold Interior Waterproofing Membrane is for use in buildings where an impervious waterproof membrane is required to floors and walls to prevent damage to building elements and adjoining areas.
- 7.2 The membrane must be protected from physical damage by the application of ceramic or stone tile finishes.
- 7.3 Movement and control joints may be required depending on the shape and size of the building or room, and the tile finish specified. Design guidelines can be found in the BRANZ Good Practice Guide: Tiling.

- 7.4 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.
- 7.5 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

### Plywood

- 8.1 Plywood must be a minimum of 17 mm thick complying with AS/NZS 2269, CD Grade Structural with the sanded C face upwards and treated to H3 [CCA treated]. LOSP treated plywood must not be used.
- 8.2 The plywood must be laid with the face grain at right angles to the floor joists. Joists must be at 400 mm centres maximum and the edges of the sheets must be supported with blocking or framing. The plywood must be fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres along the sheet edges and 200 mm centres to all framing through the body of the sheets.

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

- 8.3 Fibre cement compressed sheet must be manufactured to comply with the requirements of AS/NZS 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.

### Particleboard

- 8.4 Particleboard must be specified for the end use in accordance with NZS 3602.

### Concrete and Concrete Masonry

- 8.5 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 or NZS 4229, and concrete masonry to NZS 4229 and NZS 4230.

### Wet Area Wall Linings

- 8.6 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588, and be suitable for use in internal wet areas.
- 8.7 Fibre cement sheet must be suitable for use in wet areas and comply with the requirements of AS/NZS 2908.2
- 8.8 Installation of plasterboard or fibre cement wall linings must be carried out in accordance with the instructions of the manufacturer.

## Durability

### Serviceable Life

- 9.1 The Dampfix Gold Interior Waterproofing Membrane, when subjected to normal conditions of environment and use, is expected to have a serviceable life of at least 15 years and be compatible with ceramic or stone tile finishes with a design serviceable life of 15-25 years.

## Maintenance

- 10.1 No maintenance of the membrane will be required provided significant substrate movement does not occur and the tile finish remains intact. Regular checks must be made of the tiled areas to ensure they are sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiles, grout and sealant.

- 10.2 In the event of damage to the membrane, the tiling must be removed and the membrane repaired by removing the damaged portion and applying a patch as for new work.
- 10.3 Drainage outlets must be maintained to operate effectively, and ceramic or stone tile finishes must be kept clean.

### Internal Moisture

- 11.1 Dampfix Gold Interior Waterproofing Membrane is impervious to water and when appropriately designed and installed will avoid the likelihood of water penetrating behind linings or entering concealed spaces.
- 11.2 Dampfix Gold Interior Waterproofing Membrane is suitable for use to contain accidental overflow to meet NZBC Clause E3.3.2. A means of compliance for containment of overflow is given in NZBC Acceptable Solution E3/AS1, Paragraph 2.1.
- 11.3 Surfaces must be finished with ceramic or stone tile finishes. A means of compliance to NZBC Clause E3.3.3 and E3.3.4 is given in NZBC Acceptable Solution E3/AS1, Paragraph 3.1.1 [b], 3.1.2 [b] and 3.3.1 [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 1,500 mm out from the shower rose. Floor wastes and drainage flanges 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 1,500 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 substrates must always be carried out in accordance with the Dampfix Gold Interior Waterproofing Membrane Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.
- 12.2 Installation and finishing of components and accessories supplied by Bostik New Zealand Ltd and its approved applicators must be completed by trained applicators, approved by Bostik New Zealand Ltd.

### Preparation of Substrates

- 13.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents.
- 13.2 The relative humidity of concrete substrates must be 75% or less before membrane application. Concrete substrates 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 bond breaker installed as set out in the Technical Literature.
- 13.4 All substrates must be primed and the primer allowed to cure before the membrane is installed. Refer to the membrane supplier for primer specification.

### Membrane Installation

- 14.1 Installation must not be undertaken where the substrate surface temperature is below 10°C or above 35°C.
- 14.2 Dampfix Gold Interior Waterproofing Membrane must be thoroughly stirred before application.
- 14.3 The membrane must be applied in a minimum of two coats to give a total dry film thickness of 1 mm. Subsequent coats must be applied at an opposite direction to the previous coat.
- 14.4 Application can be made by roller [medium/long nap], brush [long bristle], or a rubber or plastic float.
- 14.5 Clean up may be undertaken with water.

### Tiling

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

### Inspections

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

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### Health and Safety

- 17.1 Safe use and handling procedures for the membrane 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 Dampfix Gold Interior Waterproofing Membrane has been undertaken by BRANZ: Testing to AS/NZS 4858 Appendix A including effect of bleach, detergent and water on tensile and elongation, cyclic movement resistance and water absorption.
- 18.2 The following testing of Dampfix Gold Interior Waterproofing Membrane was undertaken by the Commonwealth Scientific Industrial Research Organisation [CSIRO] Australia: Durability testing to AS/NZS 4858 Appendix A including effect of bleach, detergent and water on tensile and elongation, water vapour transmission to ASTM E96-92, water absorption to AS 3558.1 and cyclic movement resistance.
- 18.3 Testing of Dampfix Gold Interior Waterproofing Membrane has been undertaken by Thor Specialties Pty Limited for fungi resistance to the requirements of ASTM G21.
- 18.4 The above 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 Dampfix Gold Interior Waterproofing Membrane by BRANZ technical experts.
- 19.2 Site inspections have been carried out by BRANZ to examine the practicability of installation.
- 19.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

### Quality

- 20.1 The manufacture of the membrane 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 materials to the market is the responsibility of Bostik New Zealand Ltd.
- 20.4 Quality on-site is the responsibility of trained applicators, approved by Bostik New Zealand Ltd.
- 20.5 Designers are responsible for the building design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of the substrate manufacturer, Bostik New Zealand 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 Bostik New Zealand Ltd.

### Sources of Information

- AS 3558.1-1999 Methods of testing plastics and composite materials sanitary plumbing and fixtures - Determination of water absorption characteristics.
- AS 3740-2010 Waterproofing of domestic wet areas.
- AS 3958.1-2007 Guide to the installation of ceramic tiles.
- ASTM E96-92 Standard test methods for water vapour transmission of materials.
- ASTM G21-96 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
- AS/NZS 2908.2:2000 Cellulose-cement products - flat sheet.
- AS/NZS 1170:2002 Structural design actions.
- AS/NZS 2269:2012 Plywood - Structural.
- AS/NZS 4858:2004 Wet area membranes.
- BRANZ Bulletin Number 585. Measuring Moisture in Timber and Concrete, June 2015
- BRANZ Good Practice Guide Tiling - April 2015.
- NZS 3101:2006 The design of concrete structures.
- NZS 3602:2003 Timber and wood-based products for use in buildings.
- NZS 3604:2011 Timber-framed buildings.
- NZS 4229:2013 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230:2004 Design of concrete masonry structures.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

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**BRANZ Appraised**  
Appraisal No. 745 [2023]

**BRANZ Appraisal**  
Appraisal No. 745 [2023]  
20 July 2023

DAMPFIX GOLD INTERIOR  
WATERPROOFING MEMBRANE



In the opinion of BRANZ, **Dampfix Gold Interior Waterproofing Membrane** 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 **Bostik New Zealand Ltd**, and is valid until further notice, subject to the Conditions of Appraisal.

### Conditions of Appraisal

1. This Appraisal:
  - a) relates only to the product as described herein;
  - b) must be read, considered and used in full together with the Technical Literature;
  - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
  - d) is copyright of BRANZ.
2. **Bostik New Zealand Ltd:**
  - a) continues to have the product reviewed by BRANZ;
  - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
  - c) abides by the BRANZ Appraisals Services Terms and Conditions;
  - d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
  - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
  - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
  - c) any guarantee or warranty offered by **Bostik New Zealand Ltd**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Bostik New Zealand Ltd** or any third party.

For BRANZ

**Claire Falck**  
Acting Chief Executive  
Date of Issue:  
20 July 2023

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**07/04/2025**

# DAMPFIX GOLD

## WATERPROOFING

04 March 2020

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**640**

### YOUR SMART ADVANTAGES

- Class 3, high elasticity
- Fast drying
- Recoat in 2 hours @ 20°C & 50% RH
- Early access for following trades
- Tile next day in most conditions
- May be tiled directly using approved Bostik tile adhesives
- Reinforced with clump free fibers
- No mixing required
- High resistance to detergents & bleach
- Will not re-emulsify after curing
- Does not embrittle with age
- Excellent adhesion to concrete; rendered masonry; wet area plasterboard; FC sheet & plywood
- Can be applied to damp substrates, i.e. no free water
- Brush, roller or trowel applied
- Flood Test in 72 hours

### DESCRIPTION

Bostik Dampfix Gold is a one part, highly elastic, Class 3, water-based polyurethane waterproofing membrane system that meets the requirements of AS3740 by complying with AS/NZ 4858.

Bostik Dampfix Gold waterproofing membrane system is specifically formulated for application on graded substrates that provide positive falls to drainage outlets. Overlaying tiling systems must comply with Guide to the Installation of Ceramic Tiles - AS3958.1

This is a 2-coat system applied over primed porous & non-porous substrates. It is not recommended as a membrane system in immersed applications (such as pools or spas)

### USES

- As a waterproofing membrane to internal wet area shower, bathroom, kitchen, laundry & toilet areas to AS/NZ 3740
- As a waterproofing membrane to external balconies, rooftops & podium levels to AS/NZ 4654.2
- All applications to be covered by tile or other surface wearing and protective systems by following trades
- Suitable for concrete; cement rendered masonry; FC sheeting; water resistant plasterboard; and structural plywood (Type A Stamped "PAA JAS-ANZ" to AS/NZS2269-2004) substrates

### PRODUCT CHARACTERISTICS

Colour	Gold
Appearance	Smooth paste
Packaging	15L pails
Specific Gravity	Approx. 1.3kg/L
Volume Solids	Approx. 60%
2mm Crack Bridging	Pass
Flammability	Non-flammable
Membrane Rating	Class 3
Drying Time per coat	2 hours @ 23° C & 50% RH (minimum of 2 coats)
Final drying Time	24 hours @ 23° C & 50% RH (after last coat)
Shore "A" Hardness	Approx. 65
Moisture Vapour Transmission Rate	1.24 grams / m2 / 24hours
Tensile Strength (7 days)	1.5 - 2.0 MPa
Elongation	>900%

# DAMPFIX GOLD

## SURFACE PREPARATION

- Read precautions prior to applying any component of the waterproofing system
- Commencement of membrane system installation shall be taken as acceptance of the substrate suitability and preparation by the applicator
- Check that the surface of all substrates to be waterproofed are: structurally sound, clean, dry, or damp with no free surface water, smooth and free of voids & protrusions, free from oils, grease, curing compounds, coatings, adhesive residues and are uncontaminated by preceding trade activities
- Check that all composite substrates, such as wall & floor sheets are fully supported and installed to the manufacturer's instructions
- Where platform floor sheeting, in particular particleboard, is installed check manufacturer's specification for suitability in wet area applications and ensure that protective coatings do not impair membrane adhesion
- New concrete and render must have cured for a minimum 28 days.
- Sand & cement screeds and polymer modified renders must have cured for a minimum 7 days
- Substrates that are not smooth or free of voids and protrusions must be ground and vacuumed clean. All remaining voids must be repaired using suitable repair mortars, making sure to follow instructions for preparation, application and curing time.
- Bostik Multiprime must be applied as a primer coat on all applications to porous substrates, e.g. concrete, screeds, renders. Refer Bostik Multiprime Technical Data Sheet
- Bostik N40 Primer must be applied using "2 cloth method" on all applications to dry rigid plastic & metallic non-porous substrates, e.g., UPVC drainage outlets and penetrations; aluminium angle water stops, brass, copper and galvanised penetrations, stainless steel drains & gutters etc. Refer Bostik N40 Technical Data Sheet
- 2 coats of Bostik Moisture Seal must be used to seal concrete slabs if subjected to hydrostatic head of pressure from the negative side. Bostik Moisture Seal must be clean, dry and smooth immediately prior to the application of Bostik Dampfix Gold
- Refer Bostik Moisture Seal Technical Data Sheet
- Membranes should not be applied until all preparation steps have been completed.
- Bostik Dampfix Gold is not recommended for use in swimming pools, ponds or spas

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## APPLICATION

### Moist or Damp Surfaces

- Membrane must be applied to a primed substrate
- Multiprime can be applied to damp porous substrates, i.e. with no free water on the surface
- Multiprime must be used as a primer coat to porous substrates, e.g., concrete, renders, FC sheet, water resistant plasterboard & external grade plywood
- Dampfix Gold is not a vapour barrier and is not designed to stop a negative hydrostatic head of pressure. Use Bostik Moisture Seal.

### Bond Breaker & Membrane Installation

- Internal wet area installation must comply with the minimum requirements of AS/NZ3740 Section 3, "Installation". As a guide, refer pages 12 to 33
- External wet area installation must comply with the minimum requirements of AS/NZ4654.2, Section 2, "Design and Installation". As a guide, refer pages 7 to 30
- When installing bond breakers use Bostik's recommended sealants
- Bond breaker is to be installed over the dry primer coat where a bond breaker joint is required, e.g. to internal corners and changes in direction of substrate plane, such as wall/floor; wall/wall; hob/wall junctions, pipe penetrations, tap bodies, water stops, drainage outlets or similar
- Bond breaker joints must be a minimum 12mm x 12mm coved bead of sealant applied by caulking gun continuously into all changes of substrate plane, such as, wall/floor, hob/floor, hob/wall and wall/wall corners to the minimum termination height required by AS/NZ3740 or AS/NZ4654.2 as applicable
- The sealant must bridge all gaps and holes with a minimum 6mm contact onto the adjacent substrates
- All bond breaker joint sealant profiles must be a minimum 6mm in depth at the mid-point of the joint
- Substrate gaps at drainage outlets, flashings, and water stops, nail/screw holes etc must also be sealed using sealant prior to membrane application
- Applied sealant must be tooled around fittings and at all changes of substrate plane to a minimum 12mm x 12mm coved joint. The sealant must be a minimum 6mm in depth at the mid-point of the bond breaker joint and extend a minimum 6mm on either side of the joint or gap
- Apply membrane as soon as the bond breaker joint can be over coated without deformation of the coved sealant profile

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### Application of the Membrane

- Can be applied using a brush, roller or trowel
- Should not be applied in excess of 2mm thick per coat
- This is a 2-coat system
- A wet film gauge should be used to regulate adequate membrane coverage during application of each coat

### Membrane Protection

- Membrane should be protected throughout the application process and during the initial 24-hour cure period by the placement of signs and barriers to deny access by following trades
- Further temporary protection sheets must be installed securely, to protect the cured dry film from damage by following trades, until a protective screed or finished floor system is installed.

### Membrane Recoating and/or Repair

#### Recoating

- The surface must be cleaned free of all tile adhesive residue, surface dust and any form of contamination or substrate irregularity
- The surface of membrane must be washed down with diluted detergent and water, thoroughly rinsed and allowed to dry.

#### Repairing

- The adjacent Dampfix Gold membrane must be sound with minimum dry film thickness of 1 mm that is fully adhered to the substrate
- Membrane must be thoroughly cleaned of all foreign material and left free of all cleaning agent residue, dust or contamination
- Ensure that any exposed porous and non-porous substrates are correctly prepared, primed and sealed
- Apply 2 coats of membrane as per "Coverage" instructions
- Ensure that the membrane repair overlaps the existing membrane by a minimum 100mm
- A consistent minimum 1 mm dry film thickness is required over both previously coated and uncoated repair areas

#### Cracks & Joint Sealing

### CONCRETE & MASONRY SUBSTRATES

- Static cracks up to 4mm in width, i.e. cracks that do not move or continue to propagate, must be filled with suitable repair mortars after substrate priming and prior to the first full coat of Bostik Dampfix Gold
- Cracks greater than 2mm that are subject to movement or propagation must be referred to the builder or engineer for structural

assessment and method of rectification to perform as an expansion joint

- Expansion joints must be a minimum 6mm in width and require a backer rod installed prior to the installation of a suitable sealant (see note on page 2) at a width: depth ratio of 2:1. See "Expansion Joints" below.

### FLOOR & WALL SHEET JOINTS

- All floor and wall sheets must be installed to sheet manufacturer's specification and primed with Bostik Multiprime
- Internal or external sheet floor systems, suitable for wet area applications, require sealant application to seal sheet joints at the time of installation to comply with manufacturer's instructions. The waterproofing applicator must confirm that the sealant used is compatible with all Bostik Dampfix Gold membrane system components
- If polyurethane sealants are used into floor sheet joint installation, allow for a minimum of 7 days to cure prior to the application of the membrane
- All sheet joints must be isolated from the membrane by a min 12mm wide bond breaker tape or neutral cure silicone that covers the entire width & length of the sheet joint
- As floor sheet joints are more prone to movement over joist supports, apply an extra 750 micron (0.75 mm) wet coat of Bostik Dampfix Gold extending a minimum 35mm either side of the bond breaker tape. A further 2 full coats, at 750 microns each, must be applied to the remaining area to be waterproofed

### EXPANSION JOINTS

- All expansion joints must be isolated from the membrane by a minimum 12mm wide bond breaker tape or neutral cure silicone that covers the entire width & length of the joint
- An extra 750 micron (0.750 mm) wet coat of membrane extending a minimum 35mm either side of the bond breaker tape must be applied as an extra coat. A further 2 full coats, at 750 microns wet coat each, is required to the remaining area to be waterproofed.

### Priming

#### Porous Substrate

- A porous or absorbent substrate will allow a bead of water to easily soak into, and wet out the surface of the substrate
- To avoid pin holing Bostik Multiprime must be stirred and not shaken if colour separation is evident. Colour separation will not affect the performance of Bostik Multiprime
- Bostik Multiprime must be applied as a primer coat on all Bostik Dampfix Gold applications to porous substrates
- Refer Bostik Multiprime Technical Data Sheet.

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### Non-Porous Substrate

- A non-porous or impervious substrate will cause a bead of water to be retained on the surface of the substrate as a raised droplet. The droplet does not easily soak into the surface of the substrate
  - Concrete that is overworked or burnished at the time of placement can present, when cured, as a non-porous substrate that will not easily absorb a bead of water. Mechanical abrasion, such as captive shot blasting or vacuumed grinding is required to open substrate pores prior to the application of Bostik Moisture Seal
  - Rigid plastic and metallic substrates require Bostik N40 primer applied using the "2 cloth method" e.g., uPVC drainage outlets & penetrations, aluminium angle water stops, brass, copper or galvanised penetrations, stainless steel drains & gutters etc. Refer Bostik N40 Technical Data Sheet

### "Two Cloth Method"

- Dampen a clean & dry cloth with N40 primer and spread evenly over the non-porous substrate using a cleaning/rubbing action
  - With a second clean & dry cloth, immediately wipe all primer residues off with a buffing action
  - Allow the substrate to dry for a minimum of 5 minutes before installing a suitable sealant (see note on page 2) and/or Bostik Dampfix Gold membrane
    - Do not leave the primer longer than 4 hours before applying sealant/membrane
    - Re-prime if 4 hours has elapsed without applying sealant/membrane
    - Clean & re-prime if the primed surface is contaminated with excavation soil, water, condensation, dust or other contaminants before sealant or membrane can be applied
  - NB: For pre-treated surfaces, contact Bostik Technical Services for advice.

### PAINTABILITY

Bostik Dampfix Gold is paintable. Refer to paint supplier's recommendations.

### COVERAGE

This will vary with the porosity of the substrates. Two coats are recommended to get the optimum performance.

#### For floors

A minimum dry film thickness of 1 mm is required. 15 Litre pail will cover approximately 9–9.5 m<sup>2</sup> (based on two coats).

#### For walls

A minimum dry film thickness of 0.6 mm is required. 15 Litre pail will cover approximately 15 m<sup>2</sup>. 4 Litre pail will cover approximately 4 m<sup>2</sup>.

	Thickness per coat		Total dry film thickness (2 coats)
	Wet film	Dry film	
Floors	0.8 mm	0.5 mm	1 mm
Wall	0.5mm	0.3mm	0.6mm

	Theoretical coverage		Per unit
	per coat	for 2 coats	
Floors	20 m <sup>2</sup>	9–9.5 m <sup>2</sup>	15 L Pail
Wall	30 m <sup>2</sup>	15 m <sup>2</sup>	15 L pail

### CLEANING

Warm soapy water will remove Bostik Dampfix Gold from tools & equipment prior to full cure.

### STORAGE AND SHELF LIFE

Store between 5°C and 30°C. If stored, unopened within these temperature ranges, this product has a shelf life of 12 months. Protect from excessive heat, moisture and freeze/thaw

### IMPORTANT NOTES

- The following instruction steps as detailed in this Technical Data Sheet may not be applicable in every application. They are provided as a guide to meet the requirements of AS/NZ3740 and AS/NZ4654.2
  - It is recommended that the installation should be carried out by professional, licensed applicators holding a current Certificate from Bostik.
    - Bostik Technical Division must approve any modification or variances to this technical data sheet in writing followed by the issuance of an amended Technical Data Sheet
    - Wherever appropriate, the application must comply with AS/NZ 3740 'Waterproofing of Internal Wet Areas in residential buildings' & AS/NZ 4654.2 "Waterproofing membrane systems for exterior use – Above ground level"
      - This product is specially formulated for brush, roller or trowel application to both small and large areas
        - A wet film gauge must be used regularly to ensure that minimum wet film builds are achieved for each coat
        - All vertical terminations, including perimeter walls, hobs and penetrations etc must be of adequate height to satisfy AS/NZ 3740 for

## DAMPFIX GOLD

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internal applications & AS/NZ 4654.2 for external applications

- Apply bond breaker joint to all horizontal/vertical junctions, e.g. wall/floor, wall/wall, hob/ floor, hob/wall & shower set downs etc, prior to all membrane applications (see note on suitable sealants on pg 2)
- Allow 72 hours before flood testing the installed Bostik Dampfix Gold system.

### Note on Suitable Sealants

Suitable sealants for use as bond breakers (in order of preference and performance) include:

- V70
- Bostik 6S
- Bostik Neutral Cure Silicone

Correct bond breaker selection and installation is vital to overall membrane performance. Using an unsuitable sealant can increase the risk of failure and must be avoided. Contact Bostik Smart Help for advice if unsure or if considering products not listed above.

### PRECAUTIONS IN USE

- Must not be installed directly on wet, contaminated, or friable substrates
- Regular checks with a wet film gauge during the application of each coat are advised
- Do not apply any component of the system when air or substrate temperatures are below 5° C
- Cold damp conditions will adversely affect application properties and slow rate of curing
- Do not apply Bostik Dampfix Gold when air and substrate temperature is greater than 35°C or below 5°C
- Membrane should not be used as an exposed finish or as top coating exterior membrane
- When used in areas subject to ambient conditions below freezing special installation precautions must be taken. Contact Bostik for advice before commencing work
- All 4654.1 external membrane applications covered with a reinforced tile bed or screed must be separated from the membrane by a minimum one layer of 200um plastic sheet as a separation layer in accordance with AS3958.1 – 3.3.2.3

- The installation of protection board and ballast, such as river pebbles or similar loose laid unbound coverings, must be isolated from the membrane by a compatible drainage cell and filter fabric system
- Must not be applied directly over lightweight concrete
- Hobs constructed of autoclaved aerated blocks, e.g. Hebel, must be saturated with 2 coats of Multiprime to consolidate and seal the substrate. This is to prevent pin holing of the membrane and provide enough strength to support tiling of the hob
- Autoclaved aerated block walls must be rendered prior to the application of the waterproofing system
- Should not be used in constantly submerged applications such as swimming pools, ponds & spas
- Not designed to withstand negative side substrate head of pressure
- Use only Bostik's recommended sealants. Use of other sealants will significantly increase the risk of failure
- Any intended application of membrane outside of recommended installation should be referred to Bostik Technical Services
- Protect contents of pail from excessive heat, and freeze/thaw prior to use
- Contact Bostik prior to work commencing if there is any uncertainty regarding suitability, installation or any other matters related to the system (including bond breakers)

Complete details on each of the products mentioned are available on the product Safety Data Sheets. To ensure no harm is caused to persons using Bostik products, it is recommended that all concerned read the appropriate Safety Data Sheets. Visit [www.bostik.com/au](http://www.bostik.com/au) for copies.

### PRODUCT DETAILS

Code	Name	Size
30800489	DAMPFIX GOLD GOLD	15L

## DAMPFIX GOLD

For emergency information contact the National Poisons Information Centre, phone 0800 764 766 (0800 POISON) or CHEMCALL, phone 0800 243 622.



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This datasheet is for the general help of users. It is provided in good faith. The data is current and accurate to the best of our knowledge. Differing materials, substrates, environments, site conditions, and product storage, handling and application may affect results. Users should carry out tests to decide the product's suitability for purpose. This data sheet and the properties of the product may change without notice. Users, suppliers and retailers should check that the data sheets they have are the latest. To the maximum extent permitted by law, Bostik disclaims all warranties in relation to manufacture and use of the product. Bostik is not liable for representations made by users, suppliers or retailers about the product. Bostik is not liable for any loss or damage resulting from incorrect, careless, or negligent use or storage of the product, including use of out of date product. Any liability arising from use of the product is limited to the replacement or purchase price of the product. Bostik does not exclude rights and remedies that be excluded by legislation, for example under the Consumer Guarantees Act 1993. Sale of the product by Bostik is subject to the Bostik New Zealand Limited Conditions and Terms of Sale. For more information on Bostik, products, and conditions of use and sale visit [www.bostik.co.nz](http://www.bostik.co.nz).

Technical Advice

Tel: 0508 222 777

nzsales@bostik.com

# 6311 Timber Plank Flooring

## E3 Test Certificate

Ref 104303. Uploaded 3 Dec 2024

Purpose: Performance

## Engineered Flooring Installation Guide

Ref 104302. Uploaded 3 Dec 2024

Purpose: Installation

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NZWTA  
WOOL TESTING



NZWTA  
TEXTILES AND  
MATERIALS TESTING

**No. 1457518.7**

(Please quote this number in all correspondence)

**CLIENT:**  
Creative Flooring  
115A Diana Drive  
Wairau Valley, Auckland

**SAMPLE RECEIVED FROM:**  
Creative Flooring

**Date Received:** 5.4.23

**Attn.:** Greg Chestnut

**SAMPLE DESCRIPTION:**  
Flooring Planks – OWF Range  
Cross Link PVA to lock and upper edge.

**Client Order No.:**

**Client Reference:**

2 of 4

	Wet Swell			Recovered Swell		
	Specimen 1	Specimen 2	Specimen 3	Specimen 1	Specimen 2	Specimen 3
Qualitative Ratings (individual results):	1	1	1	1	1	1

\*Not graded because water leaked out of the ring.

**Qualitative Grade:**

- 1 = No change - Little to no noticeable change in edge swell or panel surface lift
- 2 = Slight swelling - Slight swelling, small ridge along one or more joints, very little if any panel surface lift
- 3 = Moderate - Noticeable edge swelling and some panel surface lift extending away from joint
- 4 = Objectional - Severely raise edge and swelling extending noticeably under the panel surface
- 5 = Failed test - Water leaked out of the ring, leaving no continuous film of water inside the ring  
(this grade is given even if there is no swell of the edge joint)

Observations:	Specimen 1	Specimen 2	Specimen 3
Migration of water along the upper surface:	No	No	No
Migration of water to the underside:	No	No	No

Disassembly Observations:	Specimen 1	Specimen 2	Specimen 3
Migration of water along the upper surface:	No	No	No
Migration of water to the underside:	No	No	No

Note: The Acceptable Solutions and verification methods, New Zealand Building Code E3 Internal Moisture defines on page 9 definitions - "Impervious" - that which does not allow the passage of moisture. While E3.3.3 and E3.3.6 require impervious surfaces about sanitary appliances/fixtures, the impervious performance criteria compliance covered in Page 11 mentions "No specific methods have been adopted for verifying compliance with the performance of NZBC E3." In summary, the Objective (3.1) and Functional requirement (3.2) of E3 is to prevent illness/injury or damage through accumulation of moisture, or damage caused by free water penetration.

**"THIS REPORT APPLIES ONLY TO THE SAMPLES TESTED"**

Samples and their identifying descriptions have been provided by the client unless otherwise stated. NZWTA Ltd makes no warranty, implied or otherwise as to the source of the tested samples. The above results are designed to provide THE CLIENT WITH GUIDANCE INFORMATION ONLY. This document shall not be reproduced except in full.

  
C Marshall  
Key Technical Person

19/04/2023



Changes to E3/AS1 Effective 4 November 2021

## **ENGINEERED TIMBER FLOORING INSTALLATION GUIDE**



## 1 SCOPE OF USE

Creative Flooring's engineered timber flooring system is designed for use as non-structural overlay flooring inside residential and commercial buildings. Installations outside of the scope of use will not be covered under warranty.

- Our flooring is suitable for all areas other than garages, bathrooms and commercial kitchens.
- Our flooring should always be installed onto an approved substrate.
- Additional requirements must be adhered to for installations in wet areas.
- Additional requirements must be adhered to for installations with underfloor heating.
- The area with flooring should be protected against changes in climate. Refer to our specific instruction document for site installations.

## 2 APPROVED SUBSTRATES

- 1) Concrete floors
- 2) Timber flooring (structural or overlay, but not timber joists)
- 3) Concrete floors with hydronic underfloor heating systems (set into slab 45mm minimum)
- 4) In-screed electric underfloor heating system (not ideal and sign-off required – but a supplier such as Warm-Up will warranty under their guidelines <https://www.warmup.co.nz/> )
- 5) Wet-area membrane systems (when approved by the membrane system supplier)
- 6) Acoustic underlay glued to an approved substrate

## 3 SLIP RESISTANCE

In regards to slip resistance, please check the recommendations from your local Council. Particularly for commercial applications.

There are options from Tredsafe <https://www.tredsafe.co.nz/> .

Adhesive inserts can be routed and glued into the tread nosing.

Entrance mats should always be incorporated at main entrance points, especially in commercial settings, to minimise damage.

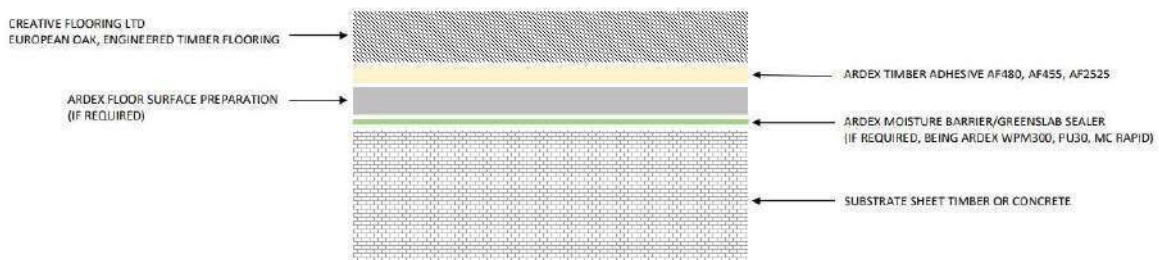
## 4 WET AREAS

A wet area is a kitchen, bathroom, laundry, toilet and any other area containing sanitary fixtures/appliances. Under changes to E3/AS1 from 4/11/2021 'Acceptable Solutions' in wet areas are only; Tiles, Vinyl or Polished Concrete. Timber flooring in wet areas must now be submitted to Council under the category 'Alternative Solution'. Timber flooring IS an acceptable alternative solution for wet areas, however we still recommend a surface such as tiles in bathrooms and laundries, due to the humidity factor and high water splash. In areas where open/door-less showers are installed, we do not recommend wood flooring.

## 5 INSTALLATION OPTION

Please note that all Creative Flooring’s engineered timber **lock** flooring has wax applied to the edges (and sealed backs) by our manufacturer. For added insurance against moisture ingress however, applying waterproof, cross-linked PVA would be providing a further level of protection.

Adhesive system for our engineered flooring diagrams below. Please note that Ardex Moisture Barrier WPM002 has BRANZ Appraisal No 472. This is one system option. Similar systems can be used. With reference to the following diagrams; first two refer to single level dwellings, second two refer to E3 compliance for multi-level dwellings.

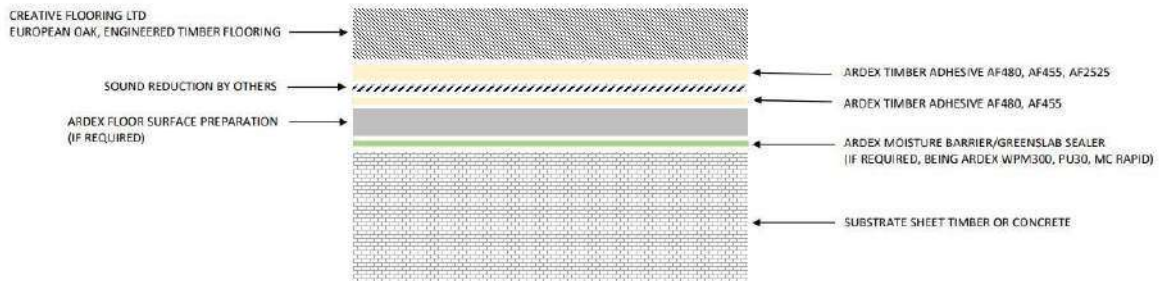


### ARDEX NZ TIMBER INSTALL (NO IMPACT/SOUND REDUCTION)

Please reference back to the Ardex data sheets for specific details on each product.



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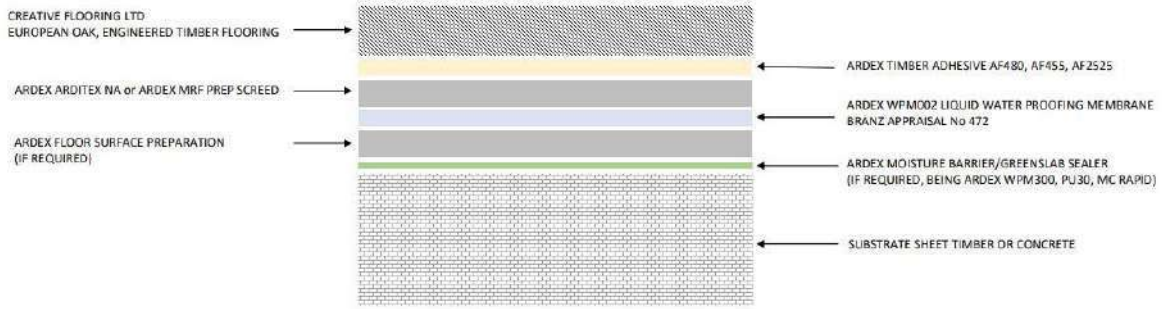


### ARDEX NZ TIMBER INSTALL (WITH IMPACT/SOUND REDUCTION)

Please reference back to the Ardex data sheets for specific details on each product.



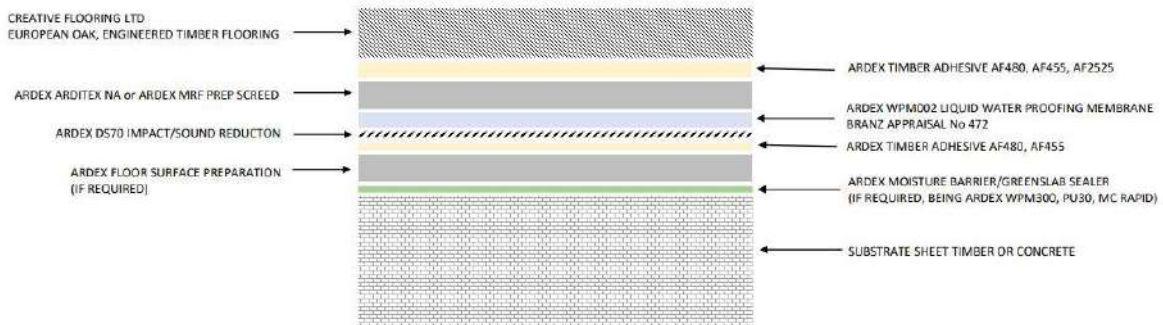
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## ARDEX NZ TIMBER INSTALL E3 COMPLIANCE (NO IMPACT/SOUND REDUCTION)



Please reference back to the Ardex data sheets for specific details on each product.



## ARDEX NZ TIMBER INSTALL E3 COMPLIANCE (WITH IMPACT/SOUND REDUCTION)



Please reference back to the Ardex data sheets for specific details on each product.

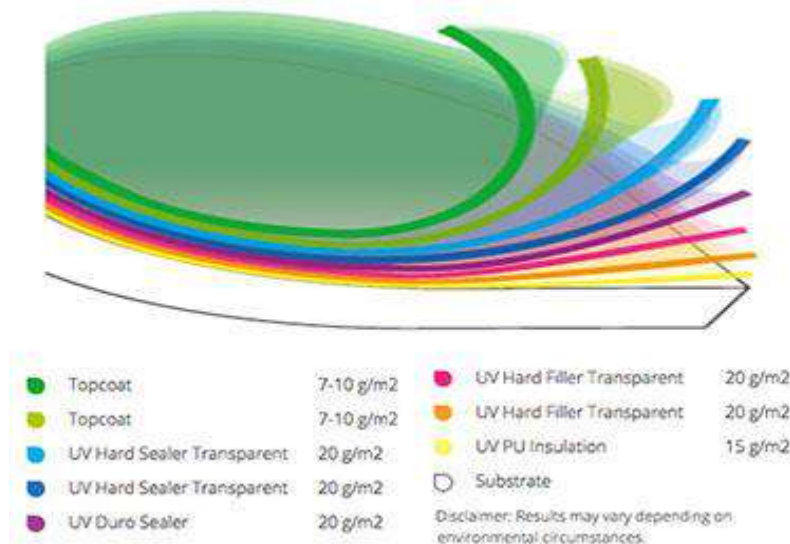
It is important to note that all installation components of the wet-area membrane and the timber flooring installation come from the same supplier to ensure the system is complete so as to not void the warranty.

After installation is complete, use a flexible, waterproof sealant specific for use with timber flooring to seal the perimeter as well as any fixed items in the room. In open-plan spaces this should extend 1.5m from each sanitary fixture/appliance.

## 6 FINISHES (COATINGS)

### LACQUER

All our pre-finished **lacquered** engineered flooring has the Treffert Sapphire coating system, where eight coats are applied.



### HARD WAX OIL

On our **oiled wood** floors we use is Osmo Hard Wax Oil. Wood is a natural material and the cell structure, similar to our skin, can take on and release moisture - meaning it breathes. To ensure that this exchange is not prevented we use finishes especially suited to the nature of wood. Osmo natural wood finishes are based on oils and waxes. The oils penetrate into the wood surface, protecting the wood from deep within. The waxes form an elastic, microprorous surface which protects the wood from external moisture and abrasion. The wood remains naturally beautiful, protected and durable <https://www.osmo.co.nz/product/Polyx%C2%AE-Oil>.

## 7 CLEANING & MAINTENANCE

Timber flooring is easily cleaned using a vacuum and a damp mop. We supply detailed care and maintenance guides with our wood floors along with the option to supply the correct products on an ongoing basis.

Timber flooring is a natural material and regardless of whether it is a lacquer or oil finish, correct care and maintenance will extend its performance and longevity.

Maintenance of Osmo finished floors is easy. Regular cleaning and maintenance with a Ph neutral detergent, such as Osmo's Wash & Care, will ensure the finish will look good for years to come.

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## 8 UNDERFLOOR HEATING

Creative Flooring (like most other engineered timber flooring suppliers) does not recommend installation of wooden flooring over **electric radiant heat** and therefore does not warrant such installations. The main reasons for this are:

Electric under floor heating is able to supply an almost instantaneous heat that warms up the flooring over a very short period of time. This can cause tension in the wood with the risk of splits appearing in the top layer.

The main problem is that the end user has the tendency to give full power to the system as the ambient temperature drops.

A **hot water pipe system**, by nature of its operation, tends to have a slower heating time frame but the following should be adhered to. Engineered flooring is the more stable option for such installations.

The guidelines below are offered as additional pointers to successful installation:

1. As with any direct stick floor you should be checking and recording your slab moisture levels (particularly new slabs). Obviously only installing over acceptable levels.
2. It should be ensured that the floor is flat – 3mm over 3m is the acceptable industry standard.
3. The radiant heat should be turned on for a lengthy period prior to the install to chase out any moisture from the slab. 21 days is recommended for new slabs.
4. The floor should be coated with a moisture barrier/retarder.
5. Moisture levels should be checked and recorded again once the barrier/retarder has been applied and cured as per the manufacturer's recommendations.
6. As far as is possible, acclimatisation of the timber floor within the environment it is going into, for as long as possible, would be ideal. The room temperature should not vary more than 9 degrees C between seasons and humidity should be maintained between 45% and 60% throughout the year.
7. The boards should be run at right angles to the heating pipes/elements below the substrate to give even heating across the boards (**consider your desired flooring direction, and advise your heating installer**).
8. Sufficient glue applied as per the manufacturer's recommendation.
9. Before installation, reduce the temperature gradually by 5 degrees C per day. At the time of installation, the sub floor temperature should be between 16-18 degrees C. After installation a temperature of 16-18 degrees C should be maintained for a further 3-4 days before returning to the recommended subfloor temperature of 24-27 degrees C.
10. Thermostats should be in the floor and not wall mounted.
11. Any increase in temperature should be made slowly, only 2-3 degrees at a time and left for a period of at least 12 hours to stabilize before increasing further. Maximum temperature is 27 degrees Celsius.
12. Once a desired temperature is reached, it should be maintained for the duration of the winter months.
13. Avoid rapid changes in heating temperatures.

Decrease temperature in a similar way, avoiding rapid changes.

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# 7120 Hot & Cold Water System

## Allproof HWC Tundish

Ref 107959. Uploaded 5 Feb 2025

Purpose: Performance, Installation

## Rheem Compliance Document

Ref 17600. Uploaded 8 Dec 2020

Purpose: Performance

## Rheem Installation Details

Ref 17601. Uploaded 8 Dec 2020

Purpose: Installation

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# HWC

655

# TUNDISH

## HWCT40 & HWCT50

*Designed to drain hot water cylinder valves through the safe tray.*

**ALLPROOF**  
INDUSTRIES



Rubber Grommet to Suit 15mm and 20mm Copper Pipe Sizes

Pipe Outlet Locators

Grate Providing Air Gap Separation & to Contain Splash

Cone Tundish

Drainage for Cylinder Tray

Safe Tray

40/50mm BSP Threaded Nut

Rubber Seal

Rubber Compression Washer

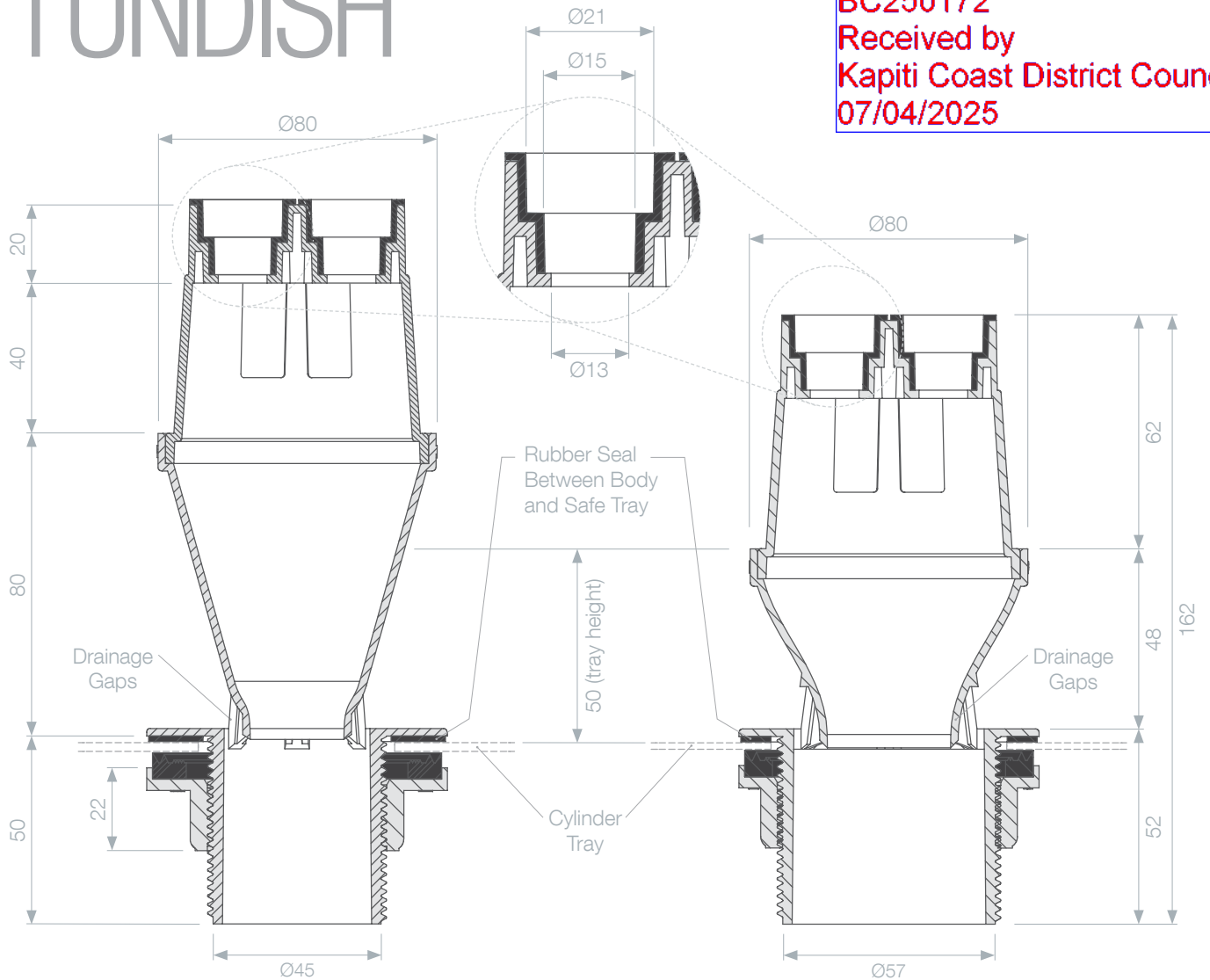
40/50mm BSP Threaded Outlet

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SUITABLE  
UP TO  
130°C

# HWC TUNDISH

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## HWCT40

## HWCT50



### HOT WATER CYLINDER TRAY TUNDISH

- > Drains cold water expansion and TPR valve drainage pipes with one outlet
- > 40mm or 50mm BSP threaded outlet
- > Easy to install in HWC safe tray
- > Grate with pipe outlet locators meets minimum air gap requirement as per AS/NZS 3500.2
- > Grommet with diminishing ID for 20mm and 15mm pipe
- > Body and Grate moulded in high temperature rated plastic
- > Grate design to contain high pressure valve drainage and allow visual checks

# Supplier Declaration of Compliance

(In accordance with Regulation 101A of the Electricity Regulations 1997)



**THIS COMPLETED FORM REMAINS WITH THE SUPPLIER AS PART OF THE DOCUMENTATION REQUIRED FOR THE "COMPLIANCE FOLDER" DO NOT SUBMIT THIS FORM TO THE MINISTRY**

## Suppliers Details

<b>Name (of New Zealand manufacturer, importer or agent)</b>	<b>Address</b>
Rheem NZ Limited	475 Rosebank Road
<b>New Zealand Company Number (if applicable)</b>	Avondale
1175771	Auckland NZ

## Product Details

**Product name, type, model and serial numbers (if applicable)**

Mains Pressure Electric Hot Water Heater

Model: 31225025

**Documents used as the basis for compliance with regulation 69**

Wakefield Laboratories Test Report # 20217C

Covering AS/NZS 3350.2.21 Safety of Household and Similar Electrical Appliances Part 2.21 Particular requirement - Storage Water Heater

## Declaration

I hereby declare that the above specified fittings or electrical appliances comply with the requirements of Regulation 69 of the Electricity Regulations 1997.

**Signature of Authorised Person**

**Print Name**

Chris Wheeler

**Position in Organisation**

Engineering Manager

**Date**

29-Oct-2009

Reset



**Supplier Identification**  
(as affixed to the product)

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# INSTALLATION INSTRUCTIONS & OWNERS GUIDE

## RHEEM MAINS PRESSURE ELECTRIC HOT WATER HEATERS

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

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

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

### **Important to the Installer**

Do not leave this booklet inside the element cover  
after installation

Please leave the booklet with the water heater's  
owner

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## IMPORTANT INFORMATION

### GENERAL

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

## ABOUT YOUR WATER HEATER

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

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

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

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

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

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

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

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

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

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

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

Vitreous Enamel	8 years
Optima	10 years

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

## HOW THE WATER HEATER WORKS

### SINGLE AND TWIN ELEMENT MODELS

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

### NON-SIMULTANEOUS ELEMENT MODELS


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

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

### SAFETY

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

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

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

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

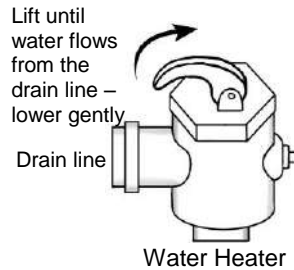
## REGULAR CARE

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

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

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

#### DIAGRAM 1



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

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#### GOING ON HOLIDAYS:

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

## SAVE A SERVICE CALL

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

### WATER DISCHARGING FROM EXPANSION CONTROL VALVES

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

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

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

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

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

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

### HIGH ELECTRICITY BILLS

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

- **Is one outlet (especially the shower) using more hot water than you think?**
- **Is there a leaking hot water pipe, dripping hot water tap, etc?**

Even a small leak will waste a surprisingly large quantity of hot water and energy. Replace faulty tap washers, and have your plumber rectify any leaking pipe-work.

## INSTALLATION

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

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

- **WATER HEATER LOCATION**

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

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

- **CONNECTION SIZES**

- Hot and Cold water connections: RP  $\frac{3}{4}$  / 20.
- Relief valve connection: RP  $\frac{1}{2}$  / 15.

- **INLET/OUTLET CONNECTIONS**

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

- **NON RETURN VALVE**

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

- **PIPE SIZES**

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


- **COLD WATER EXPANSION VALVE**

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

- **TEMPERATURE AND PRESSURE RELIEF VALVE**

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

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

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

- **WATER SUPPLY PRESSURE**

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

- **PRESSURE LIMITING/REDUCING VALVE**

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

- **SAFE TRAY AND SEISMIC RESTRAINTS**

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

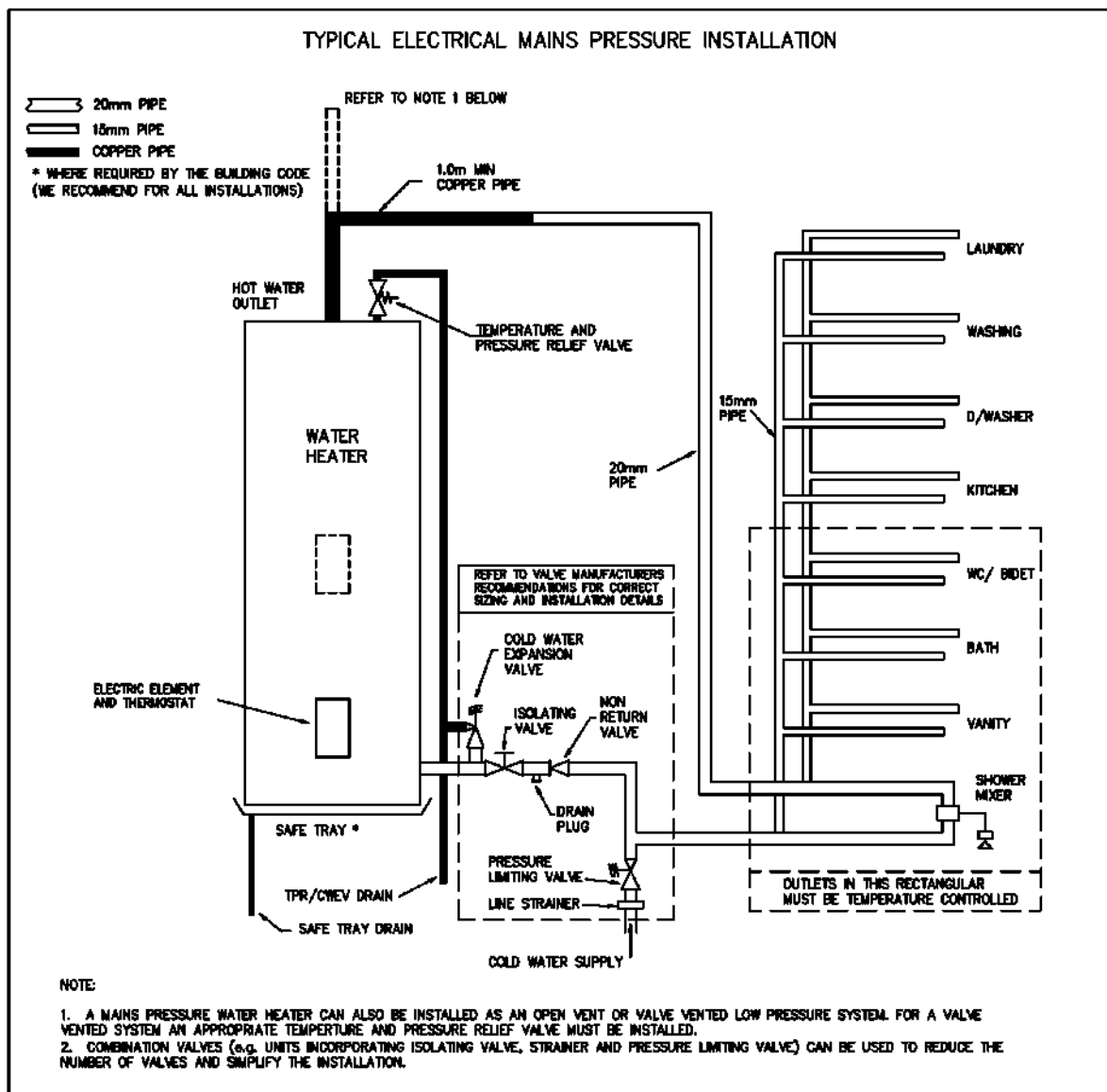


DIAGRAM 2:

## CONNECTIONS - ELECTRICAL

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

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

## COMMISSIONING

### TO FILL AND TURN ON THE WATER HEATER

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

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

### TO TURN OFF THE WATER HEATER

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

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

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## DRAINING THE WATER HEATER

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

## WHAT YOU SHOULD KNOW ABOUT WATER QUALITY

### WATER SUPPLY CHEMISTRY

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

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

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

### HARSH WATER AREAS

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

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

### CAUTION

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

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

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

### SATURATION INDEX

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

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

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

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

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

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

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

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

## RHEEM WARRANTY

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

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

#### 1. THE RHEEM WARRANTY – GENERAL

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

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

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

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

3.1 The following Warranty terms apply for all Rheem Water Heaters manufactured after 1st June 2018. Rheem will repair or replace a faulty component of your unit if it fails to operate in accordance with its specifications as follows:

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

#### Low & Mains Pressure

#### Years

\*\* (Excludes Optima)

All components	1	1	Repair or replacement of failed component, or if necessary, replacement of the complete water heater, free of charge, including labour.
Cylinder only (Thermostat setting must be below 70°C)	5	1	Repair or replacement of the complete water heater, free of charge, including labour.
Cylinder only - Vitreous Enamel (Thermostat setting must be below 70°C)	10	3	Repair or replacement of the complete water heater, free of charge. Installation and labour cost are the responsibility of the owner.

#### Optima

#### Years

All components	3	1	Repair or replacement of failed component, or if necessary, replacement of the complete water heater, free of charge, including labour.
Cylinder only (Thermostat setting must be below 70°C)	5	1	Repair or replacement of the complete water heater, free of charge, including labour.
Cylinder only (Thermostat setting must be below 70°C)	12	5	Repair or replacement of the complete water heater, free of charge. Installation and labour cost are the responsibility of the owner.

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

4.1 To be entitled to make a claim under this warranty you need to:

- Be the owner of the unit or have consent of the owner to act on their behalf.
- Contact Rheem New Zealand Limited Service Department without undue delay after detection of the defect and, in any event, within the applicable warranty period.
- Return the faulty component or unit as directed by the Rheem New Zealand Limited Service Department.

4.2 You are **not** entitled to make a claim under this warranty if your unit:

- Does not have its original serial numbers or rating labels.
- Is not installed in New Zealand.

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

5.1 If you wish to make a claim under this warranty, you need to:

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

5.2 Any expenses incurred in the making of a claim under this warranty will be borne by you.

**RHEEM SERVICE DEPARTMENT**  
475 Rosebank Road, Avondale, Auckland

www.rheem.co.nz

FOR SERVICE TELEPHONE

Phone: 0800 657 335

Fax: 09 829 0222

or visit [www.rheem.co.nz](http://www.rheem.co.nz) for your nearest Rheem Service Centre

**BC250172**  
**Received by**  
**Kapiti Coast District Council**  
**07/04/2025**

# 7411C Continuous Spouting Rainwater Systems



## Continuous Group Ltd

+64 09 2681555  
angie.yeatman@continuous.co.nz  
www.continuous.co.nz

### SUPPORTING DOCUMENTS

#### Cube 125 Spouting Brochure & Specification Sheet

Ref 43387. Uploaded 24 Jan 2025

Purpose: Installation

#### Form Series Downpipes Brochure & Specification Sheet

Ref 43401. Uploaded 24 Jan 2025

Purpose: Installation

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# Continuous Group®

## Spouting Fascia Downpipes



\*Swaging/design may vary depending on material choice and region supplied.

CUBE 125  
BOX SPOUTING

### Overview

The extra high front face of this sharp profile means it has your roof edge well and truly covered. The Cube suits a vast array of building types.

### Features

- ✓ High front allows for extra fall
- ✓ Large Capacity
- ✓ Tough marine grade materials
- ✓ Bracket options to suit
- ✓ Up to 20 year material warranty
- ✓ Matching downpipes
- ✓ 15 standard colours and more!



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Finish Range	Spouting Material	Colour Choice	Bracket Material	Bracket Options	Downpipe Options
CG Range	MagnaFlow™	Top 15 Colours	Aluminium	Internal Box-5 External Box-5	65mm Round 80mm Round 100mm Round 3x2" Rectangle 4x2" Rectangle
Designer Range	MagnaFlow™	34 Designer Colours	Aluminium		
Endurance Range*	AlumiGard™	Top 4 Colours	Aluminium		
Euro Range*	EuraMax	4 Premium Colours	Aluminium		
Copper*	Pure Copper	Natural	Copper or Brass		

### Available from these Continuous Group Locations:

NORTHLAND | AUCKLAND | WAIKATO | BAY OF PLENTY  
TARANAKI | GISBORNE | HAWKES BAY | MANAWATU | WELLINGTON  
NELSON | MARLBOROUGH | WEST COAST | CANTERBURY | OTAGO | SOUTHLAND

0800 50 1993

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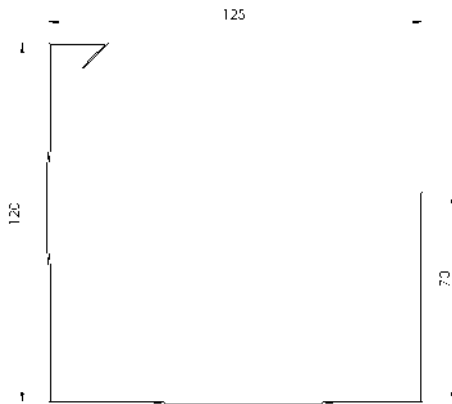


# Continuous Group®

## Spouting Fascia Downpipes



CUBE 125 BOX SPOUTING



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**Kapiti Coast District Council**  
**07/04/2025**

Maximum Capacity	8656mm <sup>2</sup>
Effective Capacity (With 10mm Freeboard)	7412mm <sup>2</sup>

PRODUCT SPECIFICATIONS		CAPACITY SPECIFICATIONS	
<b>MagnaFlow™</b> Pre-painted Steel	0.55mm G300 with a minimum of 200gsm alloy/zinc coating.	Maximum cross sectional area	8,656mm <sup>2</sup>
<b>AlumiGard™</b> Pre-painted Aluminium	0.70mm Grade 5005 H34	Effective cross sectional area with 10mm freeboard	7,412mm <sup>2</sup>
<b>EuraMax</b> Pre-painted Aluminium	0.80mm Grade 5754 H42	Flow Capacity	110 Litres/min
<b>Pure Copper</b> Copper 3/4 Hard	0.60mm Grade C12200	Recommended fall	1:500 = 2mm per 1 metre
Internal Bracket	2.50mm Aluminium 5052 H34 2.50mm Copper—hard (C12200)	Minimum Downpipe cross section	3,215mm <sup>2</sup>
External Bracket	3.00mm Aluminium 5052 H34 3.00mm Copper—hard (C12200)	Recommended round standard downpipe sizes	100mm Ø = 7,539mm <sup>2</sup> 80mm Ø = 4,776mm <sup>2</sup>
Recommended Maximum bracket spacing	750mm 600mm where snow fall is possible	Recommended rectangle standard downpipe sizes	4x2" = 5,346mm <sup>2</sup> 3x2" = 3,996mm <sup>2</sup>
Recommended Fixings	Minimum Class 4 screw &/or rivet fasteners compatible with substrate and bracket material.		

<b>Scope of use</b>	Continuous Group rainwater systems are intended to collect and channel water that runs off a roof. It is intended that the metal spouting be placed at the perimeter of the building (Positioned outside the building envelope).
<b>NZBC Compliance</b>	Test information available from Pacific Coilcoaters, New Zealand Steel and Ambro Metals, combined with past history of rainwater products indicate, that provided the product use and maintenance is in line with the guidelines contained in the current literature, Continuous Group rainwater systems can be expected to meet the performance criteria in clause E2 of the New Zealand building code.
<b>Durability</b>	All copper and aluminium products listed above are fit for purpose in environment zone B, C, D and E* Pre-painted steel products are fit for purpose in environment Zone B and C* They may be used in environment zone D subject to a pre-approval warranty application based on site address* *In all cases, areas with high wind &/or salt &/or thermal/industrial atmospheric conditions may require specific engineering design (S.E.D) Reference: Section 4, "Durability" from NZS3604:2011.
<b>Maintenance</b>	Continuous Group rainwater systems require regular maintenance to ensure the useful life of the products. Minimum maintenance interval of every 6 months or as often as needed to avoid build up of contaminants (dirt, salt, pollen etc.) on the spouting surface. Simply spray and rinse with water and/or if necessary scrub with a soft nylon brush. More information and specific maintenance products are available on our website <a href="http://www.continuous.co.nz/care-and-maintenance">www.continuous.co.nz/care-and-maintenance</a>
<b>Warranty</b>	<b>MagnaFlow™</b> : Environment zone B & C—10 year paint warranty ; 12 year perforation warranty. <b>MagnaFlow™</b> : Environment zone D—10 year paint warranty ; 10 year perforation warranty. <b>AlumiGard™</b> : 10 year paint warranty ; 12 year perforation warranty. <b>Pure Copper &amp; EuraMax</b> : 20 year material and perforation warranty. Full details and conditions of our comprehensive warranty can be found at <a href="http://www.continuous.co.nz/warranties">www.continuous.co.nz/warranties</a>

0800 50 1993

WWW.CONTINUOUS.CO.NZ



# Continuous Group®

## Spouting Fascia Downpipes



Four convenient size's to match your roof drainage and style.

FS-100

FS-80

FS-65

FS-75x50



FORM SERIES-DOWNPIPES

### Overview

Complete your rainwater system with our form series range of coloured downpipes.  
 Received by Kapiti Coast District Council 07/04/2025

### Features

- ✓ Easy Maintenance
- ✓ Bracket fixing options
- ✓ Colour match with your spouting
- ✓ UV resistant and tough materials
- ✓ Up to 20 year material warranty

Finish Range	Downpipe Material	Colour Choice	Bracket Material	Bracket options	Downpipe options
CG Range	MagnaFlow™	Top 15 Colours	Diecast Aluminium Magnaflow	Adjustable clamp Fixed Clip	Large range of diecast fittings
Designer Range	MagnaFlow™	34 Designer Colours	Diecast Aluminium	Adjustable clamp	Large range of diecast fittings
Copper*	Pure Copper	Natural	Brass or Copper	Adjustable clamp Fixed Clip	Hand mitred Welded options available

### Available from these Continuous Group Locations:

NORTHLAND | AUCKLAND | WAIKATO | BAY OF PLENTY  
 TARANAKI | GISBORNE | HAWKES BAY | MANAWATU | WELLINGTON  
 NELSON | MARLBOROUGH | WEST COAST | CANTERBURY | OTAGO | SOUTHLAND



# FORM SERIES-DOWNPIPES

### PRODUCT SPECIFICATIONS

<b>MagnaFlow™</b> Pre-painted Steel	0.55mm G300 with a minimum of 200gsm alloy/zinc coating.
<b>Pure Copper</b> Copper 3/4 Hard	0.55mm Grade C12200
Adjustable Clamp	Diecast aluminium or Diecast brass (Copper plated available)
Fixed Clip	<b>MagnaFlow™</b> Or 0.55mm Copper Grade C12200
Maximum Bracket spacing	2400mm (It is recommended that brackets are placed within 400mm of bends, tees and drain connections)
Recommended Fixings	Minimum Class 4 screw &/or rivet fasteners compatible with substrate and bracket material.

### IMPORTANT SET OUT REQUIREMENTS

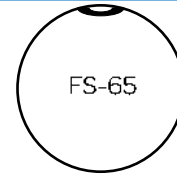
All stormwater drains to be according to MRM code of practice section 5.4 and E1/AS1 section 3

Form series downpipes can be used for water collection but can NOT be used where water tank head height is higher than top of drain. Use Ezi-Flo series downpipe where charged downpipes are required

Timber fixing points for downpipe brackets should be installed when soft claddings are used (IE: Polystyrene with plaster)

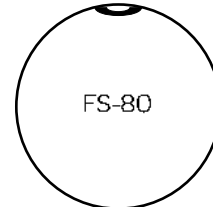
Downpipe calculations for roof area, refer to MRM code of practice sections 5.4.1; 5.4.2; 5.7

Form Series downpipes are a roll-formed lock seamed downpipe. They are not designed to withstand head pressure therefore we do not recommend, support or approve use of this type of downpipe within the building envelope or for "Charged lines"



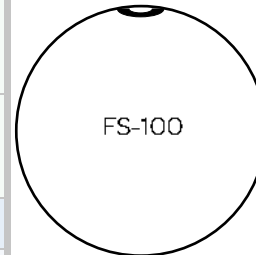
FS-65

Inside Diameter	Outside Diameter	Capacity mm <sup>2</sup>
67.3mm	68.5mm	3550



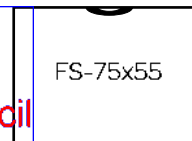
FS-80

Inside Diameter	Outside Diameter	Capacity mm <sup>2</sup>
80mm	81.2mm	5020



FS-100

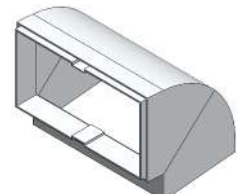
Inside Diameter	Outside Diameter	Capacity mm <sup>2</sup>
99mm	100.2mm	7690



FS-75x55

Inside Diameter	Outside Diameter	Capacity mm <sup>2</sup>
73.8 x 52.8mm	75x54mm	3890

### 95° Bend fittings



More downpipe fittings available on our website.

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07/04/2025

#### Scope of use

Continuous Group Form Series downpipes are intended to collect and channel water that runs off a roof. It is intended that the metal downpipes be placed at the perimeter of the building (Positioned outside the building envelope).

#### NZBC Compliance

Test information available from Pacific Coilcoaters, New Zealand Steel and Ambro Metals, combined with past history of downpipe systems, indicate, that provided the product use and maintenance is in line with the guidelines contained in the current literature, Continuous Group Form Series downpipes can be expected to meet the performance criteria in clause E2 of the New Zealand building code.

#### Durability

All copper, brass and aluminium products listed above are fit for purpose in environment zone B, C, D and E\*  
Pre-painted steel products are fit for purpose in environment Zone B and C\* They may be used in environment zone D subject to a pre-approval warranty application based on site address\*  
\*In all cases, areas with high wind &/or salt &/or thermal/industrial atmospheric conditions may require specific engineering design (S.E.D)  
Reference: Section 4, "Durability" from NZS3604:2011.

#### Maintenance

Continuous Group Form Series downpipes require regular maintenance to ensure the useful life of the products. Minimum maintenance interval of every 6 months or as often as needed to avoid build up of contaminants (dirt, salt, pollen etc.) on the downpipe surface. Simply spray and rinse with water and/or if necessary scrub with a soft nylon brush.  
More information and specific maintenance products are available on our website [www.continuous.co.nz/care-and-maintenance](http://www.continuous.co.nz/care-and-maintenance)

#### Warranty

**MagnaFlow™** : Environment zone B, C & D—10 year paint warranty ; 15 year perforation warranty.  
**Pure Copper** : 20 year material and perforation warranty.  
Full details and conditions of our comprehensive warranty can be found at [www.continuous.co.nz/warranties](http://www.continuous.co.nz/warranties)

# 7455 Stormwater Mitigation Systems

## ELE 25,000 litre tank

Ref 40225. Uploaded 21 Jan 2022

Purpose: Installation

## ELE Tank Installation instructions

Ref 40222. Uploaded 21 Jan 2022

Purpose: Installation

## First Flush Delta InGround Installation Guide

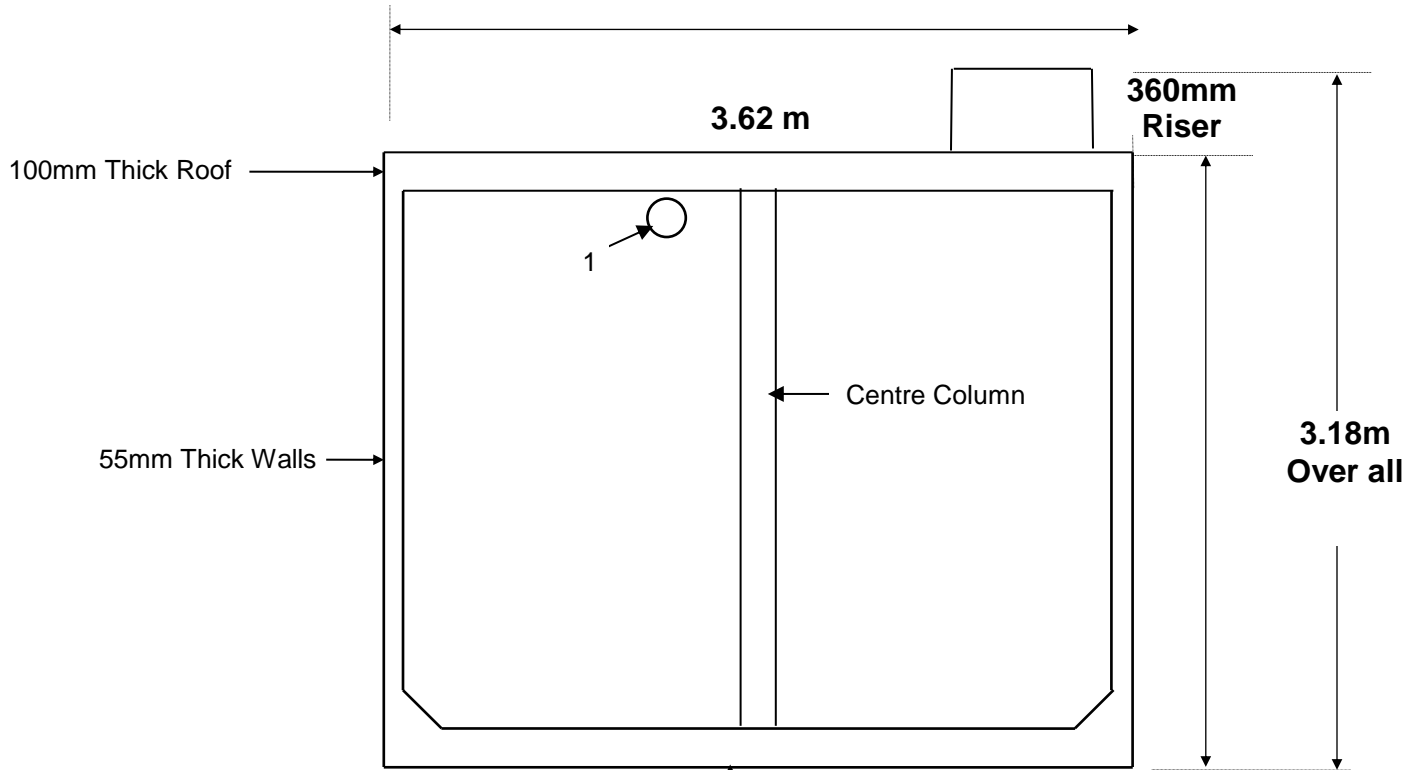
Ref 108694. Uploaded 19 Feb 2025

Purpose: Performance, Installation

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# Flat-Top Water Tank

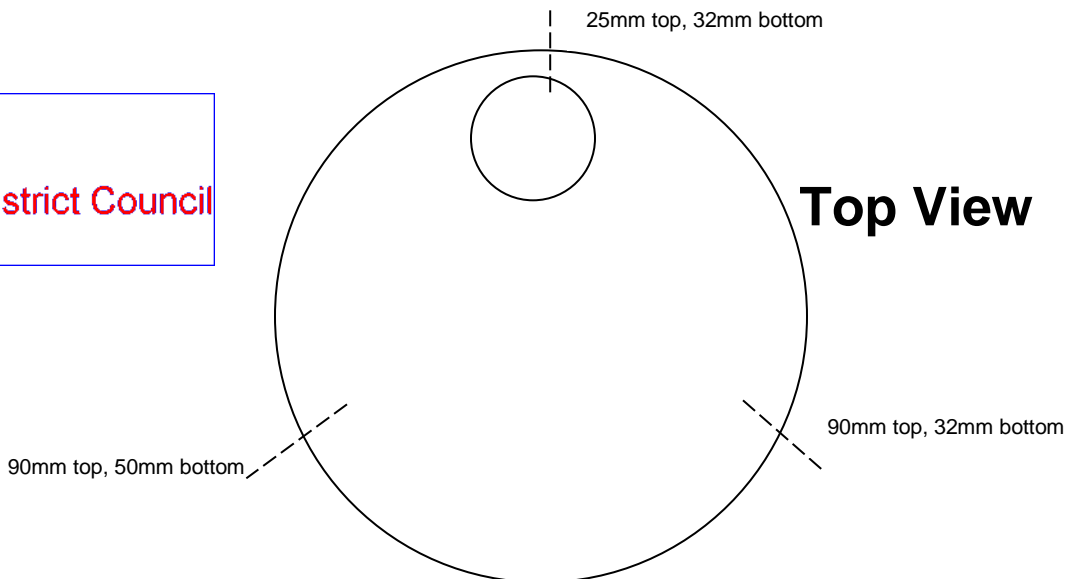
(ELE5000FLAT - 25000Lt Flat Top) 3.18m Over all depth



- 1. Overflow 90mm x 2
- 2. Outlets 32mm x 2  
and Outlet 50mm x 1
- 3. Aux Inlet/Outlet 25mm x 1

100mm Thick Floor

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## SITING YOUR ELETANK - ELE5000 (25,000 Litres)

### PREPARATION AND SITING FOR ELETANK

Try to locate your tanks away from the immediate vicinity of buildings to allow for future expansion and easy access for the Fire Service. Gone are the days when tanks are placed close to the house and downpipes run through the air. A few extra lengths of pipe now are less expensive than moving the tanks later. Rainwater is one of the few commodities that is free, so plan to collect water from all roof areas existing and proposed.

Delivery is relatively simple with the use of a large Hiab truck.

Allow 4.25 metres wide and 3.7 meters high for access for the delivery truck and its load.

Correct site preparation is essential. The loading must be transmitted through the floor onto the foundation – your ELETANK when filled with water will weigh 29,000Kgs.

The foundation requirements are for a bearing for 100kPa – the same as a house foundation.

The site is to be chosen on virgin soil, flat and level and 4.1sqm. On this area spread a 100mm thickness of sand or fine metal. This equates to approximately 1.5 cubic metres. For sites where the tank is to be partially buried care must be taken to ensure that the bottom of the site is well drained to prevent Flotation of the tank when empty. (Specially designed tanks (ELE5000 PLT) are available for situations where the tank has to be completely buried.)

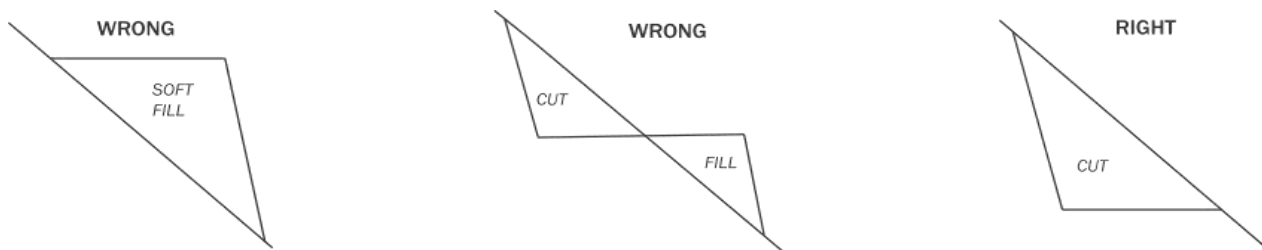
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Do not back fill around your ELETANK until the tank has been filled with water for the first time.

Connections between dual tanks should be flexible to allow for differential site settlement and earth movement.

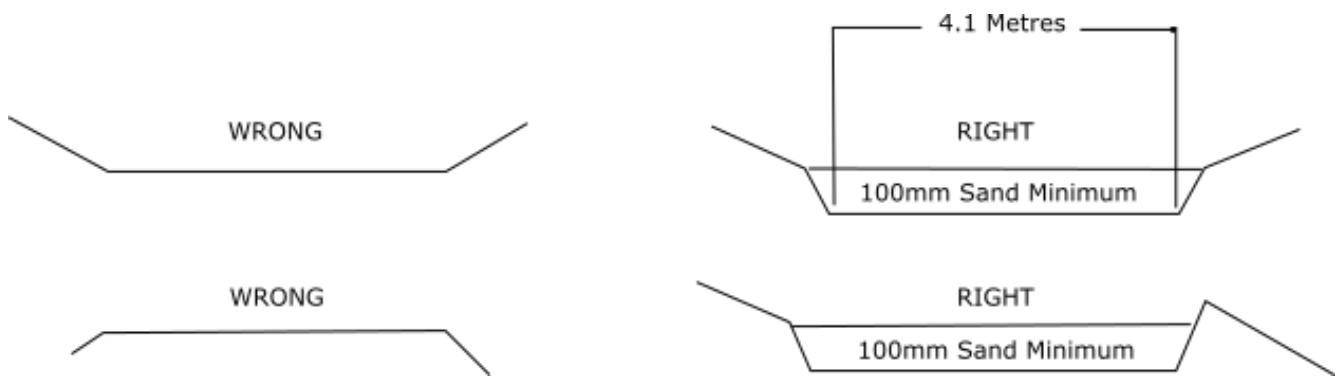
### Protect Your Investment with Correct Site Preparation

Because water tanks are extremely heavy when full (29,000Kg), this type of loading demands a good foundation so that all the weight is distributed evenly on to solid ground.



**If the site is off-level, the ELETANK will not sit plumb and will look odd. A level and straight edge must be used to avoid this. We recommend that the area designated for the tank be a prepared 4.1 metres square.**

NOTE: Besides being level, the site MUST be flat to allow the ELETANK to sit evenly. If it is convex, concave or corrugated, the base of the ELETANK will bend to take on this ground shape when full. This pressure creates stress at the joint where the walls of the ELETANK meet the base and can cause leaks. A tolerance of 25mm - 100mm, is permitted over the site.



Because it is very difficult to get a site dead level on solid ground a cushion course or gasket of 100mm of loose moving material such as scoria, sand, builders mix, fine metal etc; is required to blind out small irregularities in the solid foundation. This cushion course must not be used to overlay uneven or soft ground instead of preparing a proper site initially.

After the ELETANK is delivered, the cushion course should be sealed in by placing soil or similar material around the base of the ELETANK and up the walls about 100mm. This prevents material such as sand being washed or blown away after delivery, thus creating holes under the base of the ELETANK and the danger of uneven weight distribution when the ELETANK is full. (Overflow should be piped well away from the foundation to avoid erosion).

ELETANKS are delivered by lifting off a truck with a rear mounted Hiab. The truck needs to have clearance from fences, banks, buildings etc.

#### **OTHER POINTS TO WATCH ARE -**

- 1| That the ELETANK will be low enough to catch the water from you lowest roof line
- 2| There are no overhead wires, branches etc, blocking the access of the loaded ELETANK delivery truck
- 3| The ground is firm enough for the truck and there are no holes, drains or septic tanks etc, to fall into
- 4| Do not completely fill your ELETANK after delivery. Allow gradual filling if possible

When siting your concrete water tank please remember that your ELETANK weighs 7000kg and a FLAT TOP TANK weighs 9000kg. Although it is simple to handle with the equipment we utilise; this equipment is specialised and very expensive. This equipment is not widely available, with the alternative being a separate crane and flat-deck truck.

Because the ELETANKS are 3.62 metres wide at the roof they are a wide-load and require a pilot on the road. The pilot and pilot vehicle are required by law and operate under stringent conditions with time restrictions. Due to these requirements our deliveries can be prone to delay.

Please ensure that you do not have other contractors (eg: plumbers, diggers) waiting on site specifically for your ELETANK delivery. The Company will not accept responsibility for your contractor's costs.

Remember that on arrival our pilot vehicle driver checks your site is correct as per the instructions above and assists our contractor with the siting procedure. If not correct, extra waiting time will be chargeable.

There is no need for other contractors to be there unless special site conditions apply. However, we do recommend that the owner of the property is on-site so that the ELETANK is positioned exactly where envisaged (provided this is practical).

We allow 30 minutes to site an ELETANK. Any extra time on site is chargeable at the delivery contractor's discretion.

If you are experiencing any delivery problems or if you require further information regarding your site, please contact our office for advise

*NOTE| Guarantee is only valid if the site meets these requirements  
Buried tanks require special preparation, see separate siting sheet for details*

**FOR SALES & SERVICE PHONE  
0800 ELE 222**



ADDITIONAL SPECIFICATIONS FOR  
FLAT TOP WATER TANKS  
BURIED IN THE GROUND

PROTECT YOUR INVESTMENT WITH CORRECT SITE PREPARATION.  
FOLLOW THE ADVICE AND INSTRUCTIONS ON THE ATTACHED SITING SHEET.

When tanks are placed below ground adequate sub drainage MUST be provided to stop tanks rising when empty due to rising water tables

Access MUST be provided through the TOP of the buried tanks

If multiple tanks are installed under ground, coupling together would be preferred at the TOP

All joints between tanks are to be FLEXIBLE

If compacting around in-ground tanks, FILL TANKS FIRST, before compacting starts

If installing tanks under a floor, the floor MUST be designed to carry the loading

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

Installation of buried tanks - in special conditions ie: under floor - must be supervised by a REGISTERED ENGINEER

Please Note: This siting sheet is used in conjunction with  
"SITING YOUR ELETANK" information sheet

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# RAIN HARVESTING

by Blue Mountain Co

## First Flush

### Delta In-Ground



## Installation and Specification Guide

### PRODUCT DETAILS

A high volume first flush diverter, designed specifically for inground applications. Divert the dirtiest water and transform your rain harvesting system from “wet” to “dry” with this large volume inground first flush diverter.

The unique manifold design uses standard 100mm or 4” pipe to create a high capacity storage and diversion chamber for your first flush. Using these smaller pipe sizes makes it easier to source pipe and assemble the system, when compared to using large diameter pipe on traditional high volume diverters.

[rainharvesting.com](http://rainharvesting.com)

Code	Size	Country
WDIG10	100mm 4"	Global

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# Installation

## WHAT'S IN THE BOX?

- Delta chamber end caps x 2
- Cage/Seat & Ball
- Chamber support spacer
- 100mm (4") socket reducer
- Transparent Rapid Release Exit Funnel
- Electronic Release Valve
- Primary Filter Screen

## TOOLS/MATERIALS YOU MAY REQUIRE

- Tape measure
- Marker pen
- Saw
- File
- Priming fluid
- Solvent weld glue
- Screws/Anchors
- Screw driver
- Drill
- 100mm (4") pipe

## INSTALLATION

1 - It is a requirement to install a rain head upstream of any down pipe feeding the Delta In-Ground First Flush. Large debris must not enter the First Flush chambers to prevent blockages and damage to the Electronic Release Valve

2 - Select an installation point for your Delta In-Ground First Flush. Your diverter must be installed on a slope (minimum 5% or 1 in 20) to ensure it drains after each rainfall event. Your first flush T-junction should be at the lowest point in your Rain Harvesting sub-surface pipework or at a location to allow for easy installation and draining of the Electronic Release Valve. The T-junction can also be installed to replace the 90° bend at the base of the vertical pipe feeding your rainwater tank. If the Rain Harvesting sub-surface pipework is not part of a "wet" system, the T-junction will need to be installed with the branch below the main line and a 90° bend to direct first flush of water to the Delta. The outlet must also be accessible for maintenance and inspection. This may be achieved by running pipe to a location aboveground or installing an access pit (e.g. stormwater pit) (refer to Figure 1 for suggested installation locations).

3 - Remove Delta First Flush components from packaging and lay out parts ready for assembly

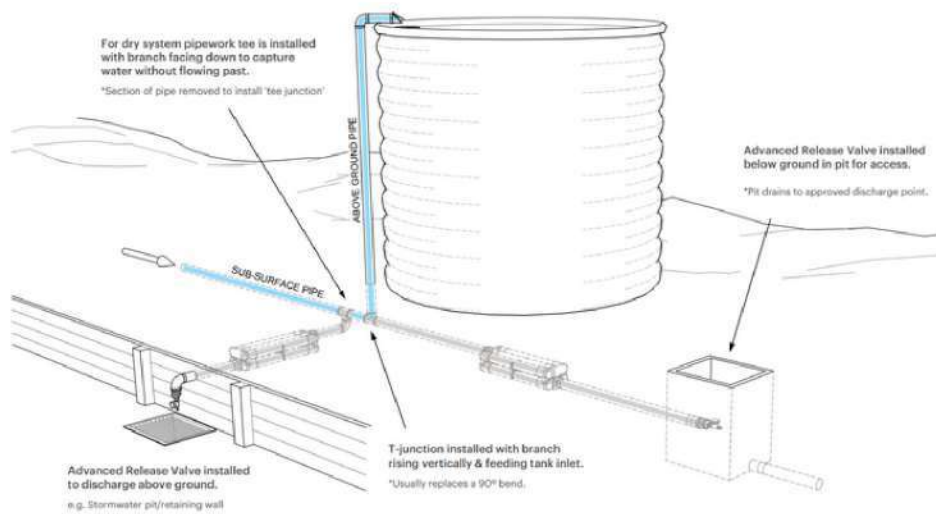
4 - Determine chamber length using the calculation chart provided, based on your Rain Harvesting roof collection area and considered pollution level (see Figure 8 - Delta Diversion Chamber Calculator).

5 - Using a tape measure, mark, cut and deburr 6 equal lengths of 100mm (4") pipe to be used as the Chamber Pipes

NOTE: It is critical that all the Chamber Pipes are exactly equal length. It is also recommended to apply a small chamfer to the outside ends of the six Chamber Pipes to improve ease of insertion into the Chamber Sockets.

Figure 1

## Suggested Installation Orientations



6 - Using priming fluid, clean all internal sockets of both Delta End Caps and each external ends of the six Chamber Pipes.

7 - Apply solvent weld glue to the Max Chamber adaptor and glue it onto the upper end of your diversion chamber. If you aren't using the Max Chamber adaptor you can disregard this step.

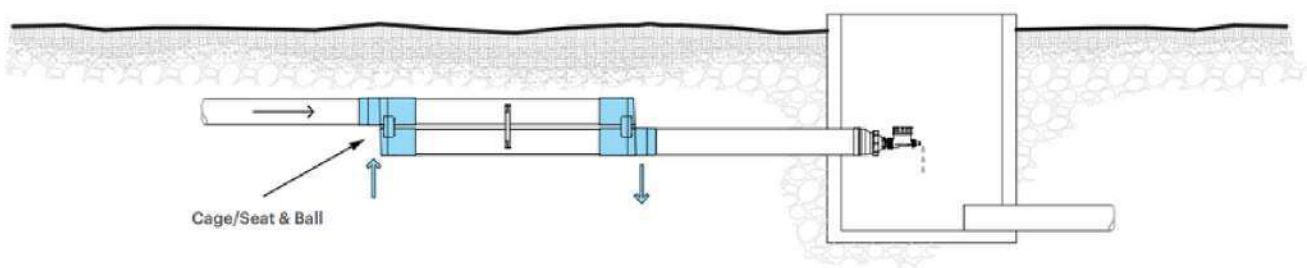
8 - Working with one Delta End Cap, apply solvent weld glue internally to a Chamber Socket and then externally to one of the Chamber Pipes. Bring the two together ensuring the pipe is inserted fully into the socket and hold until firm. Repeat this step for all remaining pipes until all six Chamber Pipes are glued into one Delta End Cap.

NOTE: All sockets of the Delta End Cap are stepped internally. The inner socket is for use with 100mm UPVC pipe and the outer socket for 4" Sch. 40 pipe. Only apply solvent weld glue to the socket relating to the pipe in use.

9 - Slide the Chamber Support Spacer over the open end of the Chamber Pipes and position approx. 200mm (8") from the unglued end.

Figure 2

## Delta In-Ground Inlet/Outlet Position

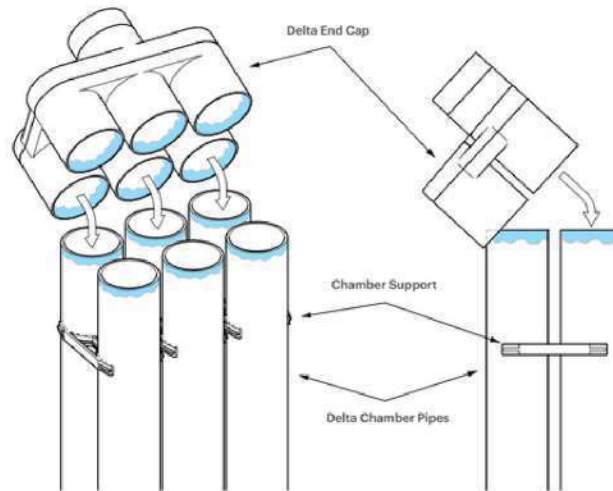


10 - Working quickly, apply solvent weld glue to each of the six internal Chamber Sockets of the remaining Delta End Cap and then externally to the six Chamber Pipes. Quickly bring the Delta End Cap together with the six pipes by first aligning three pipes and sockets on one side and then rolling onto the remaining three pipes. Using some force, push the Delta End Cap down onto the Chamber Pipes ensuring the pipes enter the socket fully and hold in position until secure (Figure 3 - Delta Diagram).

NOTE: refer to solvent weld glue manufacturers specifications and curing times.

Figure 3

### Delta Diagram

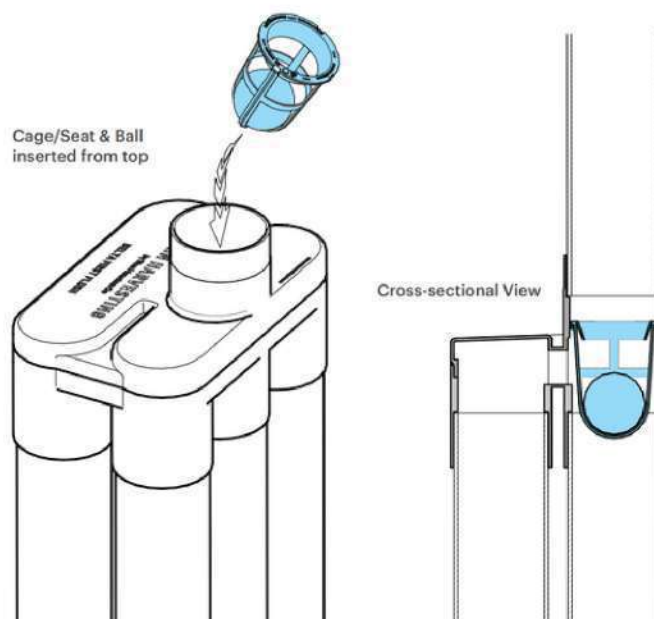


11 - Move the Chamber Support Spacer down the Chamber Pipes to approximately the half way position ensuring the pipes will be supported evenly.

12 - Insert Cage/Seat & Ball into the inlet (upstream) Delta End Cap, ensuring it is oriented correctly (Figure 4).

Figure 4

### Inserting the Cage/Seat and Ball

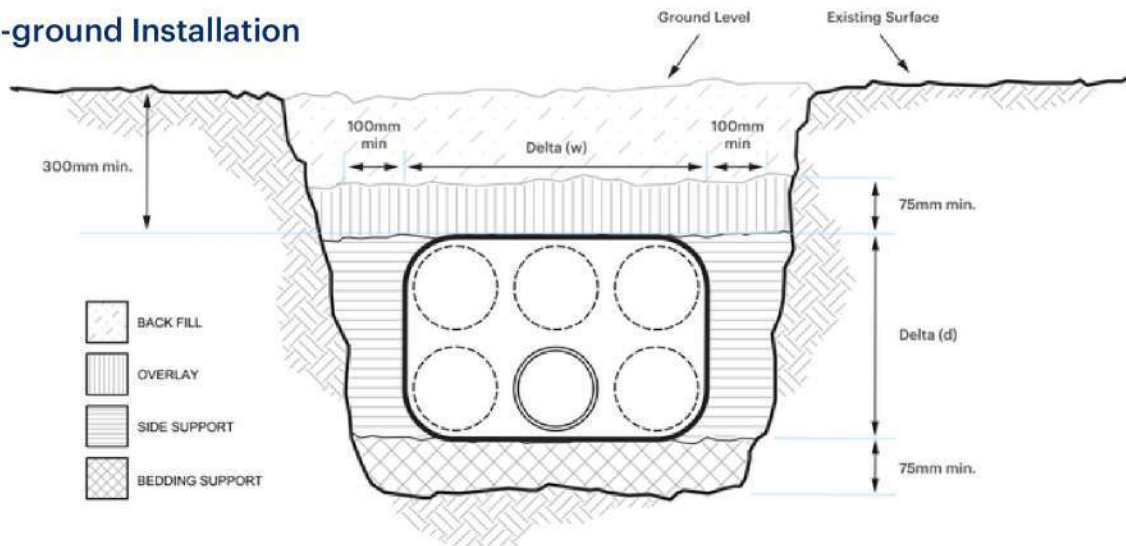


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13 - Excavate the installation location for the T-junction, assembled Delta Chamber and adjoining pipe work. Trenches should be wide enough to include a minimum of 75mm bedding and overlay support and a minimum of 100mm side support. In non-trafficable areas allow for a minimum of 300mm cover (measured from the top of the Delta/pipe to the ground surface). See Figure 5 for installation. For further information we recommend using AS3500.2:2018 as a guide.

Figure 5

### Delta In-ground Installation



14 - Using a T-junction as a template, measure the pipes at your chosen installation point and cut to create space for the T-junction. Using priming fluid and solvent weld glue, install the T-junction and fittings as required and extend pipe work ready to install your Delta.

15 - Place your Delta in position and using priming fluid and solvent weld glue connect your Delta to the extended pipe work ensuring you push the pipe hard up against the Cage/Seat & Ball. Backfill your Delta using bedding sand capable of passing through a 2mm sieve, as per State and Local Government guidelines and information provided in the previous step.

16 - The Transparent Rapid Release Exit Funnel needs to be installed in an accessible location (above ground where the ground slopes away or in a stormwater pit for access). Using a min. 170mm of 100mm pipe (3.5" of 4" pipe) and solvent weld glue, attach the 100mm90mm (4"-3") Socket Reducer (100mm/4" End Coupling) to the outlet (downstream) Delta End Cap. Screw the Transparent Rapid Release Exit Funnel onto the threaded end of the Socket Reducer.

17 - Install the Primary Filter Screen, Transparent Rapid Release Exit Funnel, and Electronic Release Valve by following the instructions in Figure 6.

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Figure 6

### Installing and setting up the Electronic Release Valve

6a. Insert the Primary Filter into the end of the First Flush chamber. It should fit snugly into the socket on the end of the pipe

6a. Insert the Primary Filter into the end of the First Flush chamber. It should fit snugly into the socket on the end of the pipe



6c. Attach the Electronic Release Valve by first installing the 25mm x 20mm (1" x 3/4") reducing adaptor and washer to the 25mm (1") thread of the screw cap.



6d. Remove the union from the valve and attach to the reducing adaptor with 20mm (3/4") washer in place.



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6e. Attach the valve at the union and orientate dial for easy access.



6f. Remove the waterproof cover from the Electronic Release Valve.



6g. Ensure the reset interval and drain time control knobs are in the "RESET" and "CLOSED" positions. Carefully slide out the battery box and install two new 1.5-volt AAA batteries.



6h. Test the unit by turning the drain time knob to the "OPEN" position. You should hear the sound of the motor within 5 seconds. Turn the drain time knob back to the "CLOSED" position ready for setting.

NOTE: If you do not hear the sound of the motor, check that the batteries are installed correctly.



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6i. Ensure that the reset interval and drain time knobs are in the "RESET" and "CLOSED" positions.

NOTE: The first time you program the Electronic Release Valve it will not begin to operate until after a time delay equal to the setting of the reset interval knob you select. The Electronic Release Valve starts to keep time when you set it. It is important that you set the timer at the hour you want it to operate. For example, if you want the Electronic Release Valve to operate at 07:00AM, you must physically set it at 07:00AM.

Set your reset interval and drain time according to the tables in Figure 6, then replace the battery box cover. A long reset interval will mean that the first flush diversion chamber empties less frequently, leading to higher rainwater yield. A short reset interval will mean that the first flush diversion chamber empties more frequently, resulting in a lower water yield.

Figure 6

### Electronic Release Valve Reset and Drain Time Settings

Suggested Reset Setting	Pollution Level
1 day	Very high
2 days	Very high
3 days	High
4 days	Medium
5 days	Medium
1 week	Low
2 weeks	Very Low
4 weeks	Very Low

Recommended drain time setting	Approx. First Flush chamber size	
5 minutes	20 litres	5.3 gallons
10	40	10
20	80	20
30	120	30
45	180	50
60	240	60
75	300	80
100	400	100
125	500	130
150	600	160

Figure 7

### Delta Diversion Chamber Calculator

AUSTRALIA	
Chamber Volume in Litres	Total Length in Millimetres
30	185
40	374
50	564
60	753
70	942
80	1132
100	1511
110	1700
120	1889
130	2079
140	2268
150	2458
180	3026
200	3405

USA	
Chamber Volume in Gallons	Total Length in Inches
8	4
10	10
12	16
14	22
18	34
20	40
24	52
28	64
32	76
40	100
50	130
56	148
72	196
80	220

**NOTE:**

2 x Delta End Caps hold approximately 20.24 litres.  
(Excluding the pipe sockets of chamber.)

---

The above figure is total volume of delta end cap excluding the liquid contained within the 6x pipe chambers.

**NOTE:**

2 x Delta End Caps hold approximately 6.52 gallons.  
(Excluding the pipe sockets of chamber.)

---

The above figure is total volume of delta end cap excluding the liquid contained within the 6x pipe chambers.

POLLUTION FACTOR FOR THE ROOF	
MINIMAL POLLUTION	SUBSTANTIAL POLLUTION
<p>DIVERT 0.5L PER M</p> <p>Open field, no trees, no bird droppings, clean environment</p>	<p>DIVERT 0.5L PER M</p> <p>Leaves and debris, bird droppings, various animal matter, e.g. dead insects, skinks, etc.</p>

POLLUTION FACTOR FOR THE ROOF	
MINIMAL POLLUTION	SUBSTANTIAL POLLUTION
<p>DIVERT 0.0125 GALLONS PER FT</p> <p>Open field, no trees, no bird droppings, clean environment</p>	<p>DIVERT 0.05 GALLONS PER FT</p> <p>Leaves and debris, bird droppings, various animal matter, e.g. dead insects, skinks, etc.</p>

The above quantum are the results of preliminary testing. Individual site analysis and field testing is required to more accurately assess the quantum to be diverted in each individual case.

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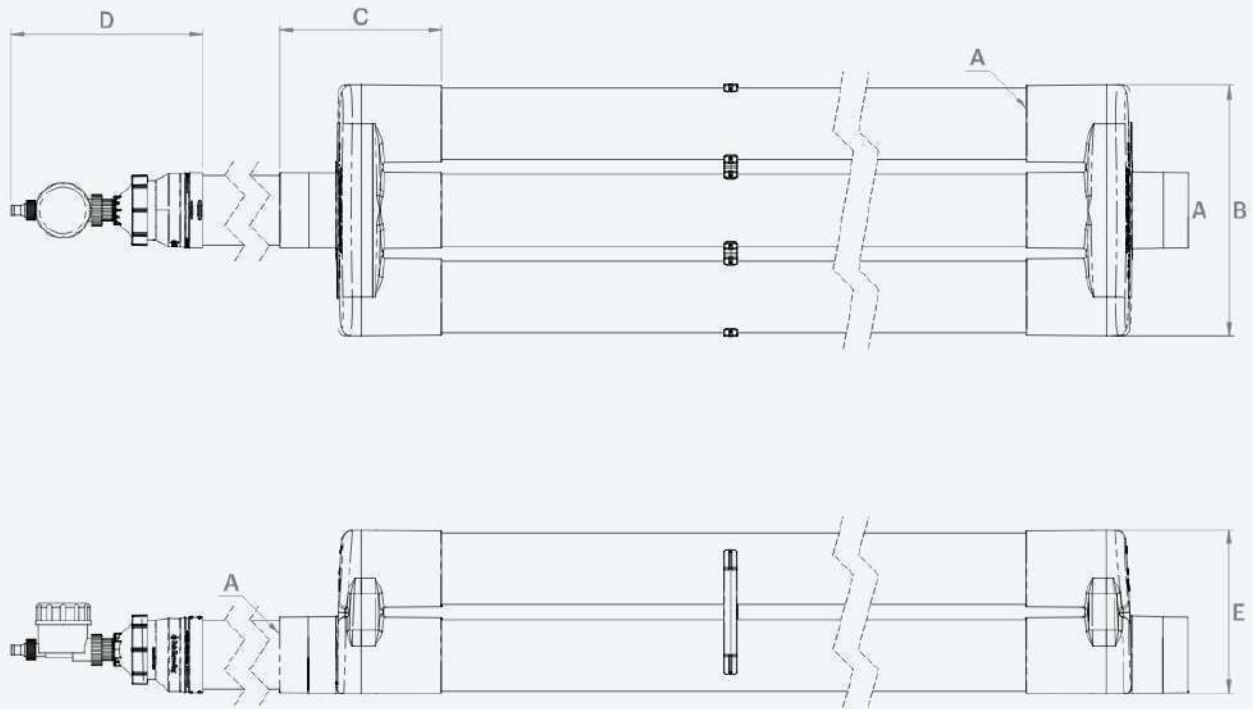
DIVERSION FACTOR FOR A FIRST FLUSH WATER DIVERTER	
MINIMAL POLLUTION	SUBSTANTIAL POLLUTION
<p><math>M^2</math> ROOF AREA X POLLUTION FACTOR = LITERS TO BE DIVERTED</p>	
<p>Example for a minimal polluted roof of 100m<sup>2</sup> 100 x 0.5 = 50 Litres to be diverted</p>	<p>Example for a heavily polluted roof of 100m<sup>2</sup> 100 x 2 = 200 Litres to be diverted</p>

DIVERSION FACTOR FOR A FIRST FLUSH WATER DIVERTER	
MINIMAL POLLUTION	SUBSTANTIAL POLLUTION
<p><math>FT^2</math> ROOF AREA X POLLUTION FACTOR = GALLONS TO BE DIVERTED</p>	
<p>Example for a minimal polluted roof of 1000ft<sup>2</sup> 1000ft<sup>2</sup> x 0.0125 = 12.5 gallons to be diverted</p>	<p>Example for a minimal polluted roof of 1000ft<sup>2</sup> 1000ft<sup>2</sup> x 0.5 = 50 gallons to be diverted</p>

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# Product Specifications

## First Flush Delta In-Ground



COUNTRY	CODE	A	B	C	D	E
Global	WDIG10	100 F	400	258	304	261
		4" SCH40 F	15.7"	10.2"	12"	10.3"

All dimensions are in mm unless otherwise stated.

### Fitting guide:

F = Female / Socket Fitting

M = Male / Spigot Fitting (Pipe size)

IP = In-Pipe Fitting

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# Maintenance

It's important to ensure that your first flush diverter outlet remains clear of any debris. If your outlet becomes blocked, the chamber will not empty and the first flush of water will not be diverted when it rains.

To ensure the flow of water out through your Electronic Release Valve, periodically remove from the Transparent Rapid Release Exit Funnel to check for any build-up of matter. Remove primary filter plus ball, and clean if required.

Periodically check that the Electronic Release Valve batteries have charge. This is indicated by the flashing light.

To protect your Electronic Release Valve from freezing or "winterising", remove the timer prior to the first frost or freeze and store it indoors until spring. Remember to remove the batteries from the battery compartment.

For best results and minimal maintenance, rain heads with 0.955mm aperture mesh such as Leaf Eater Rain Heads must be installed upstream of the Delta First Flush to limit the entry of debris that can reach your diverter.



A common misconception about collecting rainwater is that all you need is a roof, a tank and some rain. This 'tanking' approach cannot always be relied on to deliver the volume – or quality – of water that you require. That is where we can help.

With some thought, your rain harvesting system can provide you with cleaner water and lots of it. Whether you're completely reliant on tank water or wanting to keep the garden green, our simple steps will help you achieve your goal.

The Rain Harvesting approach to rainwater collection involves using tested and proven products to make quality rainwater available for use in and around your property. You don't need much to get started and you will be surprised how easy it is to get the most out of your rainwater system.

[How can we help you?](#)

**DISCLAIMER** This product specification is not a complete guide to product usage. Further information is available from Rain Harvesting Pty Ltd and from the Installation and Operating Instructions. This specification sheet must be read in conjunction with the Installation and Operating Instructions and all applicable statutory requirement. Product specifications may change without notice. © Rain Harvesting Pty Ltd

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For more information or to find out  
how we can help, just give us a call on  
Kaohi Coast District Council

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**+61 7 3248 9600**

Or visit our website at

**[rainharvesting.com](http://rainharvesting.com)**

# 7555E Escea Gas Fires

<b>Escea Ltd</b> +64 03 4788220 info@escea.com www.escea.com/nz/
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## SUPPORTING DOCUMENTS

### DS Installation Manual

Ref 82701. Uploaded 8 Jan 2024

Purpose: Installation

### DS1400 Builders & Architects Sheet

Ref 49066. Uploaded 8 Jan 2024

Purpose: Installation

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**Warning: Refer to the warning on page 1 and the wall lining instructions in sections B5 on page 9 and F6 on page 37. Failure to follow these instructions may result in a fire.**

## Installation / Service Instructions

DS 1150, DS1400, DS1650  
Gas Fireplace



### 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

### WARNING:

This appliance must be installed by a qualified person. Replacement of the appliance mains supply cord should only be made by the manufacturer, its service agent, or a similarly qualified person. **This appliance must be installed into a cavity strictly in accordance with the following instructions.**

DO NOT SPRAY AEROSOLS IN THE VICINITY OF THIS APPLIANCE WHILE IT IS IN OPERATION.

DO NOT USE OR STORE FLAMMABLE MATERIALS IN OR NEAR THIS APPLIANCE.

DO NOT PLACE ARTICLES ON OR AGAINST THIS APPLIANCE.

DO NOT MODIFY THIS APPLIANCE.

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.

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

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### Who can install this product:

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

AUS: Certificate of Compliance

NZ: Certificates that comply with the latest legislation 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:

Please contact Escea if you require warranty work. Warranty repair work must be carried out by a recognised gas fire technician. It is recommended that recognised Escea Gas Fire Technicians are also used to carry out annual servicing requirements (particularly during the warranty period). For contact details of recognised Escea Gas Fire Technicians in your area, or for replacement parts, please contact the retailer from whom the appliance was purchased or visit our website.

The heater 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). 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.

Manufactured by: Escea Ltd, PO Box 5277 Dunedin NZ, Ph: +64 3 478 8220. For contact details of your local Escea distributor or dealer in New Zealand, please visit: [www.escea.com](http://www.escea.com) or email: [info@escea.com](mailto:info@escea.com). From Australia, please visit [www.escea.com.au](http://www.escea.com.au), call AU: 1800 460 832 or WA: 1800 730 140, or email us at [info@escea.com](mailto:info@escea.com)

## DS1150 PRODUCT SPECIFICATION

MODEL NAME		DS1150		
Description of Appliance		Indoor Gas Fire Heater		
Star Rating		4.4 Stars		
Max. Heat Output		8.2kW		
A/NZ Approval No.		AS/NZS 5263.1.3		
Gas Type		Natural	Propane	ULPG
Gas input	High	34 MJ/hr	34 MJ/hr	34 MJ/hr
	Low	25 MJ/hr	25 MJ/hr	25 MJ/hr
Inlet Pressure	Max	5 kPa	5 kPa	5 kPa
	Min	1.13 kPa	2.75 kPa	2.75 kPa
Operating Pressure on High		0.68 kPa	1.8 kPa	1.8 kPa
Operating Pressure on Low		0.3 kPa	0.9 kPa	0.9 kPa
Burner Jet Size		LH & RH: 1.5mm Middle: 1.95mm	LH & RH: 0.85mm Middle: 1.3mm	LH & RH: 0.85mm Middle: 1.3mm
Burner Aeration		LH & RH: Closed Middle: 1 x 3.5mm	LH & RH: 2 x 4mm Middle: 2 x 12mm	LH & RH: 2 x 7mm Middle: Spacer (no restriction)
Pilot injector		#37	#27	#27
Appliance Dimensions (mm)	Width	1401mm		
	Height	788 mm		
	Depth	330mm		
	Weight	130 kg		
Ignition System		Electronic Ignition to pilot system		
		Escea PCB		
Ignition Activation		20 secs (approx)		
Flame Safeguard		Flame Rectification		
Consumption		160W @ 0.69A 230V		
Remote controls		Yes		
Timers		Yes		
Clock		Yes		
Function lock / child		Yes		
Temperature control		Yes		
Connections	Electric	230V AC		
	Gas	1/2" BSPP female lower centre of fireplace chassis		
	Flue Type	Aluminium Flexi Flue		
	Flue Size	75mm and 100mm Flexi Flue & PolyPro		
	Spigot Location	Right hand top		
Data badge location		On Chassis Base		

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## DS1400 PRODUCT SPECIFICATION

MODEL NAME		DS1400		
Description of Appliance		Indoor Gas Fire Heater		
Star Rating		5.1 Stars		
Max. Heat Output		9.7kW		
A/NZ Approval No.		AS/NZS 5263.1.3		
Gas Type		Natural	Propane	ULPG
Gas input	High	40 MJ/hr	40 MJ/hr	37 MJ/hr
	Low	30 MJ/hr	28 MJ/hr	28 MJ/hr
Inlet Pressure	Max	5 kPa	5 kPa	5 kPa
	Min	1.13 kPa	2.75 kPa	2.75 kPa
Operating Pressure on High		0.82 kPa	1.98 kPa	1.68 kPa
Operating Pressure on Low		0.4 kPa	0.93 kPa	1.04 kPa
Burner Jet Size		LH & RH: 1.70mm Middle: 1.95mm	LH & RH: 1.02mm Middle: 1.3mm	LH & RH: 1.02mm Middle: 1.25mm
Burner Aeration		LH & RH: 1 x 3.5mm Middle: 1 x 6mm	LH & RH: 2 x 7mm (identification grooves present) Middle: 2 x 13mm	LH & RH: 2 x 8mm Middle: Spacer (no restriction)
Pilot injector		#37	#27	#27
Appliance Dimensions (mm)		Width 1693 mm	Height 788 mm	Depth 350 mm
Weight		150 kg		
Ignition System		Electronic Ignition to pilot system Escea PCB		
Ignition Activation		20 secs (approx)		
Flame Safeguard		Flame Rectification		
Consumption		160W @ 0.69A 230V		
Remote controls		Yes		
Timers		Yes		
Clock		Yes		
Function lock / child		Yes		
Temperature control		Yes		
Connections	Electric	230V AC		
	Gas	1/2" BSPP female lower centre of fireplace chassis		
	Flue Type	Aluminium Flexi Flue		
	Flue Size	75mm and 100mm Flexi Flue		
	Spigot Location	Right hand top		
Data badge location		On Chassis Base		

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## DS1650 PRODUCT SPECIFICATION

MODEL NAME		DS1650		
Description of Appliance		Indoor Gas Fire Heater		
Star Rating		5.0 Stars		
Max. Heat Output		10.2kW		
A/NZ Approval No.		AS/NZS 5263.1.3		
Gas Type		Natural	Propane	ULPG
Gas input	High	44 MJ/hr	44 MJ/hr	44 MJ/hr
	Low	32 MJ/hr	32 MJ/hr	32 MJ/hr
Inlet Pressure	Max	5 kPa	5 kPa	5 kPa
	Min	1.13 kPa	2.75 kPa	2.75 kPa
Operating Pressure on High		0.67 kPa	1.67 kPa	1.67 kPa
Operating Pressure on Low		0.34 kPa	0.82 kPa	0.82 kPa
Burner Jet Size		LH & RH: 1.95mm Middle: 1.95mm	LH & RH: 1.1mm Middle: 1.2mm	LH & RH: 1.1mm Middle: 1.2mm
Burner Aeration		All collars (Coals/ Crystalight): Closed All collars (Logs and Woodland): 1 x 3.5mm	LH & RH: 2 x 4mm Middle: 2 x 12mm	LH & RH: 2 x 7mm Middle: Spacer (no restriction)
Pilot injector		#37	#27	#27
Appliance Dimensions (mm)		Width	987mm	
		Height	788 mm	
		Depth	350 mm	
Weight		Kg	130 kg	
Ignition System		Electronic Ignition to pilot system Escea PCB		
Ignition Activation		20 secs (approx)		
Flame Safeguard		Flame Rectification		
Consumption		160W @ 0.69A 230V		
Remote controls		Yes		
Timers		Yes		
Clock		Yes		
Function lock / child		Yes		
Temperature control		Yes		
Connections		Electric	230V AC	
		Gas	1/2" BSPP female lower centre of fireplace chassis	
		Flue Type	Aluminium Flexi Flue	
		Flue Size	75mm and 100mm Flexi Flue	
		Spigot Location	Right hand top	
Data badge location		On Chassis Base		

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# A Product Description and Installation Process

## A1 Product Description

The Escea DS-Series gas fire is an indoor room sealed gas appliance designed to be built into a false cavity. The appliance is flued using co-linear flexible aluminium flue. The user will control their fire with the Radio Frequency (RF) remote that will normally be located in its wall mount cradle. In addition to the RF remote the appliance 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.

## A2 Recommended Install Process

The following diagram illustrates the steps required to install your gas fire. The sequence in which you choose to do these tasks will vary depending on your individual scenario. Please read these instructions fully before proceeding with the installation.

**Important: Installations that are not specifically outlined in this manual should be referred to the Escea Architectural Advisory Team.**

Please email [aa@escea.com](mailto:aa@escea.com)

Non-standard installations or scenarios not covered in this manual (including but not limited to sealed cavities, under bench installations, a recessed fire, or with overhangs protruding above the fire), can expose materials to higher than anticipated levels of heat.

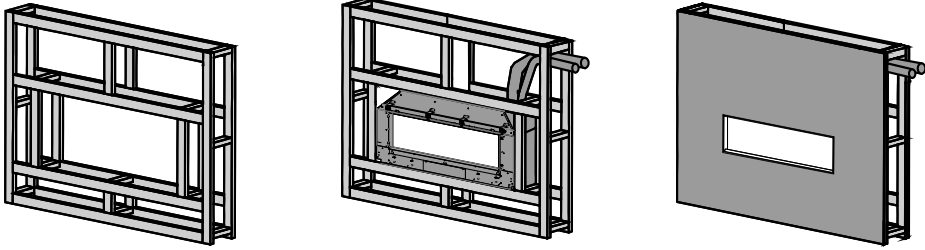
While non-standard scenarios may meet the surface temperature combustibility requirements of AS/NZS5601 Gas Installations, some materials may be exposed to higher or undesirable levels of heat, or levels of heat greater than their tolerances allow. Specifiers and installers must choose materials when in these scenarios that meet the combustibility requirements AND the maximum service temperatures allowed by the chosen product. Escea takes no responsibility for material choice and reference should always be made to the relevant material manufacturer's maximum service temperatures for the suitability of use.

Please refer to the D-Series Gas Fire Materials Guide.

For more information on materials selection and for further guidance please contact our Architectural Advisory Team - [aa@escea.com](mailto:aa@escea.com)

To ensure that your installation is fully complete, please use the "Installation Checklist" on page 46.

### False Cavity Installation



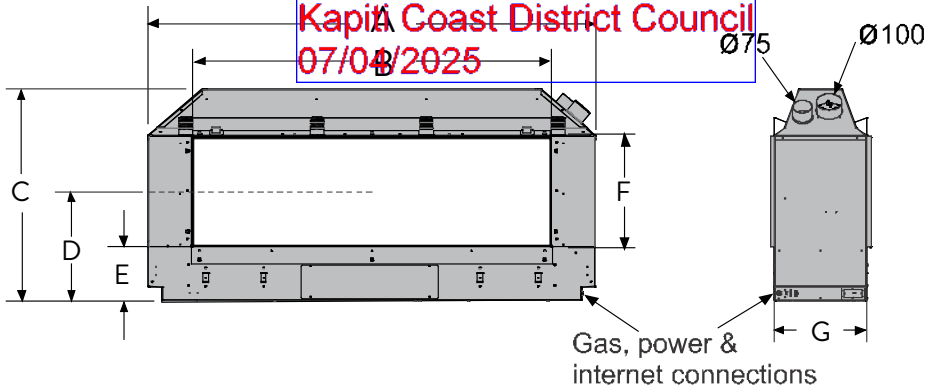
<b>Create the Cavity</b>	<b>Install electrical / gas connections, flue system, and fireplace</b>	<b>Finish installation and fit fascia</b>
Section B	Section C, D	Section F

### A3 Product Dimensions

NOT TO BE MISTAKEN FOR CAVITY DIMENSIONS

All dimensions are in mm.

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For more detail, view architectural drawings at [www.escea.com](http://www.escea.com) or [www.escea.com.au](http://www.escea.com.au)

Model	A	B	C	D	E	F	G
DS1150	1401	1067	788	408	203	411	350
DS1400	1693	1359	788	408	203	411	350
DS1650	1987	1653	788	408	203	411	350

A  
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# B Creating the Cavity

## B1 Cavity Shape

The DS Range is suitable for timber framed cavities.

Most existing masonry cavities will not be suitable.

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## B2 Designing the Cavity

The following aspects must be considered when designing this installation:

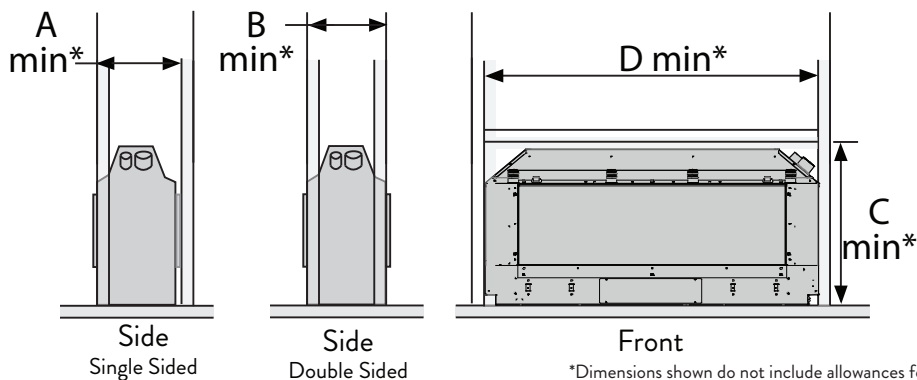
- Appliance physical size
- Single sided or double sided
- Wall finishing and interaction with appliance
- Positioning of appliance in regards to wall lining (depth into wall)
- Use of a fascia - one side or two sides?
- Exhaust termination aspect – horizontal / vertical and flue configuration
- Flue exhaust fan noise - Is there a direct noise path along the flue, especially for short flue runs?
- Exhaust cowl access for maintenance
- Gas pipe layout
- Gas isolation valve / pressure test point position
- Electrical isolation switch
- Home automation network connections - ethernet cable layout

**These DS Series fires are 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.

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

## Recommended Framing Dimensions



\*Dimensions shown do not include allowances for clearance to combustibles to the flue

Model	A	B	C	D
DS1150	364	350	850	1508
DS1400	364	350	850	1800
DS1650	364	350	850	2094

### B3 Hearth

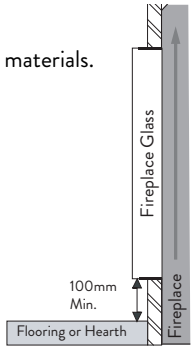
A hearth is not required. If a hearth is installed below the fire, it must be at least 100mm below the bottom of the glass or be composed entirely of non-combustible materials.

### B4 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 **150kg**.

The fireplace can be recessed into the ground but must maintain clearances detailed in the diagram (shown right) for any combustible flooring materials.

*NOTE: A recessed floor is required to install the fire with the opening less than 200mm above the floor.*



### B5 Wall Lining

Only after all applicable sections up to section F5 on page 39 have been completed is it permissible to commence with the final wall linings detailed in section F6 on page 40. Wall lining cutout dimensions around the glass must be as follows:

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Non-combustible materials may be required in some scenarios. See section F5 for further information.

Please refer to section F6 on page 40 for wall finishing dimensions surrounding glass.

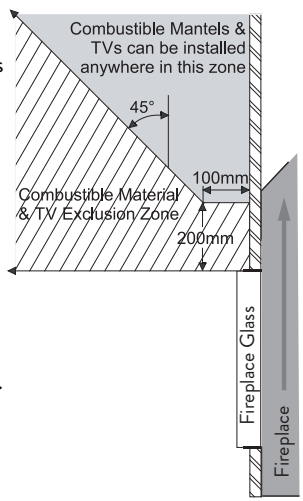
### B6 Television & Mantel Clearances

#### Television

The diagram (shown right) shows the recommended minimum clearances for the location of any electrical equipment (such as Plasma TV, LCD TV or home theatre) above a DS Series gas fire. A mantel/recess is not required to comply with our recommendation of TV installation.

*NOTE: Dimensions are from the top edge of the glass frame.*

*NOTE: The 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 recommended installation suggestion will be suitable for all electrical or home entertainment appliances.*



#### Mantel

Please refer to the diagram (shown right). Mantels or protruding ledges above the heater must not be installed lower than the dimension shown.

*NOTE: Dimension are from the top edge of the glass frame.*

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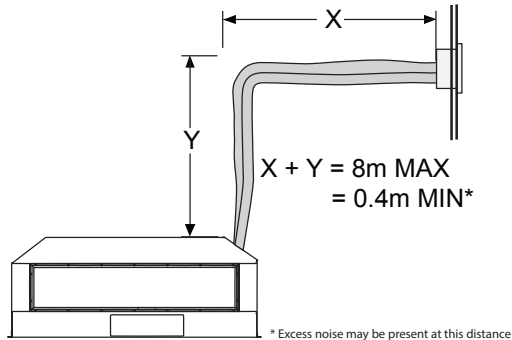
# C Installing the Flue

## C1 Flue Configuration (If less than 8m flue length is required)

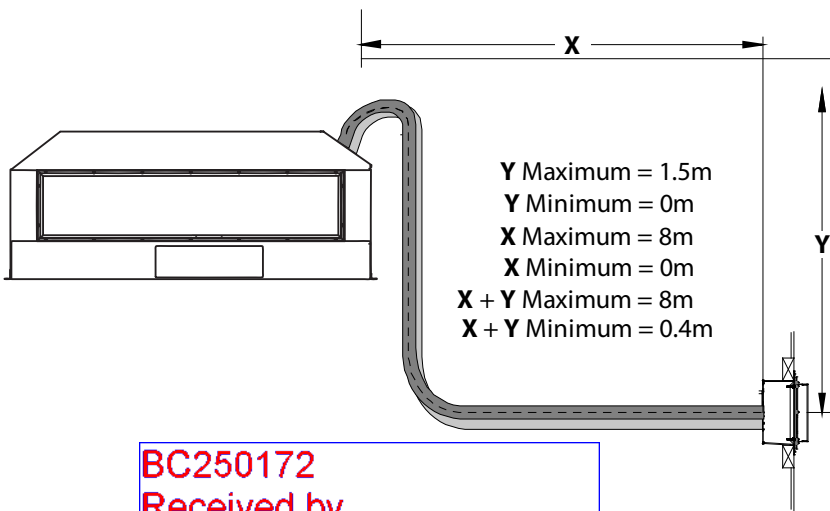
If your flue system is less than 8m long (as shown in diagrams below), then a simple aluminium flexible flue is required. If you wish to install a longer flue run of up to 40 metres, please contact the Escea Advisory Team at AA@escea.com.

**Horizontally Terminated:** Utilises the Escea horizontal power flue enclosure kit.

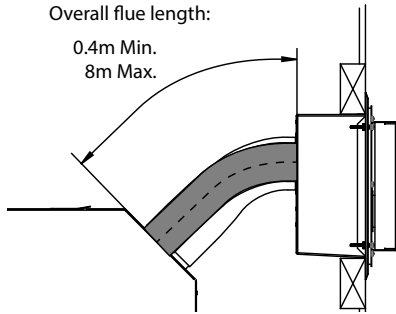
The horizontal offset of the terminal can be any amount up to the total flue length listed below. Please consult with Escea's technical staff if your intended flue configuration falls outside of the bounds of the flue configurations shown below.



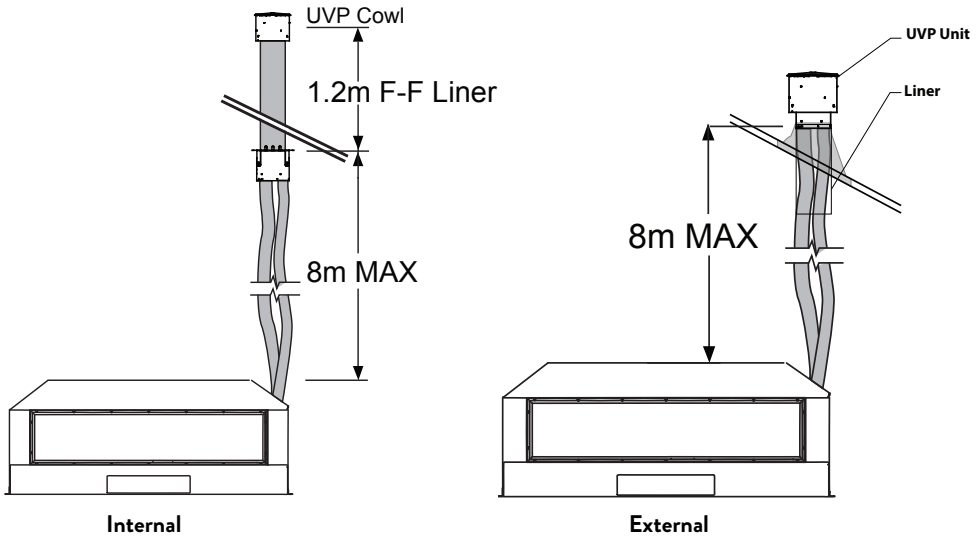
**NOTE:** When flueing above the fire, the pipe must slope towards fire - NOT towards the terminal. Also when flueing below the fire, the pipe must slope towards the terminal - NOT towards the fire.



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**Vertically Terminated:** Utilises the Escea universal vertical power flue enclosure kit.



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## C2 Flue Configuration (If more than 8m flue length is required)

If your flue system is greater than 8m long (up to 40m long), then please contact the Escea Advisory Team at [aa@escea.com](mailto:aa@escea.com) for further guidelines.

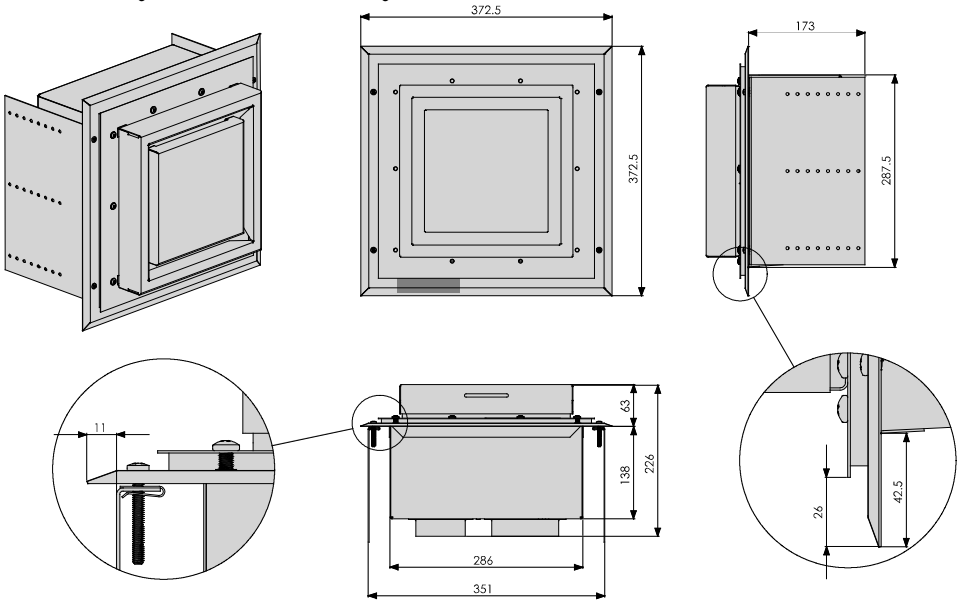
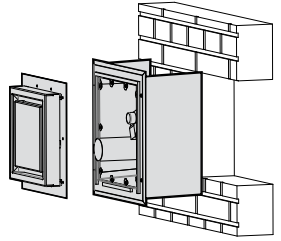
## C3 Installing the Horizontal Powerflue Wall Terminal option

The horizontal powerflue wall terminal must be installed in the correct orientation (the small horizontal slot should be at the bottom). 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 of the terminal.

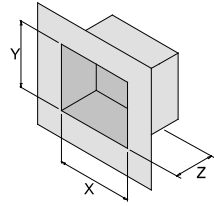
*Note: It is the responsibility of the installer to ensure the horizontal powerflue wall terminal is installed to all relevant building codes to ensure weather tightness.*



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### Creating the Hole in the Outside Wall

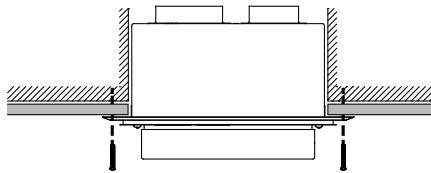
When cutting the hole in the outside wall, be mindful of how the installation of the horizontal powerflue wall terminal will be finished; the installation must be weatherproof.



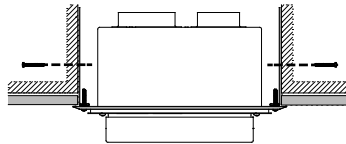
Ideal Hole/Cavity Size for Horizontal Powerflue		
	Without Side Brackets	With Side Brackets
X	298mm	360mm
Y	298mm	298mm
Z	175mm Excluding allowance for flue which exits here	

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:

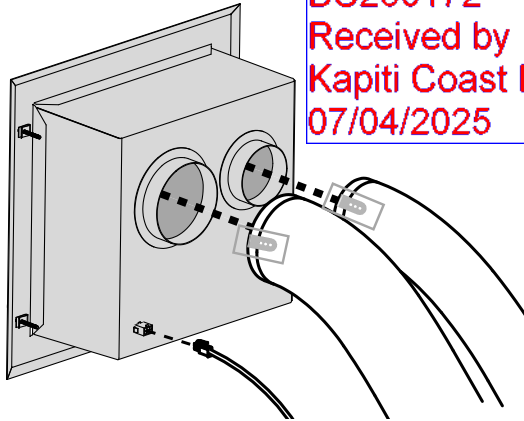


Attach the Ø100mm and Ø75mm flexible aluminium flues to the spigots on the rear of the horizontal powerflue wall terminal using the hose band clamps and the aid clips supplied. Make sure the flexi tube has been stretched out as far as possible where the hose band clamps are going to be attached (not still compressed). Plug the powerflue electrical cable into the back of the horizontal powerflue wall terminal.

Ensure that the electrical cable is firmly secured to the wall terminal or building to prevent damage or disconnection if pulled.

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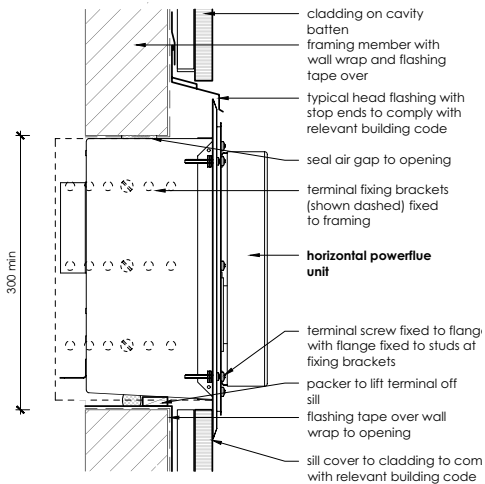
Fit the horizontal powerflue wall terminal into the hole and fix it in place, making sure the installation is sealed appropriately to prevent the ingress of water from outside the wall cladding.

*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. This may necessitate the use of appropriate flashing material where appropriate.*

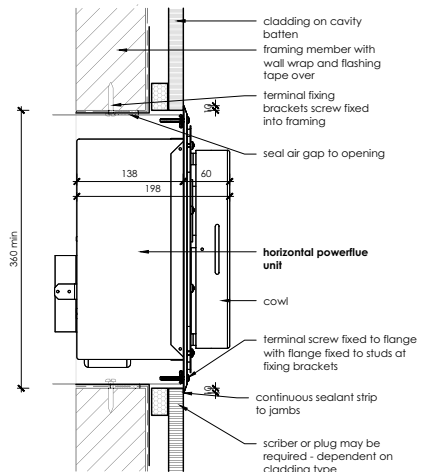
**IMPORTANT:** Ensure that flashings do not restrict the air intake slot around the periphery of the cowl.

### 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.



Head and Sill scale 1:5



Jamb scale 1:5

### C4 Installing the Universal Vertical Powerflue (Internal Install)

Note: For information regarding an external install of the UVP, go to section C5 on page 19.

The Universal Vertical Powerflue (UVP) internal configuration is designed to have the fan, mounted within the roof space of the house, and the vertical Ø225mm diameter liner, containing a Ø100mm flexi, penetrate through the roof. The UVP internal conversion kit comes with a 1200mm liner that is specific to the internal installation and must always be used.

Note: The flue setup must comply with either section C1 on page 12 or C2 on page 14.

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

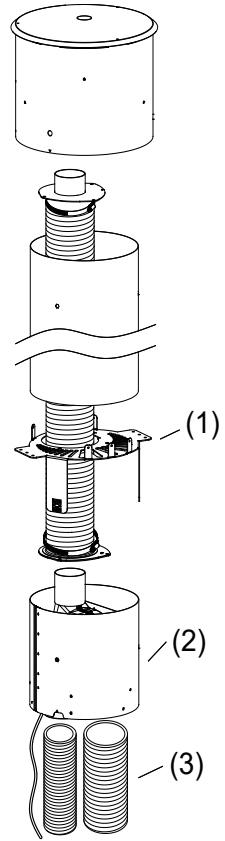
Mount the fan mount bracket (1) to the roof framing and strapping using timber ensuring that the flue is rigid and vertical. Ensure that the mounting timber does not obstruct access to the 3xM5 screw threads on the side of the fan unit.

Aim to have the fan enclosure (2) mounted as high as possible, mainly to allow sufficient fall for condensation drainage if the flexi-flue is to run horizontally.

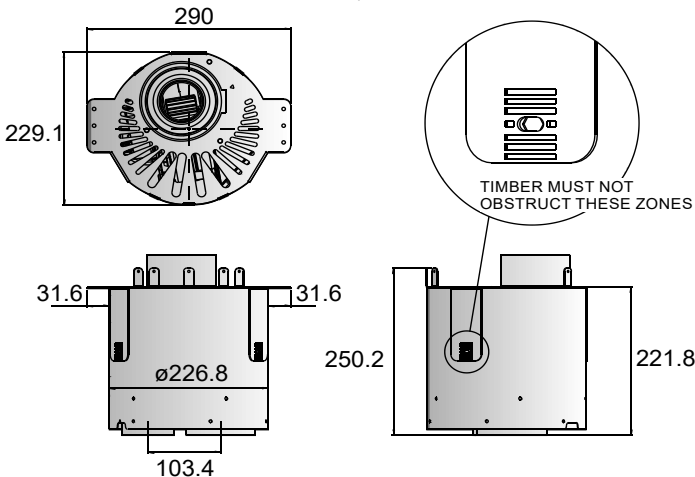
Ensure there is sufficient space below fan enclosure (2) to have access to fit the flexi-flue tubes (3) and allow flowing bends if required.

**Note: The UVP-Internal and the flexi flue connections must be installed in a location accessible for service or replacement; a service hatch or removable flashing to allow access may be required.**

Note: When installing the unit onto a flue liner, ensure the length of flue liner above the roof is the minimum required length. **ENSURE** the Ø43mm restriction plate is installed on the inlet.



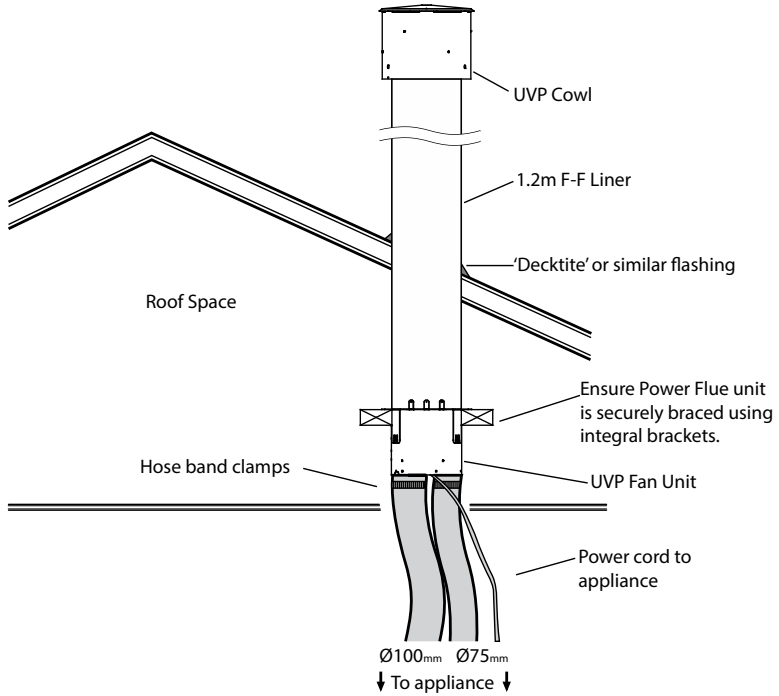
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The UVP-Internal kit is intended for use within an accessible roof space or 'chimney' construction.  
**Service access must be provided.**

Ensure installation complies with relevant building codes and regulations



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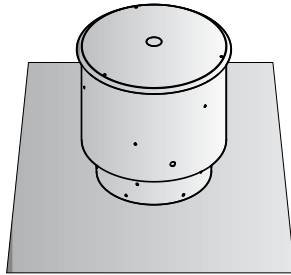
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 SERVICE

## C5 Installing an Universal Vertical Powerflue (External Install)

Note: For information regarding an internal install of the UVP, go to section C4 on page 17.

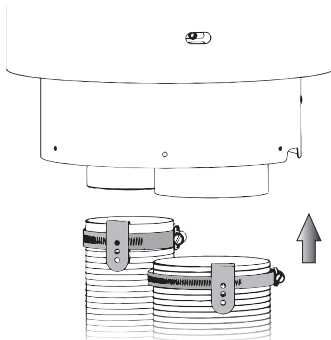
The UVP is designed to have the enclosure containing the fan unit mounted externally.

The cowl surround should be fixed in place as shown.



Mount the UVP kit to the top of a chimney flashing plate or penetrate the roof with an optional flue liner accessory and fit the UVP kit over the flue liner, sealing the penetration with a decktite or similar flashing. Ensure the terminal is vertical and rigidly mounted, the flexi flue attached below is fixed to the terminal spigots using the supplied hose clamps and aid clips. Place the clamp over the flexi flue and the clip over this. Make sure the flexi tube has been stretched out as far as possible where the hose band clamps are going to be attached (not still compressed). Slide the flexi tube over the spigot and hold it in place by drilling one hole through the spigot using the clip guide hole and riveting the three components together.

Note: When installing the unit onto a flue liner, ensure the length of flue liner above the roof is the minimum required length. ENSURE the  $\text{\O}43\text{mm}$  restriction plate is installed on the inlet.

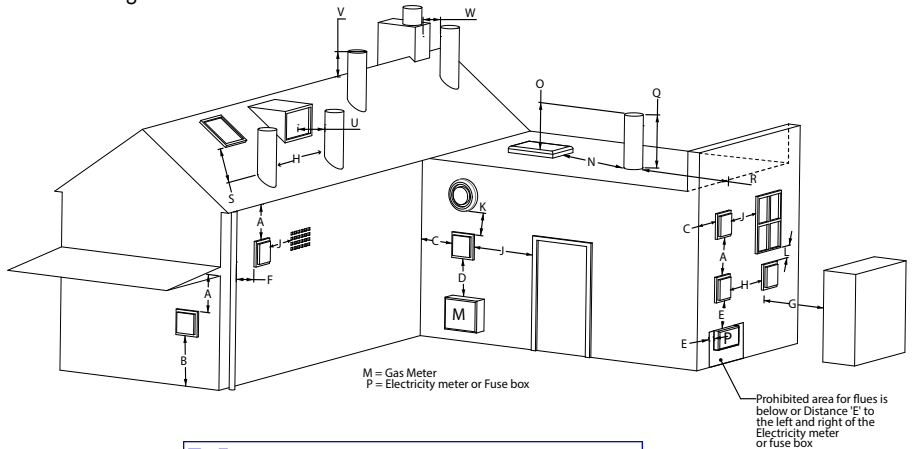


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### C6 Installing in Accordance with Relevant Codes

The location of the horizontal powerflue wall terminal must be installed in accordance with AS/NZS 5601 and any other relevant building codes. If possible, avoid installing the horizontal powerflue wall terminal in areas exposed to high winds and extreme weather.

Some of the minimum clearances for a fan assisted wall terminal are listed below; please refer to AS/NZS 5601 Gas installation standard for full guidance on the design of the flue system. Where possible allow a greater clearance.



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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	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 moving 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 moving 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

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Notes:

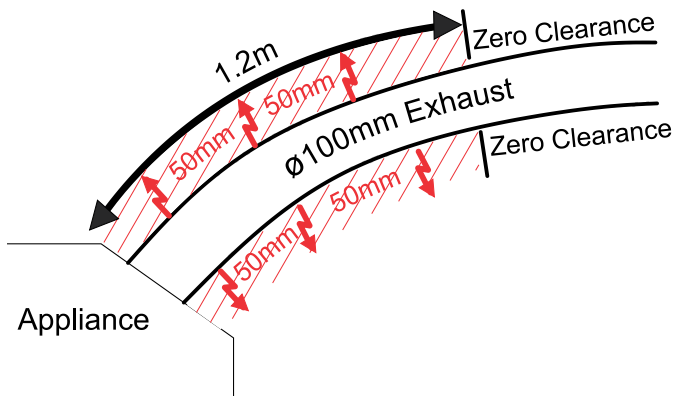
- 1) Should the flue not extend past the apex of the roof, the bottom opening of the flue should extend at least 200mm from the roof (or 300mm in regions with heavy snow).
- 2) The installation of a flue into a carport is not recommended.
- 3) The flue terminal will get very hot when in use. Precautions should be taken to protect people and animals from injury.

**C7 Running the Flue**

**A 50mm clearance to combustibles must be maintained from the exhaust flue for the first 1.2m of flexi flue from the appliance (see diagram below).**

Run the Ø100mm and Ø75mm flexible aluminium hoses from the cavity to the rear of where the horizontal or vertical powerflue terminal will be installed. Allow enough stretch in the flexible aluminium flue to allow it to protrude through the wall/ceiling/roof/flue liner to enable it to be connected to the powerflue terminal. The flue should be expanded at each end in order for the flue to be attached to the fire/powerflue. It is advisable to secure the flexi flue at regular intervals to prevent vibration, movement and sagging. Steel wire or 'builders strapping' may be used for this purpose.

Note: The flexible flue is shipped in a 'compressed' form. Extend it to your desired length by stretching.



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## C8 Running the Powerflue Electrical Cable

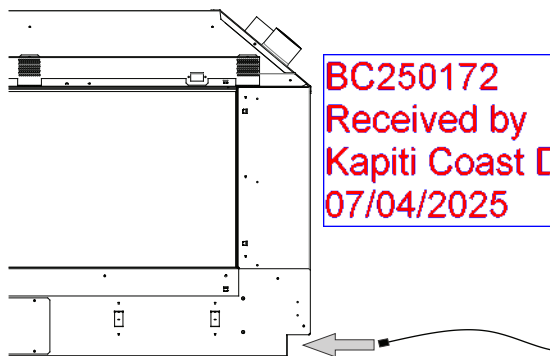
*Note: The powerflue terminal is powered from the appliance and must be connected to the appliance with the supplied electrical cable only.*

*Note: Ensure that the appliance power supply is disconnected before making the connection to the terminal*

The supplied electrical cable is 7m long; 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 it is not draped over, or in contact with, the outer shell of the appliance or the flues.

The cable must be kept clear from any other possible heat sources, sharp edges, or moisture. Fix it appropriately and allow enough cable to be able to pull both the appliance and the powerflue terminal out from their installed positions.



**If you do not connect the powerflue electrical cable to both the fireplace and the powerflue, this will result in an error when the fireplace is turned on.  
Test the fan before continuing with the rest of the installation.**

### END OF SECTION C

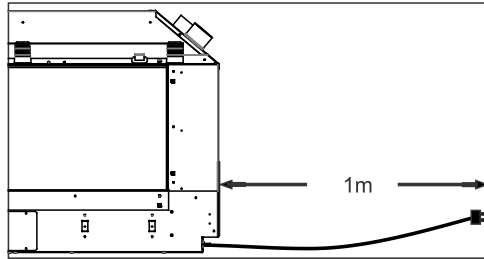
By the end of this section, you should have:

- A weather-tight installed powerflue terminal with clearance as specified by AS/NZ5601
- Reasonable access to the terminal for maintenance purposes
- Flue attached to the powerflue terminal leading back to the appliance with the correct flue clearances
- The electrical cable from the powerflue terminal run back to the appliance cavity in an electrically safe manner

# D Installing the Electricity and Gas to the Appliance

## D1 Power Supply

While the cavity is being created, consideration must be given to the location of an appropriate power supply. An earthed 230/240 volt mains power connection (typically a standard 3 pin outlet) must be available within 1m of the bottom right of the appliance. This connection **must** be accessible after the heater has been fully installed so that the appliance can be safely disconnected from the mains power supply prior to servicing.



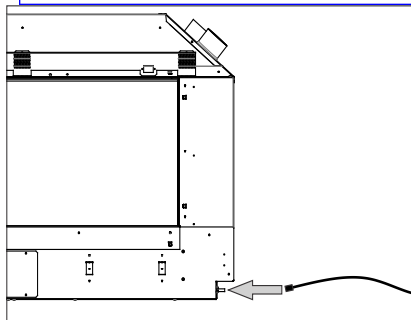
A mains isolation switch (compliant to AS:NZS 5601 Clause 6.2.8) which is accessible from outside the cavity can also be used to disconnect the power.

Regardless of the method used, it **MUST ALWAYS** be possible to safely isolate the electrical supply to the appliance after it has been fully installed.

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.~~

## D2 Network Cable

A 10 metre length of network (ethernet) cable has been supplied. Connect it to the appliance (lower right) and the buildings' modem.



Two network cable access points are available: the primary connection is on the bottom of the RH outer face of the appliance for connecting permanently to the buildings' router; the secondary connection point is located where the AUX button is (shown in section E10) for service technicians to access when the main connection method has not been used and has become inaccessible.

**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.**

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### D3 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:

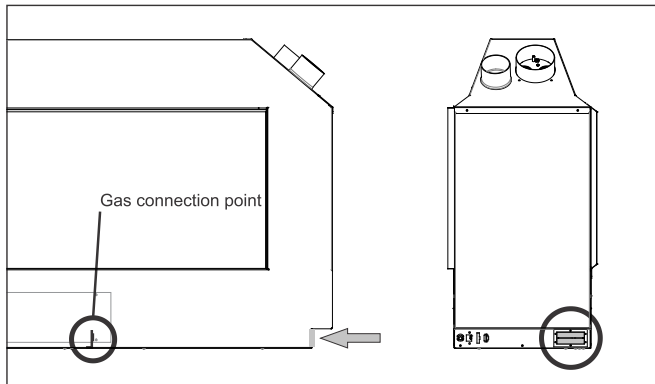
**Maximum DS1150 Gas Consumption = 34MJ/hr**

**Maximum DS1400 Gas Consumption = 40MJ/hr**

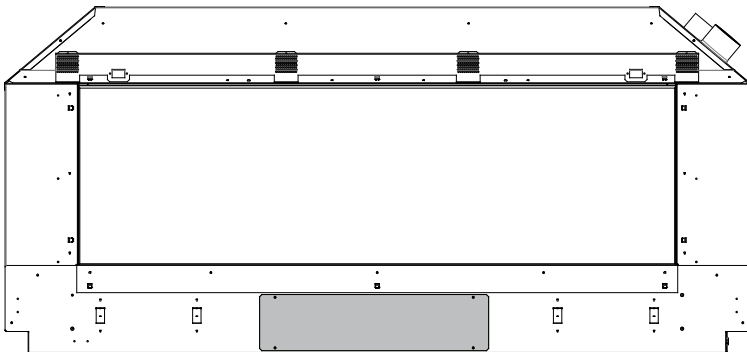
**Maximum DS1650 Gas Consumption = 44MJ/hr**

### D4 Gas Pipe Position

The gas connection is inside the appliance and is ½" male BSP on the lower right of the appliance as shown below. Access is through the silicone grommet circled below on the RH side of the chassis.



Access for connecting the gas supply to the gas connection point (shown in the diagram above) should be through the access hatches located on the front and back of the appliance (the front as shaded in the diagram below).



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## D5 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.

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### END OF SECTION D

By the end of this section, you should have:

- An unlined cavity with 230/240V AC supply where 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

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# E Installing the Appliance

## E1 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.

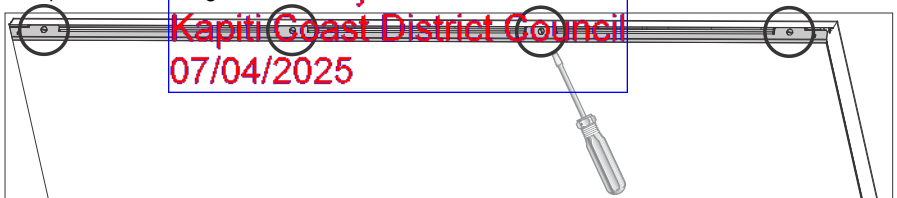


## E2 Installation

Insert the gas fire into the cavity and fix the appliance down in the correct position using the brackets on each end of the appliance. It is a requirement that this appliance be securely fastened at the base. **Ensure that the fire is seismically restrained in a manner appropriate to the installation location.**

## E3 Removing (and Replacing) the Glass

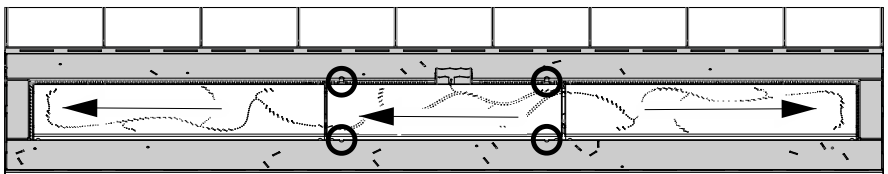
Remove the glass by unscrewing the four 1/4 turn fasteners located at the top of the glass (circled below) and remove the bracket (shown below shaded grey). Allow the glass to lean towards you and carefully lift it out. Place the glass carefully aside. Note that the fiberglass tape around the glass can mark carpet and furnishings.



**NOTE:** When replacing the glass, check the channel that the glass sits in for debris that may be sitting on top of the fiberglass tape. Remove any debris prior to placing the glass. If you feel resistance when leaning the glass towards the fireplace, remove it and double check for debris in the glass channel.

## E4 Remove the Infill & Burners

Remove the screws in the infill (DS1150/DS1400 shown in the diagram below). Lift one end of the infill up into the top corner of the firebox and then out towards you, taking care not to scratch the firebox paint and reflective panels. Remove the outer burners first by sliding them away from the centre of the fireplace, followed by the centre burner, which slides out to the left.



## E5 Gas Type Conversion

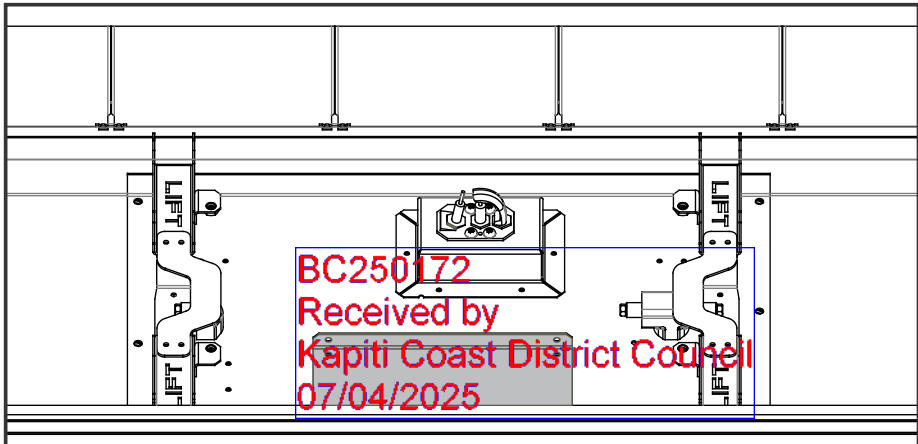
THIS APPLIANCE IS CONFIGURED TO OPERATE ON NATURAL GAS (NG), ULPG, or PROPANE. For the DS1650, please double check that the configuration of the collars match the fuelbed. For all other fires, if gas type conversion is not required then skip to the next section.

If a gas-type conversion is required, then please order a gas conversion kit from your local retailer. Follow the steps on the following pages 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.

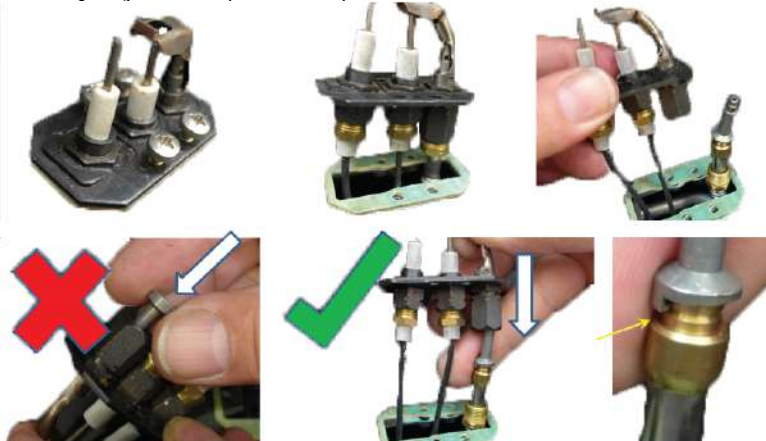
**Step 1:** Remove the screws on the control tray hatch (shown shaded in the diagram below).



Remove the hatch to access the regulator and modulating valve below.

**Step 2:** Change the three main burner jets with the jets supplied in kitset (see tables on next pages).

**Step 3:** Replace the pilot jet (see tables on the next page). *Note: Ensure the pilot jet is joined up to the olive before inserting the jet into the pilot assembly (as shown below).*

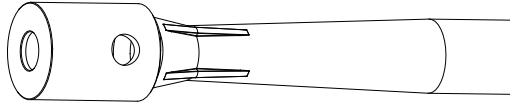


**Step 4:** Screw out the nylon adjuster screw inside the regulator to remove the existing spring. Replace the spring with the coloured spring supplied in the conversion kit and reassemble the regulator.

**Step 5:** Stick the new gas type label supplied in the kitset on the underside of the tray hatch. Ensure the serial number and date of manufacture are still visible. Write your name, company (if appropriate) and date of conversion on the new label with permanent marker.

**Step 6:** Replace the hatch (removed in step 1). Take care not to over tighten screws.

**Step 7:** The burner tubes on the underside of all burners have convertible aeration collars. Ensure the aeration collars on all burners are correctly fitted on each burner tube.



Natural Gas					
	Burner Jets			Burner Collars	
	Middle Burner	Side Burners	Pilot	Middle Burner	Side Burners
DS1150	Ø1.95mm	Ø1.5mm	#37	1 x Ø3.5mm Hole	Fully Closed
DS1400	Ø1.95mm	Ø1.7mm	#37	1 x Ø6mm Hole	1 x Ø3.5mm Hole
DS1650 Coal and Crystalite	Ø1.95mm	Ø1.95mm	#37	Fully Closed	Fully Closed
DS1650 Logs & Woodland ONLY	Ø1.95mm	Ø1.95mm	#37	1 x Ø3.5mm Hole	1 x Ø3.5mm Hole

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Propane					
	Burner Jets			Burner Collars	
	Middle Burner	Side Burners	Pilot	Middle Burner	Side Burners
DS1150	Ø1.3mm	Ø0.85mm	#27	2 x Ø12mm Hole	2 x Ø4mm Hole
DS1400	Ø1.3mm	Ø1.02mm	#27	2 x Ø13mm Hole	2 x Ø7mm Hole
DS1650	Ø1.2mm	Ø1.1mm	#27	2 x Ø12mm Hole	2 x Ø4mm Hole

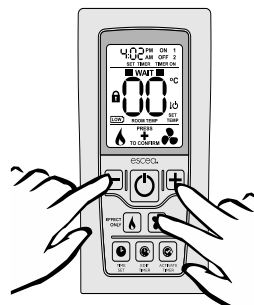
ULPG					
	Burner Jets			Burner Collars	
	Middle Burner	Side Burners	Pilot	Middle Burner	Side Burners
DS1150	Ø1.3mm	Ø0.85mm	#27	Spacer	2 x Ø7mm Holes
DS1400	Ø1.25mm	Ø1.02	#27	Spacer	2 x Ø8mm Holes
DS1650	Ø1.2mm	Ø1.1mm	#27	Spacer	2 x Ø7mm Holes

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## Step 8: Adjusting the electronic controller for gas type

Ensuring the gas is still OFF, Turn the power ON. Insert "AA" size batteries into the remote control. You should now see the time on the remote display showing 0:00.

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. 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 'EDIT TIMER' and 'ACTIVATE TIMER' buttons simultaneously; the remote display will show the current configuration of either 'NG' for Natural Gas or 'LP' for ULPG/Propane. To change this configuration, hold down the 'EDIT TIMER' and 'ACTIVATE TIMER' buttons 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.

## E6 Operating the Appliance

Turn on the fire by pressing the "⏻" power button on the remote. Within a few seconds the appliance will begin its startup sequence with a 15 second purge of the flue fan. After the purge it will attempt ignition. 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 40deg by pressing the "+" button and ensure the remote is kept in a cool environment. This will allow maximum gas flow into the appliance.

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

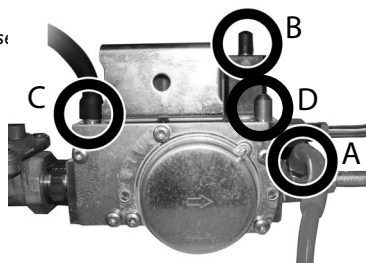
If the operating pressure does not read within 5% of the table (shown below) then remove the cap from the gas pressure regulator within the appliance and adjust the threaded spring stop. Press the ⏻ button again to shut down the fire.

## E7 Checking the Gas Operating Pressure

*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 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.*



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The gas valve (shown right) has manometer test points at A, C, and D. Ignore B.

	Gas Pressure Table - DS1150		
		Gas Type	
	Natural Gas	Propane (AUS)	ULPG (NZ)
Minimum Inlet Pressure - Pre-Regulator	1.13 kPa	2.75 kPa	2.75 kPa
Maximum Inlet Pressure - Pre-Regulator	5.0 kPa	5.0 kPa	5.0 kPa
Operating pressure - Post-Regulator (Point C)	1.0 kPa	2.3 kPa	2.3 kPa
Operating Pressure when on high - (Point A or D)	0.68 kPa ±5%	1.8 kPa ±5%	1.8 kPa ±5%
Operating Pressure when on low - (Point A or D)	0.3 kPa ±5%	0.9 kPa ±5%	0.9 kPa ±5%

	Gas Pressure Table - DS1400		
		Gas Type	
	Natural Gas	Propane (AUS)	ULPG (NZ)
Minimum Inlet Pressure - Pre-Regulator	1.13 kPa	2.75 kPa	2.75 kPa
Maximum Inlet Pressure - Pre-Regulator	5.0 kPa	5.0 kPa	5.0 kPa
Operating pressure - Post-Regulator (Point C)	1.0 kPa	2.3 kPa	2.3 kPa
Operating Pressure when on high - (Point A or D)	0.82 kPa ±5%	1.98 kPa ±5%	1.68 kPa ±5%
Operating Pressure when on low - (Point A or D)	0.4 kPa ±5%	0.93 kPa ±5%	1.04 kPa ±5%

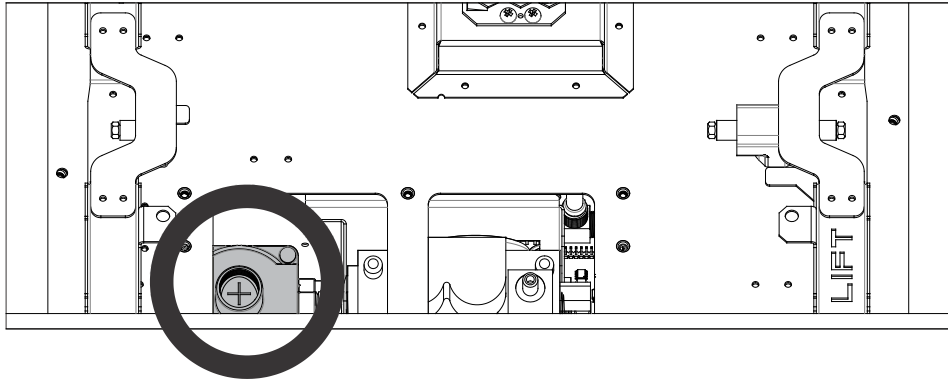
	Gas Pressure Table - DS1650		
		Gas Type	
	Natural Gas	Propane (AUS)	ULPG (NZ)
Minimum Inlet Pressure - Pre-Regulator	1.13 kPa	2.75 kPa	2.75 kPa
Maximum Inlet Pressure - Pre-Regulator	5.0 kPa	5.0 kPa	5.0 kPa
Operating pressure - Post-Regulator (Point C)	1.0 kPa	2.3 kPa	2.3 kPa
Operating Pressure when on high - (Point A or D)	0.67 kPa ±5%	1.67 kPa ±5%	1.67 kPa ±5%
Operating Pressure when on low - (Point A or D)	0.34 kPa ±5%	0.82 kPa ±5%	0.82 kPa ±5%

Remove the small access hatch found on top of the engine.

Loosen test point C (shown in the first diagram of this section) and attach a manometer tube in preparation for measuring the operating pressure—post regulator.

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Turn the fire on high and adjust the operating pressure at the regulator (shaded grey in the diagram below)

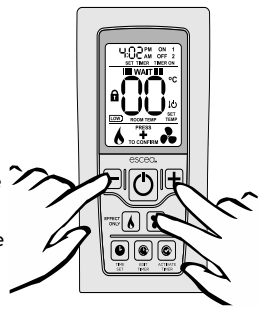


Once the operating pressure—post regulator—is set, check the operating pressure at test point A or D (shown in the first diagram of this section).

### Changing the Operating Pressure from the Remote

The following instructions **must only be undertaken by a suitably approved person**. Any tampering by an unauthorised person will void the product’s warranty and may result in a dangerous condition.

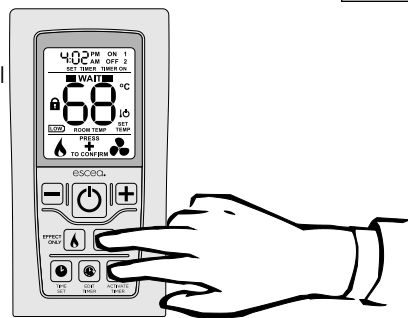
While the remote is in its “OFF” mode with only the time showing on the display, press the MINUS, PLUS and FAN BOOST buttons simultaneously (as shown right) until the characters “03” light up on the display. Release the buttons and the remote will count down and display “GO”. The screen will then display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



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Whilst in test mode: press and hold the “ACTIVATE TIMER” and “FAN BOOST” buttons for 10 seconds to access the gas valve settings. The appliance will automatically turn on while in this mode.



**WAIT.** Allow the appliance to fully light all burners before continuing.

The high setting for the currently set gas type is displayed first (indicated in the clock segments at the top - see ! right). Pressing the plus or minus keys will change the setting up or down respectively, which will change the gas pressure measured at point A or D. The large digits will blink rapidly after the setting is made until the verification is received from the fire.

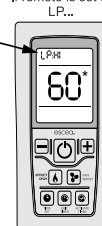
**Note:** The numbers displayed on the remote should only be used to achieve the correct pressure. The numbers by themselves do not represent anything and should not be relied upon.

toggling to the low setting is done by pressing the ‘EFFECT ONLY’ button (indicated in the clock segments at the top and by the ‘EFFECT ONLY’ icon at the bottom). Settings are made with the PLUS and MINUS buttons as above. Exit this mode by pressing the on/off button.

If remote is set to NG...



If remote is set to LP...



High



Low

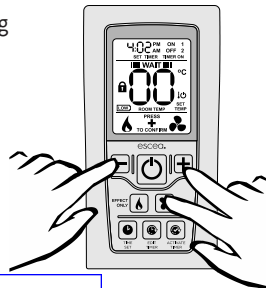


\*The numbers shown above are not targets

## Changing from Celsius to Fahrenheit

By default Escea gas fires are set to Celsius. To change from Celsius to Fahrenheit or back, you need to follow the steps below to make the adjustment to your Escea remote.

**Step 1:** While the remote is in its “OFF” mode with only the time showing on the display, press the MINUS (3), PLUS (7) and FAN BOOST (8) buttons simultaneously (as shown below 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.



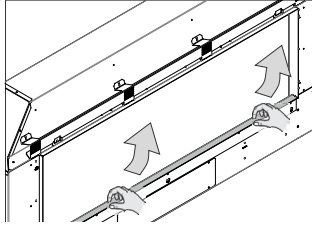
**Step 2:** Press the FAN BOOST button (7) and see the C or F flash with the chosen degree mode.

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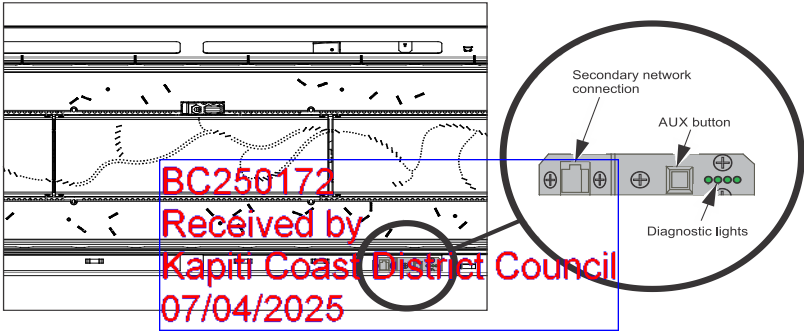
### E8 Auxiliary On/Off button

The auxiliary on/off button is used to turn the fireplace on without the remote control and for “teaching” the fireplace to listen for new remote controls. For information on teaching a new remote control, see section S6 on page 50 of the service manual at the end of this document.

To access the auxiliary on/off button, remove the bottom trim bracket by lifting the bracket upwards (as shown in the diagram below).



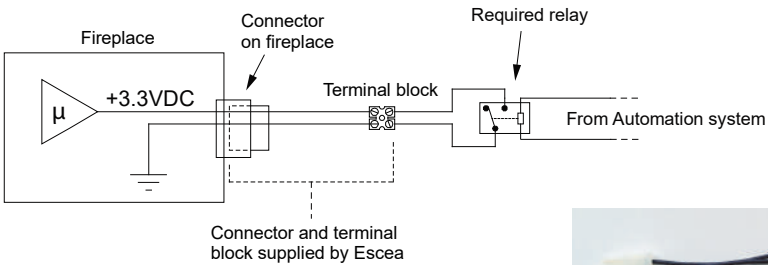
The AUX button location can be seen in the diagram below.



### E9 Home Automation Setup

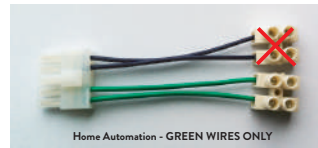
Escea D-Series fireplaces have a simple interface for connection to a home automation system. This allows the fireplace to be woken up, started, and then shut down. The “Close to Wake” connection (shown below) is essentially taking one of the 3.3 volt DC pins on the fireplace micro-controller and shorting it to ground.

In order to isolate the fireplace from the automation system, a relay needs to be used (as shown). This allows you to keep the fireplace’s 3.3V supply isolated.



The home automation connection can be found in your fireplace accessory pack (shown to the right).

This connects to the fireplace via the lower RH outside panel of the fireplace, next to the primary network cable access point, as shown in section D2 on page 23.



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## Home Automation Operation

### Relay closed

The fireplace will start in a medium setting until the remote control talks to the fireplace and picks up the 'ON' signal (which can take up to 4 minutes). Once the remote has communicated with the fireplace it will turn on and begin operating 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 is 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 (which can take up to 4 minutes). While the relay is open the fireplace will be in standby mode and available for manual operation by the user.

## END OF SECTION E

By the end of this section, you should have:

- The appliance installed in the cavity
- The appliance fitted to the cavity base and wall lining
- The appliance tested to ensure its electricity supply
- The appliance gas supply attached and pressure tested with all other gas appliances running

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## F Finishing the Installation

### F1 Coal or Crystalight Fuelbed Installation

If using the crystalight or coal fuel beds, place all the crystalight/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 the edges of the firebox or glass.

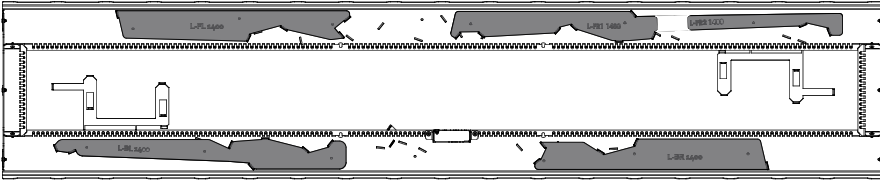
Do not heap or mound any fuelbed.

### F2 Log and Woodland Log Fuelbed Retainer Setup

When setting up a log or woodland log fuel bed, you must have the correct retainers present before assembling the fuel bed. The correct retainers are supplied with the fuel bed packaging. On your retainers you will see either a letter at the start that will determine the fuelbed type (i.e. W = Woodland, L = Logs). The letters and numbers that follow help to determine the retainer location.

Remove the infill by following section E4 on page 26. Place the infill upside down with the hole for the pilot on the side furthest from you; this is the back (for the DS1400, place the pilot on the side closest to you). Remove the retainers from the flat nested sheet. When reading the text on each retainer, fold **ALL** the retainer tabs 90° away from you.

For some older infills, on the **UNDERSIDE** of the infill you may see numbers from 1 to 4. If the infill has numbers, then match the numbers on the infill with the numbers on the log retainers. For all other infills, the combination of letters and numbers provides an indication of the location: B- Back, F-Front, L-Left, R-Right. The infill for the DS1400 Log installation is shown below as an example.

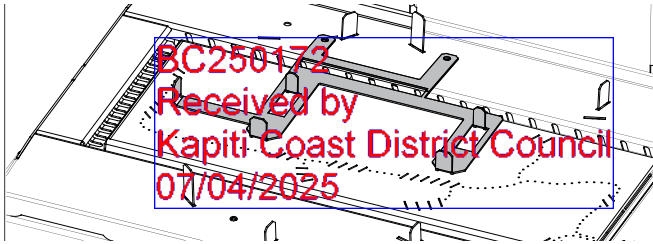


Attach all retainers by feeding the tabs from the **UNDERSIDE (unpainted side)** through the cutouts on the infill. Fix each retainer in place from the top of the infill with the screws provided.

Replace the infill and burners in the fireplace.

**For Logs Only:** the final log retainers are placed on **TOP** of the infill and burners to support the end log (number 2 from index). This part comes in flat form and is to be folded as per the image below.

They are then installed on both outer sides of the infill and are fixed in place by 1 screw as below.



### F3 Log Fuelbed Installation

Logs must be located correctly as stated/depicted in this section.

The final layout should replicate the picture shown in Step 3. Place the embers or flakes in a single even layer after the logs have been located correctly (excess embers or flakes should NOT be added if one even layer has been achieved). The embers or flakes must not cover the pilot or pilot guard.

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

### Log Index



Use the index above as a guide for selecting the correct logs.

### Log Setup DS1150

Step 1:



Step 2:



Step 3:



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### Log Setup DS1400

Step 1:



Step 2:



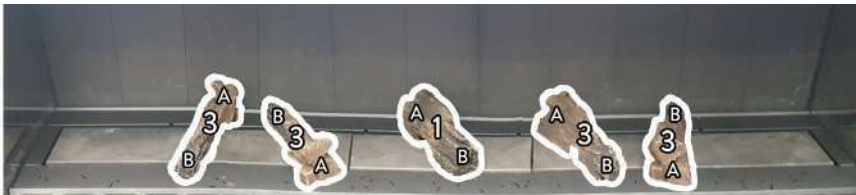
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Step 3:

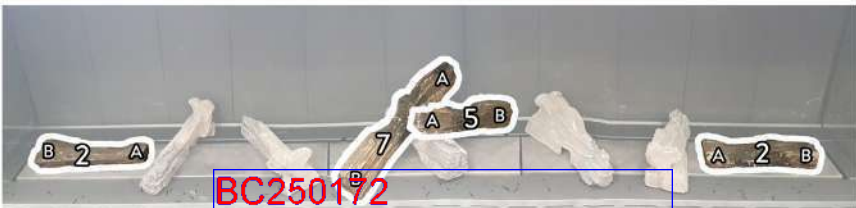


**Log Setup DS1650**

Step 1:



Step 2:

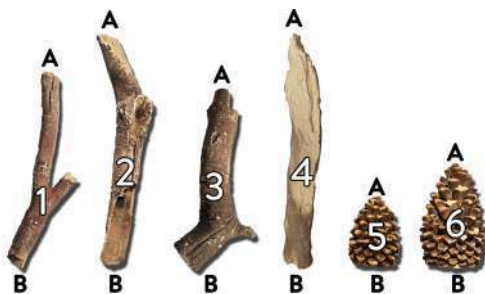


Step 3:



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**F4 Woodland Fuelbed Installation  
Woodland Log Index**



Use the index above as a guide for selecting the correct logs. Place the flakes in a single layer evenly after the logs have been located correctly (excess flakes should NOT be added if one even layer has been achieved). The flakes must not cover the pilot or pilot guard.

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### Woodland Log Setup DS1150

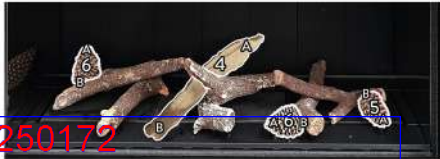
Step 1:



Step 2:



Step 3:



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### Woodland Log Setup DS1400

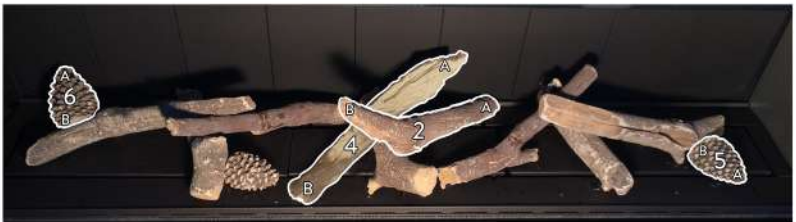
Step 1:



Step 2:



Step 3:



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### Woodland Log Setup DS1650

Step 1



Step 2



Step 3



Complete - Ready for flakes/embers



### F5 Flame Picture

An abnormal flame pattern will look long and stringy, it may cause soot to build up inside the firebox.

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An abnormal flame pattern will likely be the result of incorrect settings (jet size, burner aeration collar). Check that these are correct before proceeding. If an abnormal flame pattern is still present, please contact Escea.

It is the responsibility of the installer to ensure a correct flame pattern.

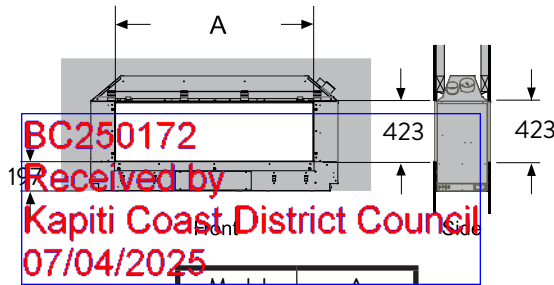
## F6 Wall Linings

The final wall lining can only be commenced after all previous applicable sections have been completed. The appliance must be installed prior to and behind the finished wall surface. Allow clearance for any plasterboard, tiles, or other finishing materials that may be intended for the finished wall surface. The wall board that lines the outside of the opening can be normal plasterboard and does not need to be non-combustible. The plasterboard must protrude beyond the framework as shown in the following diagram.

**Note:** The final wall lining must not encroach within the specified dimensions in this section. These dimensions indicate the opening required in the wall lining. Encroaching on the minimum cut out dimension may inhibit the future serviceability of the fire.

The glass viewing area of the fire is bordered by a black metal trim. This acts as a junction between any wall linings and the viewing area. It allows for the wall linings to be up to 14mm in depth. Combustible wall linings must not exceed this dimension and protrude past the black trim. Failure to follow these instructions may risk damage to the adjacent wall lining.

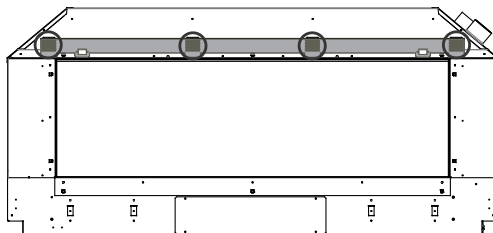
### DS-Series Minimum Wall Lining Dimensions



Model	A
DS1150	1079
DS1400	1371
DS1650	1665

*Note: The wall lining directly above the appliance will get warm and hence may discolour paint finishes that are susceptible to temperature damage. The heat may also distort vinyl wall coverings. For durability of finishes and surfaces you should contact the relevant manufacturer for their specification and avoid materials that are not suitable for use above a fireplace. Please see section A2 on page 8 for more information.*

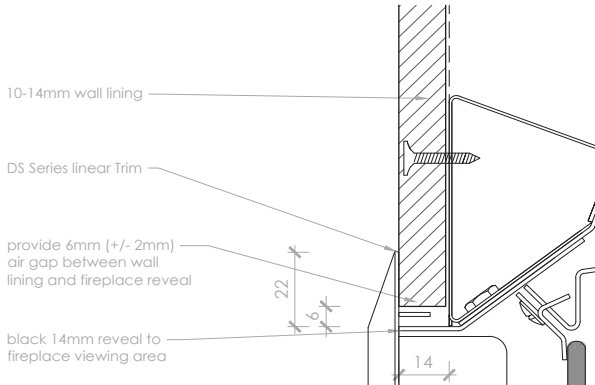
The wall lining can be fixed to the gib fixing bracket (shaded below). There are four areas on the bracket (circled below) that can be used for fixing screws.



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## Frameless or Linear Trim Wall Linings

If not using a fascia, ensure the edge of the wall lining is finished in a tidy manner (for a nice Gib finish we recommend Gib Rondo stopping bead). 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. Please note that a 6mm (+/-2mm) minimum gap between the top gib trim and the bottom of the gib is required for either



**NOTE:** a 20mm or less wall lining must be used when installing a DS Series fireplace **without** a fascia. For wall linings with a total thickness of 10mm or larger, a “Linear Trim” may be purchased to cover any exposed wall lining. A 10mm wall lining is recommended for ease of installation.

**NOTE:** Do not glue the fascia to wall cladding, do not fit cladding around the fascia that prevents it from being removed, do not run the fire without the fascia properly attached, the fascia is designed to be easily removed for future servicing.

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## Bevelled Lite Fascia

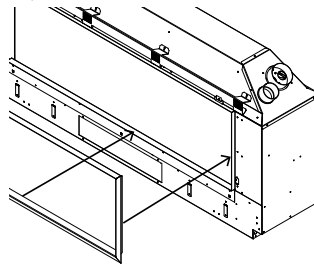
If using a Bevelled Lite fascia, cutouts will be required in the finished plaster board to allow for the fascia securing pins to attach to the appliance.

**NOTE: Do not glue the fascia to wall cladding, do not fit cladding around the fascia that prevents it from being removed, do not run the fire without the fascia properly attached, the fascia is designed to be easily removed for future servicing.**

*NOTE: A 13mm wall lining must be used when installing a DS fireplace with a Bevelled Lite fascia; this is the maximum distance the Bevelled Lite fascia can sit off the front face of the fire.*

### F7 Fitting the Linear Trim

To install the Linear Trim onto the DS Series, slide the bottom of the trim along the gib trim and push it in flush with the wall cladding. It should slide in on all four sides and fit by friction inside the black reveal (the top should be above the top of the black reveal).



*NOTE: If the friction fit is loose, please use the provided fiber tape along the bottom edge of the linear trim to tighten the fit.*

### F8 Fitting the Bevelled Lite Fascia

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

*NOTE: Never 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.



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Step 3: Rivet the 4 spring clips onto the bracket on top of chassis of the appliance.



Step 4: After the 13mm thick wall has been finished, the fascia clips onto the appliance.

### F9 Locating Wall Mount Cradle for Wireless Control

The appliance's remote contains the thermostat that will sense and communicate the room temperature 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 the following factors into account:

- Simple and 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 to locate the cradle off the ground 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.

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## F10 Operating the Appliance

If you haven't done so already, insert the supplied "AA" size batteries, being careful of the polarity. "0:00" should now be showing on the remote display.

To turn the fire on, press the 'POWER' button once; 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 remotes "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 initial 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 decreasing the set temperature. Check that the Effect Only and Fan Boost functions work correctly.

For further operation instructions please refer to the User Guide.

## F11 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 various types of materials are 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 are no cause for concern.

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### 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 due to: 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 S13) 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.

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# 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
- 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
- Gas type conversion process carried out if required
- 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 (or 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 with suitable leak detection solution and drop tests completed on gas pipework
- Fuel bed correctly installed
- Glass correctly fitted
- A fitted fascia
- Operated the fire and verified that it lights reliably and safely
- Appliance functions checked, including thermostat operation, Effect Only, and Fan Boost
- Data label marked up with correct gas type and dated by installer if converted during installation
- Home-owner shown how to operate the appliance correctly
- Warranty card filled in with installer details and appliance serial number
- User Guide made available for end user
- Plumbing Industry Commission Compliance Certificate given to end user

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## 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.
- Only use **Escea approved** spare parts.
- Spare parts are available from an Escea Distributor or Retailer
- **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. Trial fan-boost, Effect Only, and thermostat modes to ensure that all modes function correctly.

To access the product data plate, first remove the fireplace glass, any fuelbed media, the burners, and the firebox base. The data plate is located underneath the controls tray (step 1 of section E6).



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## 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.

**Note: An error code may not signify a fault/warranty issue; depending on the error code, it may signify that the remote batteries are dead or the LPG cylinder is empty. Refer to the section below and contact Escea if needed.**

Error Code	Suggested action
 Electronics Over Temp	<p>The electronics have gone over temperature.</p> <ul style="list-style-type: none"> <li>• Check for excess lint and dust build-up on the PCB/Controller.</li> <li>• Check that fascia panels are installed correctly as incorrect installation may result in restricted air flow.</li> <li>• Ensure correct gaps are present around glass.</li> <li>• Room air fans may be slowed or stalled. Remove firebox, check that fans are plugged in, clean, and free turning.</li> </ul> <p><i>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).</i></p>
 Flame Failure or Power Flue trip	<p>The fire has tried to light three times and failed.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Check correct gas pressure to the appliance with all other appliances running.</li> <li>• 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.</li> <li>• Ensure the electrode is not contacting any metalwork including the burners and has the correct air gap.</li> <li>• Check that the electrical power cable between the appliance and the power-flue wall terminal is connected and not damaged.</li> </ul>

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Appliance Over  
Temperature  
Sensor Trip

The bimetallic snap disk mounted on the exhaust collector box has tripped.

- Check that fascia panels are installed correctly as incorrect installation may result in restricted air flow.
- Check that fans are plugged in, cleaned, and free turning - room air fans may be slowed or stalled.
- Check the regulator -being set too high may result in excess heat build-up.
- Check flues are securely connected at both ends - if the inlet flue is not connected the appliance may draw warm air from the cavity.
- Check the jets
- Check the tabs are in the correct orientation (see section S13, step 2).



Valve Solenoid  
Check Failure

The valve solenoids have failed the pre-ignition test. A wire may have dislodged or the valve solenoid is faulty.

- Check that the connections to each solenoid are secure and in place. The connections on the ends of the wires may need to be tightened (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.
- One of the solenoids on the valve inside the fire may have failed. If this is the case, the valve will need to be replaced.



Remote Cannot  
communicate with  
fire

The remote cannot communicate with the fire.

- Check if the fire is 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.



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 that 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 black 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
- Check that the fan inside the powerflue wall terminal is running during startup. This fan may need servicing if it is slowed or stalled.

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### S3 Cleaning the Fuel bed and Glass

ALWAYS USE GLOVES WHEN HANDLING THE FASCIA AND GLASS.

Follow section E3 on page 26 to remove the glass. Place the glass carefully aside. Any standard ammonia-free glass cleaner may be used to clean the glass. Use a soft brush to clean the fuel bed media, being careful to replace it according to the instructions in section F1 on page 34, F3 on page 35, or F4 on page 37.

If soot builds up on the fuelbed and/or the inside of the glass becomes excessive or regular then one of the following actions may be required:

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

### S4 Cleaning the Fascia

The outside of an Escea Fascia must only be cleaned with a soft microfibre cloth. If heavier cleaning is required for the likes of grease or stubborn fingerprint removal we recommend the use of a dedicated stainless steel cleaner for stainless steel fascias or warm soapy water for powder coated fascias.

#### **NEVER RUB THE FASCIA.**

#### **For Stainless Steel Fascias:**

1. Ensure that the Gas Fireplace is off and that the fascia is cold to the touch.
2. Using the gloves provided with your fascia, a stainless steel cleaner and a clean cloth, apply a small amount of cleaner to the cloth and wipe the fascia with even, straight strokes.
3. Make sure your strokes follow the direction of the grain or brush finish. Wiping across the grain can leave small scratches.
4. The cleaner may leave a very fine film over the fascia, ensure this film is distributed evenly.
5. If the film is applied too heavily and is quite visible, you can remove the excess by gently wiping dry with a microfibre cloth. Ensure your strokes still follow the direction of the grain or brush finish.
6. Ensure that no film is applied to the glass of your Escea Gas Fireplace. If applied accidentally, wipe off with an absorbent microfibre cloth.

#### **For Powder Coated Fascias:**

1. Ensure that the Gas Fireplace is off and that the fascia is cold to the touch.
2. Using the gloves provided with your fascia, gently clean the fascia with a cloth and warm soapy water.
3. Wipe off with an absorbent microfibre cloth.

### S5 Checking Operating Pressure

See section E9 of this manual.

### S6 Replacing a Remote Control

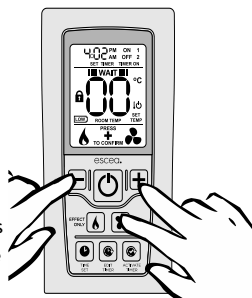
If the wireless control becomes lost or damaged, a new one can be ordered from any Escea retail agent. When you have the new remote, the following procedure needs to be followed to “teach” the remote to only communicate with that fire.

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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 to the right) until the characters "03" light up on the display. Release the buttons. 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 linked to the fire.

4. Press and hold the 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 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 power button. Turn it off again using the remote control.

6. The fire is now linked to the remote control.

### S7 Replacing the Burners

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

Remove the 4 screws in the infill and lift 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. Lift out the burners and replace as necessary.

### S8 Serial Number

The serial number for the fire can be found in two places. The first is in the battery compartment of the wireless remote under the batteries. The second is on the data sticker on the chassis under the electronics tray.

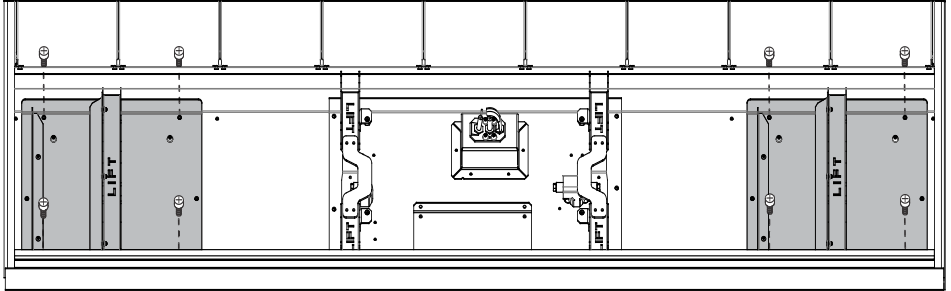
### S9 Removing or Cleaning Fan

As part of regular service procedure, it is recommended that the fan is removed for cleaning. Dust will build up on the fan rotor and in the cavity where the fan is located. This can be removed by the service person using a hearth brush and a vacuum cleaner.

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ISOLATE THE POWER TO THE FIRE BEFORE STARTING THIS PROCEDURE.

Screw Locations:



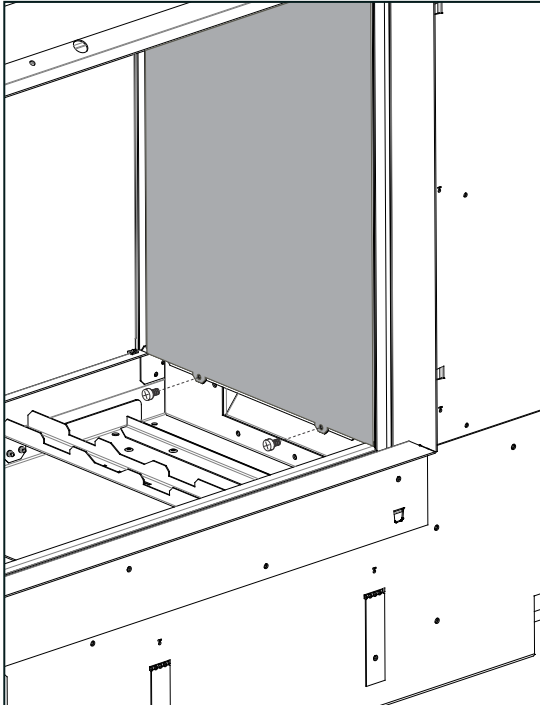
### S10 Removing the Control Tray

ISOLATE THE POWER TO THE FIRE BEFORE THIS PROCEDURE.

Refer to Step 1 of "E5 Gas Type Conversion" on page 25

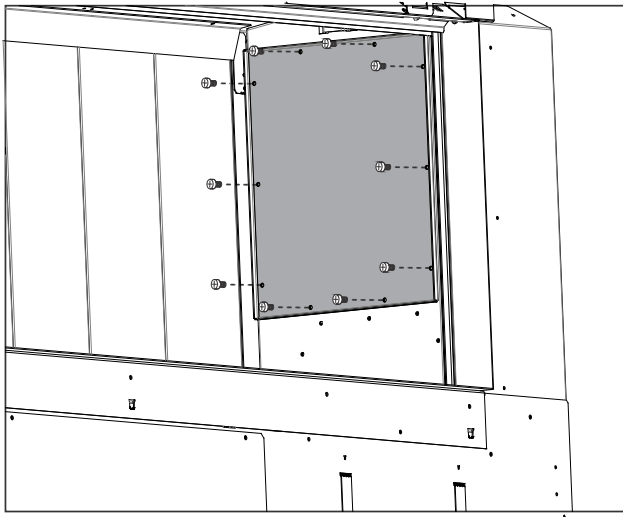
### S11 Pressure Switch Removal

1. With the infill removed, remove the screw in the top of the reflective panel (shown shaded in the diagram below). Carefully remove the panel from the firebox.



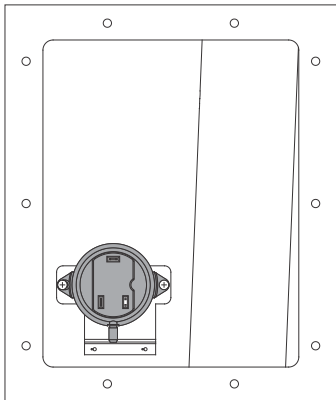
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2. Remove the 10 screws (shown in the diagram below) in the access hatch and carefully remove from the firebox.



3. Remove the 2 silicone tubes (making note of which tube goes on each spigot).

Disconnect the two wires from the pressure switch and remove the two screws on either side of the pressure switch to remove it from the bracket. The black hose should be connected to the low pressure port and the translucent to the high pressure port.



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## S12 Replacing the Thermal Cut Out (TCO)

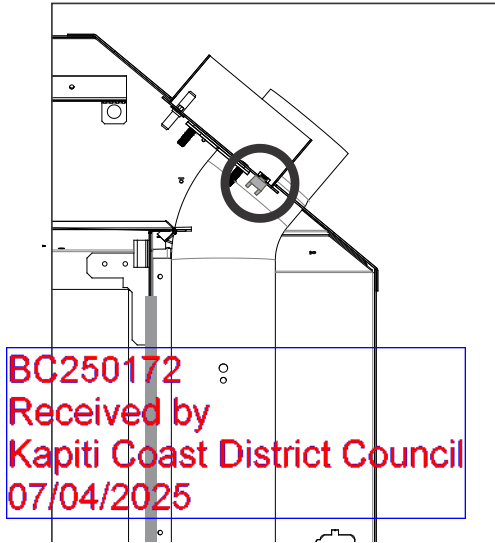
**WARNING - Ensure power is turned off before removing any TCO.**

There are two thermal cutouts: one in the LH room fan assembly (60°C) and the other attached to the exhaust manifold (120°C).

### Exhaust TCO (120°C)

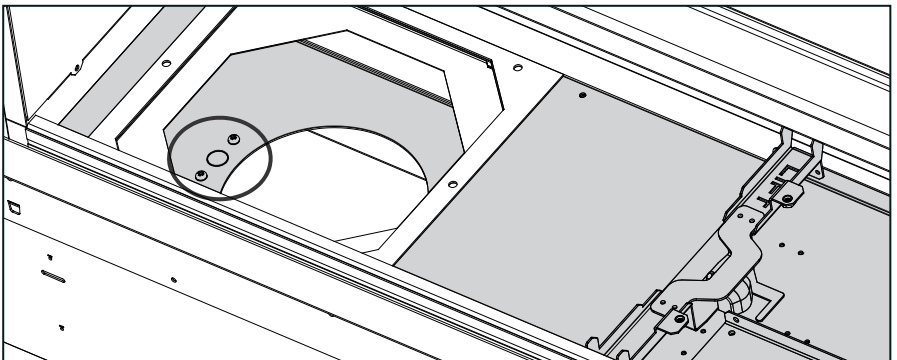
Access to this TCO by following steps 1 and 2 from section S11.

Reach into the hatch and locate the TCO (circled in the diagram below). The TCO has two wires connected to the main body; remove these. Unscrew the TCO by hand and remove from the firebox.



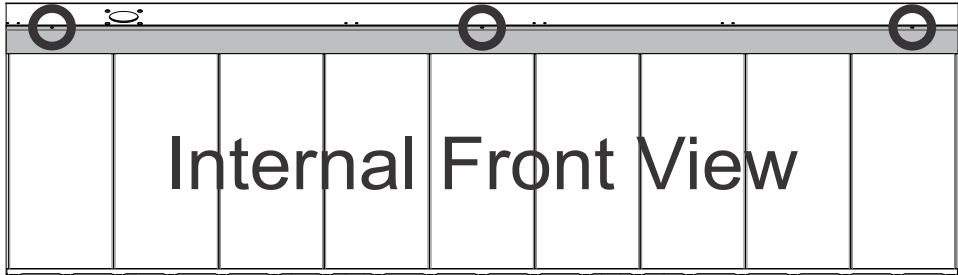
### Fan TCO (60°C)

Access to this TCO by following S9 and removing the left hand fan (not exhaust side). Once the fan is removed you will see the TCO (circled in the diagram below). To remove this, unscrew the two visible screws and, once free, remove the two wires connected to the TCO. Remove the TCO from the chassis.

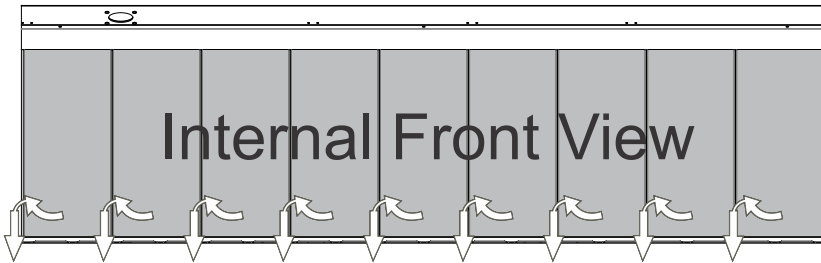


### S13 Single Sided Front to Back Conversion (only for single sided fires)

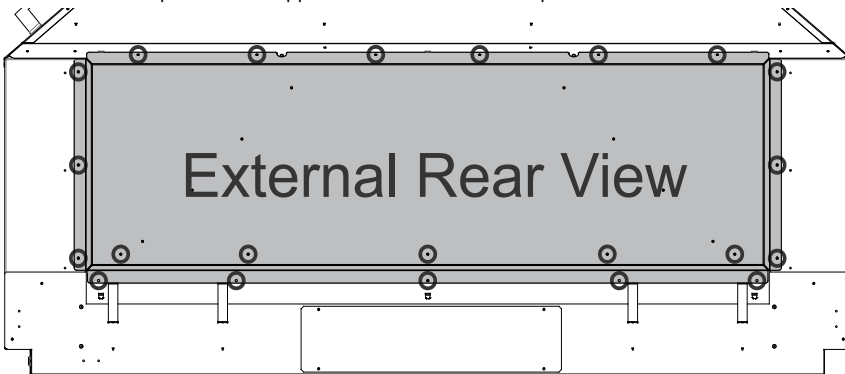
1. Follow sections E3 on page 26 and E4 on page 26 to remove the glass, infill, burners.
2. On the inside of the firebox, slightly loosen the firebox liner bracket (shaded in the diagram below) by loosening—not removing—the screws (circled in the diagram below, quantity may differ with model).



3. Carefully swing the lower edge of each firebox liner towards you and pull down to release each panel (shaded in the diagram below). It may be necessary to slide the firebox liner to the side first. Remove the firebox liner bracket and replace the screws.

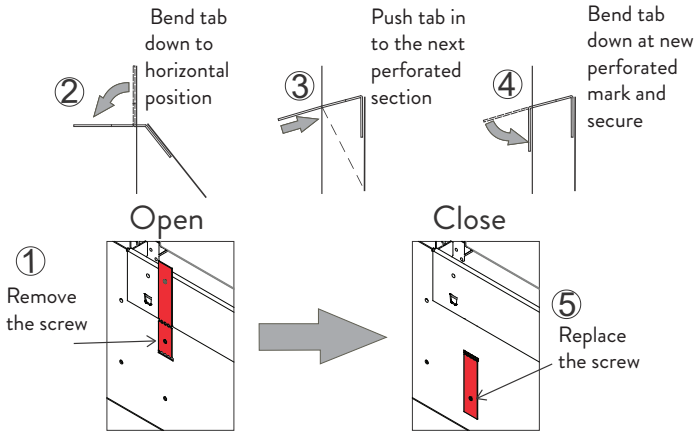
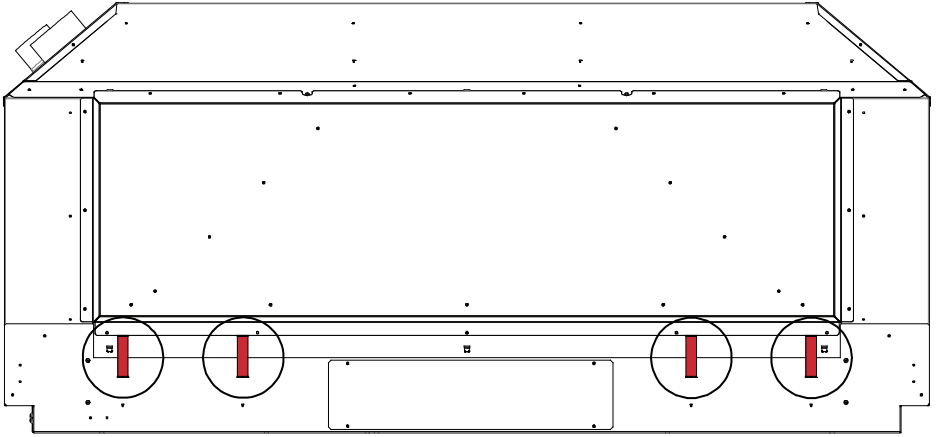


4. Move to the back of the fire for the following steps. Remove the screws (circled in the diagram below) in the back panel of the appliance. Remove the back panel.



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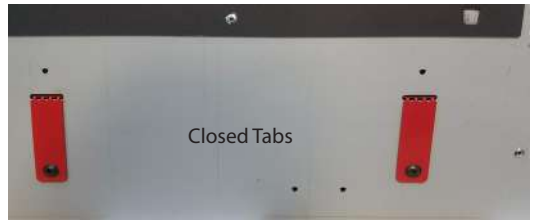
5. On the back of the appliance remove one screw from each of the four tabs near the bottom of the chassis and set each pair of tabs from 'open position' to 'close position' (shown below). This is necessary to change the airflow path of the fire from front to back.



**Please Take Extra Care on this STEP**



Open Tabs

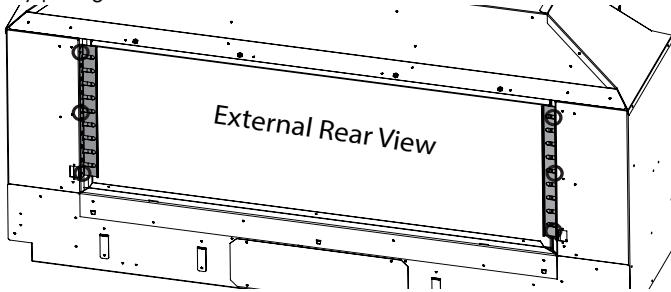


Closed Tabs

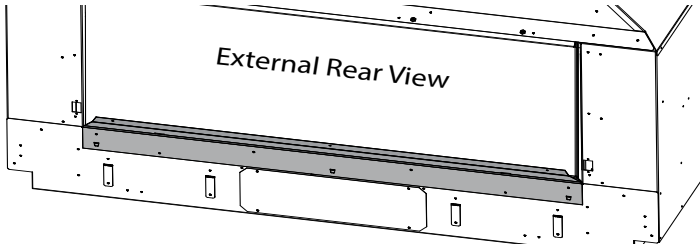
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6. Remove the 6 screws in the chassis (shown circled below) and remove the side brackets (shown shaded below) by pulling them in towards the centre of the fire.

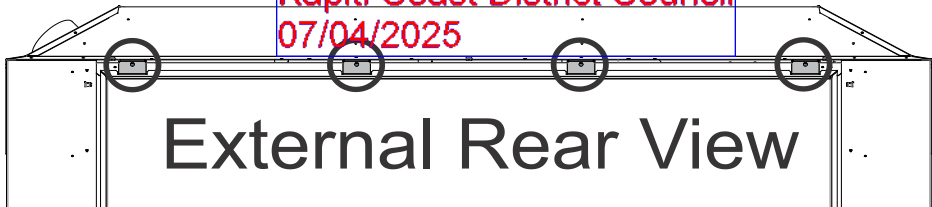


7. Remove the bottom air deflector (shown shaded below).

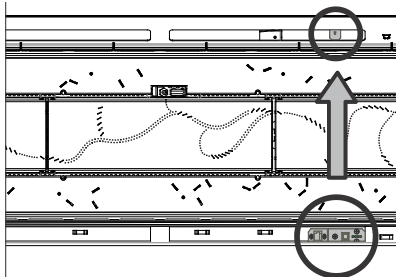


8. Now remove the top bracket by unscrewing the 1/4 turn fasteners (circled below) and allow the panel to lean forward so you may access the panel.

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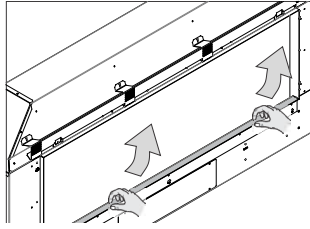
9. Relocate the diagnostic bracket to the opposite side of the appliance by carefully removing the middle screw and feeding it through to the opposite side of the fire (as shown in the diagram below). Note: this step must be completed after preparing the other side of the appliance for either a LH to RH conversion.



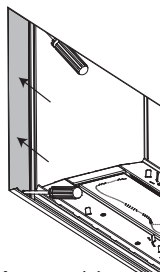
10. Carefully replace the bracket in step 2 of section S13 and install on the other side of the firebox (now the new rear).

NOTE: REMEMBER TO REPLACE ALL THE SCREWS TO AVOID FIREBOX LEAKING

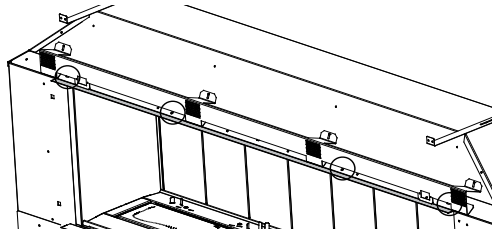
11. Remove the bottom trim by pulling hard to release it from the appliance taking care not to scratch the side trims (shown below).



12. Remove the two side trims. These are fixed top and bottom with the low profile black self tapper screws (see below).



13. Remove the top trim bracket from the front by unscrewing the black machine screws provided (circled below).



14. Replace all the removed parts (removed in steps 2 - 8) to the front of the appliance by reversing the procedure documented above.

15. **Using the diagram from step 5 in section E5 above, change the position of the four tabs on the original front side from closed to open. Ensure those on what is now the front are in closed position.** !

16. After removing the components in the previous steps, fix the trims by reversing step 11, leaving the bottom trim for the step.

17. Reinstall the burners and the infill by reversing the steps in E4.

18. Install the fuel bed media as per section F on page 34. Finish the conversion by installing both pieces of glass and both bottom trim brackets.

Note: After any conversion **AIRFLOW MUST NEVER** be coming up the glass from the bottom, it must ALWAYS EXIT FROM the top of the glass. If this is not correct then review the position of the tabs on the back of the fire at the bottom.

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## S14 Servicing the Horizontal/Universal 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.

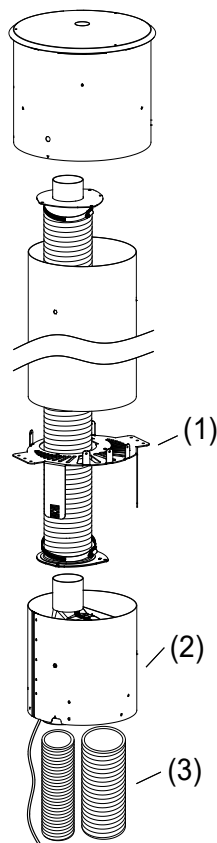
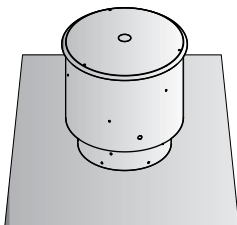
Removing this plate gives complete access to the fan for servicing or replacement. Check that all the seals are still intact. Check that the fan electrical terminals, motor, and impeller are not corroded. Ensure there are no signs of leakage in or around the terminal.

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 Universal Vertical Powerflue:

If the UVP is internally installed remove the unit (2 in the right hand image) and replace the complete fan unit.

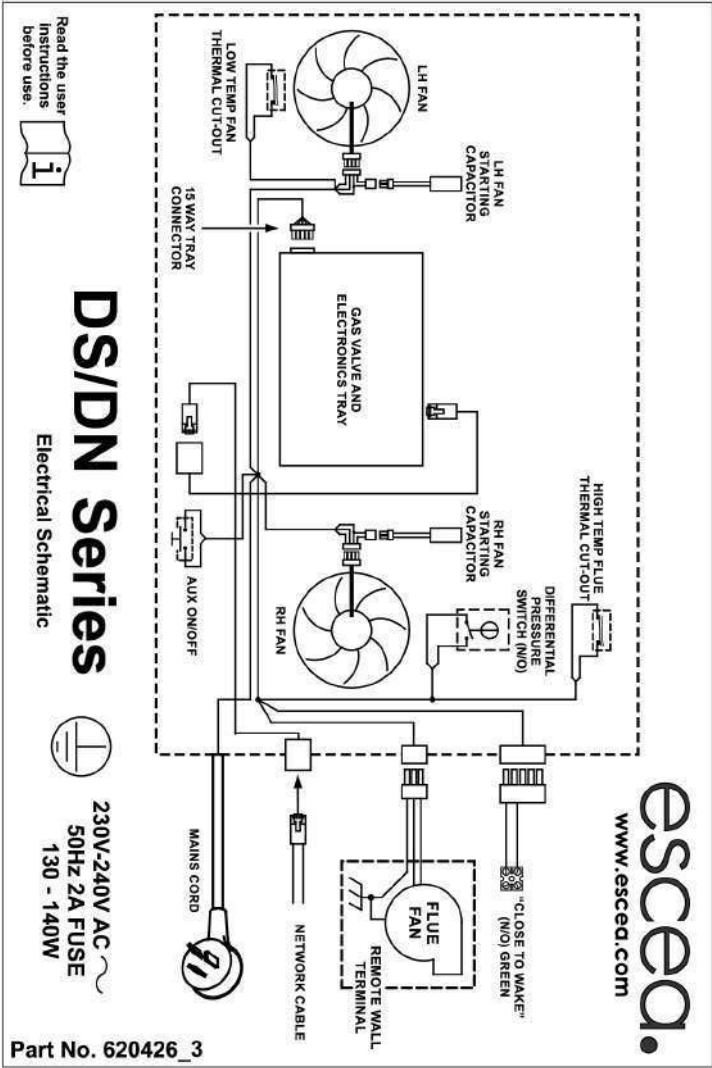
If the UVP is externally installed the cowl/fan unit pictured below is to be completely replaced by removing it from the liner or flashing.



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S15 Wiring Diagram

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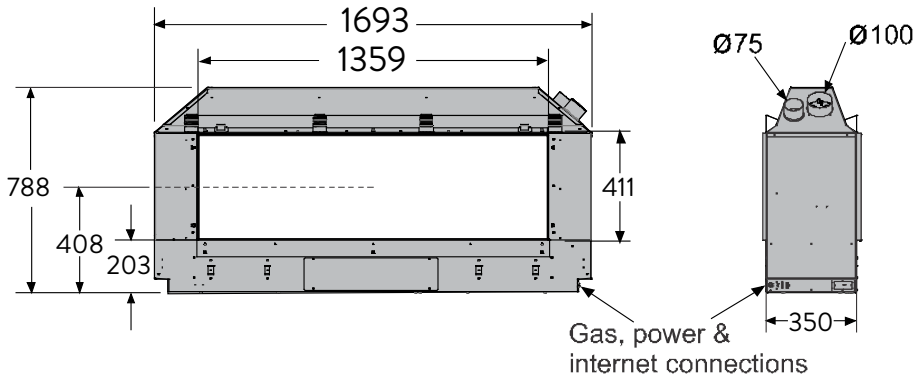


For further information or specifications, visit the technical section of our website [www.escea.com](http://www.escea.com) to view the latest product Installation Manual.

**Appliance Information**

**Specifications**

Heat Output	9.5 kW*
Star Rating	5 star *
Gas Input / Consumption	40 MJ/hr
Gas Connection	Lower centre of appliance, 1/2" BSP
Gas Type	Natural Gas / ULPG (NZ) / Propane (Aus)
Power Requirement	3 pin earthed 230V power outlet to be within 1.0m of right side of the appliance.
Appliance Weight	150kg

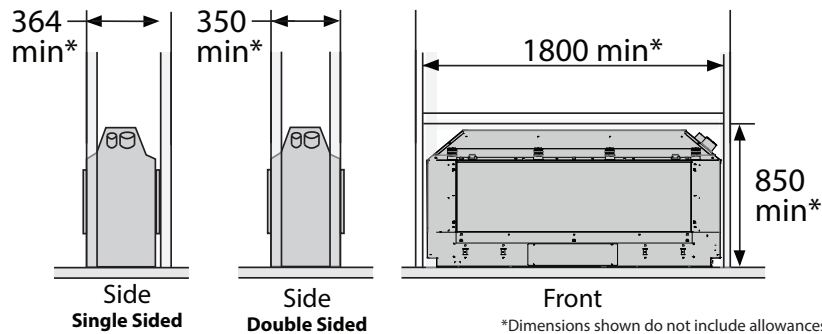


**DS1400 Chassis Dimensions (mm)**

*\*May vary with flue type and fireplace configuration.*

**Cavity Construction**

**Recommended Framing Dimensions (mm):**



*\*Dimensions shown do not include allowances for clearance to combustibles to the flue*

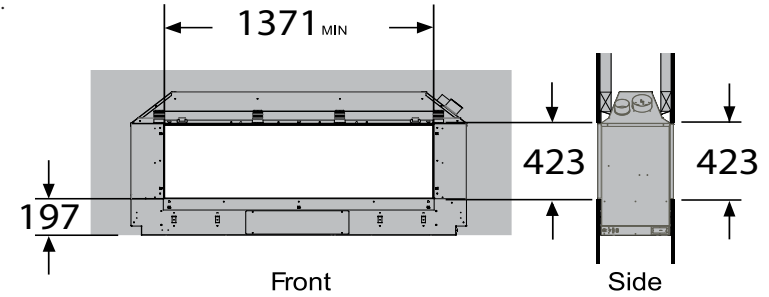
**Wall Lining Dimensions**

**Minimum Wall Lining 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.

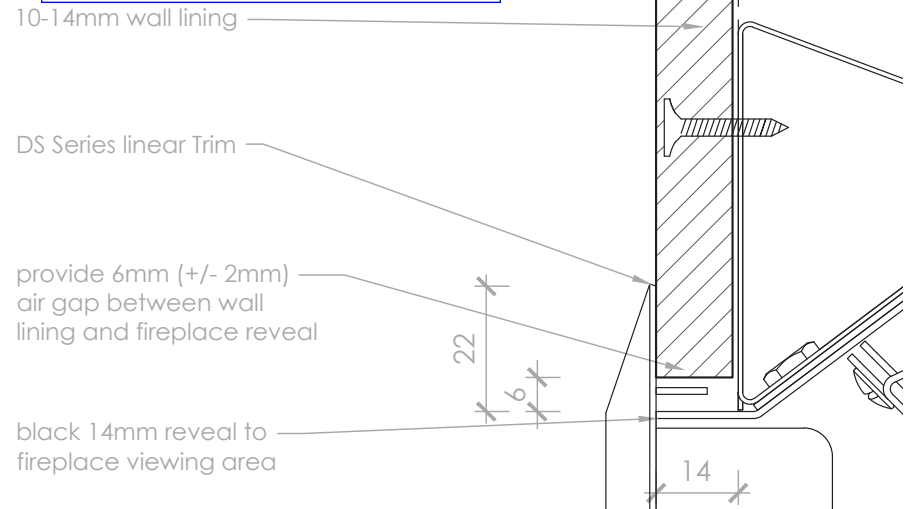
The wall board that lines the outside of the opening can be normal 13mm plaster board and does not need to be non-combustible.



**Finish**

**Finishing Detail**

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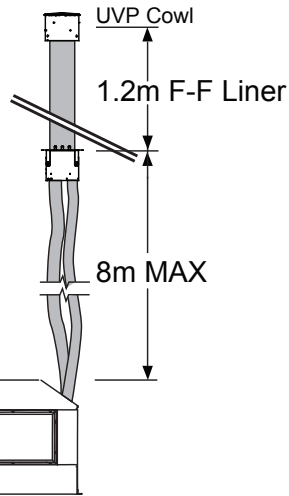
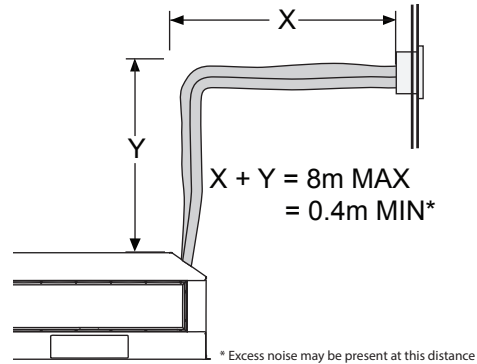


## Flue Information

### Flue Configuration (If less than 8m flue length is required)

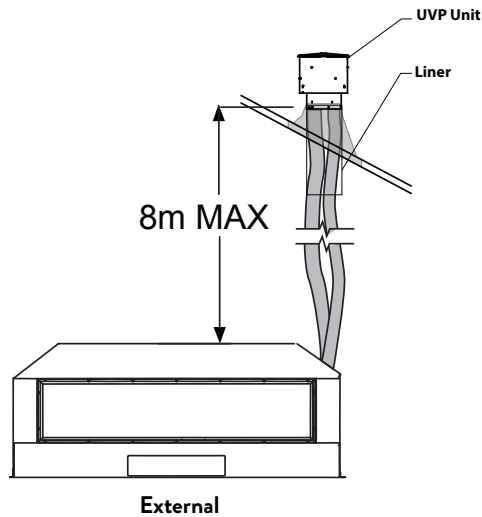
If your flue system is less than 8m long (as shown in the diagrams below), then a simple aluminium flexible flue is required.

If your flue system is greater than 8m long, then please contact the Escea Advisory Team at aa@escea.com for further guidelines.



Internal

**Horizontally Terminated:** utilizes the Escea horizontal power flue enclosure kit.



External

**Vertically Terminated Externally:** utilizes the Escea external vertical power flue enclosure kit

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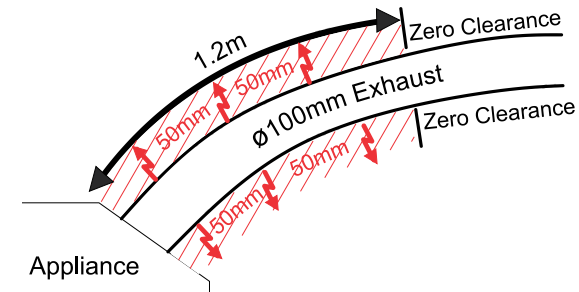
## Clearances

750

### Chassis and Flue Clearance

The fire chassis is zero clearance rated.

A 50mm clearance must be maintained from the exhaust flue for the first 1.2m of flexi flue from the appliance (see diagram below).



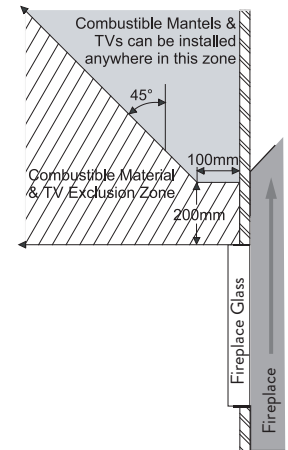
### Television Clearances

The diagram (shown right) shows the recommended minimum clearances for the location of any electrical equipment (such as Plasma TV, LCD TV or home theatre) above a DS1400 gas fire.

A mantel/recess is not required to comply with our recommendation of TV installation.

Note: dimensions from the top edge of the glass frame.

Note: The television clearance recommendations below 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.



### Mantel Clearance

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

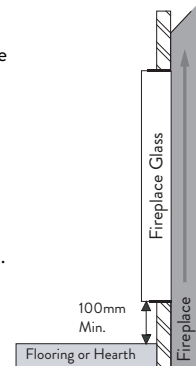
Note: dimension from the top edge of the glass frame.

### 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 **150kg**.

The fireplace can be recessed into the ground but must maintain clearances detailed in the diagram shown right for any combustible flooring materials.

The fireplace must be seismically restrained in a manner appropriate to the installation location.



# Structural Calculations for Proposed Residence 40 Anderson Park Drive, Waikanae



These calculations are in accordance with:

AS/NZS 1170:2002 Structural Design Actions  
NZS AS 1720.1 2022 Timber Structures Part 1 Design Methods  
NZS 3101:2006 Concrete Structures Standard  
NZS 3404:1997 Steel Structures Standard  
NZS 3604:2011 Timber Framed Buildings  
NZS 4229:2013 Concrete Masonry Buildings Not Requiring Specific Design  
NZS 4230:2004 Design of Reinforced Concrete Masonry Structures

<b>Engineer:</b>	<b>Initials:</b>
Stuart Preston	SRNP
Hugh Falkner	HAF
Shannon O'Leary	SOL

## Preamble:

The project comprises a proposed single-story residence.

These calculations pertain to the design of:

- Foundations,
- Beams and their connections,
- Specifically determined lateral loads,
- Bracing schedule to NZS 3604,
- Stormwater detention tank.

The ultimate limit state site wind speed has been determined as 40m/s (High) based on specific wind speed assessment.

TC2 compliant X-Pod raft foundations have been specified in accordance with CGW report 21852-RPT-G-002-A and Cohesive report 1000-143-04.

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# SCHEDULE OF INSPECTIONS

## for Proposed Residence

### 40 Anderson Park Drive, Waikanae



We confirm that CERTA Engineering Ltd have been engaged to undertake construction monitoring of the specific engineering design items to an EngNZ/ACENZ CM3 level and propose to undertake the following site inspections:

No.	Item of inspection	Timeframe
1	Foundation subgrade	Prior to placing hardfill, sand or concrete blinding layer. (BY GEOTECH)
2	Concrete piles	Pre-pour
3	Foundation beams, pads and slabs	Pre-pour
4	Internal beams, posts and connections	Pre-line or prior to building in to such an extent that remediation work could not be carried out.

**Notes:**

- a) The above items of inspections are the minimum required to enable CERTA Engineering Ltd to issue a PS4 – Producer Statement Construction Review for the specific engineering design items.
- b) The above items of inspection do not cover work constructed in accordance with NZS 3604:2011, for which inspections are to be undertaken by the Building Consent Authority.
- c) The Contractor/Builder is to provide CERTA Engineering Ltd at least 24 hours' notice of the requirement for an inspection. The above timeframes are indicative, the Engineer and Contractor are to agree the timing of inspection prior to work commencing on site.
- d) The Contractor /Builder is to provide reasonable and safe access to enable works to be inspected.
- e) The above schedule does not necessarily represent the actual number of inspections to be undertaken. The number of inspections will depend on the construction method, sequence of the works and whether or not unforeseen conditions or difficulties are encountered on site.

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## PRODUCER STATEMENT - PS1 - DESIGN

(Guidance notes on the use of this form are printed on page 2)

**ISSUED:** CERTA Engineering Ltd  
**TO:** **Timothy Atkinson**  
(Owner / Developer)  
**TO BE SUPPLIED TO:** KCDC District Council  
(Building Consent Authority)  
**IN RESPECT OF:** **Proposed Residence**  
(Description of Building Work)  
**AT:** **40 Anderson Park Drive, Waikanae**  
(Address)  
**LOT 39 DP 592074**

**753**

We have been engaged by the owner/developer referred to above to provide **structural design services and construction monitoring of specifically designed elements** in respect of the requirements of Clause B1 (B2 of specifically designed elements) of the building code for

- All  **Part only as specified of building work:**
- Specifically designed TC2 foundations outside the scope of NZS3604:2011 only
  - Specifically designed beams outside the scope of NZS3604:2011 only
  - Specifically determined lateral actions
  - Bracing capacity schedule to NZS3604:2011

The structural design carried out by us has been prepared in accordance with Compliance Documents issued by the Ministry of Business, Innovation & Employment B1/ VM1 and B2/AS1.

The foundation design carried out by us has been prepared as an alternative solution in accordance with Module 4 of the NZ Geotechnical Society Publication: Earthquake Resistant Foundation Design (Nov 2021).

The proposed building work covered by this producer statement is described on the drawings titled:

**40 Anderson Park Drive** and numbered **S0** to **S4**.

**On behalf of the Design Firm**, and subject to:

- (i) Site verification of the following design assumptions: Bearing capacity of excavated foundations to satisfy the requirements of NZS3604:2011 and to be confirmed on site by the Geotechnical Engineer;
- (ii) All proprietary products meeting their performance specification requirements;

**I believe on reasonable grounds** that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided will comply with the relevant provisions of the Building Code and b), the persons who have undertaken this design work have the necessary competency to do so. I also recommend the following level of construction monitoring:

CM1  CM2  CM3  CM4  CM5 observation services.

(Engineering Categories)

I, Stuart Preston am CPEng # 138744. I am a member of: Engineering New Zealand and hold the following qualifications: BE(Civil), CMEngNZ, CPEng

The design firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000\*.

The Design Firm is a member of ACENZ

SIGNED BY Stuart Preston ON BEHALF OF CERTA Engineering Ltd

Date 24<sup>th</sup> March 2025

(Signature)



Note: this statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provide to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000\*.

This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.

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**Received by**  
**Kapiti Coast District Council**  
**07/04/2025**



Building Code Clause(s) E1

J44890

**PRODUCER STATEMENT - PS1 - DESIGN**

(Guidance notes on the use of this form are printed on page 2)

**ISSUED:** CERTA Engineering Ltd

**TO:** **Timothy Atkinson**  
(Owner / Developer)

**TO BE SUPPLIED TO:** KCDC GIS  
(Building Consent Authority)

**IN RESPECT OF:** **Proposed Residence**  
(Description of Building Work)

**AT:** **40 Anderson Park Drive, Waikanae**  
(Address)  
**LOT 39 DP 592074**

**BC250172**  
**Received by**  
**Kapiti Coast District Council**  
**07/04/2025**

We have been engaged by the owner/developer referred to above to provide **civil engineering design services** in respect of the requirements of Clause E1 of the building code for

All  **Part only as specified of building work:**  
- Detention tank and dispersal trench

The design carried out by us has been prepared in accordance with Compliance Documents issued by the Ministry of Business, Innovation & Employment E1/VM1

The design calculations covered by this producer statement is described on the calculations titled:  
**40 Anderson Park Drive** and numbered **S5 to S6**.

**On behalf of the Design Firm**, and subject to:

- (i) Site verification of the following design assumptions: Ground conditions and layout as per the design, to be confirmed on site by Engineer;
- (ii) All proprietary products meeting their performance specification requirements;

**I believe on reasonable grounds** that a) the system, if constructed in accordance with the drawings, specifications, and other documents provided will comply with the relevant provisions of the Building Code and b), the persons who have undertaken this design work have the necessary competency to do so. I also recommend the following level of construction monitoring:

CM1  CM2  CM3  CM4  CM5 observation services.


I, Stuart Preston am CPEng # 138744.

I am a member of: Engineering New Zealand and hold the following qualifications: BE(Civil), CMEngNZ, CPEng.

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The Design Firm is a member of ACENZ

SIGNED BY Stuart Preston ON BEHALF OF CERTA Engineering Ltd

Date 24<sup>th</sup> March 2025 (Signature).....

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This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.

## GUIDANCE ON USE OF PRODUCER STATEMENTS

Producer statements were first introduced with the Building Act 1992. The producer statements were developed by a combined task committee consisting of members of the New Zealand Institute of Architects, Engineering New Zealand, Association of Consulting Engineers New Zealand in consultation with the Building Officials Institute of New Zealand. The original suite of producer statements has been revised as at the date of this form as a result of enactment of the Building Act (2004) by these organisations to ensure standard use within the industry.

The producer statement system is intended to provide Building Consent Authorities (BCAs) with reasonable grounds for the issue of a Building Consent or a Code Compliance Certificate, without having to duplicate design or construction checking undertaken by others.

- PS1 Design** Intended for the use by a suitably qualified independent design professional in circumstances where the BCA accepts a producer statement for establishing reasonable grounds to issue a Building Consent;
- PS2 Design Review** Intended for use by a suitably qualified independent design professional where the BCA accepts an independent design professional's review as the basis for establishing reasonable grounds to issue a Building Consent;
- PS3 Construction** Forms commonly used as a certificate of completion of building work are Schedule 6 of NZS 3910:2013; or Schedules E1/E2 of NZIA's SCC 2007 2
- PS4 Construction Review** Intended for use by a suitably qualified independent design professional who undertakes construction monitoring of the building works where the BCA requests a producer statement prior to issuing a Code Compliance Certificate. This must be accompanied by a statement of completion of building work (Schedule 6).

The following guidelines are provided by ACENZ, EngNZ and NZIA to interpret the Producer Statement.

### Competence of Design Professional

This statement is made by a Design Firm that has undertaken a contract of services for the services named, and is signed by a person authorised by the firm to verify the processes within the firm and competence of its designers.

A competent design professional will have a professional qualification and proven current competence through registration on a national competence-based register, either as a Chartered Professional Engineer (CPEng) or a Registered Architect.

Membership of a professional body, such as the Engineering New Zealand (EngNZ) or the New Zealand Institute of Architects (NZIA) provides additional assurance of the designer's standing within the profession. If the design firm is a member of the Association of Consulting Engineers New Zealand (ACENZ), this provides additional assurance about the standing of the firm.

Persons or firms meeting these criteria satisfy the term "suitably qualified independent design professional".

### Professional Indemnity Insurance

As part of membership requirements, ACENZ requires all member firms to hold Professional Indemnity Insurance to a minimum level.

The PI insurance minimum stated on the front of this form reflects standard, small projects. If the parties deem this inappropriate for large projects the minimum may be up to \$500,000.

### Professional Services during Construction Phase

There are several levels of service which a Design Firm may provide during the construction phase of a project (CM1-5)3 (OL1-OL4)2. The Building Consent Authority is encouraged to require that the service to be provided by the Design Firm is appropriate for the project.

### Requirement to provide Producer Statement PS4

Building Consent Authorities should ensure that the applicant is aware of any requirement for producer statements for the construction phase of building work at the time the building consent is issued as no design professional should be expected to provide a producer statement unless such a requirement forms part of the Design Firm's engagement.

### Attached Particulars

Attached particulars referred to in this producer statement refer to supplementary information appended to the producer statement.

### Refer Also:

- 1 Conditions of Contract for Building & Civil Engineering Construction NZS 3910: 2013
- 2 NZIA Standard Conditions of Contract SCC 2007 (1st edition)
- 3 Guideline on the Briefing & Engagement for Consulting Engineering Services (ACENZ, 2004)

[www.acenz.org.nz](http://www.acenz.org.nz)  
[www.engineeringnz.org](http://www.engineeringnz.org)  
[www.nzia.co.nz](http://www.nzia.co.nz)

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 Kapiti Coast District Council  
 07/04/2025



Memorandum from licensed building practitioner:

J44890

**Certificate of design work**

Section 45 and Section 30C, Building Act 2004

**THE BUILDING**

Street Address: 40 Anderson Park

Suburb:

Town/City: Waikanae

Postcode:

**THE OWNER**

Name(s):

**BASIS FOR PROVIDING THIS MEMORANDUM**

I am providing this memorandum in my role as the **Specialist** designer who supervised 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, Stuart Preston, supervised the following design work that is restricted building work

**PRIMARY STRUCTURE: B1**

Design work that is restricted building work	Description (as required)
Foundations (✓)	SED <sup>(1)</sup> TC2 X-Pod Raft Slab
Retaining Walls (✗)	
Beams (✓)	SED Roof beams
Portal (✗)	
Bracing (✓)	SED Lateral Loads, bracing schedule to NZS3604:2011
Other (primary) (✗)	

**WAIVERS AND MODIFICATIONS**

No waivers or modifications of the building code are required.

**ISSUED BY**

Name: **Stuart Preston**

CPEng number: **138744**

Design Entity/Company: Certa Engineering Limited

**DECLARATION**

I, **Stuart Preston**, LBP, state that I have applied the skill and care reasonably required of a competent design professional in 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: 24<sup>th</sup> March 2025

(1) SED = Elements subject to **Specific Engineering Design** outside of the scope of NZS 3604:2011, unless noted otherwise.

**GENERAL:**

- REFER ARCHITECT'S DRAWINGS FOR DIMENSIONS, UNLESS NOTED OTHERWISE. DIMENSIONS TO BE CONFIRMED ON SITE PRIOR TO STEEL FABRICATION. DO NOT SCALE OFF THIS DRAWING.
- IF MAXIMUM HEIGHT DIMENSIONS VARY FROM THAT SHOWN CONTACT ENGINEER IMMEDIATELY. IT IS THE CONTRACTOR'S RESPONSIBILITY FOR THE SET OUT ON SITE AND DETERMINING ACTUAL WALL HEIGHTS AS THESE MAY VARY FROM THAT SHOWN
- STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATIONS, ARCHITECTURAL, CIVIL AND ENGINEERING SERVICES DOCUMENTS.
- UNLESS OTHERWISE NOTED ALL LEVELS ARE IN METERS, AND ALL DIMENSIONS ARE IN MILLIMETERS, AND SHALL BE CHECKED BY CONTRACTOR PRIOR TO CONSTRUCTION.
- DIMENSION SHALL NOT BE OBTAINED BY SCALING FROM DRAWINGS.
- ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT OR ENGINEER FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
- ALL MATERIAL AND WORKMANSHIP SHALL BE ON ACCORDANCE WITH THE CURRENT CODES OF PRACTICE EXCEPT WHERE VARIED BY THE SPECIFICATION AND/OR DRAWINGS.
- WHERE PROPRIETY PRODUCTS ARE SPECIFIED IN THE DOCUMENTS THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE PRODUCT FOR APPROVAL.
- ENGINEER REQUIRES 24 HOURS NOTICE BEFORE ANY INSPECTION (REFER TO STRUCTURAL CALCULATIONS FOR SCHEDULE OF INSPECTIONS).

**FILL SPECIFICATION:**

- SITE TO BE CLEARED OF ALL TOPSOIL AND ANY ORGANIC MATERIAL THEN CUT TO A SERIES OF LEVEL BENCHES.
- ENGINEER TO INSPECT PRIOR TO ANY FILL PLACEMENT.
- FILL MATERIAL TO BE CRUSHED ROCK TOPCOURSE MATERIAL FREE OF ORGANIC MATERIAL FULLY COMPACTED TO 90% OF MAXIMUM DENSITY TO NZS4402.4.2.2:1988 TEST 4.2.2 MAXIMUM DRY DENSITY.
- COMPACT IN MAXIMUM LAYERS OF 150mm THICK WITH A 2 TONNE ROLLER - TRACK ROLLING WITH A DIGGER IS NOT ACCEPTABLE
- ENGINEER TO INSPECT AND TEST EVERY 2nd LAYER PLACED (300mm INTERVALS)

**PILING:**

- PILE DEPTH ESTIMATIONS ARE HIGHLY APPROXIMATE AND MAY BE SUBJECT TO SIGNIFICANT VARIATION ON SITE. IF GREATER CONFIDENCE IS REQUIRED WE RECOMMEND INSTALLATION OF TEST PILES.
- DRIVEN TIMBER PILES TO HAVE A DEPENDABLE ULTIMATE CAPACITY OF 65KN U.N.O. (REFER DRAWING FOR ESTIMATED LENGTH)
- PILING CONTRACTOR TO PROVIDE RECORD OF PILE SETS AND PILE DRIVING EQUIPMENT DETAILS. TOP OF PILES TO BE PAINTED WITH METALEX AND HAVE A GAP BETWEEN PILE AND FOOTING STEEL OR A LAYER OF DPM
- FOR LARGE POLE HOLES IT IS RECOMMENDED TO DRILL & POUR INTERMEDIATE HOLES, THEN COMPLETE REMAINDER IN A SEPARATE POUR TO MINIMISE HOLE COLLAPSE.
- ENSURE BOTTOM OF PILE HOLES ARE FREE OF WATER AND LOOSE MATERIAL. TAMP AS NECESSARY

**WAFFLE SLAB NOTES:**

- SLAB AND FOOTINGS - USE 25MPa CONCRETE, 100mm SLUMP
- REFER POD SUPPLIER SPECIFICATIONS AND DRAWINGS FOR SAWCUTS AND SHRINKAGE CONTROL JOINTS
- BASECOURSE AS REQUIRED TO BRING SITE LEVEL. ANY SOFT SPOTS ARE TO BE EXCAVATED AND REPLACED WITH BASECOURSE.
- POLISHED FLOOR - USE 30MPa CONCRETE WITH 13mm AGGREGATE (DO NOT USE A PUMP MIX), 100mm SLUMP, ENSURE WET CURING FOR AT LEAST 7 DAYS. 2 LAYERS OF DPC ON 20mm SAND BLINDING. ENSURE SAWCUTS ARE MADE AT THE EARLIEST POSSIBLE TIME (WITHIN 48 HRS)

**STRUCTURAL MAINTENANCE SCHEDULE:**

- YEARLY:** WASH DOWN ALL EXPOSED STEELWORK THAT IS NOT IN A FULLY INTERIOR ENVIRONMENT.
- 10 YEARLY:** INSPECT AND REPAIR SEALANT THAT ENCLOSES STRUCTURAL MILD-STEEL COMPONENTS AND/OR TIMBER WITH MILD-STEEL FIXINGS.  
CHECK EXPOSED TIMBER FIXINGS FOR CORROSION, REPAIR AS REQUIRED.
- 25 YEARLY:** INSPECT SAMPLES OF STRUCTURAL STEEL THAT IS HIDDEN FROM VIEW BUT NOT ENCLOSED WITHIN A VAPOUR BARRIER, AND REPAIR PROTECTIVE COATINGS AS NECESSARY. INSPECTION MAY TYPICALLY REQUIRE REMOVAL OF CLADDING AND/OR THE DRILLING OF HOLES FOR BORESCOPE ACCESS. REPAIR AS REQUIRED.  
INSPECT ALL EXPOSED, EXTERNAL TIMBER. REPAIR AS REQUIRED  
INSPECT ALL EXPOSED, EXTERNAL REINFORCED CONCRETE FOR SIGNS OF SPALLING OR CRACKING. REPAIR AS REQUIRED.

**STEEL:**

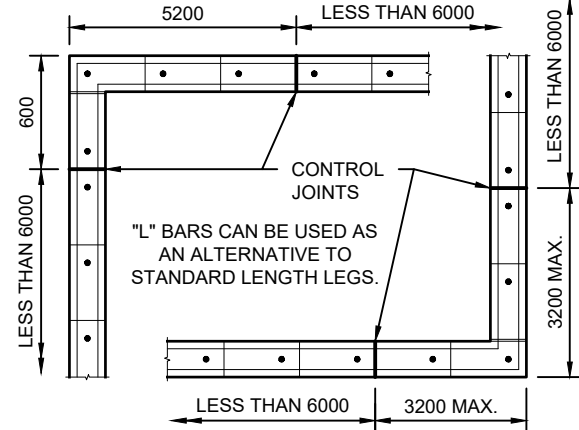
- ALL STEEL WORK SHALL COMPLY WITH THE REQUIREMENTS OF NZS3404:2009
- ALL WELDS TO BE 6 FILLET WELDS ALL ROUND UNLESS NOTED OTHERWISE.
- ALL M12 BOLTS TO BE GRADE 4.6. ALL M16 BOLTS TO BE GRADE 8.8 UNLESS NOTED OTHERWISE.
- ALL PLATES TO BE 10 THICK UNLESS NOTED OTHERWISE.
- STEEL GRADES:  
- PLATES 250MPa  
- HOT ROLLED SECTIONS 300MPa  
- HOLLOW SECTIONS 350MPa
- ALL WELD ELECTRODES ARE E48XX OR W5
- ALL INTERNAL STRUCTURAL STEEL TO BE FINISHED IN ACCORDANCE WITH SYSTEM DESIGNATION AS/NZS2312/A1/K1 BEFORE DELIVERY TO SITE. ANY AREAS DAMAGED TO BE MADE GOOD TO ORIGINAL SPECIFICATION.
- ALL EXTERNAL STRUCTURAL STEEL TREATMENT SHALL BE ONE OF THE FOLLOWING: (NZS TS 3404-2018)
  - TSZ150S - 150µm THERMAL SPRAY ZINC + 75µm ACRYLIC PAINT (EXTERIOR OVER 1KM FROM COAST).
  - OR
  - HDG900 - 900gm/m<sup>2</sup> GALVANISED COATING. (EXTERIOR OVER 1KM FROM COAST).

**CONCRETE:**

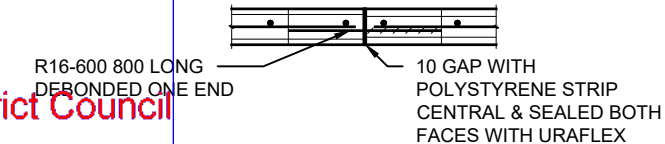
- ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF NZS3109:1997
- CONCRETE SHALL HAVE A 28 DAY STRENGTH OF:
  - SLABS & FOOTINGS 25MPa
  - PILES 17.5MPa
  - TIDY SLABS 10MPa
- MAXIMUM SLUMP TO BE 100mm UNLESS NOTED OTHERWISE
- CONCRETE FINISHES SHALL BE:
  - SLABS U3
  - EXPOSED FOOTINGS F4
- ALL REINFORCEMENT SHALL COMPLY WITH AS/NZS4671:2001 (HD BARS SHALL NOT BE REBENT)
- THE CONCRETE SHALL BE KEPT CONTINUOUSLY WET FOR A PERIOD OF A LEAST 4 DAYS. FROM 4-10 DAYS AFTER POURING IT SHALL BE KEPT DAMP BY OCCASIONAL HOSING..
- ALL CHEMICAL ANCHOR HOLES TO BE CLEANED OUT AND EMBEDDED TO DEPTHS IN ACCORDANCE WITH MANUFACTURES INSTRUCTIONS.

**MASONRY:**

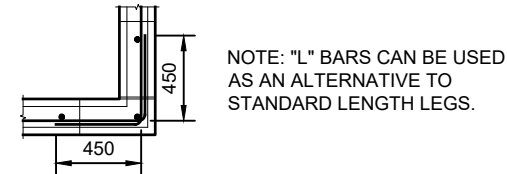
- ALL MASONRY IS LAID IN RUNNING BOND CONFIGURATION UNLESS NOTED OTHERWISE.
- ALL MASONRY WITHIN THE BUILDING STRUCTURE IS GRADE B AS DEFINED IN NZS 4230.
- ALL CONCRETE MASONRY BLOCKS SHALL CONFORM TO NZS 3102 UNLESS NOTED OTHERWISE. DENSITY SHALL BE > 1750 kg/m<sup>3</sup>.
- ALL MASONRY WORK SHALL COMPLY WITH THE REQUIREMENTS OF NZS4210:2001 & NZS4229:2013. LINTELS WHERE NOT SPECIFICALLY DETAILED SHALL COMPLY WITH THE PROVISIONS OF NZS4229:2013. USE 800g/m<sup>3</sup> OF SIKA 'CAVEX' EXPANSION AGENT, OR APPROVED ALTERNATIVE, FOR MASONRY BLOCK INFILL.
- VERTICAL CONTROL JOINTS IN MASONRY TO BE PROVIDED AT 6m MAX. CENTRES. WHERE NOT SHOWN ON DRAWINGS THE JOINTS SHOULD BE LOCATED IN ACCORDANCE WITH NZS4229:2013 SECTION 12 AND TO APPROVAL OF THE ENGINEER.



**6. BLOCK WORK CONTROL JOINTS:**



**7. ALL BLOCK WORK HORIZONTAL REINFORCING MUST LAP ADEQUATELY AT CORNERS AND JUNCTIONS AS INDICATED BELOW:**



- IF MAXIMUM HEIGHT DIMENSIONS VARY FROM THAT SHOWN CONTACT ENGINEER IMMEDIATELY. IT IS THE CONTRACTOR'S RESPONSIBILITY FOR THE SET OUT ON SITE AND DETERMINING ACTUAL WALL HEIGHTS AS THESE MAY VARY FROM THAT SHOWN
- CONCRETE SHALL BE: B1(B2 RETAINING WALLS) 20MPa  
- BLOCK FILL
- ALL REINFORCEMENT SHALL COMPLY WITH AS/NZS4671:2001 AND SHALL BE PLACED CENTRAL IN MASONRY BLOCK U.N.O. (HD BARS SHALL NOT BE REBENT)
- CHASING OF LOAD BEARING MASONRY UNITS IS NOT PERMITTED WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

REINFORCING LAP LENGTHS				
	MASONRY(20MPa)		CONCRETE (25MPa)	
BAR SIZE	300	500	300	500
10	400	700	-	-
12	480	840	360	600
16	640	1120	480	800
20	800	1400	600	1000
25	-	-	750	1250

REINFORCEMENT COVER		MASONRY	CONCRETE
EXPOSURE CLASSIFICATION		17.5MPa	25MPa
INTERIOR	A1	35	25
EXTERIOR - MOD	B1	50	40
AGAINST GROUND		-	75

**TIMBER:**

- ALL TIMBER WORK SHALL COMPLY WITH THE REQUIREMENTS OF NZS3602:2003
- ALL BOLTED TIMBER CONNECTIONS TO HAVE 50x50x3 WASHERS.
- ALL TIMBER TO BE MSG8 UNLESS SPECIFIED OTHERWISE.
- TIMBER CONNECTIONS NOT SHOWN TO BE IN ACCORDANCE WITH NZS3604. TIMBER SIZES NOT SHOWN REFER ARCHITECT.
- EXTERNAL BOLTS, WASHERS & BRACKETS TO BE STAINLESS STEEL.

TIMBER HAZARD CLASSIFICATIONS		
HAZARD CLASS	SERVICE CONDITIONS	TYPICAL USES
H1.2	PROTECTED FROM WEATHER, BUT WITH A RISK OF MOISTURE CONTENT CONDUCTIVE TO DECAY	WALL FRAMING - SEE NZS3604
H3.2	PERIODIC WETTING, NOT IN CONTACT WITH THE GROUND, MORE CRITICAL END USES	DECKS, PERGOLAS, EXTERNAL BEAMS, POST NOT IN GROUND
H4	GROUND CONTACT, OR CONDITIONS OF SEVERE OR CONTINUOUS WETTING	FENCE POSTS, LANDSCAPING TIMBER NOT REQUIRING A BUILDING CONSENT
H5	GROUND CONTACT, OR CONDITIONS OF SEVERE OF CONTINUOUS WETTING, WHERE USES ARE CRITICAL AND WHERE A HIGHER LEVEL OF PROTECTION THAN H4 IS REQUIRED	HOUSE PILES AND POLES, CRIB WALLING, POSTS IN GROUND FOR DECKS, VERANDAS, PERGOLAS

SCREW CONVERSION TABLE	
GAUGE SIZE	METRIC SIZE
8g	4.2Ø
10g	4.9Ø
12g	5.6Ø
14g	6.3Ø

**SAFETY STATEMENT:**

- EXISTING LOAD BEARING STRUCTURAL ELEMENTS SHALL BE ADEQUATELY PROPPED PRIOR TO REMOVING ANY SUPPORTING STRUCTURE. PROPPING SHALL REMAIN UNTIL NEW SUPPORTING STRUCTURE IS INSTALLED AS PER THE ENGINEER'S DRAWINGS AND REQUIREMENTS.
- THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE BUILDER.
- TEMPORARY WORK AND PROPPING IS THE RESPONSIBILITY OF THE BUILDER.

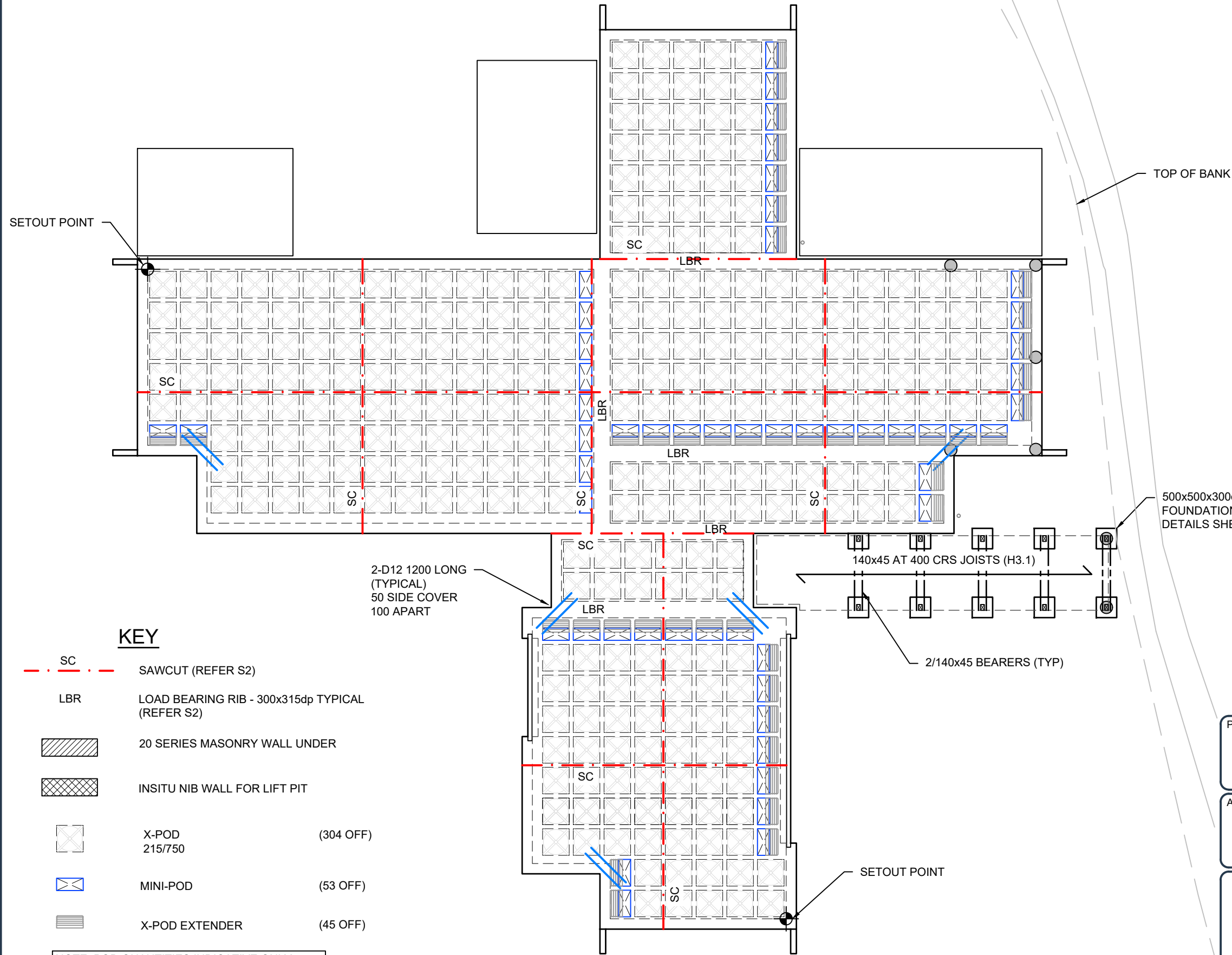
PROJECT  
**PROPOSED HOUSE**

ADDRESS  
**40 ANDERSON PARK DRIVE  
DRIVE, WAIKANAЕ**

**CERTA ENGINEERING**  
Lower Hutt Office  
Tel: 04 566 8004  
Level 1, 70 Bloomfield Tce  
P.O. Box 30 535  
Lower Hutt 5040  
email@certa.nz

DATE: 24 March 2025      DESIGNED: SOL  
DRAWN: BV      APPROVED: SRNP  
JOB No: **44890**      SHT No: **S0**      REV: **A**

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Kapiti Coast District Council  
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500x500x300dp  
 FOUNDATION PAD (REFER  
 DETAILS SHEET S4)

140x45 AT 400 CRS JOISTS (H3.1)

2/140x45 BEARERS (TYP)

REFER STRUCTURAL CALCULATIONS  
 FOR INSPECTION SCHEDULE

TRUSS MANUFACTURER TO ENSURE ALL TRUSS  
 LOADS ARE TO INTERNAL THICKENINGS OR  
 EXTERNAL PERIMETER

**KEY**

- SC SAWCUT (REFER S2)
- LBR LOAD BEARING RIB - 300x315dp TYPICAL (REFER S2)
- 20 SERIES MASONRY WALL UNDER
- INSITU NIB WALL FOR LIFT PIT
- X-POD 215/750 (304 OFF)
- MINI-POD (53 OFF)
- X-POD EXTENDER (45 OFF)

NOTE: POD QUANTITIES INDICATIVE ONLY  
 (THIS NUMBER MAY ALTER DUE TO SERVICE  
 PENETRATIONS)

300Ø CONCRETE AUGERED PILE TO  
 MINIMUM PILE DEPTH 2.0m

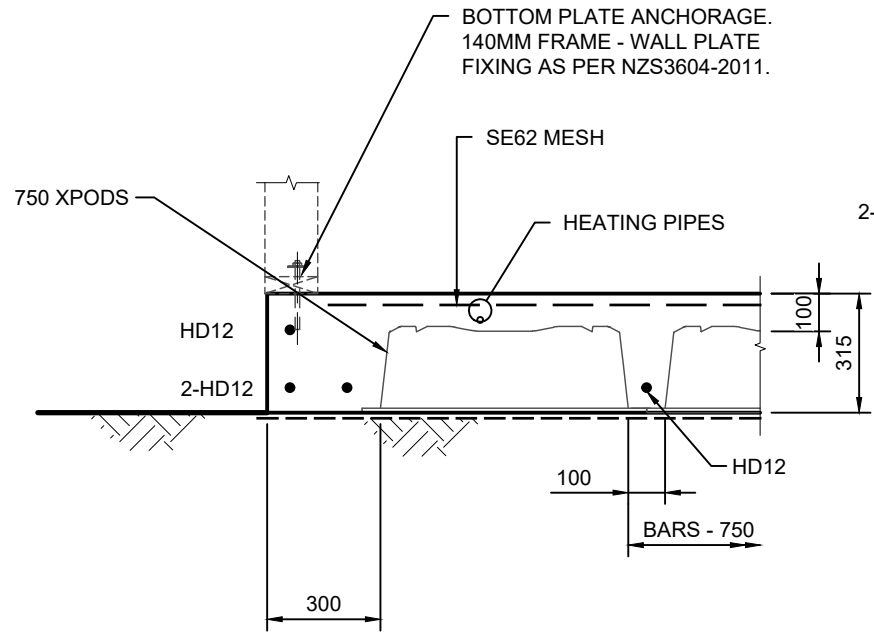
**FOUNDATION PLAN**  
 SCALE 1:100

PROJECT  
**PROPOSED HOUSE**

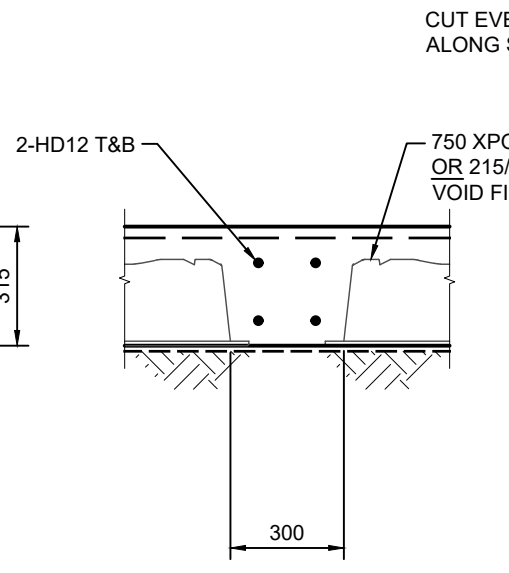
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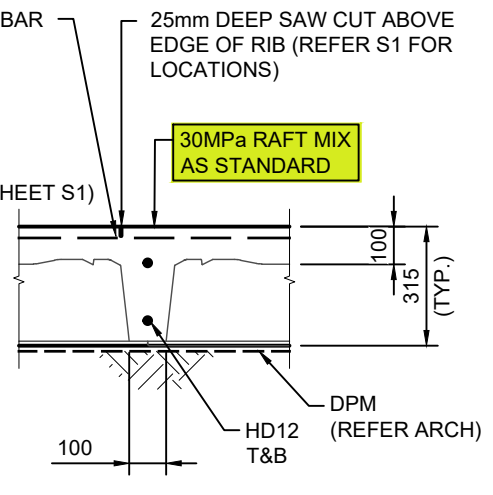
DATE: 24 March 2025	DESIGNED: SOL
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JOB No: <b>44890</b>	SHT No: <b>S1</b> REV: <b>A</b>



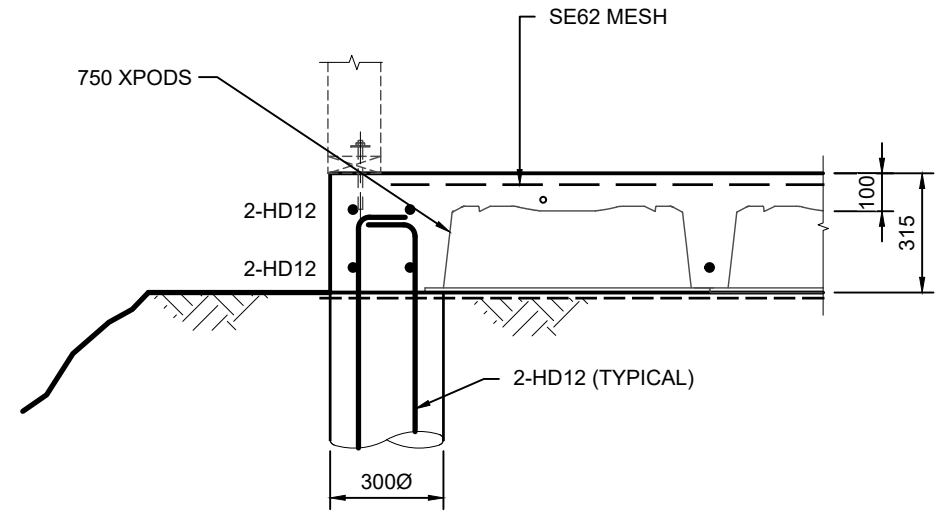
**XPOD EDGE BEAM DETAIL**  
1:20



**XPOD INTERNAL BEAM/PILE THICKENING DETAIL**  
1:20



**RIB DETAIL**  
1:20



**PILED XPOD EDGE BEAM DETAIL**  
1:20

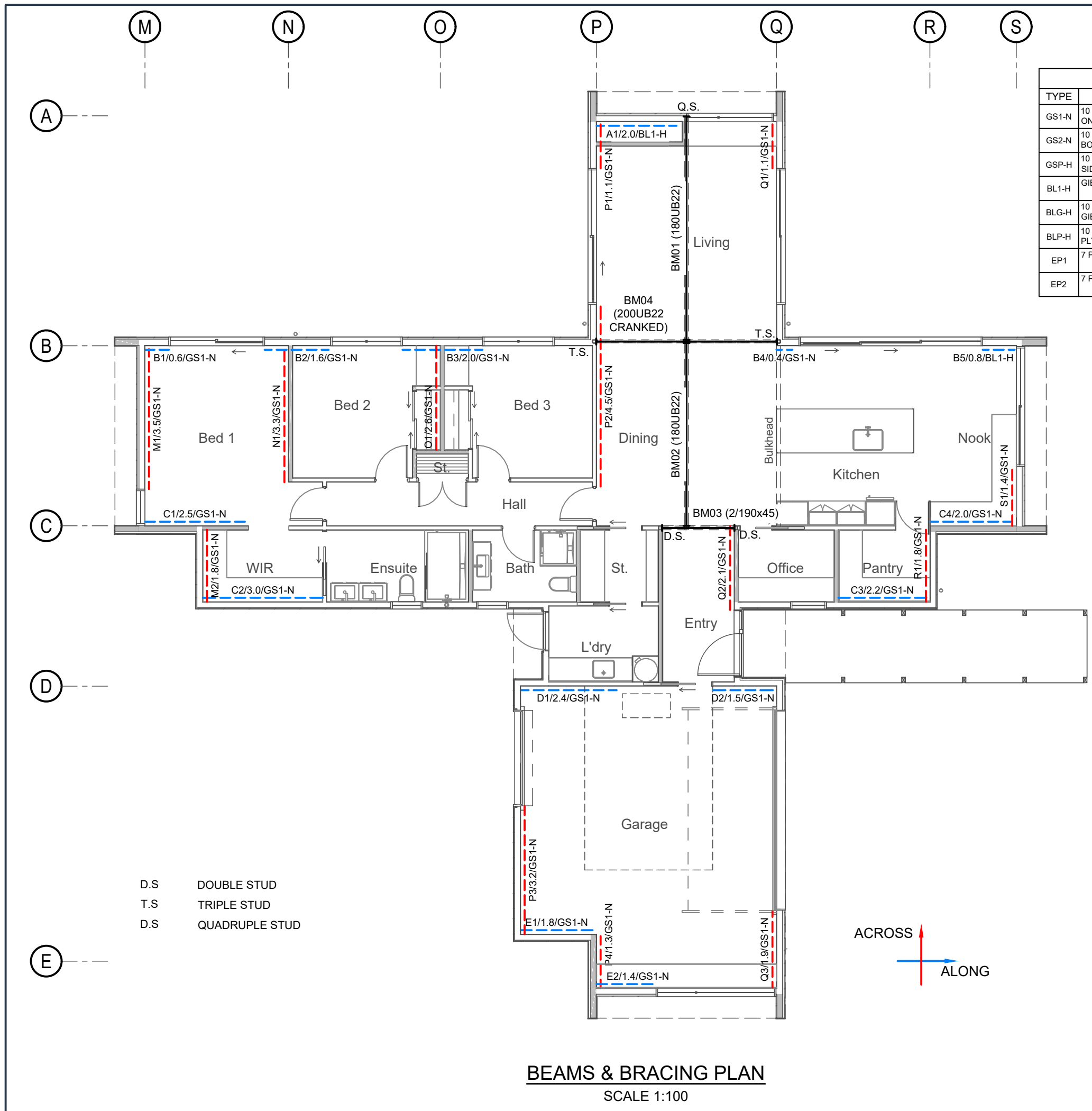
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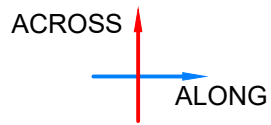
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BRACING LEGEND			
TYPE	LINING	HOLD-DOWN REQUIREMENTS	
GS1-N	10 GIB® STANDARD PLASTERBOARD ONE SIDE	NIL	MINIMUM CHARACTERISTIC UPLIFT CAPACITY OF 15KN FOR CONCRETE SLABS; OR 12MM DIAMETER X 150MM LONG GALVANISED COACH SCREW FOR TIMBER FLOORS
GS2-N	10 GIB® STANDARD PLASTERBOARD BOTH SIDES	NIL	
GSP-H	10 GIB® PLASTERBOARD TO ONE SIDE 7 PLYWOOD OTHER SIDE	PANEL HOLD-DOWN FIXINGS*	
BL1-H	GIB BRACELINE® ONE SIDE	PANEL HOLD-DOWN FIXINGS*	
BLG-H	10 GIB BRACELINE® ONE SIDE 10 GIB® PLASTERBOARD OTHER SIDE	PANEL HOLD-DOWN FIXINGS*	
BLP-H	10 GIB BRACELINE® ONE SIDE 7 PLYWOOD OTHER SIDE	PANEL HOLD-DOWN FIXINGS*	
EP1	7 PLYWOOD OTHER SIDE	PANEL HOLD-DOWN FIXINGS*	
EP2	7 PLYWOOD EACH SIDE	PANEL HOLD-DOWN FIXINGS*	7 PLYWOOD TO BE FIXED WITH 50x2.8Ø NAILS AT 150 TO PERIMETER OF BRACING ELEMENT AT NO LESS THAN 7MM FROM SHEET EDGE AND 300 TO INTERMEDIATE STUDS 10 GIB OR BRACELINE FIXED WITH 32x8g GIB GRABBER

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D.S DOUBLE STUD  
 T.S TRIPLE STUD  
 D.S QUADRUPLE STUD



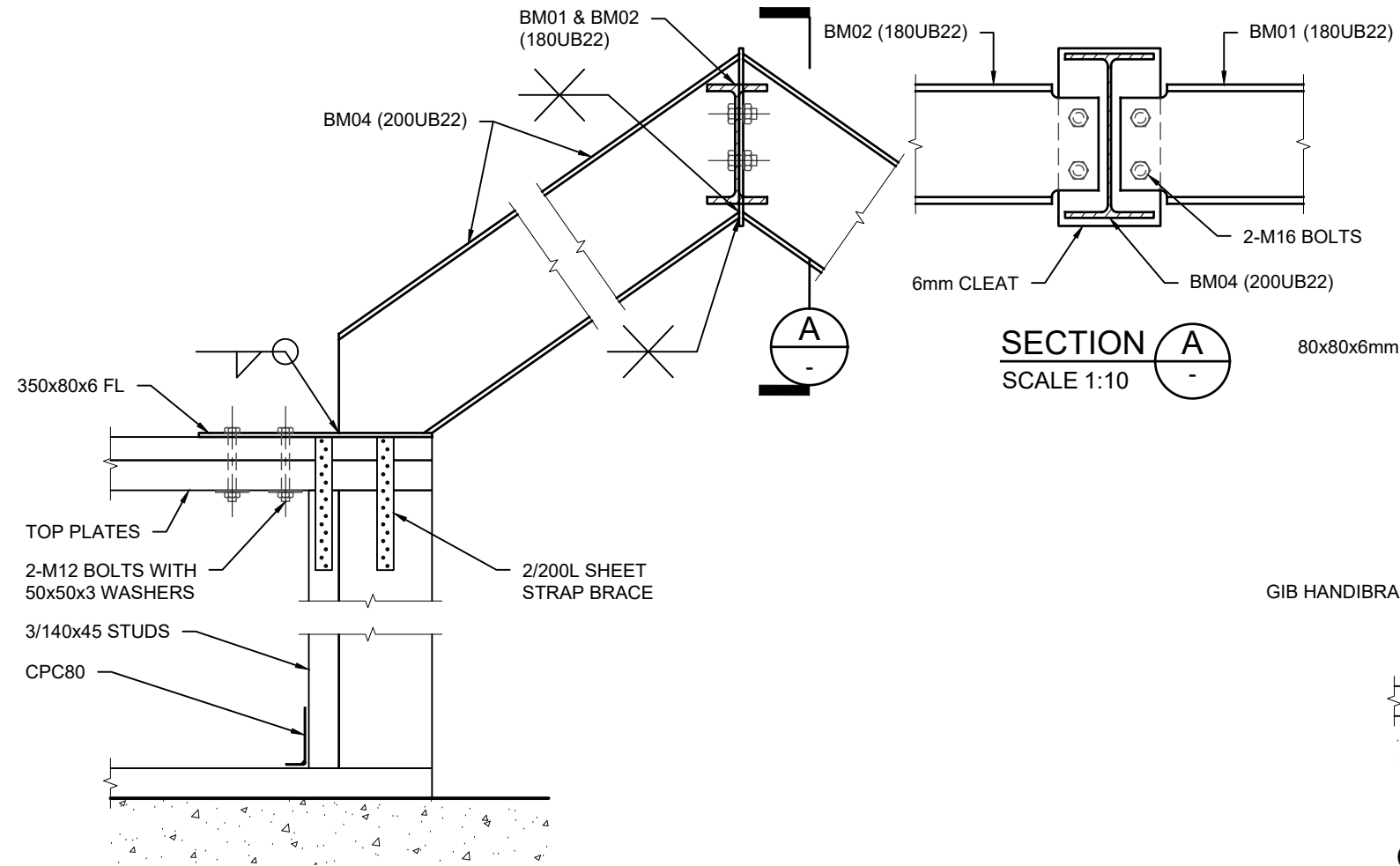
**BEAMS & BRACING PLAN**  
 SCALE 1:100

PROJECT  
**PROPOSED HOUSE**

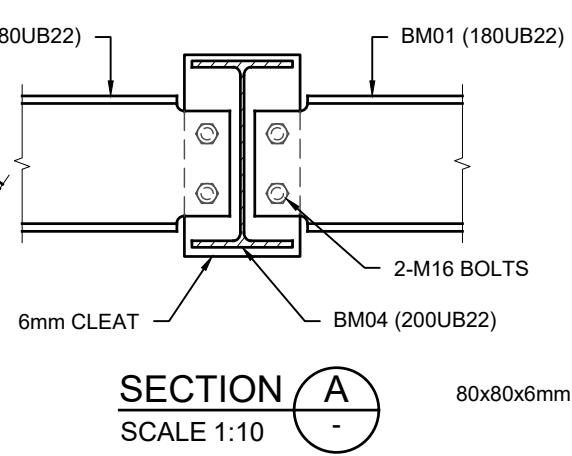
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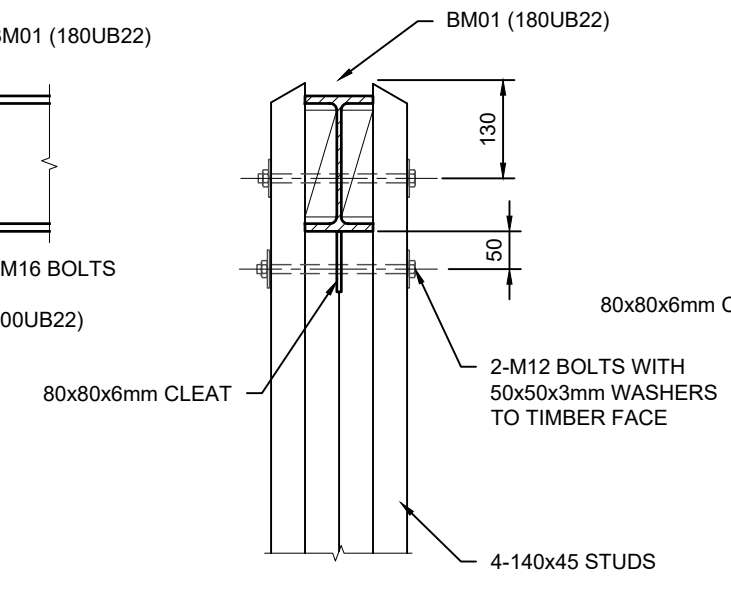
DATE: 24 March 2025	DESIGNED: SOL
DRAWN: BV	APPROVED: SRNP
JOB No: <b>44890</b>	SHT No: <b>S3</b> REV: <b>A</b>



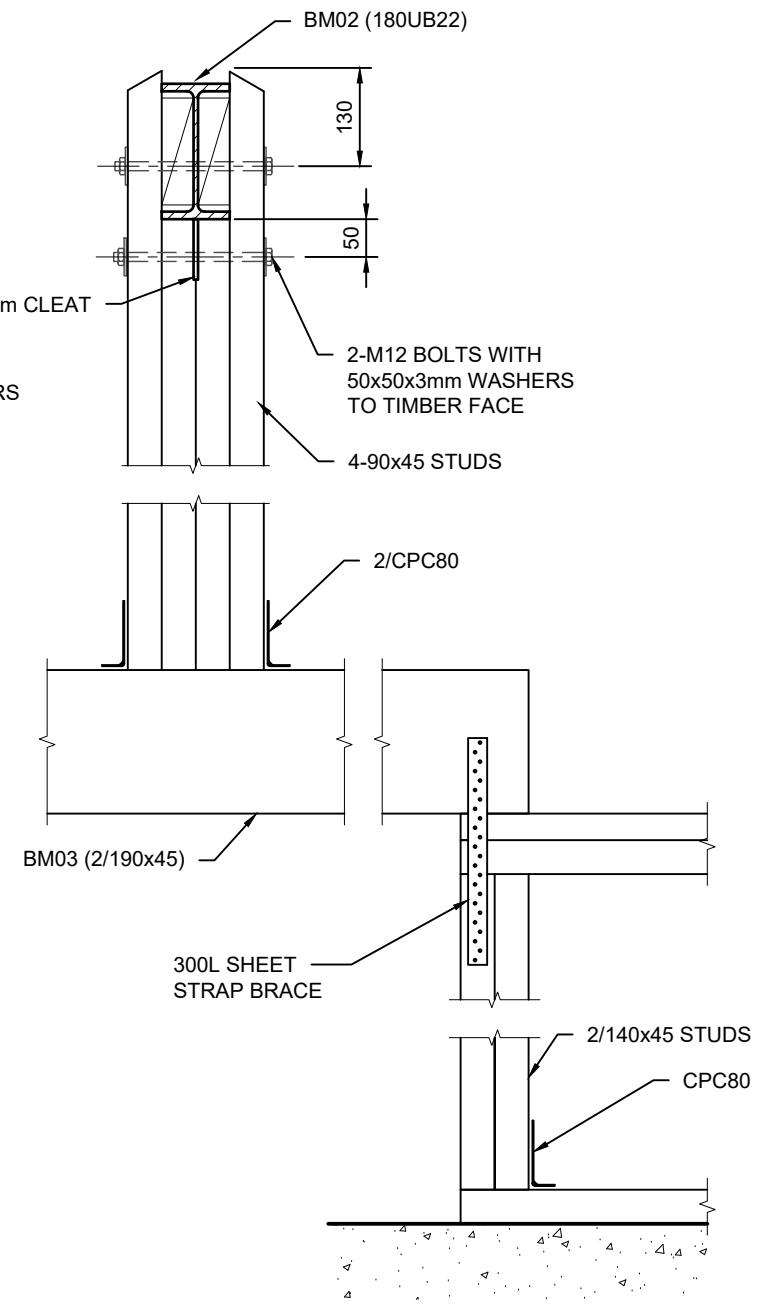
**BM04 TO STUD AND BM01 & BM02 CONNECTION DETAIL**  
SCALE 1:10



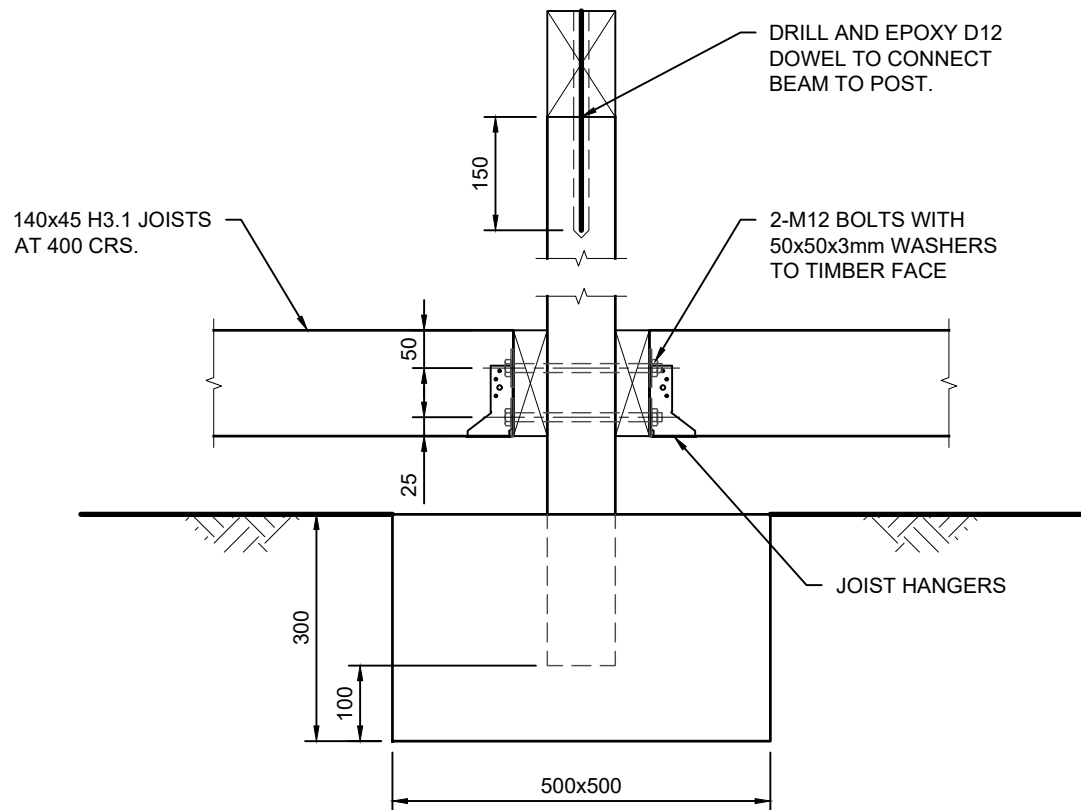
**SECTION A**  
SCALE 1:10



**BM01 TO STUD CONNECTION DETAIL**  
SCALE 1:10



**BM02 TO BM03 CONNECTION DETAIL**  
SCALE 1:10



**BOARDWALK POST/BEAM CONNECTION DETAIL**  
SCALE 1:10

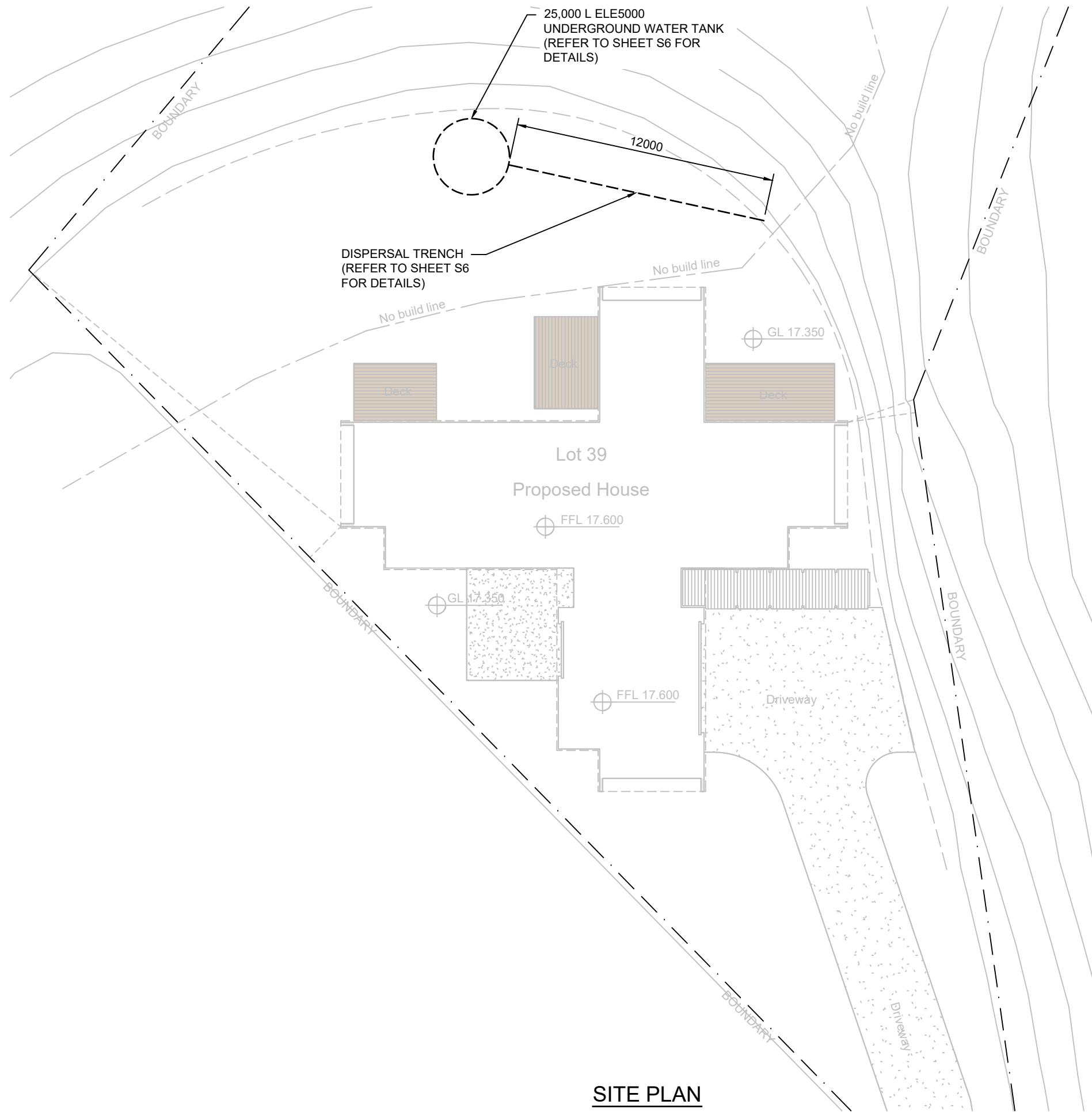
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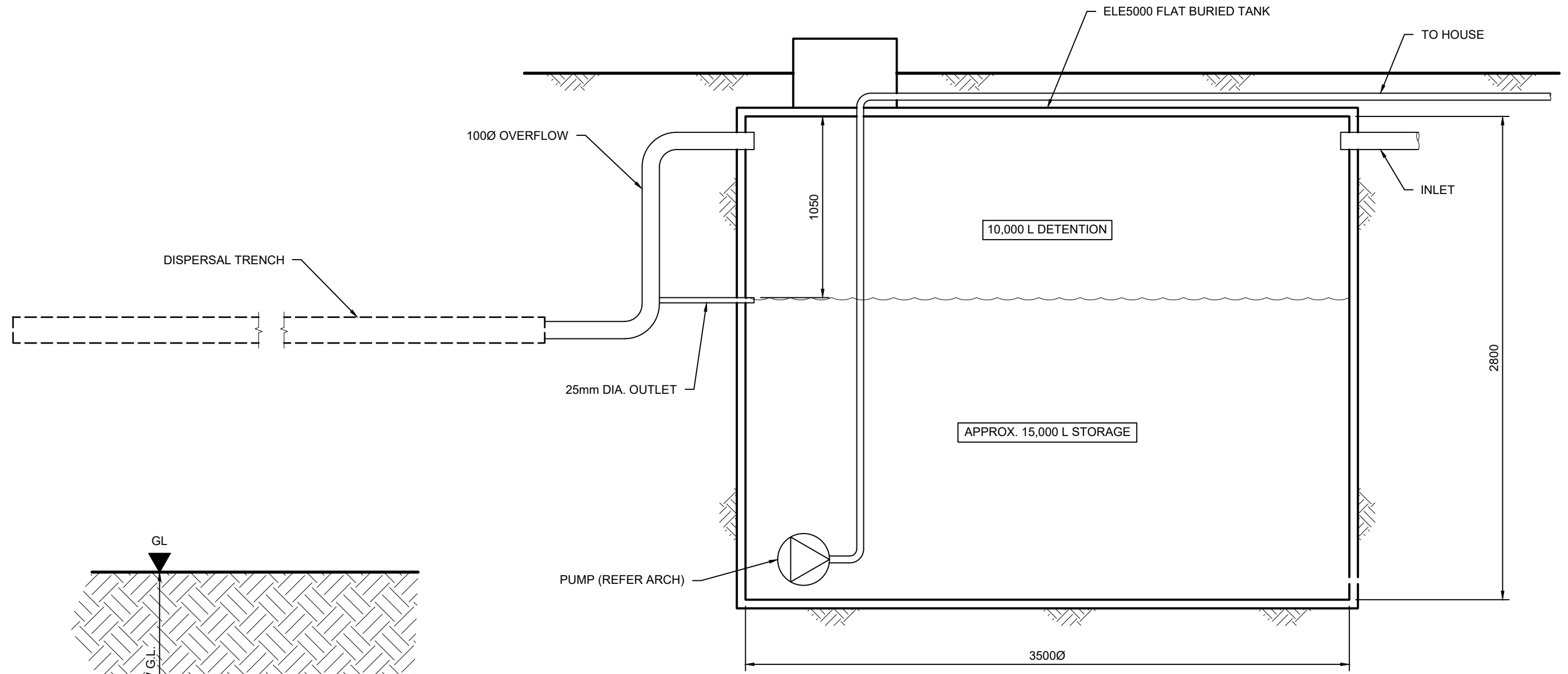
DATE: 24 March 2025	DESIGNED: SOL
DRAWN: BV	APPROVED: SRNP
JOB No: <b>44890</b>	SHT No: <b>S4</b> REV: <b>A</b>



**SITE PLAN**  
SCALE 1:200

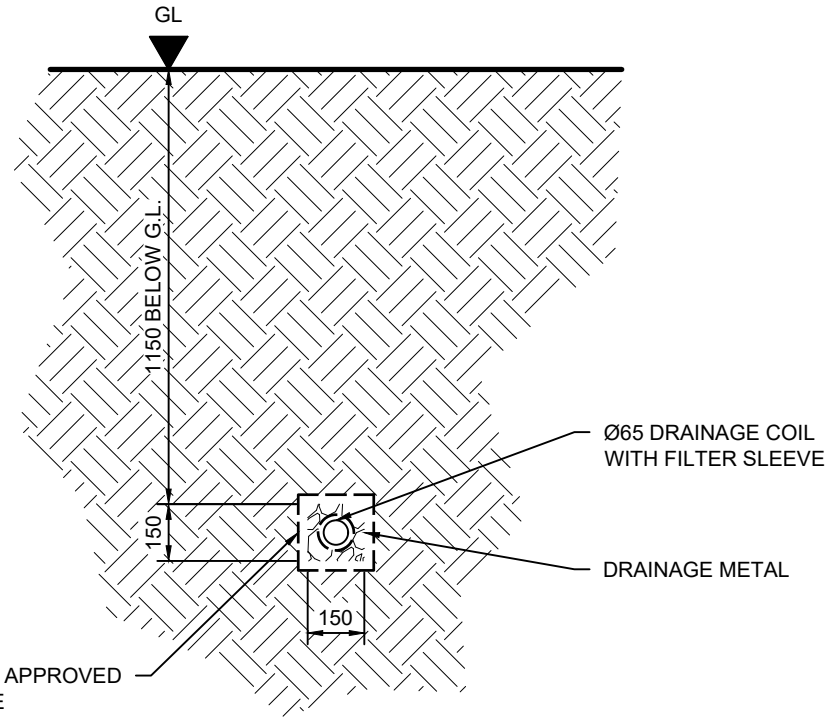
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PROJECT			
<b>PROPOSED HOUSE</b>			
ADDRESS			
<b>40 ANDERSON PARK DRIVE DRIVE, WAIKANAЕ</b>			
		Lower Hutt Office Tel: 04 566 8004 Level 1, 70 Bloomfield Tce P.O. Box 30 535 Lower Hutt 5040 <a href="mailto:email@certa.nz">email@certa.nz</a>	
		DATE: 24 March 2025	DESIGNED: SOL
DRAWN: BV		APPROVED: SRNP	
JOB No: <b>44890</b>		SHT No: <b>S5</b>	REV: <b>A</b>



**DETENTION TANK**  
SCALE 1:25

SOAK PITS TO BE LOCATED MIN 2m FROM DWELLING, 1.5m FROM BOUNDARIES AND SMALL BUILDINGS AND 1m FROM SEWERS.



**DISPERSAL TRENCH DETAIL**  
SCALE 1:20

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PROJECT  
**PROPOSED HOUSE**

ADDRESS  
**40 ANDERSON PARK DRIVE  
DRIVE, WAIKANAE**

**CERTA ENGINEERING**  
Lower Hutt Office  
Tel: 04 566 8004  
Level 1, 70 Bloomfield Tce  
P.O. Box 30 535  
Lower Hutt 5040  
[email@certa.nz](mailto:email@certa.nz)

DATE:	24 March 2025	DESIGNED:	SOL
DRAWN:	BV	APPROVED:	SRNP
JOB No:	<b>44890</b>	SHT No:	<b>S6</b>
		REV:	<b>A</b>



## GIB EzyBrace® Systems specification GS1-N

Specification code	Minimum length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard to one side only

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centres thereafter.

External Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for external wall bottom plate fixing.

### WALL LINING

- Any 10mm or 13mm GIB® plasterboard lining.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

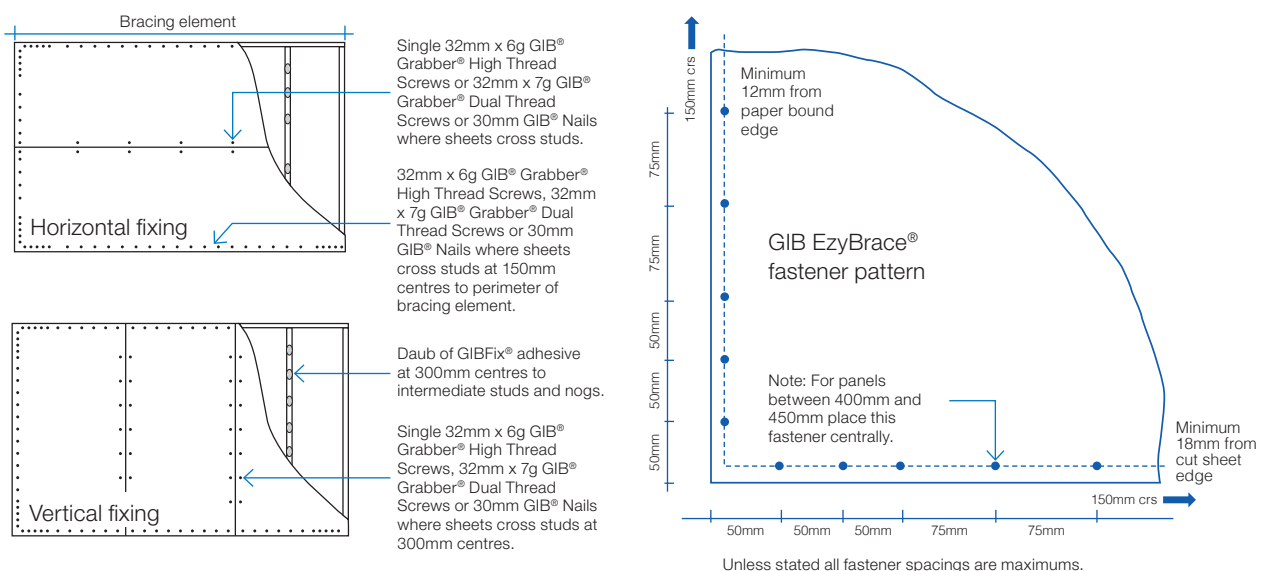
#### Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.

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In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



## GIB EzyBrace® Systems specification BL1-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BL1-H	0.4	10mm or 13mm GIB Braceline® to one side only	Hold downs

### WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

### BOTTOM PLATE FIXING

#### Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

#### Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

### WALL LINING

- A layer of 10mm or 13mm GIB Braceline®
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

### PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

### FASTENING THE LINING

#### Fasteners

32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

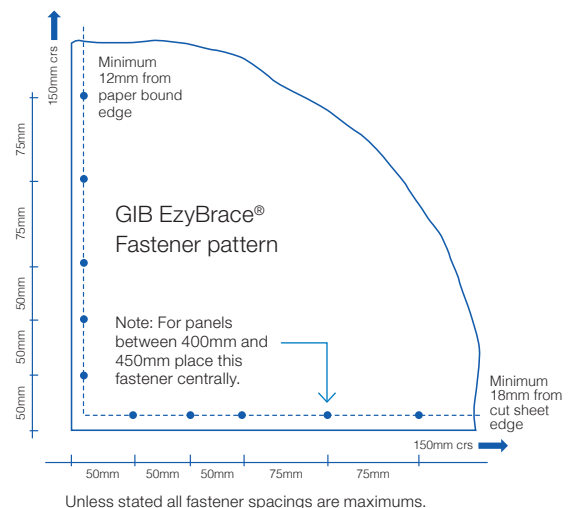
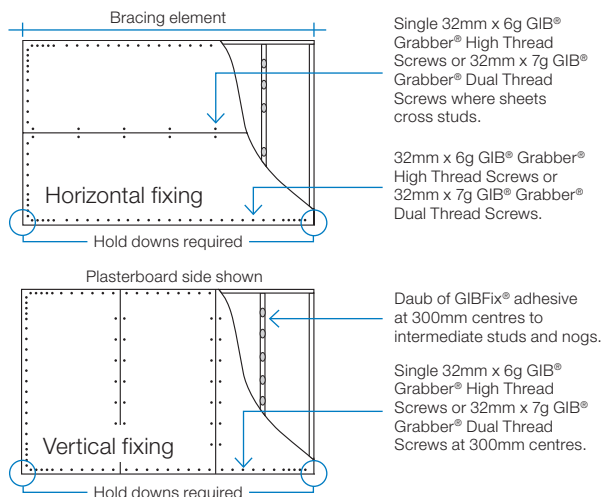
#### Fastener centres

50,100,150, 225, 300mm from maximum each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the sheet joint. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

### JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.

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**07/04/2025**

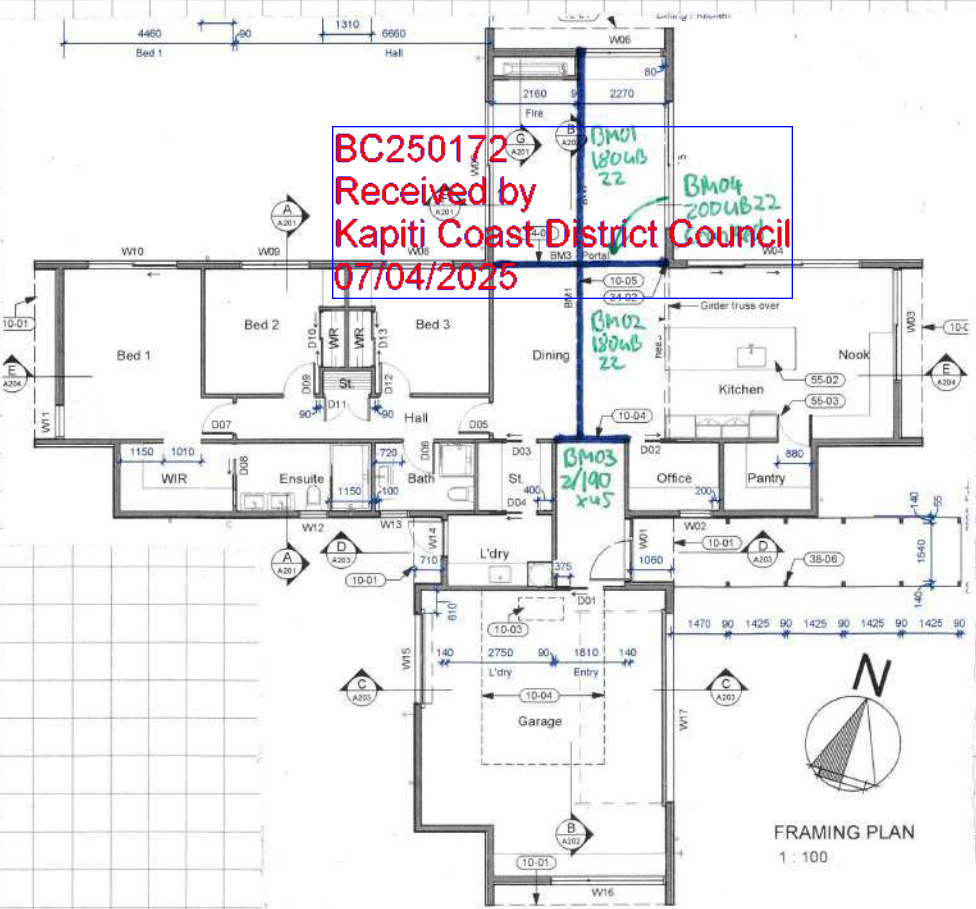


In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

Date 21-3-25	Eng. SUL	Job No. 44890	Sheet No. 1
Project 40 Anderson Park			



CALCULATIONS



## BEAM DESIGN CALCULATION SHEET

Job Name: 40 Anderson Park

Job No. 44890

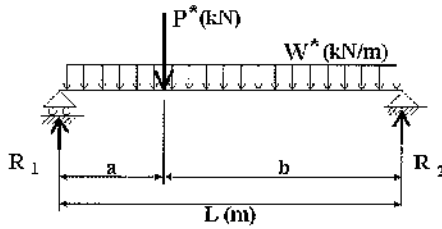
Date: 21-Feb-25

Engineer SOL

Beam No. BM01



ref AS/NZS1170.1&amp;.2:2021, AS NZS1720:2022, NZS3404:1997

**Beam Properties:**

Beam Length L = 5.5 m       $Q_{pt} = 1.8$  kN  
 $a = 2.8$  m       $b = 2.8$  m  
 Wind Trib Width = 2.50 m      **Check:  $a < b$  OK**

Material: Steel (UB)      E: 200000 MPa  
 Section: 180UB22.2      x 1      Ixx: 1.53E+07 mm<sup>4</sup>  
 wetted in service?      Zxx: mm<sup>3</sup>

**Beam Loads:****Uniform loading-W\*:**

**Dead Load:** Beam Self weight: 0.22 kN/m  
 Roof 0.35kPa x 2.5m 0.88 kN/m  
 kN/m  
 kN/m  
 kN/m  
 $\Sigma G$  udl= 1.09 kN/m

**Concentrated loading-P\*:**

kN  
 kN  
 kN  
 kN  
 $\Sigma G$  pt= kN

**Live Load:**

Roof  $Q_r = 0.63$  kN/m  
 kN/m  
 kN/m  
 kN/m  
 $\Sigma Q$  udl= 0.63 kN/m

Roof  $Q_r =$  kN  
 kN  
 kN  
 kN  
 $\Sigma Q$  p= kN

**Wind Load:**

$W_{u\ up} = -2.7$  kN/m  
 $W_{u\ down} = 1.3$  kN/m

**Reaction from roof beam :**

$P_{wu\ up} =$  kN  
 $P_{wu\ down} =$  kN

Design Wind Speed  $V_{(z)} = 41.0$  m/s $q_{(z)} = 0.5(\bar{b}_{air})V_{(z)}^2 \times 10^{-3} = 1.01$  kPa (ULS)

Design for enclosed building as per AS/NZS1170:

 $C_{fig} = C_{pe}K_aK_cK_fK_p - C_{pi}K_c$ **Calculate Aerodynamic shape factor and design wind pressure:** $K_a = 0.98$        $K_f = 1.00$        $K_p = 1.00$ **Upward Wind Loads**External  $C_{pe(min)} = -0.9$ Internal  $C_{pi(max)} = 0.3$ 

2 surfaces acting

 $K_c = 0.90$ Pressure  $C_{fig\ up} = -1.06$  $P_z = -1.07$  kPa**Downward Wind Loads** $C_{pe(max)} = 0.3$  $C_{pi(min)} = -0.3$ 

2 surfaces acting

 $K_c = 0.90$  $C_{fig\ down} = 0.53$  $P_z = 0.54$  kPa

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Note: Negative wind pressure indicates roof is under uplift loading.

**Analysis:****Input Parameters**

$\Phi = 0.9$   
 $k_1 = 0.80$   
 $k_4 = 1.00$   
 $k_6 = 1.00$   
 $k_9 = 1$   
 $k_{12} = \#N/A$   
 $j_2 = 1.00$   
 $\alpha_m = 1.13$

le (m) = 1

**Strength Checks**

Load Combination	Shear check $V^*$	Bending check
	$= WL/2 + P^*b/L$	$M^* = w^*L^2/8 + P^*a^*b/L$
1.2G + 1.5Q	6.2 kN	8.5 kN.m
1.2G + $W_{down} + 0.4Q_f$	8.0 kN	11.0 kN.m
0.9G + $W_{up}$	-4.6 kN	-6.4 kN.m
$V^*_{max} =$	8.0 kN	$M^*_{max} = 11.0$ kN.m
$\Phi V_s =$	186.0 kN	$\Phi M_p = 37.9$ kN.m

OK

OK

roof vibration not checked

**Deflection Checks**

Load Case	mm	Span/	Comment
G	4.3	1,293	OK
G + 0.7Q	6.0	923	OK
G + 0.4Q <sub>f</sub>	4.3	1,293	OK
Ws up	-7.8	705	OK
Ws down	3.9	1,401	OK
$\Delta$ 1kN	1.13	N.A.	OK

**Reactions (kN):**

	G	Q	$W_{up}$	$W_{down}$	1.2G + 1.5Q	1.2G + $W_d$ + 0.4Q	0.9G + $W_{up}$
R1	3.0	1.7	-7.3	3.7	6.2	8.0	-4.6
R2	3.0	1.7	-7.3	3.7	6.2	8.0	-4.6

### BEAM DESIGN CALCULATION SHEET

Job Name: 40 Anderson Park

Job No. 44890

Date: 21-Feb-25

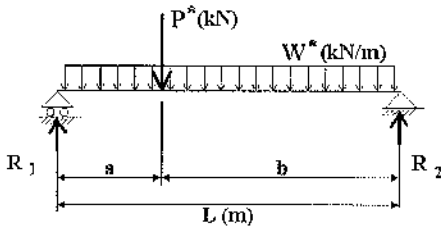
Engineer SOL

Beam No. BM02



ref AS/NZS1170.1&2:2021, AS NZS1720:2022, NZS3404:1997

#### Beam Properties:



Beam Length L = 4.5 m       $Q_{pt} = 1.8$  kN  
 $a = 2.3$  m       $b = 2.3$  m  
 Wind Trib Width = 2.50 m      **Check:  $a < b$  OK**

Material: Steel (UB)      E: 200000 MPa  
 Section: 180UB22.2      x 1      Ixx: 1.53E+07 mm<sup>4</sup>  
 wetted in service?      Zxx: mm<sup>3</sup>

#### Beam Loads:

#### Uniform loading-W\*:

**Dead Load:** Beam Self weight: 0.22 kN/m  
 Roof 0.35kPa x 2.5m 0.88 kN/m  
 kN/m  
 kN/m  
 kN/m  
 kN/m  
 **$\Sigma G$  udl = 1.09 kN/m**

#### Concentrated loading-P\*:

kN  
 kN  
 kN  
 kN  
 kN  
 **$\Sigma G$  pt = kN**

#### Live Load:

Roof  $Q_r = 0.63$  kN/m  
 kN/m  
 kN/m  
 kN/m  
 **$\Sigma Q$  udl = 0.63 kN/m**

Roof  $Q_r =$  kN  
 kN  
 kN  
 kN  
 kN  
 **$\Sigma Q$  p = kN**

#### Wind Load:

$W_{u\ up} = -2.7$  kN/m  
 $W_{u\ down} = 1.4$  kN/m

#### Reaction from roof beam :

$P_{wu\ up} =$  kN  
 $P_{wu\ down} =$  kN

Design Wind Speed  $V_{(z)} = 41.0$  m/s       $q_{(z)} = 0.5(\sigma_{air})V_{(z)}^2 \times 10^{-3} = 1.01$  kPa (ULS)

Design for enclosed building as per AS/NZS1170:       $C_{fig} = C_{pe} K_a K_c K_l K_p - C_{pi} K_c$

#### Calculate Aerodynamic shape factor and design wind pressure:

$K_a = 0.99$        $K_l = 1.00$        $K_p = 1.00$

#### Upward Wind Loads

External  $C_{pe(min)} = -0.9$   
 Internal  $C_{pi(max)} = 0.3$   
 2 surfaces acting  
 $K_c = 0.90$   
 Pressure  $C_{fig\ up} = -1.07$   
 **$P_z = -1.08$  kPa**

#### Downward Wind Loads

$C_{pe(max)} = 0.3$   
 $C_{pi(min)} = -0.3$   
 2 surfaces acting  
 $K_c = 0.90$   
 $C_{fig\ down} = 0.54$   
 **$P_z = 0.54$  kPa**

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*Note: Negative wind pressure indicates roof is under uplift loading.*

#### Analysis:

#### Input Parameters

$\Phi = 0.9$   
 $k1 = 0.80$   
 $k4 = 1.00$   
 $k6 = 1.00$   
 $k9 = 1$   
 $k12 = \#N/A$   
 $j2 = 1.00$   
 $\alpha_m = 1.13$

Strength Checks				Deflection Checks			
Load Combination	Shear check $V^* = WL/2 + P^*b/L$	Bending check $M^* = w^*L^2/8 + P^*a^*b/L$	Load Case	mm	Span/	Comment	
			1.2G + 1.5Q	5.1 kN	5.7 kN.m	G	1.9
1.2G + $W_{down} + 0.4Q_t$	6.6 kN	7.4 kN.m	G + 0.7Q	2.7	1,685	OK	
0.9G + $W_{up}$	-3.9 kN	-4.4 kN.m	G + 0.4Q <sub>t</sub>	1.9	2,360	OK	
$V^*_{max} = 6.6$ kN		$M^*_{max} = 7.4$ kN.m	Ws up	-3.5	1,271	OK	
$\Phi V_s = 186.0$ kN		$\Phi M_b = 37.9$ kN.m	Ws down	1.8	2,536	OK	
			$\Delta$ 1kN	0.62	N.A.	OK	

le (m) = 1

OK

OK

roof vibration not checked

#### Reactions (kN):

	G	Q	$W_{up}$	$W_{down}$	1.2G + 1.5Q	1.2G + $W_d$ + 0.4Q	0.9G + $W_{up}$
R1	2.5	1.4	-6.1	3.1	5.1	6.6	-3.9
R2	2.5	1.4	-6.1	3.1	5.1	6.6	-3.9

### BEAM DESIGN CALCULATION SHEET

Job Name: 40 Anderson Park

Job No. 44890

Date: 21-Feb-25

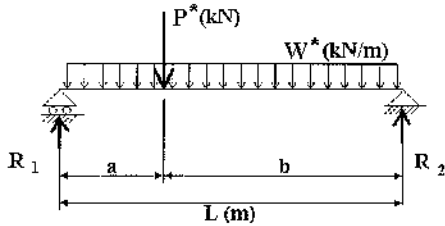
Engineer SOL

Beam No. BM03



ref AS/NZS1170.1& 2:2021, AS NZS1720:2022, NZS3404:1997

**Beam Properties:**



Beam Length L = 1.8 m       $Q_{pt} = 1.8 \text{ kN}$   
 a = 0.9 m      b = 0.9 m  
 Wind Trib Width = 2.50 m      **Check: a < b OK**

Material: MSG8      E: 6700 MPa  
 Section: 190x45      x 2      Ixx: 5.14E+07 mm<sup>4</sup>  
 wetted in service?      Zxx: 5.42E+05 mm<sup>3</sup>

**Beam Loads:**

**Uniform loading-W\*:**

**Concentrated loading-P\*:**

**Dead Load:** Beam Self weight: 0.09 kN/m  
 kN/m  
 kN/m  
 kN/m  
 kN/m  
**Σ G udl = 0.09 kN/m**

BM02      2.50 kN  
 kN  
 kN  
 kN  
**Σ G pt = 2.5 kN**

**Live Load:** *point load case critical*  
 Roof       $Q_r =$  kN/m  
 kN/m  
 kN/m  
 kN/m  
**Σ Q udl = kN/m**

Roof       $Q_r =$  1.80 kN  
 BM02      1.40 kN  
 kN  
 kN  
**Σ Q p = 3.2 kN**

**Wind Load:**  
 $W_{u \text{ up}} = -2.7 \text{ kN/m}$   
 $W_{u \text{ down}} = 1.4 \text{ kN/m}$

**Reaction from roof beam :**  
 $P_{wu \text{ up}} = -6.1 \text{ kN}$   
 $P_{wu \text{ down}} = 3.1 \text{ kN}$

Design Wind Speed  $V_{(z)} = 41.0 \text{ m/s}$        $q_{(z)} = 0.5(\sigma_{air})V_{(z)}^2 \times 10^{-3} = 1.01 \text{ kPa (ULS)}$   
 Design for enclosed building as per AS/NZS1170:       $C_{fig} = C_{pe}, K_a, K_c, K_l, K_p - C_{pi}, K_c$

**Calculate Aerodynamic shape factor and design wind pressure:**

$K_a = 1.00$        $K_l = 1.00$        $K_p = 1.00$

**Upward Wind Loads**  
 External       $C_{pe(min)} = -0.9$   
 Internal       $C_{pi(max)} = 0.3$   
 2 surfaces acting  
 $K_c = 0.90$   
 Pressure       $C_{fig \text{ up}} = -1.08$   
 **$P_z = -1.09 \text{ kPa}$**

**Downward Wind Loads**  
 $C_{pe(max)} = 0.3$   
 $C_{pi(min)} = -0.3$   
 2 surfaces acting  
 $K_c = 0.90$   
 $C_{fig \text{ down}} = 0.54$   
 **$P_z = 0.54 \text{ kPa}$**

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*Note: Negative wind pressure indicates roof is under uplift loading.*

**Analysis:**

**Input Parameters**

$\Phi = 0.8$   
 $k1 = 0.80$   
 $k4 = 1.00$   
 $k6 = 1.00$   
 $k9 = 1.14$   
 $k12 = 1.00$   
 $j2 = 2.00$   
 $\alpha_m = 1.13$   
 le (m) = 1

Strength Checks				Deflection Checks			
Load Combination	Shear check $V^*$ $= WL/2 + P^*b/L$	Bending check $M^*$ $= w^*L^2/8 + P^*a^2/L$	Load Case	mm	Span/	Comment	
1.2G + 1.5Q	4.0 kN	3.6 kN.m	G	1.7	1,039	OK	
1.2G + $W_{down}$ + 0.4Q <sub>r</sub>	5.0 kN	3.9 kN.m	G + 0.7Q	1.4	1,324	OK	
0.9G + $W_{up}$	-4.3 kN	-2.8 kN.m	G + 0.4Q <sub>r</sub>	2.7	659	OK	
$V^*_{max} =$	5.0 kN	$M^*_{max} =$ 3.9 kN.m	Ws up	-2.4	743	OK	
$\Phi V_s =$	27.7 kN	$\Phi M_b =$ 5.5 kN.m	Ws down	1.2	1,470	OK	
			Δ 1kN	0.35	≤mm	OK	

OK      OK      floor limit

**Reactions (kN):**

	G	Q	$W_{up}$	$W_{down}$	1.2G + 1.5Q	1.2G + $W_d$ + 0.4Q	0.9G + $W_{up}$
R1	1.3	1.6	-5.5	2.8	4.0	5.0	-4.3
R2	1.3	1.6	-5.5	2.8	4.0	5.0	-4.3

Date 21-2-25

Eng. SOL

Job No. 44890

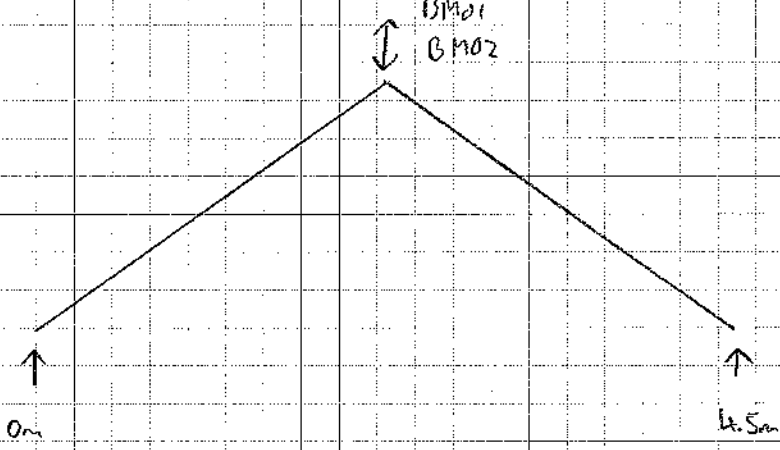
Sheet No. 6

Project  
40 Anderson Park



CALCULATIONS

Bram 04



Point Loads:

Bram 01:

Dead:

BC250172

3.0 kN

Live:

Received by

1.7 kN

Kapiti Coast District Council

wind down:

07/04/2025

3.7 kN

wind up:

-7.3 kN

Bram 02:

Dead:

2.4 kN

Live:

1.4 kN

wind down:

3.1 kN

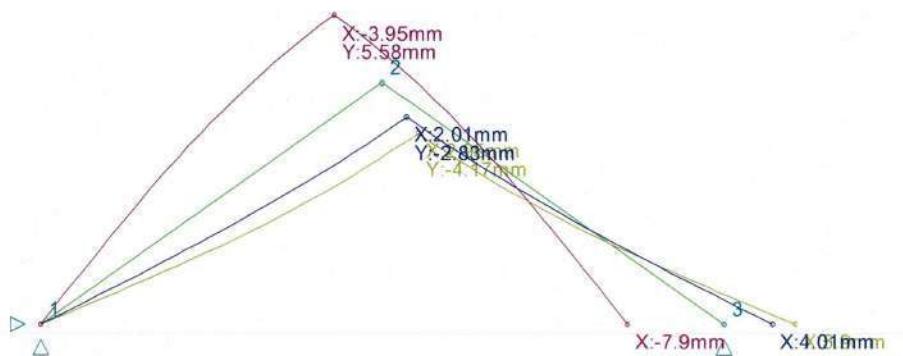
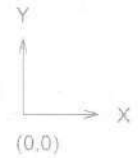
wind up:

-6.1 kN

Load cases 11,14,15:

- 11 (SW) G + 0.4Q
- 14 Ws = 0.75 Wu Down
- 15 Ws = 0.75 Wu Up

Beam 04  
Deflection



$$\frac{4500 \text{ mm}}{7.9 \text{ mm}} = \frac{\text{span}}{570}$$

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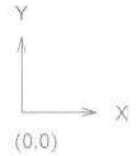
No general restraint

Sections:  
■ 1 200 UB 22.3

Envelope for load cases 10,12,13:

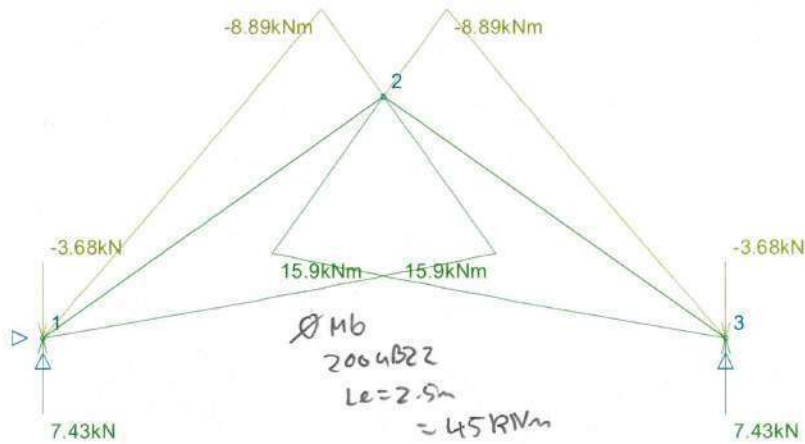
Min  
Max

BM04  
Bending



772

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07/04/2025



No general restraint

Sections:  
1 200 UB 22.3

Project: 40 Anderson Park Drive  
Location:

Date: 20-Feb-25  
Engineer: SOL  
Job No. 44890



### DETERMINATION OF AS/NZS1170 SEISMIC COEFFICIENT

Applicable to Structure Of Period  $T < 0.7$  Seconds  
Base Shear Force  $V = C_d \cdot W_i$

Location =	Kapiti	First Mode Period (>0.4 sec) =	0.4
Site Subsoil Category	Deep/Soft Soil (Class D)	Structural Ductility Factor $\mu =$	3
From AS/NZS1170 $C_h(T_1) =$	3.00	$S_p =$	0.70
$C(T) = C_h(T_1)RZN(T,D) =$	1.20	$R =$	1.00
$K_u = (\mu-1)T_1 / 0.7 + 1 =$	2.14	$Z =$	0.40
$C_d(T_1) = C(T)S_p/K_u =$	0.39	$N(T,D) =$	1
Serviceability $C_d(T1) =$	0.21	$\mu = 3, C_d(T1) =$	0.39

#### EQUIVALENT STATIC METHOD

#### Building Weight Determination

<b>Roof</b>	Roofing	0.35 kPa x 260m <sup>2</sup>	91.0
	1/2 Upper Walls External	0.40 kN/m x 92m	36.8
	1/2 Upper Walls Internal	0.30 kN/m x 70m	21.0
	<b>W Roof =</b>		<b>148.8</b>
<b>First Floor</b>			
	Area Upper Floor		15 m <sup>2</sup>
	Area Upper Deck		0 m <sup>2</sup>
	Upper Floor	0.4 kPa x U.F. area m <sup>2</sup>	6.0
	Seismic Live	0.3 x 1.5kPa x U. F. area m <sup>2</sup> x LLR	6.8
	Upper Deck	0.4 kPa x deck area m <sup>2</sup>	0.0
	U. Deck Seismic Live	0.3 x 2kPa x U.D. area m <sup>2</sup> x LLR	0.0
	<b>W Upper Floor =</b>		<b>12.8</b>
Upper Floor LLR ( $\psi_a$ )	(Live Load Reduction Factor) $\psi_a = 0.3 + (3 + \sqrt{A})$ where $1 > \psi_a > 0.5$		1.00
Upper Deck LLR ( $\psi_a$ )	(Live Load Reduction Factor) $\psi_a = 0.3 + (3 + \sqrt{A})$ where $1 > \psi_a > 0.5$		1.00
		<b>Wt =</b>	<b>161.6</b>
	<b>V = Cd Wt</b>	<b>V =</b>	<b>63.3 kN</b>

#### Bracing Distribution

Level	Wi	Hi	WiHi	Ratio WiHi/SumWiHi	$i = 0.92(\text{Ratio} \times 1)$ (+8% V for roof level)	Vi Cum.	BU (u=3)
Roof	149	4	595	1.000	63.3	63.3	1268
First Floor	13	0	0	0.000	0.0	63.3	1268
	162		595				

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**Demand Calculation Sheet**

single storey

V06/11

**Job Details**

Street and Number 40 Anderson Park Drive  
 Suburb Waikanae  
 Lot and DP Number  
 City/Town/District  
 Designer & Date SOL  
 Company Name Certa Engineering Ltd  
 Job Number J44890



Select Lining Option 10 or 13 mm GIB® Plasterboard ▼

**Building Specification**

Number of storeys	single ▼	
Floor Loading	2kPa ▼	
Foundation Type	slab ▼	
		<b>Complete Single Floor</b>
		<b>Column only</b>
		▼
		▼
		▼
Cladding Weight	light ▼	
Roof Weight	light ▼	
Room in Roof Space	no ▼	
Roof Pitch (degrees)	35	
Roof height above eaves (m)	2.0	
Building height to apex (m)	4.2	
Ground to lower floor level (m)	0.2	
Stud Height (m)	2.4	
Building Length (m)	23.0	
Building Width (m)	23.0	
Building Plan Area (m2)	220	

**Building Location**

<b>Wind Zone</b>	<b>High</b>	<b>Earthquake Zone</b>	<b>Soil Type</b>
Select by Building Consent Authority Map	▼	3 ▼	D&E (deep to very soft) ▼
or Preference	High ▼	<b>Annual exceedance probability</b>	
Wind Region	Preference selected ▼	1/500 (NZS3604:2011 default) ▼	
Lee Zone	Preference selected ▼		
Ground Roughness	Preference selected ▼		
Site Exposure	Preference selected ▼		
Topographic Class	Preference selected ▼		

Highlighted values below from Engineer's NZS1170:2004 specific calculations:

**Bracing Units required for Wind**

Demand W (BU)		Walls single
along	slab	1080
across	slab	972

**Bracing Units required for Earthquake**

Demand along / across E (BU)	
	Walls single
slab	1270

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## SINGLE OR UPPER STOREY WALLS ALONG V06/11

Lines		Bracing Elements							
1	2	3	4	5	6	7	8	9	10
Line Total Check	Line Label	Bracing Element No.	Available Wall Length L (m)	Angle to Bracing line (degrees)	Element Height H (m)	Bracing Type	Supplier	Bracing Units Achieved	
								W	E
208	<b>A</b>	1	2	3.2		BL1-H	GIB®	256	208
372	<b>B</b>	1	0.6	2.4		GS1-N	GIB®	34	35
		2	1.6	2.4		GS1-N	GIB®	110	96
		3	2	2.4		GS1-N	GIB®	138	120
		4	0.4	2.4		BL1-H	GIB®	36	40
		5	0.8	2.4		BL1-H	GIB®	87	82
581	<b>C</b>	1	2.5	2.4	2.4	GS1-N	GIB®	172	150
		2	2	2.4	2.4	GS1-N	GIB®	138	120
		3	3	2.4	2.4	GS1-N	GIB®	207	180
		4	2.2	2.4	2.4	GS1-N	GIB®	152	132
234	<b>D</b>	1	2.4	2.4	2.4	GS1-N	GIB®	165	144
		2	2.4	2.4	2.4	GS1-N	GIB®	103	90
192	<b>E</b>	1	1.8	2.4	2.4	GS1-N	GIB®	124	108
		2	1.4	2.4	2.4	GS1-N	GIB®	97	84

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		Wind	Earthq.
Totals Achieved	W	168%	EQ 125%
Concrete Slab		1818	1587
Totals Required (from Demand)		OK	OK
		1080	1270


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SINGLE OR UPPER STOREY WALLS ACROSS										V06/11
Lines		Bracing Elements								
1	2	3	4	5	6	7	8	9	10	
Line Total Check	Line Label	Bracing Element No.	Available Wall Length L (m)	Angle to Bracing line (degrees)	Element Height H (m)	Bracing Type	Supplier	Bracing Units Achieved		
								W	E	
318	M	1	3.5		2.4	GS1-N	GIB®	242	210	
		2	1.8		2.4	GS1-N	GIB®	124	108	
198	N	1	3.3		2.4	GS1-N	GIB®	228	198	
156	O	1	2.6		2.4	GS1-N	GIB®	179	156	
606	P	1	1.1		2.4	GS1-N	GIB®	74	66	
		2	4.5		2.4	GS1-N	GIB®	311	270	
		3	3.2		2.4	GS1-N	GIB®	221	192	
		4	1.3		2.4	GS1-N	GIB®	90	78	
306	Q	1			2.4	GS1-N	GIB®	74	66	
		2			2.4	GS1-N	GIB®	145	126	
		3			2.4	GS1-N	GIB®	131	114	
108	R	1	1.8		2.4	GS1-N	GIB®	124	108	
146	S	1	1.4		2.4	BL1-H	GIB®	179	146	

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							Wind	Earthq.
Totals Achieved	W	218%	EQ	145%	2121	1837		
Concrete Slab					OK	OK		
Totals Required (from Demand)					972	1270		

<b>Project:</b> <b>Location:</b>	Detention Tank Design	<b>Job No:</b> <b>Date:</b> <b>Engineer:</b> <b>Sheet No:</b>	44890	
	40 Anderso Park		24-Feb-25	
			SOL	

**Increased Flow**

Rain fall intensity ( I )

ARI*	10m Duration	60m Duration
(Year)	(mm/hr)	(mm/hr)
100	158	51.1

\*Obtained NIWA HIRDS - Rainfall Intensities (mm/hr) RCP 6.0 for the period 2081 - 2100

**60min Duration Assessment**

	Site Cover Type	Collect area ( A ) (m <sup>2</sup> )	Runoff Coefficient (C) <sup>(1)</sup>	Flow rate (C . I . A) (m <sup>3</sup> /hr)	(l/s)
Before	Natural area	2243.0	0.3	34.4	9.6
<b>RESULT</b>				<b>34.4</b>	<b>9.6</b>
After	Natural area	1911	0.3	29.3	8.1
	House	252	0.9	11.6	3.2
	Driveway	80	0.9	3.7	1.0
	Total Volume	2243		44.6	12.4
	Volume into Tank		V <sub>in</sub> =	15.3	4.2
	<b>INCREASED FLOW</b>			<b>10.2</b>	<b>2.8</b>

**10min Duration Assessment**

Maximum allowable outflow from tank (10min pre development peak flow) - V<sub>out</sub> (I<sub>10</sub>)

Developed Area =	332	0.3	15.7	4.4
------------------	-----	-----	------	-----

$q = Cd.(a) \sqrt{2gh}$   
 $Cd = 0.81$  (short tube)

Height from top of tank to outlet (m)  
 Diameter of outlet pipe (mm)

1                      25

Maximum outflow from tank (l/s) V<sub>out</sub> = 1.8

Accptable outflow from tank - V<sub>out</sub> (I<sub>60</sub>) < V<sub>in</sub> (I<sub>10</sub>) = OKAY

Storage required - I<sub>60</sub> (V<sub>in</sub> - V<sub>out</sub>) x 3600 / 1000 = 8.9 m<sup>3</sup>

Minimum diameter of tank required = 3.4 m

Note:

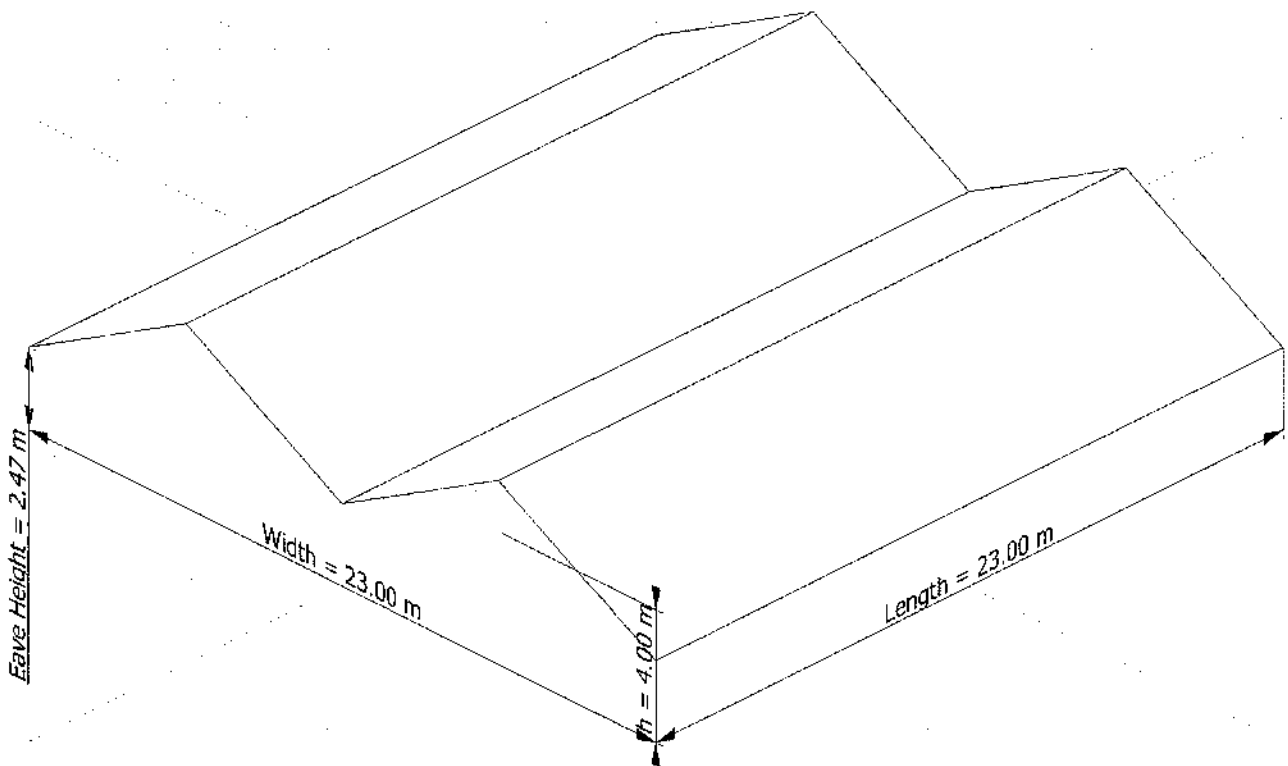
<sup>(1)</sup> Runoff coefficient obtained from Building Code Clause E1/VM1.

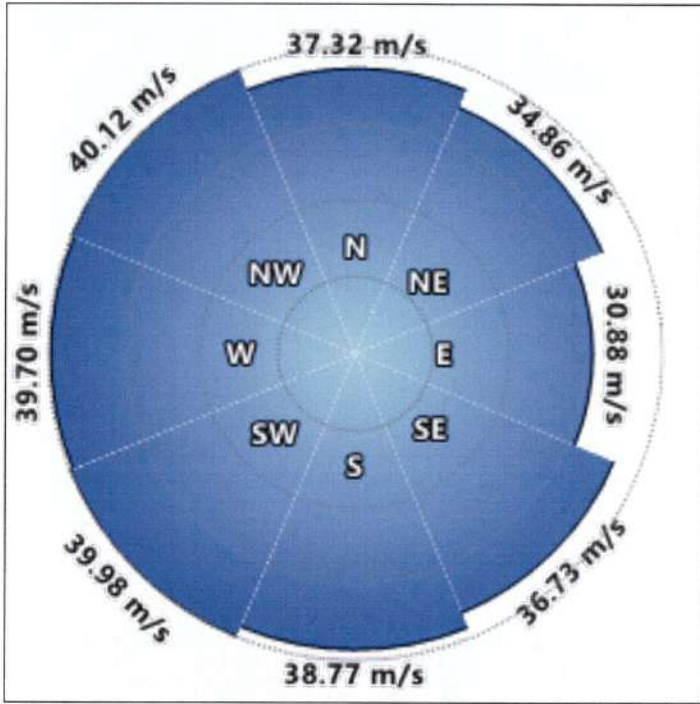
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# CHECKWIND AS/NZS 1170.2-2021 SITE REPORT

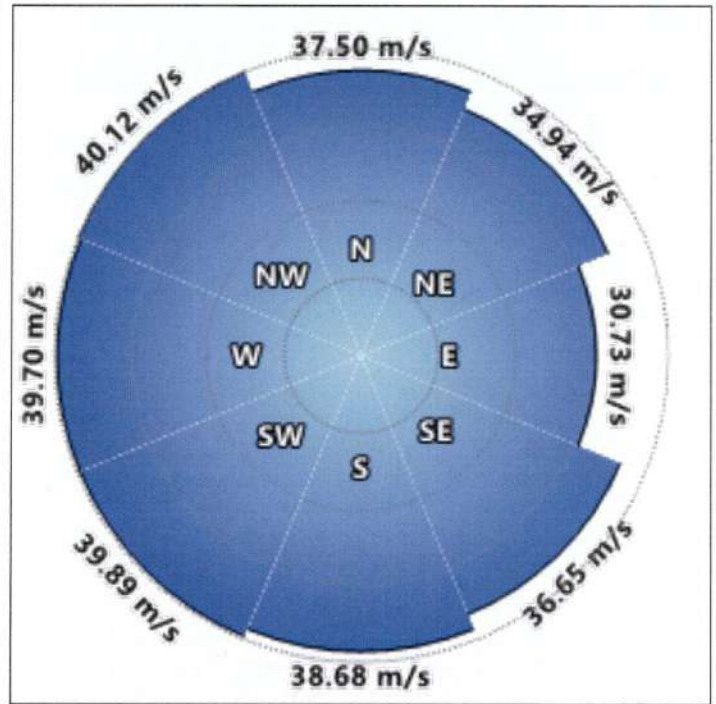
STRUCTURE:	BUILDING	LATITUDE:	-40.867692	CRITICAL DIRECTION:	North West
ORIENTATION:	0°	LONGITUDE:	175.046376	Md:	1.0
WIDTH:	23.00 m	ELEVATION:	14.50 m	Mc:	1.0
LENGTH:	23.00 m			TC:	2.23
HEIGHT (h):	4.00 m	WIND REGION:	NZ2	Mz,cat:	0.8915
BASE RL:	0.00 m	ULTIMATE ARI:	500 YEARS	Ms:	1.0
		ULTIMATE VR:	45 m/s	Mh:	1.0
		SERVICEABILITY VR:	39 m/s	Mlee:	1.0
				Mel:	1.0
				Mt:	1.0
				Vsit,β:	40.12 m/s
				qsit,β:	0.9658 kPa
				Vserv,β:	34.77 m/s
				qserv,β:	0.7254 kPa

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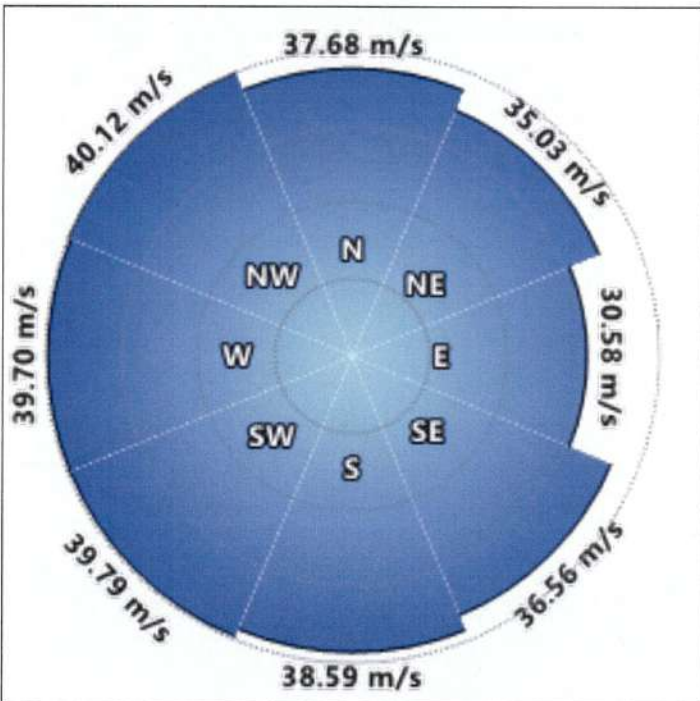




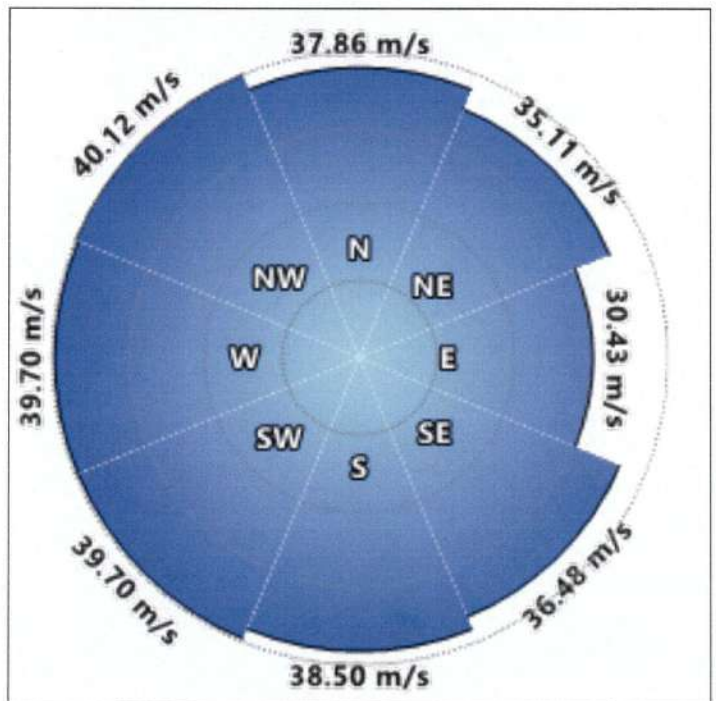
Wind Rose @ z = 0.00 m



Wind Rose @ z = 1.33 m



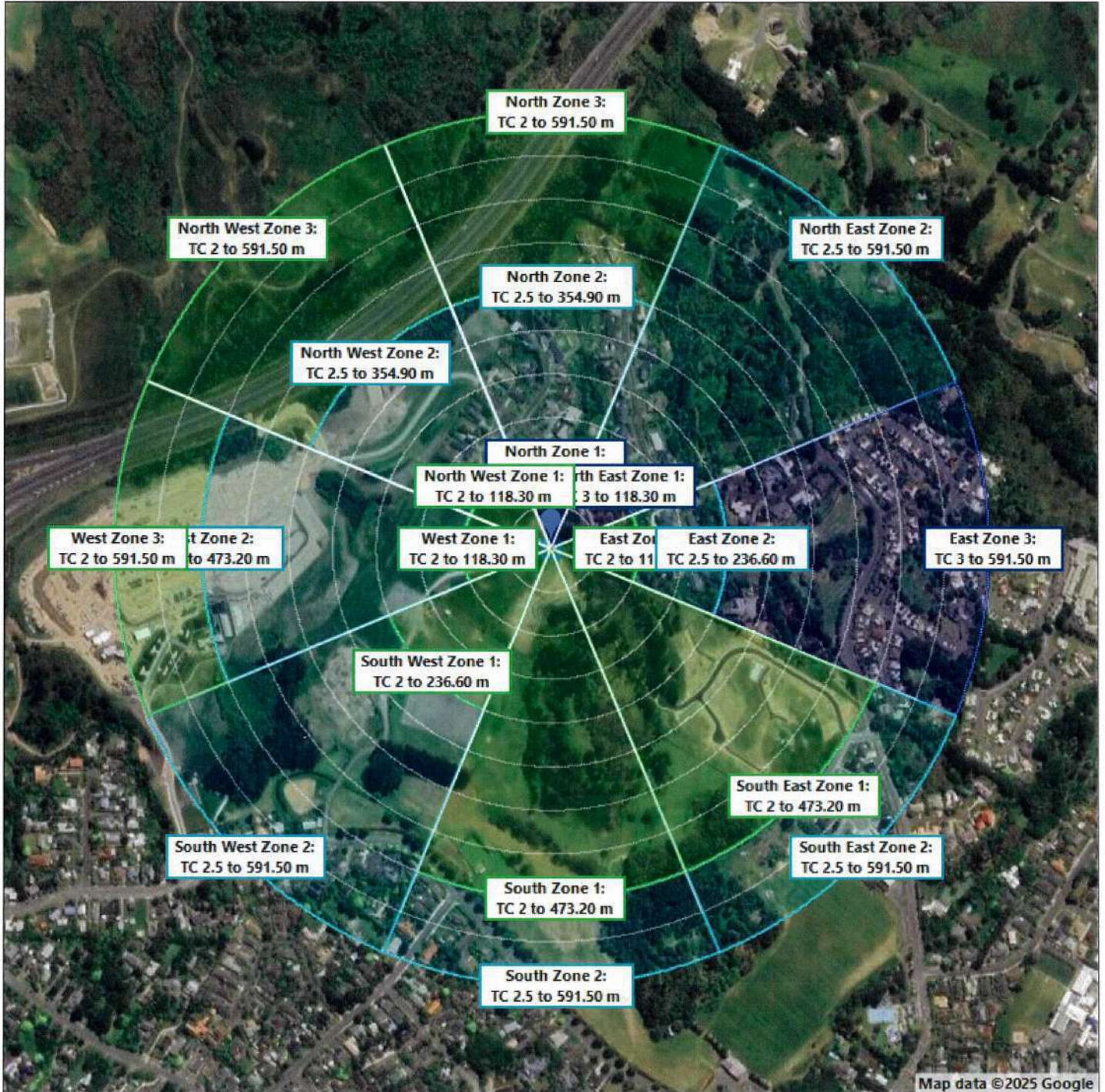
Wind Rose @ z = 2.67 m



Wind Rose @ z = 4.00 m

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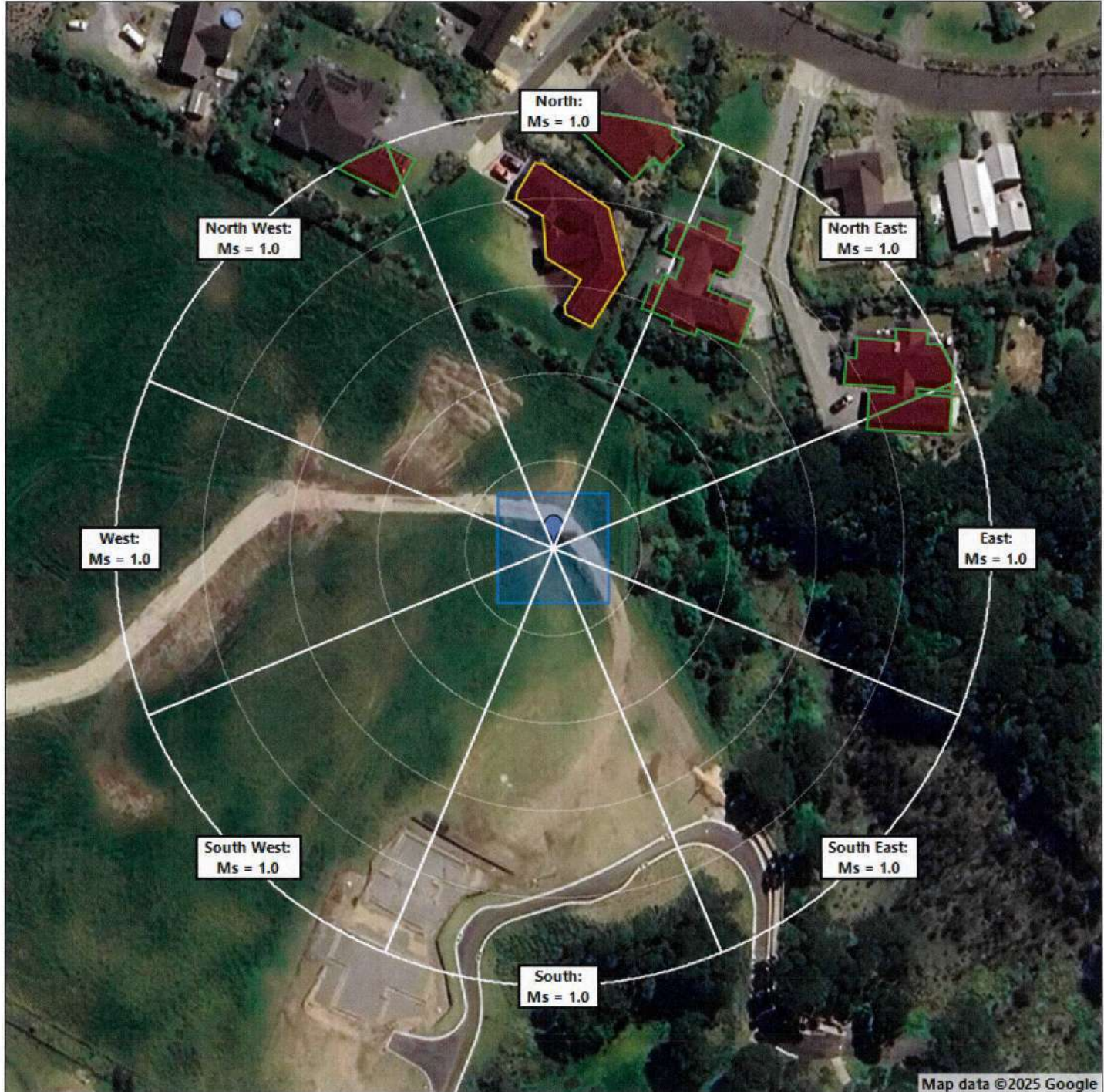
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TITLE:  
PROJECT:  
CODE:

CHECKWIND 8.1.7  
Thursday, February 20, 2025 1:27:40 PM  
Shannon O'Leary @ CERTA Engineering

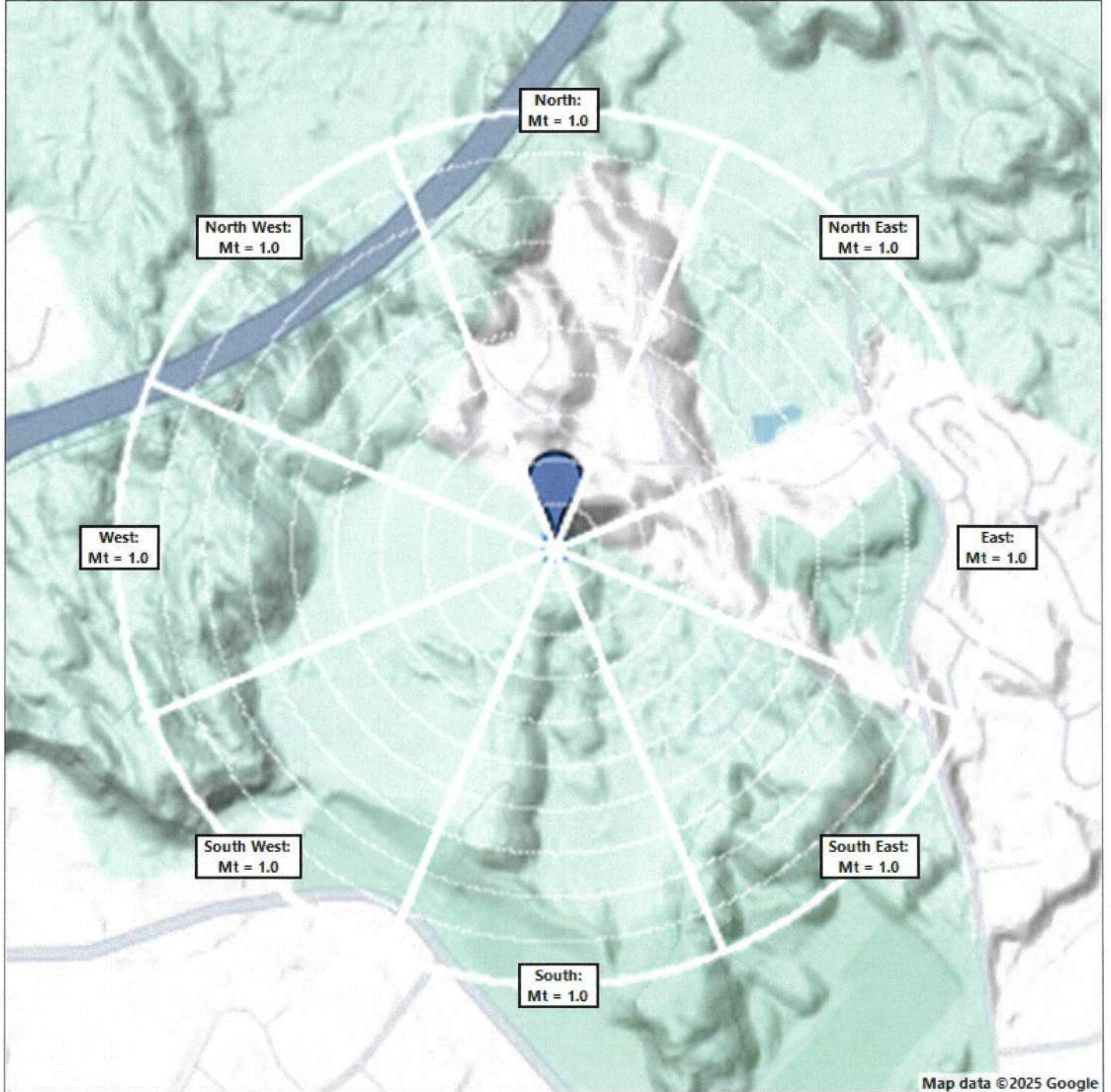
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PROJECT:  
CODE:

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# GEOTECHNICAL ASSESSMENT

Lot 39 Anderson Park, Waikanae

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Received by  
Kapiti Coast District Council  
07/04/2025

Job number: 1000-143-04

Date: 13/03/2025



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## 1. Introduction

Cohesive Consulting have been engaged by Tim Atkinson to provide a geotechnical assessment for a proposed new dwelling at Lot 39 Anderson Park, Waikanae (Legal Description: Lot 39 DP 592074). This geotechnical assessment has been prepared to provide foundation recommendations as part of a building consent application with the Kapiti Coast District Council.

This report considers the following aspects of site development:

- Suitable building platforms and foundations.

A geotechnical site testing plan is attached as Appendix 1 showing the property boundaries, and associated site investigations.

### 1.1. Relevant Documentation

- Earthworks Recommendations Letter by Cohesive Consulting dated 27 January 2025 (Appendix 1)
- Conceptual plans by AD Architecture dated 22 November 2024 (Appendix 2)
- Earth Fill and Site Suitability Report by CGW Consulting Engineers titled “ 110 Ngarara Road – Anderson Park Stage 2” dated 24 August 2022; document reference: 21852-RPT-G-002-A.
- Geotechnical Addendum by CGW Consulting Engineers titled 110 Ngarara Road, Anderson Park Stage 2: Geotechnical Addendum” dated 30 November 2023; document reference 21852-LET-G-001-E.
- NZS 4402:1986 - Methods of testing soils for civil engineering purposes
- NZS4431:2022 – Engineered fill construction for lightweight structures
- NZGS Module 1 and 6 (2021)
- Kapiti Coast District Council: GIS Maps
- Resource Management Act 1991

The requirement for specific engineer design is dependent on whether the site subsoils fall within the NZS3604:2011 definition of ‘good ground’. ‘Good ground’ – means any soil or rock capable of permanently withstanding an ultimate bearing pressure of 300 kPa (i.e., a dependable bearing capacity of 150 kPa using a reduction factor of 0.5) but excludes:

- a) Potentially compressible ground such as topsoil, soft soils such as clay which can be moulded easily in the fingers, and uncompacted loose gravel which contains obvious voids.
- b) Expansive soils being those that have a liquid limit of more than 50% when tested in accordance with NZS4402 Test 2.2 and a linear shrinkage of more than 15% when tested from the liquid limit in accordance with NZS 4402 Test 2.6.
- c) Any ground which could foreseeably experience movement of 25 mm or greater for any reason including one or a combination of the following: land instability, ground creep, subsidence, seasonal swelling and shrinking, frost heave, changing groundwater level, erosion, dissolution of soil in water, and effects of tree roots.

## 2. Documentation Summary

Cohesive Consulting have carried out a comprehensive review of the existing documentation which includes an Earthworks Completion Report by CGW Consulting Engineers (24 August 2022), Geotechnical Addendum by CGW Consulting Engineers (dated 30 November 2023), and earthworks plans by AD Architecture dated 16 January 2025.

The Earthworks Completion Report by CGW Consulting Engineers provides the following summary on lot 39:

- An ultimate bearing in excess of 200Kpa can be assumed from a depth of 0.3mbgl.
- Site is subject to Specific Engineering Design and is classified as a TC2 site in accordance with the Canterbury Technical Guidance.

The Geotechnical Addendum by CGW Consulting Engineers states for Lot 39, engineered FILL has been placed on top of the original TOPSOIL which is expected at an approximate depth of 0.8-1.0mbgl.

The proposed earthworks plan by ADarchitecture shows that extensive earthworks are proposed on lot 39 in order to provide a suitable building platform:

- Lot 39: excavations are proposed on the lot with a cut area of 70m<sup>2</sup> and a volume of 25m<sup>3</sup>. Maximum cut depth of 0.1m is proposed though it should be noted that this will need to extend to a minimum depth range of 0.8-1.0mbgl to ensure that all surface and buried TOPSOIL is excavated and removed from the building platform, prior to the placement of engineered FILL.

## 3. Proposed Development

It is our understand that a dwelling is to be constructed on Lot 39 Anderson Park, Waikanae, following extensive earthworks in order to prepare a suitable building platform. Upon completion of earthworks, a TC2 compliant stiffened raft system such as an Xpod foundation shall then be constructed to support a single storey dwelling. The proposed dwelling is to have a building footprint of 233m<sup>2</sup> and consist of three bedrooms, two bathrooms, kitchen/dining area, living room, office, outdoor deck spaces and a garage. Refer to Appendix 2 for concept plans.

## 4. Desktop Study

### 4.1. Site Description

The site is located at Lot 39 Anderson Park, Waikanae, Kapiti Coast (Legal Description: Lot 39 DP 592074). The site is currently an undeveloped residential lot as part of the Anderson Park subdivision. Some preexisting earthworks have been completed on the lot though it should be noted that these earthworks are to be rectified as approved FILL material has been placed on top of a TOPSOIL layer. The site has an approximate area of 2,242.77m<sup>2</sup> and is shown in Figure 1 which has been sourced from the Kapiti Coast District Council GIS Maps.

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Figure 1: Image displaying site location and extent, Kapiti Coast District Council Maps, 2021.

4.2. Published Geology

The GNS Science online geology map (Figure 2) shows the underlying geology of the site is defined as Holocene Stable Dune Deposits consisting of sand. However, these are regionally scaled documents and should not be relied on for site-specific acceptance.

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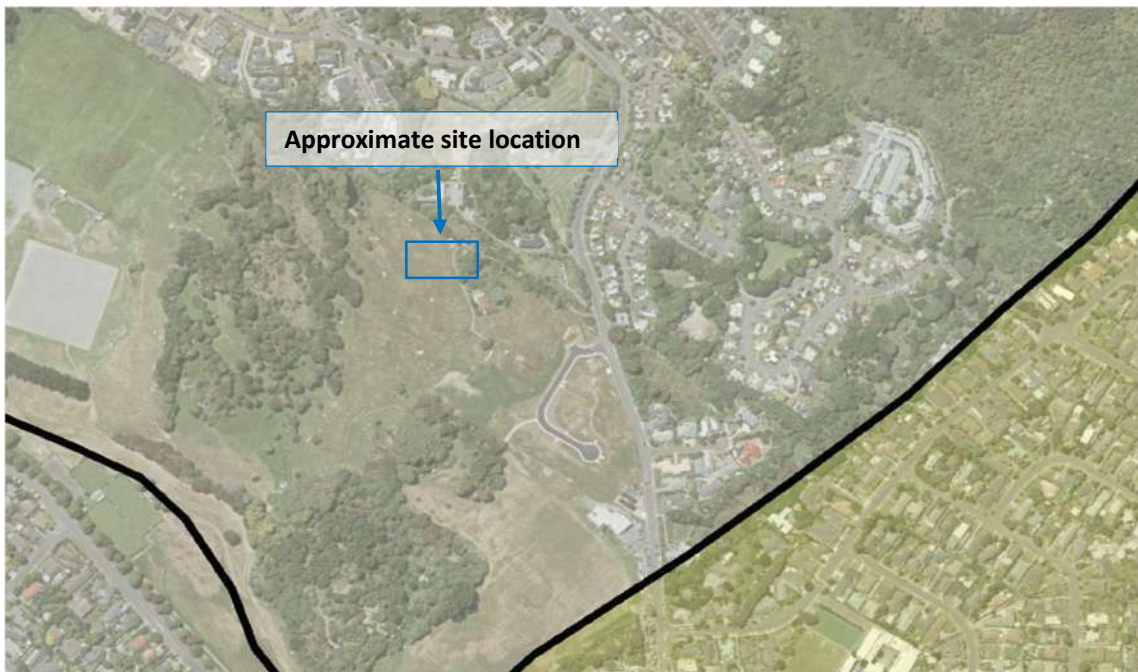


Figure 2: Geology of the site from GNS 1:250000 Geological Map of New Zealand.

Holocene Stable Dune Deposits
 
 Late Pleistocene River Deposits

The Ohariu Fault lies approximately 2.4km east of the site and is described by GNS Maps as an active dextral fault with an unknown subsidiary movement sense. The Gibbs Fault lies approximately 3.8km east of the site and is described by GNS Maps as an active dextral fault with an unknown subsidiary movement sense. The Otaki Forks Fault lies approximately 12.8km east of the site and is described by GNS Maps as an active reverse fault with a dextral sense of movement. The Wellington Fault lies approximately 26.5km east of the site. The Wellington Fault is described as a Class 1 active fault and is also known as the collision zone between the Australian and Pacific plate. GNS describes this an oblique dextral strike slip fault indicating possible movement in all directions.

#### 4.3. New Zealand Geotechnical Database

The New Zealand Geotechnical Database was consulted to view any possible nearby testing that had previously been completed in the area. An extensive geotechnical investigation has been carried out by CGW Consulting Engineers as part of the subdivision investigation stage of the project. Geotechnical investigations consisted of test pit excavations, scale penetrometers and CPT testing. Liquefaction analysis results shows the site classifies as a TC2 site in accordance with the Canterbury Technical Guidance.

## 5. Geotechnical Assessment

Upon review of the existing documentation, the following results and interpretations can be made:

- Geotechnical investigations were not deemed necessary by Cohesive Consulting as the near surface ground profile and underlying geology has already been well summarised by CGW Consulting Engineers. Extensive earthworks are proposed across the lot to rectify the placement of FLL on top of TOPSOIL.
- Previous investigations show that an ultimate bearing capacity in excess of 200kPa and 300kPa can be expected immediately below the buried TOPSOIL. This shall be confirmed with a stripped ground inspection during earthworks monitoring by Cohesive Consulting.
- A liquefaction assessment has been provided by CGW Consulting Engineers which shows the site classifies as a TC2 site in accordance with the Canterbury Technical Guidance.
- The site does not meet the definition of "Good Ground" in accordance with NZS3604:2011 due to a moderate risk of liquefaction. Foundations are subject to Specific Engineering Design.
- A site class D has been conservatively assumed in accordance with NZS1170.5:2004.

## 6. Engineering Recommendations

### 6.1. Earthworks and Build Platform Preparation

All earthworks are to be carried out in accordance with the earthwork's specifications letter by Cohesive Consulting dated 27 January 2025. The following earthworks summary points can be made in preparation of the building platform:

- All FILL previously placed is to be excavated and stockpiled in appropriate location for inspection and then re-use if deemed suitable.

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- All buried TOPSOIL is to be excavated and removed from the site. A stripped ground inspection shall be carried out by Cohesive Consulting to ensure all unsuitable soils have been removed. Scala penetrometers shall be carried out across the base of the excavation to confirm that an ultimate bearing capacity in excess of 200kPa is encountered.
- The use of on site SAND can then be utilised as FILL material (pending approval) which shall be placed and compacted in 150-200mm layers. Scala penetrometers shall be utilised to assess the compaction at half and full lift heights. A water source will need to be utilised to ensure sufficient compaction is achieved.
- Upon approval by Cohesive Consulting, the building platform shall then be capped with a 100mm layer of AP40 to create a smooth working platform for slab construction.

## 6.2. Foundations

Cohesive Consulting will provide construction monitoring reports and a geotechnical completion letter stating that earthworks have been carried out in accordance with this geotechnical assessment, earthworks specification letter and NZS4431. This documentation shall facilitate both resource consent and building consent applications with the Kapiti Coast District Council. A TC2 compliant stiffened raft system (i.e. TC2 RibRaft or Xpod) can then be founded. Foundation design to be performed by a suitably qualified engineer.

Initial review by:



Maika Fraser  
Engineering Geologist/Director  
BSc

Prepared and issued by:



Nathan Blaker  
Chartered Engineering Geologist/Director  
BSc, PMEG, CMEngNZ (pEngGeol)



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## 7. Limitations

This geotechnical assessment has been prepared for Tim Atkinson as our client with respect to the proposed new dwelling at Lot 39 Anderson Park, Waikanae. It shall not be relied upon for any other purpose. The reliance by other parties on the information or opinions contained in this report shall, without our prior review and agreement in writing, be at such parties' sole risk.

Opinions and judgments expressed herein are based on our understanding and interpretation of current regulatory standards and should not be construed as legal opinions. Where opinions or judgments are to be relied on, they should be independently verified with appropriate legal advice. Any recommendations, opinions, or guidance provided by Cohesive Consulting in this report are limited to technical engineering requirements and are not made under the Financial Advisers Act 2008.

Recommendations and opinions in this report are based on data from testing and observations undertaken on site. The nature and continuity of subsoil conditions away from the tests are inferred and it must be appreciated that actual conditions could vary considerably from the assumed model.

During excavation and construction, the site should be examined by a geotechnical engineer or Engineering Geologist to judge whether the exposed subsoils are compatible with the inferred conditions on which the report has been based. It is possible that the nature of the exposed subsoils may require further investigation, and the modification of the design based on this report. In any event, it is essential that the firm is notified if there is any variation in subsoil conditions from those described in the report as it may affect the design parameters recommended in the report.

Cohesive Consulting have performed the services for this project in accordance with the standard agreement for consulting services and current professional standards for environmental site assessment. No guarantees are either expressed or implied.

There is no investigation which is thorough enough to preclude the presence of materials at the site which presently, or in the future, may be considered hazardous. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable now may in the future become subject to different regulatory standards which cause them to become unacceptable and require further remediation for this site to be suitable for the existing or proposed land use activities.

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## Appendix 1: Earthworks Specifications Letter

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Job No. 1000-143-04

Monday, 27 January 2025

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07/04/2025

**Attention:**

Tim Atkinson

Leith Consultants

Kapiti Coast City Council

**RE: Earthworks Recommendations Letter – Proposed development at Lots 39,40 and 41 Anderson Park, Waikanae**

**1. Introduction**

Cohesive Consulting have been engaged by Tim Atkinson to provide an earthworks recommendations letter for a proposed development on lots 39-41 Anderson Park, Waikanae, as per the resource consent conditions issued by the Kapiti Coast District Council.

**2. Relevant Documentation**

Cohesive Consulting have reviewed all provided documentation which are referenced within this letter and include:

- Earth Fill and Site Suitability Report by CGW Consulting Engineers titled “ 110 Ngarara Road – Anderson Park Stage 2” dated 24 August 2022; document reference: 21852-RPT-G-002-A.
- Geotechnical Addendum by CGW Consulting Engineers titled “110 Ngarara Road, Anderson Park Stage 2: Geotechnical Addendum” dated 30 November 2023; document reference 21852-LET-G-001-E.
- Earthworks plans by ADarchitecture dated 16 January 2025

**3. Documentation Summary**

The Earthworks Completion Report by CGW Consulting Engineers provides the following summary on lots 39-41:

- An ultimate bearing in excess of 200Kpa can be assumed from a depth of 0.3mbgl.
- Site is subject to Specific Engineering Design and is classified as a TC2 site in accordance with the Canterbury Technical Guidance.

The Geotechnical Addendum by CGW Consulting Engineers states for Lot 39, engineered FILL has been placed on top of the original TOPSOIL which is expected at an approximate depth of 0.8-1.0mbgl. The FILL placed on Lots 40-41 has been considered suitable and the recommendations made in the Earthworks Completion Report remain unchanged.

The proposed earthworks plan by ADarchitecture shows that extensive earthworks are proposed across the 3 lots in order to provide suitable building platforms.

- Lot 39: excavations are proposed on the lot with a cut area of 70m<sup>2</sup> and a volume of 25m<sup>3</sup>. Maximum cut depth of 0.1m is proposed though it should be noted that this will need to extend to a minimum depth range of 0.8-1.0mbgl to ensure that all surface and buried TOPSOIL is excavated and removed from the building platform, prior to the placement of engineered FILL.



- Lot 40: excavations are proposed on the lot with a cut area of 465m<sup>2</sup> and a volume of 195m<sup>3</sup>. Maximum cut depth of 0.95m and a maximum fill height of 2.3m is proposed.
- Lot 41: excavations are proposed on the lot with a cut area of 655m<sup>2</sup> and a volume of 545m<sup>3</sup>. Maximum cut depth of 1.25m and a maximum fill height of 2.05m is proposed.

#### 4. Earthworks

Any earthworks on site are to be carried out in accordance with NZS4431:2022.

##### 4.1. Excavations

Proposed excavations in the area of the proposed building platforms on Lot 39-41 must extend to a minimum depth of 0.3mbgl where an ultimate bearing capacity in excess of 200kPa is inferred as per the CGW Earthworks Completion Report. Excavations on Lot 39 are to extend to a minimum depth range of 0.8-1.0mbgl to ensure all buried TOPSOIL is excavated and removed from the site. A stripped ground inspection is to be carried out by Cohesive Consulting to ensure that all unsuitable soils have been removed and the ground at the base of the excavation displays a minimum ultimate bearing capacity of 200kPa.

All unsuitable soils such as TOPSOIL and uncontrolled FILL are to be removed from site or placed in a stockpile at an appropriate location to avoid unfavourable loading on construction or preconstruction slope batters.

Excavations shall not be left exposed for long periods of time. Cuts made in conjunction with the construction of a batter or retaining walls shall be done so in an efficient manner to ensure the stability of the site is maintained.

##### 4.2. Filling and Compaction

All engineered or structural fill should be placed in ≤ 150-250 mm lifts and be compacted to a minimum of 95% of maximum dry density, within suitable limits of optimum moisture content as defined in NZS4431:2022. Compaction should be achieved using standard plant and methodology suitable for the imported material. A water source should be maintained on-site for moisture control. The fill must be tested and certified in accordance with NZS4431:2022 if the thickness exceeds 400 mm and monitored by a suitably qualified engineer.

The use of onsite material such as clean sands are considered suitable for the use as FILL material provided they are appropriately stockpiled and inspected prior to use.

Nuclear densometer testing shall be utilised to assess the compaction of hard FILL material. Scala penetrometers shall be utilised to assess the compaction of onsite SAND material.

Fill may be battered down to natural ground at a maximum grade of 1V in 2.0H if possible and the subgrade should be adequately benched, and the topsoil removed. Alternatively, any compacted fill on site should be retained by retaining structures. FILL batters shall be hydroseeded or planted with appropriate deep rooted vegetation.

We trust this letter meets the requirements of the consent conditions issued by KCDC, please do not hesitate to contact me with any further questions.

Email: [Nathan@cvsgeotechnical.co.nz](mailto:Nathan@cvsgeotechnical.co.nz)

Phone: 021 069 5609

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Prepared by:

A handwritten signature in blue ink, appearing to read "N Blaker".

**Nathan Blaker**  
**Chartered Engineering Geologist/Director**

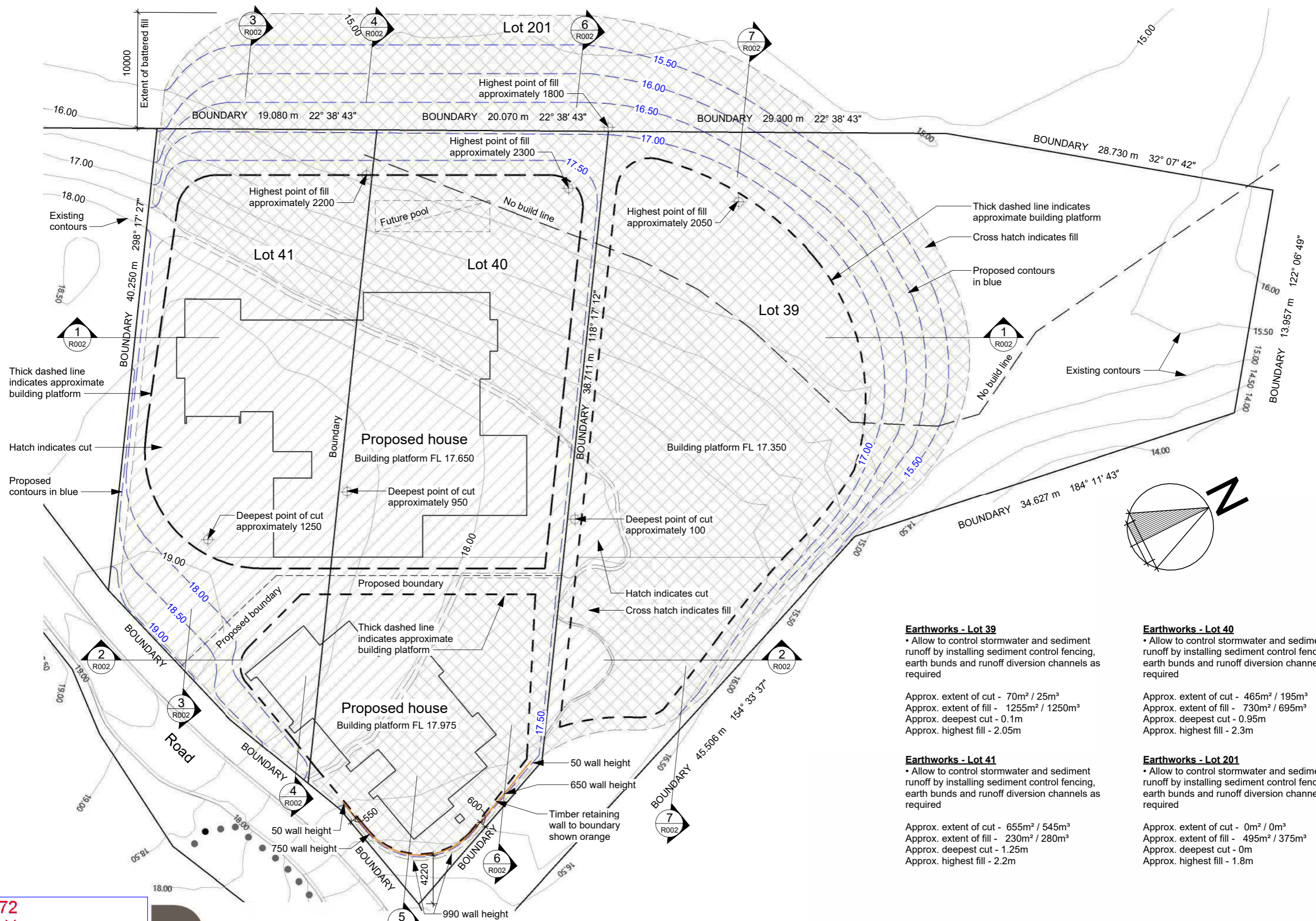
BSc, PMEG, CMEngNZ (pEngGeol)



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## Appendix 2: Conceptual Plans

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**Earthworks - Lot 39**

• Allow to control stormwater and sediment runoff by installing sediment control fencing, earth bunds and runoff diversion channels as required

Approx. extent of cut - 70m<sup>2</sup> / 25m<sup>3</sup>  
Approx. extent of fill - 1255m<sup>2</sup> / 1250m<sup>3</sup>  
Approx. deepest cut - 0.1m  
Approx. highest fill - 2.05m

**Earthworks - Lot 40**

• Allow to control stormwater and sediment runoff by installing sediment control fencing, earth bunds and runoff diversion channels as required

Approx. extent of cut - 465m<sup>2</sup> / 195m<sup>3</sup>  
Approx. extent of fill - 730m<sup>2</sup> / 695m<sup>3</sup>  
Approx. deepest cut - 0.95m  
Approx. highest fill - 2.3m

**Earthworks - Lot 41**

• Allow to control stormwater and sediment runoff by installing sediment control fencing, earth bunds and runoff diversion channels as required

Approx. extent of cut - 655m<sup>2</sup> / 545m<sup>3</sup>  
Approx. extent of fill - 230m<sup>2</sup> / 280m<sup>3</sup>  
Approx. deepest cut - 1.25m  
Approx. highest fill - 2.2m

**Earthworks - Lot 201**

• Allow to control stormwater and sediment runoff by installing sediment control fencing, earth bunds and runoff diversion channels as required

Approx. extent of cut - 0m<sup>2</sup> / 0m<sup>3</sup>  
Approx. extent of fill - 495m<sup>2</sup> / 375m<sup>3</sup>  
Approx. deepest cut - 0m  
Approx. highest fill - 1.8m

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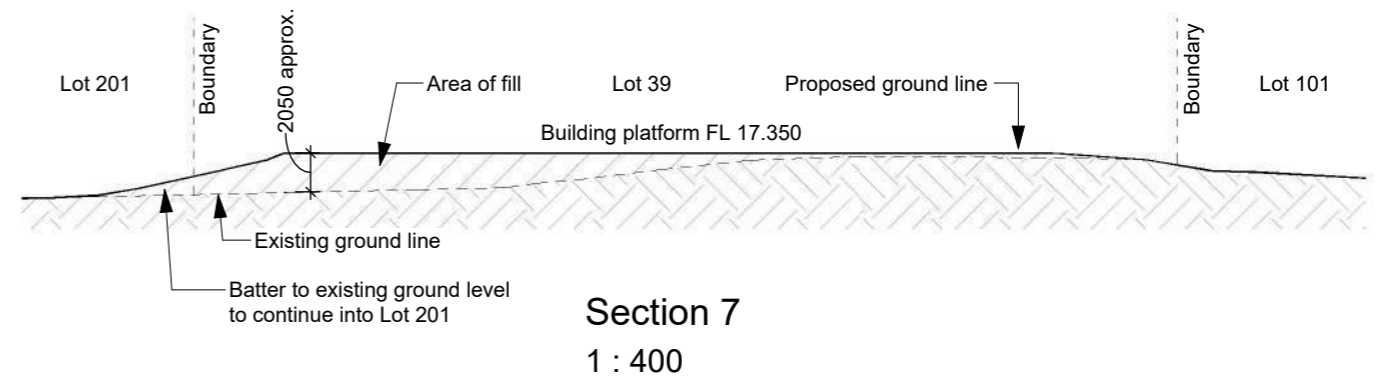
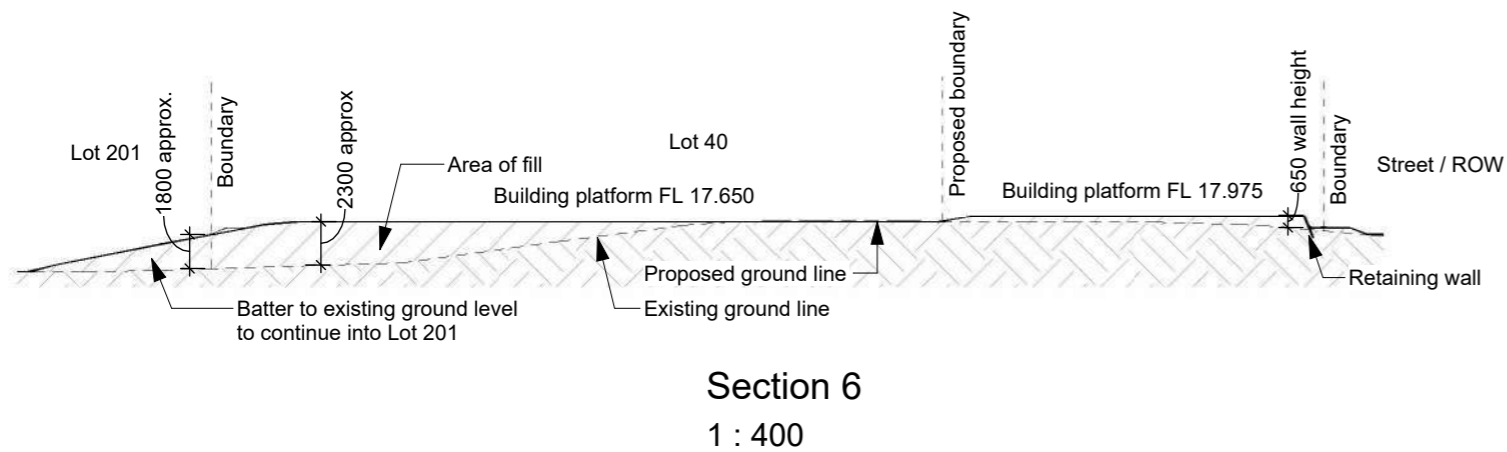
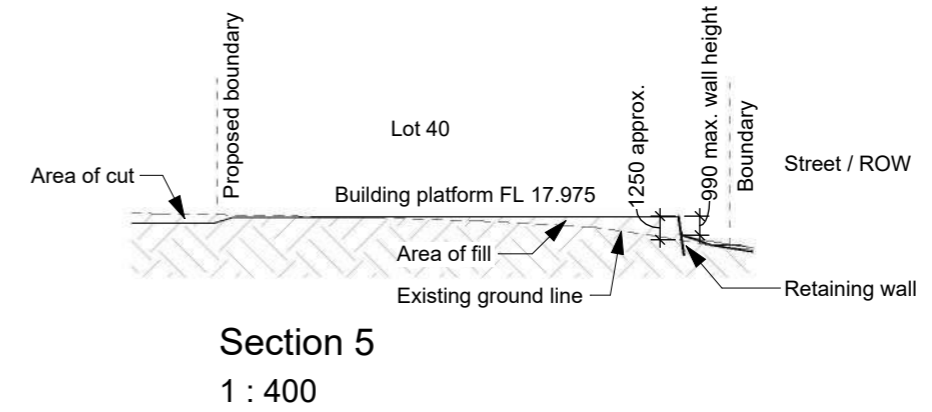
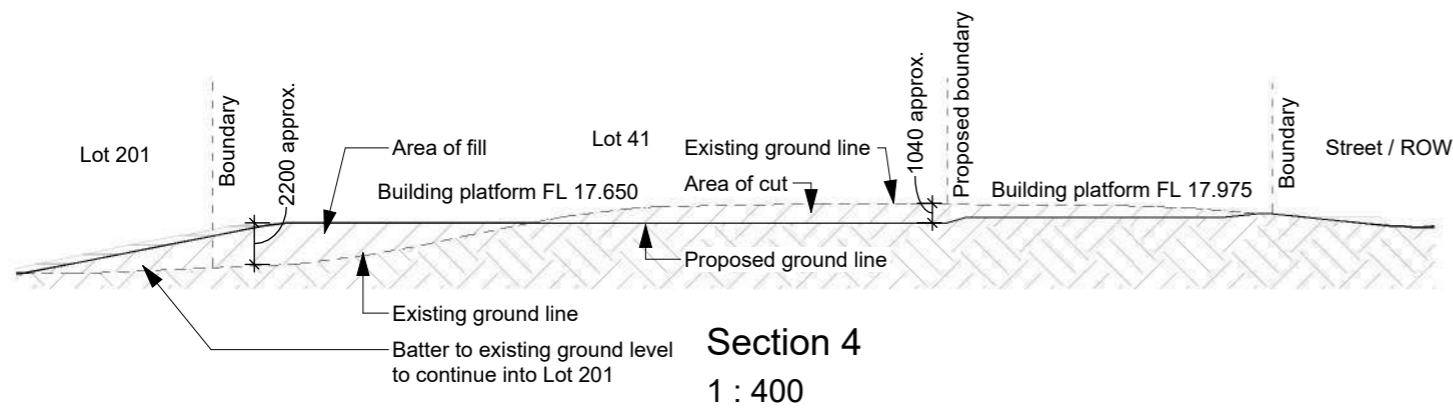
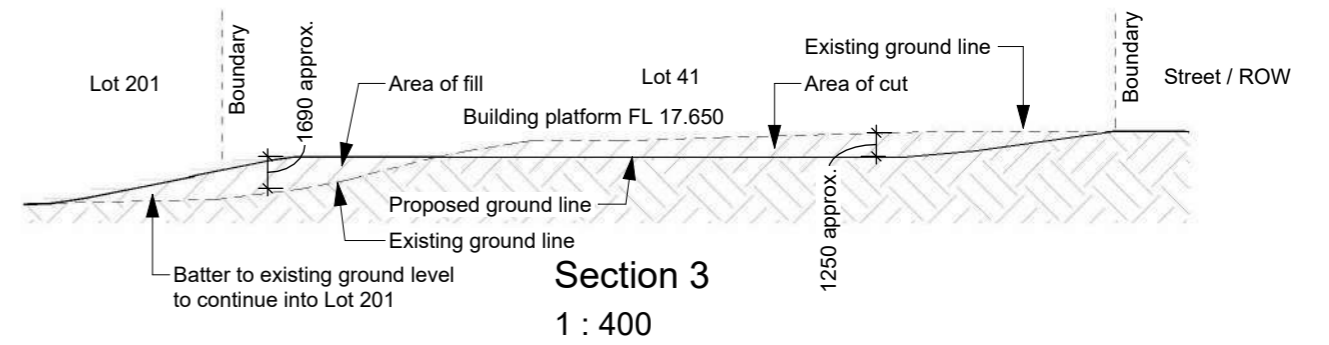
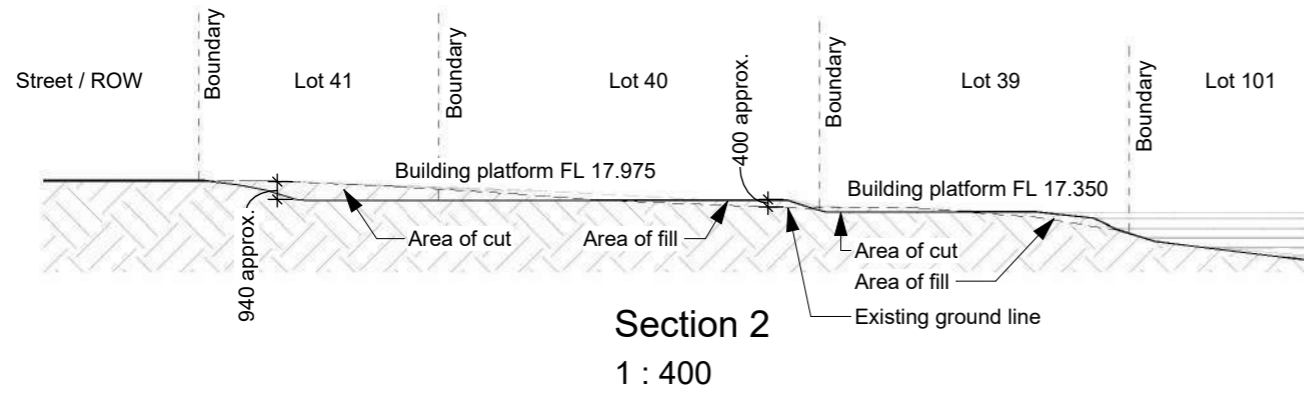
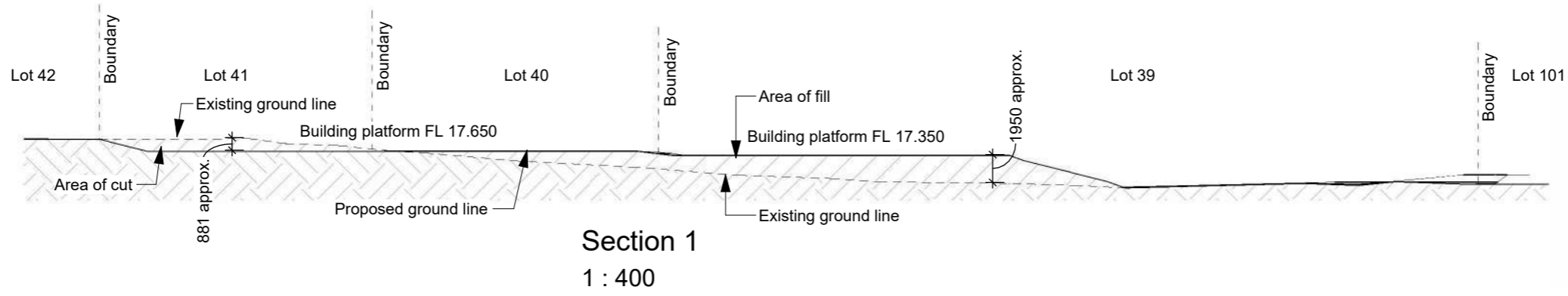
Tim & Jo Atkinson  
Anderson Park Lot 39, 40, & 41

Waikanae

Site and Earthworks Plan  
Resource Consent

R001  
# 22009 16/01/2025 Rev 3 1 : 300

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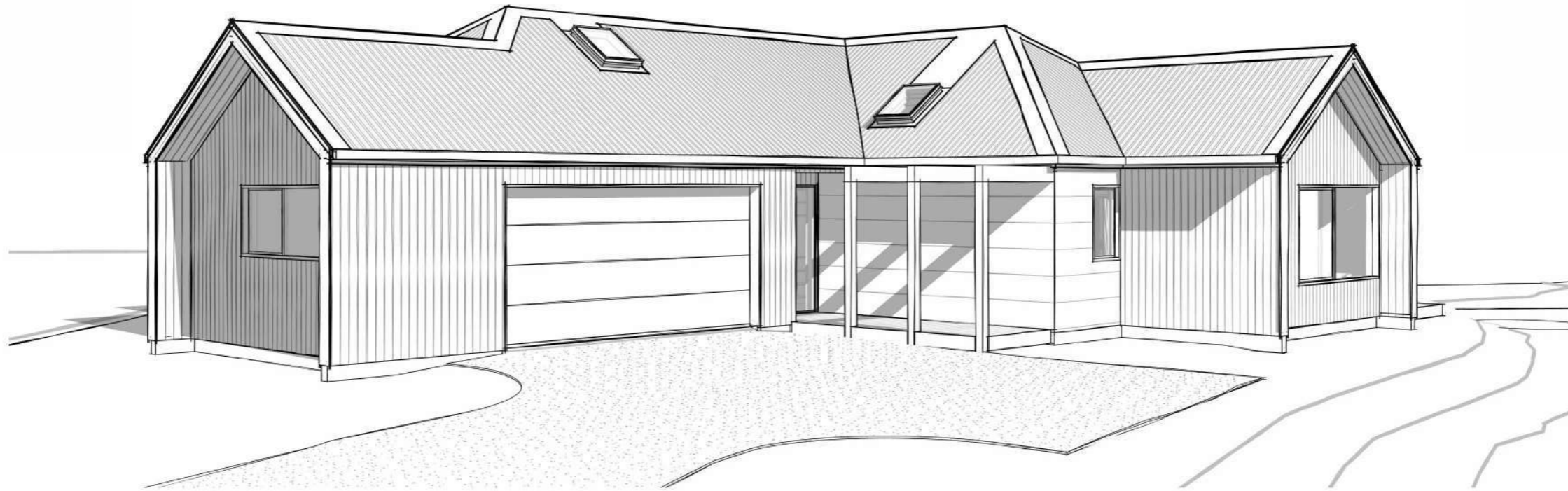
PRELIMINARY DRAWINGS		
No.	Sheet Name	Rev.
P001	Building 3D	
P002	Site Plan	
P003	Floor Plan	
P005	Elevations	
P006	Elevations	
P007	Section	

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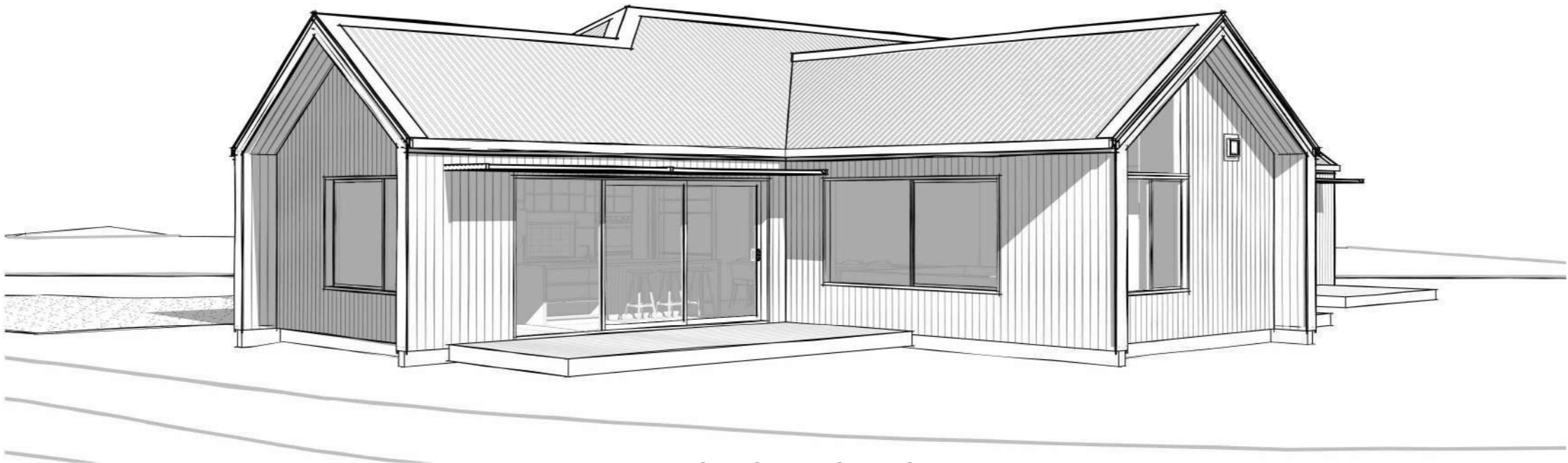
Proposed House  
 FOR  
 Tim Atkinson  
 AT  
 40 Anderson Park Drive  
 Waikanae



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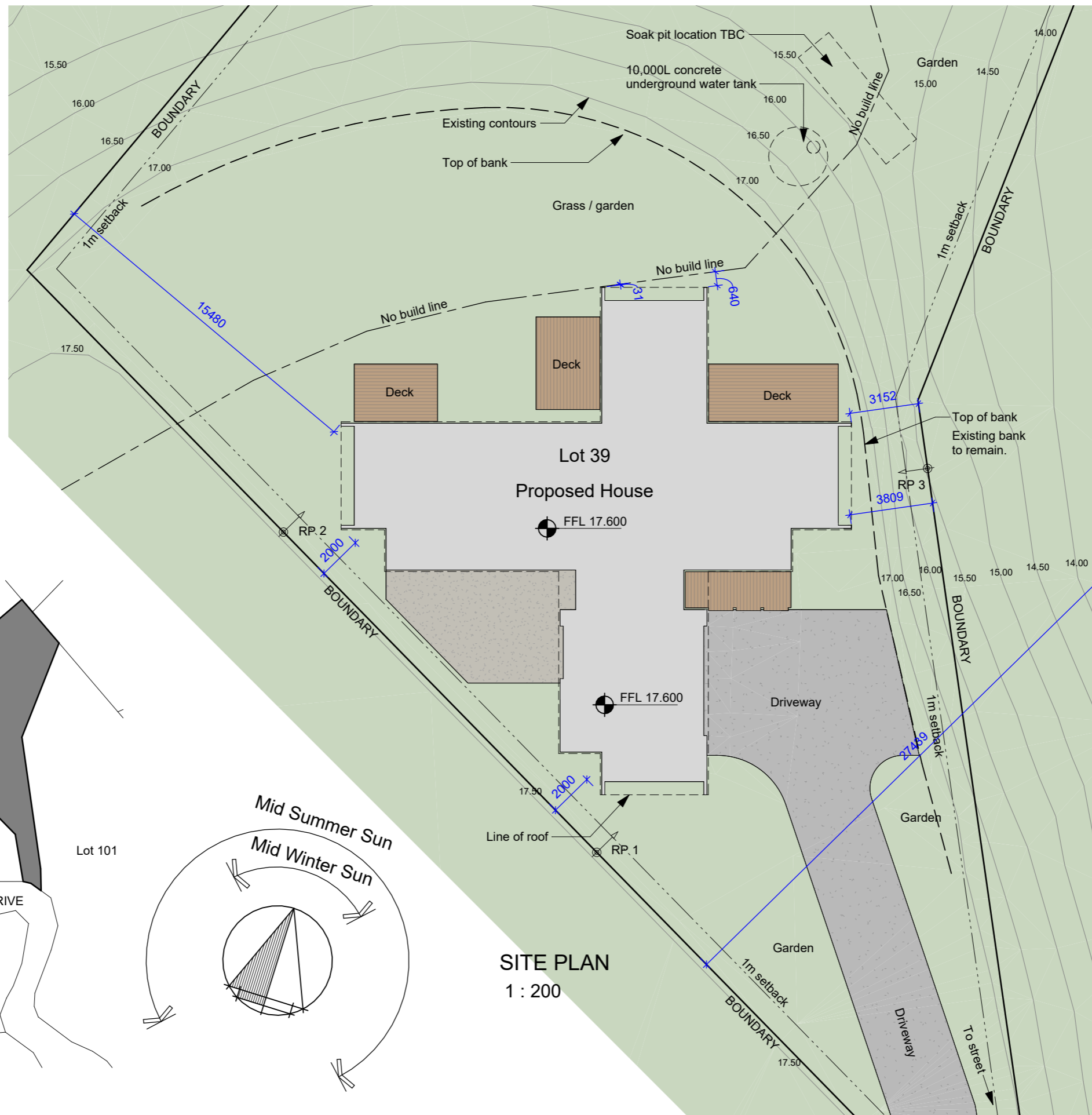


PERSPECTIVE SKETCH 1



PERSPECTIVE SKETCH 2

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**Legal Description**  
 LOT 39  
 DP 592074

**Site Areas**

Net Site Area	2243 m <sup>2</sup>	
Site Coverage	252m <sup>2</sup>	11%
Area of Outdoor Living	20 m <sup>2</sup>	
Area of Paving	218 m <sup>2</sup>	
Area of Permeable Surfaces	1773 m <sup>2</sup>	79%

**Building Consent Authority**  
**Kapiti Coast District Council**

**Planning Features**

Planning:	General Residential
Hazard:	
Noise:	
Other:	SAL 19

**Site information**

Wind Zone:	High (Eng TBC)
Exposure Zone:	C
To Sea (m):	1760-1800m
Earthquake Zone:	3
Climate Zone:	3
Snow Zone:	N1 (0 - 400m)
Soil Class:	TBC
Liquefaction Area:	High

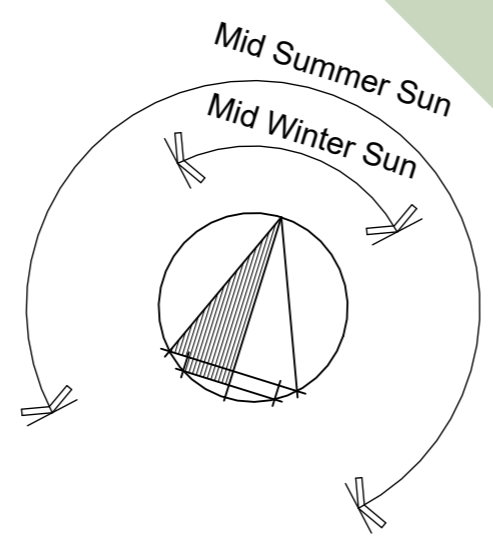
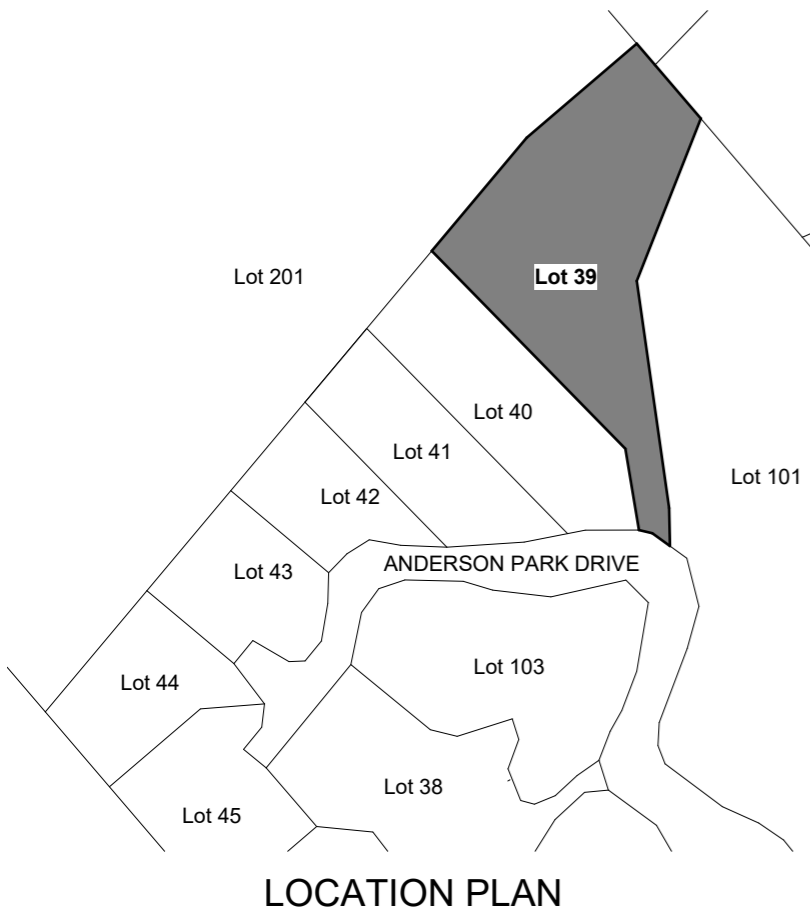
**NOTES:**  
 Refer to Geotech report for ground conditions

SAL 19 = Special Amenity Landscape  
 (At street and neighbouring site/s)

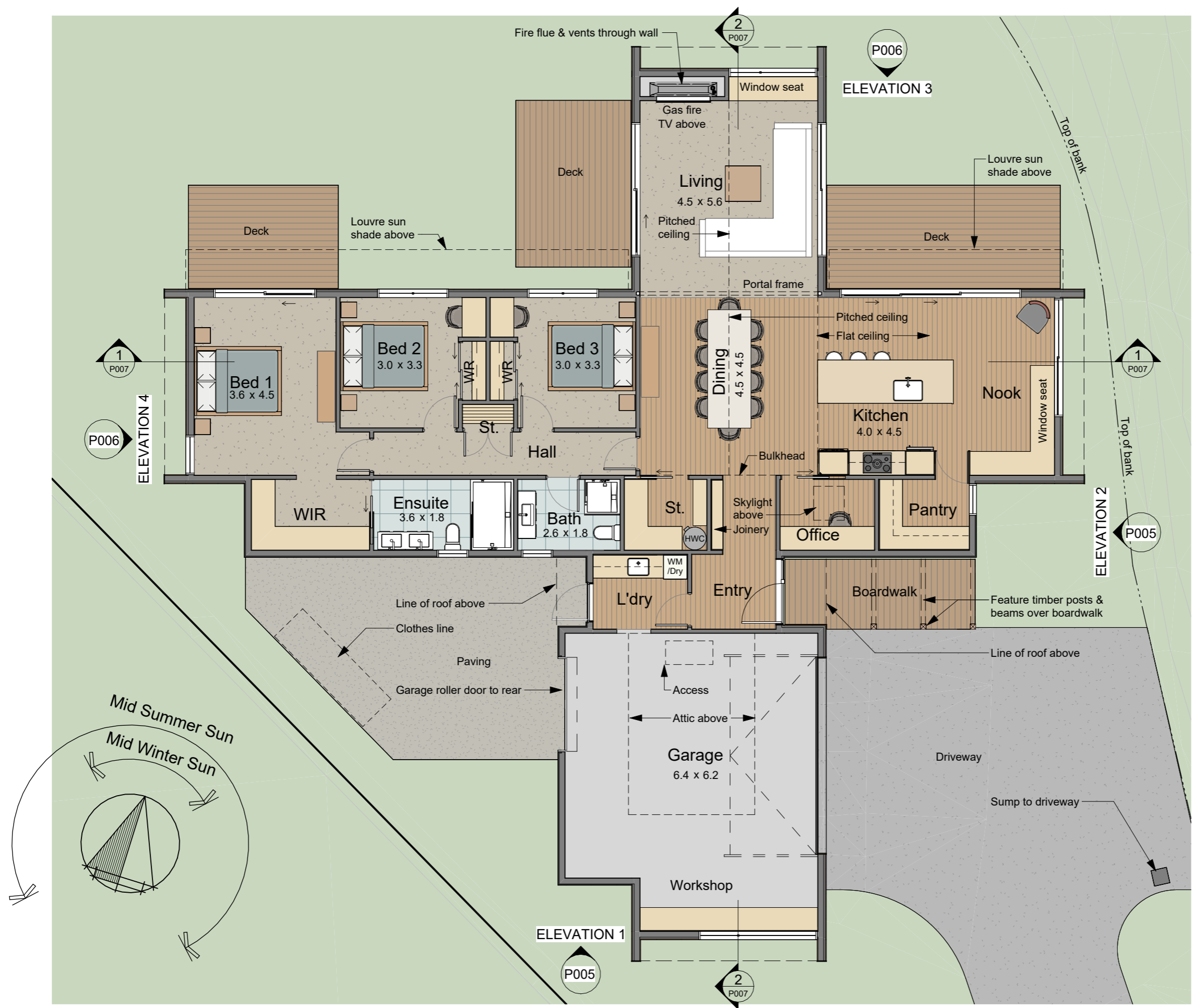
No Build Zone at rear of site  
 (House located outside of zone)

Minimal Earthworks required <50m<sup>3</sup>  
 (House foundations and Driveway only)

Resource Consent Requirements
- Resource Consent not required

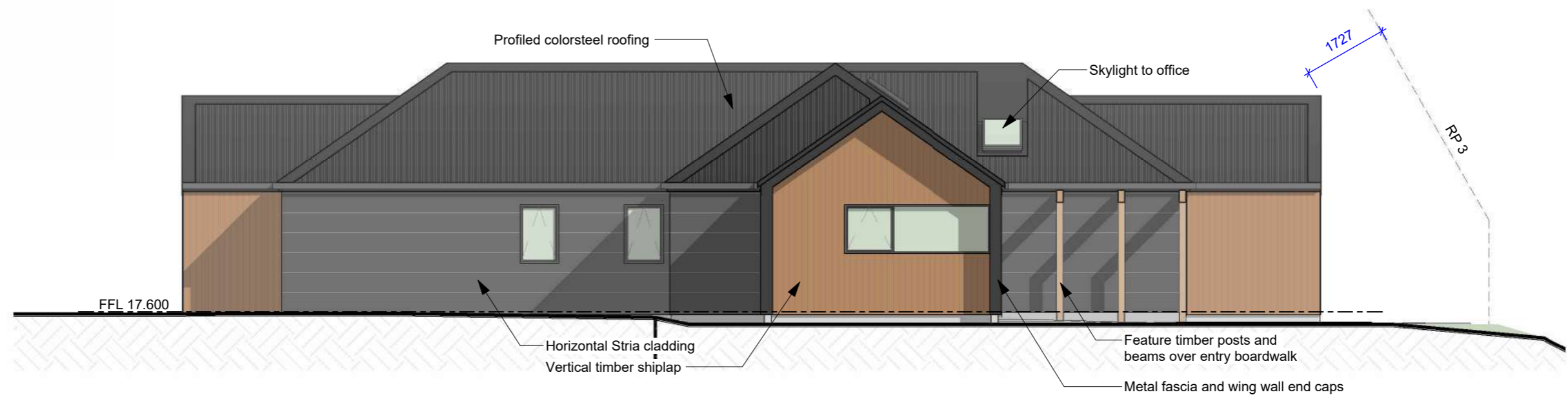


**SITE PLAN**  
 1 : 200



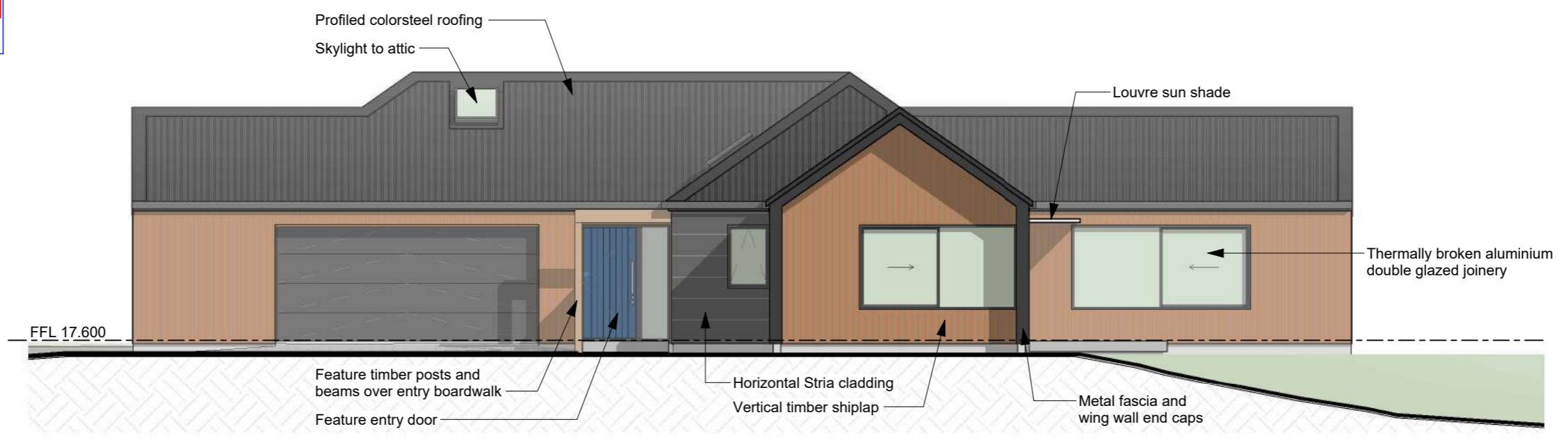
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<b>FLOOR AREA TO FRAMING</b>	
Area	228 m <sup>2</sup>
<b>FLOOR AREA TO CLADDING</b>	
Area	233 m <sup>2</sup>



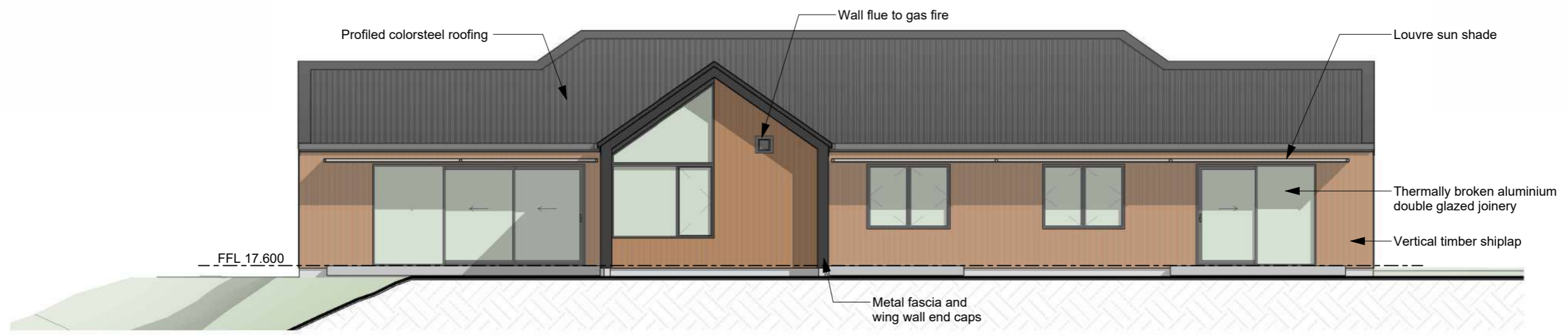
ELEVATION 1  
1 : 100

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ELEVATION 2  
1 : 100

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ELEVATION 3  
1 : 100

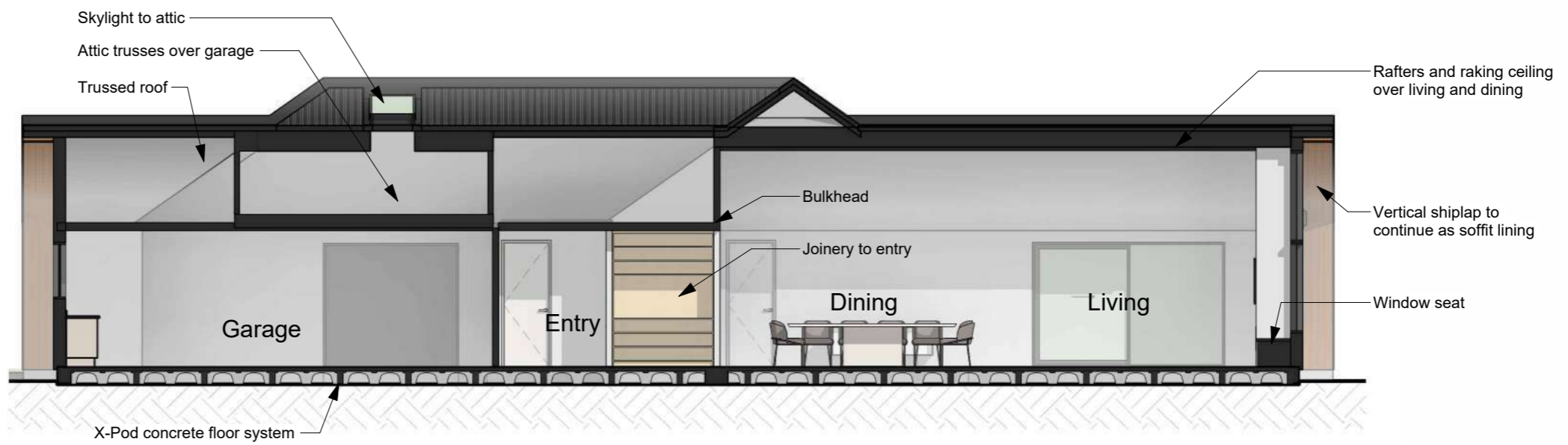


ELEVATION 4  
1 : 100

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INDICATIVE SECTION 1  
1 : 100



INDICATIVE SECTION 2  
1 : 100

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## Memorandum from Licensed Building Practitioner: Certificate of Design Work - Form 2A - KCDC199305

### Submission Details

Submission Ref	KCDC199305
Status	Accepted
Building Complexity	R2
Is Complete	Yes
Date Submitted	Wed 2 Apr 2025, 9:15 AM
Building Consent Authority	Kapiti Coast District Council
Site Address	40 Anderson Park Drive, Waikanae, Waikanae 5036
Parent Consent Number	250172
Submitter	AD Architecture Ltd (Brandon Lauridsen)

## Memorandum from Licensed Building Practitioner: Certificate of Design Work - Form 2A

## Memorandum from licensed building practitioner (certificate of design work) – Form 2A

[Section 30C](#) or [section 45](#), Building Act 2004

### How to complete the application form:

1. Each section within the form will turn green when the minimum required information has been completed, a red asterisk ( \* ) marks items that are mandatory.
2. All sections must be completed before you can submit the application, the submit button at the bottom of the form will not be available until all sections of the form have been completed and green.
3. The application can be saved and closed at any stage at the bottom of the form, this allows you to come back to the application at a later date without losing any of the information you have already completed.

### Where Is The Building

#### What is the street address \*

40 Anderson Park Drive, Waikanae

#### Legal Description \*

LOT 39

#### Deposited Plan

DP 592074

#### Building Name

#### Location of building within site/block including near street access

Proposed building located centrally. vehicle access from Right of way

## Who Owns The Building

## Owner name \*

Timothy &amp; Joanna Atkinson &amp; BMC Trustee Company (N0.22) Ltd

## Title

## Owner email address \*

timothyatkinson@gmail.com

## Owner contact number \*

021401480

## Owner mobile number

## Owner mailing address \*

48 Anderson Park Drive, Waikanae

## What Are Your Details

## Name \*

Peter Davis

## Email address \*

peter.d@adarchitecture.nz

## Contact number \*

042985662

## Mailing address \*

PO Box 1585, Paraparaumu Beach 5252

## Registration Type \*

 Licensed Building Practitioner Registered Architect Chartered Professional Engineer

## Licensed Building Practitioner registration number \*

103740

## What Work Have You Carried Out/Supervised

## Primary Structure \*

 Yes N/A

## What parts of the primary structure were you involved with \*

 FOUNDATIONS / SUBFLOOR FRAMING WALLS ROOF COLUMNS / BEAMS BRACING OTHER

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## WALLS

## Carried out / supervised

Carried out  Supervised

## Description of restricted building work

New walls to house  
(Note: lintels by prenailer - see PS1)

## If appropriate reference to plans / specifications

## ROOF

## Carried out/ supervised

Carried out  Supervised

## Description of restricted building work

New roof rafters over living/dining(Skillion roof)  
(Note: Trusses by prenailer / Ridge beam by Engineer - see PS1)

## If appropriate reference to plans / specifications

## External moisture management systems \*

Yes  N/A

## What parts of the external moisture management systems were you involved with \*

<input checked="" type="checkbox"/> DAMP PROOFING	<input checked="" type="checkbox"/> ROOF CLADDING or ROOF CLADDING SYSTEM	<input checked="" type="checkbox"/> VENTILATION SYSTEM
<input checked="" type="checkbox"/> WALL CLADDING or WALL CLADDING SYSTEM	<input type="checkbox"/> WATERPROOFING	<input type="checkbox"/> OTHER

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## DAMP PROOFING

## Carried out/ supervised:

 Carried out Supervised

## Description of restricted building work

DPM under slab

## If appropriate reference to plans / specifications

## ROOF CLADDING or ROOF CLADDING SYSTEM

## Carried out/ supervised:

 Carried out Supervised

## Description of restricted building work

Profiled metal roofing on underlay to roof

## If appropriate reference to plans / specifications

## VENTILATION SYSTEM

*For example: sub floor or cavity systems*

## Carried out/ supervised:

 Carried out Supervised

## Description of restricted building work

Roof ventilation using Drispace VENT products - refer to details  
Cladding on cavity

## If appropriate reference to plans / specifications

## WALL CLADDING or WALL CLADDING SYSTEM

## Carried out/ supervised:

 Carried out Supervised

## Description of restricted building work

James Hardie Stria and JSC Verti-clad on cavity on underlay

## If appropriate reference to plans / specifications

## Fire safety systems \*

 Yes N/A

## Are waivers or modifications of the building code required \*

 Yes No

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## Declaration

### Basis for Providing this Memorandum \*

Sole Designer - of all the RBW design outlined in this memorandum - I carried out all 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.

**\* I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work described on this form.**

**\* I understand that by submitting this form, I certify that the design work that is restricted building work recorded on this form:**

(a) complies with the Building Code Clauses identified on this form

(b) complies with the building code subject to any waiver or modification of the building code recorded on this form.

### Privacy Information

The information you have provided on this form is required so that your application can be processed under the Building Act 2004. The Council, Territorial Authority (TA) or Building Consent Authority (BCA) collates statistics relating to building work and has a statutory obligation to provide information to third parties. The information is stored on a public register, which must be supplied to whoever requests the information. Under the Privacy Act 2020, you have the right to see, and correct personal information Councils, TAs and BCAs hold about you.

In providing this information, you agree to your details being used for customer surveys carried out by the BCA, TA or BCA.

### Your application fees

The Building consent Authority will charge fees for your consent application. These will include statutory levies to BRANZ and the Ministry of Business, Innovation & Employment.

A fee schedule can be found on the BCA's website, refer to the link in the details panel on the right. Your fees will be advised when the BCA accepts your submission.

**Name of person making this declaration \***

**Date \***

Peter Davis

01/04/2025

While the above statement must be made by an individual LBP, and the form submitted accordingly, the Department considers that it is acceptable for the form to also record the name of the design firm, as a legal entity, employing that LBP.

## Submitter Declaration

**Submitter Name**

Brandon Lauridsen

**Date**

02/04/2025

I understand that by ticking the following boxes, I am agreeing to the following statements:

**\* As the agent I confirm that I am submitting this application on behalf of and with the authority of the owner and confirm that all the information within the application is, to the best of my knowledge, true and correct.**

**\* oc.service.lbp\_design.declaration**

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**RECORD OF TITLE  
UNDER LAND TRANSFER ACT 2017  
FREEHOLD**

**Guaranteed Search Copy issued under Section 60 of the Land  
Transfer Act 2017**



R. W. Muir  
Registrar-General  
of Land

**Identifier** **1146413**  
**Land Registration District** **Wellington**  
**Date Issued** 08 April 2024

**Prior References**  
921363

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**Estate** Fee Simple  
**Area** 3.5767 hectares more or less  
**Legal Description** Lot 39 Deposited Plan 592074 and Lot 201  
Deposited Plan 592074

**Registered Owners**

Timothy David Atkinson, Joanna Elizabeth Atkinson and BMC Trustee Company (No.22) Limited

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**Interests**

12958651.2 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 8.4.2024 at 2:52 pm (affects Lot 39 DP 592074)

Subject to Section 241(2) Resource Management Act 1991 (affects DP 592074)

Appurtenant hereto is a right of way, right to drain sewage and water and right to convey electricity, telecommunications and water created by Easement Instrument 12958651.4 - 8.4.2024 at 2:52 pm

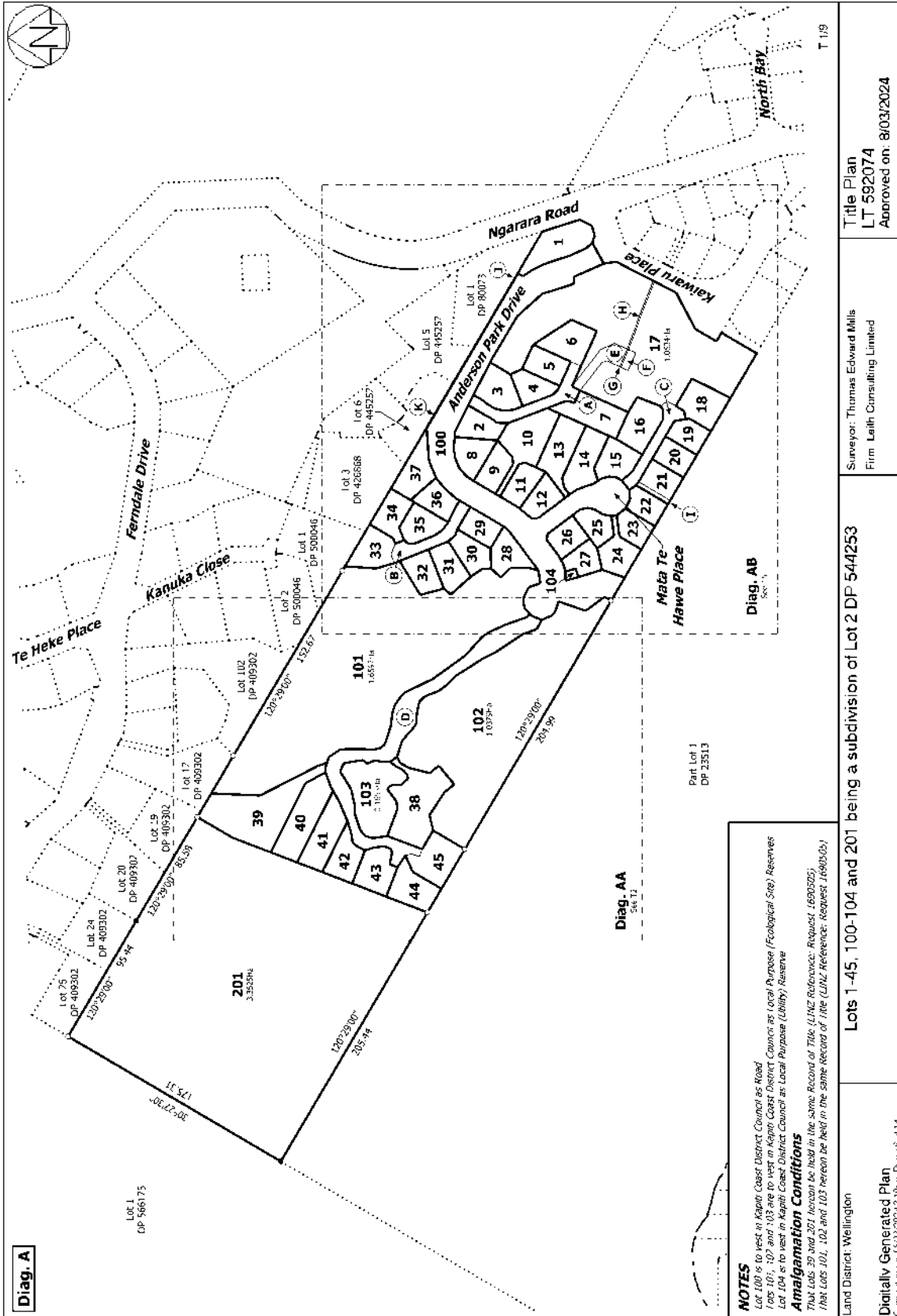
The easements created by Easement Instrument 12958651.4 are subject to Section 243 (a) Resource Management Act 1991 Land Covenant in Covenant Instrument 12958651.9 - 8.4.2024 at 2:52 pm (affects Lot 39 DP 592074)

Land Covenant in Covenant Instrument 12958651.10 - 8.4.2024 at 2:52 pm (affects Lot 39 DP 592074)

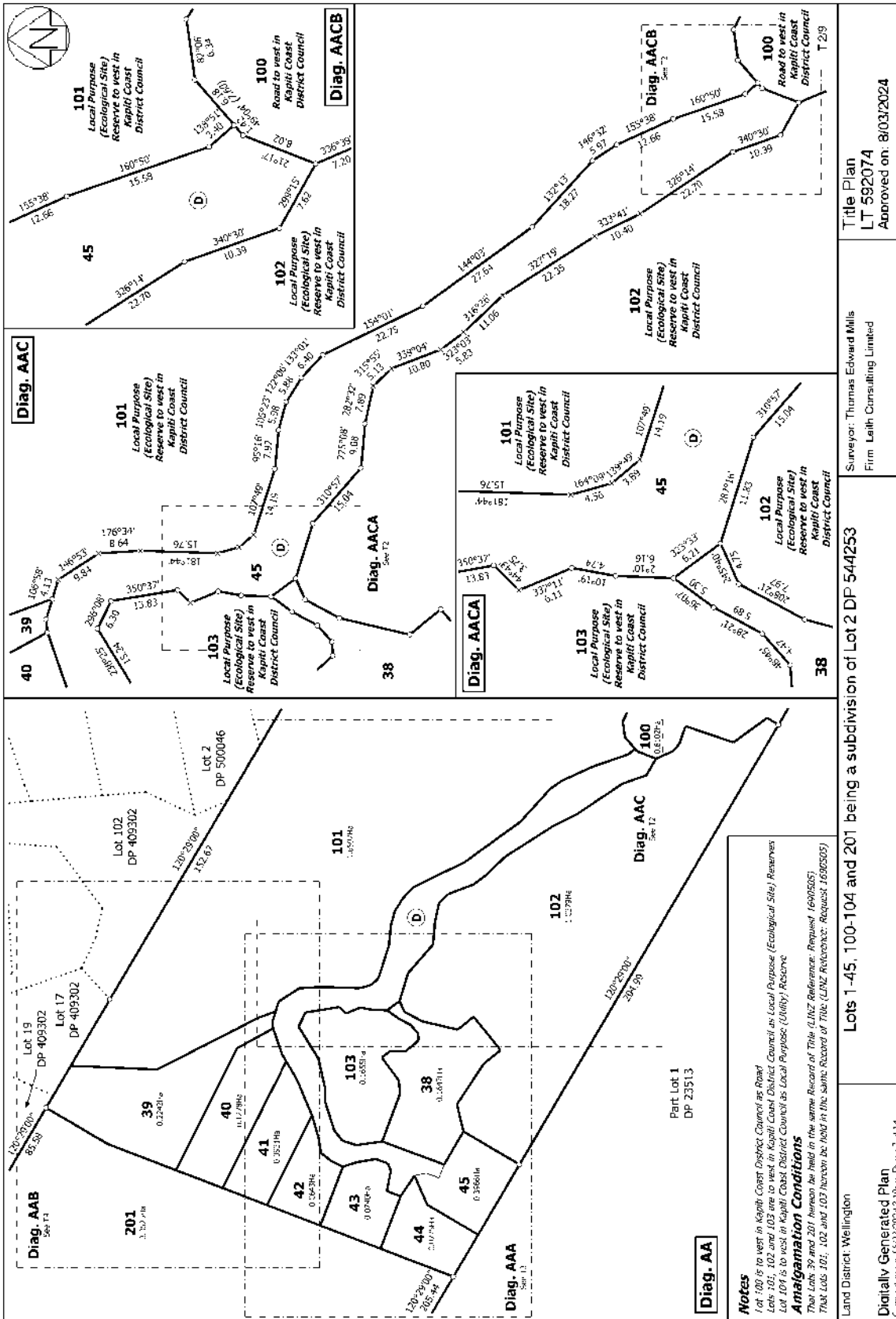
Land Covenant (in gross) in favour of (now) Connexa Limited created by Covenant Instrument 12958651.11 - 8.4.2024 at 2:52 pm

13209580.3 CAVEAT BY ANDERSON PARK ESTATES LIMITED - 31.1.2025 at 2:53 pm

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**Notes**  
 Lot 100 is to vest in Kapiti Coast District Council as Road  
 Lots 101, 102 and 103 are to vest in Kapiti Coast District Council as Local Purpose (Ecological Site) Reserves  
 Lot 104 is to vest in Kapiti Coast District Council as Local Purpose (Other) Reserve  
**Amalgamation Conditions**  
 That Lots 39 and 201 hereon be held in the same Record of Title (LIRZ Reference: Ampuss 1600805)  
 That Lots 101, 102 and 103 hereon be held in the same Record of Title (LIRZ Reference: Request 1600205)

**Title Plan**  
 LT 592074  
 Approved on: 8/03/2024

Surveyor: Thomas Edward Mills  
 Firm: Leith Consulting Limited

**Lots 1-45, 100-104 and 201 being a subdivision of Lot 2 DP 544253**

Land District: Wellington  
 Digitally Generated Plan  
 Generated on: 07/04/2025 Page 2 of 14

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**Kapiti Coast District Council**  
**07/04/2025**



# View Instrument Details

**Instrument No** 12958651.4  
**Status** Registered  
**Date & Time Lodged** 08 April 2024 14:52  
**Lodged By** Stevenson, Jane Maree  
**Instrument Type** Easement Instrument



Affected Records of Title	Land District
559705	Wellington
WN46D/652	Wellington
1146376	Wellington
1146377	Wellington
1146378	Wellington
1146379	Wellington
1146380	Wellington
1146381	Wellington
1146390	Wellington
1146391	Wellington
1146392	Wellington
1146393	Wellington
1146394	Wellington
1146395	Wellington
1146396	Wellington
1146404	Wellington
1146405	Wellington
1146406	Wellington
1146407	Wellington
1146408	Wellington
1146409	Wellington
1146411	Wellington
1146412	Wellington
1146413	Wellington
1146414	Wellington
1146415	Wellington
1146416	Wellington
1146417	Wellington
1146418	Wellington
1146419	Wellington

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 Further Information Received  
 15/04/2025

**Annexure Schedule** Contains 3 Pages.

## Grantor Certifications

- I certify that I have the authority to act for the Grantor and that the party has the legal capacity to authorise me to lodge this instrument
- I certify that I have taken reasonable steps to confirm the identity of the person who gave me authority to lodge this instrument
- I certify that any statutory provisions specified by the Registrar for this class of instrument have been complied with or do not apply
- I certify that I hold evidence showing the truth of the certifications I have given and will retain that evidence for the prescribed period

I certify that the Mortgagee under Mortgage B758320.1 has consented to this transaction and I hold that consent

I certify that the Mortgagee under Mortgage 12934325.2 has consented to this transaction and I hold that consent

**Signature**

Signed by Jane Marce Stevenson as Grantor Representative on 26/03/2024 10:18 AM

---

**Grantee Certifications**

I certify that I have the authority to act for the Grantee and that the party has the legal capacity to authorise me to lodge this instrument

I certify that I have taken reasonable steps to confirm the identity of the person who gave me authority to lodge this instrument

I certify that any statutory provisions specified by the Registrar for this class of instrument have been complied with or do not apply

I certify that I hold evidence showing the truth of the certifications I have given and will retain that evidence for the prescribed period

**Signature**

Signed by Jane Marce Stevenson as Grantee Representative on 26/03/2024 10:18 AM

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

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**Form 22**

**Easement instrument to grant easement or *profit à prendre***

(Section 109 Land Transfer Act 2017)

**Grantor**

**Anderson Park Estates Limited**

**Grantee**

**Anderson Park Estates Limited** (RoT 1146  
**Darren Kevin Ingham** (RoT WN46D/652)  
**Jacqueline Ann Challis** (RoT 559705)

**Grant of Easement or *Profit à prendre***

**The Grantor** being the registered owner of the burdened land set out in Schedule A **grants to the Grantee** (and, if so stated, in gross) the easement(s) or *profit(s) à prendre* set out in Schedule A, with the rights and powers or provisions set out in the Annexure Schedule(s)

**Schedule A**

*Continue in additional Annexure Schedule, if required*

Purpose of Easement, or <i>profit</i>	Shown (plan reference) <b>DP 592074</b>	Burdened Land (Record of Title)	Benefited Land (Record of Title) or in gross
Right of Way Right to drain sewage & water Right to convey electricity, telecommunications & water	<b>A</b>	Lot 6 - RoT <b>1146380</b>	Lots 2, 3, 4, 5 & 7 (RoT <b>1146376-1146379 &amp; 1146381</b> )
	<b>B</b>	Lot 33 - RoT <b>1146407</b>	Lots 30, 31, 32, 34 & 35 (RoT <b>1146404-1146406, 1146408 &amp; 1146409</b> )
	<b>C</b>	Lot 17 - RoT <b>1146391</b>	Lots 16, 18, 19, 20 & 21 (RoT <b>1146390 &amp; 1146392-1146395</b> )
	<b>D</b>	Lot 45 - RoT <b>1146419</b>	Lots 38, 39, 40, 41, 42, 43, 44 & 201 - (RoT <b>1146412-1146418</b> )
Right to drain sewage & Right to convey water	<b>J</b>	Lot 37 - RoT <b>1146411</b>	Lot 1 DP 80073 RoT <b>WN46D/652</b> )

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Right to drain sewage	<b>K</b>	Lot 37 - RoT <b>1146411</b>	Lot 6 DP 445257 (RoT <b>559705</b> )
	<b>C</b>	Lot 17 - RoT <b>1146391</b>	Lot 22 (RoT <b>1146396</b> )
Right to drain water	<b>A</b>	Lot 6 - RoT <b>1146380</b>	Lot 17 (RoT <b>1146391</b> )

**Easements or profits à prendre rights and powers (including terms, covenants and conditions)**

Delete phrases in [ ] and insert memorandum number as required; continue in additional Annexure Schedule, if required

Unless otherwise provided below, the rights and powers implied in specified classes of easement are those prescribed by the Land Transfer Regulations 2018 and/or Schedule 5 of the Property Law Act 2007

The implied rights and powers are hereby [**varied**] [~~negated~~] [~~added to~~] or [~~substituted~~] by:

[Memorandum number \_\_\_\_\_, registered under section 209 of the Land Transfer Act 2017]

[the provisions set out in Annexure Schedule page 1 hereto ]

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Form L

Annexure Schedule

Page 1 of 1 Page

*Insert instrument type*

Easement Instrument

*Continue in additional Annexure Schedule, if required*

**Rights and powers continued**

**Right to Convey Water**

The same rights and powers as set out in paragraph 3 of the Fifth Schedule to the Land Transfer Regulations 2018.

**Right to Drain Water**

The same rights and powers as set out in paragraph 4 of the Fifth Schedule to the Land Transfer Regulations 2018.

**Right to Drain Sewage**

The same rights and powers as set out in paragraph 5 of the Fifth Schedule to the Land Transfer Regulations 2018.

**Right of Way**

The same rights and powers as set out in paragraph 6 of the Fifth Schedule to the Land Transfer Regulations 2018.

**Right to Convey Electricity**

The same rights and powers as set out in paragraph 7 of the Fifth Schedule to the Land Transfer Regulations 2018.

**Right to Convey Telecommunications**

The same rights and powers as set out in paragraph 8 of the Fifth Schedule to the Land Transfer Regulations 2018.

TOGETHER WITH, IN RESPECT OF ALL OF THE SAID EASEMENTS, the rights and powers as set out in paragraphs 10, 11, 12, 13 and 14 of the Fifth Schedule to the Land Transfer Regulations 2018 SAVE THAT:

- (a) Where there is a conflict between the provisions of the Fifth Schedule to the Land Transfer Regulations 2018 and the Fifth Schedule to the Property Law Act 2007, the provisions of the Fifth Schedule to the Property Law Act 2007 must prevail, and
- (b) Where there is a conflict between the provisions of the Fifth Schedule to the Land Transfer Regulations 2018 and/or the Fifth Schedule to the Property Law Act 2007 and the modifications in this Easement Instrument, the modifications must prevail.

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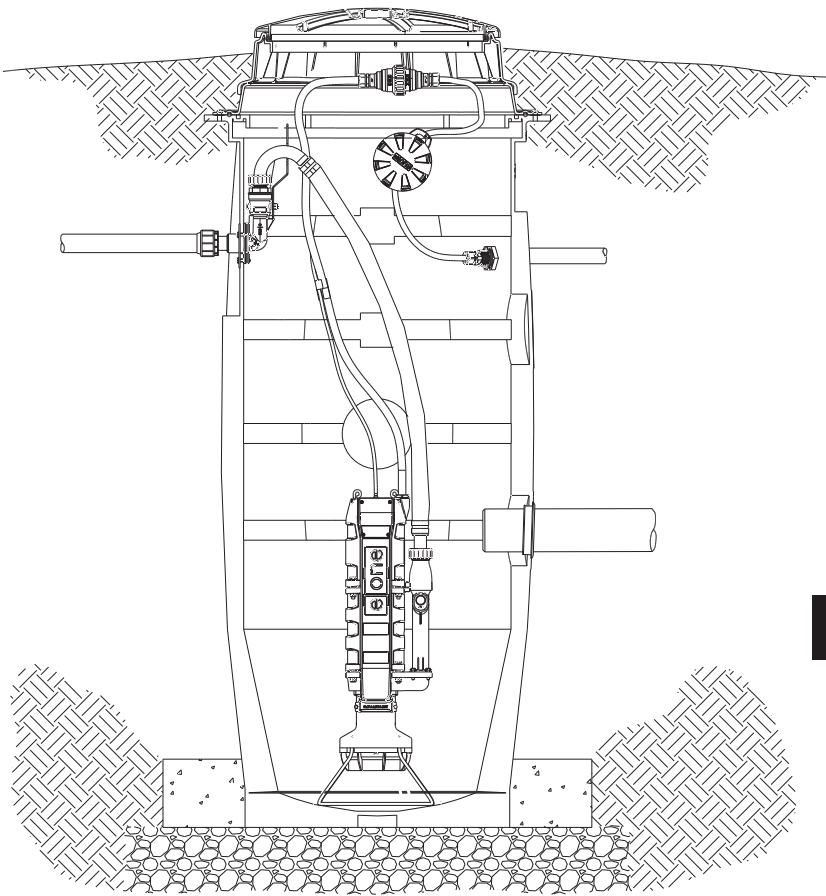
# **E/ONE**

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# **EXTREME**

S E R I E S

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## **2010iP Simplex Typical Installation Instructions**

**Simplex Station  
700 L Capacity**

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The 2010iP Simplex station is a well-engineered system designed to provide low-pressure sewer service to individual residences or buildings. Correct installation and start-up of this equipment will ensure proper operation.

This is a sewage handling pump and must be vented in accordance with national and local plumbing codes. This pump is not to be installed in locations classified as hazardous. All piping and electrical systems must be in compliance with applicable standards, local and national codes and to the satisfaction of relevant authorities.

## PRODUCT DESCRIPTION

The 2010ip Simplex station consists of a grinder pump, tank, pump alarm panel and connecting power (supply) cable. The tank is a polyethylene basin complete with a gasket-sealed lid. Three lid styles are available for the 2010iP station (Figure 4). Sewage enters the tank through the 100 mm DWV uPVC (110.2 mm OD) (standard) inlet pipe where it is ground into fine particles by the grinder pump. The in-line pumping mechanism

discharges the macerated sewage to a pressure or gravity main, then to a remote treatment site. The pump is a semi-positive displacement type capable of operating at discharge pressures up to 56 m TDH. Ample tank storage capacity in conjunction with integral level sensing controls provides for economic, on-demand, operation of the grinder pump.

## ITEMS REQUIRED FOR INSTALLATION

Prior to beginning installation, a thorough review of these installation instructions is recommended. This will likely eliminate problems with inconvenient piping and cable locations or due to the unavailability of materials or equipment. In addition to the components furnished with each station, the following items will be needed to support installation:

- Electrical supply in accordance with the specification on the pump nameplate.
- Bedding material (Section 2)
- Concrete ballast (Section 5)
- 100 mm DWV uPVC (110.2 mm OD) inlet pipe (from residence or building sewer) (Sections 4 & 7)

- PE100, 40mm OD, PN16, SDR11 polyethylene discharge pipe to force or gravity main (recommended – Section 8)
- Compactable backfill material (Section 11)

The following tools:

- 127mm (5") dia. hole saw
- Pipe thread sealant (suitable for materials being joined)
- Pipe wrenches
- Electric drill
- Common hand tools

## INSTALLATION STEPS

The following instructions will provide the necessary information to properly install the grinder pump station.

### 1. Station Unpacking

(Figure 1)

The station alarm panel, grinder pump and tank are shipped to the job site separately. Inspect the tank (1) and ensure that it sustained no damage during shipment. Proper handling of the polyethylene tank will ensure reliable performance. Do not drop the tank or roll it on its side. Only a non-marring sling should be used

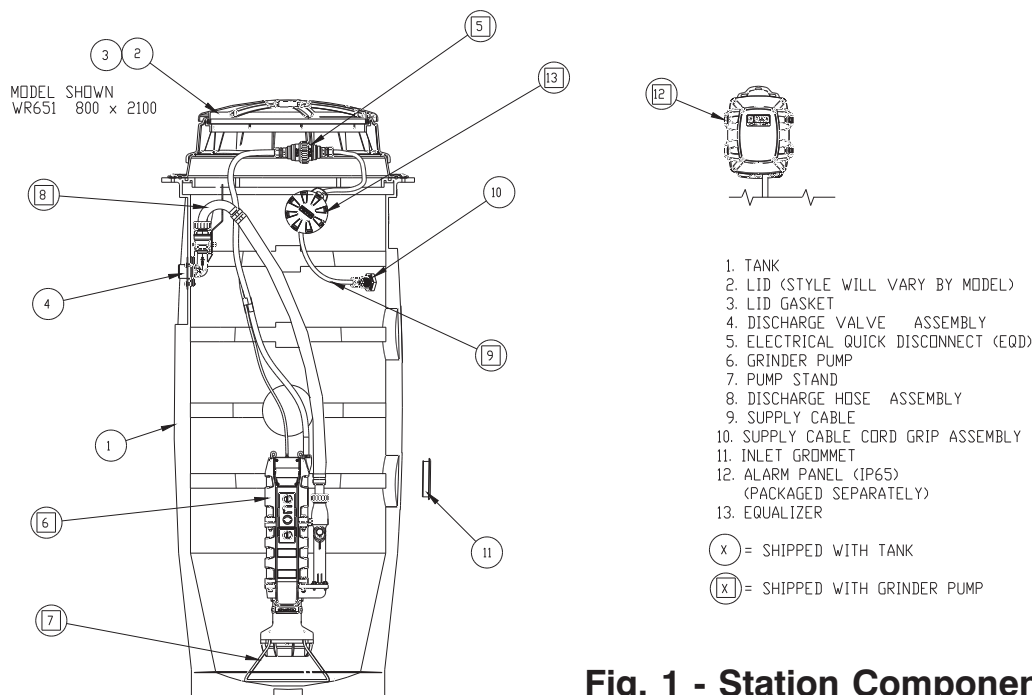


Fig. 1 - Station Components