Section 3

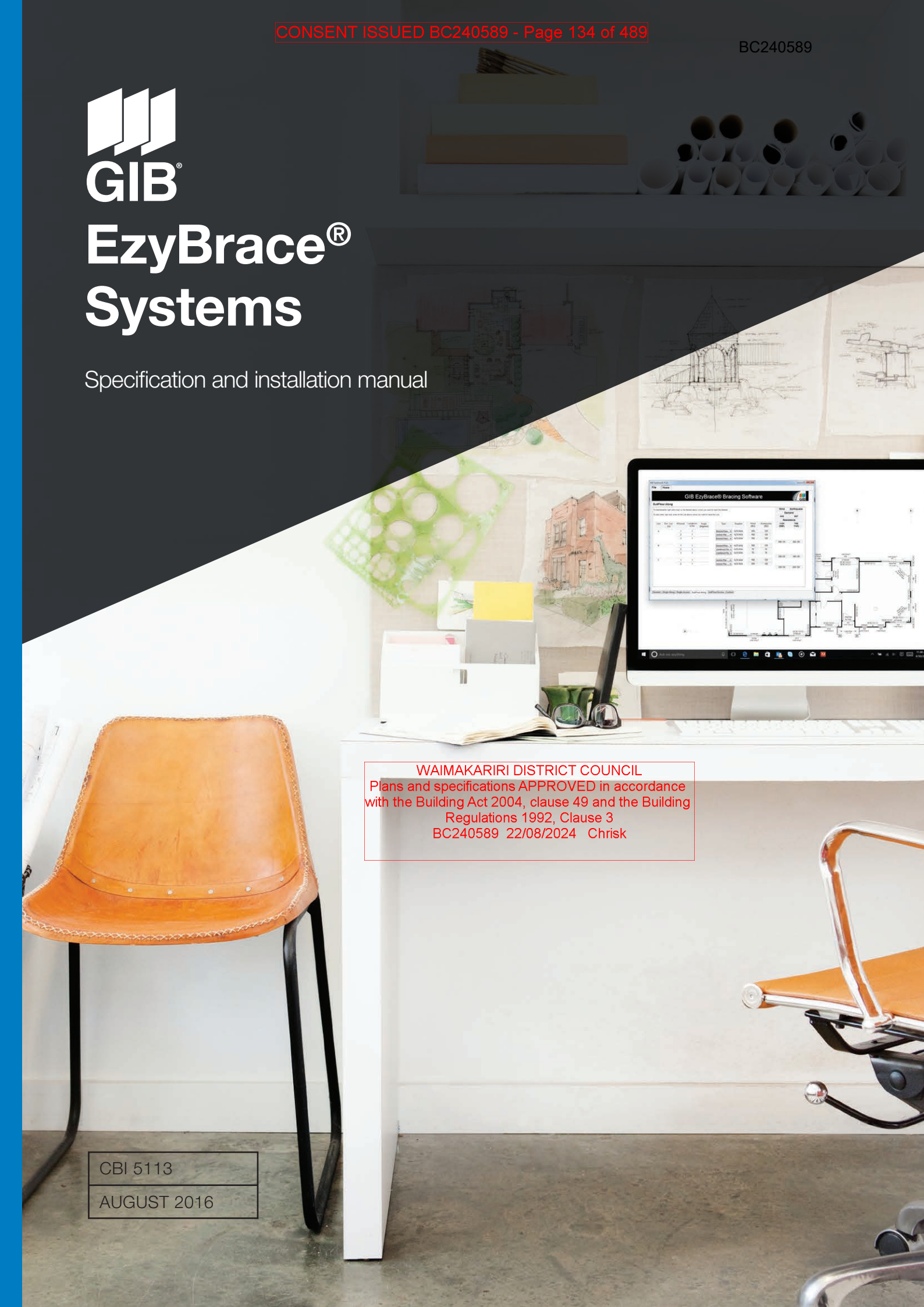
~~Truss Details &~~ Bracing Details

see engineering

- Manufacturers bracing instruction and construction documentation
- Design IT Calcs
- Hyspan etc.

GIB® EzyBrace® Systems

Specification and installation manual



CBI 5113
AUGUST 2016

NATIONAL SUPPORT

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GIB® HELPLINE

0800 100 442

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[1]
- Encourages more even bracing distribution throughout the building.

[1] 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.

BRANZ Appraised
Appraisal No.928 [2016]

CONTENTS

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This publication may be superseded by a new publication at any time. Winstone Wallboards accepts no liability for reliance upon publications that have been superseded.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 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 futher 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.

	Acceptable alternative GIB® plasterboards								
Specified GIB® plasterboard	GIB® Standard	GIB Ultraline®	GIB Braceline/ Noiseline®	GIB Aqualine®	GIB Toughline®	GIB Fyreline®			
						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.*

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. 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.

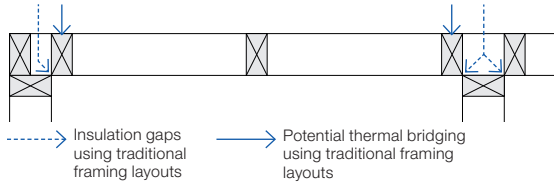
The GIBFix® Framing System offers better thermal efficiencies and minimises potential joint imperfections resulting from interior linings being fixed to multiple timber framing members.

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.

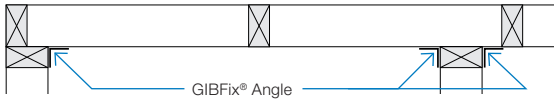
Bracing ratings apply whether fixing is directly into timber or into the metal components, provided correct construction details, fastener types and centres are applied.

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[1].
- Encourages more even bracing distribution throughout the building.

1. Actual savings dependent on building and bracing design.

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.

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.

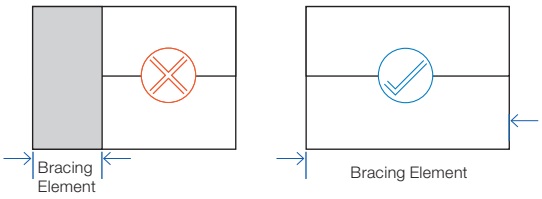
It is of prime importance to comply with the details of design, construction and workmanship in this document.

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:

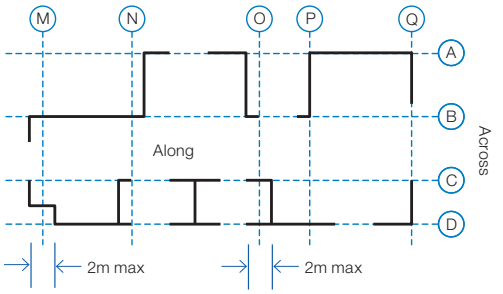
- 6 metres for standard construction with any GIB® plasterboard ceiling, or
- 7.5 metres where dragon ties in accordance with NZS3604:2011 have been installed, or
- 12 metres with a GIB® plasterboard ceiling diaphragm.

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.

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 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.

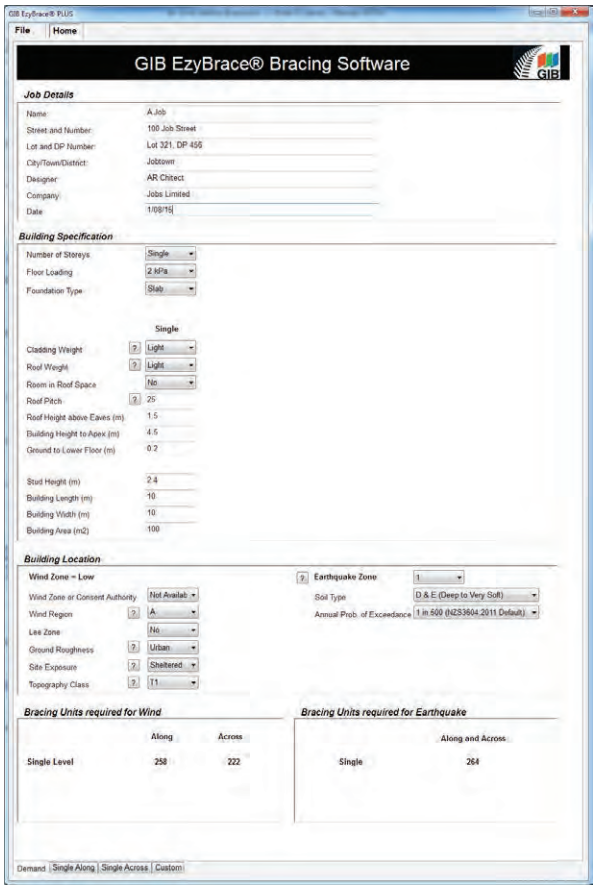
Bracing resistance sheets ('tabs') are added depending on the building specification entered. For example, subfloor bracing resistance tabs only show when a 'subfloor' foundation type has been selected.

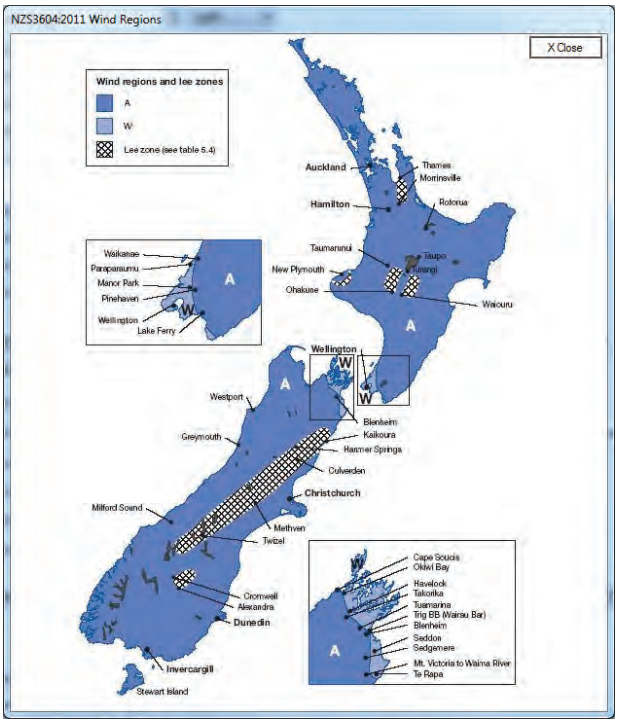
The Demand sheet gives the designer the option to select a longer earthquake return period which represents a higher earthquake design force. The default for buildings constructed in accordance with NZS3604:2011 is an earthquake that has a 10% chance of being exceeded within the assumed 50 year 'design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

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





Download GIB EzyBrace® 2016 design software from 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

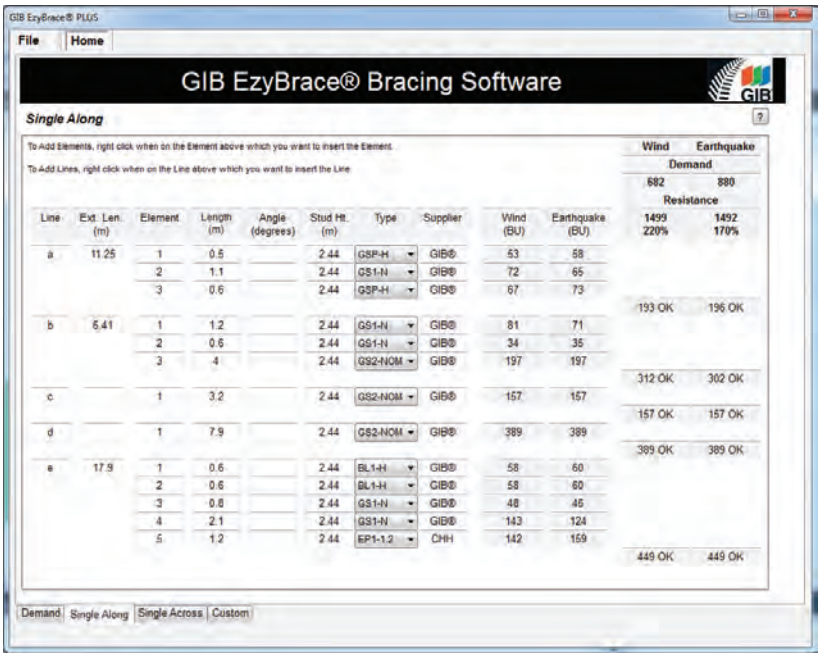
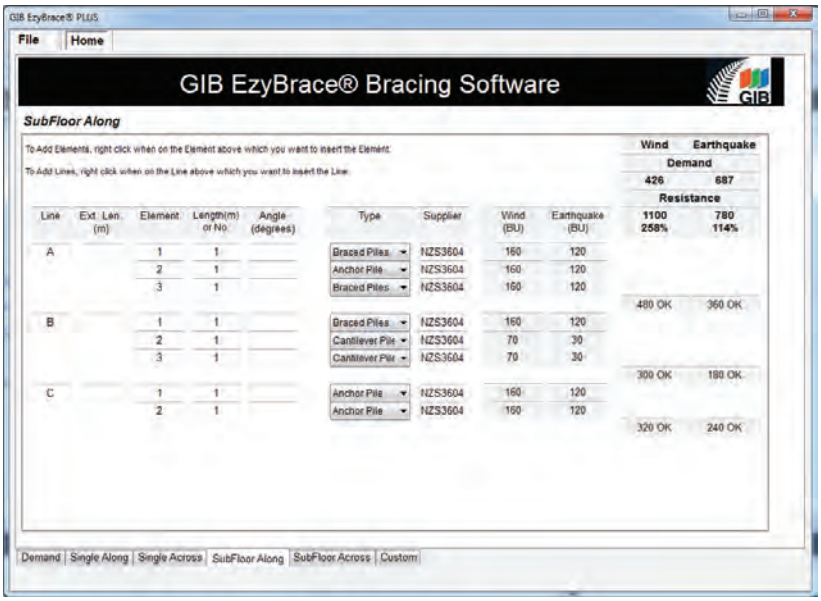


FIGURE 7: GIB EZYBRACE® 2016 — SUBFLOOR BRACING RESISTANCE CALCULATION SHEET

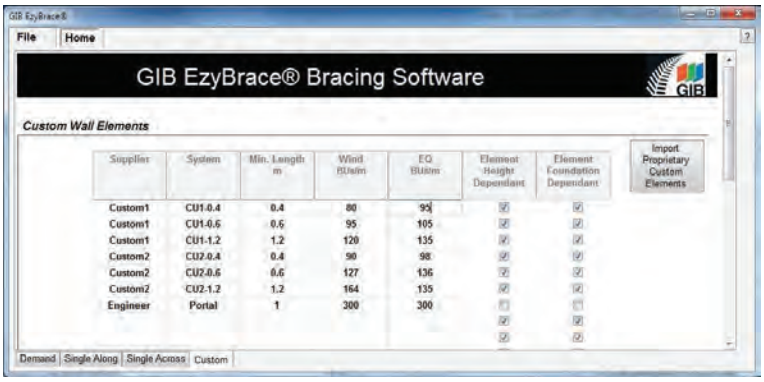


Download GIB EzyBrace® 2016 design software from gib.co.nz/ezybrace

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



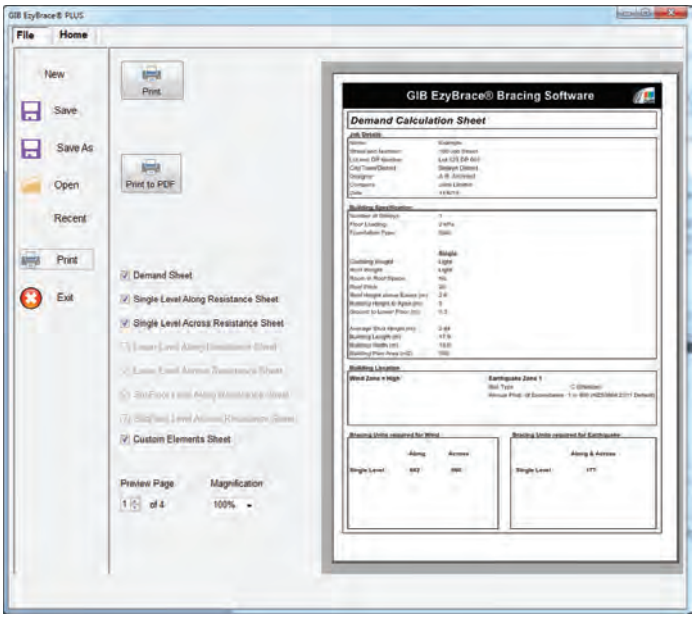
Note: Values and systems shown in Custom Elements Sheets are for illustrative purposes only.

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

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 futher 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

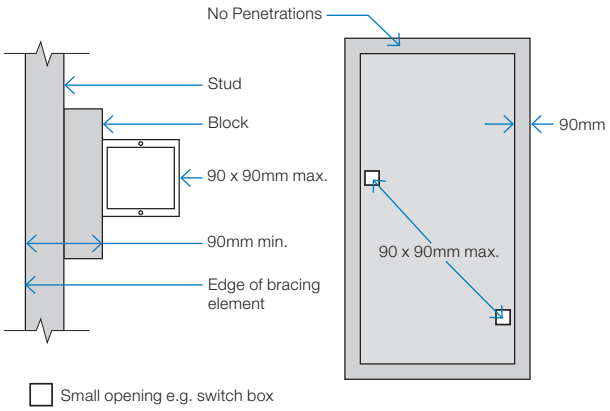
SMALL OPENINGS

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

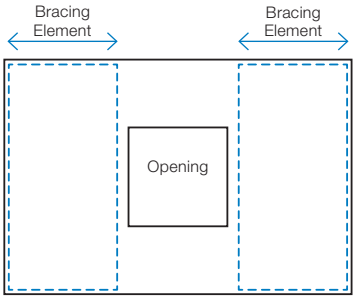
Openings above 90 x 90mm such as switch boards, recessed cabinets and TV's etc. should be placed outside of the bracing element or locate bracing on the other side of the wall framing.

FIGURE 10: SMALL OPENINGS IN BRACING ELEMENTS



GEB001

FIGURE 11: LARGE OPENINGS AND BRACING ELEMENTS



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.

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)

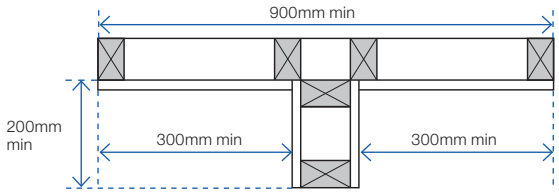


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FIGURE 13: WALL INTERSECTION (GIBFIX® FRAMING SYSTEM)

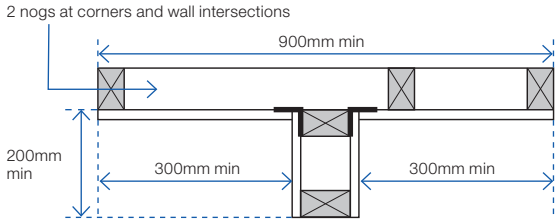

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FIGURE 14: CORNER INTERSECTION (GIBFIX® FRAMING SYSTEM)

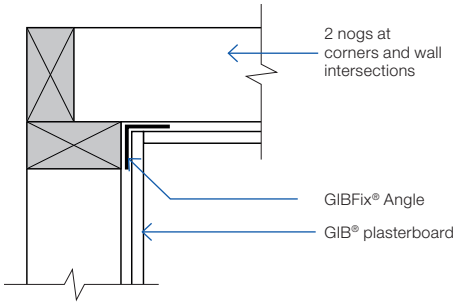

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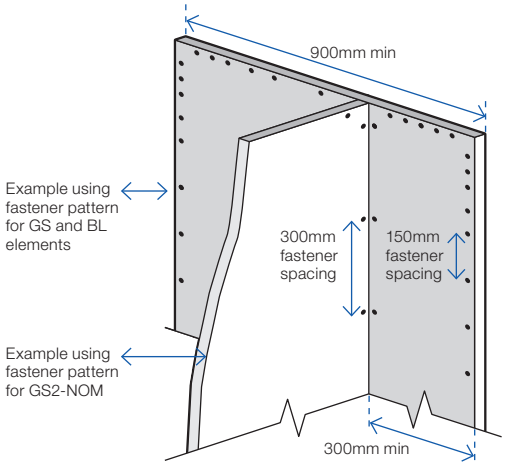
FIGURE 15: WALL INTERSECTION FASTENER PLACEMENT



Junction

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

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

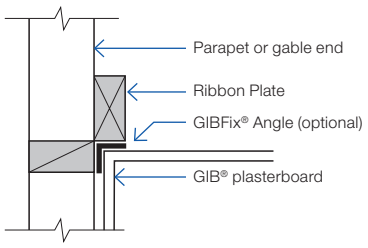
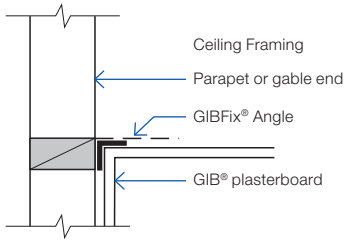


FIGURE 17: PARAPETS AND GABLE ENDS WITH GIBFIX® ANGLE



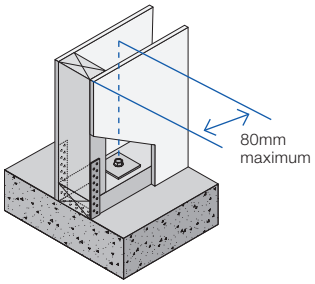
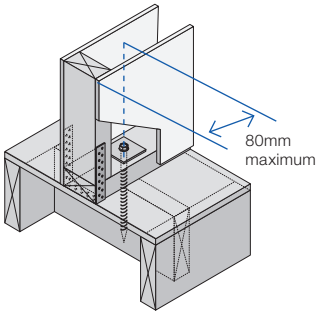
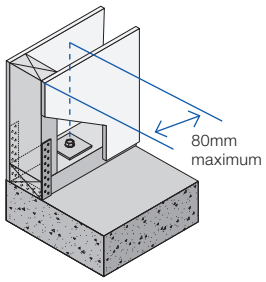
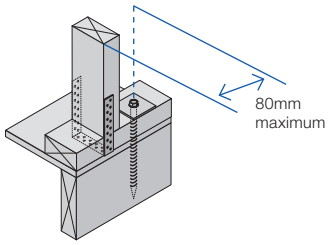
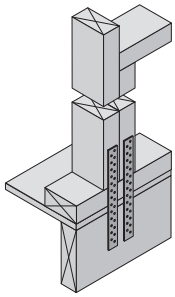
GFS003

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.	

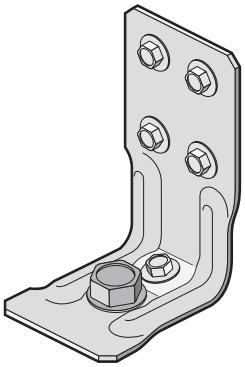
Bracing strap installation

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	
 GEB004	 GEB005
External wall	
 GEB006	 GEB007
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.	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.
	 GEB008

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

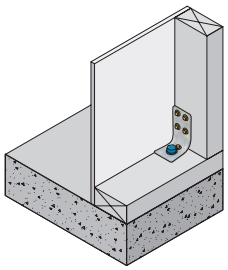
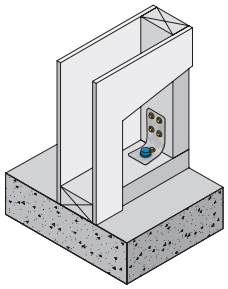
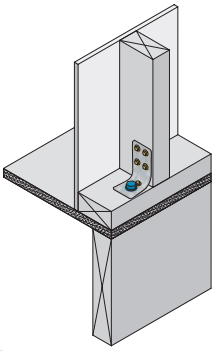
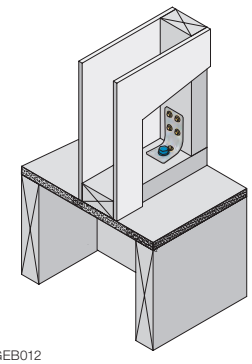
GIB HandiBrac® installation



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
 GEB009	 GEB010	 GEB011	 GEB012
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.	

GIB HandiBrac® placement with GIBFix® Framing System for concrete floors

Figure 18 shows the preferred positioning of the GIB HandiBrac® panel hold-down brackets within the GIBFix® 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® 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.

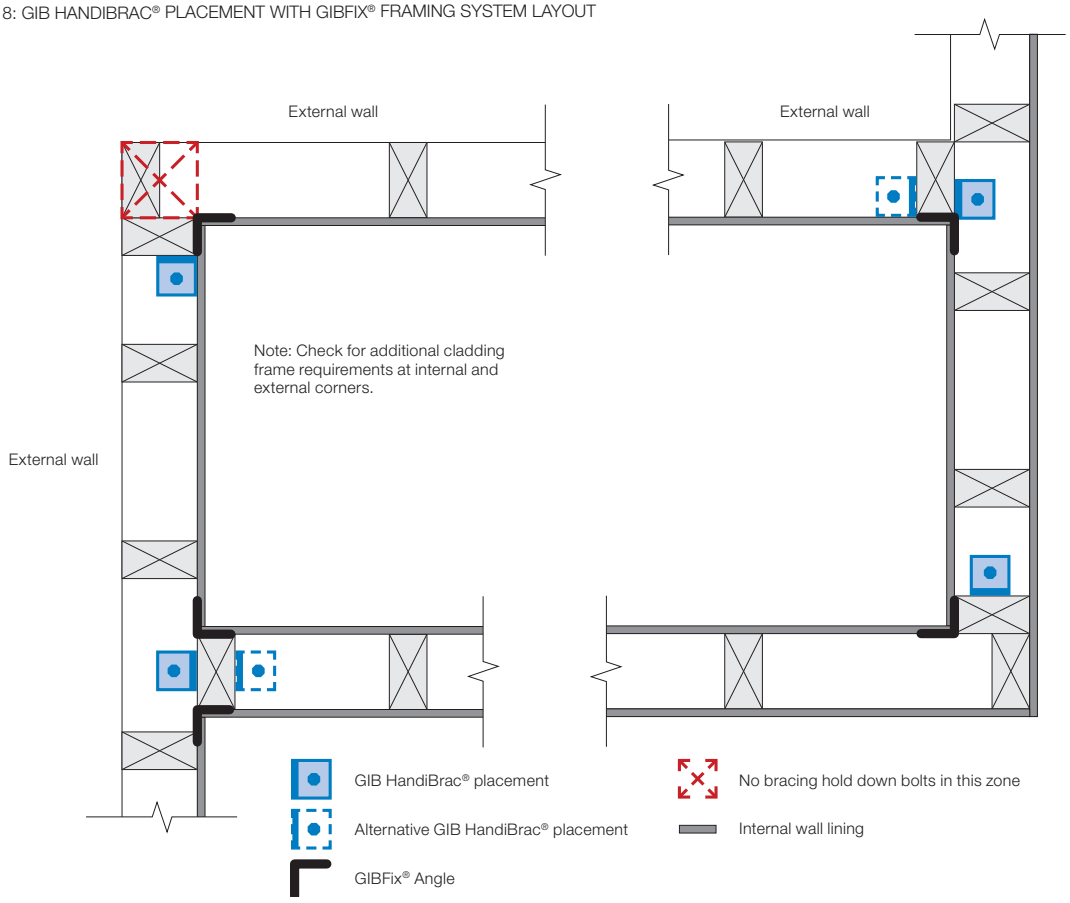
The GIB HandiBrac® is fixed to the stud which has the GIBFix® Angle.

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

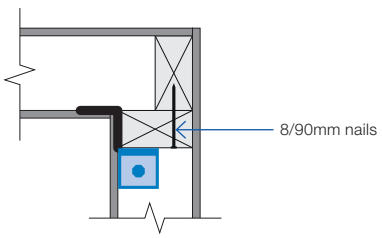
For timber floors bolt fixing in to solid joist or block is required, as shown on p 15.

FIGURE 18: GIB HANDIBRAC® PLACEMENT WITH GIBFIX® FRAMING SYSTEM LAYOUT



GEB013

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



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.

FIGURE 20: PROTRUSIONS AND CUTOUTS

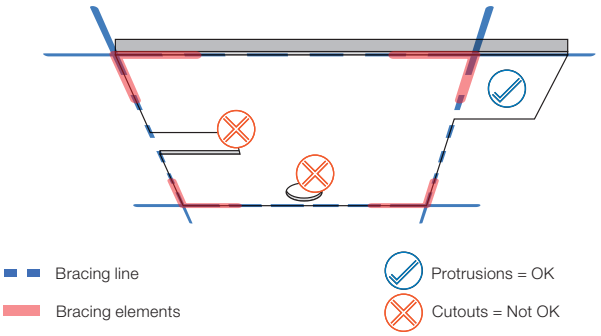


FIGURE 21: DIAPHRAGM BRACING LINING SPACINGS

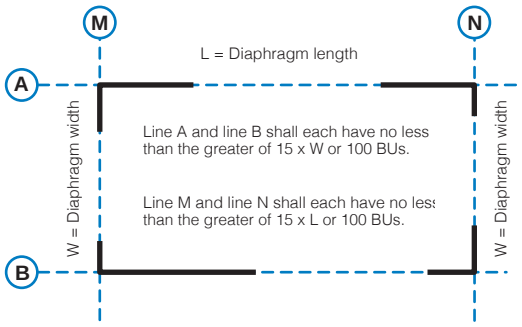
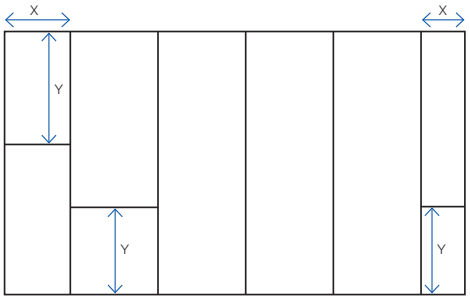
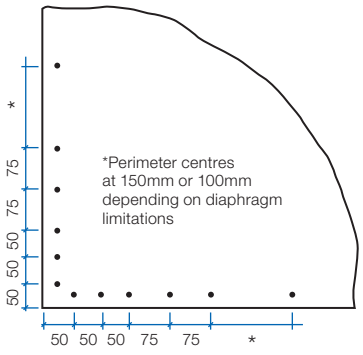


FIGURE 22: GIB® CEILING DIAPHRAGM SHEET WIDTHS AND LENGTHS



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

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.

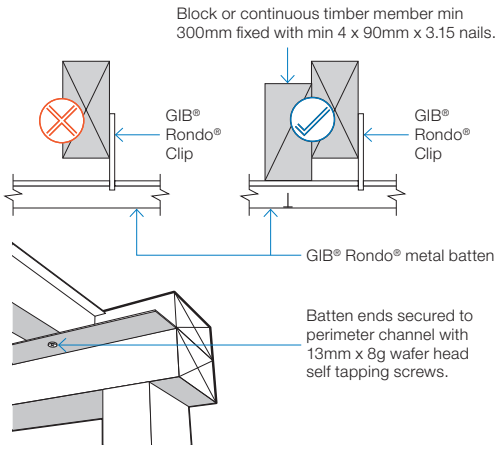
GIB® Rondo® metal battens must be fixed directly to the roof framing. If a clip system has been used, a timber block (min 300mm) or a continuous timber member can be fixed alongside the bottom chord to permit a direct connection to the batten, see figure 26.

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.

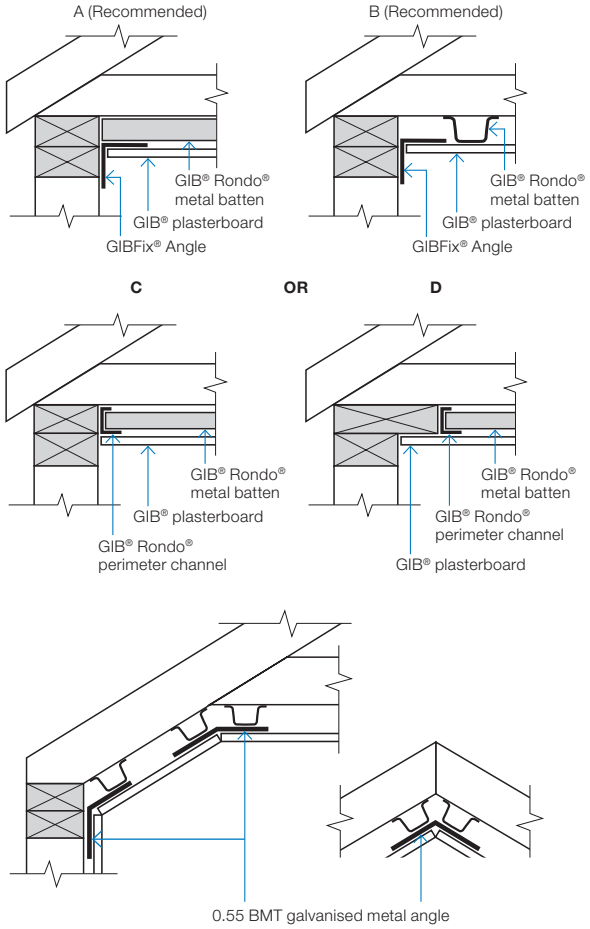
Coved ceiling diaphragms can be achieved by using nominally 32 x 32 x 0.55mm proprietary galvanised metal angles ("back-flashing") at the changes in direction. These angles shall be:
- Fastened at 300mm on each edge to metal battens using 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm 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



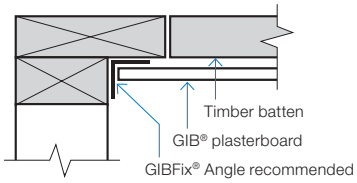
GEB016

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



GEB017

FIGURE 28: TIMBER CEILING BATTENS*



GEB018

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 withing 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

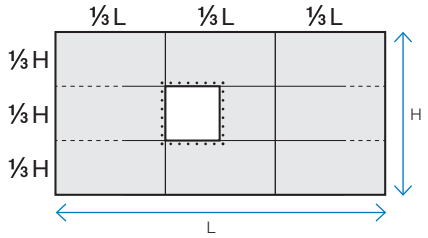
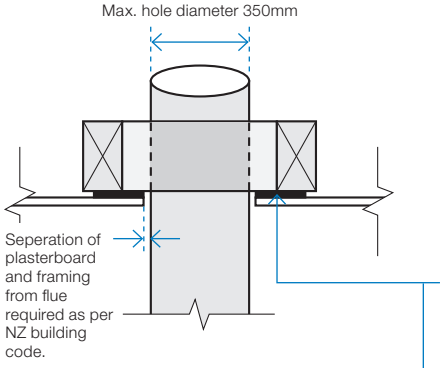
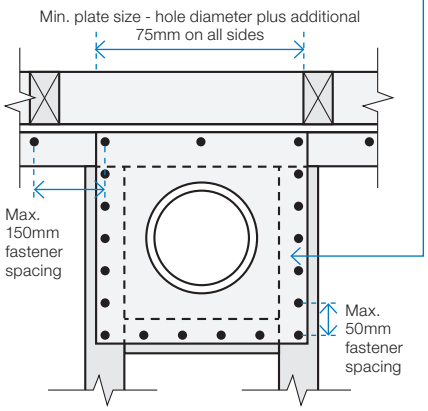


FIGURE 25: FIREPLACE FLUES AND RANGE HOOD OPENINGS

Section view



Plan view



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.

Plasterboard ceiling not shown in plan view

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.

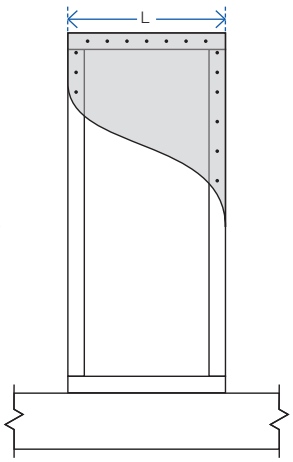
'N' type GIB EzyBrace® elements are identified by GIB® specification numbers GS1-N, GS2-N and GS2-NOM

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.

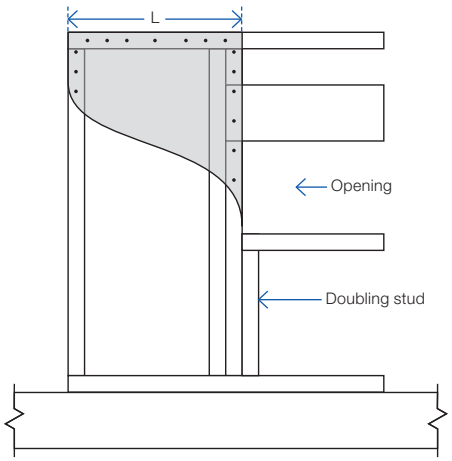
Fastener spacings and diagram scales shown in Figures 29–32 are indicative only. Refer to p.23–30 for construction details.

FIGURE 29: GS BRACING ELEMENTS (OPTION A)



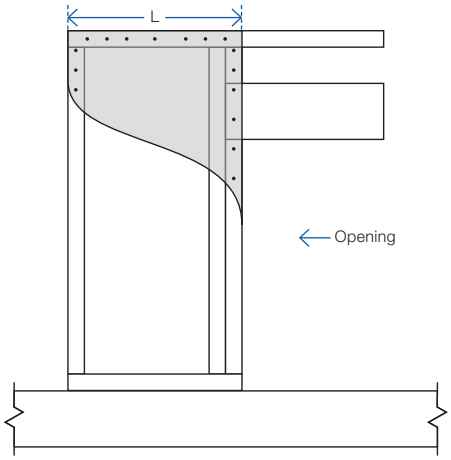
GS1-N, GS2-N elements
'L' indicates the length of the bracing element

FIGURE 30: GS BRACING ELEMENTS (OPTION B)



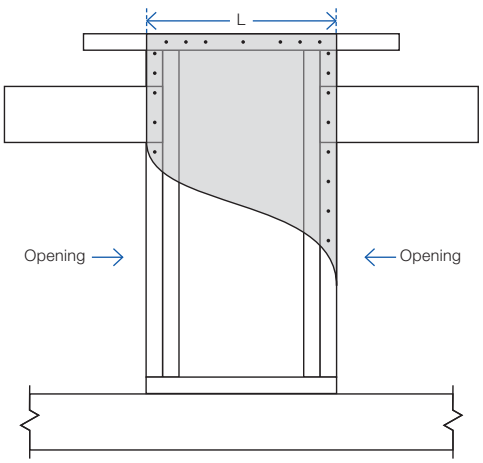
GS1-N, GS2-N elements
'L' indicates the length of the bracing element

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.

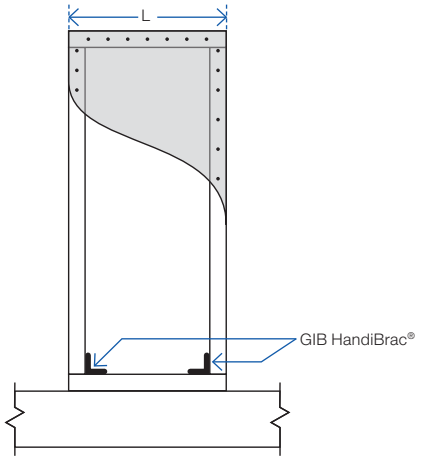
Spike doubling stud to trimming stud using a minimum of 2/90mm gun nails at 600mm centres. Lintel straps (where required for wind uplift) should be checked in and be located away from the bracing element fasteners.

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.

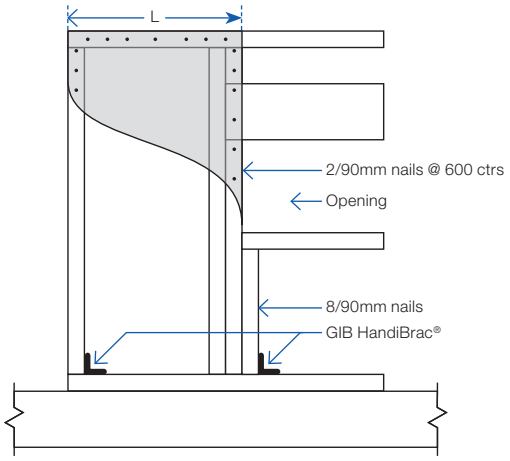
Fastener spacings and diagram scales shown in figures 33–36 are indicative only. Refer to p.23–30 for construction details.

FIGURE 33: BL BRACING ELEMENTS (OPTION A)



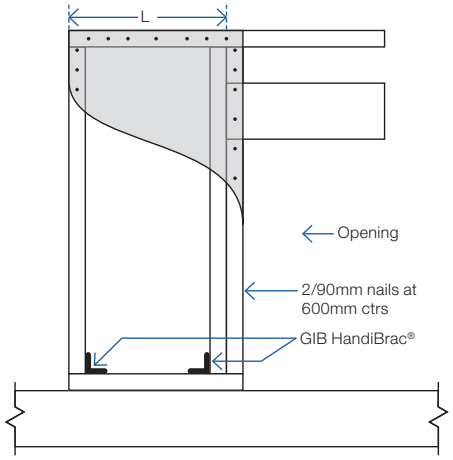
'H' type elements with specific hold downs
'L' indicates the length of the bracing element

FIGURE 34: BL BRACING ELEMENTS (OPTION B)



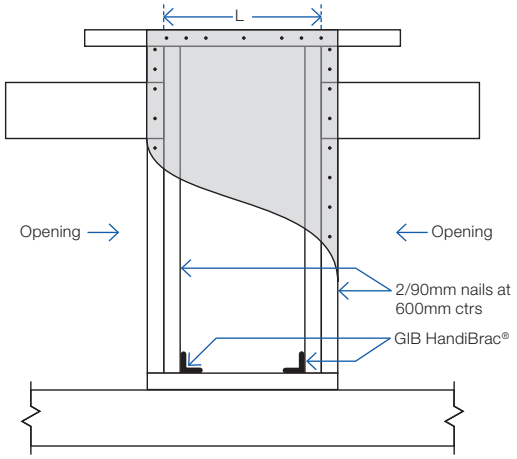
'H' type elements with specific hold downs
'L' indicates the length of the bracing element

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

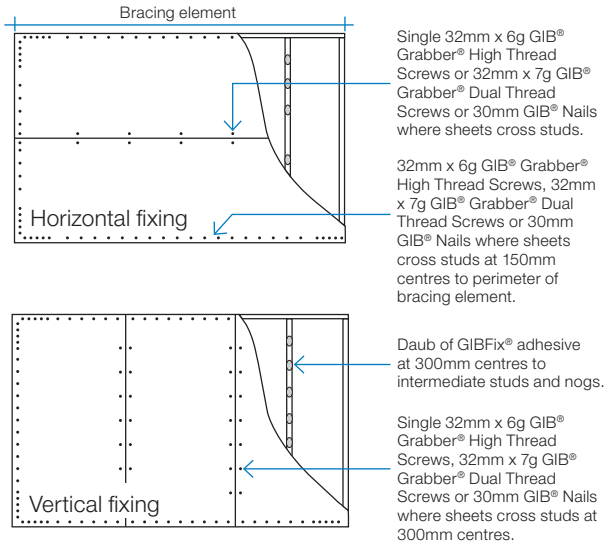
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

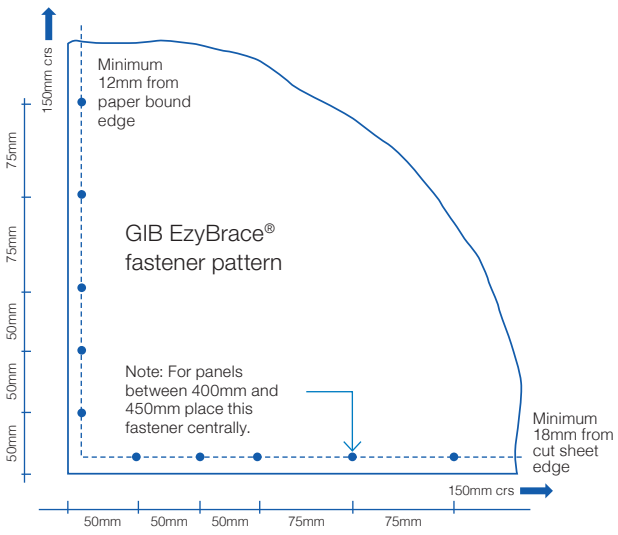
Fastener centres

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.





Unless stated all fastener spacings are maximums.

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 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

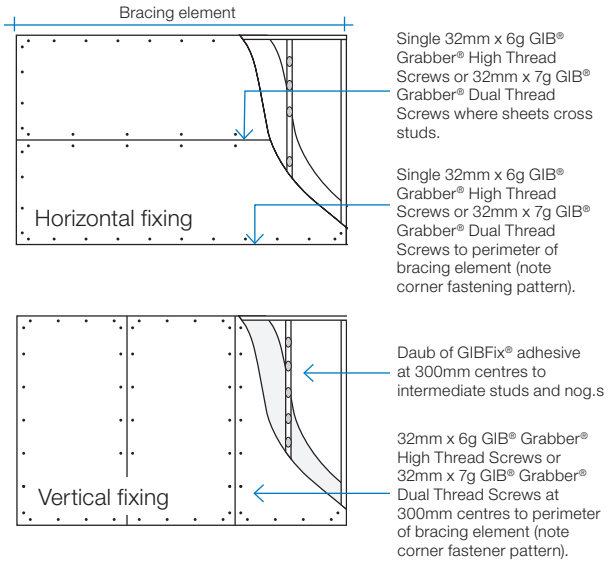
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Angle use 32mm x 7g GIB® Grabber® Dual Thread Screws.

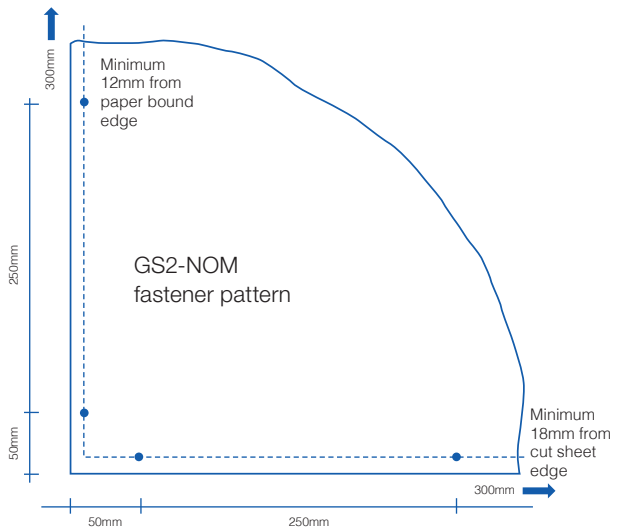
Fastener centres

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.





Unless stated all fastener spacings are maximums.

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

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

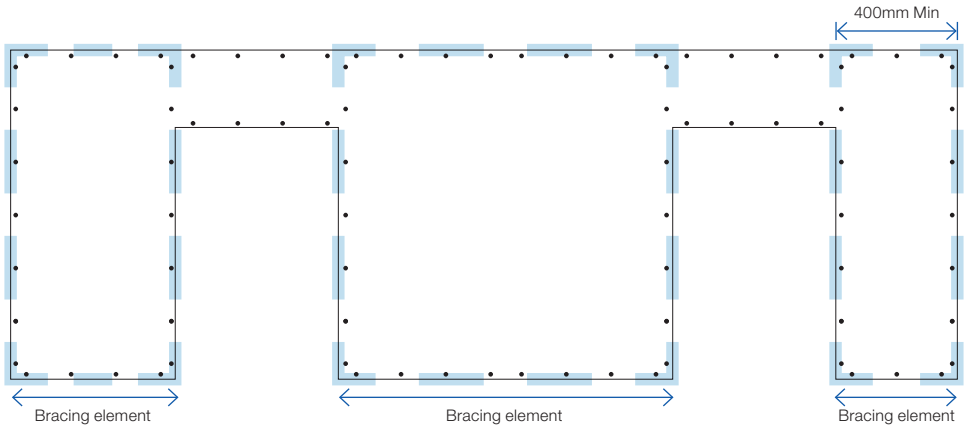
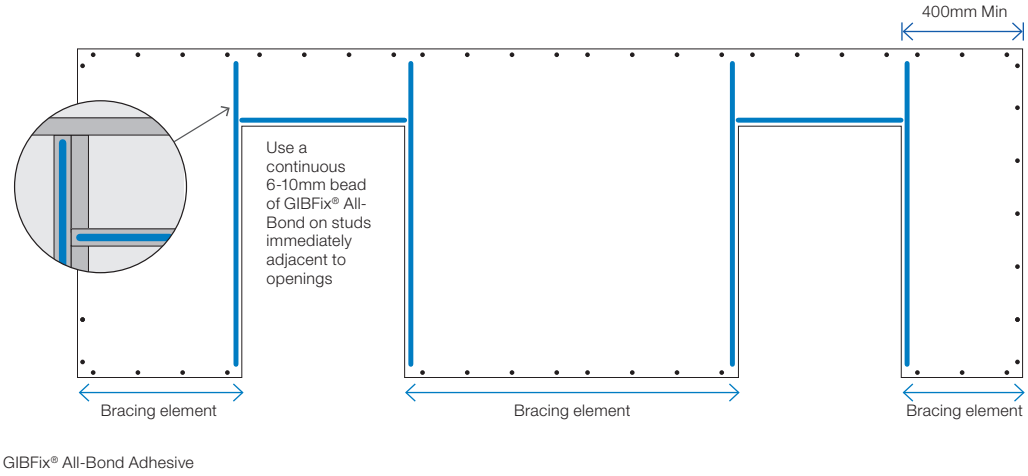
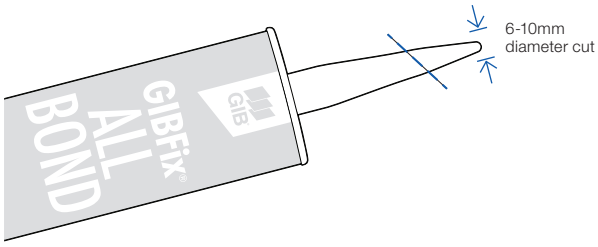


FIGURE 38: SCREW AND ADHESIVE FIX FOR OPENINGS



ADHESIVE NOZZLE APERTURE



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

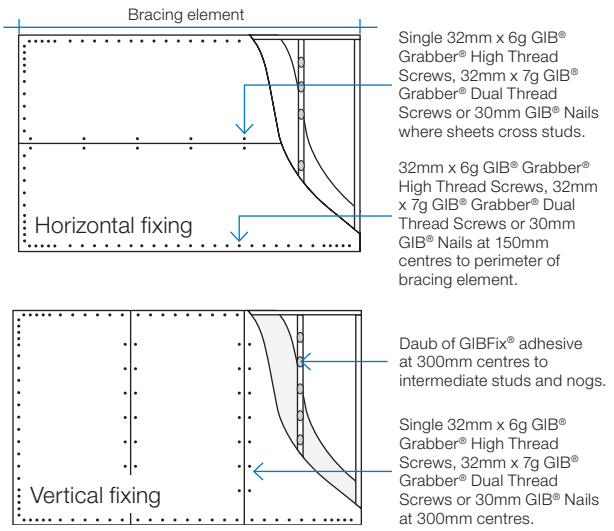
32mm x 6g GIB® Grabber® High Thread Screws,32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

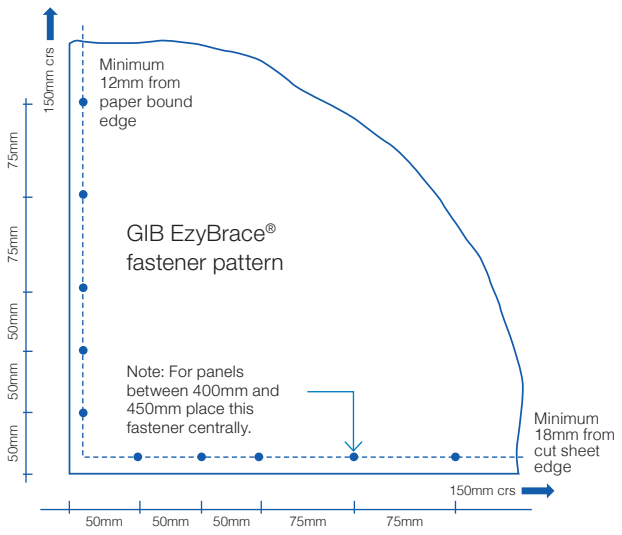
Fastener centres

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.





Unless stated all fastener spacings are maximums.

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 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. 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® 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.

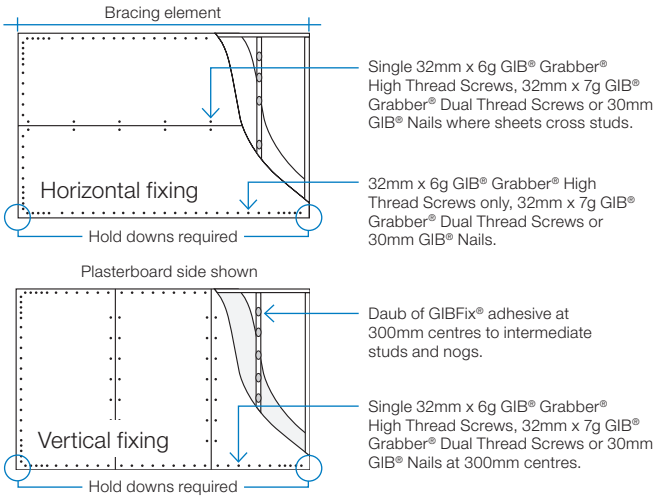
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails.

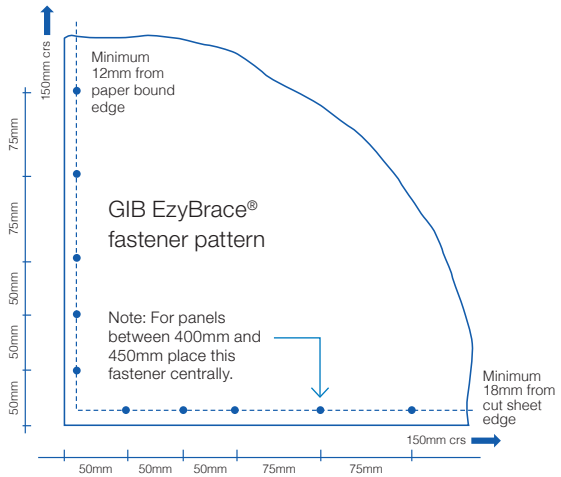
Fastener centres

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 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.





Unless stated all fastener spacings are maximums.

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

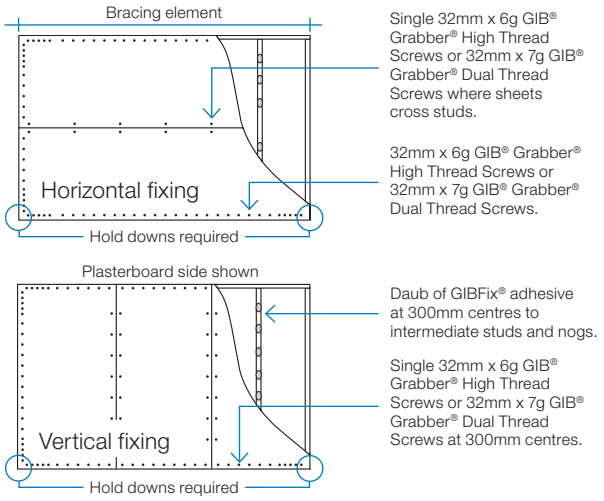
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

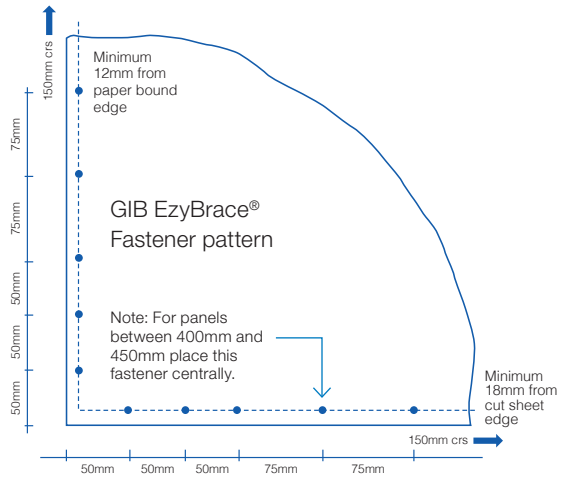
Fastener centres

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.





Unless stated all fastener spacings are maximums.

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 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. 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® 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.

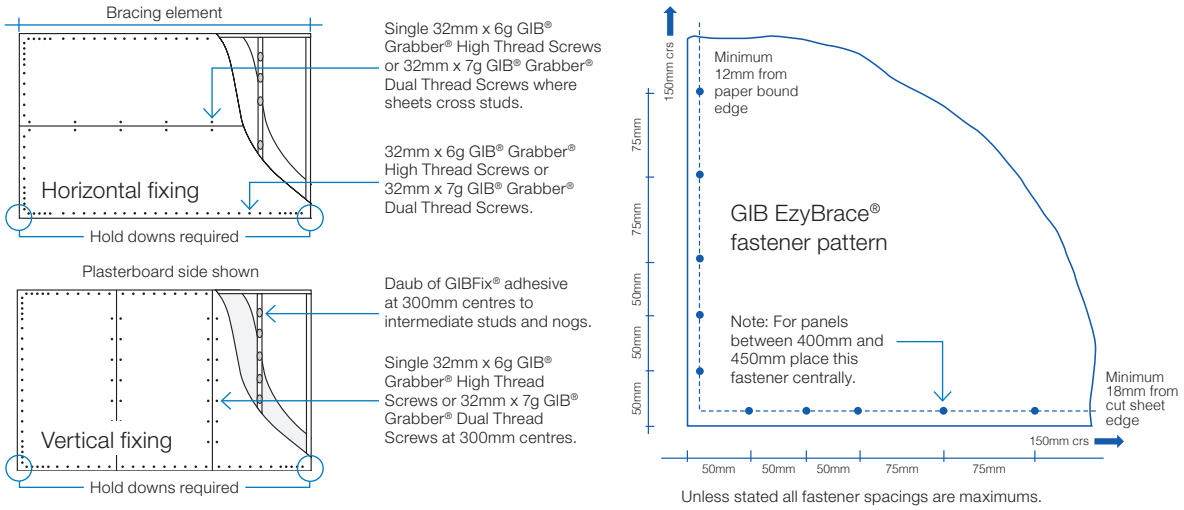
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

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.



Unless stated all fastener spacings are maximums.

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. Within 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

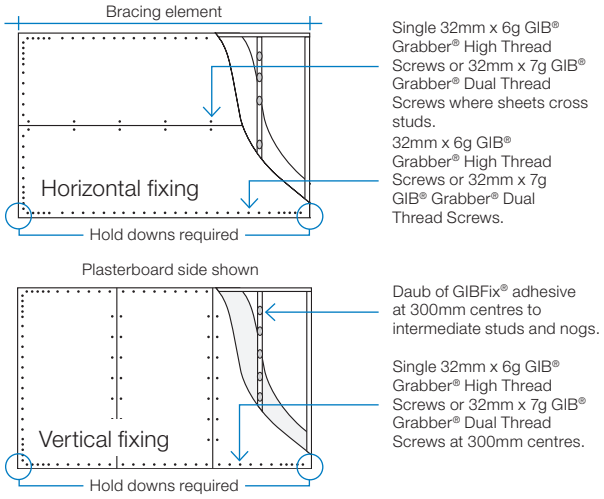
GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread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

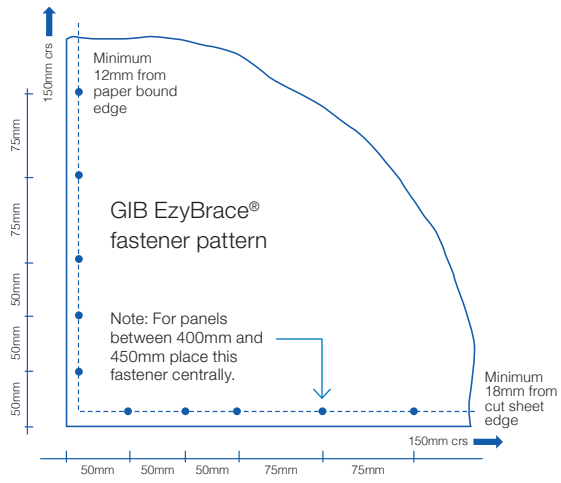
Fastener centres

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.





Unless stated all fastener spacings are maximums.

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^{CERTTM}

The Global GreenTag^{CertTM} certified eco-label acknowledges product as meeting the GreenRate Standard set by Global GreenTag.^{CertTM}

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.

COPYRIGHT

TRADEMARKS

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.

FOR MORE INFORMATION VISIT

gib.co.nz

OR CALL THE GIB® HELPLINE

0800 100 442

Section 4
H1 Calculations
Risk Matrix

Building Consent BC240589
Received 26/7/2024

NZBC H1 - Calculation Method

Client	Frew
Address	982a Oxford Road
	Rangiora

REFERENCE BUILDING

Component	Description	Area sq m	Construction R-value	Heat Loss	(Heat loss = Area/R-value)
Roof Type 1	Corrugated on trusses @ 900crs	0.00	6.60	0.00	
Roof Type 2	500mm Ceiling Edge Insulation area	61.32	6.60	9.29	
Wall Type 1	70% Total Wall Area	66.63	2.00	33.32	
Wall Type 2		0.00	2.00	0.00	
Wall Type 3		0.00	2.00	0.00	
Floor	Timber Floor	61.32	3.00	20.44	
Glazing (30%)	Double Glazed Windows	28.56	0.50	57.11	
Glazing (>30%)	Double Glazed Windows	0.00	0.63	0.00	
Sklights	Skylight	0.00	0.62	0.00	
				120.16	TOTAL LOSS

Note: Total area of glazing (including Skylights) must be 50% or less than the total wall area

PROPOSED BUILDING

Component	Description	Area sq m	Construction R-value	Heat Loss	(Heat loss = Area/R-value)
Roof Type 1	Corrugated on rafters @ 900crs	61.32	3.69	16.62	
Roof Type 2		0.00	1.00	0.00	
Wall Type 1	Ply	79.15	2.24	35.34	
Wall Type 2		0.00	1.00	0.00	
Wall Type 3		0.00	1.00	0.00	
Wall Type 4	Front Door	1.74	0.56	3.11	
Wall Type 5		0.00	2.18	0.00	
Wall Type 6		0.00	1.00	0.00	
Floor	Timber Floor	61.32	2.64	23.23	
Glazing (30%)	Double Glazed Windows	14.30	0.50	28.60	
Glazing (>30%)	Double Glazed Windows	0.00	0.63	0.00	
Sklights	Skylight	0.00	0.62	0.00	
				106.89	TOTAL LOSS

WAIMAKARIRI DISTRICT COUNCIL
Plans and specifications APPROVED in accordance with the Building Act 2004, clause 49 and the Building Regulations 1992, Clause 3
BC240589 22/08/2024 Chrisk

Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "isothermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- (•) Floors
- ( ) Walls
- ( ) Roofs

Date: 04/06/2024

Element Name (optional) — 2.64 m²°C/W

Type: Floor: Suspended Floor (no Lining)

Suspended Floor (no Lining) [view detail]

internal surface 0.09

Flooring : generic - Particle Board 20mm
R-value: 0.17

Timber Frame & Cavity : 140mm joists @ 600mm

Floor Frame Area: 7.5%	*Cavity Area: 92.5%*
Framing : *R-value: 1.16*	Insulation : 2.6

Insulation value of the subfloor space

Suspended floor area [m²]:	61.32
Perimeter length [m]:	31.52
Perimeter height [m]:	0.6
Perimeter type:	Exposed floor (pole house)

[Print Page]

Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "isothermal planes" method, the same method as used in NZS4214:2006.

I have recently implemented some changes to the way assemblies with multiple adjacent insulation layers such as truss roofs with a second layer of insulation are calculated. Check out the details here.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- Floors ○
- Walls ◉
- Roofs ○

Date: 03/03/2023

Element Name (optional) — 2.24 m²°C/W

Type: Wall: Timber Frame with vented Cavity

Timber Frame with vented Cavity [view detail]

- external surface 0.03
- Cladding : Shadowclad — *R-value: 0.10*
- Air Barrier : generic - Building paper — *R-value: 0.01*
- Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 800mm
  - *Wall Frame Area: 14.4%*
    - 15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
    - Framing : *R-value: 0.75*
  - *Cavity Area: 85.6%*
    - 15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
    - Insulation : 2.6
    - still Airgap: none — *R-value: 0.00*
- Wall Lining : generic - gypsum Plasterboard 10mm — *R-value: 0.04*
- internal surface 0.09

[Print Page]

APL MANUFACTURING

Entrance Door R-values

SLIMLINE PLASMA

HEIGHT \ WIDTH	710	760	810	860	910	960
1950	0.249	0.259	0.267	0.276	0.283	0.291
2000	0.250	0.260	0.268	0.277	0.284	0.292
2050	0.251	0.260	0.269	0.278	0.286	0.293
2100	0.252	0.261	0.270	0.279	0.287	0.294
2150	0.252	0.262	0.271	0.280	0.288	0.295
2200	0.253	0.263	0.272	0.280	0.289	0.296
2250	0.253	0.263	0.273	0.281	0.290	0.298

Construction R-value Calculator

This webpage calculates the R-value of walls, roofs and suspended floors for most insulation material R-values. It uses the "isothermal planes" method, the same method as used in NZS4214:2006.

Some of the possible material combinations may not be suitable for actual constructions, i.e. EPS based claddings directly fixed on timber framing. Please make sure to select only appropriate material combinations.

If your construction is not listed, please send an e-mail to designnavigator@gmail.com with a description and a detail drawing (pdf) of it.

Please select the element type. Then choose the construction details and enter the R-value of the insulation either directly in the text box or by choosing a product from the right panel.

- Floors ○
- Walls ○
- Roofs ◉

Date: 24/07/2024

Element Name (optional) — **3.69** m²°C/W

Type: Roof: Timber framed skillion or flat Roof

Timber framed skillion or flat Roof [view detail]

external surface 0.03

Roofing : generic - Metal corrugate Iron with building paper
R-value: 0.01

Timber Frame & Cavity :
140mm rafters or joists @ 900mm, blocking @ 900mm

Roof Frame Area: 9.8% — *Cavity Area: 90.2%*

Framing :
R-value: 1.19

still Airgap : none
R-value: 0.00

Thermal Break :
generic - none
R-value: 0.00

Insulation : 4.5

Roof Lining : generic - gypsum Plasterboard 10mm
R-value: 0.04

internal surface 0.09

Non-IC-rated recessed downlights
Ceiling Area [m²]: Number of downlights: Clearance from lamp holder side [m]:

[Print Page]

NZBC E2 - Risk Matrix	
Client	Frew
Address	982a Oxford Road
	Rangiora

Risk Factor	Low	Medium	High	Very H	Score	Select
Wind Zone	0	0	1	2	**1**	Wind High
No. of Storeys	0	1	2	4	**0**	1 Storey
Roof / Wall	0	1	3	5	**0**	Roof/Wall Low
Eaves Width	0	1	2	5	**5**	Eaves Very High
Envelope	0	1	3	6	**1**	Envelope Medium
Decks/Balcony	0	2	4	6	**0**	Deck/Balcony Low
			Total Score		**7**	

Note: Claddings in Extra High Wind Zones require Rigid Underlays & Drained Cavities.
Scores are the same as Very High Wind Zone

	Cladding	Cavity	Risk Score
North Elevation	Plywood Sheet	Drained Cavity	7
East Elevation	Plywood Sheet	Drained Cavity	7
South Elevation	Plywood Sheet	Drained Cavity	7
West Elevation	Plywood Sheet	Drained Cavity	7

Wind Zone	
Low Risk	NZS3604 Low Wind Zone
Medium Risk	NZS3604 Medium Wind Zone
High Risk	NZS3604 HIgh Wind Zone
Very High Risk	NZS3604 Very High Wind Zone
Extra High Risk	NZS3604 Extra HIgh Wind Zone

Number of Storeys	
Low Risk	One Storey
Medium Risk	Two Storey in part
High Risk	Two Storey
Very High Risk	More than Two Storeys

Roof / Wall Junctions	
Low Risk	Roof/wall intersections fully protected eg hip & gable roof with eaves
Medium Risk	Roof/wall intersections partly protected eg hip & gable roof no eaves
High Risk	Roof/Wall intersection fully exposed eg parapets, reverse slope eaves
Very High Risk	Roof elements finishing within wall clad eg lower ends of aprons, chimneys

Eaves Width	
Low Risk	Greater then 600mm at first level
Medium Risk	450-600mm at first level or greater than 600mm at second level
High Risk	100-450mm at first level or 450-600mm at second level
Very High Risk	0-100mm at first level or 100-450mm at second level of 450-600mm at third level

Envelope Complexity	
Low Risk	Simple rectangle, L, T or bommerang shape, single cladding
Medium Risk	Complex, angular or curved building shapes, single wall claddings
High Risk	Complex, angular or curved building shapes, multiple wall claddings
Very High Risk	As for High Risk but with junctions not covered in Table 1C or IF, box windows, pergolas

Decks & Balconies	
Low Risk	None or timber slatted deck or porch at ground level
Medium Risk	Fully roofed waterproof deck or timber slatted deck at 1sy or 2nd level
High Risk	1st level waterproof deck or 1st level cantilevered slatted deck
Very High Risk	2nd level waterproof deck or 2nd level cantilevered slatted deck

Suitable Wall Claddings		
Risk Score	**Direct Fix**	**Drained Cavity**
0 - 6	Timber Weatherboards Fibre Cement Weatherboards Vertical Profiled Metal - Corro or Trim Fibre Cement Sheet (Jointed) Plywood Sheet	Masonry Stucco Horizontal Profiled Metal - Corro or Trim Fibre Cement Sheet (flush finish) EIFS
7 - 12	Bevel-backed Timber Weatherbds Vertical Timber Board & Batten Vertical Profiled Metal - Corro Only	Masonry Stucco Horizontal Profiled Metal - Corro or Trim Rusticated Weatherboards Fibre Cement Weatherboards Fibre Cement Sheet (flush & jointed) Plywood Sheet EIFS
13 - 20	Vertical Profiled Metal - Corro Only	Masonry Stucco Horiz Profiled Metal - Corro/Trim Rusticated Weatherboards Fibre Cement Weatherboards Fibre Cement Sheet (flush & jointed) Plywood Sheet EIFS Bevel-back Weatherboards
Over 20	Redesign Specific Design	

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Plans and specifications APPROVED in accordance with the Building Act 2004, clause 49 and the Building Regulations 1992, Clause 3
BC240589 22/08/2024 Chrisk

Section 5
Specifications

FREW

982a OXFORD ROAD

RANGIORA

PRELIMINARY AND GENERAL

BUILDING CONTRACT:

The general conditions governing the contract shall be generally as set out by the Canterbury Masters Association and shall be prepared by the Contractor.

SPECIFICATION:

This specification shall be read in conjunction with the drawings and the contract and shall be taken to be a record of the materials used and the standard of workmanship expected from the Contractor and Sub-contractors.

Anything not specifically mentioned will be carried out to the New Zealand Standard Specification 3604 and New Zealand Building Code and NZS 4229 Concrete Masonry Buildings nor requiring specific design.

FOREMAN:

The Contractor is to have a competent foreman in charge of the contract from start to completion of work.

EXAMINE THE SITE:

The Contractor is advised to familiarise himself/herself with the site, specifications and drawings and to obtain generally their own information on all matters affection the execution of the works before submitting their quote.

The submission of a quote will be taken to mean that this has been done and that any matter that might affect the works has been taken into consideration and that allowance has been made accordingly. Any uncertainties shall be brought to the attention of the client.

BY-LAWS AND REGULATIONS:

All work and materials shall be in accordance with the requirements of the Building Regulations and with the New Zealand Building Code Handbook and approved documents and NZS 3604 Code of Practice for light timber frame buildings not requiring specific design. The contractor and subcontractors undertaking with work shall obtain copies of the relevant sections of the New Zealand Building Code and documents relating to acceptable solutions and verification methods and shall be conversant with their contents as these documents become part of each section of this specification.

Provision shall be made within the quotation of tender to comply with the by-laws and regulations of any authority, which relates to the works and to obtain all necessary permits to complete the work. The acquisition of the building Consent shall be the responsibility of the Client.

INSURANCE:

Before commencement of work the Contractor shall supply the Client with cover notes from the insurance company certifying that all the insurances required are covered by valid policies. The Contractor will be required to effect and maintain over the duration of this contract an insurance against loss or damage by fire to property, loss of life, accident, injury or damage to property arising out of, or caused or contributed to either directly or indirectly by the operation of the Contractor.

WORKMANSHIP:

All workmanship shall be in accordance with good trade practices and such that a good standard of end result will be obtained.

PROTECTION OF EXISTING BUILDINGS, PATHS, ETC:

Protect existing buildings, paths, driveways, services and roadways from damage due to contractual operations. Properly make good or repair any damage that may occur.

VARIATIONS:

No variations to the contract shall be made without the prior written permission of the client.

TEMPORARY POWER SUPPLY:

The Contractor will be responsible for arranging “Contractors Power Supply” connection on site and arranging all necessary fees to be paid.

PROVIDE PLANT:

Provide all plant, scaffolding, hoists, tackle etc and a foreman plus sufficient number of men for the proper expeditions and the complete execution of the works, supply and cartage, workmanship and materials, which although not specifically mentions, may be nevertheless incidentally necessary for the proper completion of the work described herein.

SETTING OUT:

The Contractor is to do the setting out of all work and is to be responsible for its accuracy and must amend any errors. Check all dimensions on the site in particular siting and set out of foundations before pouring any concrete. Any doubt in setting out shall be reported to the Designer.

ATTENDANCE:

Contractor shall ascertain from each sub-contractor all particulars relating to his work with regard to the order of its execution and the position in which chases, holes etc shall be required before the work is started. No claim shall be allowed for extra cost of cutting away work already executed in consequence of any neglect by the Contractor to ascertain these particulars before hand.

CLEANING AND PROTECTION:

The Contractor shall at frequent intervals and in any case whenever so required by the owner and at completion, remove from the building and site all rubbish litter and surplus materials which may accumulate and shall take all reasonable precaution to protect finished surfaces from damage or disfigurement of the finished work of other trades and will be responsible for the cost of restoring any surfaces harmfully affected. Particular care shall be taken by all trades to avoid scratching, denting or bruising finished or exposed joinery timbers. All paint or plaster splashes or other marks shall be removed and cleaned off immediately.

PURCHASE OF SPECIAL GOODS:

The Owner reserves the right to purchase all fittings etc for which P.C. prices or Lump Sums are specified. The P.C. Sums quoted shall be P.C prices in Christchurch and the Contractor shall be entitled only to the usual trade discount. Where Lump Sums are specified the amounts allowed are net and the Contractor must add his own profit to such sums specified as no discount will be allowed.

SHEDS AND STORAGE:

The Contractor shall supply ass necessary temporary sheds and toilet for the use of his men and for storage of materials on the site.

CARE OF WORKS:

The Contractor is to keep all persons on the works (including those employed by sub-contractors) under his control and within the boundaries of the works generally until their completion including all work executed and materials deposited on the site by himself or sub-contractors and suppliers. The Contractor shall be responsible for all damage arising from weather carelessness of the operatives, damage or loss and shall be held solely responsible for all damage to adjoining buildings or property caused by him or his employees including sub-contractors and shall indemnify the principal against all claims on account thereof.

PROTECTION FROM WEATHER:

The Contractor is to cover up and protect the works from the weather and is to suspend all operations during weather, which would be detrimental to the work.

COMPLETION:

At completion the Contractor shall remove all refuse and debris from and around the building and off the site. Leave the whole site tidy and fit for gardening and leave the entire buildings, including paths, steps, terraces etc ready for use. All floors shall be left broom clean, all glass work left sound and clean inside and out and all painted and stained or polished work left free from spots and dirt. All bench tops and basin, pans, etc shall be left clean and free from paint, varnish or other spots.

MAINTENANCE:

The Contractor shall make good all defects, shrinkage or other faults whatsoever which may arise or appear within a period of ninety (90) days after the certified completion of the works. Maintenance retention shall be 2.5% if the contract price and shall be retained until the completion of the 90 day maintenance period.

CERTIFICATES:

The Contractor shall obtain from the Territorial Authority, Network Utility Authority or Building Certifier all required certificates and approvals.

Where Producer Statements are required by the Territorial Authority prior to the issue of a Code Compliance Certificate, the Contractor shall obtain and deliver such required statements.

The Contractor shall uplift a Code Compliance Certificate (covering the whole of the building work) from the Territorial Authority or the Building Certifier as applicable prior to completion of the contract.

CARPENTER

GENERAL:

All carpentry work is to be set out to the dimensions given and attend upon all other trades. All work shall comply with the N.Z.B.C and acceptable solutions and N.Z.S 3604

TIMBER:

All timber is to be the best of its respective kind, free from loose knots, shakes and other imperfections and to hold to the sizes specified.

KINDS OF TIMBER:

Timber shall be graded according to the NZS 3631 : "Classification and Grade of Timber." Framing timber shall be dry to 20% moisture content before being enclosed and finishing timber to 12%-18% moisture content. Structural timber shall be standard engineering grade.

FINISH:

Framing timbers shall be gauged. Timber exposed to view or touch, shall be machine dressed. Interior finishing's shall be with sandpaper. Remove all arises, rough or uneven patches, hammer marks and other surface defects before painting or other surface finishing.

WORKMANSHIP AND CONTRUCTION:

Workmanship and construction shall be of the best trade practice, and shall comply with the relevant provisions of N.Z.B.C and NZS 3604. The best trade practice shall be deemed to include those methods, practises and processes contained in the current syllabuses for the New Zealand Trade Certificates in Carpentry, Joinery and Timber machinery.

BUILDING PAPER:

Building paper shall be as noted on drawings. Torn or punctured sheets shall be rejected and must be replaced. Adjacent sheets shall have a minimum lap of 150mm. B2 durability. N.Z.B.C.

DAMPCOURSE:

A damp course of 3 ply bitumen fabric weighing not less than 3.66kg per sq metre shall be laid under all timbers in contact with concrete.

WALL FRAMING:

Framing is generally laserframe.

1. Plates – All plates shall be in long lengths laid flat and shall have dovetail halvings at all connecting points, corners and junctions.

2. Studs - All studs shall be cut to lengths as required, having square ends and shall be spaced to suit wall linings centres as shown on drawings. At all corners and junctions, sufficient studs shall be provided to give a 50mm bearing to a linings.

3. Dwangs - Dwangs shall be 90x45mm timber in rows spaced at a maximum of 800mm apart and securely nailed to studs with two nails at each end. Provide all extra dwangs required to support fittings and at all joints of lining sheets.

ROOF CONSTRUCTION:

a) **Trussed Roofs:** Drawings showing clearly the type, pitch, span, spacing and overhangs of roof trusses and details of roof claddings shall be provided to the truss manufacturer. Thereafter, the Contractor shall match construction with the drawings and details provided by the truss manufacturer throughout all stages of fixing and bracing. The Contractor shall especially accord with the manufacturer's instructions for tying down where over-hangs exceed 750mm. In all cases anchorage of all trusses to plates shall be with not less than 2/100mm skew nails plus 2/4.0mm wire dogs.

EAVES:

Construct boxed eaves (unless otherwise shown on plans) and fit timber fascia or leave ready for fixing of Stratco spouting and fascia or Taylor Fascia. Line underside of soffits (unless otherwise detailed) with 4mm flat hardieflex sheets.

METER RECESS:

Provide recess for Electric meter Board where directed to the satisfaction of the Local Electric Supply Authority.

MAN HOLE:

Provide manhole in ceiling 800 x 800mm where directed.

WARDROBES:

To be lined full height. Provide inside each with 300 x 25mm full width shelf at 1.7m from floor and 20mm galvanised pipe coat rail at 75mm below shelf. Provide cupboards over wardrobe where required.

LINEN:

Lined full height inside and to have 25mm helving. Full depth for linen at approximately 400mm c.c.

ARCHITRAVES, SKIRTINGS ETC:

Finish all windows internally, door openings and wherever required with 50 x 12mm rounded or splayed architraves. Finish at junction of floor and well with 75 x 12mm Rimu or Custom wood skirting neatly mitred at angels and scribed to floor. Supply and fix beads, half rounds where required.

INSTALLATION:

Install bath tub, shower cabinet/s, w.c., hand basin, vanity units and all other joinery as supplied by joiner.

SHOWERS:

Construct shower cabinet as shown on Plan, if not a one-piece unit. Fit shower floor (floors) and line walls with an approved wet area wall lining. Owner to choose colour.

SHOWER DOORS:

Supply and install sliding shower doors and screens where required, with clear safety glass.

GARAGE DOORS:

Supply and install Tilta or Roller door as shown on plan.

PRIMING TIMBERS:

Allow to Prime or Stain any exterior timbers where necessary before erection.

INSULATION:

Refer to NZBC Clause H.1 Install insulation as required in NZBC acceptable solution H1/ASI. All insulation materials are to be installed in accordance with manufacturers recommendations and the NZBC.

2 x R3.6 – fibreglass batts to ceilings
R2.6 – fibreglass batts to exterior walls

ALUMINIUM JOINERY

GENERAL:

All window and door frames shall be built from selected powder coated aluminium sections/profiles. All aluminium to comply with NZS 4211 “Specification for Performance of Window” and NZS 3504 “Specifications for Aluminium Windows” and NZS4223 Parts 3: 2016 and to be to sizes shown on plans.

Windows to be fitted with H3.1 25mm Pine Reveals grooved to take Gibraltor Board and lockable double tongued latches to sashes. The colour of the aluminium frames shall be selected by Owner.

All glass shall comply with N.Z.S.4667 & 4223 Parts 3: 2016

Double glaze units as shown.

All windows & doors to be fitted with WANZ bars as per drawings & manufactures specifications

TIMBER JOINERY

GENERAL:

Refer to General Conditions of Contract, which shall apply to this section of work.

Supply all joinery as required and shown on the plans, including trim, pelmets, stairs etc.

All materials and fittings must be top quality and shall be supplied to the site pre-finished or ready for finishing as indicated.

The Joiner must discuss the joinery details with the main Contractor/Owner at the time of pricing to clarify any queries he may have and prior to manufacture if necessary.

The Joiner must site measure and verify all opening heights, for fitted joinery and confirm final appliances sizes and models, and tolerances required for all built-in fittings. Joiner shall liaise with the Main Contractor and Carpenter to allow all necessary tolerances, shadow margins etc to allow building in.

KITCHEN JOINERY:

Kitchen joinery to be built up as shown, for the supply of kitchen joinery including all bench tops, etc.

Joiner to liaise with Main Contractor/Owner to discuss final details before manufacture.

INTERIOR DOORS:

All interior doors to be 810mm paint grade/Rimu in ex 150 x 35mm Rimu DA back grooved for Gibraltor Board.

All other cupboard doors and front to be as shown on plan.

Aluminium wardrobe panels fitted into 150 x 35mm Rimu DA Reveals grooved for Gibraltor Board.

EXTERIOR DOOR:

Supply of main entry door to be hung in aluminium frame with sidelights or heart rimu timber frame with sidelights as shown on plan.

INTERIOR LININGS

WALLS:

Line all walls with 10.0 mm Gibraltor Board and stop all joints and nails to a paint finish. Level 4 finish.

OTHER LININGS:

CEILINGS:

Line ceilings with 13.0mm Gibraltor Board and stop all joints and nails to a paint finish. Level 4 finish.

GIB COVE:

PLASTER CORNICES:

ELECTRICIAN

GENERAL:

The electrical work shall be carried out in accordance with the Building Act, The New Zealand Building Code, The NZ Wiring Rules (AS/NZS 3000:2007), NZECP & Electrical Safety Regulations 2010 and Approved Documents, and to the complete satisfaction of their Inspector. All wiring shall be concealed.

CONNECTION TO MAINS:

Make all necessary connections to the Local Authority main, all wiring shall be underground within the site boundary.

Allow to provide temporary power to site for construction.

CONSENTS:

The Electrician shall obtain all Consents and pay all fees for the above work before commencing any work.

MATERIALS AND ARTICLES:

Except where specified otherwise, all materials and articles shall be of New Zealand Manufacture. All articles and materials not specified by makers catalogue number, shall be of the best quality.

WORKMANSHIP:

The whole of the work shall be carried out by skilled Tradesmen using adequate equipment and methods in accordance with best Trade practice.

FINISH:

Particular care shall be taken with this section of the work, as none but a high class finish shall be accepted.

SETTING OUT:

Where not specifically shown on the drawings or noted in the specification, the exact position of points and lights shall be determined on the job by the owner.

POINTS:

Allow for double outlets and single outlets as shown on plan

LIGHTS:

Allow for light points as shown on drawings. If light fittings are to be supplied allow a P.C. sum of $ ……. For the supply of fittings. If fittings supplied by owners, owners shall liaise with Main Contractor/Electrician for installation of fittings.

SHAVING POINTS:

Allow for shaving points to all vanities.

TELECOM, TELEVISION AND SECURITY WIRING:

Refer to Electrical plan.

BATHROOM HEATERS AND TOWEL RAILS:

Allow for and install heated towel rail to Bathroom and ensuite.

ADDITIONAL WIRING AND INSTALLATION OF FOLLOWING APPLIANCES AS SUPPLIED BY OWNERS:

1. Range hood as shown on plan
2. Dishwasher as shown on plan
3. Front Door Bell
4. Garage Door Opener (supplied with garage door)

GAS

GENERAL:

All work shall comply with the Building Code, the Building Act, and the New Zealand Building Code. All work shall be carried out to the acceptable solutions as shown in the N.Z.B.C. G10, G11, G12, and AS/ NZS 5601:2013

The general Contractor is to collaborate with the Gas Contractor and arrange with him for carrying out his work at such times and in such a manner as will cause the minimum amount of inconvenience and delay

CONSENTS AND FEES:

Arranged for and uplift all necessary consents, give all notices, pay all fees and arrange for the inspection of the works and materials.

MATERIALS:

All materials to be of the best of their respective kinds and to approval before being used.

WORKMANSHIP:

The whole of the work shall be carried out by skilled Tradesmen using adequate equipment and methods in accordance with best Trade practice.

FINISH:

Particular care shall be taken with this section of the work, as none but a high class finish shall be accepted.

SETTING OUT:

Where not specifically shown on the drawings or noted in the specification, the exact position of points and lights shall be determined on the job by the owner.

PLASTERER

GENERAL:

All work shall be carried out by suitably qualified and competent tradesmen who shall supply all materials, plant and equipment necessary to complete the works.

All work shall comply with the NZS 4251 “Code of Practice for Solid Plastering”.

SCOPE:

Allow to plaster area as shown on plan. Plaster finish to be discussed with Owners.

Allow to smooth plaster exposed surfaces of foundations.

PAINTING

Preliminary:

Refer to the Preliminary Section of the Specification for clauses equally binding on all sections of this contract

Standards:

NZBC 1992:B2, E2, G7

Scope:

Soffits
Exterior cladding
Front door & sidelights
Interior walls & ceilings
Interior doors & window reveals
Skirtings & trims

Materials:

Dulux Tradeline in unopened containers.

External:

1 undercoat, 2 top coats acrylic high gloss or stain or oil as selected

Internal:

All Gibraltor board shall have sealer applied over No. 4 stopping finish, all in accordance with the Gib Board Manufacturer's specification.

1 coat Gib sealer or 1 undercoat, 2 top coats acrylic semi gloss or high gloss as selected.3 coats polyurethane for clear finish

GIB Aqualine to all wet area with 2 Coat Enamel

Colours:

All colours to be as selected and approved by Owner (maximum of 4 colours from white base)

Application:

Thoroughly prepare all surfaces, rub down between coats and leave a first class finish. Stop all cracks and nail holes, etc. No painting shall be done under adverse weather conditions. All paintwork shall be 3 coats in 1 undercoat and 2 top coats.

All work shall be of the highest standard, performed by skilled tradesmen in accordance with best trade practice, using tools and equipment suitable for ensuring a first class job.
No external work shall be done during frosty or inclement weather.
Any work damaged by dust, rain or any other cause shall be rubbed down and recoated. The top and bottom edges of all doors etc. shall be painted to the same number of coats as the exposed faces.

No coat of paint, varnish or polish shall be applied until the undercoat is perfectly dry and hard. All finished surfaces shall be left smooth, even and free from brush marks, lap marks, corner dribbles or other trades.

All fittings, fixings and hardware shall be removed before preparatory processes are commenced and shall be refixed on completion of the painting. Adequately protect all finished work, including glass from paint splashes.

On completion, clean down all surfaces involved, including glass, rubbish, splashes and blemishes, etc. Remove all rubbish and leave ready for occupation.

PLUMBER

ACCORDANCE WITH BY-LAWS:

All plumbing work to be in accordance with the Building Act, the Building Act and the New Zealand Building Code. All work shall be carried out to the acceptable solutions as shown in the H.Z.B.C. Chapters B2, G10, G12, G13 and E1. All pipe materials are to be to AS/NZS 1260

CONSENTS AND FEES:

Arranged for and uplift all necessary consents, give all notices, pay all fees and arrange for the inspection of the works and materials.

MATERIALS:

All materials to be of the best of their respective kinds and to approval before being used.

FLASHINGS:

Liaise with the Carpenter to supply all flashings as required for the complete weatherproofing of the building and appurtenances. All flashings shall be shop formed and to approval.

COLD WATER SUPPLY:

Bring in 20mm diameter cold water supply from lateral to house, provide meter and stopcock control/toby box as required by local Authorities. Provide taps at a suitable position to allow the complete system to be drained and shut down due to frost if not being used.

Pipe work shall be Polybutylene or similar to the approval of the Owners and shall be smooth full bore, seamless free from defects and suitable for the plumbing system. All pipe work shall be lagged to suit conditions.

HOT WATER SUPPLY:

Install Hot Water as shown on plans

All hot water piping shall be copper, generally 15mm diam. (20mm to bath_ shall be carefully formed with a smooth internal bore and shall be lagged and strapped tightly to the framing.

The hot and cold water supply lines to all fittings shall be taken off to give the best uninterrupted flows and pressures to fittings, e.g. showers first, then bath, basins, sinks, etc.

TRAPS AND WASTES:

Provide pvc wastes, pipes and raps to all fittings as required by regulation. Conceal all vents within wall space. Refer also to drawings. Wastes cast under slab shall be wrapped in "Denso" tape and plumbers felt.

All first floor back vents from fittings are to combine in ceiling space and connect in to soil stack vent before passing through roof.

TAPS, ETC:

Taps, mixers, shower rose, etc shall be covered by a P.C sum of $……..

SANITARY FITTINGS:

1. W.C Pans – Caroma Concorde Sovereign 2000 pans and cisterns. Colours to be selected.

2. Shower Trays – supply shower trays to sizes shown on plan. Colour to be selected.

3. W.C. Hand basin – Caroma Valet Hand Rinse Basin. Colour to be selected.

4. Vanities: Allow for the supplying of vanity units.

HOSE TAPS:

Supply and install two hose taps.

ADDITIONAL PLUMBING FOR FOLLOWING APPLIANCES AND INSTALLATION AS SUPPLIED BY OWNERS:

1. Dishwasher

DRAINLAYER

GENERAL:

All work shall comply with the Building Code, the Building Act, and the New Zealand Building Code. All work shall be carried out to the acceptable solutions as shown in the N.Z.B.C. Chapters B2, G10, G12, G13 and E1.

The general Contractor is to collaborate with the Drainage Contractor and arrange with him for carrying out his work at such times and in such a manner as will cause the minimum amount of inconvenience and delay.

All stormwater and sewer pipes where possible are to be run in the same trench.

CONSENTS AND FEES:

The drain layer shall apply and uplift all necessary consents, give all notices, pay all fees and arrange for the inspection of the works and materials. On completion, the whole of the drainage is to be tested and handed over to thorough working order, according to the requirements of the Local By-Laws and to the satisfaction of their Inspector. The Drain layer shall supply any necessary records of works carried out as required by the New Zealand Building Code.

CO-OPERATE WITH CONCRETOR/CARPENTER:

Co-operate with the Concretor for the forming of opening of foundations, pads, etc. Co-operate with Concretor in placing all necessary pipe work before concrete is placed.

PIPES:

All sewer and stormwater pipes shall be uPVC complying with NZS 7643

GULLY TRAPS:

All gully traps shall be uPVC with cast aluminium grates. Set gully trap in concrete haunched around pipe.

Surround gully dish with concrete 100mm above finished ground level properly boxed with a plaster finish.

LAYING OF DRAINS:

All drains shall be commenced at the point of outfall and worked back to the highest part with at least 500mm earth cover.

All branches and other connections, cleaning eyes etc to be connected in as work proceeds. All joints shall be made as per Manufactures instructions.

If cover is less than 500mm pipes shall be covered with concrete to the requirements of the Local Authority. Soil and stormwater pipes under slab shall be run in ABS pvx.

SEWER MAIN:

Excavate and lay drain to connect into Septic System

Section 6
Technical Information

- Septic Tank & Effluent Design incl. fencing
- ~~ECan Approval Documents~~
- ~~Gas Fire~~
- Heating Unit Woodsman Tarras
- ~~Solar Panels~~
- ~~Central Heating Systems~~
- Manufacturer's Literature
- A4 Details/Acceptable Solution Extract
- Well/Water Test

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PS1 Design

On site Wastewater system and Land Application for

Roy Antony Frew &
Madison Lee Munro

982 A Oxford Road, Fernside

Lot 1 DP 70772

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Design Statement:

6th August 2024

To: Waimakariri District Council,

I, Lew Austin confirm that the sewage Land Application system for the above site, has been designed with sound and widely accepted principles to adequately dispose of the sewage effluent on site.

The standard of effluent treatment will meet and /or exceed the level specified within the Council recommendations for sewage treatment where municipal treatment is unavailable. The specified system will comply with AS/NZS 1547:2012 where applicable.

The design is detailed in the Specification and Working Drawings included in this document. Austin Bluewater is covered by a current policy of professional indemnity insurance (to indemnity value of $5,000,000), I believe on reasonable grounds that this system will adequately dispose of effluent on site and comply with N.Z Building Code G13.2, G13.3.4, G13/VM4 of the Building Regulation 1992 First Schedule and shall continue to satisfy the performance requirements of the First Schedule, Clause B2.3.1 (b) of the Building Amendment Reg 1997. Provided the system is installed as per specifications and the owner operates and maintains the system as detailed in the Owner's Manual, this Wastewater Treatment System will perform at the levels indicated.

Site Assessment & Design By:

Steve Roche
Business Manager
(NZ Cert Onsite Wastewater Management System Design)

Design Review, Desktop Assessment & Document Preparation By:

Beth Roche
Wastewater Design & Consent Planner
(NZ Cert Onsite Wastewater Management System Design)

Final Review By:

Lewis Austin
Company Director

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PS1 Design – Permitted Activity

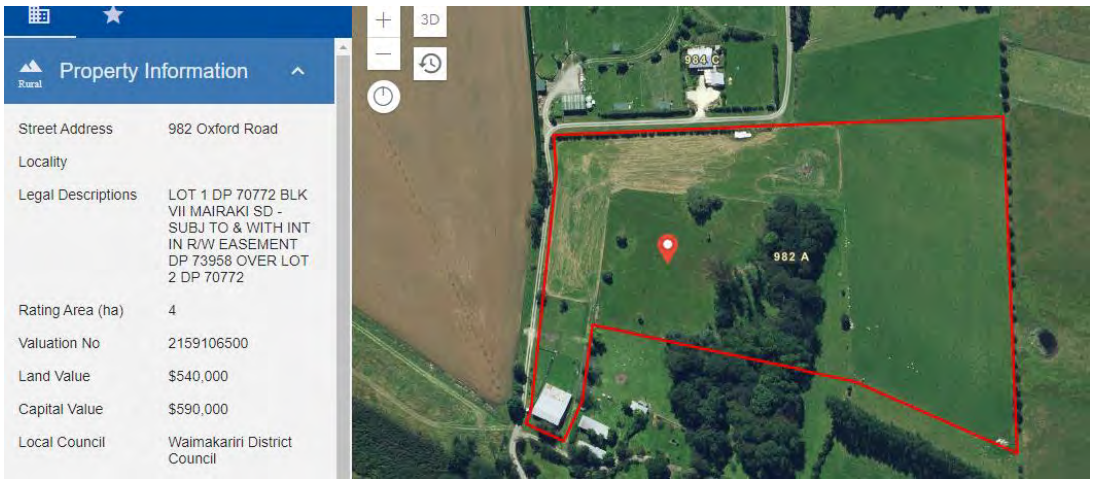
On-site Wastewater System and Land Application

This statement provides design specifications and technical information for an Austin Bluewater ABS2000 secondary treatment system (6 chamber septic system) and design specifications for the disposal field.

This system design will adequately dispose of effluent on site and comply with **AS/NZS1547:2012** and the **N.Z Building Code G13.2, G13.3.4, G13/VM4** of the Building Regulation 1992 First Schedule and shall continue to satisfy the performance requirements of the First Schedule, Clause B2.3.1 (b) of the Building Amendment Reg 1997. Provided the system is installed as per specifications and the owner operates and maintains the system as detailed in the Owner's Manual, this Wastewater Treatment System will perform at the levels indicated within this design.

Customer Details:

Applicant:	Roy Anthony Frew & Madison Lee Munro
Contact Details:	Address: 209 Leithfield Road, Amberley 7481 Phone: 021 133 5452 Email: madimunro97@gmail.com
Installation Location:	982 A Oxford Road, Fernside
Legal Description:	Lot 1 DP 70772
Lot Size:	4ha
Local Council:	Waimakariri District Council
Date Site Visit:	1/05/24
Permitted Activity	This property complies with Rule 5.8 of the Canterbury Land and Water Plan and does not require Environment Canterbury consent refer to compliance checklist page 21-22.



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Site Investigation:

Steve from Austin Bluewater went to site on the 1/05/24 to discuss the proposed use for the property and assess the receiving environment in relation to wastewater treatment requirement and the regulations for the best practice environmental solution for the property.

At the onsite meeting it was discussed that the plan for the site is to covert barn to a 1-bedroom self-contained dwelling and in the future build a 3-bedroom dwelling discharging a combined total of 1600L/ day to an ABS2000 aerated treatment system to 460m^2 of drip irrigation line.

A detailed site and soil investigation was performed by Austin Bluewater in the designated Land Application System Envelope (LASE). The property is flat with no evidence of ground instability, a test hole was dug to the depth of 1000mm. Mottling was found at 300mm at the introduction of the clay layer and this is due to poorly drained soil, groundwater was not found within the test hole, breakdown of soil in table below;

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Soil Breakdown:

Test pit depth:	1000mm
Topsoil:	300mm
Subsoil:	300-1000mm silty clay loams forming 35mm ribbons
Category:	4 (imperfectly drained)
Groundwater:	None
Mottling:	300mm due to the clay layer which is poorly drained
Aquifer Type:	Unconfined / Semiconfined Aquifers

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Environmental Impact Assessment:

The ABS2000 aerated treatment system processes the domestic wastewater to high secondary standard as per OSET trial 12 2016/2017 full results for report attached within document. The expected concentration exiting the treatment system is total nitrogen of <30mg/L and NH4- is <1mg/L. The drip irrigation field will be installed sub surface, 100-150mm below ground level. Planting the drip line area will improve uptake of nitrate-nitrogen. The pathogens exiting the treatment system is <10,000cfu/100mL (as per OSET trials) we have ensured a separation from the drip irrigation line to groundwater is 2.35m to ensure pathogen and nitrogen have a less than minor effect on the surrounding area.

The property water is obtained by a private small community well BW23/0241 which is 308m south of the LAS envelope. The closest well to the dripline location is well M35/4989 with a separation distance of 325m this well is on a lower land elevation than the LAS envelope by 24m refer to well assessment information for more details. The small community supply is 308m south from the LAS envelope and a community well protection zone for Cust town supply 3,985m west from the property this discharge will not affect the small community supply or the Cust town supply due to groundwater flow south east. We have ensured no direct entry in to any of the surrounding waterways in the area, a separation distance of 20m from all open drains, streams or waterways to ensure surface water quality within the area. We have chosen the best practice wastewater system for the site to ensure less than minor groundwater quality.

Design Parameters:

The chosen system has been designed in accordance with AS/NZS 1547:2012 On-Site Domestic Wastewater Management, the supply & installation of an ABS2000 on-site wastewater system dispersing to drip irrigation line

Dwelling	1 future dwelling 1 converted barn
Bedrooms	Future Dwelling – 3 bedrooms Converted barn – 1 bedrooms
Population Equivalent:	Future dwelling maximum occupancy 5 people Converted shed maximum occupancy 2 people Based on 200 litres per person per day as per AS/NZS1547:2012
Flow:	Future Dwelling – 1000 Litres per day Converted barn – 600 litres per day Total flow 1600 Litres per day
Dripline:	460m^2 of drip irrigation line laid sub surface 100-150mm below ground level
Drip irrigation rate:	3.5mm

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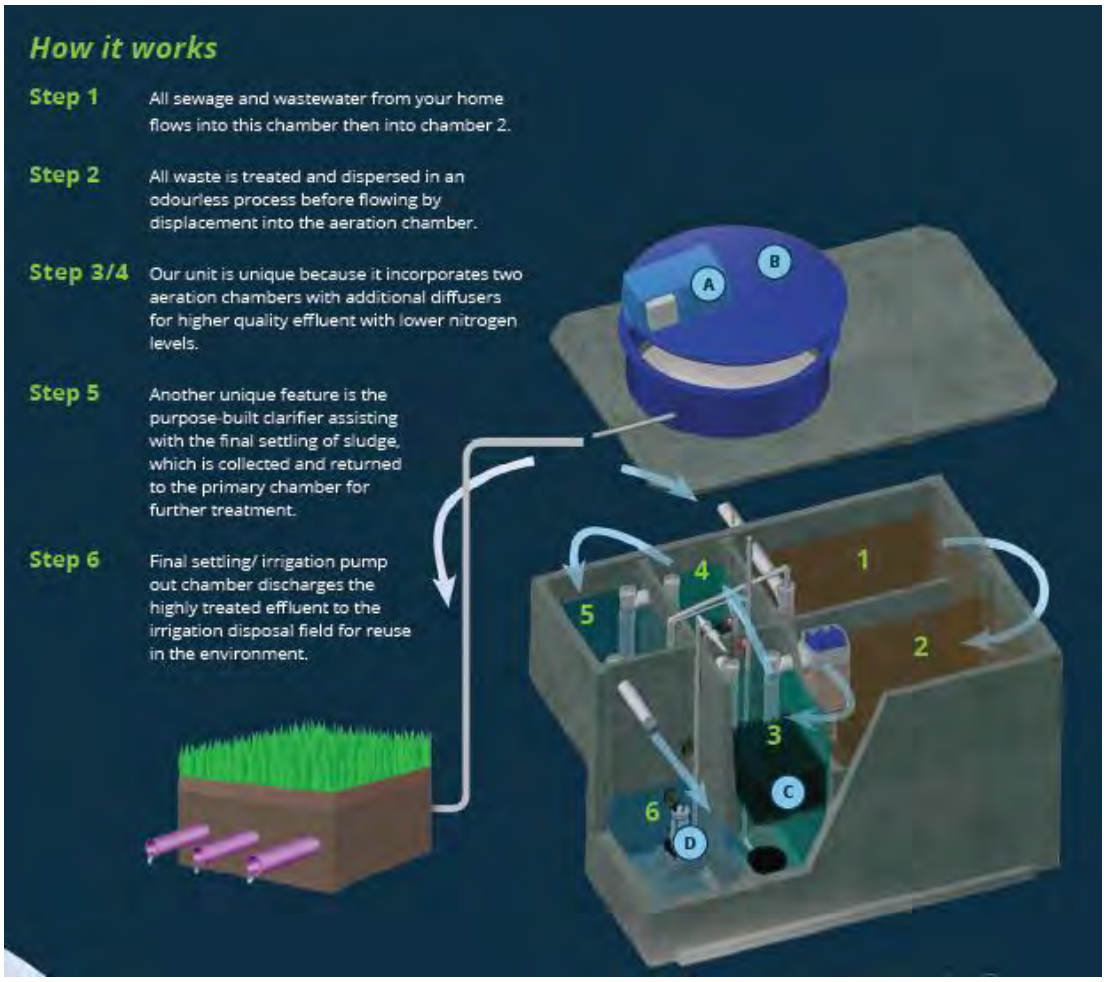
System Required:

Austin Bluewater ABS2000 is designed within accordance to **AS/NZS 1547:2012, AS/NZS1546.3:2008** and process engineered to perform as specified in the On-site Effluent Treatment National Testing Programme (OSET NTP).



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Technical Specifications

	Working Volumes
Primary pre-treatment chamber	2.03m³
Secondary pre-treatment chamber	2.03m³
Aeration chamber 1	.72m³
Aeration chamber 2	.70m³
Clarifying chamber	.58m³
Pump out chamber (gross)	1.03m³
Total holding tank capacity (gross)	8.13m³
Working tank volume	6.40m³
Reserve capacity	1.73m³

System Dimensions

Overall length	3.0m
Overall width (incl. foot)	2.2m
Overall height (incl. standard turret & control box)	2.76m
Weight	8.2T
Invert level from bottom of tank	1.63m

Construction

Manufactured in special high-grade 45mpa structural concrete and reinforced with 665 steel mesh.

Note: Consistent with our policy of product improvement, we reserve the right to alter specifications without notice.

Certification

Manufactured to AS/NZS 1546 and 1547 standards. NZTP 58 approved.

Comprehensive Protection Warranty

Austin Bluewater Wastewater Treatment Systems are warranted against defects in materials and workmanship under normal operating conditions and serviced by a comprehensive warranty and replacement program.

Austin Bluewater Environmental Concepts Ltd
20 Illinois Drive, Rolleston 7614
PO Box 16865, Hornby, Christchurch 8441
P 0800 287 846 or 03 595 2812
E office@austinbluewater.co.nz

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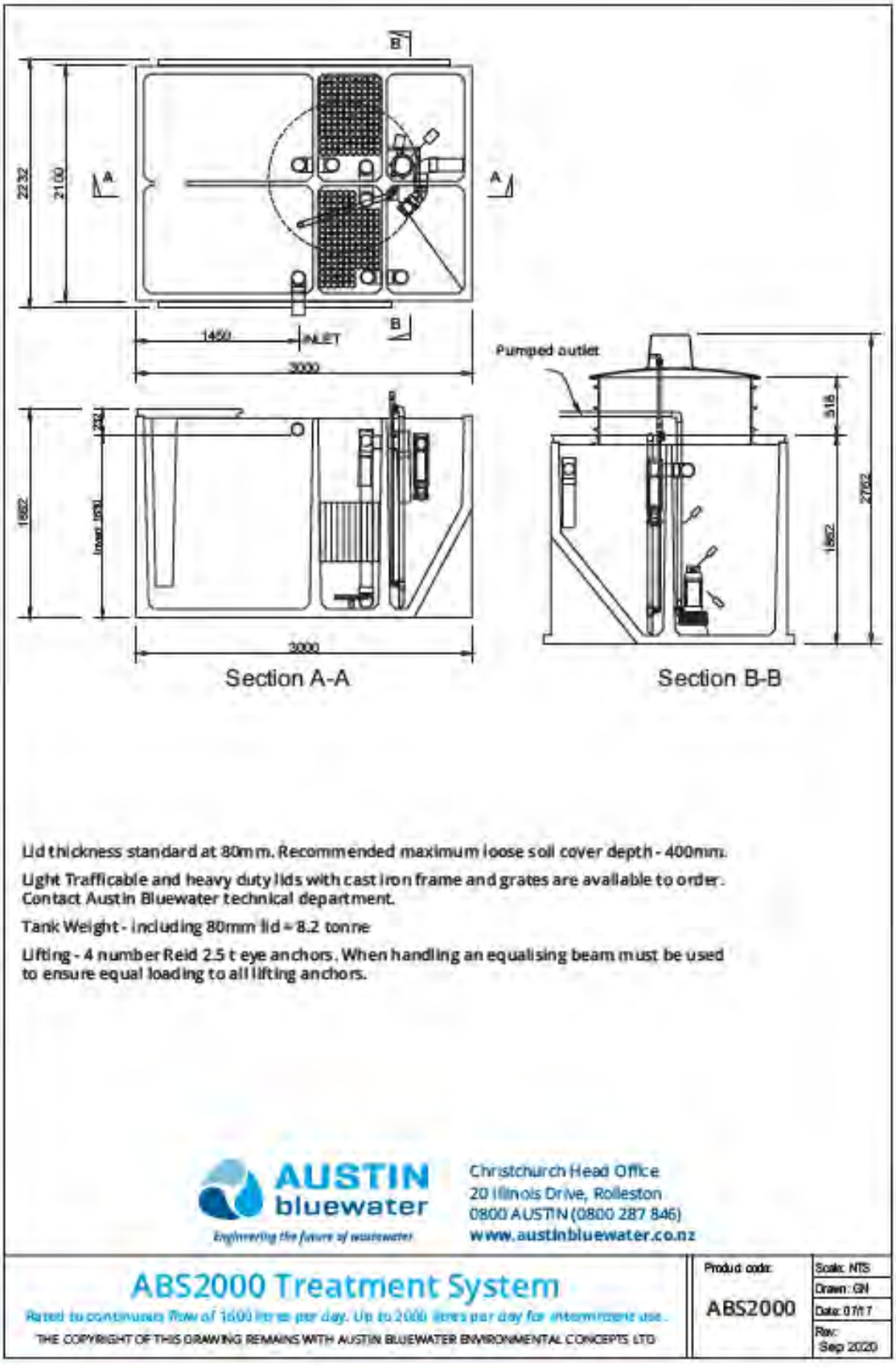

Lid thickness standard at 80mm. Recommended maximum loose soil cover depth - 400mm.

Light Trafficable and heavy duty lids with cast iron frame and grates are available to order. Contact Austin Bluewater technical department.

Tank Weight - including 80mm lid = 8.2 tonne

Lifting - 4 number Reid 2.5 t eye anchors. When handling an equalising beam must be used to ensure equal loading to all lifting anchors.

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Christchurch Head Office
20 Illinois Drive, Rolleston
0800 AUSTIN (0800 287 846)
www.austinbluewater.co.nz

ABS2000 Treatment System

Rated to continuous flow of 1500 litres per day. Up to 2000 litres per day for intermittent use.

Product code:	Scale: NTS
ABS2000	Drawn: GN
	Date: 07/17
	Rev: Sep 2020

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OSET Trials Results:

ROTORUA LAKES COUNCIL | water NEW ZEALAND | Bay of Plenty REGIONAL COUNCIL

On-site Effluent Treatment National Testing Programme (OSET NTP)

PERFORMANCE CERTIFICATE
Austin Bluewater AB2K
OSET NTP Trial 12, 2016/2017

System Tested
The Austin Bluewater AB2K submerged aerated filter wastewater treatment system participated in Trial 12 of the On-site Effluent Treatment National Testing Programme (OSET NTP). This commenced on 24 October 2016 and ran over nine months (39 weeks) during which the treated effluent discharge was monitored generally every six days. The test flow rate was 1,000 L/day to represent the daily domestic wastewater flow from a 3-bedroom dwelling with 5 to 6 occupants. Note that the manufacturers advised design capacity for this plant is 1600 L/day.

Test Flow Rate
The Austin Bluewater AB2K submerged aerated filter wastewater treatment system was tested at 1,000 litres/day (equivalent to servicing a 3-bedroom 5 to 6 person household) over an 8 month (35 week) period October 2016 to June 2017 followed by a 1 month (4 week) high load effects test involving 5 days at 2,000 litres/day then 1,000 litres/day over the following 3 weeks.

Testing and Evaluation Procedures
A total of 39 treated effluent samples of organic matter (BOD_5) and suspended solids (TSS) at generally six day intervals during weeks 9 to 35 were tested and evaluated against the secondary effluent quality requirements of the joint Australia/NZ standard AS/NZS 1547:2012.
A total of 16 treated effluent samples of organic matter (BOD_5), total suspended solids (TSS), total nitrogen (TN), ammonia nitrogen (NH_4-N), total phosphorus (TP) and faecal coliforms (FC) at generally six day intervals during weeks 23 through 35 were tested and the results benchmarked and rated on their median values. In addition, the energy used by the treatment system was assessed on the mean of consumption levels over the 16 sample days.

General Performance
In terms of effluent quality the Austin Bluewater AB2K plant performed well overall, with very low and stable BOD and TSS results. Good nitrification was achieved throughout with very low levels of NH_4-N. Denitrification was initially moderate but it declined through the test with increasing TOXN and TN and available alkalinity reduced. The plant handled the high flow test well with respect to BOD and TSS but had a sharp increase in NH_4 with no significant improvement over the following two weeks. Bacteria removal was good throughout for a secondary treatment plant without disinfection producing effluent with a median of 7600 cfu/100 ml (ie a 3.2log reduction).

The plants power usage of 1.75 kWh/day was typical for a package secondary treatment plant.

Apart an unfortunate incident when the manufacturer unfortunately left the power 'off' after the plant was insulated the plant operated without attendance throughout the trial.

Service requirements are 6 monthly where disposal is to dripline.

AS/NZS 1547:2012 Secondary Effluent Quality Requirements
These requirements are that 90% of all test samples must achieve a BOD_5 of $\leq$ 20 g/m^3 and TSS of $\leq$ 30 g/m^3 with no one result for BOD_5 being >30 g/m^3 and no one result for TSS being >45 g/m^3. The Austin Bluewater AB2K plant had **97% of BOD_5** results and **97% of TSS** results within the **Secondary Effluent Quality** requirements for both the 90%ile and maximum limits above. **The Austin Bluewater AB2K plant thus achieved AS/NZS 1547 secondary effluent quality performance requirements** when operated at 1,000 L/day, which is only 62% of the manufacturers advised design capacity of 1600 L/day.

Benchmark Ratings
The Austin Bluewater AB2K system achieved the following effluent quality ratings over the sixteen benchmarking results in weeks 20 to 35 (when operated at 1,000 L/day or 62% of the advised plants design capacity):

On-site Effluent Treatment National Testing Programme,
c/- Technical Manager 10 Tide Close, Mount Wellington, AUCKLAND 2013
Mob: 021 626 772 E-mail: ray@hedgland.co.nz

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On-site Effluent Treatment National Testing Programme (OSET NTP)

Indicator Parameters	Median	Std Dev	Rating	Rating System				
				A+	A	B	C	D
BOD (mg/L)	2	0	A+	<5	<10	<20	<30	≥30
TSS (mg/L)	1	1	A+	<5	<10	<20	<30	≥30
Total Nitrogen (mg/L)	27.6	6	C	<5	<15	<25	<30	≥30
NH_4- Nitrogen (mg/L)	0.04	2	A+	<1	<5	<10	<20	≥20
Total phosphorus (mg/L)	2.4	0.4	B	<1	<2	<5	<7	≥7
Faecal Coliforms (cfu/100mL)	7,600	6,900	B	<10	<200	<10,000	<100,000	≥100,000
Energy (kWh/d) (mean)	1.75	0.3	B	0	<1	<2	<5	≥5

This Certificate of Performance applies to an Austin Bluewater AB2K wastewater treatment plant with a rated capacity of 1600 L/day, constructed from a single precast concrete tank comprising 6 chambers: 2 Primary (1970L each), 2 Aeration (700L each), Clarifier (540L), Pump Chamber (850L), and fitted with 6 blocks of Bioblok 150 growth media in the aeration tanks plus an 80Lpm air blower, and having 1400L emergency storage capacity.

This certificate is valid for 5 years from 20 December 2017. For the full OSET NTP report on the performance of the Austin Bluewater AB2K wastewater treatment plant contact Lew Austin,
Mobile 021 356 736 or Email: lew@austinbluewater.co.nz

Authorised By:

Ray Hedgland, Technical Manager, OSET NTP
23 March 2018

On-site Effluent Treatment National Testing Programme,
c/- Technical Manager 10 Tide Close, Mount Wellington, AUCKLAND 2013
Mob: 021 626 772 E-mail: ray@hedgland.co.nz

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Land Application Irrigation System:

Discharge effluent from the ABS 2000 System into

- Soakage area to be a minimum 460m^2, multiple lines 16mm pressure compensating dripline x spaced 1m apart.
- Disposal to be through emitters at 0·6m centres @ 3.5mm/day Rate. The dripline will be installed by being laid sub surface 100-150mm below ground level.
- 3m separation distance is required from drip irrigation line and foundations as per AS/NZS1547:2012.
- The drip irrigation will be installed within the designated land application system envelope (purple envelope) as per site plan page 17-18.
- Recommend disposal area to planted in locally sourced indigenous plantings, which will assist in liquid and nitrogen uptake. (Maintenance of plants is the owner's responsibility).
- **No** stock or vehicles will have access to the discharge area, if there is a risk that stock or vehicles may access the drip irrigation line the area will need to be fenced. Please refer to your local council requirements on fencing guidelines for the discharge area.
  Please note: Maintenance of plants within drip line area and fencing of drip line is the owner's responsibility.

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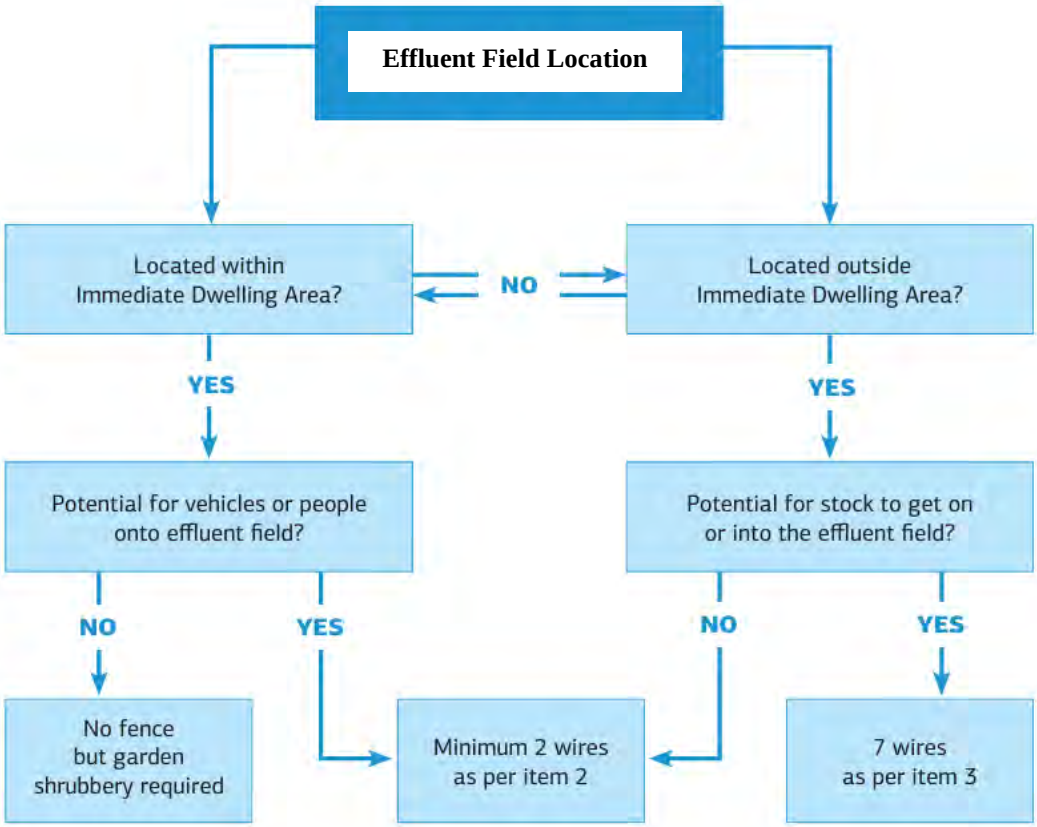
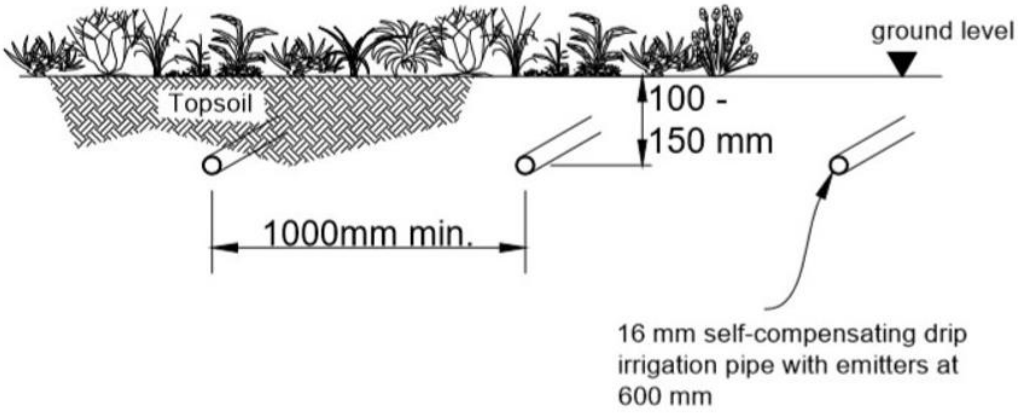


Diagram Schematics for Sub Surface Dripper Line:



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Topography / Elevation Profile for Dripper Line Land Application System Envelope:

Flat <10, please see below elevation profile

Land system for 982 A Oxford Road
Roy Frew & Madison Munro
Lot 1 DP 70772 Section size: 4ha

CONSENT ISSUED BC240589 29/8/2024 10:48:38

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0 0 0 0 Kilometres

Scale: 1:1,000 @A3

Map Created by Canterbury Maps on 7/08/2024 at 10:04 AM

N

984 C

982/A

test hole location

Proposed shed/s building platform
No flow allocated

Boundary

2m off boundary

Submain

Proposed location ABS2000 processing total flow 1600L/day once future dwelling is built

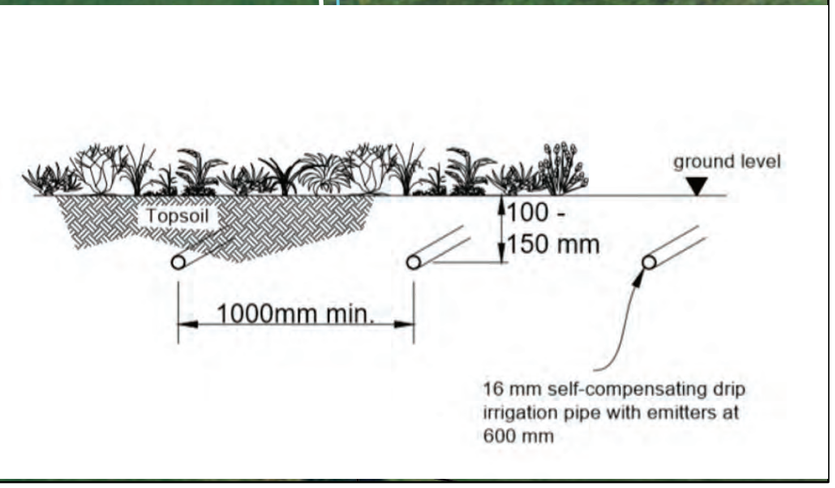
Barn to be converted into
1 bedroom dwelling
Flow 600L/day
Max occupancy 2 people

LAS envelope >460m^2
Drip irrigation line to be laid sub surface 100-150mm below ground level, 1m spaced apart, air valves must be at high point of field. Exact location will be shown within asbuilt at installation.

Separation Distance:
>2m off boundary
>3m from any foundation
>20m from drains, streams and water bodies
>50 from wells

No stock or vehicles will have access to the discharge area, if there is a risk that stock or vehicles may access the drip irrigation line the area will need to be fenced. Please refer to your local council requirements on fencing guidelines for the discharge area.

Future dwelling 3 bedroom
Flow 1000L/day
Max occupancy 5 people
Indicative location only - still to be confirmed
Please note: The location and drain height of the future dwelling needs to be considered prior to building so that the future dwelling has enough fall to the existing septic tank to function effectively. If the right fall can not be achieved an additional pump station may be required.



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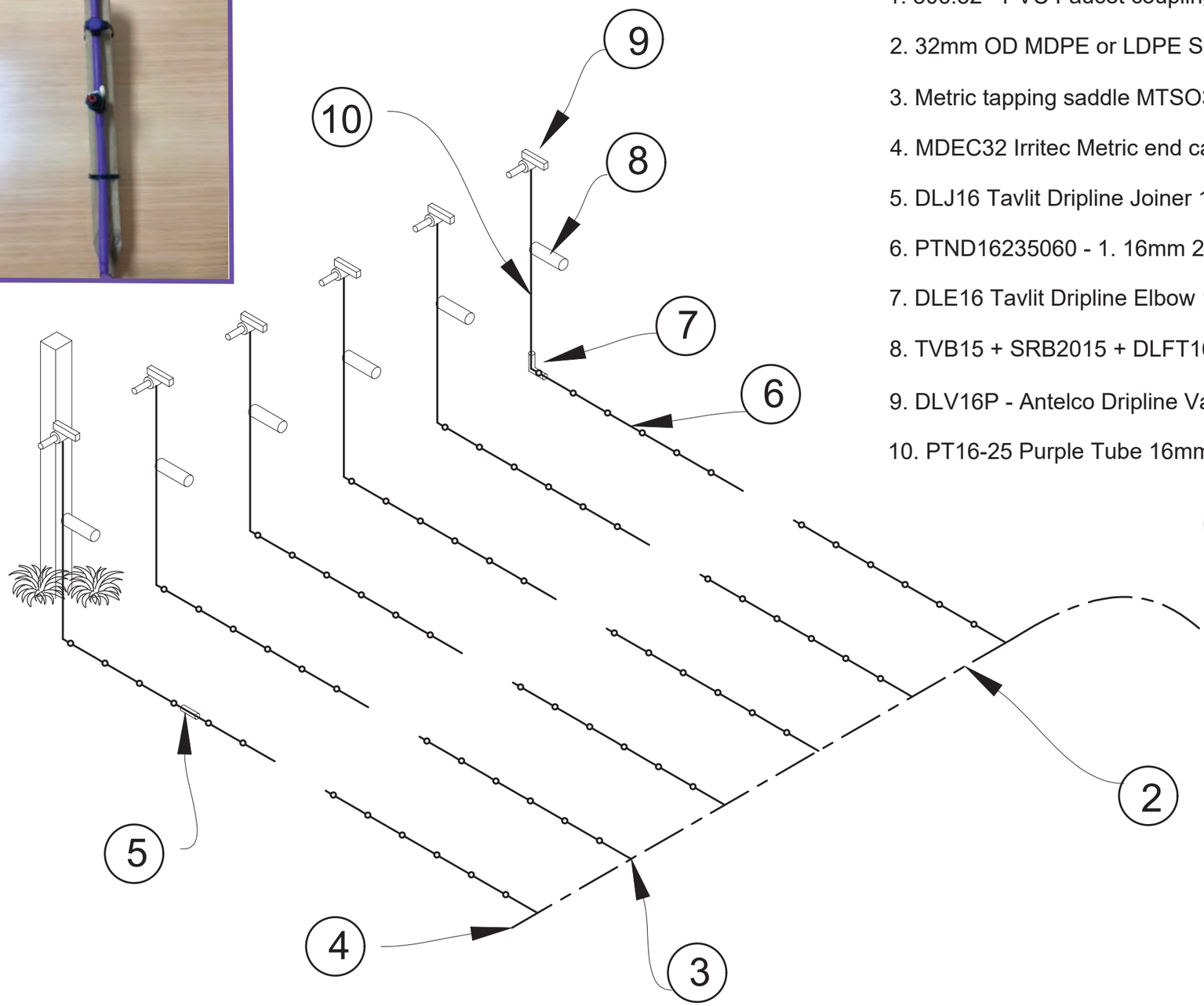

1. 806.32 - PVC Faucet coupling 32mm + MDMC3232
2. 32mm OD MDPE or LDPE Submain
3. Metric tapping saddle MTSO3220 + DLMD1620
4. MDEC32 Irritec Metric end cap
5. DLJ16 Tavlit Dripline Joiner 16mm (as required)
6. PTND16235060 - 1. 16mm 2.35 l/hr @ 0.6m - non drain - max 100m per flush valve
7. DLE16 Tavlit Dripline Elbow 16mm
8. TVB15 + SRB2015 + DLFT1620 Tefen Vacuum Breaker assembly-must be at high point of field
9. DLV16P - Antelco Dripline Valve
10. PT16-25 Purple Tube 16mm OD

ABS2000
Treatment system

Rev	Date	Comments
A	4/24	Reissue

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WASTEWATER TREATMENT ENGINEERS

Christchurch Head Office
20 Illinois Drive, Rolleston
P O Box 16865, Hornby 8441,
Christchurch
0800 austin - 0800 287 846

Drip Field Example Layout schematic

Product code: DLSc1

Scale: NTS
Drawn: GN
Date: 08/17
Rev: A

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Accidental Discovery Protocol:

The following Accidental Discovery Protocol procedure will be followed. Prior to any commencement of any works, contractors must be aware of the area being a sensitive area and procedures must be followed in the event that the taonga (Māori artefacts), burial sites/ kōiwi (human remains), or Māori archaeological sites are accidentally discovered.

If a discovery of material suspected to be a taonga, kōiwi or Māori archaeological site, the following steps shall be taken immediately:

1. All work on the site will cease immediately.
2. Immediate steps will be taken to secure the site to ensure the archaeological material is not further disturbed.
3. The contractor/works supervisor/owner will notify the Kaitiaki Rūnanga and the Area Archaeologist of the NZHPT. In the case of kōiwi (human remains), the New Zealand Police must be notified.
4. The Kaitiaki Rūnanga and NZHPT will jointly appoint/advise a qualified archaeologist who will confirm the nature of the accidentally discovered material.
5. If the material is confirmed as being archaeological, the contractor/works supervisor/owner will ensure that an archaeological assessment is carried out by a qualified archaeologist, and if appropriate, an archaeological authority is obtained from NZHPT before work resumes (as per the Historic Places Act 1993).
6. The contractor/works supervisor/owner will also consult the Kaitiaki Rūnanga on any matters of tikanga (protocol) that are required in relation to the discovery and prior to the commencement of any investigation.
7. If kōiwi (human remains) are uncovered, in addition to the steps above, the area must be treated with utmost discretion and respect, and the kōiwi dealt with according to both law and tikanga, as guided by the Kaitiaki Rūnanga.
8. Works in the site area shall not recommence until authorised by the Kaitiaki Rūnanga, the NZHPT (and the NZ Police in the case of kōiwi) and any other authority with statutory responsibility, to ensure that all statutory and cultural requirements have been met.
9. All parties will work towards work recommencing in the shortest possible time frame while ensuring that any archaeological sites discovered are protected until as much information as practicable is gained and a decision regarding their appropriate management is made, including obtaining an archaeological authority under the Historic Places Act 1993 if necessary. Appropriate management may include recording or removal of archaeological material.
10. Although bound to uphold the requirements of the Protected Objects Act 1975, the contractor/works supervisor/owner recognises the relationship between Ngai Tahu whānui, including its Kaitiaki Rūnanga, and any taonga (Māori artefacts) that may be discovered.

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Compliance 5.8:

Rule 5.8 – The discharge of wastewater from a new, modified or upgraded on-site domestic wastewater treatment system onto or into land in circumstances where a contaminant may enter water, please refer to checklist below;

Proposed Canterbury Land & Water Regional Plan			**982 A Oxford Road, West Eyreton**
Rule 5.8 – The discharge of wastewater from a new, modified or upgraded on-site domestic wastewater treatment system onto or into land in circumstances where a contaminant may enter water			
Condition		**Complies**	**Comments**
1	The discharge volume does not exceed $2m^3$ per day; and	✓	Future dwelling Converted barn 1600L/day = $1.6m^3$
2	The discharge is onto or into a site that is equal to or greater than 4 hectares in area; and	✓	4ha
2a	The discharge is not located within an area where residential density exceeds 1.5 dwellings per hectare and the total population is greater than 1000 persons; and	✓	Residential density does not exceed 1.5 dwellings per hectare
3	The discharge is not onto or into land:		
3a	- Where there is an available sewerage network; or	✓	No network available
3b	- That is contaminated or potentially contaminated; or	✓	Nothing listed on LLUR
3c	- That is listed as an archaeological site; or	✓	Not within archaeological zone
3d	- In circumstances where the discharge would enter any surface water body; or	✓	>20m from drains, streams and waterbodies
3e	- Within 20m of any surface water body or the Coastal Marine Area; or	✓	>20m
3f	- Within 50m of a bore used for water abstraction; or	✓	>50m from all wells
3g	- Within a Group or Community Drinking-water Supply Protection Zone area as set out in Schedule 1; or	✓	Not within a community well protection plan
3h	- Where there is, at any time, less than 1m of vertical separation between the discharge point and groundwater; and	✓	2.3m refer to well assessment
4	The treatment and disposal system is designed and installed in accordance with Sections 5 and 6 of New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management; and	✓	System is designed and to be installed in accordance with Sections 5 and 6 of New Zealand Standard AS/NZS 1547:2012
5	The treatment and disposal system is operated and maintained in accordance with the system's design specification for maintenance or, if there is no design specification for maintenance, Section 6.3 of New Zealand Standard AS/NZS 1547:2012 – On-Site Domestic Wastewater Management; and	✓	System is required to be serviced every 6 months as per system's design specification and Section 6.3 of New Zealand Standard AS/NZS 1547:2012

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6	The discharge does not result in wastewater being visible on the ground surface; and	✓	Appropriately sized application rate and field size to ensure no ponding or pooling on the ground surface.
7	The discharge does not contain any hazardous substance	✓	Only domestic wastewater processed to high secondary standard.

Listed Land Use Register:

Nothing listed on Listed Land Use Register for contamination for this property.

https://llur.ecan.govt.nz/home

You have the following **Land Parcels** selected. These are being used to search for intersecting records in the Listed Land Use Register.

Reset Search

Legal Description	Titles	Valuation No	
982 Oxford Road			
Lot 1 DP 397121	387314	2159106500	✕

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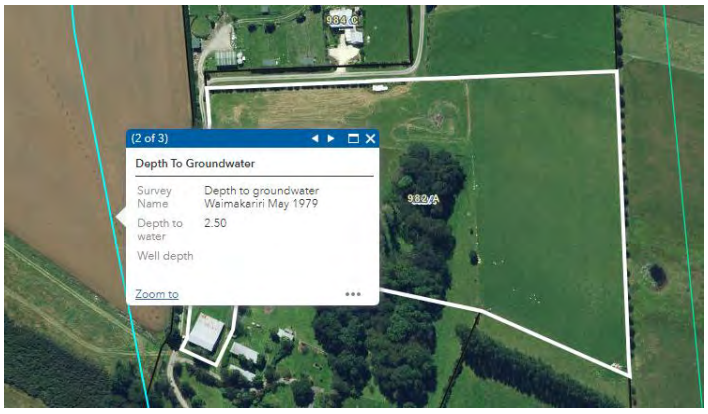
Wells Assessment:

Wells with highest water level readings within 1000m of the property. Well M35/4989 reading is not quality assured as it was done by the owner, M35/0144 & BW23/0241 area on lower land elevations than the LAS envelope so these wells should be disregarded.

Based on the remaining well closest to the property it has a highest water level of 13.27m looking at Environment Canterbury depth to groundwater the property is 2.5m to 5.00. I have chosen to adhere to 2.5m as a more conservative assessment for groundwater in the area.

Well No	Well Status Description	Depth	Distance	Highest Water Level	Reading Count	Years
M35/4989 not quality assured	Active (exist, present)	39.95999908	325m S	-0.199999988	1	January 27, 2015
M35/0144 lower land elevation	Not Used	18.89999962	458m S	-1.170000002	103	September 23, 1977, May 2, 1991
M35/0107	Active (exist, present)	17.10000038	808m NW	-13.27999973	20	September 23, 1977, October 15, 1986
BW23/0241 lower land elevation	Active (exist, present)	46.04999924	308m S	0.700000003	1	January 8, 2015



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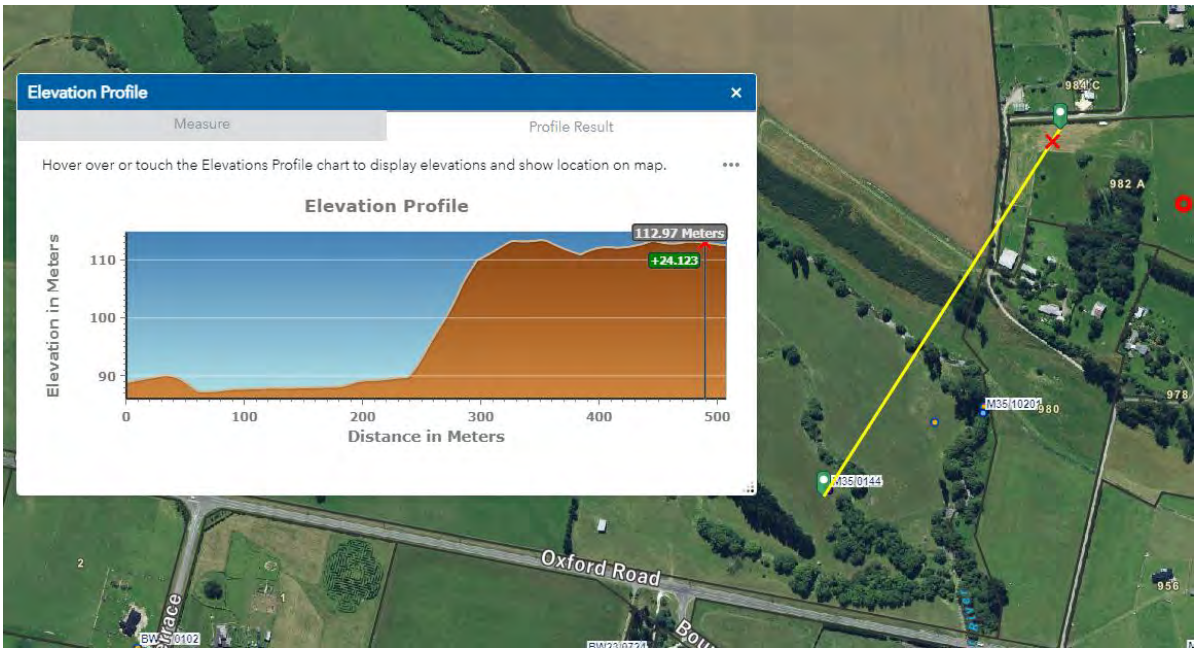
Well M35/4989 reading is not quality assured as per below table;

Well Number	M35/4989	
Readings are from Measuring Point to water level. Ground level is 0.30m below MP		
date_read	depth_to_water	DepthToWaterTypeName
27-Jan-15	-0.5	Owner - Not Quality Assured

Well M35/0144 is on a lower land elevation of 24m than the location of the LAS envelope.



Well BX23/0241 is on a lower land elevation of 24m than the location of the LAS envelope.

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Well Water Quality Readings:

There is only on well within 500m of the property, this well has no nitrate nitrogen readings but a bacteria reading of 16.0/100mL as per table below;

Well #	Depth	Distance from land application system	# Samples	Highest concentration of bacteria in all samples taken	Highest concentration of nitrate nitrogen in all samples taken	Years
M35/4989	39.96m	325m S	1	16.0/100mL	No results	11/02/1992

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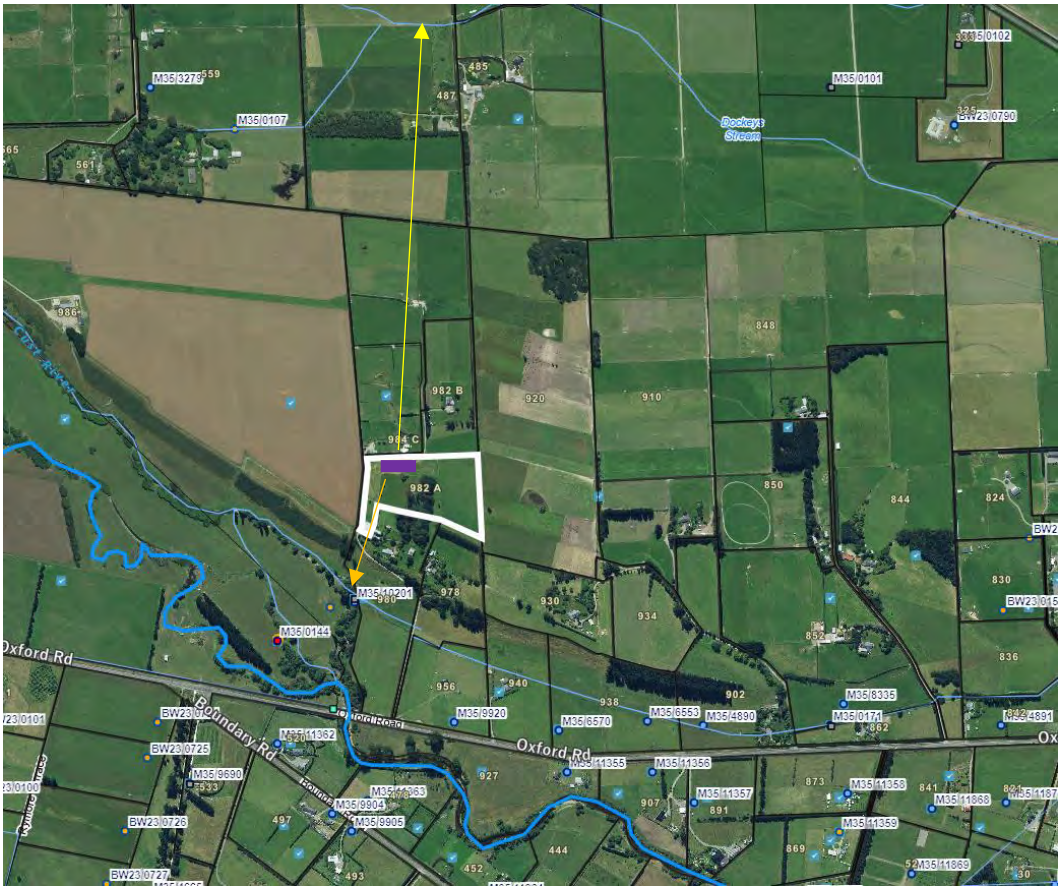
The property is within a very low nitrogen leaching vulnerability area the effects will be minimised as the effluent will be treated to secondary standard prior to discharging to drip irrigation line.

Water Entry:

The separation from Land application system envelope and drains, streams and waterways is greater than 20m as per below;

- Cust River is 252m south from the LAS envelope.
- Dockeys Stream is 1007m north from the LAS envelope.



LAS envelope

Cust River 252m

Dockeys Stream 1,007m

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Flood Potential:

The location of the drip irrigation line has not been flooded from rainfall events or river in flood. The Waimakariri Flood maps does not show any risk of flooding in the location of the LAS envelope. The Flood Imagery Register from Environment Canterbury does not show any indication of flooding on this property.

https://waimakariri.maps.arcgis.com/apps/instant/portfolio/index.html?appid=c6bc05f87d4f47ecae975e5241657913

https://apps.canterburymaps.govt.nz/FIR#!/1355706.8501811794,5093502.261166138,1357235.5907467536,5094591.48881911,2193

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Owner Service/Operation Requirements:

Property owners should fully inform themselves about the on-site wastewater management system on their property in regards to operation, maintenance and monitoring guidelines. They should have a copy of their owner's manual provided within this design and a copy also comes with the purchased tank. If you need a copy of the owner's manual is available on our website to download https://www.austinbluewater.co.nz/ .

The property owner should ensure that the maintenance of the system is carried out by a certified service agent with more than 2 years of experience in servicing these types of systems. This system requires to be serviced every 6 months and a report must be provided after each service, refer next page for service report example. Owners must ensure they keep a copy of the service report and if requested provide copies to the local authority or Environment Canterbury.

Property owners must ensure that all design, owner/operation manuals and maintenance/ servicing reports are kept with the property and if the property is ever sold this information needs to be passed onto the new owners.

Property owners must ensure **no** stock or vehicles will have access to the discharge area, if there is a risk that stock or vehicles may access the drip irrigation line the area will need to be fenced. Maintenance of plants within drip line area and fencing of drip line is the owner's responsibility.

Service Agent Maintenance Requirements:

On installation of the onsite wastewater treatment systm the PS3, asbuilt and installation photographs must be supplied to Environment Canterbury along with the "Exercising of Resource Consent" form attached within the granted Decision Docment.

The system needs to be serviced every 6 months by a experienced person with 2 years or more experience in servicing these onsite wastewater systems. A report must be provided by the qualified service agent.

The report must include the following:

- Ensuring all access points on the treatment system are readily accessible for maintanence
- Measuring dpeth of solids and scum in the treatment tank
- Pumping out the wastewater system if the solids and scum layers combined are greater than one half of the depth of the treatment tank
- Checking outlet filter and cleaning if necessary
- Checking that the pump/siphon/float switches are working
- Checking and flushing the distribution pipes
- Maintenance of vegetative cover – this is the responsibility of the homeowner
- Copy of the service report and provided to Environment Canterbury on request

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Service Report Example:

AUSTIN bluewater
Austin Bluewater Environmental Concepts Ltd
20 Illinois Drive, Rolleston, Christchurch
PO Box 16865, Hornby, Christchurch
P 0800 287 846 or 03 595 2812
E office@austinbluewater.co.nz
www.austinbluewater.co.nz

04/07/2024

Customer name ABS2000
Customer Address

Treatment System Service Report

Your Wastewater Treatment System on Smithfield Rd, was serviced on Thursday, 04th July 2024 by David Freer

Please contact us if you have any questions about your service.

Checks	Service	Irrigation	Tests	Status
Irrigation Pump ✓	Inlet Primary Baffle ✓	Irrigation Filter Cleaned ✓	Dissolved Oxygen (PPM)	Primary Sludge (mm)
Aerator/Blower ✓	Clarifier Filter Cleaned ✓	Flushed Lines ✓	pH	Secondary Sludge (mm)
Sludge Recycle Device ✓	Blower Filter ✓ Cleaned	Ponding –	Clarity (NTU)	Irrigation Sludge (mm)
Control Panel Audible ✓	Ultra Violet –	Run Off –	Temperature (C)	Pumpout Required
Control Panel Visual ✓		Irrigation Working ✓		Clarifier De-Sludge –
				Irrigation De-Sludge ✓

Notes:
ABS2000- Complete Scheduled Service as Required

Kind regards,

Austin Bluewater

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Powered by SEPTIX

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Products for Septic Tank or ABS2000 Treatment System:

Suitable Products

Plant Based Cleaners are great as they are Phosphate, Chlorine and Ammonia free, here are some of the brands available in New Zealand.

- EcoStore
- Earthwise
- Able
- Sigrids
- Greenearth
- Biozyme Cleaner

Avoidable Products

Please avoid these products from being discharged into a septic system

- Ajax
- Antibiotics , Anti-Depressants and Blood Pressure Medication being flushed.
- Alcohol
- Bubble Bath
- Coffee Grinds
- Dettol
- Domestos
- Diesel and Petrol
- Draino
- Dog and Cat Flea and Tick Wash
- Exit Mould
- Finish Dishwasher Powder or Tablets
- Fabric Softener
- Excess Milk
- Paint Oil, Water and even Kids paint
- Handy Andy
- Harpic Toilet Cleaners
- Napisan
- Persil
- Kerosene
- Shower and Glass Cleaning products
- Campervan & Caravan Toilet Tablets
- Excessive Salt
- Left over Spa and Swimming Pool Tablets

Most product's that have a poison helpline on the back of the product is a clear indication that they are not septic safe.

Please note this list is not intended to promote or discredit any company or product, but to provide aid in keeping your septic tank or treatment plant alive and operating costs down.

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Introducing Products to Your System:

Maintaining A Healthy Balance

Refer to Austin Bluewater owner's manual for more details on how to look after your ABS Treatment System included

The greatest cause of problems with your treatment plant **are cleaning products and the washing machine**.

Cleaning Products

Certain cleaning products may harm your treatment system by poisoning the natural bacteria that treat the wastewater. We recommend using environmentally friendly products. Your treatment system relies on bacteria for your system to work effectively. Any product that kills bacteria is harmful to your system. If you wish to use some of the harsher cleaning products, it is suggested that you use a bucket and discard the contents in an alternative manner. This also applies to disinfectant, surface spays and wipes. Most cleaning products should generally cause no issue when used as per the manufactures instructions and used in moderation. Always try to use the minimum amount of product required to perform the cleaning task. Look for products labelled "safe for use in septic systems".

Washing Machines

Try to evenly spread your washing over a period of a week. Avoid, where possible, washing everything in one day. It puts too much pressure on the system and your unit will struggle to cope. Liquid soaps breakdown easier than granulate styles do. Try not to be heavy handed with the amount of soaps you use. When working properly, your treatment system will work efficiently with no odours or problems.

More details regarding keeping your septic tank healthy refer to Owner's Manual attached to this design.

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Installation:

Austin Bluewater ABS 2000 aerated treatment system is to be installed by a registered drainlayer and all associated drains connecting to tank and disposal field. Installation of the treatment unit to be in conjunction with manufacturer requirements. Risers and access lids to tank chambers are to be watertight. Access lids to be at 100-200mm above ground level please check with your local council requirements. Disposal field to be installed as per cross section and plan view drawings.

Site Clearance:

Upon completion of all drainage work, the site is to be left neat and tidy. (There will be a large volume of excavated material left over. The Drainlayer should check with owner if it needs to be removed or a location for it to be stock piled).

Service Contract:

A Service Contract will need to be arranged, at the times required specified in Austin Bluewater **Home Owners Guide** to ensure the Aeration System is functioning properly. This contract must always be kept signed and active. This system requires servicing every six months.

Future proofing:

The ABS2000 will be operating at 1600L/day. The system has a total operating capacity of 1600L/day. No additional flow can be added to the system.

Disclaimer:

The relevant parties incorporated with this wastewater design process are to be honest and transparent when providing Austin Bluewater with information relating to existing and/ or proposed wastewater activities on the site mentioned as this will impact on the calculations for proposed wastewater treatment. Examples of information provided are the potential number of bedrooms, other consent or activities on site, and also specifically to any water supply with any chemicals to wastewater connection and this potentially creating toxicants to the biological process. Any alterations to the proposed area of the land that could alter the soil profile or the potential daily wastewater quantity or quality must be reported Austin Bluewater. Parties who fail to report relevant information that could impact on this design & specification, will void authenticity of this document.

Consent must be sought and approved in order to use this document from Austin Bluewater**.** If any changes or variations to any particular specifications or plan in this documentation are thought as not relevant by the installer before, or at the time of installation. Failure to communicate necessary information will void this documentation which would result in Austin Bluewater not taking ownership for the wastewater design or functionality of the product. All expenses to variations of documentation created by introduced alterations after the design has been prepared, are the client or relevant parties' responsibility and expense. If the owner does not follow the Ecan/ Local Council requirements/ specifications of this product outlined in

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the Owner's Manual and does not have the recommended maintenance carried out, it will void the design and wastewater quality outcomes in this document.

I certify that this treatment system has been designed in accordance with AS/NZS 1547:2012 (On site Domestic Wastewater Management). Providing the system is installed and maintained according to specifications and recommendations within this document and is operated and maintained correctly by the system owner, I believe the system will provide an effective, environmentally-safe system for treating and disposing of domestic wastewater into land then into groundwater.

For Austin Bluewater

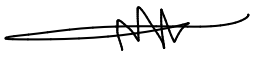
Beth Roche
Wastewater Design & Consent Planner

Owner Declaration:

I have read and understood this statement and will follow the usage/servicing requirements to maintain the system's the manufacturer's recommendations, rule 5.8 of the Canterbury Land and Water Plan & AS/NZS 1547:2012.

Owner: Madison Lee MUNRO

Date: 19.08.2024

Signature: 

Owner: Roy Antony FREW

Date: 19.08.2024

Signature: 

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Planting for Drip Irrigation Line:

The following plants are suitable for Canterbury area. Maximum heights and spreads are approximate only, and will differ in different situations, soils and aspects. As per Southern Woods Info Sheet 16.

Botanical Name	Common Name	Max Height	Max Spread
Aristotelia serrata	Wineberry	6	3
Carex comans	Ornamental Grass	0.5	1
Carex secta	Large Green Sedge	1.5	1.5
Carex trifida	Ornamental Sedge	1	1
Carex virgata	True Wetland Sedge	1	1
Carpodetus serratus	Marble Leaf	7	4
Chionochloa conspicua	Snow Grass	1	1.5
Chionochloa rubra	Red Tussock	1	1.5
Coprosma propinqua	Mingimingi	5	2.5
Cordyline australis	Cabbage Tree	10	2
Cortaderia richardii	Toe Toe	2	2
Cyperus ustulatus	Giant Umbrella Sedge	1	0.6
Dacrycarpus dacrydioides	White Pine	50	5
Eucalyptus gregsoniana	Wolgan Snow Gum	6	4
E. lansdowneana ssp albopurpurea	Crimson Mallee	6	4
Eucalyptus lingustrina	Privit-leaved Stringybark	6	4
Eucalyptus moorei	Narrow-leaved Sally	4	3
Griselinia littoralis	Broadleaf	5	2.5
Hebe spp			
Hoheria populnea	Lacebark	8	3
Leptospermum scoparium	Manuka	4	3
Melicytus ramiflorus	Whiteywood	8	2.5
Nothofagus fusca	Red Beech	30	5
Pennantia corymbosa	Bellbird Tree	8	3
Phormium spp	Flax		
Pittosporum	Black Mapou	5	3
Pittosporum tenuifolium	Kohuhu	6	3
Plagianthus regius	Ribbonwood	12	3
Pseudopanax arboreus	*Pseudopanax arboreus*	6	3.5
Sophora microphylla	Kowhai	8	3
Uncinia uncinata 'Rubra'	Red-leaved Grass	0.3	0.3

AUSTIN bluewater

Engineering the future of wastewater

Aerated Wastewater Treatment Systems

ABS 2000 / 2500 / 3000

OWNER / OPERATOR MANUAL

Important

We recommend you keep this Manual with other important household manuals for future reference. If you have questions regarding the safety and operation of your Austin Bluewater ABS Treatment System contact your Local Authorised Service Technician.

- Do not attempt to service components of the system yourself, call your Accredited Service Technician.
- Only Authorised Service Personnel are to remove covers on the Treatment System.

Problems with advanced treatment systems can be difficult to analyse.

Whenever your system is not functioning correctly, it is best to contact a trained professional, such as the manufacturer or trained technician to recommend the best procedure.

This version updated August 2024

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About Us

Austin Bluewater Environmental Concepts Ltd is a proven leader with over 30 years hands-on experience designing and manufacturing wastewater treatment systems, in New Zealand, for New Zealand.

Austin Bluewater Environmental Concepts is a leading manufacturer of specialised wastewater products including treatment systems, septic tanks, water storage tanks, pump stations, grease traps and oil & grit interceptors. Our company's founder and director Lew Austin, is the innovator of Aerobic Wastewater Treatment Systems in New Zealand and still plays an active role in the direction and supervision of the business.

As a business, we actively seek to develop, improve and refine all aspects of our products and our manufacturing processes. Our respect and care for the environment is our motivation to continue to develop and enhance the treatment of wastewater.

All of our products are designed, manufactured and assembled at our own manufacturing facility to ensure consistent quality and durability.

The Treatment System

The Nature of Household Sewage

Household sewage is a combination of wastewater from several sources including sinks, toilets, showers, washing machines and dishwashers. The largest source of household sewage may vary depending upon the number of residents and water-using appliances within the home. Organic matter comes mostly from toilets, while sinks, showers, and washing machines contribute large amounts of wastewater containing only small amounts of soap and dirt (including grease, detergents, lint and vegetable matter).

Treatment System Process

First Stages – Primary Treatment

All wastewater from the home flows by gravity into multi-stage primary settling chambers.

The heavier, solid particles in the sewage settle to the bottom of these chambers forming a layer of sludge. Lighter materials, including fat and grease, float to the surface, forming a scum layer.

Anaerobic (no oxygen) bacteria establish themselves in these chambers and partially digest organic matter.

Sludge and scum are stored in these chambers rather than being allowed to flow into the next chambers.

Second Stages – Secondary Treatment

Our system is unique as it comprises multiple aeration chambers for higher quality treatment. Within these chambers a filter medium product called Bio-Blok is used to provide vast surface area, allowing a biological film to grow on its surface. This film is made up of healthy active aerobic bacteria, fed by diffused oxygen (by way of air) which is pumped through the enriched effluent multiplying the bacterial content. This process breaks down the effluent and assists with the denitrification process plus the removal of suspended solids.

Third Stage – Clarification

The purpose built clarifier acts as a final settling chamber, removing settled sludge back to the primary area, to assist in de-nitrification of the system.

Final Stage – Irrigation

This chamber contains an automatic irrigation pump or Flout which sends the highly treated effluent to the disposal field for irrigation and final treatment within the soil.

Septic Tank Effluent Filters

Austin Bluewater ABS Systems are fitted with Polylok Effluent Filters, recognised as the most efficient filters available. These have an automatic shut-off ball installed with every filter.

When the filter is removed for cleaning, the ball will float up and temporarily shut off the system so solids won't leave the chamber.

While effluent filters are partially self-cleaning, they must be cleaned as part of routine maintenance, your service agent will perform this task during scheduled servicing.

Pumped Systems

Site conditions, engineers and local Councils will determine the type of pump to be installed.

Pumped systems also allow for even pressure dosing of dispersal fields resulting in a longer life to the field than under gravity conditions. Effluent levels in the pump chamber are controlled by internal switches that turn the pump on and off at preset levels, sending effluent to the disposal field.

Introducing Products To Your System

Maintaining A Healthy Balance

The greatest cause of problems with your treatment plant **are cleaning products and the washing machine**.

Cleaning Products

Certain cleaning products may harm your treatment system by poisoning the natural bacteria that treat the wastewater. We recommend using environmentally friendly products.

Your treatment system relies on bacteria for your system to work effectively. Any product that kills bacteria is harmful to your system. If you wish to use some of the harsher cleaning products, it is suggested that you use a bucket and discard the contents in an alternative manner. This also applies to disinfectant, surface spays and wipes.

Most cleaning products should generally cause no issue when used as per the manufactures instructions and used in moderation. Always try to use the minimum amount of product required to perform the cleaning task.

Look for products labelled “safe for use in septic systems”.

Washing Machines

Try to evenly spread your washing over a period of a week. Avoid, where possible, washing everything in one day. It puts too much pressure on the system and your unit will struggle to cope. Liquid soaps breakdown easier than granulate styles do. Try not to be heavy handed with the amount of soaps you use.

When working properly, your treatment system will work efficiently with no odours or problems.

It needs a happy balance.

How To Look After Your ABS Treatment System

Acceptable Solutions

Substances that are considered to be typical domestic wastewater are human waste, bath and dish water and edible food waste.

The following substances may be used regularly without harming your Austin Bluewater ABS Treatment System:

- Laundry detergents without bleach
- Dishwashing detergents without bleach
- Toilet paper
- Household cleaners containing sodium bicarbonate, sodium carbonate and sodium borate.

Caution Substances

Caution substances in large concentration will reduce or stop the treatment process.

These same substances in smaller concentrations can be safe to use in moderation without affecting the treatment process. You may use the following substances with your Austin Bluewater ABS Treatment System if you use the substance according to the manufacturer's directions, use the substances sparingly, and do not introduce concentrated doses to the system:

- Bio-degradable laundry powders
- Household cleaners containing sodium bactericides such as
  - Pine oil (disinfectant used in the general purpose liquid cleaners)
  - N-alkyl dichlorobenzyl ammonium chloride (disinfectant used in detergents and spray cleaners)
  - Sodium hydroxide (lye chemical used in drain openers and cleaners)
  - Sodium dichlor-s-triazinetrione (powdered bleach used in scouring powders and automatic dishwasher detergents)
  - Ortho-phenylphenol (bactericide used in tub and toilet bowel cleaners)

We recommend to cease using the above substances if you experience issues with your treatment system, anything containing bleach should be used with caution.

Waste Food

Some food waste, whether or not it is run through a waste grinder will not be treated by the system, but will remain in solid form and fall to the bottom of the septic tank.

Therefore, you should not use a waste grinder system, or dispose of these food items through the Austin Bluewater ABS Treatment System:

- Animal bones
- Melon rinds
- Corn cobs
- Pips and seeds
- Eggshells
- Any other non-edible food waste

Never Dispose Of Any Of The Following Items Into The System

- Automotive Oil or petroleum based products
- Bleaches, disinfectants, whiteners
- Nappy liners, wet wipes, condoms, sanitary napkins

Automotive oil is not treatable by the bacteria; the disinfectants will take away all the bacteria's oxygen; the sanitary items are impregnated with anti-bacterial matter, so they will never break down. The results will be – bacteria will die. The tank will almost certainly need to be pumped out to remove the gross pollutants and the tank refilled and re-started.

Whatever the product, always ensure that it is marked as Bio-degradable and Safe to Use in Septic/Onsite Systems.

If you experience issues with system performance that you think may be caused by a certain product, cease use or replace with a different product and see if the problem persists. Talk to your service agent if you have concerns about the health of your system.

Please note: Although often unavoidable, chemotherapy, radiation treatments and antibiotics can upset the system. Certain enzyme products on the market can help improve system performance. We recommend speaking to your service agent in this instance.

Products For Septic Tank or AWTS System

Suitable Products

Plant Based Cleaners are great as they are Phosphate, Chlorine and Ammonia free, here are some of the brands available in New Zealand.

- EcoStore
- Earthwise
- Able
- Sigrids
- Greenearth
- Biozyme Cleaner

Avoidable Products

Please avoid these products from being discharged into a septic system

- Ajax
- Antibiotics , Anti Depressants and Blood Pressure Medication being flushed.
- Alcohol
- Bubble Bath
- Coffee Grinds
- Dettol
- Domestos
- Diesel and Petrol
- Draino
- Dog and Cat Flea and Tick Wash
- Exit Mould
- Finish Dishwasher Powder or Tablets
- Excess Milk
- Paint Oil, Water and even Kids paint
- Handy Andy
- Harpic Toilet Cleaners
- Napisan
- Persil
- Kerosene
- Shower and Glass Cleaning products
- Campervan & Caravan Toilet Tablets
- Excessive Salt
- Left over Spa and Swimming Pool Tablets

Most product's that have a poison helpline on the back of the product is a clear indication that they are not septic safe.

Please note this list is not intended to promote or discredit any company or product, but to provide aid in keeping your septic tank or treatment plant alive and operating costs down.

Source: Water New Zealand

Our Additional Recommendations

In addition, Austin Bluewater have performed some limited trials with customers and found the following **products less likely to cause problems** within the system.

Use products sparingly and as directed.

Dishwasher:

- Active dishwashing powder (Do not use power balls or dishwashing tablets)
- Ecostore products
- Earthwise products

Washing Machine:

- Cold Water Surf
- Cold Power
- Fab2
- Ecostore products
- Earthwise products

(Do not use any type of fabric softener as this can cause sludge buildup within the system)

Cleaning Products:

- Spray and Wipe
- Ecostore products
- Earthwise products
- Biozyme products

Toilet:

- Ecostore toilet cleaner - use sparingly

Again, this list is not intended to promote or discredit any company or product, but to provide aid in keeping your septic tank or treatment plant alive and operating costs down.

High and Low Loadings

The treatment plant is designed to handle a maximum daily flow as per the following:

- ABS2000 - 1600L per day, up to 2000L intermittent use.
- ABS2500 - 2000L per day, up to 2500L intermittent use.
- ABS3000 - 2400L per day, up to 3000L intermittent use.

There may be times where the flows are higher or lower than ‘average’ use.

Low or No Flows

At times of low or no occupancy there will be less ‘food’ for the aerobic bacteria to consume. Do not turn the power off to the system. There is some recirculation occurring within the system as part of the treatment process and this helps to keep the contents moving to provide a food source to the aerobic chambers. The amount of beneficial bacteria will be somewhat regulated by the available organic content of the waste stream. If there are prolonged periods of no flow the bacteria will die back. When normal flow resumes the bacteria will colonise accordingly, however during this period there may be some slight odours while the system recovers. Any odours should be temporary and the system should recover within a couple of weeks. If odours persist you should contact your service person for advise or possibly a tank inspection.

If the system will not be used for months or more we recommend discussing this with your service person, power to the system can be switched off but upon restarting a service callout may be required to check correct operation and there may be temporary odours as the system recovers.

High Flows

As with low flows, there may also be times where occupancy or water use is higher than average. It is important not to hydraulically overload the system as this can result in the contents becoming unsettled and cause premature filter blockages, it can also have a negative effect on effluent quality.

The system is capable of treating the volumes listed above however the size of the effluent field can be a limiting factor. Most designs account for the number of bedrooms and base the design off maximum occupancy, this makes the system suitable for when guests or additional occupants will be using it providing maximum treatment flows are not exceeded.

System Maintenance, Monitoring and Servicing

It is the owners responsibility to:

- Monitor the alarm panel and contact the appropriate contractor in the event of a fault.
- Control the substances entering the system (remember anything that goes down the drain will end up in the system).
- Have the system pumped out as and when required (this is usually determined by the service provider).

To maintain the Limited Warranty your Austin Bluewater ABS Treatment System should be furnished with a 6 monthly service policy to ensure proper operation of the system.

Primary and Secondary Chambers

Periodically, waste will need to be removed from both primary chambers using normal pump-out procedures. These intervals will vary depending on usage and solids accumulation, your service person will advise when a pump out is required. As a guide, on average systems will require a pump out of the primary chambers every 4-6 years.

Polylok Effluent Filter

The system is complete with a Polylok effluent filter which heavily reduces the amount of solids that reach the end of the system resulting in lower BOD (organic content) and suspended solids in the treated effluent. This filter requires cleaning as part of routine maintenance.

Dosed Pumping System

A dosed pumping system is used to give a proportioned controlled flow to the engineer designed disposal field, to allow for even distribution over the entire field. Submersible effluent pumps operate in harsh acidic conditions and should be checked on a 6 monthly basis for satisfactory operation.

System Capacity

The system is rated for a maximum of:

- 8 – 10 persons or 1,600 litres/day continuous flow - ABS2000
- 10 – 12 persons or 2,000 litres/day continuous flow - ABS2500
- 12 – 14 persons or 2,400 litres/day continuous flow - ABS3000

As with any system it is important the system is not hydraulically overloaded as this will interfere with the treatment process. Continuous use above site specific design may also result in flooding of the disposal area.

Visual

Wastewater backup is characterised by wastewater flowing back into the house or slow movement of the wastewater in the drains. This may indicate a problem with your wastewater treatment system. Identify where the backup is occurring within your home's plumbing system. If no material is blocking the drain, contact your Service Technician or local supplier. Check for an alarm at the controller, if alarming refer to Section Five.

Within the greater Canterbury area, Austin Bluewater Environmental Concepts offer a six monthly service and maintenance contract to ensure your system functions correctly. This also forms part of our two year Limited Warranty Validation.

Service procedure includes the following:

1. Visual inspection of system to ensure correct biological function of system.
2. Septic and secondary chamber checked and biological breakdown of sewage analysed for correct operation of system. Client notified of correct timing for septic pump-out.
3. Polylok bacteriological filter cleaned and repositioned.
4. Inspection and/or adjustment of sludge return and aeration balance.
5. Air blower filter checked and cleaned or replaced if needed.
6. If pump fitted, unit removed, impeller checked and unit fully cleaned of debris/build-up.
7. Inspection/cleaning of biogrowth in pump chamber.
8. Flushing of irrigation field
9. Disassembly, cleaning and reassembly of micron filter (if fitted).
10. Field Service Report presented to owner and Council verifying work carried out.

Troubleshooting, Faults & Alarms

In the event of a fault, an audible alarm will sound and an alarm strobe light will flash on the system controller. The alarm can be muted by pressing the mute button, the strobe will continue to flash. The mute function will reset after 24 hours.

The following information will assist with establishing the fault, please contact Austin Bluewater or your local service agent for help or further advice in the event of a fault.

The tables below refer to the possible alarms shown on the main controller at the wastewater tank. The tables are broken down to show the respective alarms, their likely cause and their likely solution.

ALARM: AIR FAULT	
POSSIBLE CAUSE	**SOLUTION**
The blower has failed	Repair or replace blower
The air hose has come off the pressure switch at base of controller	Remove the top of the turret attachment and secure hose onto pressure switch
The air hose has come off the air piping inside the turret	Remove top of turret and secure hose onto air pipe

ALARM: HIGH WATER FAULT	
The fluid level in the irrigation tank is high	Check irrigation filter is clean Check that the pump is running and pumping freely
The float is caught in the high level position	Check float position and move to stop it being caught

ALARM: CHECK FILTER	
The irrigation pump has been running in excess of 30 minutes continuously	Check and clean the irrigation filter

See more information under 'Equipment or Power Failure' – Page 18

PROBLEM: WASTEWATER IS BACKING UP INTO THE HOME SEWER PIPING	
There is an obstruction in the home sewer piping	Check the pipes leading to the system visually or with drain cleaning equipment for an obstruction and correct
There is an obstruction in the discharge line from the system	Check the effluent piping and lateral field piping visually or with drain cleaning equipment for an obstruction and correct
The lateral field pump has failed	Check the operation of the lateral field pump per the manufacturer's specifications
The flow rate to the system is too high	Check the maximum flow rate to the system to see that it is within normal limits
The tank requires cleaning and/or a pump out is required	Check the sludge depth in both chambers of the tank to see if it is below required levels
Polylok filter is blocked	Remove Polylok filter from system and clean as necessary
There is a blockage at the inlet of the system	Remove 100mm PVC cap to inspect inlet. Remove or clear blockage if required

Equipment or Power Failure

In the event of equipment or power failure please follow these guidelines.

Power Failure or Outage

The system needs power to treat the wastewater and to pump to the irrigation field. In the event of a power failure or outage minimise water usage as much as possible. There is enough emergency storage in the tank for about a days worth of flow. The system should restart when the power has resumed, a high level alarm may be experienced at this stage if water has continued to flow into the system during the outage. Let the system pump down, this will be automatic. The alarm can be silenced by pressing the mute button on the controller. The alarm should clear within a couple of hours when the internal levels have returned to normal.

If an alarm persists contact your local service agent.

Irrigation Pump Failure

This will often be indicated by a high level alarm, if a pump failure is diagnosed limit water usage as much as possible. A replacement pump should be installed as soon as possible. There is emergency storage in the system and this should be enough to cover minimal water usage before the pump is replaced. Avoid using washing machines, dishwashers, showers etc. during this time.

Blower Failure

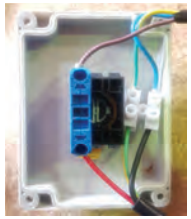
This will often be indicated by an air alarm. A blower failure will stop air being pumped through the aerobic treatment chambers and stop the recirculation within the tank. This will heavily affect the treatment and the biomass will start to die back. The system will still pump to the field but the effluent will not be as clean as usual and may cause filter blockage and odours if left unrepaired. The blower should be repaired or replaced as soon as possible. Water usage should be reduced where possible until the blower is reinstated.

ABS Controller Installation Guide

All electrical work must be carried out as per NZS 3000:2007 and NZECP2:1993. The controller is to be earthed at the distribution board and the supply to the controller should be protected by a 16A MCB.

This controller is rated to 10A at 230V and has been designed for the ABS tank only.

1. Run the power supply cable through a cable gland (or similar water tight method) to the junction box mounted on the blower box. Ensure this connection is high as practical above ground level to ensure the chance of water entering is as low as possible.
2. Once the power supply cable is inside the junction box, wire the supply Phase to the isolation switch. Wire the Supply Earth and Neutral to the terminal block with the corresponding Earth (green/yellow) and Neutral (black) cables.
3. The inside of the blower box will show two cables with plugs attached to them, and a cable for the high level alarm. The plugs supply power to the Pump and Blower respectively.
4. The pump and blower plugs each have a label identifying what is the plug for the pump and blower. Connect the pump and blower to their respective plugs
5. Wire the high level alarm float to the cable supplied. The wires of the float used are the Black and Brown wire. The Blue wire is not used and can be cut but ensure it is sealed well so no moisture can track down the float cable. The float is to be wired Normally Open (NO). The level float circuit is extra low voltage. NB: This is typically done at the factory.
6. Once finished wiring, secure the blower box's lid back on.



7. Once installed commission by:
   - Supply power to controller once safe to do so. The Green Power LED light should illuminate on front of controller.
   - The Blower should run continuously
   - Test pump by lifting the float attached to the pump.
   - Test high level alarm by lifting high level alarm float. The red High Water Fault LED should illuminate, the buzzer sound and alarm light flash.
   - Press the mute button and the buzzer should stop. The mute will disengage after 24 hours.

Installation Information

Site Requirements

- The tank(s) should be installed clear of any buildings so as not to affect any structure and with regard for section boundaries relating to local regulations and bylaws.
- The location of the treatment system is subject to approval by local councils/ authorities.
- The tank(s) should be sited so that access can be gained for desludging purposes.
- The tank(s) should be installed on a suitable foundation in stable soils.
- The tank(s) should be installed in a location and manner that diverts surface water away from the system.
- Installation should account for cases of high ground water or flood prone areas.
- The sanitary drainage system should comply with the New Zealand Building Code. All drainage levels should be considered to ensure that there are appropriate gradients leading into the system.
- A 16 amp circuit is required at the tank.

Installation Instructions

- The system components are to be installed in accordance with the approved design plans and taking into account required setback distances and consented land application system envelope areas.
- The system comes complete with an alarm panel mounted on the top. Consideration should be given to placement so any alarm will be seen and can be dealt with in a timely manner. Remote alarm panels are available for installations where the on tank alarm panel is in a hidden location. These are purchased and installed separately.
- As standard, Austin Bluewater ABS systems are non-trafficable and should be located away from trafficked areas or protected by fencing, bollards or barriers etc. Recommended maximum loose soil cover depth is 400mm for standard lid thickness.
- Any excavation must comply with all relevant legal acts, codes and standards including Department of Labour approved code of practice for safety.
- Following excavation dimensions of hole to suit both tank and soil types, cover the base of the hole with 100mm of 5-7 drainage gravel ensuring the base is finished perfectly level. DO NOT leave exposed rocks as these may damage the tank and void the warranty. DO NOT use sand.
- Tank Weight - including 80 mm lid = 8.2 tonne. Lifting - 4 x 2.5T eye anchors. When handling, an equalising beam must be used to ensure equal loading to all lifting anchors.
- Backfill excavation with soil/sand maximum particle size of 50mm DO NOT use rocks. Compact in layers of 300mm max.
- The ABS lid(s) should be a minimum of 200mm above finished ground level to prevent stormwater ingress.
- To prevent flotation, fill the tank to at least 70% of capacity. Austin Bluewater will not take responsibility for floating tanks.
- For ground level installations, the ground must be able to support the tank and water contents. Generally the foundation must have a safe bearing capacity of 100kPa typical for normal house foundations. Tanks must be placed on a bed of compacted sand or 5-7 drainage gravel 150mm thick. This base must extend an additional 1.0 metre further than the tank base all round. We recommend that the site is excavated a minimum of 150mm below existing ground level.
- Ensure the drain field is not in trafficked areas and do not allow stock to graze on this area.
- Austin Bluewater ABS systems leave our yard fully assembled, 2 tank systems (ABS 2500/3000) will require a standard 100mm drainage connection between the 2 tanks.
- Inlet/outlet heights should be positioned to allow for fall between tanks. There should be no need to remove access lids except for filling with water or if a riser kit is being installed for deeper than standard installs. Instructions for this are provided separately if required. Any lids removed should be reinstalled and screwed down to prevent accidental or unauthorised access.
- Only authorised personnel should access tank internals.
- All electrical connections to the system must comply with current codes and operate correctly.
- The controller is powered via a 230V power supply. This power supply should be protected by a 16A MCB or as deemed necessary from the electrician. The controller is rated to 10A at 230V.

Commissioning and Startup Procedure

To ensure correct operation and effluent quality, the ABS system will need to be commissioned shortly after installation or after usage begins. Commissioning should only be performed by a trained staff member or agent of Austin Bluewater.

Contact Austin Bluewater or your local agent to arrange commissioning.

Commissioning can only be performed when the tank is full, we recommend leaving the power off until the aeration chambers are full, this will allow the correct back pressure for the blower to operate. If no water was added to the system during install, approximately 5500L will be required to fill the system to this point. As a guide, a typical flow allowance is 200L per person per day.

Among other things, commissioning should include:

- A general inspection of the installation
- An operational check of all components
- Testing of air and high water alarms
- Testing of alarm strobe and audible alarm
- Correctly adjust air diffusers
- Correct setting of sludge return
- Check correct seating of Polylok filter
- Check for leaks in discharge pipework
- Check field for leaks
- Check each flush point for flow and leaks

Information For Effluent Field Planting

The following plants are suitable for the Canterbury area. Maximum heights and spreads are approximate only, and will differ in different situations, soils and aspects.

BOTANICAL NAME	COMMON NAME	MAX HEIGHT	MAX SPREAD
Aristotelia serrata	Wineberry	6	3
Carex comans	Ornamental Grass	0.5	1
Carex secta	Large Green Sedge	1.5	1.5
Carex trifida	Ornamental Sedge	1	1
Carex virgata	True Wetland Sedge	1	1
Carpodetus serratus	Marble Leaf	7	4
Chionochloa conspicua	Snow Grass	1	1.5
Chionochloa rubra	Red Tussock	1	1.5
Coprosma propinqua	Mingimingi	5	2.5
Cordyline australis	Cabbage Tree	10	2
Cortaderia richardii	Toe Toe	2	2
Cyperus ustulatus	Giant Umbrella Sedge	1	0.6
Griselinia littoralis	Broadleaf	5	2.5
Hebe spp			
Hoheria populnea	Lacebark	8	3
Leptospermum scoparium	Manuka	4	3
Melicytus ramiflorus	Whiteywood	8	2.5
Pennantia corymbosa	Bellbird Tree	8	3
Phormium spp	Flax		
Pittosporum colensoi	Black Mapou	5	3
Pittosporum tenuifolium	Kohuhu	6	3
Plagianthus regius	Ribbonwood	12	3
Pseudopanax arboreus	Fivefinger	6	3.5
Sophora microphylla	Kowhai	8	3
Uncinia uncinata ‘Rubra’	Red-leaved Grass	0.3	0.3

General Notes On Planting

- Avoid planting willows, birches, pohutukawa and poplars near driplines.
- Conversely, avoid locating driplines near existing plantings of these trees. Their invasive root systems can crowd and damage the driplines.
- Do not plant or grow root vegetables in dripline areas, although the wastewater is treated to a high level, there are still pathogens in the waste stream that can cause illness.
- Fruit trees can be planted in dripline areas, we recommend staking as a ready supply of water near the surface can prevent the establishment of deep root systems.
- Any fruit that has fallen onto the ground should be thoroughly washed and dried before consumption.

Limited Warranty

Please refer to our website for warranty terms and conditions.

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AUSTIN bluewater

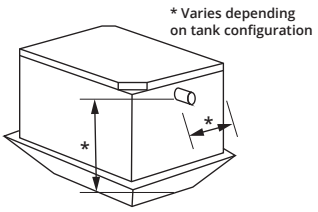
Standard Tank Specifications

Custom tanks may vary from details shown – refer to specific drawing.

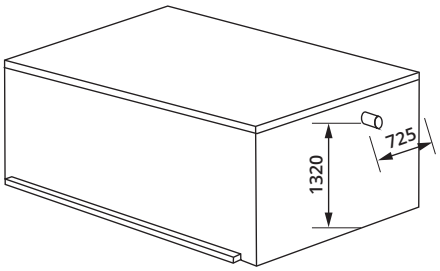
Refer to website resources or Austin Bluewater drawings for tank layouts, position of lifting points and positions of inlets, as these vary on each tank type.

Tank Type	*Length*	*Width* *(incl anti float nibs if included)*	*Overall Height* *(from base of tank to top of lid)*	*Invert* *(from base of tank)*	*Weight of Tank (t)* *(including standard lid)*	*Lifting Points* *(number & type)*
B52 and 65 Series Tanks	3000	1932	1560	1320	5.70	4 x 2.5 Reid anchors
ABS Series Treatment Tank	3000	2232	2380 to top of first turret	1630	8.20	4 x 2.5 Reid anchors
1,500L and 15 Series Tanks	1500	1200	1639	Varies (refer drawing)	1.80	2 x 2.5 Reid anchors
B33 and 33 Series Tanks	2750	1225	1560	1320	3.60	4 x 2.5 Reid anchors
HT10 and 10 Series Tanks	2450 diameter		2380	2000	5.40	4 x 2.5 Reid anchors
HT20 and 20 Series Tanks	3075 diameter		3020	n/a	9.60	4 x 5.0 Reid anchors

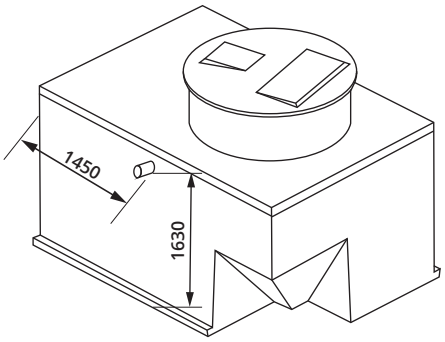
PLEASE NOTE : When handling any tank with more than 2 lifters, an equalising beam must be used to ensure all lifters are equally loaded.



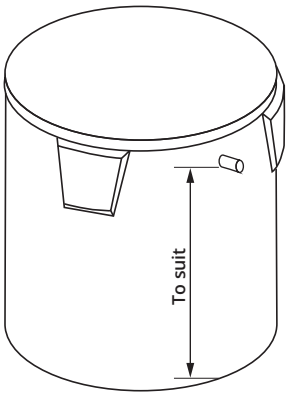
1,500L and 15 Series Tanks



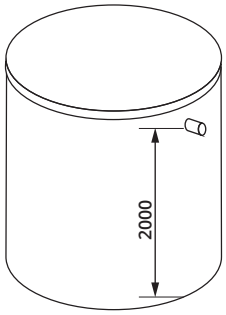
B52 and 65 Series Tanks



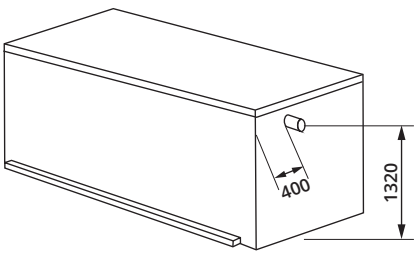
ABS Series Invert Position



HT20 and 20 Series Tanks 20,000L



HT10 and 10 Series Tanks 10,000L



B33 and 33 Series Tanks

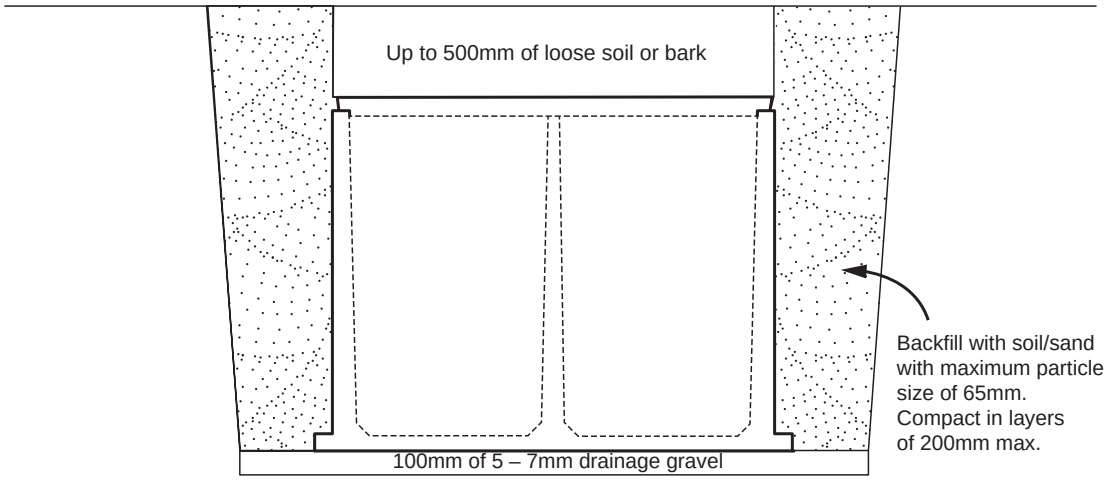
Building Consent BC240589
Received 20/8/2024

AUSTIN bluewater

Tank Installation Guide

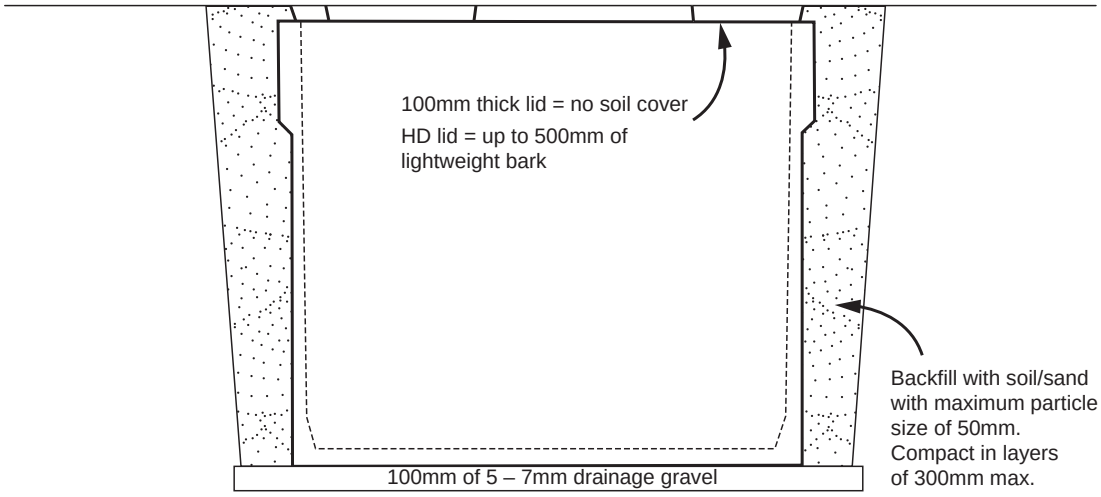
ABS, B52 & 33 and Pump Chamber series tanks

Refer installation guide for details



T20 tanks

Refer installation guide for details



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Received 20/8/2024

AUSTIN bluewater

Instructions and Install Notes

Excavation Instructions

Any excavation must comply with all relevant legal acts, codes and standards including Department of Labour approved code of practice for safety.

1. Check with your local council authority for requirements on tank location and drainage system for the site.
2. Following excavation dimensions of hole to suit both tank and soil types cover the base of the hole with 100mm of 5-7 drainage gravel, ensuring the base is finished perfectly level. DO NOT leave exposed rocks as these may damage the tank and void the warranty. DO NOT use sand.
3. Backfill excavation with soil / sand maximum particle size of 65mm DO NOT use ROCKS compact in layers of 200 mm max.
4. To prevent flotation, fill tank to at least 70% of capacity. Austin Bluewater will not take responsibility for floating tanks.
5. The excavated ground surface for the tank shall have an ultimate bearing capacity of 200kPa and all organic material shall be removed. Tanks shall be placed on a bed of compacted 5–7 mm drainage gravel 100mm thick to form a level surface. This base must extend an additional 1.0 metre further than the tank base all round. We recommend that the site is excavated a minimum of 200mm below existing ground level. To ensure the above conditions are met, a geotechnical consultant may be engaged to provide written sign off.

General Installation Notes

1. T20 tanks with a 100mm thick lid MUST be installed with the lid at ground level – NO SOIL COVER. If an HD lid is used the tank may be buried up to 500mm but only covered with light weight bark.
   For all other tanks the precast lid will support a maximum 500 kg point load (pedestrian loading only) or if buried, 500mm depth of loose soil cover or bark . A ‘no go zone’ around the perimeter of the tanks for 2 metres must be identified to stop intrusion of vehicles, stacked materials and other heavy objects.
2. Surface storm water should be diverted away from lid to prevent water ingress.
3. Ensure the drain field is not in trafficked areas, and do not allow stock to graze on the this area.
4. TO ENABLE SERVICING OF ABS TREATMENT SYSTEMS, THE LID MUST BE ABLE TO BE LIFTED OFF AND PLACED TO ONE SIDE. TO ALLOW THIS, THE ELECTRICAL CONNECTION MUST HAVE A FLEXIBLE SECTION WITH SPARE CABLING.
5. The ABS turret must extend a minimum of 100mm above finished ground level.

PLEASE NOTE: Failure to comply with these instructions will invalidate the warranty

Building Consent BC240589
Received 22/7/2024

North Canterbury Drainage Ltd.

Stormwater Loading design.

982a Oxford Road, Fernside.

New home/converted shed.

Provide stormwater drainage design for new home/converted shed.

Total roof area = 350m2

Ground Type: Heavy clays, very poor-nil soakage.

Best Solution is a holding Tank as per WDC ECOP SD 251 (details below) discharging to natural swale approx 25m north of building.

Tank size 30,000ltr

Tank to have restricted out flow of 25mm as per details.

Swale discharge via dissipater or bubble up sump.

Pipework from tank to existing stormwater system to be 100mm upvc drainage pipe. **and 80mm downpipes.**

All pipework to be installed as per NZBC E1 AS1/AS2.

Designed by Josh Sutherland.

Certified Drainlayer. #20799

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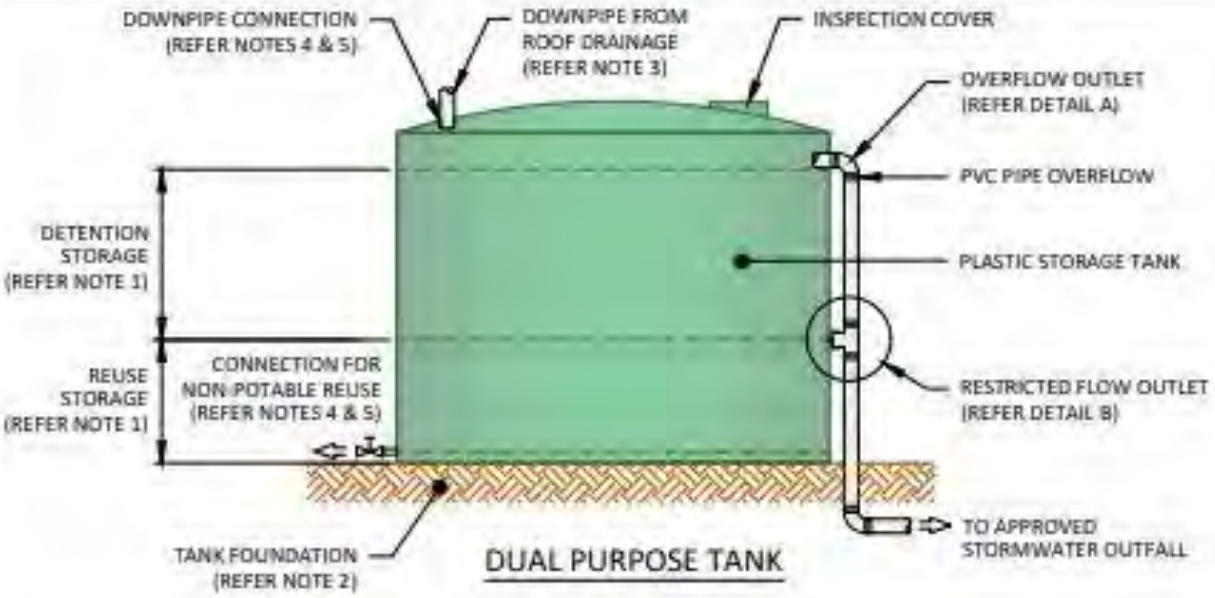
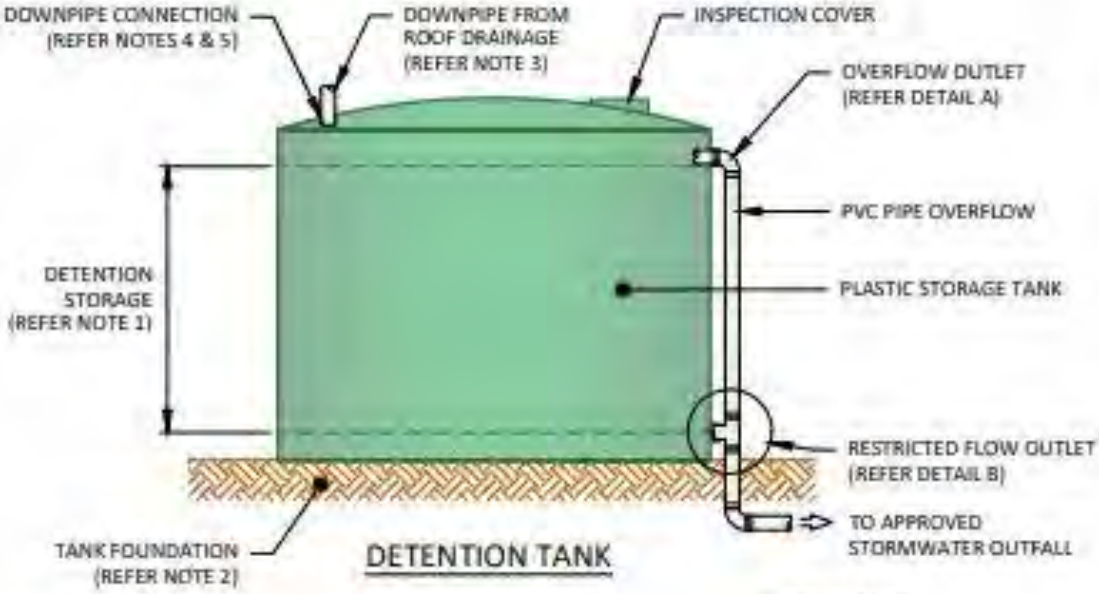
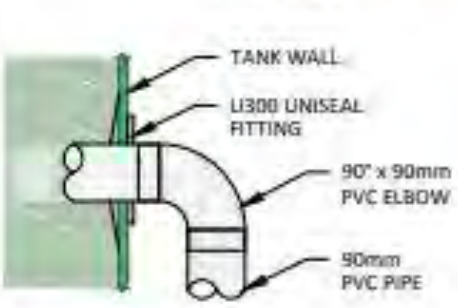


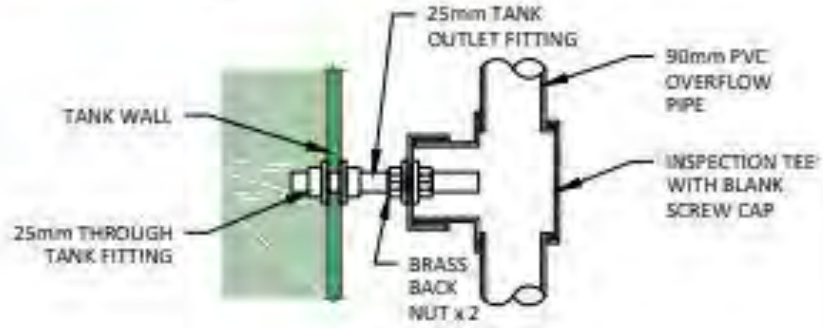
DUAL PURPOSE TANK



DETENTION TANK



DETAIL A

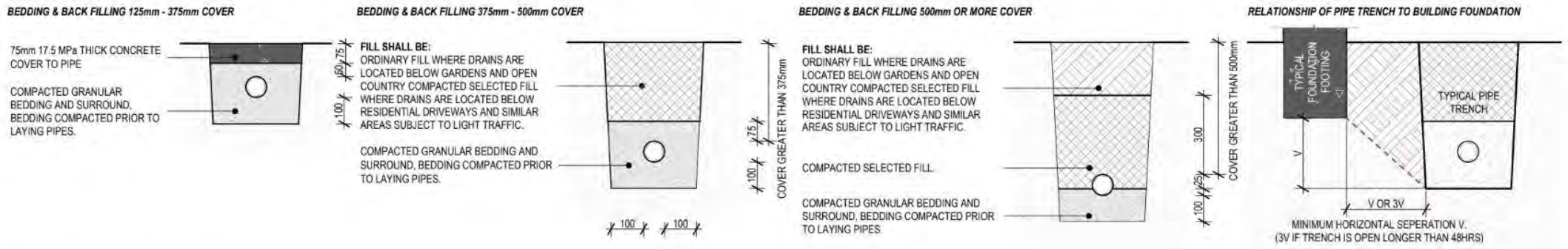


DETAIL B

NOTES:

1. TANK SIZE BASED ON PROVIDING A DETENTION STORAGE VOLUME OF 2m³ PER 100m² OF ROOF AREA. REUSE STORAGE VOLUME IS TYPICALLY HALF THE DETENTION STORAGE VOLUME.
2. TANK FOUNDATION AND FIXING TO GROUND TO BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
3. DEBRIS DIVERTER/LEAF GUARD TO BE INSTALLED ON DOWNPIPES IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
4. FIT UNISEAL IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
5. HOLES DRILLED THROUGH TANK WALL TO BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

	PROJECT TITLE	SHEET TITLE	SHEET
WAIMAKARIRI DISTRICT COUNCIL	ONSITE STORMWATER TANKS	STANDARD DRAWINGS	251
			ISSUE: B / PLAN No.: 600



DRAINAGE : BEDDING & BACKFILLING

1:20