

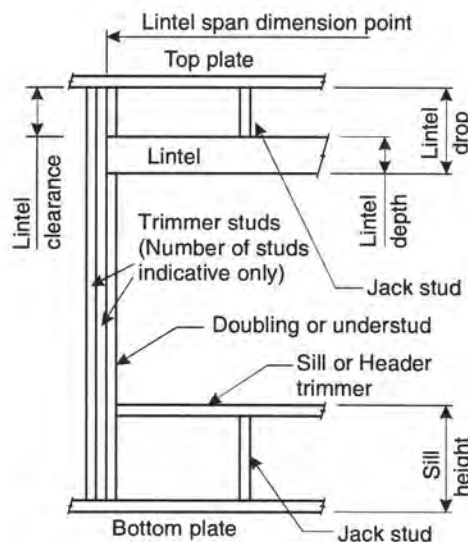


## LINTEL FIXING SCHEDULE ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

### NOTE:

- ★ All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa.
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist horizontal loads.
- ★ These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- ★ All fixings assume bottom plate thickness of 45mm maximum. Note: TYLOK options on timber species.
- ★ Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011.

### DEFINITIONS



### Lintel Supporting Girder Trusses:

Roof Tributary Area	Light Roof			Heavy Roof		
	Wind Zone			Wind Zone		
	L, M, H	VH	EH	L, M, H	VH	EH
8.6 m <sup>2</sup>	G	G	H	G	G	H
11.6 m <sup>2</sup>	G	H	H	G	G	H
12.1 m <sup>2</sup>	G	H	H	G	H	H
15.3 m <sup>2</sup>	H	H	-	G	H	H
19.1 m <sup>2</sup>	H	-	-	G	H	-
20.9 m <sup>2</sup>	H	-	-	H	H	-
21.8 m <sup>2</sup>	H	-	-	H	-	-
34.3 m <sup>2</sup>	-	-	-	H	-	-

### Notes:

- 1) Roof Tributary Area = approx. 1/2 x (Total roof area on girder and rafter trusses supported by lintel)
- 2) Assumed girder truss is at mid-span or middle third span of lintel
- 3) Use similar fixings for both ends of lintel
- 4) All other cases require specific engineering design

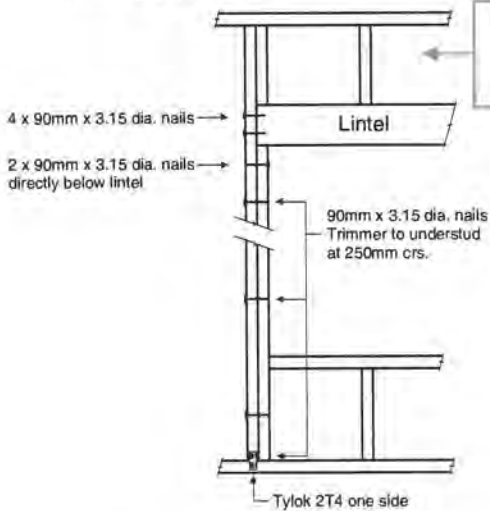
### SELECTION CHART FOR LINTEL FIXING

Lintel Span	Loaded Dimension (See Fig. 1.3 NZS 3604:2011)	Light Roof					Heavy Roof				
		Wind Zone					Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
0.7	2.0	E	E	E	E	F	E	E	E	E	E
	3.0	E	E	E	F	F	E	E	E	E	F
	4.0	E	E	F	F	F	E	E	E	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
0.9	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	E	F	F	F	E	E	F	F	F
	5.0	E	F	F	F	G	E	E	F	F	F
	6.0	E	F	F	G	G	E	E	F	F	G
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	F	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	G	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	H	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
	6.0	F	G	H	-	-	E	F	G	H	-
3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
	4.0	F	G	H	H	-	E	F	G	H	H
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	-
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	F	F	G	H	-
	4.0	F	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-

# LINTEL FIXING OPTIONS

## TYPE E

1.4 kN

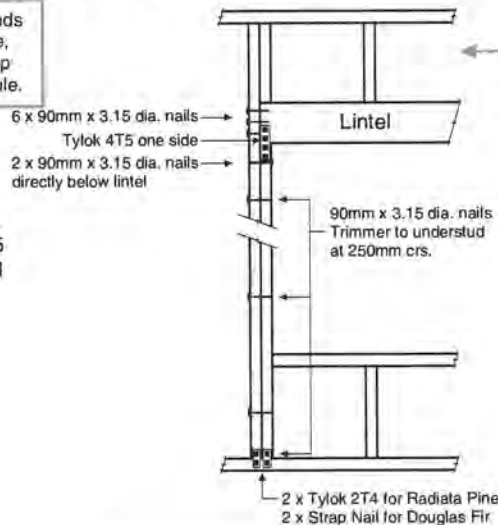


For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

## TYPE F

4.0 kN

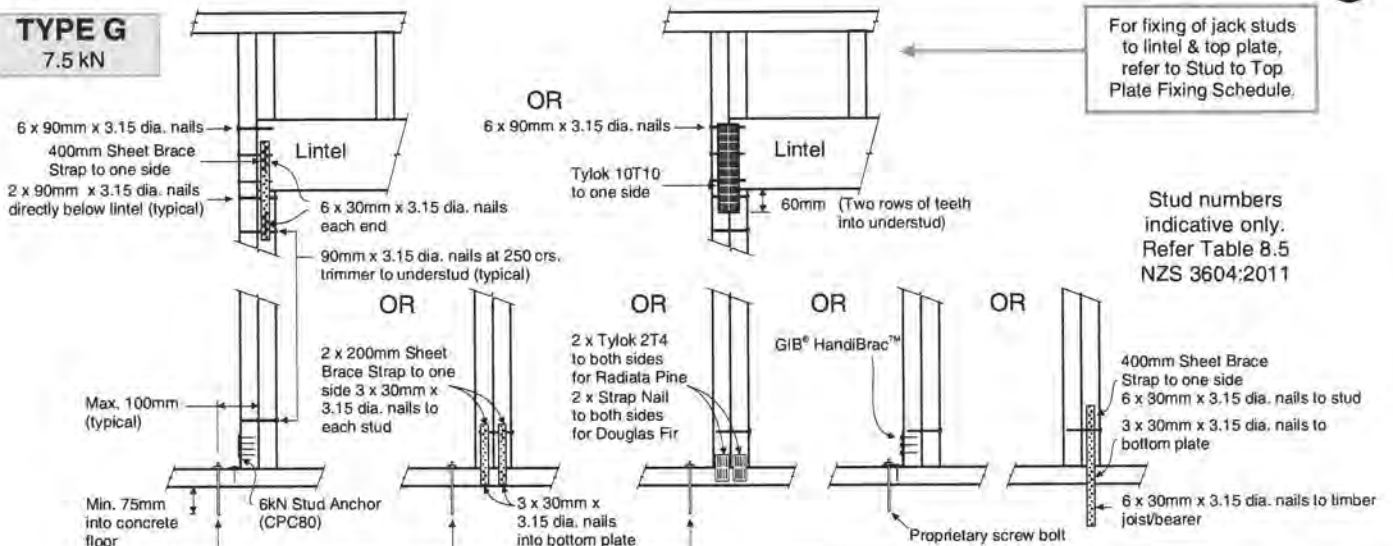


For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

## TYPE G

7.5 kN



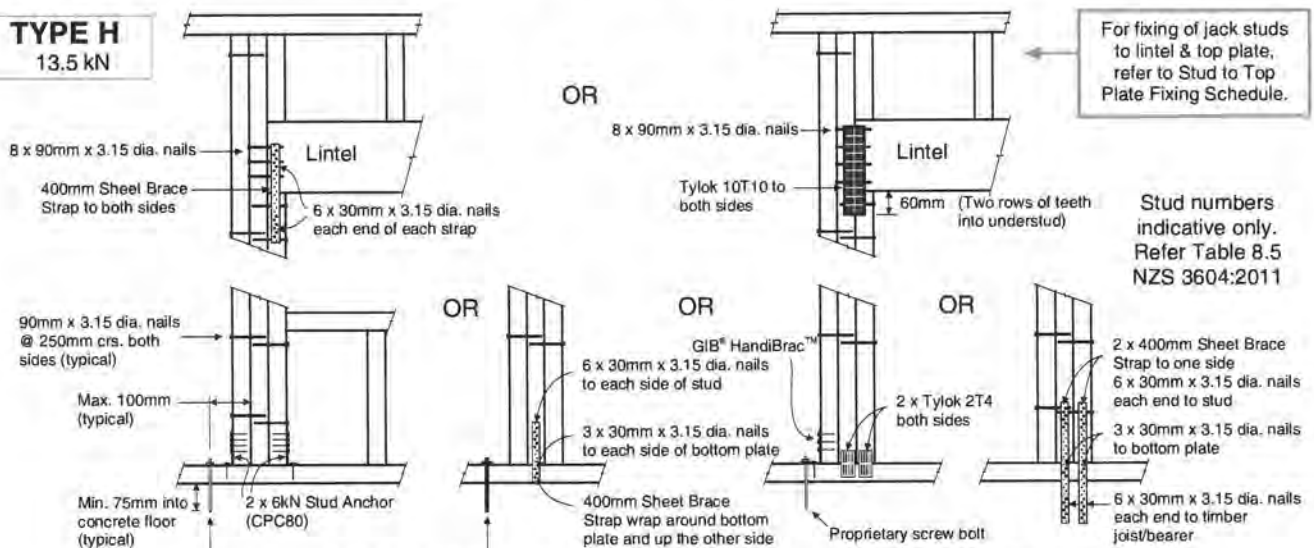
For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

M12 proprietary concrete fixing bolt with 50x50x3mm square washer or M12 x 150mm coach screw with 50x50x3mm square washer into timber joist/bearer

## TYPE H

13.5 kN



For fixing of jack studs to lintel & top plate, refer to Stud to Top Plate Fixing Schedule.

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

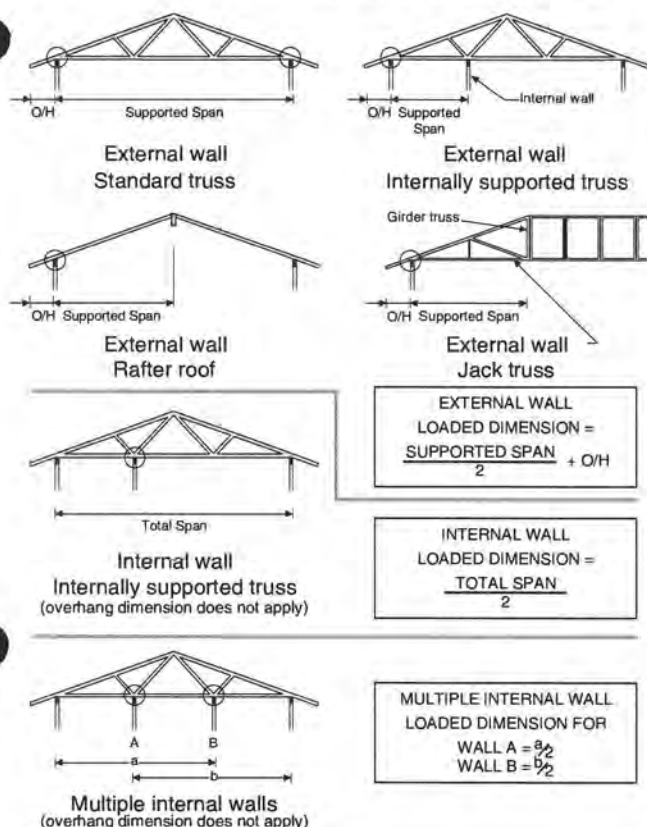
M12 proprietary concrete fixing bolt with 50x50x3mm square washer or M12 x 150mm coach screw with 50x50x3mm square washer into timber joist/bearer

## STUD TO TOP PLATE FIXING SCHEDULE ALTERNATIVE TO TABLE 8.18 NZS 3604:2011

### NOTE:

- ★ All fixings are designed to resist vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20 kPa
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist lateral loads.
- ★ These fixings assume the correct choice of rafter/truss to top plate connections have been made.
- ★ Gable end wall top plate/stud connections where the adjacent rafter/truss is located within 1200mm of gable end wall with a maximum verge overhang of 750mm, requires fixing type A as shown below.
- ★ All fixings assume top plate thickness of 45mm maximum.
- ★ Wall framing arrangements under girder trusses are not covered in this schedule.
- ★ All timber selections are as per NZS 3604:2011.

### LOADED DIMENSION DEFINITION



### FIXING SELECTION CHART

(Suitable for walls supporting roof members at 600, 900 or 1200mm crs.)

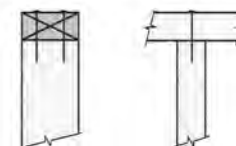
Wind Zones L, M, H, VH, EH, as per NZS 3604:2011

Loaded Dimension (m)			Light Roof Wind Zone					Heavy Roof Wind Zone				
Stud Centres			L	M	H	VH	EH	L	M	H	VH	EH
300mm	400mm	600mm										
3.0	2.3	1.5	A	A	B	B	B	A	A	B	B	B
4.0	3.0	2.0	A	A	B	B	B	A	A	B	B	B
5.0	3.8	2.5	A	B	B	B	B	A	A	B	B	B
6.0	4.5	3.0	A	B	B	B	B	A	A	B	B	B
7.0	5.3	3.5	A	B	B	B	B	A	A	B	B	B
8.0	6.0	4.0	A	B	B	B	B	A	A	B	B	B
9.0	6.8	4.5	B	B	B	B	B	A	A	B	B	B
10.0	7.5	5.0	B	B	B	B	B	A	A	B	B	B
11.0	8.3	5.5	B	B	B	B	B	A	A	B	B	B
12.0	9.0	6.0	B	B	B	B	B	A	A	B	B	B

### FIXING OPTIONS

#### FIXING TYPE A 0.7 kN

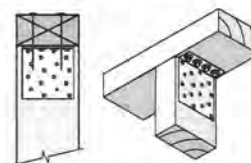
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



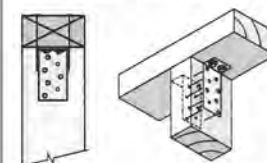
#### FIXING TYPE B 4.7 kN

CHOOSE ANY OF THE 3 OPTIONS BELOW

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.

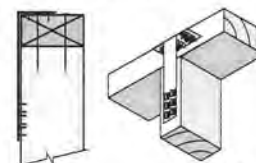

Plus  
LUMBERLOK  
6kN Stud Anchor  
(CPC80)

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.


Plus  
2 x LUMBERLOK  
CPC40

Recommended for internal wall options to avoid lining issues

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.


Plus  
LUMBERLOK  
Stud Strap  
(one face only)

#### Note:

To calculate the number of B type fixings required, divide the wall length by the stud centres, add 1 to this figure and locate this number of fixings as evenly as possible along the wall length. This figure includes the start and end studs in each wall length.

**Ramset™****PRODUCT TECHNICAL  
STATEMENT****2011****Bottom Plate Product  
Technical Statement**

Bottom Plate Fixing Solutions Table

Fixing Requirements				Installation		
Bottom Plate Location	Bottom Plate Fixing Requirement	Concrete Strength (min.)	Floor Edge Type	Fastener	Max Spacing	Min Edge Distance
External Wall	NZS3604:1999	17.5 MPa	Concrete	12120BPA* <sup>1</sup>	900 mm <sup>3</sup>	55 mm
	NZS3604:2011* <sup>3</sup>		Masonry Block			
	Proprietary Bracing Systems (15 kN)	17.5 MPa	Concrete	AS12150H* <sup>2</sup> AS12150GH* <sup>2</sup>		
			Masonry Block			
Internal Wall	NZS3604:1999	17.5 MPa	N/A	12120BPA* <sup>1</sup>	900 mm	N/A
	NZS3604:2011			8x75 Drive Pin & Washer	600 mm	N/A
	Proprietary Bracing Systems (15 kN)	17.5 MPa	N/A	12120BPA* <sup>2</sup>	900 mm	N/A

Solutions are suitable when fixing a 90x45 Bottom Plate.

1 - To be used in conjunction with a 50x50x3 washer.

2 - To use in conjunction with a Pryda Bracing Anchor bracket.

3 - To meet NZS3604: 2011, Masonry Block floor requirements, Max spacing = 600mm.

**Bottom Plate Durability**

NZS3604 Table 4.1 classes bottom plates in a "closed (dry, internal location), not subjected to airborne salts or rain wetting" therefore the durability requirements can be met anywhere in New Zealand with a zinc passivated fastener.



12120BPA Anchor



AS12150 Anchor



HD875 Drive Pin

Ramset has determined the suitability of the above fasteners from results in reports SR125, LTR032 2008 and evaluation by research organisations and Industry recognised personnel.

**Ramset™**  
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Suitability Statement / Published 01/2011





**BRANZ Appraised**  
Appraisal No.621 [2008]

**BRANZ Appraisals**

Technical Assessments of products  
for building and construction

**BRANZ  
APPRAISAL  
No. 621 (2008)**

Amended 2 May 2012.

## **THE TEKTON® WEATHERIZATION SYSTEM**

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### **Product**

1.1 The Tekton® Weatherization System consists of Tekton® Building Wrap, One Piece Sill Tape or Protecto Sill System (flexible flashing tapes), Tekton Seam Tape and TRADE-SEAL. The system is used behind wall cladding systems and around framed joinery openings as a secondary weather resistant barrier for walls.

1.2 The Tekton® Building Wrap is fixed directly to the outside of the external wall framing, and is also wrapped around the inside face of the framing at openings. Tekton Seam Tape is applied over the joints of the installed flexible wall underlay. The One Piece Sill Tape or Protecto Sill System is then 'moulded' into the opening over the building wrap to cover both the face and edge of the opening framing, and also at joinery heads to seal flashings to the flexible wall underlay. The Protecto Wrap Tapes are also used for sealing punctures and tears in the flexible wall underlay. TRADE-SEAL is used to seal all penetrations through the flexible wall underlay.



### **Scope**

2.1 The Tekton® Weatherization System has been appraised for use on timber framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent wall claddings directly fixed to framing; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.2 The Tekton® Weatherization System has been appraised for use as a flexible wall underlay on steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.3 The Tekton® Weatherization System has been appraised for use as a flexible wall underlay over rigid wall underlays on timber and steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to and including 'Extra High'.

2.4 The Tekton® Weatherization System has also been appraised for use on building subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Tekton® Weatherization System into their design in accordance with the declared properties and the instructions of Marshall Waterproofing NZ/AUS Ltd.

## New Zealand Building Code (NZBC)

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

**Clause B2 DURABILITY:** Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.2. The Tekton® Weatherization System meets this requirement. See Paragraphs 9.1 – 9.2

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.2. The Tekton® Weatherization System contributes to exterior walls meeting this requirement. See Paragraphs 12.1 and 12.2.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. The Tekton® Weatherization System meets this requirement and will not present a health hazard to people.

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

## Technical Specification

4.1 System components supplied by Marshall Waterproofing NZ/AUS Ltd are as follows:

- Flexible wall underlay – Tekton® Building Wrap is a synthetic breather-type building membrane available in rolls 2740 mm wide and 37 m long or 1370 mm wide and 74 m long. The product is manufactured from coated spun bonded polypropylene.
- Flexible flashing tape (1) – One Piece Sill Tape is a polyethylene faced, modified SBS rubberised asphalt, self adhesive flashing tape. It is available in rolls 150 mm wide, 20 m long and 1 mm thick.
- Flexible flashing tape (2) – Protecto Sill System comprises Protecto Wrap Detail Tape, Protecto Wrap Sill Tape and Protecto Tak spray on primer. Both the tapes are based on modified SBS rubberised asphalt and Protecto Tak is a solvent based spray on adhesive primer. Protecto Wrap Detail Tape is supplied as a 150 mm wide, 15 m long and 1.0 mm thick roll, Protecto Wrap Sill Tape is supplied as a 50, 150, 200 mm wide, 30m long and 0.5mm thick roll and Protecto Tak is supplied in 369 g can.
- TRADE-SEAL is an EPDM sleeve bonded to a carrier material of spun-bonded high density polyethylene film 150 micron thick. The carrier material is backed with a self adhesive layer. The TRADE-SEAL is available with various diameter EPDM sleeve sizes to accommodate different size wall penetrations.
- Adhesive tape – Tekton Seam Tape is a thin polypropylene joining adhesive tape, available in rolls 48 mm wide and 50 m long.

4.2 Accessories used with the system which are supplied by the building contractor are:

- Staples, clouts or other temporary fixings to attach the building wrap to the framing, and polypropylene tape, galvanized wire or mesh as set out in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5 where required to support the building wrap.

## Handling and Storage

5.1 All products must be kept clean and dry at all times prior to use by storing under cover so that they are protected from the weather and damage. Rolls of Tekton® Building Wrap must be stored on end.

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

## Timber and Steel Framing

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

### General

7.2 The Tekton® Weatherization System is intended for use as an alternative to conventional building papers which are fixed over timber or steel framed walls in order to limit the entry of wind into building cavities, and to act as a secondary barrier to wind-driven rain.

7.3 The Tekton® Weatherization System is intended for use behind wall cladding systems and at joinery openings as a secondary defence against water penetration into framing cavities.

7.4 The 'moulding' of One Piece Sill and Protecto Sill System Tapes into openings over the building wrap as an internal flashing system provides a seamless, physical waterproof barrier at that point. When it is installed at a slope forward, or when 'dammed' at the back of the sill trimmer with the likes of an air seal, the flashing tapes will direct moisture to the outside of the framing. One Piece Sill and Protecto Sill System Tapes are manufactured from modified SBS rubberised asphalt and therefore will self-seal around most common fasteners used to fix joinery to framing.

7.5 The system will also provide a degree of temporary weather protection during construction. However, it will not make the building weathertight and some wetting of the underlying structure is always possible before the building is closed-in. Hence, as with all other temporary weather protection systems, the building must be closed-in and made weatherproof before moisture sensitive materials such as wall or ceiling linings and insulation materials are installed.

7.6 The Tekton® Weatherization System is also suitable for use as an air barrier to walls that are not lined, such as attic spaces at gable ends, as called up in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.4 (c). Refer to Table 1.

7.7 TRADE-SEAL when used with Tekton® Building Wrap, provides an alternative solution to the pipes and services penetrations specified in NZBC Acceptable Solution E2/AS1, paragraph 9.1.9.3 and Figure 68.

**Table 1: NZBC E2/AS1 Table 23 Requirements**

NZBC E2/AS1 Table 23 Wall Underlay Properties	Property Performance Requirement	Actual Property Performance - Tekton® Building Wrap
Absorbency	$\geq 100 \text{ g/m}^2$	Classified as non-absorbent (see paragraph 7.7)
Vapour Resistance	$\leq 7 \text{ MN s/g}$	1.15 MN s/g
Water Resistance	$\geq 20 \text{ mm}$	Pass
pH of Extract	$\geq 6$ and $\leq 9$	9.78 (Note 1)
Shrinkage	$\leq 0.5\%$	0.10 %
Mechanical	Edge tear and tensile strength	Edge tear: Machine direction = 228 N Cross direction = 186 N Tensile strength: Machine direction = 4.4 kN/m Cross direction = 3.9 kN/m
Air Barrier	Air resistance: $\geq 0.1 \text{ MN s/m}^3$	$\geq 0.1 \text{ MN s/m}^3$

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

7.8 The Tekton® Weatherization System is suitable for use under wall cladding as a wall underlay system as called up in NZBC Acceptable Solution E2/AS1, Table 23 on timber framed buildings, except that it must not be used with non-absorbent metal based wall claddings such as sidings or metal based weatherboards in direct fixed installations. Tekton® Weatherization System is suitable for use under cavity based wall claddings as a non-absorbent synthetic wall underlay system as called up in NZS 2295, Table 2.4 on steel framed buildings.

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

7.10 When the Tekton® Weatherization System is used in conjunction with LOSP (light organic solvent preservative) treated timber, the solvent from the timber treatment must be allowed to evaporate (generally at least one week) prior to the installation of the system.

## Structure

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

## Durability

### Serviceable Life

9.1 The system meets code compliance with NZBC Clause B2.3.1 (a), not less than 50 years where the cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry veneer, and code compliance with NZBC Clause B2.3.1 (b), 15 years where the cladding durability requirement is 15 years. This is provided it is not exposed to the weather for a total time of more than 60 days when using either Protecto Sill System Tapes or the One Piece Sill Tape. The product also must not be exposed to the weather or UV light at any time in service.

9.2 The exterior cladding must be maintained weathertight at all times for the Tekton® Weatherization System to have a serviceable life equal to that of the cladding.

## Control of Internal Fire and Smoke Spread

10.1 The Tekton® Building Wrap component of the system has an AS 1530 Part 2 Flammability Index of 0. It therefore meets the requirements of NZBC Acceptable Solution C/AS1 Part 6, Table 6.2 for surface finish requirements for suspended flexible fabrics, and therefore it may be used with no restrictions in all buildings.

## Outbreak of Fire

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

## External Moisture

12.1 The system is used to assist the control of moisture behind wall claddings by ensuring moisture which may occasionally penetrate the wall cladding is directed back to the exterior of the building.

12.2 The system is suitable for use with wall claddings complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal, and where exposed up to, and including 'Very High' winds as defined by NZS 3604.

## Installation Skill Level Requirements

13.1 Installation must always be carried out in accordance with the Technical Literature and this Appraisal by a competent tradesperson with an understanding of the wall wrap and weatherization system installation.



## System Installation

14.1 The system must be installed in accordance with NZBC Acceptable Solution E2/AS1, or when used with BRANZ Appraised wall claddings, in accordance with any instructions given in the Appraisal, along with the instructions given in the Technical Literature.

14.2 Tekton® Building Wrap building wrap must be fixed first to the external face of the timber wall framing and as per NZS 2295 for steel framed buildings installed over all openings in the framing then cut and dressed into all sides of the openings.

14.3 Openings are dressed with lengths of One Piece Sill or Protecto Sill System Tapes where required and adhered to the Tekton Building Wrap. The tape is 'fanned' around the corners onto the face of the Tekton Building Wrap and folded over the outside edge of the opening framing. All surfaces must be clean and dry prior to the installation.

14.4 Any other components of the cladding system or joinery installation, such as sill trays, other flashings or seals should be installed as instructed by the cladding or joinery manufacturer. Note that these components, including cladding systems and joinery have not been assessed and are outside the scope of this Appraisal.

## Inspections

14.5 The Technical Literature must be referred to during the inspection of Tekton® Weatherization System installations.

## Summary

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

## Tests

15.1 The following tests have been carried out on Tekton® Building Wrap by Ensis Papro: Folding strength of paper in accordance with AS/NZS 1301.423; edge tear resistance and tensile strength in accordance with AS/NZS 4200.1 and air resistance in accordance with BS 6538-3.

15.2 The following tests have been carried out on Tekton® Building Wrap by BRANZ: Absorbency in accordance with AS/NZS 4201.6, Vapour transmission in accordance with ASTM E 96B, Shrinkage in accordance with AS/NZS 4201.3, Water barrier in accordance with AS/NZS 4201.4 and pH of extract in accordance with AS/NZS 1301.421.

15.3 Tests have been carried out on the One Piece Sill, Protecto Wrap Detail Tape and Protecto Wrap Sill Tapes in accordance with ICC Evaluation Service Criteria for Flashing Materials, AC148. The results have been reviewed by BRANZ experts and found to be satisfactory.

15.4 Peel adhesion testing of the One Piece Sill, Protecto Wrap Detail Tape and Protecto Wrap Sill Tapes, Tekton Seam Tape and TRADE-SEAL on the Tekton® Building Wrap has been completed by BRANZ.

## Other Investigations

16.1 Durability opinions have been given by BRANZ technical experts.

16.2 Practicability of installation has been assessed by BRANZ and found to be satisfactory.

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

## Quality

17.1 The manufacture of the products that make up the system has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

17.2 The quality of supply to the market is the responsibility of Marshall Waterproofing NZ/AUS Ltd.

17.3 Building designers are responsible for the design of the building, and for the incorporation of the Tekton® Weatherization System into their design in accordance with the instructions of Marshall Waterproofing NZ/AUS Ltd.

17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Marshall Waterproofing NZ/AUS Ltd.

## Sources of Information

- AS 1530.2 - 1993 Test for flammability of materials.
- AS/NZS 1301.421s: 1988 Determination of the pH value of aqueous extracts of paper, board and pulp - cold extraction method.
- AS/NZS 4200.1: 1994 Pliable building membranes and underlays - materials.
- AS/NZS 4201.3: 1994 Pliable building membranes underlays - Methods of test - Shrinkage.
- AS/NZS 4284: 1995 Testing of building facades.
- BS 6538-3: 1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295: 2006 Pliable, Permeable Building Underlays.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
- The Building Regulations 1992.





**BRANZ**

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

The Appraisal is issued only to Marshall Waterproofing NZ/AUS Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

**Conditions of Appraisal**

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

For BRANZ

**P Burghout**  
Chief Executive

Date of issue: 8 October 2008

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

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

**Amendment No. 2, dated 2 May 2012.**

This Appraisal has been amended to include an additional product.



**BRANZ Appraised**  
Appraisal No.548 [2007]

BRANZ Appraisals

Technical Assessments of products  
for building and construction

**BRANZ  
APPRAISAL  
No. 548 (2007)**

Amended 31 January 2012

**TEKTON®  
BUILDING WRAP**

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## Product

1.1 Tekton® Building Wrap is a synthetic breather-type flexible wall underlay for use as a wall underlay and air barrier under direct and non-direct fixed wall cladding on timber and steel framed buildings. The product is manufactured of a coated spun-bonded polypropylene, and is approximately 0.6 mm thick.



## Scope

2.1 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on timber framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with absorbent wall claddings directly fixed to framing; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.2 Tekton® Building Wrap has been appraised for use as a flexible wall underlay on steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to, and including 'Very High'.

2.3 Tekton® Building Wrap has been appraised for use as a flexible wall underlay over rigid wall underlays on timber and steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1; and,
- situated in NZS 3604 Wind Zones up to and including 'Extra High'.

2.4 Tekton® Building Wrap has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Tekton® Building Wrap into their design in accordance with the declared properties and the instructions of Marshall Waterproofing NZ/AUS Ltd.

## New Zealand Building Code (NZBC)

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

**Clause B2 DURABILITY:** Performance B2.3.1(a), 50 years and B2.3.1(b), 15 years. Tekton® Building Wrap meets these requirements. See Paragraphs 8.1 and 8.2.

**Clause E2 EXTERNAL MOISTURE:** Performance E2.3.2. When used as part of the cladding system, Tekton® Building Wrap will contribute to meeting this requirement. See Paragraphs 11.1 - 11.3.

**Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. Tekton® Building Wrap meets this requirement and will not present a health hazard to people.

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

4.1 Tekton® Building Wrap is a 100 g/m<sup>2</sup> light grey sheet membrane material approximately 0.6 mm thick.

4.2 The product is supplied in rolls 1.370 m x 74 m and 2.743 m x 37 m. The product is printed with the Tekton® logo repeated along the length of the roll. The rolls are wrapped with an instruction sticker.

### Accessories

4.3 Accessories used with Tekton® Building Wrap which are supplied by the installer are:

- Fixings - staples, clouts or proprietary wrap fixings, or other temporary fixings to attach the wall wrap to the framing.
- Building wrap support - polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to support the wall wrap in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

## Handling and Storage

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

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

## Timber and Steel Framing

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

## General

7.2 Tekton® Building Wrap is intended for use as an alternative to conventional building papers which are fixed over timber and steel framed walls in order to limit the entry of wind into building cavities, and to act as a secondary barrier to wind-driven rain.

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

7.4 Tekton® Building Wrap is suitable for use under wall claddings as a wall underlay as called up in NZBC Acceptable Solution E2/AS1, Table 23, except that it must not be used with non-absorbent wall claddings such as vinyl or metal based sidings or weatherboards in direct fixed installations. Tekton® is suitable for use under cavity based wall claddings as a non-absorbent synthetic wall underlay as called up in NZS 2295, Table 2.4 on steel framed buildings. Refer to Table 1.

7.5 Tekton® Building Wrap is also suitable for use as an air barrier to walls that are not lined, such as attic spaces at gable ends, as called up in NZBC Acceptable Solution E2/AS1, Paragraph 9.1.4 (c). Refer to Table 1.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Wall Wrap Properties	Property Performance Requirement	Actual Property Performance
Absorbency	$\geq 100 \text{ g/m}^2$	Classified as non-absorbent (see paragraph 7.4)
Vapour Resistance	$\leq 7 \text{ MN s/g}$	1.15 MN s/g
Water Resistance	$\geq 20 \text{ mm}$	Pass
pH of Extract	$\geq 6$ and $\leq 9$	9.78 (Note 1)
Shrinkage	$\leq 0.5\%$	0.10 %
Mechanical	Edge tear and tensile strength	Edge tear: Machine direction = 228 N Cross direction = 186 N Tensile strength: Machine direction = 4.4 kN/m Cross direction = 3.9 kN/m
Air Barrier	Air resistance: $\geq 0.1 \text{ MN s/m}^3$	$\geq 0.1 \text{ MN s/m}^3$

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

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



## Stucco Plaster

7.7 Tekton® Building Wrap is suitable for use as a non-rigid backing material for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.1. The wall underlay must be supported with 75 mm galvanised mesh or plastic tape or wire at 150 mm centres run across the cavity battens to limit deflection to a maximum of 5 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.2.

7.8 Tekton® Building Wrap may also be used as a slip layer over rigid backings for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.3(b).

## Structure

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

## Durability

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

### Serviceable Life

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

## Control of Internal Fire and Smoke Spread

10.1 Tekton® Building Wrap has an AS 1530 Part 2 Flammability Index of 0 and meets the requirements of NZBC Acceptable Solution C/AS1 Part 6, Table 6.2 for surface finish requirements for suspended flexible fabrics, and therefore it may be used with no restrictions in all buildings.

## Outbreak of Fire

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

## External Moisture

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

12.2 Tekton® Building Wrap, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding systems compliance with NZBC Clause E2.

12.3 When used as an air barrier, particular care must be taken to ensure an air tight barrier is achieved, and weather sealing at all openings and penetrations through the cladding meets the requirements of the NZBC.

## Installation Skill Level Requirements

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

## Wrap Installation

14.1 Tekton® Building Wrap must be fixed to all framing members at maximum 300 mm centres with hot-dip galvanised, large-head clouts 20 mm long, zinc plated 6-8 mm staples, or proprietary wrap fixings. The membrane must be pulled taut over the framing before fixing.

14.2 Tekton® Building Wrap must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 75 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.

14.3 The wall underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the membrane by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut membrane must be folded inside the opening and stapled to the penetration framing. Excess wall underlay may be cut off flush with the internal face of the wall frame.

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

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

14.6 Any damaged areas of Tekton® Building Wrap, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

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

## Tests

15.1 The following tests have been carried out on Tekton® Building Wrap by Ensis Papro: Folding strength of paper in accordance with AS/NZS 1301.423; edge tear resistance and tensile strength in accordance with AS/NZS 4200.1 and air resistance in accordance with BS 6538-3.

15.2 The following tests have been carried out on Tekton® Building Wrap by BRANZ: Absorbency in accordance with AS/NZS 4201.6, Vapour transmission in accordance with ASTM E 96B, Shrinkage in accordance with AS/NZS 4201.3, Water barrier in accordance with AS/NZS 4201.4 and pH of extract in accordance with AS/NZS 1301.421.



## Other Investigations

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

## Quality

- 17.1 The manufacture of Tekton® Building Wrap has not been examined by BRANZ, but details of the methods adopted for quality control and the quality of the materials used, have been obtained.
- 17.2 The quality of supply to the market is the responsibility of Marshall Waterproofing NZ/AUS Ltd.
- 17.3 Building designers are responsible for the design of the building, and for the incorporation of the wall wrap into their design in accordance with the instructions of Marshall Waterproofing NZ/AUS Ltd.
- 17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Marshall Waterproofing NZ/AUS Ltd.

## Sources of Information

- AS 1530.2 - 1993 Test for flammability of materials.
- AS/NZS 1301.421s: 1988 Determination of the pH value of aqueous extracts of paper, board and pulp - cold extraction method.
- AS/NZS 4200.1: 1994 Pliable building membranes and underlays - materials.
- AS/NZS 4201.1: 1994 Pliable building membranes and underlays - Methods of test - Resistance to dry delamination.
- AS/NZS 4201.2: 1994 Pliable building membranes and underlays - Methods of test - Resistance to wet delamination.
- AS/NZS 4201.3: 1994 Pliable building membranes and underlays - Methods of test - Shrinkage.
- AS/NZS 4201.4: 1994 Pliable building membranes and underlays - Methods of test - Resistance to water penetration.
- AS/NZS 4201.6: 1994 Pliable building membranes and underlays - Methods of test - Surface water absorbency.
- NZS 2295: 2006 Pliable, Permeable Building Underlays.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
- The Building Regulations 1992.

### Amendment No. 1, dated 15 August 2008

This Appraisal has been amended to include Steel Framing

### Amendment No. 2, dated 31 January 2012.

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



# BRANZ

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

**The Appraisal is issued only to Marshall Waterproofing NZ/AUS Ltd, and is valid until further notice, subject to the Conditions of Appraisal.**

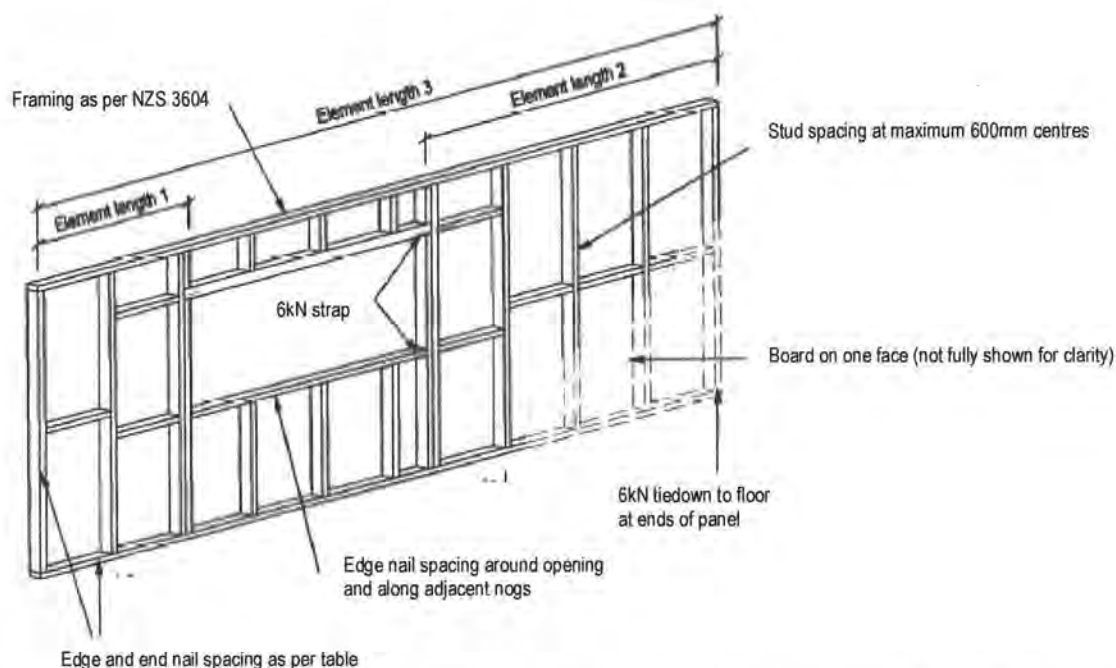
### Conditions of Appraisal

1. This Appraisal:
  - a) relates only to the product as described herein;
  - b) must be read, considered and used in full together with the technical literature;
  - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
  - d) is copyright of BRANZ.
2. Marshall Waterproofing NZ/AUS Ltd:
  - a) continues to have the product reviewed by BRANZ;
  - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
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3. Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
4. BRANZ makes no representation or warranty as to:
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  - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
  - c) any guarantee or warranty offered by Marshall Waterproofing NZ/AUS Ltd.
5. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
6. BRANZ provides no certification, guarantee, indemnity or warranty, to Marshall Waterproofing NZ/AUS Ltd or any third party.

For BRANZ

**P Robertson**  
Chief Executive

Date of issue: 27 July 2007



Type of board	Minimum wall length (mm)	Nail spacing (mm)	Tiedowns (kN)	BU/m wind	BU/m e'quake
9mm Strandboard	600	150	6	105	115
9mm Triboard	600	150	6	110	125
12mm Strandboard	600	150	6	110	125
15mm Triboard	600	150	6	120	130
15mm Triboard	1200	75	12	155	160

#### Notes

1. 12kN tie down only to be used into concrete floor.
2. Nails for fixing board to wall framing to be 40 x 2.8mm diameter galvanised flat head nails.
3. Intermediate nogs are not necessary for 15mm Triboard.
4. The bracing units shown are for board fixed to only one side of the framing.
5. The bracing units shown are for a 2.4m high wall. For walls more than 2.4m high, the bracing units need be reduced on a pro rata basis as per NZS 3604, e.g. for a 3m high wall, the bracing units (wind) for 9mm Strandboard are  $2.4/3 \times 105 = 84$ .

The above information has been developed from tests carried out in the Timber Laboratory of SCION, Rotorua over the period 31 October 2008 to 26 November 2008. The testing was carried out in accordance with the P21 test method and the results were evaluated as per the BRANZ Technical Recommendation No.10, Dec 1991.

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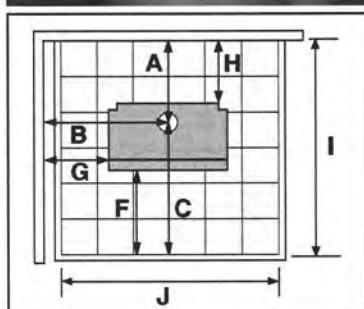
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Date of issue 1 December 2008

## Wood Fire Installation & Owner's Operation Manual



# metrofires

## ECO Freestanding Models

- |                |      |                 |                   |                |
|----------------|------|-----------------|-------------------|----------------|
| • ECO Tiny Ped | • R1 | • Wee Rad       | • ECO Xtreme Ped  | • ECO Euro Rad |
| • ECO Tiny Rad | • R2 | • ECO Wee Ped   | • Xtreme Rad      | • ECO Euro Ped |
|                |      | • ECO Wee Curve | • Xtreme Rad Base |                |

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## **⚠ WARNING!** Important Information

- WE HIGHLY RECOMMEND YOU READ THIS ENTIRE MANUAL AS INCORRECT OPERATION AND/OR LACK OF MAINTENANCE WILL VOID THE WARRANTY
- The appliance and flue-system shall be installed in accordance with AS/NZS 2918 and the appropriate requirements of the relevant building code or codes
- Any modification of the appliance that has not been approved in writing by the testing authority is considered to be in breach of the approval granted for compliance with AS/NZS 4013

## **⚠ CAUTION!** Important Information

- **Mixing of appliance or flue-system components from different sources or modifying the dimensional specification or components may result in hazardous conditions.**
- **Where such action is considered, the manufacturer should be consulted in the first instance.**
- **Do not install a Metro if there is any sign of visible damage**

This Metro wood fire has been tested to and complies with AS/NZS2918:2001 when installed in accordance with this manual. Please ensure you are fully conversant with this relevant standard and the contents of this manual. Correct installation is critical to the safe operation and performance of this wood fire.

### **Please take particular note of the following:**

- It is recommended that Metro's be installed with a Metro ECO flue system which has been developed to enhance the performance of Metro wood fires. Any alternative flue system must have a minimum flue pipe length of 4.2 metres of 150mm diameter flue pipe.
- The 150mm active flue pipe must be fully encased from the ceiling to the underside of the flashing cone at the top of the flue system, (i.e. there must not be any 150mm flue pipe exposed).
- All flue pipe joints must be sealed and riveted. The bottom of the flue pipe in particular **MUST** be fully sealed into the flue outlet of the Metro wood fire.
- In New Zealand, the Metro must be bolted through the floor protector into the floor to comply with the seismic restraint provisions of AS/NZS2918:2001
- All Metro's are extremely heavy, varying in weight from 85kgs up to 150kgs. During the installation process do not lift the appliance by yourself, and take care not to damage the panel coating.

## Assembling your Metro wood fire

All Metro wood fires are packed in a single heavy-duty carton, and bolted to a wooden pallet. Having removed the packaging and located this manual, familiarise yourself with the illustrations on pages 2 & 3, and proceed as detailed below.

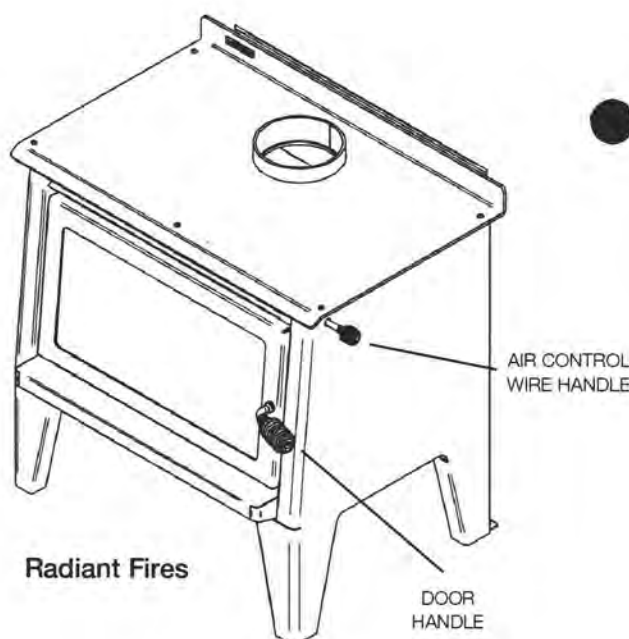
Please note: you should only assemble this wood fire if you are suitably experienced in wood fire assembly and installation.

*Note: The Metro carton shows the model Metro you are about to install, enabling you to select the appropriate model's assembly instructions.*

### **Metro Radiant Fires**

These Metro's are supplied virtually fully assembled. Packed inside the firebox you will find bricks in a cardboard wrapper, a wire door handle and the air control wire handle.

- Remove the two securing bolts located at the base of each rear leg which secure the Metro to the wooden pallet, and carefully "walk" the Metro off the pallet.
- Open the door fully and fit the side bricks to each side of the firebox. Location lugs are fitted to the base and rear of the firebox to retain the side bricks in position. Refer to Diagram 2.
- Attach the door handle to the door latch assembly by screwing it on clockwise.
- Attach the air control wire handle by screwing it on clockwise.





# Assembling your Metro wood fire

## Metro Pedestal Fires

To minimise freight damage, the pedestal base has been packaged inside the firebox. Please note: you should only assemble this wood fire if you are suitably experienced in wood fire assembly and installation.

To safely assemble your Metro, please proceed as follows: -

- Safely remove straps by cutting straps with scissors.
- Lift off carton, turn upside down (use to hold all discarded packaging).
- Lift off the top grille and place somewhere safe. Be careful not to chip the enamel coating.
- Open the door 90 degrees and lift the door off the hinge and place somewhere safe. Be careful not to chip the enamel coating.
- Remove the pedestal packed in a cardboard wrap
- Remove the pedestal mount plate
- Remove pedestal heat shield (Xtreme & Euro models only)
- Remove the side bricks, door handle and the bolt bag
- Remove the 2 tek screws at the base of the inside of the firebox that are fixing the wood fire to the pallet.
- It is recommended that 2 people work together with this step. Grab the underneath top of the firebox door opening with one hand, holding the flue spigot with the other, slowly lift the front of the wood fire all the way back and rest the wood fire on it's rear heat shield on the floor. Remove the packaging pallet.
- Xtreme & Euro models only – Fit the pedestal heat shield over the 4 bolts as shown in Diagram 1, with the open edge facing the front of the Metro (up)
- Position the pedestal with its front facing over the 4 bolts and fit the washers and nuts supplied, check to ensure the pedestal is correctly aligned and securely tighten the nuts
- It is recommended that 2 people work together with this step. Grab the flue spigot with one hand and the other hand underneath the top of the firebox door opening, lift upwards standing the wood fire onto it's pedestal.
- Re-fit the door and top grille
- Open the door fully and fit the side bricks to each side of the fire box. Location lugs are fitted to the base and rear of the firebox to retain the side bricks in position. Refer to Diagram 2.

*Note: The ECO Tiny Ped model utilises a slightly different pedestal to that detailed in Diagram 1. The rear panel on the pedestal must be turned around with the return fold facing back the opposite way.*

## All Metro Models

Check to ensure the top baffle is in its correct position in the top chamber of the firebox. It should be resting on four support lugs (two on each side of the firebox). The baffle must be hard back against the rear of the firebox with the "promet extension" (white board) or return front steel edge of the baffle facing forward as illustrated in Diagram 2.

Diagram 1

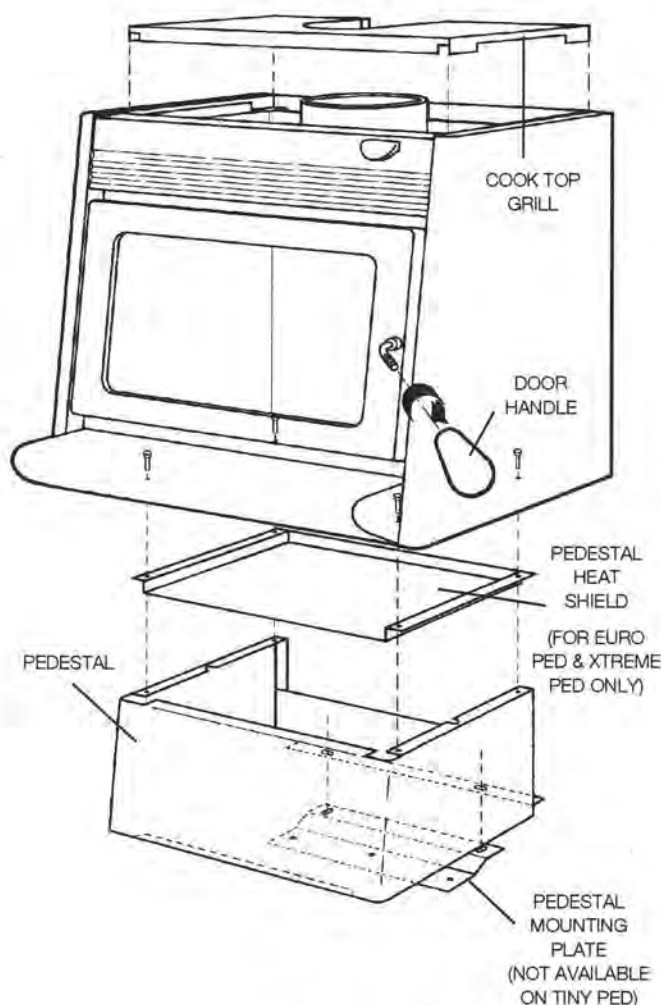
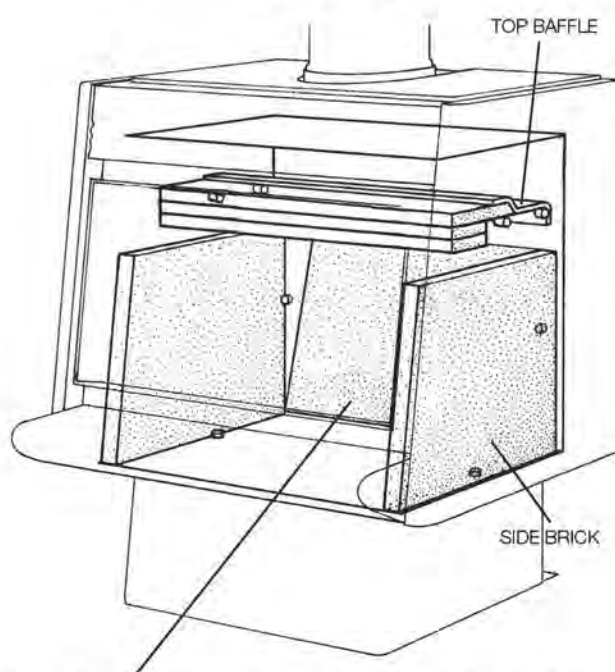


Diagram 2



*Note: The ECO Wee Ped has an additional "3rd brick" which fits to the rear face of the firebox, locating under/into a bracket provided in the middle of the firebox's rear face, under the top baffle.*

## Direct vent option

The ECO Xtreme Ped, ECO Euro Ped, ECO Wee Curve and ECO Euro Rad models have the option to be installed as "Direct Vent" appliances, thereby drawing all primary and secondary combustion air from outside the home. Once connected, this direct venting option ensures the air that is heated within the home, stays in the home improving efficiency and reducing fuel usage.

*Note: Connection of the Metro's direct vent inlet to outside the home is optional. If not connected these Direct Vent models still offer greatly improved performance and lower emissions due to the unique pre-heated air path for all primary and secondary combustion air that these models consume.*

### Direct Vent Options

Three "Direct Vent kits" are available to connect the ECO DV Metro to an air supply from outside the living environment of the home. The kits available include;

- DV WALL KIT – For installations when the Metro is installed against an outside wall.
- DV FLOOR KIT– For installations onto a floor which has a free air supply below it.
- DV CEILING KIT– For installations when the Metro is installed against an internal wall and on a concrete floor

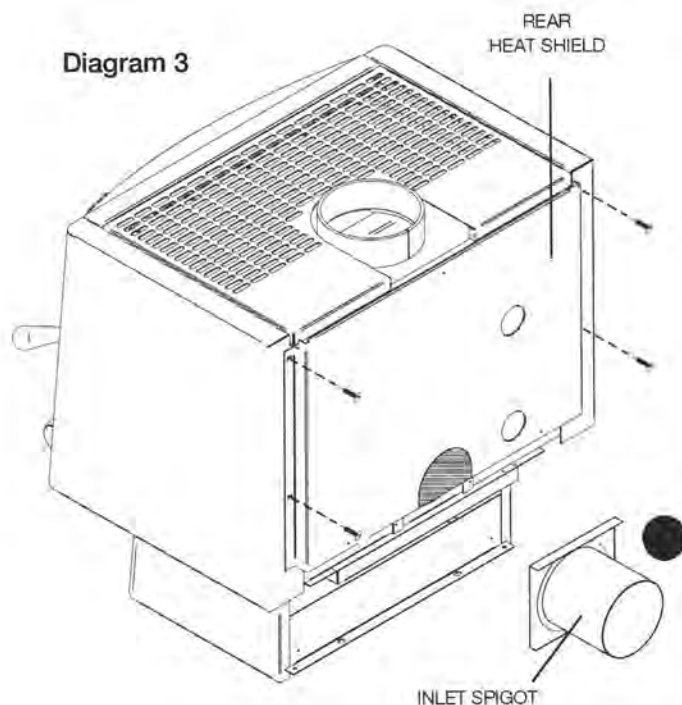
*(DV Ceiling kit goes into the wall cavity, then up inside the wall into the ceiling cavity, where the air supply is drawn from)*

### Installing the Direct Vent Option

Remove the rear heatshield from the Metro wood fire by unscrewing the four self tapping screws illustrated in Diagram 3 and proceed as follows;

1. Remove the section of panel illustrated with a "hatch", from the mid/bottom section of the rear heatshield. This section to be removed has been pre-punched and only requires a few small tabs to be cut.
2. Take the "inlet spigot" supplied in the "Direct Vent kit" and slide it fully down into position into the brackets provided on the rear of the firebox.
3. Replace the Metro's rear heatshield with the four screws previously removed.

The Metro wood fire is now ready for installation once you have pre-fitted the Direct Vent kit into the wall or floor. Full instructions for this procedure are supplied with the Direct Vent kits.



## Floor protector size, construction & fitting

Pioneer manufacture an extensive range of what Pioneer term "Ash Floor Protectors" which comply with the minimum floor protector requirement of AS/NZS 2918:2001, and can be installed with any freestanding Metro wood fire.

Metro freestanding wood fires do not require an insulated floor protector as they comply with the minimum floor protector requirements of AS/NZS 2918:2001. These minimum floor protector requirements are;

- They must be of adequate size to give appropriate wall, rear and front clearances/projections as detailed below and in the chart illustrated on page 6. Note;
- The floor protector must extend 200mm horizontally to the rear and each side directly below the door opening, and 300mm forward of the door opening.
- The upper surface of the floor protector must be made of non combustible material.
- A suitable floor protector for a Metro freestanding wood fire is therefore any non-combustible material which could include;
- Ceramic tiles with grouted joints fixed directly to timber flooring.
- A sheet of toughened glass, panel steel etc. laid directly onto a wooden or other combustible floor.

*Note: If being installed onto a concrete or non-combustible floor a floor protector is not required.*

### Metro Radiant Series

Lift the Metro onto the floor protector and using a tape measure to ensure that the minimum wall clearances and front floor protector projections as detailed in the chart on page 6 are met or exceeded. Once the Metro's location on the floor protector is established and if the installation is in New Zealand, seismic restraint is required.

Using masonry anchors if the floor protector is on a concrete floor or coach bolts if a wooden floor, secure through the holes provided at the base, behind both rear legs.

*Note: the anchors must pass through the floor protector and securely anchor the Metro to the floor.*

### Metro Pedestal Series

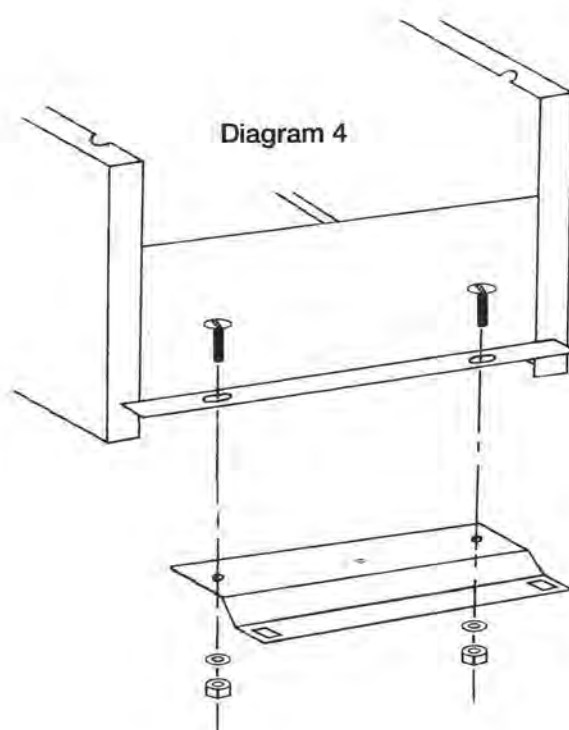
These models (excluding the ECO Tiny Ped) are supplied with a "pedestal mounting plate". Refer to Diagram 1 on page 3. Place the mounting plate on the floor protector with the two slots at the rear. A flue centre hole is marked on this plate and a chart is attached enabling you to locate the position of the Metro without placing the Metro onto the floor protector. Once the location of this mounting plate is established, secure it through the floor protector into the floor using a minimum of two of the four holes provided, diagonally opposite each other. Suitable anchors are as detailed below left for the Metro Radiant Series.

### Alternative Metro Mount Plate Installation

For installations when it is desirable to position the assembled Metro prior to bolting down, it is possible to "invert" the mounting plate and use it as a means of bolting the Metro directly to the floor, through the floor protector. Refer to Diagram 4 and note;

1. Rotate the mount plate 180 degrees so the label faces downwards.
2. Remove the two "slide nuts" from the rear face of the mount plate.
3. Secure the mount plate to the pedestal with 6mm bolts through holes provided as illustrated.

You can then bolt down the Metro through the two rectangular slots in the rear edge of the mount plate. These slots are more accessible than bolting direct through the pedestal, and it also eliminates the need for spacers.



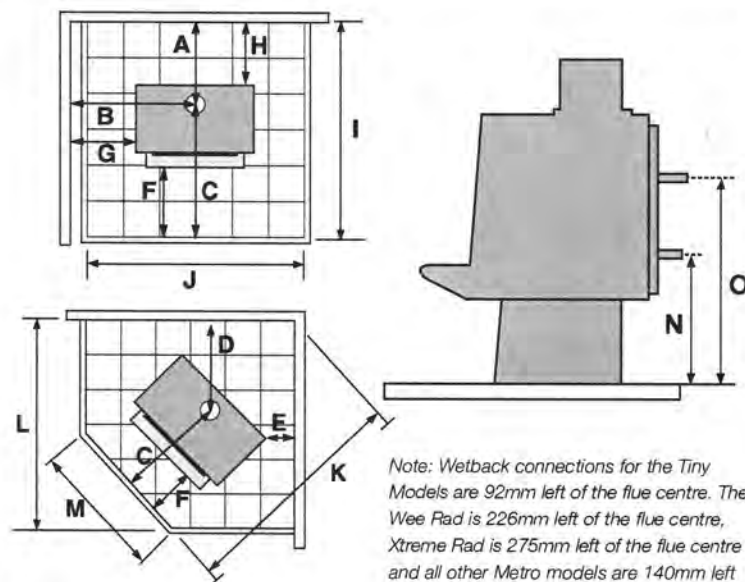
## Clearance chart

Measurements listed below are the minimum required, stated in millimetres. Measurements are taken from the following reference points as illustrated:

- From the nearest combustible wall or surface (A, B, D, E, G, H)
- From the Metro's flue centre (A, B, C, D)
- From the outermost point of the Metro's cabinet construction (E, F, G, H)
- To the edge of the ash floor protectors non-combustible surface (C, F, I, J, K, L, M)

The Metro ECO Euro Ped & ECO Xtreme Ped installed with a "Pioneer Double Flue Shield with side extensions fitted" reduces minimum corner clearance E from 170mm to 110mm. In this situation use the LTD Euro Ped chart for ECO Euro Ped measurements E, D, K & L.

*Note: If you are installing any of the above wood fires onto a Pioneer 1150 corner floor protector the flue shield side extensions MUST be fitted. The Metro Wee Rad corner clearance can be reduced by fitting specific Wee Rad corner shields. See chart below for clearances.*



## Metro installation clearances (Minimum clearances shown are in mm, with a Pioneer double flue shield fitted)

Model	A	B	C	D	E	F	G	H	I	J	K	L	M
ECO Tiny Rad	225	552	580	420	150	200	300	75	805	650	1165	925	250
ECO Tiny Ped	210	430	580	290	25	200	185	60	790	650	990	875	250
R1	243	774	586	554	280	244	530	100	829	825	1370	1118	425
R2	246	858	626	582	275	235	570	100	872	905	1449	1203	505
Wee Rad	243	568	580	455	150	230	260	100	823	825	1224	1015	425
Wee Rad (Corner shields fitted)	243	568	580	425	120	230	260	100	823	825	1180	985	425
ECO Wee Ped	260	595	580	385	85	200	300	110	840	825	1120	950	425
ECO Wee Curve	300	555	580	405	100	200	250	150	880	825	1150	975	425
Xtreme Rad	251	650	630	458	100	227	280	100	881	907	1277	1077	507
Xtreme Rad Base	251	650	630	458	100	227	280	100	881	907	1277	1077	507
ECO Xtreme Ped	230	585	625	495	170	200	250	80	855	905	1325	1120	507
ECO Euro Rad	250	625	625	435	80	200	250	100	875	905	1240	1065	505
ECO Euro Ped	230	585	625	495	170	200	250	80	855	905	1325	1120	505

## Metro specifications (Measurements shown are in mm)

Model	WIDTH	DEPTH	HEIGHT	N	O
ECO Tiny Rad	505	530	665	280	470
ECO Tiny Ped	490	530	665	280	470
R1	488	485	668	N/A	N/A
R2	575	537	690	N/A	N/A
Wee Rad	615	498	688	295	485
ECO Wee Ped	590	530	665	295	485
ECO Wee Curve	607	530	665	280	470
Xtreme Rad	740	554	743	349	539
Xtreme Rad Base	740	554	743	349	539
ECO Xtreme Ped	670	575	715	325	515
ECO Euro Rad	750	575	745	338	528
ECO Euro Ped	670	575	715	325	515
ECO Euro Trad	670	575	715	325	515



### **WARNING!** Important Information

- Do not connect to an unvented hot water system.
- Install in accordance with AS 3500.4.1 or NZS 4603 and the appropriate requirements of the relevant building code or codes.

### Wetbacks

If the home is in a classified "clean air zone", and dependent on requirements/restrictions which may be imposed by your local council, you may or may not be able to install a water heating device. If in doubt consult your local Metro retailer. Only Pioneer's cast jacket wetback system should be fitted to a Metro; alternative wetbacks will void the Metro's emission approvals and may seriously affect the performance of the appliance and void the owner's warranty.

*Note: Wetback systems are not suitable for use in locations where the water supply has lime content, lime build up inside the coil will eventually block the coil causing the wetback to fail.*

The wetback is fitted to the inside rear of the firebox, with the connection pipe heights illustrated and detailed on the previous page 6. Please note:

- Wetback connections for the Tiny models are 92mm left of the flue centre. The Wee Rad is 226mm and Xtreme Rad is 275mm left of the flue centre. All other Metro models are 140mm left of the flue centre, facing the Metro/wall; the return pipe connection is directly above the inlet connection.
- The Wee Rad, Xtreme Rad & Xtreme Rad Base wetback position is to the outside left hand side wall. See specific instruction in the 'Rad Wetback' box for these appliances.
- Reduced height pedestals are available for certain models to reduce wetback connection heights.

- It is recommended the return pipe has a minimum rise of 1 in 12; performance will reduce as the distance to the storage cylinder increases.

To fit the wetback proceed as follows: (Unless Wee or Xtreme Rad models, then please follow instructions in the wetback box)

1. Remove the rear panel of the Metro by removing the four pozi drive screws. Remove the two pre-punched knockouts from this panel.
2. Two further knockouts will be visible on the inner rear heatshield; remove these also. Once these are removed 6mm nuts will be visible through the knockout holes.
3. Open the Metro's door and locate two bolts securing the pressed washers which are visible on the left hand side of the firebox for both inlet and outlet connection points.
4. A further three bolt heads will also be visible on the inside rear wall of the firebox; these are threaded into the 6mm thick firebox. Remove all three.
5. Using the tube of sealant supplied with the wetback, apply a liberal bead of sealant around both the two connection pipes and also the outer circumference of the wetback which will face the inside rear wall of the firebox. This will completely seal the wetback to the inside rear wall of the fire on installation.
6. Fit the wetback into the firebox and carefully pass the connection pipes through the holes in the rear of the firebox. Securely attach the wetback using the three bolts previously removed from the rear face of the firebox, fitting them through the slots provided in the wetback's jacket.
7. The wetback is now ready for connection to the storage cylinder by a registered plumber.

## Flue installation

It is recommended that all Metro freestanding wood fires be installed with the energy efficient Metro ECO flue system which comes complete with a detailed installation manual. This installation manual must be presented with your application to gain consent with your local council.

A copy of the installation manual can be downloaded from [www.metrofires.co.nz](http://www.metrofires.co.nz), under Flue Systems, or a copy can be obtained from your Metro retailer. Any alternative flue system must comply with and be installed as detailed in AS/NZS 2918:2001, and a copy of the installation manual must also be presented with your application to gain consent with your local council.

All Metro's require a 150mm diameter flue. Please note:

- All joints in the flue pipe must be sealed with Pioneer fire cement (or similar) and riveted.



- The base of the flue pipe must be sealed into the outlet of the Metro's flue stub. This is critical for optimum operation.
- Refer "Important Information" on page 2.
- The flue systems 150mm diameter flue pipe must terminate a minimum of 4.6 metres above the top surface of the floor protector.

### Pioneer Flueshield

All Metro's have been tested with a Pioneer double flue mounted shield. For the Metro to be installed with minimal clearances as the clearance chart states, only the Pioneer double mounted flue shield can be used. All other flue shields will invalidate the installation.

The Metro can be installed without a flue shield, if this is the case it needs to be installed as AS/NZS 2918:2001 stipulates.

## **WARNING!** Important Information

- WE HIGHLY RECOMMEND YOU READ THIS ENTIRE MANUAL AS INCORRECT OPERATION AND/OR LACK OF MAINTENANCE WILL VOID THE WARRANTY
- Any modification of the appliance that has not been approved in writing by the testing authority is considered as breaching AS/NZS 4013
- Do not use flammable liquids or aerosols in the vicinity of this appliance when it is operating
- Never operate your Metro with the top grill removed
- Do not use flammable liquids or aerosols to start or rekindle the fire
- Never operate your Metro with the door ajar, except on initial start up
- Do not store fuel within the Metro's specified installation clearances
- Do not dry clothes on or near this appliance
- Open the air control before opening the Metro's door

## **CAUTION!** Important Information

- This appliance should be maintained & operated at all times in accordance with this instruction manual
- This appliance should not be operated with cracked door glass, over worn, faulty or missing door seals
- Do not use driftwood, treated or unseasoned (wet) fuel, the use of most types of preservative treated wood as fuel can be hazardous
- Do not empty ash into a combustible container

## Congratulations on the purchase of your Metro wood fire

This low-emission, slow combustion appliance is designed to give you many years of warmth and service, subject to the following key factors. These key factors, if not adhered to are the major causes of unsafe installation, poor performance and flue blockages and product failure.

1. Your Metro wood fire must be installed correctly. Metro recommend a competent and suitably qualified installer.
2. The only fuel to be used in this appliance shall be wood that meets the following criteria.
  - Less than 25% moisture,
  - Has not been treated with preservatives or impregnated with chemicals or glue,
  - Is not chipboard, particle board, or laminated board, and
  - Is not painted, stained or oiled
3. The appliance shall be operated at all times in accordance with the "Installation and Operating Instructions" supplied with each appliance.
4. Metro's should only be installed with Metro ECO Flue Systems.
5. Coal must not be used as a fuel.

Please also note the following important points:

- In New Zealand a building consent is required from your local building authority. The homeowner is responsible for obtaining this consent.
- As correct installation is critical to the performance and safe operation of your Metro, it is recommended your Metro be installed by a registered installer or a person suitably qualified in the installation of wood fires. Your Metro retailer will be able to arrange professional installation for you.
- During the very first fire your Metro will give off an odour and fumes as the firebox paint cures. Do not be alarmed; open all windows and externally opening doors in that room and close any internally opening doors. This curing

process will last for approximately one hour and is likely to happen this one time.

- Properly seasoned (dry) timber is necessary for the Metro to operate efficiently; firewood that contains a high moisture content will result in flue pipe blockages and reduce the heat output.

*Note: Softwood usually takes 12 months to season - Hardwood can take up to 24 months to season - Wood must be stored in a location that enables air circulation. Unseasoned wood stored in a closed woodshed without air circulation will still be unseasoned 12 months later.*

- It is critical that the fire not be operated with over worn, faulty or missing door seals. Door seals will harden over time and become over-worn (3-4 year's) this will cause air to leak into the fire, causing the appliance to 'over fire'.
- It is critical that the fire not be operated with over worn, faulty or missing bricks, baffle plate, baffle extension (white board on the baffle plate)
- It is critical that the fire not be operated with cracked, or broken door glass.

Please note, the above 3 points require regular inspection/maintenance (every time the ash bed is cleaned out, generally 3-5 times a season) and if not maintained will void the firebox warranty. Please ensure you keep your proof of purchase/receipt on any parts you buy.

- For optimum performance fuel must be loaded so the logs lay "front to rear" in preference to laying across the width of the firebox. Spaces should be left between the logs to enable oxygen to get to as much of the surface of the fuel as possible.
- A small hot fire loaded frequently is more efficient than a large fire burning on a low setting.
- Your Metro is covered by a full unconditional 12 month warranty on replacement parts, and a 10 year firebox warranty. See page 15 for warranty conditions.

## Where to install a Metro wood fire in your home

Wood fires are usually installed in the main living area, which is the section of the home that is usually kept the warmest, being the area in the home most frequently occupied. However, before deciding on the best location for your Metro wood fire you may wish to consider:

- Water heating. If you are intending to have a wetback it is important that the wood fire is as close as practically possible to the water storage cylinder.
- Split level homes are best heated when the wood fire is installed on the lower level, as the heated air will rise to the higher levels.
- Building construction is another consideration. Specified clearances from walls, curtains etc must be maintained

and you need to ensure no structural beams or internal gutters etc are directly above your preferred site. If you have a two storey dwelling you need to consider the second storey to ensure you don't have the flue directly outside a second storey window.

Generally, you can install your Metro in your home anywhere that suits you; Pioneer offer various fan systems to transfer heat to sections of the home that are not heated sufficiently. It is necessary if using a fan system that the Metro you have purchased has sufficient output to heat the total area you wish to heat. Your Metro retailer or installer will be able to advise if you are uncertain.

## Optional wetbacks

If your home is in a classified "clean air zone", and dependent on requirements/restrictions which may be imposed by your local territorial authority (council) you may or may not be able to install a water heating device. If in doubt consult your local Metro retailer.

Water heating is another key feature of your Metro wood fire, and on offer are a number of options depending on the model you have purchased. Metro offer a 2kW wetback suitable for the Tiny Rad and Tiny Ped. All other ECO Metro's can be fitted with the ECO wetback or Rad wetback in Wee Rad, Xtreme Rad & Xtreme Rad Base. R1 and R2 models cannot be fitted with a wetback.

*Note: Wetbacks are not suitable for use in locations where the water supply has lime content. Lime build up inside the coil will eventually block the coil causing the wetback to fail.*

Other considerations are:

- Distance from your Metro to the storage cylinder will affect the amount of hot water produced.
- Your climate & the manner in which you will 'fire' your Metro.

### Cost Savings

Wetbacks can enable substantial power savings, dependent on the climate in the area in which you live. If you live in a cold climate you are likely to use your Metro for many months of the year, in which case a Pioneer wetback will reduce or even eliminate your water heating costs over those months. If however you live in a warmer climate and use your Metro for only a few hours a day over the colder months, electricity savings will be considerably less.

### Water Pressure

A common misconception is that you must have a low-pressure system to have a wetback; this is not true. You must have a "vented" system and high-pressure cylinders are usually not vented. However you can install an "indirect" cylinder which contains a secondary coil inside the storage cylinder, enabling you to have a wetback while retaining a high-pressure system.

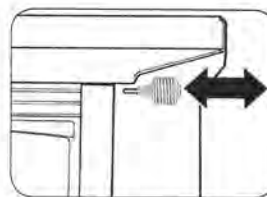


## Getting to know your Metro wood fire

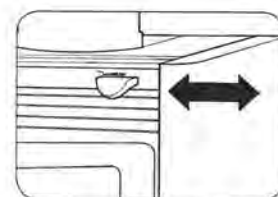
Operating your Metro wood fire is simple and you will quickly learn how to get the best from it. First take a minute to familiarise yourself with your new Metro.

- Raise the door handle anticlockwise until the latch releases, then slowly pull the door open. You will note that if you let the door go before it is at 90° to the appliance, it will fall closed. This is a safety feature that ensures the door cannot fall open if it is not latched securely. For the door to remain open, you must open it fully.
- There is a single air control making your Metro easy to adjust. This control moves from left to right, which is "low to high".

The Metro Radiant Series have a wire air control handle located at the upper right hand side of the appliance. Simply pull out to increase burn rate or push in to reduce burn rate.



RADIANT SERIES AIR CONTROL



ALL OTHER SERIES AIR CONTROL

All other model Metro's have an air control knob located on the upper front of the appliance.

Slide this control knob gently from right to left until you reach a stop. This is a pre-set "low" position. Your Metro must not be operated at a lower burn rate than this pre-set low allows.

## Operating your Metro wood fire

If your Metro has only been installed within the past few days, the fire cement seal at the base of the flue will not be fully cured. To ensure the cement sets without blistering it is recommended you burn 2-3 sheets of loosely crumpled newspaper at a time, approximately once every hour over a 6-8 hour period.

During the very first fire your Metro will give off an odour and fumes as the firebox paint cures. Do not be alarmed. Open all windows and externally opening doors in that room and close any internally opening doors. This curing process will last for approximately one hour and is likely to happen this one time.

### Start up

Place a quantity of loosely crumpled newspaper on the base of the firebox until it is approximately 50% full of paper, or place firelighters on the base of the firebox. Add dry kindling and move the air control knob fully to the right, being the "full open" position.

Light the paper at two or three locations across the front of the door opening and leave the door slightly ajar resting on the latch pin if necessary for a few minutes while the fire establishes. Once the kindling is burning well, open the door and add 2-3 small logs at a time until you have a well-established fire. Usually this will take approximately 30 minutes, during which time the air control should be set on "high" and the door should be closed, except for the initial few minutes and when fuel is being added.

### Normal operation

Once the fire is well established, regulate the air control to achieve the desired burn rate and heat output. As you move the air control to the right, burn rate, firebox temperature and heat output will increase, if you move the control to the left they will decrease.

### Note:

- Always open the air control fully prior to opening the door, then open the door slowly.
- When loading logs, place them end-on, "front to back"; air spaces should be left between the logs to enable oxygen to get to as much of the surface of the fuel as possible.
- Every time you refuel, leave the air control on "high" for a minimum of 20-25 minutes.
- Never use the door to force wood into the firebox, as this is likely to break the glass.

### Cooking

All Metro's are designed to enable cooking of soups, stews and casseroles etc, and your Metro will easily boil a flat bottom stainless steel kettle. The Radiant Series have a dedicated cooking top enabling large pots to be placed on the cook top, while all other models have a lift-off grille.

*Note: Metro's supplied with a lift-off top grille have this feature to enable the grille to be removed for cleaning if you have a spill. The lift-off top grille must be left on when cooking, because if removed the wall temperatures next to the appliance may become excessive and the top of the firebox is generally too hot to cook on directly. Please note: Although very durable, Metro's in a satin stainless look are not recommended to be used to cook on.*

## Cleaning and maintenance for your Metro wood fire

The Radiant Series and the Wee & Xtreme Ped painted wood fires are coated with "Pioneer Metallic Black" high temperature paint and will require periodic repainting.

All other model Metro's are coated with either;

- Vitreous enamel is extremely durable and designed to last the life of the appliance. As vitreous enamel is glass, a solid or heavy object dropped or banged against a panel could chip the enamel surface.
- Selected model Metro's are offered in a stainless steel look. Although very durable it is not recommended that Metro's with this finish be used to cook on.

All model Metro's can be cleaned with a damp cloth when the appliance is not operating.

### Door glass

Providing your fuel is properly seasoned, under normal operating conditions the air-wash design of the Metro's firebox keep the door glass clear. If the glass requires cleaning you may use either a razor blade scraper or an oven cleaner.

If your door glass breaks it must be replaced with 5mm thick ceramic glass which is available from your local Metro retailer.

### Door seals

Over time, usually 3-4 years, the door and glass seals will become hard and cause air to leak into the firebox, causing the appliance to 'over fire'. Your Metro retailer stocks replacement woven fibreglass door and glass seals, which need replacing when they become hard and over worn.

The door of your Metro is easily removed. Hold it in both hands and lift the hinge end of the door up and over the top hinge pin, then lower the door from the bottom hinge pin.

### Side bricks

Hair-line cracks are not uncommon and are a result of the intense heat within the Metro's firebox, coupled with mechanical damage caused by accidental impact when fuel is being loaded. However if the side bricks become cracked to the extent that they start to break up, they must be replaced.

### Door adjustment

Provision is available on both sides of the door to enable adjustment.

To adjust the hinge end of the door, open the door fully, loosen the top hinge nut and slightly lift the latch end of the door; you will see the hinge assembly move back 1-2mm which will usually be sufficient. Retighten, then repeat by loosening the lower hinge nut, this time applying a slight downwards pressure onto the door to move the lower hinge assembly back a similar distance, then retighten.

The door latch is also adjustable, as the latch pin on the right side of the firebox is fitted through a slot which enables the latch pin to be loosened, moved back and re-tightened.

### Ash removal

Over a period of time ash will build up in the base of the Metro's firebox and require removal. The time this build-up takes depends on the density and cleanliness of your fuel.

To remove the excess ash your Metro should not be operating.

- Open the door, and using a hearth shovel or similar, empty the excess ash directly into a steel or non-combustible container.
- If the ash is not disposed of immediately, be careful where you store it, as the ash can retain heat for many days and become a fire hazard.
- You must leave a bed of ash in the base of the firebox approximately 10mm deep; this insulates the base of the firebox and improves combustion.

### Top baffle

This is a 'sacrificial' part of the firebox and should be checked monthly. Usually only the "Promet" (white board) front/underneath section needs to be replaced when it starts to disintegrate.

*Note: Cracks in the promet are not uncommon and have no adverse effect on the operation of your Metro. These cracks are the result of intense heat coupled with expansion and contraction.*

*Note: Burning wood which is not properly seasoned, i.e. to 25% moisture content or more, will expedite this disintegration.*

### Flue systems

Should be checked annually, particularly the bottom end of the lower flue section at its rear lock formed joint. If deterioration is noticed contact your Metro retailer or installer.

The flue pipe should also be swept a minimum of once a year, or as required during the winter season. If smoke enters the room when you open the Metro's door this usually indicates the flue pipe is becoming restricted and needs cleaning. The frequency of flue pipe cleans depends on many factors, with the main variables being:

- The seasoning of the wood. If not properly seasoned you will require frequent flue pipe cleans.
- The density of the wood. Softwoods generally result in more creosote build-up in the flue pipe. Pioneer produce a telescopic fluebrush system which is available from your Metro retailer.

To clean the flue pipe of your Metro, proceed as follows:-

- Open the Metro's door fully, reach inside with the palm of your hand face-up and extended, lift the top baffle approximately 20mm, then lift it forward out through the door opening, placing it on a sheet of newspaper you have placed on the front of the floor protector.
- Close the door and slide the air control to the left.
- Once on the roof, remove the cowl from the top of flue system and sweep the flue pipe using a 150mm-diameter flue pipe brush as detailed in the instructions provided with the fluebrush.
- Once the flue pipe is clear, clean and refit the cowl. Remove the excess soot which has fallen into the firebox, leaving a layer of ash 10mm deep on the base of the firebox, then refit the top baffle.

*Note: the baffle must be fitted so its rear is touching the back of the firebox; if uncertain refer to page 3 in the installation section at the rear of this manual, which shows illustrations of the baffle location.*

## Troubleshooting your Metro wood fire

If your Metro is installed correctly, your fuel is dry and you operate it correctly you will find it to be a pleasure to use. Metro's many years of experience within the wood heating industry has shown that 99% of customer dissatisfaction is due to:

- unseasoned fuel
  - faulty installation
  - operational error
- or a combination of the above 3 points

The following may be of assistance if you are experiencing any of these problems.

### **SMOKE ENTERS THE ROOM WHEN THE METRO'S DOOR IS AJAR: (POSSIBLE REASONS AND SOLUTIONS)**

#### **Check flue pipe joints:**

If the flue pipe joints are not sealed correctly, smoke will not draft up the flue pipe as well as it should. The flue pipe joint connecting into the flue spigot on top of the Metro is most critical, if this is not sealed correctly, smoke will enter the room when the door is ajar. To check this joint is sealed correctly, run a match or lighter flame around the joint, if the flame is sucked into the spigot, then it's not sealed. This check needs to be done when the fire is not going, be sure to check the rear of the joint as that is where the biggest gap is, due to the seam in the flue pipe, which is always on the rear of the flue pipe.

#### **Ensure the fuel you are using is correctly seasoned:**

If you are burning unseasoned fuel (wet), the fire will cause nothing but problems. The Metro won't deliver much heat, it will be lazy, it will smoke into the room when the door is ajar, and the door glass will run black.

#### **Flue pipe length is too short:**

Add more flue pipe as the longer the flue system, better the draft of smoke up the flue pipe. Please note, if you did not purchase the Metro ECO Flue System, you will not have the ECO Cowl which increases draft. We highly recommend the Metro ECO Cowl is fitted, this will increase the draft, if you already have an ECO Cowl and smoke is still entering the room, add another 600mm length of flue pipe.

#### **Downdraft:**

If you have checked all of the above and the fire is still smoking into the room, it's possible there may be a down draft issue. Down draft is something that is not fixed with a single fix, it's purely trial and error, things to try: -

- "H" Cowl, designed purely for downdraft issues, but if you have an ECO Cowl fitted as standard, you will also need to add another 600mm of flue pipe to compensate as the H Cowl is shorter in length
- Directional Cowl, designed for high wind areas

#### **Air control setting:**

Ensure the air control setting is on high before opening the door to reload, this will increase the draft of smoke up the flue pipe.

### **If your Metro didn't smoke, but its starting too and is getting worse:**

The pipe is in need of a clean. It is recommended that the flue pipe to be cleaned every season, however if you are burning the fire on low a lot, or are using unseasoned fuel, flue pipe cleans will be required more frequently.

#### **Correct operation:**

Modern day wood fires need to be operated hard and fast, more so than low and lazy to ensure the firebox and flue pipe runs hot and efficient. If the fire and flue pipe is up to temperature it will perform extremely well, the smoke will draw up the flue pipe with ease, and the fire will produce good amounts of heat, if the fire is operated on low a lot of the time, the door glass will run black, the flue pipe will tend block up more frequent, and the fire will end up smoking into the room when reloading. It's better to have a small fire running hard and fast, rather than a big fire running low and lazy.

### **OTHER ISSUES THAT YOU MAY EXPERIENCE**

#### **I can smell smoke in the room after a low burn cycle**

The smell is creosote that will be seeping through the flue pipe joints or out of the flue spigot onto an external surface, thus creating the smell in your room. The cause will be either unseasoned fuel or incorrect operation on low burn cycles. Creosote is very corrosive and excessive buildups will result in the flue pipe and potentially the flue spigot and upper burn chamber failing. Failure of flue pipe or firebox due to creosote build up is not covered under warranty as creosote build up is only possible from either unseasoned fuel or incorrect operation.

#### **The Metro is noisy as it heats up and cools down**

There will always be some expansion and contraction noise as the Metro heats and cools, however this can usually be reduced substantially by loosening three nuts at the rear of the appliance. To remedy, locate the 25mm deep cavity at the rear of your Metro between the "rear panel" and the "inner rear heat shield", you will see a 6mm nut and two 6mm bolt heads in this cavity. Using a 10mm ring or open ended spanner, loosen all three so they are finger tight only.

On all non-DV model Metro's the air channel that allows the combustion air to enter the fire is fitted to the top underneath of the door opening, it's fitted with two M6 bolts, slightly loosen these bolts.

*Note: Is not applicable on the ECO DV models.*

#### **The Metro won't turn down as much as it did**

The door itself may need readjusting, the hinge and latch is slotted and allows for movement, loosen the hinge and move back a few mm, this will make the door seal tighter which will stop air leaking into the fire. The door and glass seals may be in need of replacing, which is generally needed every 3-4 years. Refer page 11, Door adjustment.



## Warranty details for your Metro wood fire



Metro wood fires are manufactured in New Zealand, using the highest quality of materials, workmanship and the latest manufacturing techniques, which is why we offer a full 10 year firebox warranty and 1 year parts warranty for peace of mind.

### Metro Warranty

#### (NZ Consumer laws apply to this warranty)

Pioneer Manufacturing Limited (Pioneer) warrants the steel firebox against defective materials and workmanship which would render it unfit for normal domestic use, from the date of purchase by the original consumer, for a period of 10 years.

Components including panel coating, door retainers, door seals, glass, trim, baffle & bricks are warranted for a period of 1 year from the date of original purchase for domestic use against defective materials and workmanship.

All associated accessories including, but not limited to, fans, flue systems, flue shields, wetbacks, tool sets, ash pots etc, covered by a 1 year warranty against defective materials and workmanship.

It is recommended, but not a condition of this warranty, that a full service/inspection of the Metro wood fire be carried out at the end of each winter season.

#### Warranty Conditions:

- The Metro wood fire must be installed, operated and maintained strictly in accordance with the building code and this installation and operation manual.
- The Metro wood fire must be installed and used in a domestic application.
- This warranty covers appliance like for like replacement or repair at the manufacturer's discretion but excludes freight, travel, installation, labour and/or any other associated costs.
- Pioneer or their agents are not liable for any loss or expense direct or indirect arising from the failure of any part or operation of the appliance.
- Operation of this appliance in violation of the warnings in this operation and installation manual will void this warranty.
- Your Metro wood fire must be regularly maintained and we recommended it is also serviced annually. Proof of servicing may be required. If a wood fire is not regularly maintained and serviced, the life span will be reduced. If your Metro wood fire has been neglected, by not being regularly maintained and serviced, warranty may be declined.

- It is critical that the fire not be operated with over worn, faulty or missing door seals. Door seals will harden over time and become over-worn (3-4 year's) this will cause air to leak into the fire, causing the appliance to 'over fire'.
- It is critical that the fire not be operated with over worn, faulty or missing bricks, baffle plate, baffle extension (white board on the baffle plate)
- It is critical that the fire not be operated with cracked, or broken door glass.

Please note, the above 3 points require regular inspection/maintenance (every time the ash bed is cleaned out, generally 3-5 times a season) and if not maintained will void the firebox warranty. Please ensure you keep your proof of purchase/receipt on any parts you buy.

- A claim under this warranty should be directed to the retailer who supplied the Metro wood fire. If this is not possible write direct to the manufacturer stating details of fault, serial number of your Metro, date and proof of purchase and name of retailer where the Metro was purchased.

#### Warranty Exclusions:

##### This manufacturer's warranty does not cover:

- Service calls which are not related to any defect in the product (i.e. operational, installation or fuel issues). The cost of a service call will be charged if the problem is not found to be a product fault.
- Defects caused by factors other than normal domestic use or use in accordance with the product's operation manual.
- Defects caused through the product being operated in an "over-fired" manner resulting in sections of the firebox operating excessively hot to the point that sections glow red. (Note – This will result in distortion of the firebox)
- Defects to the product caused by accident, neglect, misuse or act of God.
- The cost of repairs carried out by non-authorized repairers or the cost of correcting such unauthorised repairs.
- Required maintenance as set out in this manual.

Service under this manufacturer's warranty must be provided by a repairer authorised by Pioneer Manufacturing Ltd. Such service shall be provided during normal business hours.

**⚠ IMPORTANT!** Complete and retain these details at time of purchase:

Purchase Date

Serial Number

Model

Colour

Retailer





### Metro Wood Fire Specifications

Metro have a specifications brochure available which details relevant compliance data for every model. This brochure also details clearances and specifications for all models, which is generally required when applying for a building consent. See your Metro retailer to obtain a copy, or visit [www.metrofires.co.nz](http://www.metrofires.co.nz)

### Metro Accessories

Pioneer offer a range of heating accessories designed to compliment the styling of your Metro wood fire. See the opposite page for some of our range of heating accessories.

This range of accessories includes floor protectors, heat transfer ducts, fire guards, tool sets, flue brushes and more. For further details ask your Metro retailer for a copy of the Pioneer heating accessories brochure, or visit [www.metrofires.co.nz](http://www.metrofires.co.nz)

### Metro Pellet Fires

Metro's pellet fires offer a different look from the traditional wood fire. Practically heat at the touch of a button, Metro pellet fires are the latest form of heating. Offering features like 'timer control' which allows you to program the pellet fire to turn on at anytime.

Metro Pellet fires are super clean burning and offer exceptional heating efficiencies. The fuel is clean burning and uses highly efficient wood pellets made from pine shavings. This renewable fuel is compressed into a dense pellet allowing for maximum heat to be released. Check out Metro's new flame today!

### Metro Solar Systems

Metro Solar brings together Pioneer Manufacturing Ltd and DUX Australia. These two companies are both market leaders in their own fields with proven technical design, and manufacturing capabilities and specialise in eco-friendly yet technically oriented consumer products.

Key features about Metro Solar...

- State of the art collector technology with selective surface coating and tempered low iron glass for exceptional efficiency and performance.
- Thermally insulated cylinders which can be located on ground level for safer installation and easy maintenance.
- The patented Hotlogic processor controls water circulation to suit weather conditions and usage

## metrofires.co.nz

Visit the Metro website: [www.metrofires.co.nz](http://www.metrofires.co.nz) to view Metro's new product 'video demos' showing the latest in wood fire technology energy saving options. You can view the entire Pioneer and Metro product range, find out where your nearest Metro retailer is located or simply check out the latest specifications, installation requirements and emission and efficiency data for the Metro of your choice.



## Pioneer heating accessories

### All the accessories you'll ever need!

Pioneer Manufacturing Limited distribute a wide range of heating accessories, and shown below are some of the heating accessories readily available from your local Metro retailer.

Some of these heating accessories are designed to compliment your Metro wood fire, and some are to assist with the up-keep and maintenance of your Metro wood fire, keeping it in good order for many years to come.



ECO Flue Systems



Pioneer Flashrites



Pioneer Versatiles (Lead & Aluminium)



Pioneer High Temperature Paint



Pioneer Fireguards



Pioneer Heat Transfer Ducts



Universal Door Seal Kits



Fireside Toolset



Silicone



Pioneer Fire Cement



Wetbacks



Chubb Smoke Detectors



Alloy Wall Floor Protectors



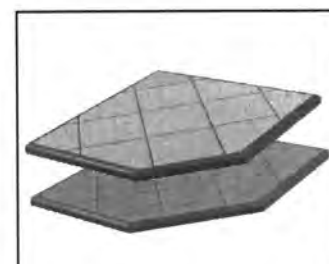
Alloy Corner Floor Protectors



Pine Wall Floor Protectors



Pine Corner Floor Protectors



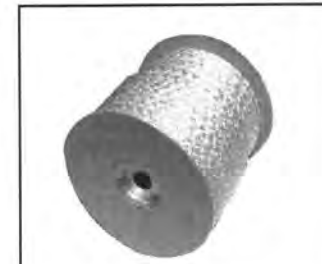
Rimu Corner Floor Protectors



Rimu Wall Floor Protectors

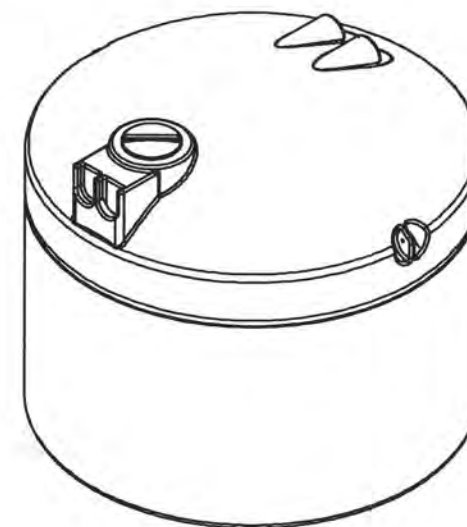
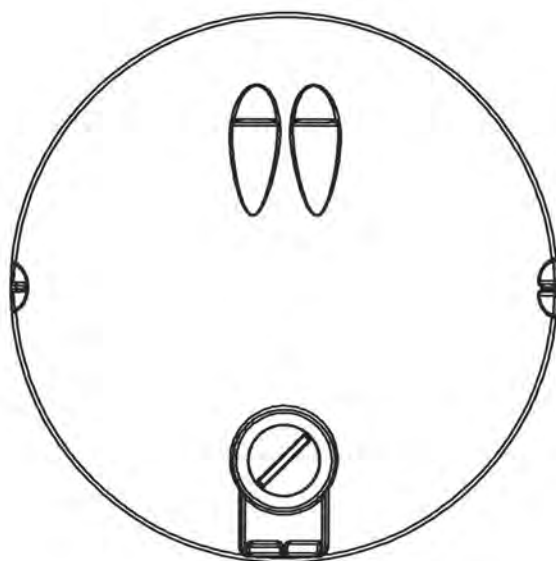
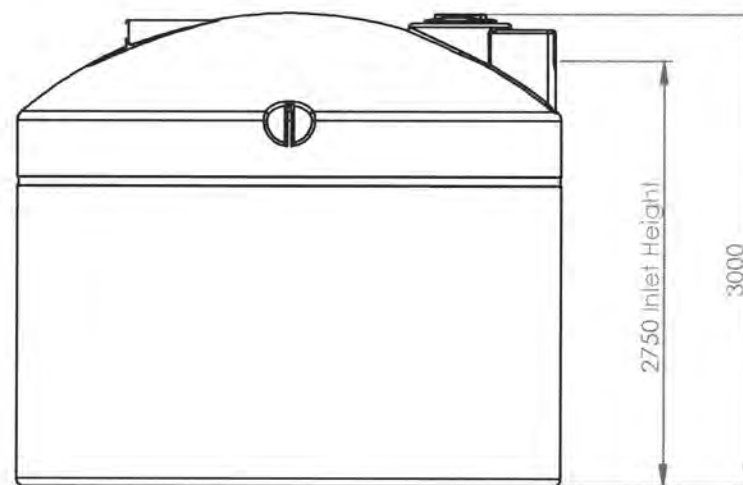
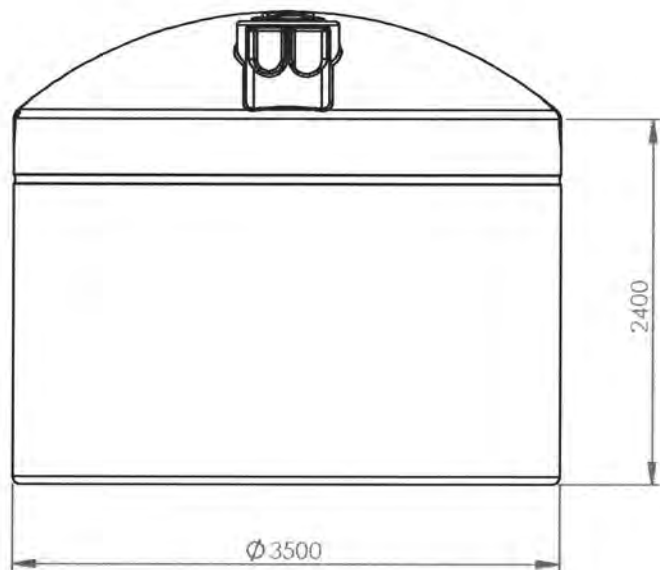


Glass Tape - available in 1.6m lengths



Door Rope - available in 1.6m lengths





	NAME	DATE
DRAWN	D.I.B.	20 July 2006
CHK'D		
APP'VD		
DIMENSIONS ARE APPROXIMATE DUE TO VARIATIONS IN THE MANUFACTURING PROCESS		
DO NOT SCALE DRAWING		
Copyright Bailey Tanks Limited 2006		
WEIGHT: 375kg		

<b>BAILEYTANKS</b>		<b>BAILEY TANKS®</b>
DWG NO.	BT25000 NZ	A4
SCALE 1:50	SHEET 1 OF 1	REVISION



## **USER MANUAL**

## **INSTALLATION INSTRUCTIONS**

## **WARRANTY REGISTER**

GREENGLO MAINS PRESSURE INTEGRATED WATER HEATER  
SINGLE COIL SERIES & DOUBLE COIL SERIES  
GREENGLO MAX

### Customer

Congratulations for choosing a GreenGlo integrated water heater  
We recommend you read page 1 to 5 of this manual.

It may save you time and trouble later.

Please register the product warranty as per page 20 of this manual

The other pages of the manual are intended for the installer.

For a further assistance or information contact our service desk

☎ 0800 447 336

✉ [info@greenglo.co.nz](mailto:info@greenglo.co.nz)

## **IMPORTANT INFORMATION**

GreenGlo are purposely-built heavy duty mains pressure cylinders. Installation of GreenGlo could be different than other tanks.

GreenGlo water heaters must be installed by a registered plumber and in accordance with these installation instructions, NZ.3500.4 National plumbing regulations; municipal building codes other relevant statutory regulations.

Observation of these instructions and the associated component instructions is most important and failure to do so could void the benefits of warranty.

The information contained in this manual, and all other information or advice provided by GreenGlo Limited in connection with the purchase, installation use and service of GreenGlo water heater is given in good faith. GreenGlo Limited will not be liable for any person for any inaccuracy or omission in the information arising through the fault of GreenGlo Limited directly or indirectly.

A pressure-limiting valve of 500kPa max rating must be fitted. Failure to install a pressure limiting valve where required will void the warranty.

## **SAFETY**

Scalding occurs at 50°C. This appliance is capable of providing hot water above this temperature. All installers must advise customers of the potential hazard of scalding in accordance with the relevant National standards including NZS3500.4.

Young children should not play with the appliance.

A combination Temperature Pressure Relief valve with a maximum rating of 850kPa must be fitted.

Water may drip from the discharge pipe of this valve.

This pipe must be left open to the atmosphere.

For more information, please refer to the Regular Care section on page 5 of this manual.

Also fitted to the water heater is a special auto reset thermostat.

These safety devices must not be tampered with or removed from the appliance under any circumstances.

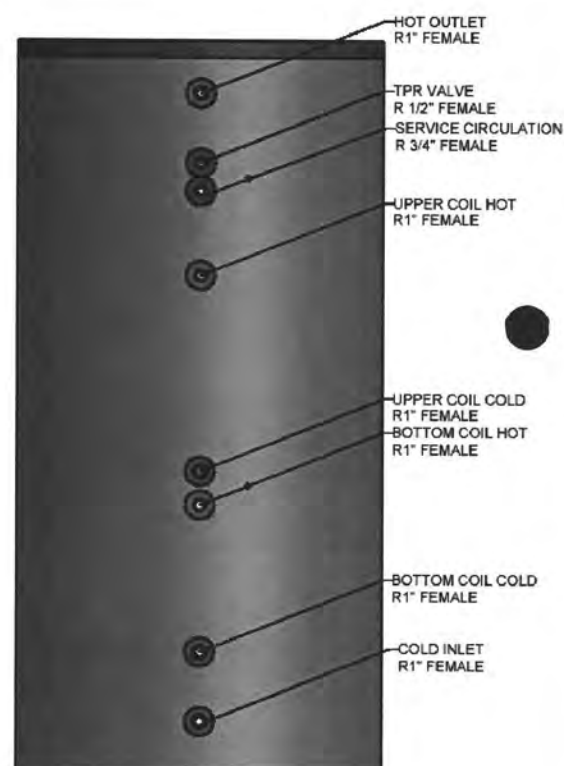
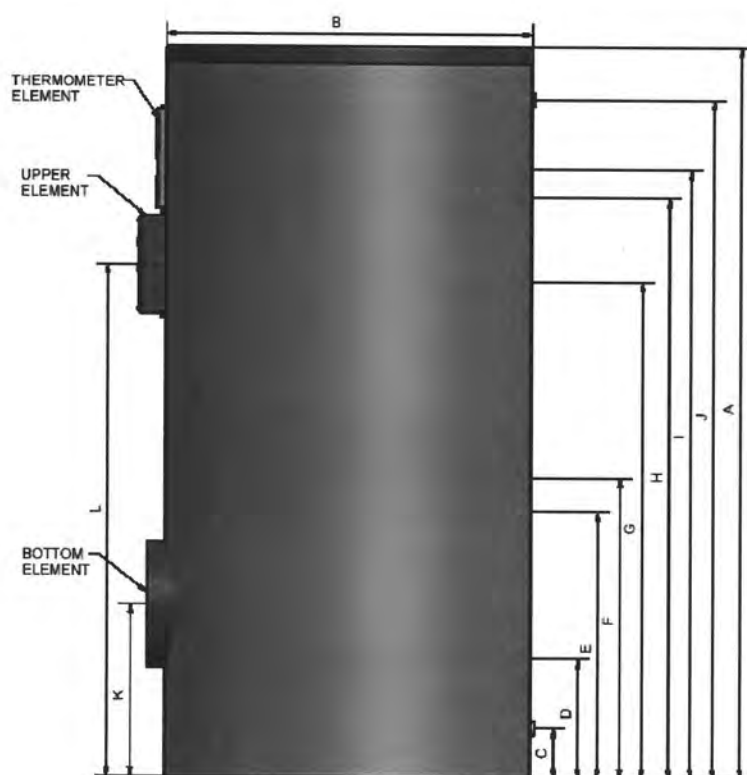
Use a separate circuit breaker for each of the electrical heating elements



## ABOUT YOUR WATER HEATER

1. GreenGlo & GreenGlo Max is a high technology storage tank, backed up by new manufacturing methods offering quality of goods to consumers.
2. The main goal of producing GreenGlo water heaters is heating and storing potable hot water in a main pressure storage tank using electricity. GreenGlo also offers optional heating equipment such as solar, gas and wetback. Potable hot water is stored in the main water storage tank separately from the heating fluids in the coils.
3. The heating fluid, which is heated in the heat source, is circulated between the heat source and cylinder's coil. The warmed fluid takes its heat from the heat source and transmits to the water heater.
4. GreenGlo cylinders inner surface is enamelled. The process used is a double enamelling process that coats the inside surface of the cylinder.
5. GreenGlo cylinders are protected by a magnesium anode rod in order to prevent cathode corrosion. The magnesium anode rod ought to be checked and replaced if required, every 36 months by a certified plumber, and can be done by following this manual page 16.
6. GreenGlo exterior surface is covered by 40 kg/m<sup>3</sup> and 50 mm polyurethane insulation (except 800D and 1000D) in order to diminish the loss of the heat. The GreenGlo 800D and 1000D insulation is removable. This convenience allows easy delivery and access through narrow doorways. **Do not remove covers** unless essential and only after receiving specific instructions from GreenGlo service desk
7. GreenGlo is an indoor tank and shall be install in a well vented space to prevent condensation
8. There is a choice of double or single or double coil GreenGlo depending on the application needed. I.E. if the cylinder will be heated with a wetback or a solar system, GreenGlo single coil water heater would be appropriate. On the other hand, if the cylinder will be heated with both wetback and a solar system, GreenGlo double coil would be appropriate.
9. GreenGlo water heaters have been produced to suit a wide range of applications and installations and are complying with NZS4606  
In this manual we present the most common applications, however if you require advice on any other application, please contact our service desk on 0800 447 336 or [info@greenglo.co.nz](mailto:info@greenglo.co.nz)

## PRODUCT INFORMATION



Note: 800D & 1000D foam insulation is removable  
Do not remove cover unless essential  
Contact GreenGlo service desk before removal of cover  
GreenGlo models have a soft blanket cover for extra insulation

### GreenGlo Max

Dimensions may change without notice	180S	300S	180D	300D	400D
	Single Coil <b>S Series</b>		Double Coil <b>D Series</b>		
Volume (litres)	180	300	180	300	400
A – Height (mm)	1100	1800	1100	1800	1850
B – Diameter (mm)	575	575	575	575	630

Outdoor models are available



## PRODUCT INFORMATION

### General product information

Maximum working pressure 800kPa

Maximum water temperature 90°C

Maximum coils working pressure 800kPa

Maximum heat exchange temperature 95°C

Enamelled steel automatically welded

50 mm polyurethane in accordance to NZS4692.1 and NZS4692.2

Indoor use only

Note : The product must not be exposed direct sunlight, rain, etc. Uninsulated pipework exposed to outdoor decrease heater performance & may increased energy consumption.

### Specific product information

Dimensions may change without notice	180S	300S	180D	300D	300DS	400D	500D	800D	1000D
	Single Coil		Double Coil						
	<b>S Series</b>		<b>D Series</b>						
Volume ( <i>litres</i> )	180	300	180	300	300	400	500	800	1,000
A – Height ( <i>mm</i> )	1650	1780	1650	1780	1240	1580	1860	1750	2090
B – Diameter ( <i>mm</i> )	520	615	520	615	755	755	755	1060	1060
C - Cold Inlet	180	80	180	80	95	75	60	395	395
D - Bottom Coil Cold	280	350	280	350	355	385	235	495	495
E - Bottom Coil Hot	500	655	500	655	565	595	690	870	920
F - Upper Coil Cold	N/A	N/A	570	755	655	690	780	965	1020
G - Upper Coil Hot	N/A	N/A	855	1210	865	1040	1320	1190	1510
H -Service Circulation	740	920	740	920	730	790	1010	710	760
I - TPR Valve	1430	1570	1430	1570	940	1300	1580	1270	1610
J - Hot Outlet	1585	1720	1585	1720	1100	1490	1765	1365	1715
K - Bottom Element	240	290	240	290	300	335	315	385	385
L - Upper Element	N/A	N/A	935	1285	N/A	1060	1395	1260	1580
Element Rating ( <i>kW</i> )	3.0	3.0	2 x 2.0	2 x 2.0	3.0	2 x 2.0	2 x 3.0	2 x 4.8	2 x 4.8
O - Ports Thread	1" F	1" F	1" F	1" F	1" F	1" F	1" F	2" F	2" F
Tank Thickness ( <i>mm</i> )	3	3	3	3	3	3	3	4	4
Angle of ports	45°R	45°R	45°R	45°R	45°R	45°R	45°R	90°R	90°R
Max energy Bottom coil ( <i>kW</i> )	9.0	17.5	9.0	17.5	20.0	24.6	39.3	35.0	37.2
Max energy upper coil ( <i>kW</i> )	N/A	N/A	13.6	26.2	30.0	39.3	54.0	70.0	89.3
Weight ( <i>kG</i> )	90	112	103	127	128	198	229	293	326

## WATER QUALITY

GreenGlo water heaters have been manufactured to deal with most local body water supplies. Desired water quality levels:

pH Level	between 6.5 and 8.5
Chlorides:	up to 200 ppm
Total Dissolved Solids (TDS)	up to 1000 mg/L
Saturation Index	between -0.8 and +0.8

If your water quality or the heating liquids are outside the above range, you should fit appropriate water filtration.

### Caution:

If water TDS is above 600 mg/L, there is a possibility of hydrogen gas accumulating in the top of the water heater during long periods of no use.

If the water heater has not been used for more than 2 weeks:

- Open the hot water tap and let water flow for 1 minute.
- Hydrogen gas is flammable; therefore make sure that there is no smoking, sparks or naked flames near the tap.
- Do not operate any hot water appliance such as a washing machine or a dishwasher prior to the above procedure.

## REGULAR CARE

### Six Monthly:

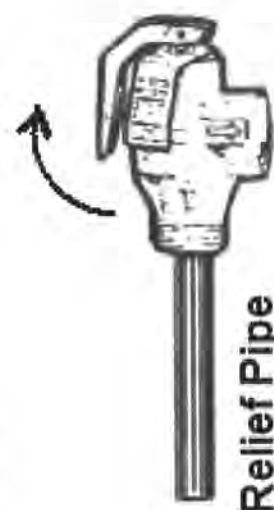
Near the top of the water heater you will find the TPR Valve (Temperature Pressure Relief Valve). Raise the lower lever and gently release some water into the relief pipe.

Note:

- If water does not flow down the relief pipe, or if water does not stop flowing once you released the lever, contact your plumber
- It is normal for the valve to release small amount of water during heating cycles
- Never block the relief drain pipe

### Five yearly maintenance:

A qualified plumber should check and if needed replace the sacrificial anode in the water heater as per pages 16 & 17 Consider also replacement of the TPR valve, and clean coils of the cylinder via the clearing door if needed





## PLUMBING CONNECTION

### Delivering and mounting the GreenGlo cylinder

- The product should be kept away from sharp tools during loading or delivering and ports should be protected.
- The product should not be left or placed where it's exposed directly to weather such as direct sunlight, rain snow etc.
- Choose a dry and well vented space. Access moisture may cause tank condensation and may void the warranty.
- Mount the bottom of the tank clear of the floor. Usage of a drain tray is highly recommended
- If the product is installed on the floor, the floor must be dry and moisture-proof. Consider a drainage tray when required.
- If possible leave headroom of half water heater length so the anode can be inspected or replaced. Remember you may have to remove the entire water heater later for servicing as per pages 16 & 17.
- Cylinder must be strapped and mounted in accordance to NZS3500.4
- GreenGlo Limited does not accept any responsibility, if the product is physically damaged or operates inefficiently due to wrong handling
- The product must be carried vertically – if in doubt, **fasten** the bolts of the upper and lower dome prior to installation

### Basic Plumbing connection of the Water heater

- The size of the GreenGlo tank needs to be chosen carefully in order to maintain the hot water supply demand.
- Start with the Basic Diagram of page 7 before conducting any specific application connection
- Fit the cold inlet valves prior to commissioning the cylinder
- Ensure that the TPR Valve is fitted and that the service circulation is **plugged off** or connected prior to filling up the cylinder with water
- Lag all hot water pipes coming out of the water heater

### Plumbing Connection of additional applications

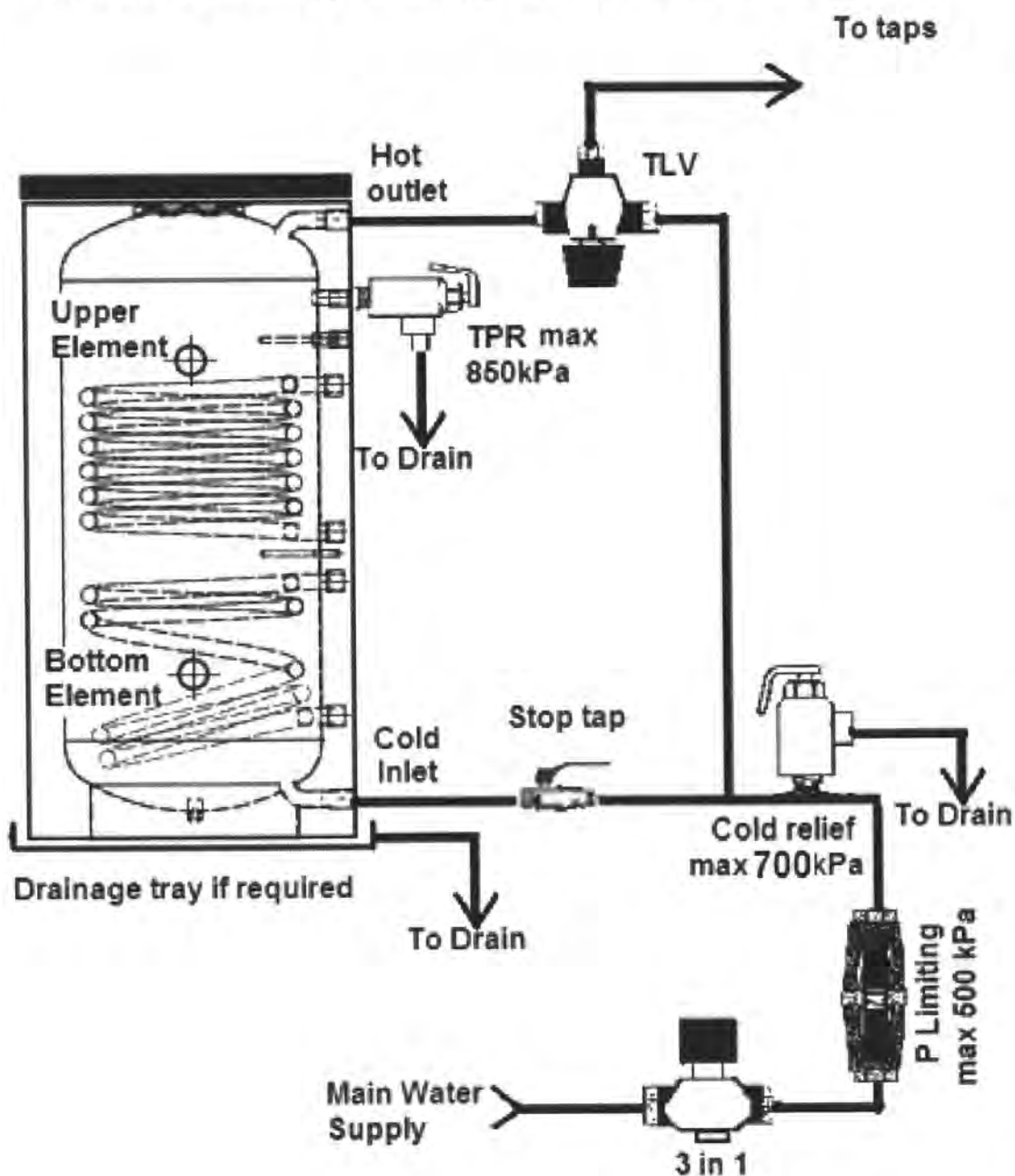
- Simply follow the diagrams and the notes of page 8 to 12
- If you are in doubt or attempting to install an application outside the below diagrams, please contact GreenGlo service desk for advice.

### IMPORTANT NOTE:

When using brass fitting, use **PTFE** tape or a **dialectic connector** between the brass fitting and the port thread to prevent electrolysis.

Hemp is only allowed if Heldite is used

## GreenGlo basic plumbing connection diagram



### Important Notes:

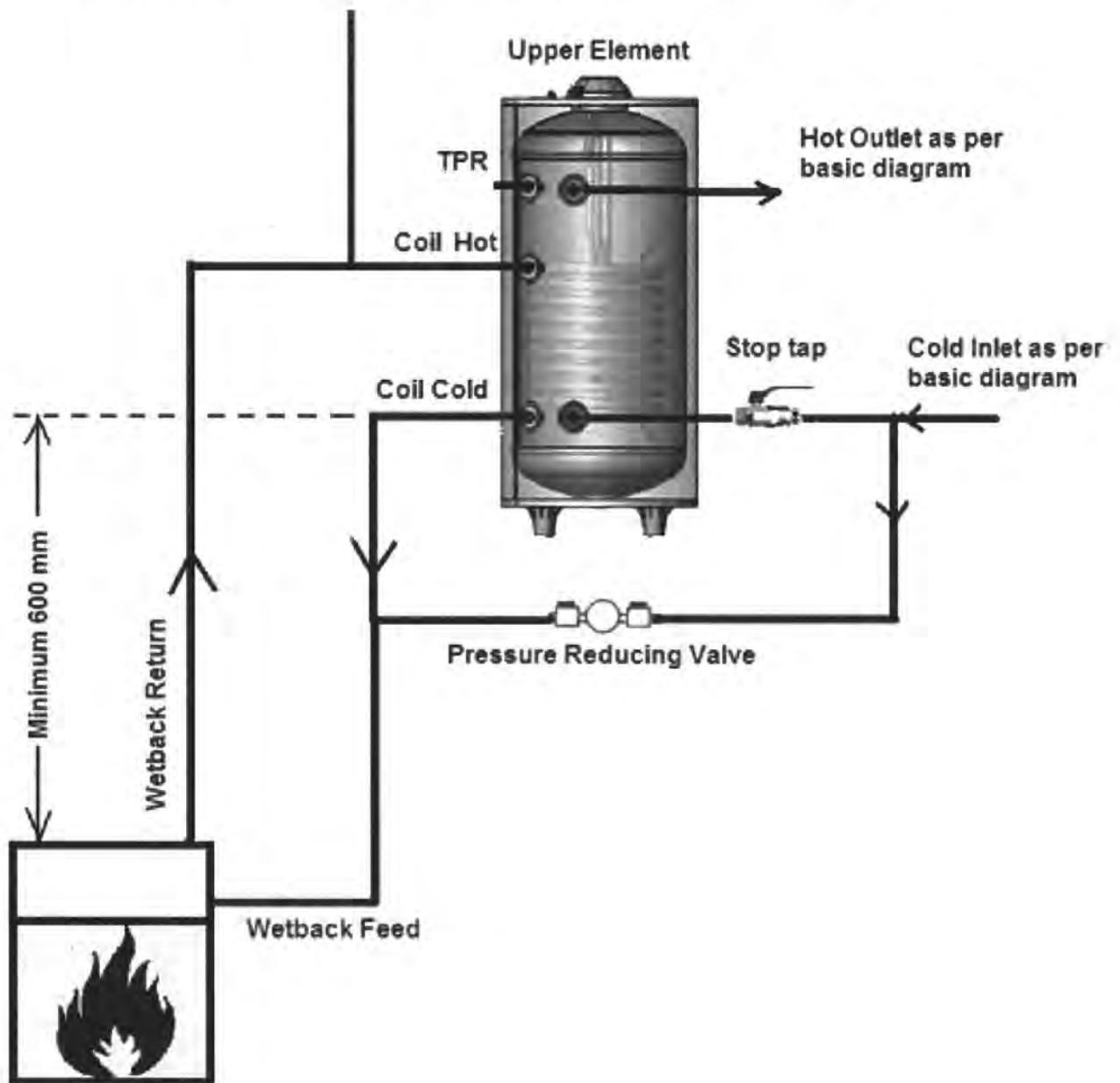
Valves are not supplied with the water heater

The above diagram describes valves for a mains pressure arrangement; however the cylinder could also be fitted to a low pressure system.

GreenGlo tanks are equipped with a service circulation port.

Use this port for **ring main** or other external applications.

## GreenGlo wetback plumbing connection diagram

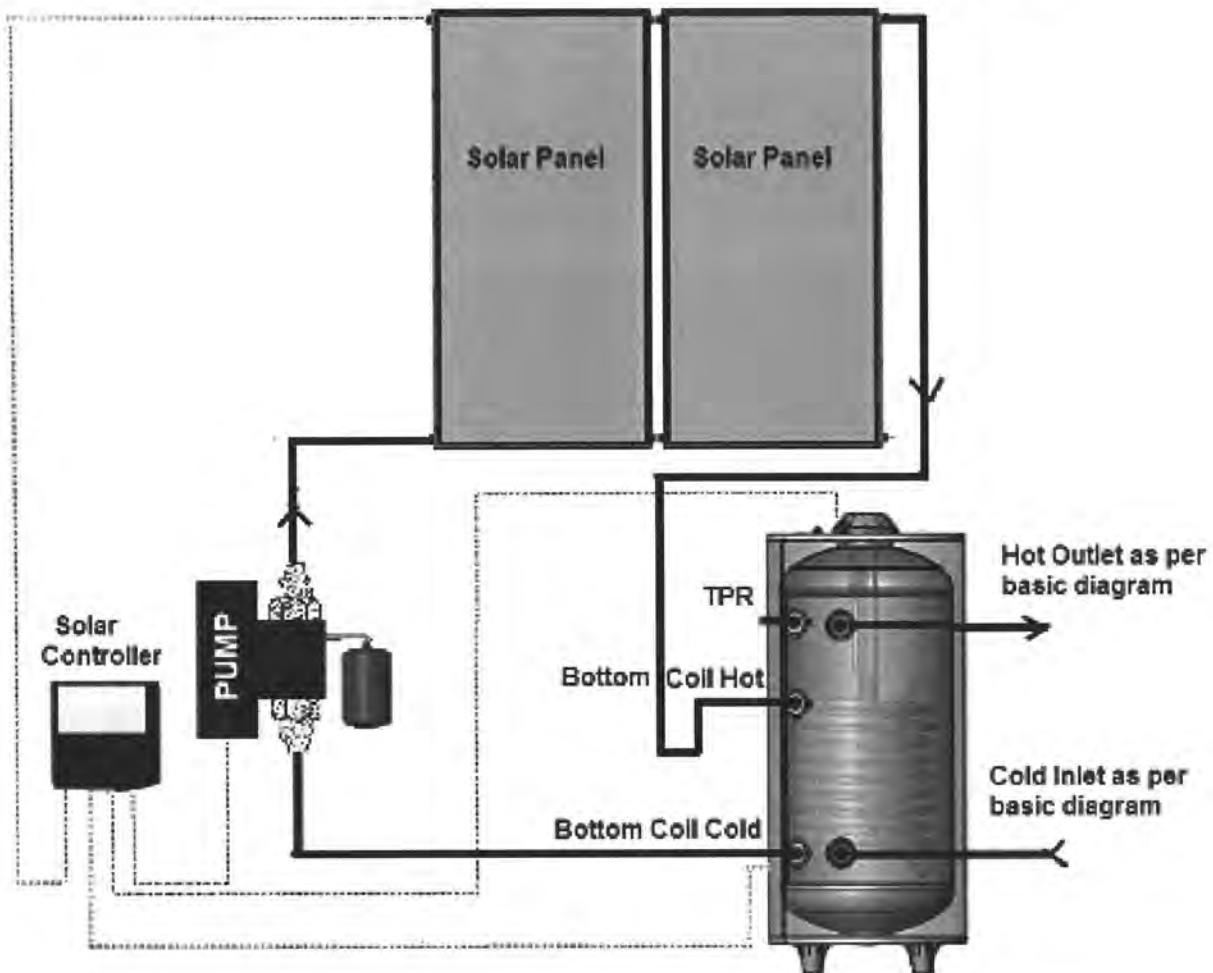


### Important Notes:

1. No valves or restrictions are allowed on the wetback loop
2. When installing Wetback and Solar using GreenGlo D Series, connect wetback to upper coil and solar to bottom coil. Wetback should be installed to the bottom coil with all other multiple connections
3. Wetback output **shall not** be greater than 1kW per 100 litres storage.
4. **Add 100ml** of Fernox F1 or similar to the static water in the coil



## GreenGlo Solar plumbing connection diagram

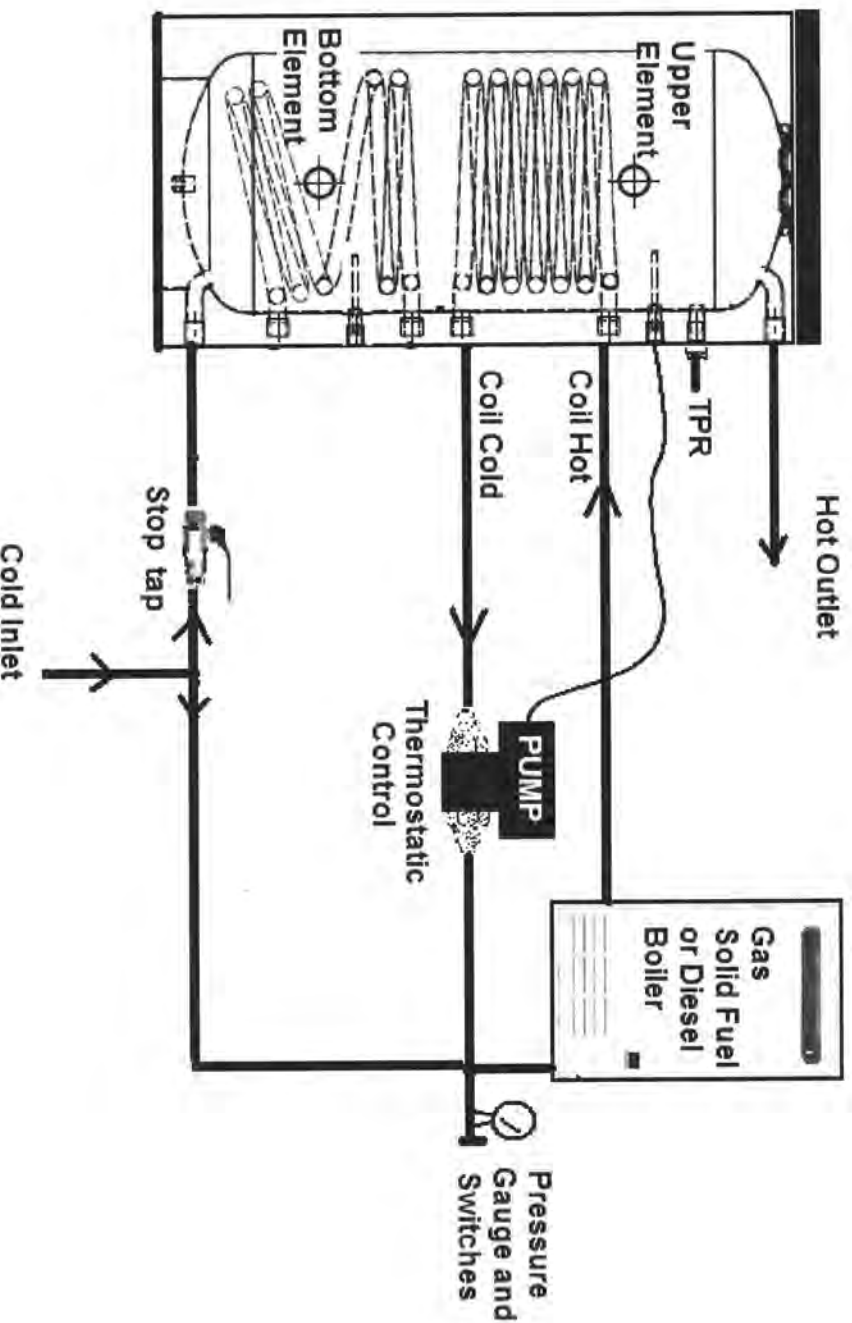


### Important Notes:

1. The diagram shows generic drawings of connections to and from GreenGlo cylinder. Follow the specific instructions of the solar panel supplier for the actual detailed arrangement, components and valves.
2. When using GreenGlo D series, solar collectors should be installed to the bottom coil - boiler, wetback or heaters should be installed to upper coil.
3. It is highly recommended running the solar system via the GreenGlo coil on a close loop arrangement. Open loop solar is also possible using the Service Circulation port for the solar return instead of the Coil Hot port, and branching off the Cold Inlet instead of using the Coil Cold port.
4. When connecting commercial solar systems, ensure that the energy going through the solar coil is lower than the max kW rating of the coil as per page 4. Excess energy above the coils rating will void the warranty.

Warning: Open loop solar carries frost risks to the panels if antifreeze is not used

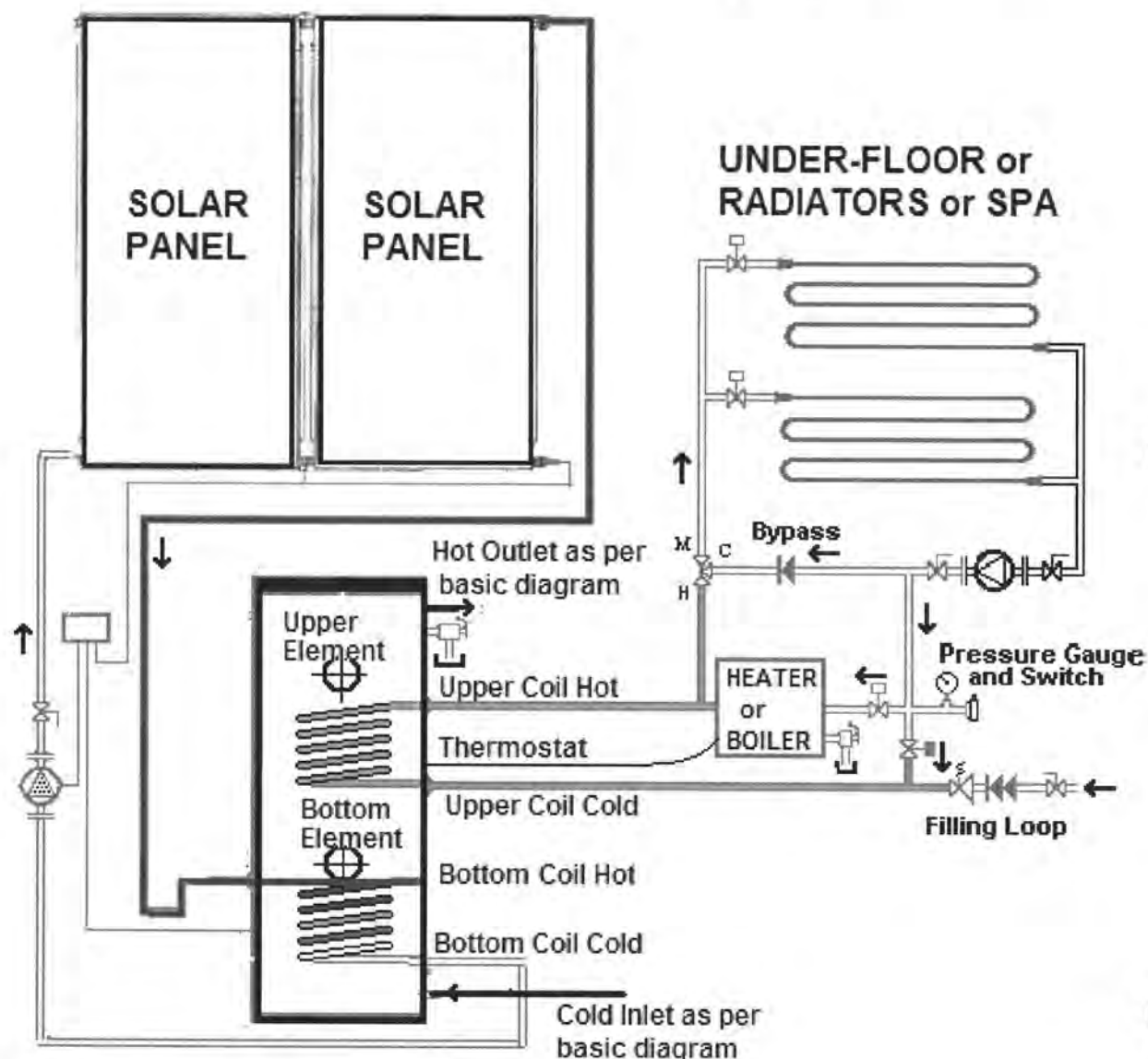
## GreenGlo Gas/Solid Fuel/Diesel plumbing connection diagram



### Important Notes:

1. The diagram shows generic drawings of connections to and from GreenGlo cylinder. Follow the specific instructions of the heater / boiler supplier for the actual detailed arrangement, components and valves.
2. The heater / boiler must have an integrated relief valve
3. The energy input of the boiler must be smaller than the max kW rating of the coil.
4. Excess energy above the coils rating will void the warranty.
5. The above diagram will maximize hot water flow rate of water.
6. Instantaneous water heaters should be installed after hot water outlet for temperature top up, in cases where high water flow is not required.
7. **Add 100ml** of Fernox F1 or similar to the static water in the coil

## GreenGlo Solar *plus* Heater/Boiler *plus* Underfloor Heating / Radiator / SPA - plumbing connection diagram



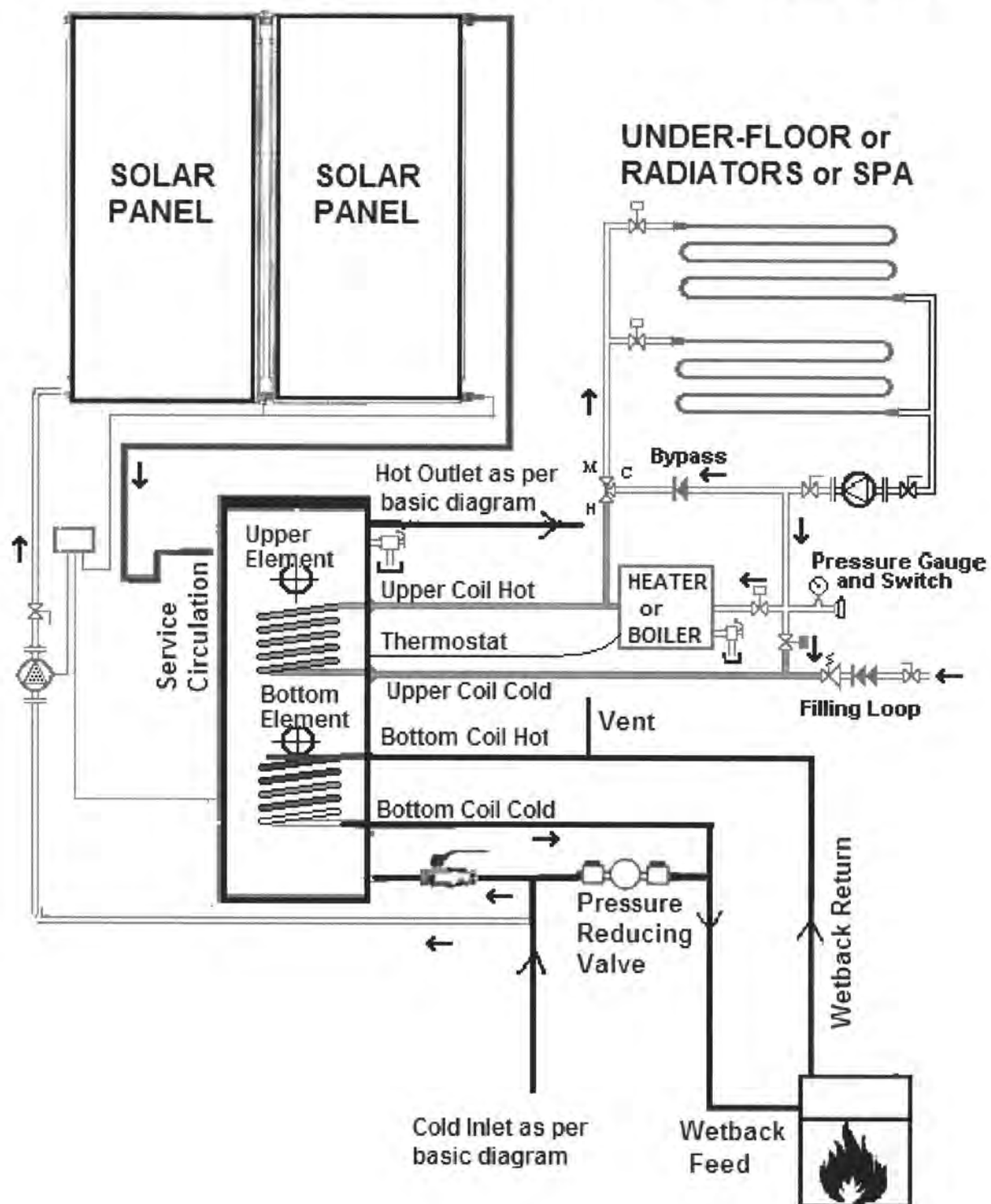
### Important Notes:

1. Applicable for GreenGlo D series only
2. The diagram shows generic drawings of connections to and from GreenGlo cylinder. Follow the specific instructions for the heater / boiler supplier, the Solar Panels supplier and the Underfloor / Radiators or SPA supplier for the actual detailed arrangement, components and valves.
3. The heater / boiler must have an integrated relief valve
4. **Add 100ml** of Fernox F1 or similar to the static water in the boiler coil
5. The energy input of the boiler must be smaller than the max kW rating of the coil. Excess energy above the coils rating will void the warranty.

More options are available



# **GreenGlo Solar *plus* Wetback *plus* Heater/Boiler *plus* Underfloor Heating / Radiator / SPA - plumbing diagram**



Refer to the notes of page 11

## **COMMISSIONING**

### **VERY IMPORTANT:**

**Prior to turning on the power supply and prior to turning on any heating application such as solar, wetback or a heater, the cylinder MUST BE FILLED UP WITH WATER**

- Open a hot water tap, making sure that all other hot water taps are shut down
- Open the inlet tap fully to fill up cylinder
- Open each hot water tap till water flows freely
- Check all pipes for leaks
- Switch on the elements and set the timer/controller (if one is installed)
- Attend to any other external heating applications

## **DRAINING THE WATER HEATER**

- Turn off the power supply to the elements
- Turn off all external heating applications
- Turn off cold inlet supply at the 3 in 1 valve or at the meter
- Open a hot water tap to drain the pipework
- Disconnect the hot water outlet union
- Open to atmosphere Cold Water Expansion Valve to let water flow via the drain pipe

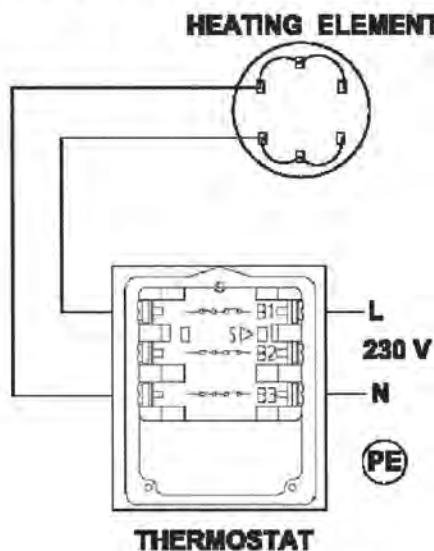
## ELECTRICAL CONNECTION

**NOTE: Power supply must be OFF until water heater filled with water**  
 All electrical work must be carried out by a qualified person (per AS/NZS3000).  
 All water heaters are manufactured for 230VAC, 50HZ single phase.  
 GreenGlo 800D 1000D elements also capable to operate on a 3-phase 400VAC  
 A flexible 20mm conduit is required for the electrical cable to the water heater

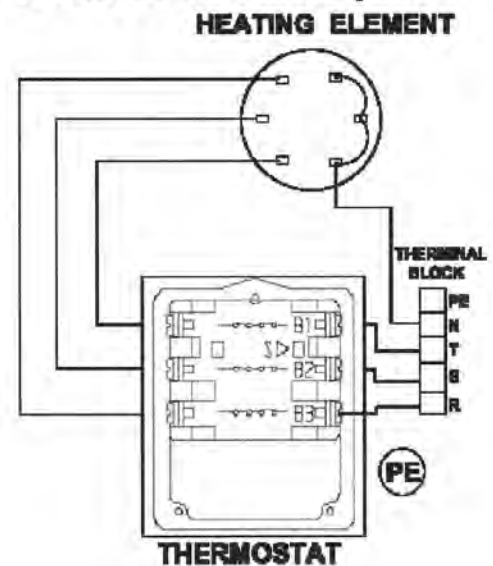
### Booster Elements and Thermostats setting:

Adjust the thermostat temperature to the customer requirements.  
 The booster elements and the thermostats are single phase factory pre-wired.

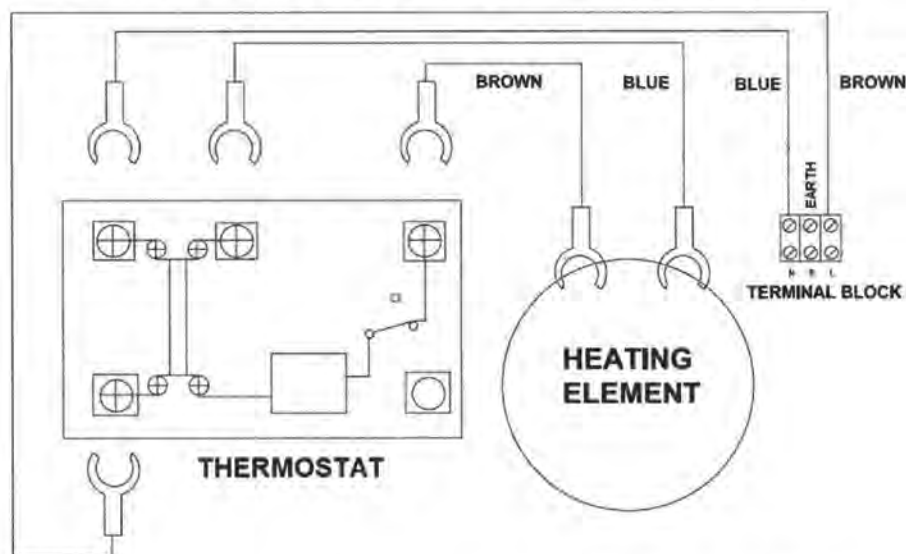
#### 800D & 1000D on Single phase



#### 800D & 1000D on Three phase



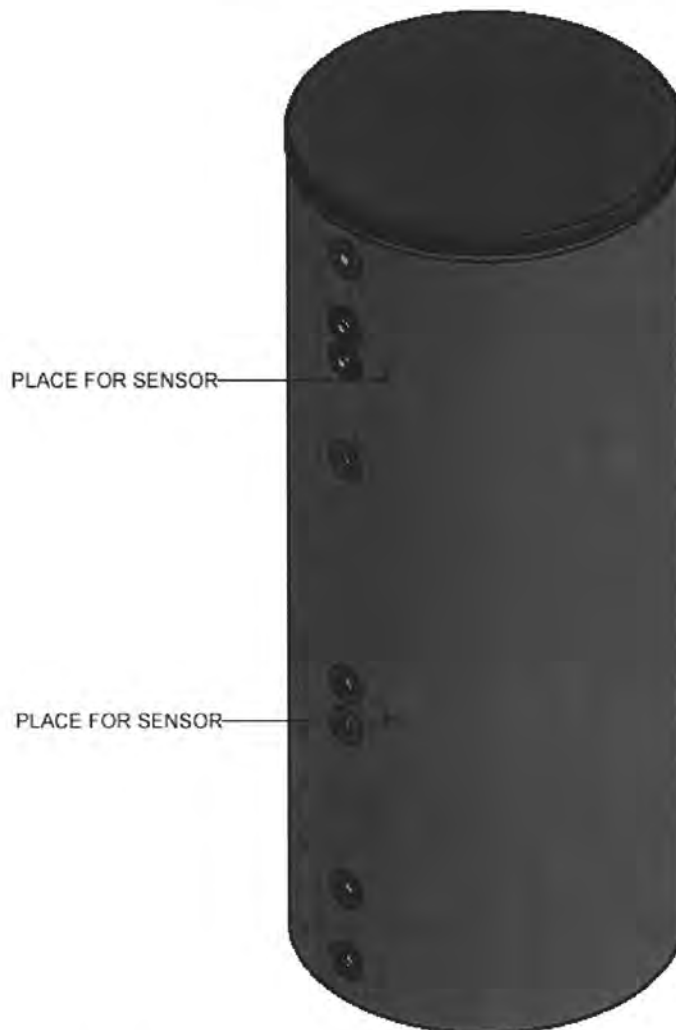
### GreenGlo 180S to 500D pre-wired diagram



The lower element can be connected to the **Off Peak electricity supply**.



## SENSORS CONNECTION



Sensors sense the temperatures when the cylinder is connected to heating applications, and transfer the reading to the controllers, such as 3 way valve, pumps and other electronic controllers.

Sensor pockets are located in the most appropriate level for heat distribution in the cylinder. Sensor holders must be used and supplied by the electronic control unit supplier. The holders attach the sensor to the surface which prevents the sensors from falling down from the pocket.

**Make sure that probes are pushed all the way into the sensor tubes.**

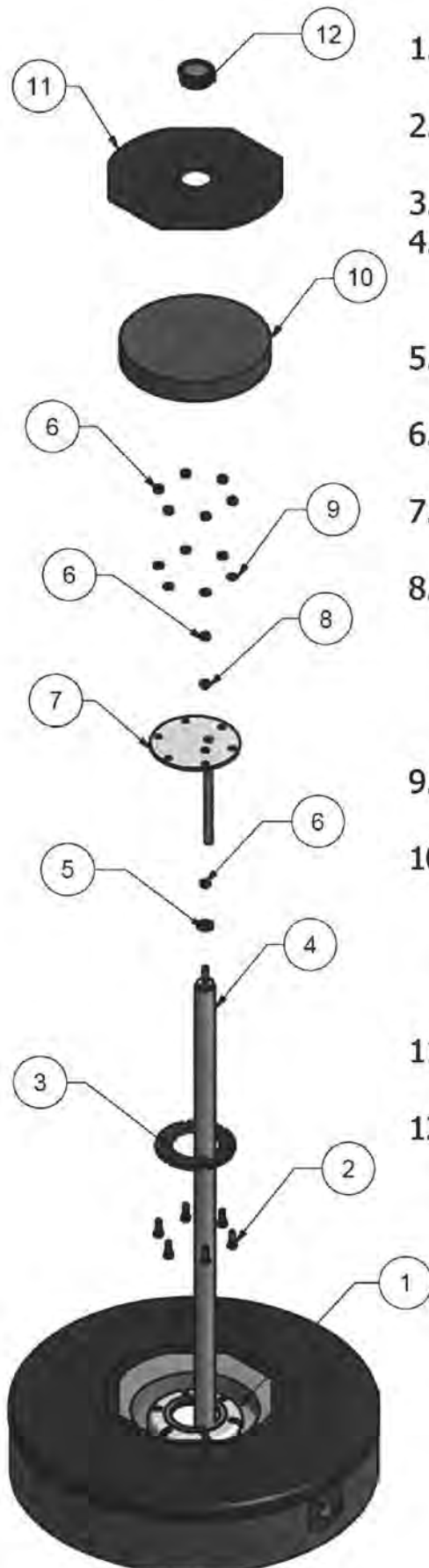
Use a thermal paste.

Secure the probe cable

Locate sensors above the electrical elements when required

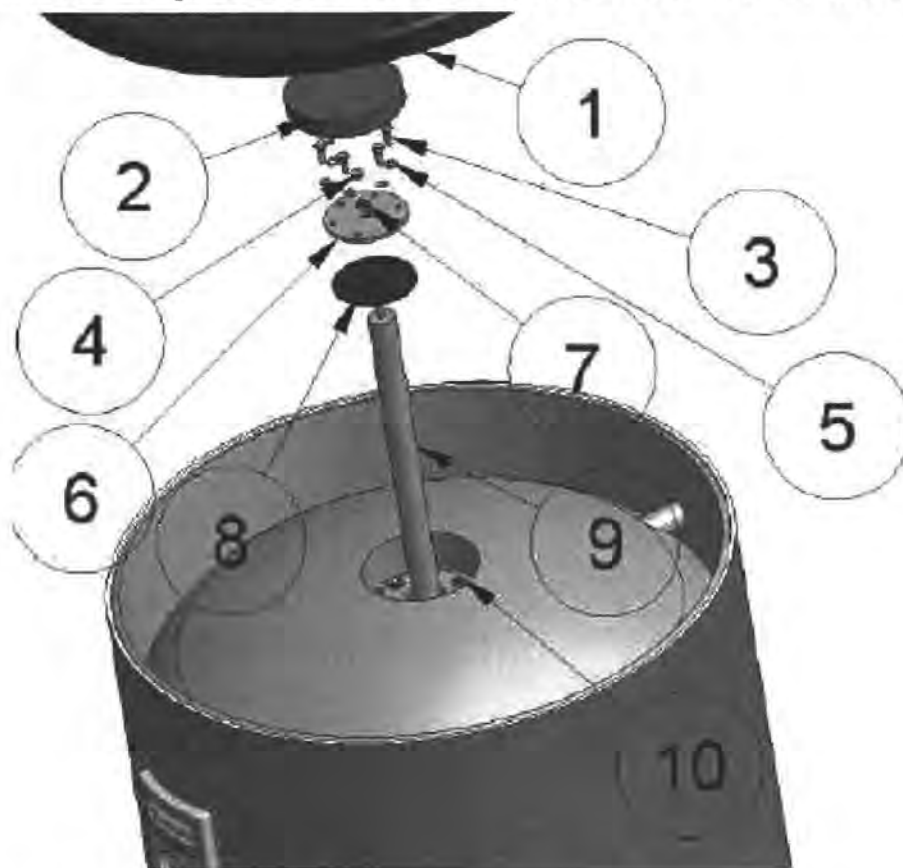
## REGULAR CARE – SERVICE PERSON

### Anode Replacement GreenGlo 180S, 180D, 300S, 300D



1. Disconnect the power supply to the water heater
2. Drain approximately 5 to 10 lt. from cylinder as per page 13 instructions.
3. Unscrew service cap (11) gently
4. Take out the soft foam insulation (10) and disassemble anode ground cable from flanges cap (7).
5. Disassemble the flanges (7) and then remove the flanges gasket (3).
6. Open the nut that is on the flanges (6) and attach it to the anode rod.
7. Remove old anode rod (4) over flanges and insulation gasket (5) and the washer (8).
8. Assemble new anode rod from the side of enamelled flanges (7); with a new insulation gasket (5) with a new washer (8) on the other side, and fasten the anode nut (6) over anode rod.
9. Return flange gasket (3) to position. Replace gasket if needed
10. Locate flange exactly central side of the cylinder flange. Fasten nuts in a cross tightening order as per page 18. Don't leave out nut flakes (6) – it needs to be directly opposite flange slots (1) as shown.
11. Conduct a pressure test and check for any leaks or sweat
12. Assemble insulation; place the tail of thermometer couple in the pocket, which is on the flange. Locate the service cap on the bush of top cap.

## Anode Replacement GreenGlo 300DS to 1000D



6. Disconnect the power supply to the water heater.
7. Drain approximately 5 to 10 lt. from cylinder as per page 13 instructions.
8. 800D & 1000D: Drain entire water from cylinder as per page 13.
9. Remove cylinder top cap (1)
10. Take out insulation carefully and disassemble anode ground cable from flanges cap (6) then from flanges (10).
11. Disassemble the flanges (6) and (3) by removing the nuts.
12. Remove the flanges gasket (8).
13. Disassemble the flanges nut (4) and attached the anode rod (9).
14. Remove old anode rod (9) over flanges and keep the anode isolation bush and anode gasket (8).
15. Assemble new anode rod from the side of enamelled flanges (7) and leave isolated bush (5) on the other side, and install nut over anode behind the beam gear side.
16. Locate flange gasket through inlet of the cylinder. Replace gasket if needed
17. Locate flange exactly central side of the cylinder flange. Fasten nuts in a cross tightening order per page 18. Don't leave out nut flakes (5) – it needs to be opposite flange number (1) as shown.
18. Close the service cap on the bush of top cap.

## Cylinder Coils Cleaning via Clearing Door

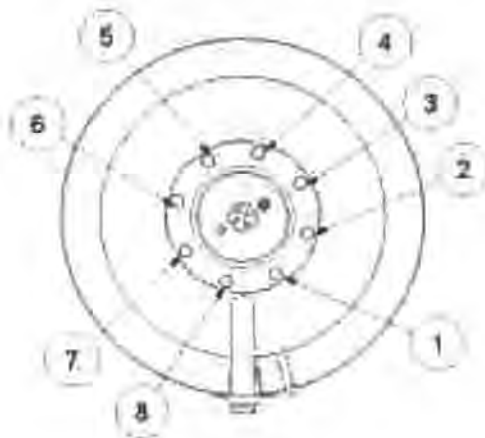
Access door is located on the cylinder top for GreenGlo 180S to 300D models.  
Access door is located on the cylinder side for GreenGlo 300DS to 1000D.  
GreenGlo access door dimensions are designed to the European standards.

Over the years, cylinder coils become covered with lime and other mineral deposit depending upon water quality. After a while, heat transfer will become difficult and the cylinder's efficiency reduces due to the deposits. Therefore, clearing the coils should be periodically done thru the access door.

1. Disconnect the power supply to the water heater
2. Drain entire water from cylinder as per page 13 instructions.
3. Remove nuts of access door and remove service door
4. Gently water blast coils removing the mineral deposits
5. Return access door ensuring that gasket is in place. Replace gasket if required
6. It is **essential** to tighten up access door nuts in the order shown below:

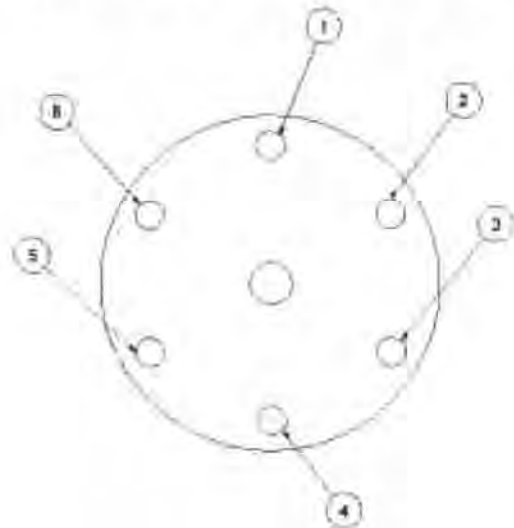
### GreenGlo S Series, 180D, 300D

Order: 1-5, 3-7, 2-6 torque: 17Nm



### GreenGlo 300DS to 1000D

Order: 1-4, 6-3, 2-5 torque: 8Nm



7. Fill up and pressurise water heater and check for leaks
8. Place a maintenance sticker on the water heater



## WARRANTY

GreenGlo Limited will repair or if necessary replace a defective water heater or parts failure due to faulty manufacturing as per the following schedule:

Component	Installation	Warranty period	Coverage
All	All types of standard installations	First 12 months	Repair or replace 100% water heater and components free including labour at GreenGlo discretion
Internal heat exchanger	Domestic standard installations	Year 2 to 7	Repair or replace 100% water heater free. Owner responsible for installation and labour costs <b>SUBJECT TO 5 YEARS SERVICE</b>
Internal heat exchanger	Commercial and other standard installations	Year 2 & 3	Repair or replace 100% water heater free. Owner responsible for installation and labour costs
		Year 4 & 5	Repair or replace 50% of water heater value. Owner responsible for installation and labour costs

### Durability

GreenGlo water heaters meet the requirements of NZS4606 given that:

1. Installed and maintained by a qualified person and according to the building code and this manual
2. Not damaged in any way
3. Water quality according to page 5 of this manual
4. Max kW Rating of all heater connections as per page 4 of this manual

### Change of Ownership

This warranty extends beyond the original purchaser of the water heater.

### Standard Installation

Standard installation includes all connections as per this manual and any other connections that may be approved by GreenGlo service desk.

The tank shall be accessible and easy to remove

## WARRANTY REGISTRATION

Warranty registration is highly important, as it confirms installation date and the type of installation to ensure that you enjoy the full benefits of the product warranty.

Registration **Option 1:** go to [www.greenglo.co.nz](http://www.greenglo.co.nz) under warranty register

Registration **Option 2:** Call our service desk on 0800 447 336

Registration **Option 3:** Fax the below form to 09 353 1445

Registration **Option 4:** Send the below form to

Solar Group Limited  
PO Box 35588  
Browns Bay, Auckland

Name:	_____
Address:	_____
Phone:	_____
email:	_____
Name of Installer:	_____
Main Application:	_____
	e.g.. Wetback, Solar, Gas, etc
Domestic usage?	Yes / No – if no specify: _____
GreenGlo Water Heater Model:	_____
Product Serial Number:	_____
Notes:	_____
	_____



## REGULAR CARE LOGON

Installation Date: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

6 months: TPR Valve check date: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

12 months TPR Valve check date: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

18 months TPR Valve check date: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

2 years TPR Valve check date: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

30 months TPR Valve check: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

3 years service by: \_\_\_\_\_ date: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

42 months TPR Valve check date: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

4 years TPR Valve check date: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

54 months TPR Valve check: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

5 years service by: \_\_\_\_\_ date: \_\_\_\_\_ / \_\_\_\_ / \_\_\_\_

## **19. Warranty Exclusions:**

GreenGlo warranty will not cover the following situations:

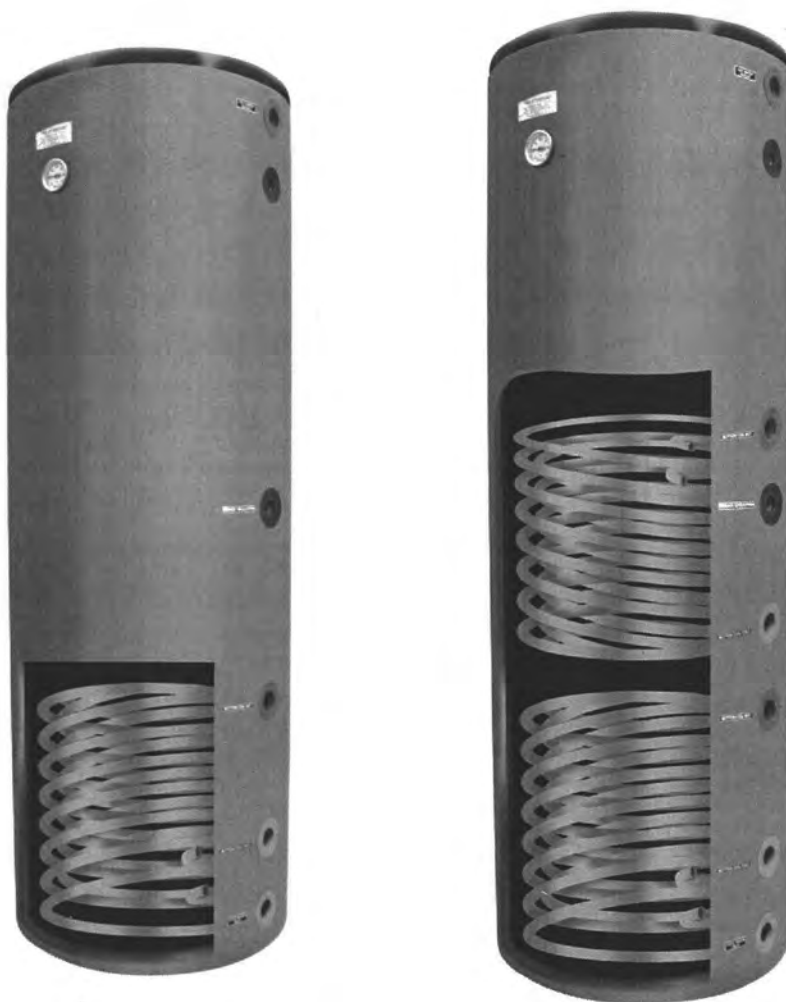
1. Failure because of misuse, damage or neglect
2. Product is not installed or serviced in accordance with this manual or the NZ building code
3. Damage caused by an act of God
4. Water quality outside the range of page 5 of this manual
5. Connection of any associated heater with a max kW Rating higher than the coil capacity as per page 4 of this manual
6. Installation of tanks in moisture environment
7. Use of water temperature or pressure, or coil temperature or pressure, outside the restrictions of page 4 of this manual
8. Water hammer or negative pressure occurring in water pipework
9. Neglect to protect the coils with anti corrosive

### **Note:**

- GreenGlo Limited is not liable for any sequential damages such as walls, carpets, furniture etc.
- Replacement parts provided under this warranty does not carry a new warranty. The unexpired warranty remains effective.
- GreenGlo Limited is only liable for the water heater and will not assume directly or indirectly any other obligations in connection with the product
- GreenGlo Limited does not cover access labour replacement costs of GreenGlo tanks installed: 30KM outside main centre, weekend charges, labour due to difficult access to tank
- You may have other rights in addition to this warranty under the Consumer Guarantee Act



Installer / Service Provider details



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

27 June 2013

David Reid Homes  
PO Box 148  
Paraparaumu

COPY

**Building Consent: 130379**

Dear Sir

### **Request for further information**

**Description:** *New single-level building.*  
**Location:** 142 Huia Street, Waikanae  
**Legal Description:** LOT 10 DP 22652 BLK VI KAITAWA SD

Following checking of your *Building Consent* it is apparent that further information is required..

#### **Information Needed:**

- 1) There is no sewer lateral provided to this property. Please provide a sewage treatment design. A list of approved designers/installers is attached.
- 2) Please provide details of solar panels to be installed.

The information requested above relates to Plumbing and drainage only. You will be notified of any further requirements of a general nature once your plans have been perused by the Building Control Consents team.

Please contact me if you would like to discuss this matter.

Yours faithfully

Simon Copp  
Building Control Officer

(Plumbing&Drainage)

Direct line tel. no. (04) 296 4773

Author/generator ID data

Larsens concrete and Drainage 063445911

Kiwi green –Airtech 9000 04 2982757

Wright tanks 06 3536157

Clearflow contractors 06 3574788

Harold Thomas ( Thomas Plumbing)

Septech 0800353222

Gary Williams worminator 06 3626684

[gary@waterscape.co.nz](mailto:gary@waterscape.co.nz)

Dave Miller Environmental Engineer  
0800428426

Ensure that these contractors apply for a Building  
Consent before commencing work.

Kāpiti Coast District Council  
Tel 04 296 4700  
[www.kapiticoast.govt.nz](http://www.kapiticoast.govt.nz)

2013

David Reid Homes  
PO Box 148  
Paraparaumu 5254

**Building Consent: 130379**

Dear Sir/Madam

**Request for further information**

<b>Description:</b>	New single-level building.
<b>Location:</b>	142 Huia Street, Waikanae
<b>Legal Description:</b>	LOT 10 DP 22652 BLK VI KAITAWA SD

Following checking of your Building Consent it is apparent that further information is required.

**Information Needed:**

- 1) Post footing detail not provided by the engineer as stated on sheet 9, also please provide the connection detail for the post.
- 2) Solar panels; please provide the size and fixing penetration details. Refer to G12/AS2 for the structural requirements to the supporting frames.
- 3) Skillion roof fixing require 7kN fixings- refer to table 10.18 of NZS 3604:2011 for clarity.
- 4) Please clarify support to the lower end of the rafters over the dining room area, i.e. where they appear to attach to the trusses.
- 5) Please confirm crest height of the 3° roof cladding.
- 6) Wall cladding: a number of faces on the provided risk matrix that exceed 6 indicate direct fixed vertical trapezoidal metal cladding. As this is outside of E2/AS1 please revise the details or provide evidence in support of the design. Please note the cladding details will be reviewed on return of this point.
- 7) Please clarify or locate roof bracing details.

We have suspended your application and will not proceed any further with its processing until the above information is received. Please send it to us by 25/08/13. If we do not receive it by this date, we may not be able to issue your Building Consent.

Please contact me if you would like to discuss this matter.

Yours faithfully

Jaime Sherlock

Direct line tel. no. (04) 296 4730

29/07/2013



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Dimond Auckland  
48 Victoria Street  
Onehunga, Auckland

P O Box 13 546, Onehunga, Auckland 1643  
Telephone: 09 622 4626  
Facsimile: 09 634 6231

# Dimond

29 July 2013

Kapiti Coast District Council  
KAPITI.

Dear Sir,

**RE: Assessment of Direct fixed Vertical LT7 cladding**  
On site address 142 Huia St, Waikanae, Wellington

E2/AS1 Wall cladding risk Matrix 9 on the worst elevation  
Wind zone: Very High  
Number of floor levels 1

E2/AS1 allows corrugate to be used vertically on walls with a risk matrix of 19, but the 18 mm rib height and loser lap detail on corrugate are not as effective as the 36 mm rib height and tighter overlap of the LT7 profile, in providing better weather tightness.

The open ribs of LT7 will allow an air passage up the profile, should condensation require drying.

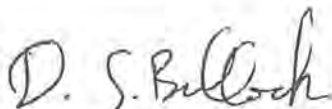
Having viewed the elevations and details as supplied by Mike Robertson, A.D.Architecture, We recommend flashings cover the wall cladding a minimum cover of 100 mm. and the LT7 is stop ended.

Provided this is achieved, Dimond confirm the LT7 used as vertical wall cladding, on a non cavity wall, will meet the performance criteria in clause E2 of the New Zealand Building code, for a period of not less than 15 years provided it is maintained in line with the guidelines and details contained in The Dimond current literature.

This covers the cladding against perforation as a result of corrosion for a period of 15 years.  
This statement is based on over 30 years past performance of the LT7 profile in N.Z. used as both commercial and residential applications.

A copy of these recommendations is available through The Dimond website [www.dimond.co.nz](http://www.dimond.co.nz)

Yours faithfully



David Bullock  
Technical Services Manager

## Jaime Sherlock

---

**From:** Mike Robertson [Mike.R@adarchitecture.co.nz]  
**Sent:** Monday, 29 July 2013 2:58 p.m.  
**To:** Jaime Sherlock  
**Subject:** RE: 142 Huia Street, Waikanae  
**Attachments:** Dimond cladding letter.pdf

Hi Jaime,

Letter attached from Dimond confirming the suitability of the cladding to be direct fixed.  
Cheers.

Regards,

Mike Robertson **ADNZ ( Professional ), LBP ( Design 2 )**  
Architectural Designer

*"Always check the LBP register to ensure your building practitioner is licensed."*



The Pier, 6-8 Seaview Road  
P.O. Box 1585, Paraparaumu Beach 5252  
Mobile : 027 2824589  
Tel : 04 2985662 Extn 15  
Fax : 04 2985663

[www.adarchitecture.co.nz](http://www.adarchitecture.co.nz)  
[www.adarchitecture.co.nz/ada-blog](http://www.adarchitecture.co.nz/ada-blog)

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**From:** Jaime Sherlock [mailto:jaime.sherlock@kapiticoast.govt.nz]  
**Sent:** 29 July 2013 12:01  
**To:** Mike Robertson  
**Subject:** RE: 142 Huia Street, Waikanae

Hi Mike,  
Thanks for the returned info so far.  
I'm ok with all points except 6. An out of date version of E2/AS1 is cited and only a statement is made regarding the use of direct fixed cladding but no evidence to support it. I will need a little more on this or alternatively the cladding could be placed on cavity with the use of a cavibatt type system,

Cheers  
Jaime

**Jaime Sherlock**  
**Building Control Officer**  
**Āpiha Whakatū Whare**

Kāpiti Coast District Council  
Tel 04 296 4700  
[www.kapiticoast.govt.nz](http://www.kapiticoast.govt.nz)

---

**From:** Mike Robertson [mailto:Mike.R@adarchitecture.co.nz]

29/07/2013

**Sent:** Friday, 26 July 2013 1:29 p.m.  
**To:** Jaime Sherlock  
**Cc:** 'Judith Kunz'  
**Subject:** RE: 142 Huia Street, Waikanae

Hi Jaime,

Please find attached revised plans and information relating to your RFI questions below :

- 1 – Post footing and connection details on revised sheets 09 and 10.
- 2 – Solar panel fixing detail attached.
- 3 – Skillion rafter fixings on revised sheet 14.
- 4 – Rafter support on revised sheet 15.
- 5 – Roofing profile attached.
- 6 – Dimond installation info attached. On page 2, the last paragraph states that Dimond vertical run cladding does not require a cavity batten system and is considered an alternative solution.
- 7 – Roof bracing on revised sheet 14.

If you have any further queries, let me know.  
Cheers.

Regards,

Mike Robertson **ADNZ ( Professional ), LBP ( Design 2 )**  
Architectural Designer

*"Always check the LBP register to ensure your building practitioner is licensed."*



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**From:** Jaime Sherlock [<mailto:jaime.sherlock@kapiticoast.govt.nz>]  
**Sent:** Thursday, 25 July 2013 4:50 p.m.  
**To:** Peter Davis  
**Subject:** 142 Huia Street, Waikanae

Hi Peter  
Sorry for the delay in reviewing this plan. Please see RFI below  
Regards,

**Jaime Sherlock**  
**Building Control Officer**  
**Āpiha Whakatū Whare**

29/07/2013



3 July 2013

Jules Esther and Dana Rachelle Peterson  
c/- David Reid Homes  
PO Box 148  
Paraparaumu

**Building Consent:** 130379

Dear Sir/Madam

### **Building Consent Application requiring Resource Consent**

**Description:** New single-level building.  
**Location:** 142 Huia Street, Waikanae  
**Legal Description:** LOT 10 DP 22652 BLK VI KAITAWA SD

We recently received an application from you for a building consent for the above property.

I have just completed a preliminary assessment of the application's compliance with the Council's District Plan.

Under the provisions of the District Plan, the site is within the Rural Zone.

Your application does not comply with Rural Zone Standards relating to earthworks, (Earthworks appear to exceed 100 cubic metres and extend beyond the 2 metre foundation line.).

A certificate will be attached to the building consent advising that a resource consent is required and restricting the work until the resource consent is obtained. I have therefore enclosed an application form and information relating to applying for a resource consent under the Resource Management Act, 1991. A fee of \$758 is payable with this application.

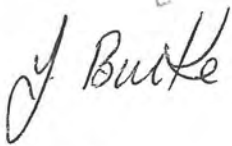
Your application for resource consent should be submitted together with a set of the related drawings. Council reserves the right to assess this application for other dispensations that may be required.

Under the Building Act 2004, section 37, Council has the right to determine what building work, if any, may proceed before a resource consent has been obtained. The extent to which any building work may proceed on your project will be detailed on the certificate attached to the building consent.

Please contact me urgently should you wish to voluntarily suspend processing of this building consent while you reassess your options. You may wish to consider altering your proposal to make it comply with the District Plan rules.

Please contact me if you would like to discuss this matter.

Yours faithfully



Jill Burke  
Resource Consent Planner

Enclosures: 1. Resource Consent Application form and information

## Certificate attached to project information memorandum 130379

COPY

### Section 37, Building Act 2004

#### Restrictions on commencing building work under the Resource Management Act 1991

The building work referred to in the attached project information memorandum is also required to have the following resource consents under the Resource Management Act 1991:

Resource consent is required to carry out earthworks exceeding 100 cubic metres and extending beyond the 2 metre foundation line of the proposed dwelling.

As these resource consents will or may materially affect the building work to which the attached project information memorandum relates, until they have been granted no building work may proceed.

Failure to comply with the requirements of this notice may result in legal action being taken against you under the Resource Management Act 1991.



Signature

Jill Burke

Projects Officer

On behalf of: KAPITI COAST DISTRICT COUNCIL

Date: 3/07/13

COPY

BC 130379

BC 130379

3 July 2013

Jules Esther and Dana Peterson  
David Reid Homes  
PO Box 148  
Paraparaumu

Dear Jules Esther and Dana Peterson,

Kapiti Coast District Council (Council) is currently processing your application for Building Consent (BC 130379) and it has been determined that Development Contributions are chargeable under section 198 Local Government Act 2002.

With reference to BC 130379 for construction of a New single-level building. at 142 Huia Street, Waikanae, a development contribution of \$4384.83 is payable.

Please note that if you had constructed the dwelling first the Development Impact fees charged would have been at the pre 1999 rate. The fees for the Family Flat would have been charged at 50% of \$8769.83 for a second dwelling in accordance with our fees schedule. We have therefore considered it fair to charge the discounted fee for the new dwelling. If you have any queries please do not hesitate to contact us.

We enclose a copy of the Development Impact Fees brochure for your information. This sets out the schedule of fees payable.

A copy of our invoice is attached.

For your information: If the development contribution is not paid, -

- (a) The council may, under section 208(b) of the Local Government Act 2002, withhold the code compliance certificate that would be issued under section 95 of Building Act 2004.

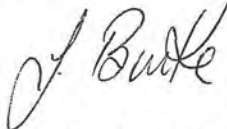


(b) 2004, must refuse to issue a code compliance certificate for the building work until it has received –

- (i) evidence that the development contribution has been paid or made by the owner to the Council; or
- (ii) a copy of written evidence that the existing dwelling on the site has been demolished.

(c) The Council may, under section 208(d) of the Local Government Act 2002, register the development contribution under the Statutory Land Charges Registration Act 1928 as a charge on the title of the land in respect of which the development contribution was required.

Yours sincerely



Jill Burke on behalf of Claire Stevens  
**Building Control Manager**

On behalf of Kapiti Coast District Council  
3 July 2013



# **SPECIFICATION**

of work to be done and materials to be used in carrying out the works shown on the accompanying drawings

## **New House**

(project name)

## **142 Huia St, Waikanae**

(project address)

## **Dana Peterson & Jules Esther**

(owners name)

Job Number: 11090

Date: Dec 2013

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## **1220 PROJECT**

### **1. GENERAL**

This general section describes the project including:

- Design parameters for design by contractor
- Archaeological discovery

#### **1.1 READ ALL SECTIONS TOGETHER**

Read all general sections together with all other sections.

#### **Description of the work**

#### **1.2 RESTRICTED BUILDING WORK**

This project includes Restricted Building Work.

#### **Site**

#### **1.3 LEGAL DESCRIPTION**

The site of the works, the street address and the legal description are shown on the drawings.

#### **1.4 EXISTING BUILDINGS**

Existing buildings consist of a house which is to be removed by separate contract and a garage which will become part of the new structure

#### **Site environment - Wind**

#### **1.5 WIND DESIGN PARAMETERS - NON SPECIFIC DESIGN**

The design wind pressures are to NZS 3604, Table 5.4 Determination of wind zone, up to and including Extra High Wind Zone.

Building wind zone - High (refer to NZS 3604, table 5.4)

#### **Site environment - Durability**

#### **1.6 EXPOSURE ZONE**

The exposure zone is to NZS 3604, Section 4 Durability, 4.2 Exposure zones and NZBC E2/AS1.

The site zone is - C

#### **Site environment - Seismic**

#### **1.7 EARTHQUAKE ZONE - NON SPECIFIC DESIGN**

The zone is to NZS 3604, Section 5 Bracing design, 5.3 Earthquake bracing demand.

The earthquake zone is - 1

#### **Archaeological discovery**

#### **1.8 ANTIQUITIES AND ITEMS OF VALUE**

Report the finding of any fossils, antiquities and other items of value, to the Contract Administrator. All to remain undisturbed until approval is given for removal.

Pre-1900, items or evidence of human activity on the site, come under the Historic Places Trust Act 1993. If such items or evidence is discovered work must stop immediately and the Contract Administrator must be notified immediately. The site maybe classified as an Archaeological Site under the Act, and the Contract Administrator or Owner must contact the NZ Historic Places Trust for authority to proceed.

Post-1900 items remain the property of the owner, pre-1900 items may remain the property of the owner or the Crown subject to what is found.



## 1232 INTERPRETATION & DEFINITIONS

### 1. GENERAL

This general section relates to interpretation and definitions that are used in this specification.

#### 1.1 DEFINITIONS

Required:	Required by the documents, the New Zealand Building Code or by a statutory authority.
Proprietary:	Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
Provide and fix:	"Provide" or "fix" or "supply" or "fix" if used separately mean provide and fix unless explicitly stated otherwise.
Review:	Review by the contract administrator is for general compliance only. Review does not remove the need for the contractor to comply with the stated requirements, details and specifications of the manufacturers and suppliers of individual components, materials and finishes. Neither can the review be construed as authorising departures from the contract documents.
Working Day:	Working Day means a calendar day other than any Saturday, Sunday, public holiday or any day falling within the period from 24 December to 5 January, both days inclusive, irrespective of the days on which work is actually carried out.

#### 1.2 PERSONNEL

Owner:	The person defined as "owner" in the New Zealand Building Code.
Principal:	The person defined as "principal" in the conditions of contract.
Contractor:	The person contracted by the principal to carry out the contract.
Contract Administrator:	The person appointed by the principal to administer the contract on the principal's behalf. Where no person has been appointed by the Principal, it means the Principal or the Principal's representative.

#### 1.3 ABBREVIATIONS

The following abbreviations are used throughout the specification:

AAMA	American Architectural Manufacturers Association
AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
ASTM	American Society for Testing and Materials
AWCINZ	Association of Wall and Ceiling Industries of New Zealand Inc
BCA	Building Consent Authority
BRANZ	Building Research Association of New Zealand
BS	British Standard
CSIRO	Commonwealth Scientific and Industrial Research Organisation
HERA	Heavy Engineering Research Association
LBP	Licensed Building Practitioner
MoBIE	Ministry of Business, Innovation and Employment (includes the old DBH)
MPNZA	Master Painters New Zealand Association Inc
NZBC	New Zealand Building Code
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
NZTA	New Zealand Transport Agency (previously TNZ)
NUO	Network Utility Operator
PS1	Producer Statement – Design
PS2	Producer Statement – Design Review
PS3	Producer Statement – Construction
PS4	Producer Statement – Construction Review
RBW	Restricted Building Work
SARNZ	Scaffolding and Rigging Association New Zealand Inc
SED	Specific Engineering Design

TA	Territorial Authority
TNZ	Transit New Zealand (Transit New Zealand is now New Zealand Transport Agency NZTA, some specifications are still prefixed TNZ)

#### 1.4 DEFINED WORDS

Words defined in the conditions of contract, New Zealand Standards, or other reference documents, to have the same interpretation and meaning when used in their lower case, title case or upper case form in the specification text.

#### 1.5 WORDS IMPORTING PLURAL AND SINGULAR

Where the context requires, words importing singular only, also include plural and vice versa.

## 1233 REFERENCED DOCUMENTS

### 1. GENERAL

#### 1.1 REFERENCED DOCUMENTS

Throughout this specification, reference is made to various New Zealand Building Code Compliance Documents (NZBC \_\_), acceptable solutions (\_\_ AS\_\_) and verification methods (\_\_ VM\_\_) for criteria and/or methods used to establish compliance with the New Zealand Building Code.

Reference is also made to various standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), overseas standards and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications.

Documents cited both directly and within other cited publications are deemed to form part of this specification. However, this specification takes precedence in the event of it being at variance with the cited documents.

#### 1.2 DOCUMENTS

Documents referred to in the GENERAL sections are:

NZBC F4/AS1	Safety from falling
NZBC F5/AS1	Construction and demolition hazards
AS/NZS 1170.2	Structural design actions - Wind loads
AS/NZS 3012	Electrical installations - Construction and demolition sites
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3404:1997	Steel structures standard
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 4210	Masonry construction: Materials and workmanship
NZS 6803	Acoustics - Construction Noise
Building Act 2004	
Building Regulations 1992	
Health and Safety in Employment Act 1992	
Health and Safety in Employment Regulations 1995	
New Zealand Building Code	
Historic Places Act 1993	
Resource Management Act 1991	
Smoke-free Environments Act 1990	
OSH	Guidelines for the provision of facilities and general safety in the construction industry
SARNZ	Best practice guideline for scaffolding in New Zealand

## 1234 DOCUMENTATION

### 1. GENERAL

This general section relates to documentation required by the Territorial Authority/Building Consent Authority for compliance with the New Zealand Building Code. It also includes documentation relating to:

- Substitutions
- Manufacturers documents

#### **Building Consent Authority documentation**

#### 1.1 BUILDING CONSENT

Obtain the original or copies of the building consent forms and documents from the owner and keep them on site. Liaise with the BCA for all notices to be given and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

#### 1.2 BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004

- to carry out any work not in accordance with the building consent.
- to carry out Restricted Building Work by anyone other than a Licensed Building Practitioner licensed for that type of work.

The resolution of matters concerning building code compliance to be referred to the contract administrator for a direction in writing and then to the BCA for consent.

Where any alteration is requested by the territorial authority or any other authority, do not undertake such alteration until the matter has been referred to the Contract administrator for direction.

#### 1.3 PROJECT PERSONNEL

Provide names and contact detail of the contractor's key personnel and tradespersons who are involved with the project. Provide the names in the form required in the general section of the specification. Review the list once a month and reissue it if changes have been made.

#### **Licensed Building Practitioner documentation**

#### 1.4 LICENSED BUILDING PRACTITIONERS

On behalf of the Owner, provide details of LBP's to carry out or supervise Restricted Building Work. Provide names, LBP numbers, areas of practice and other required information. Provide this to the BCA and the Contract Administrator before commencing work on the Restricted Building Work. Provide the information in the form required in the general section 1222L PROJECT PERSONNEL LBP'S. Review the list once a month and reissue it if changes have been made.

Include the following which are considered applicable to this project:

- Site LBP
- Carpenter
- Foundations 1 Concrete foundation walls and concrete slab-on-ground constructor
- Roofing 3 Metal tile roofer

Also provide names and contact details of the following

- Registered drainlayer
- Registered plumber
- Registered gasfitter
- Registered electrician



- 1.5 **NOTIFICATION OF BREACHES OF BUILDING CONSENT**  
Provide to the Contract Administrator and the Contractor a copy of any advice given to the BCA under s.89 of the Building Act. Provide this advice no later than the time the advice is given to the BCA.
- 1.6 **RECORD OF BUILDING WORK**  
Where Restricted Building Work is carried out by a LBP, on completion of the RBW provide a Record of Building Work for inclusion with the documentation required for Code Compliance. Provide copies to both the BCA and the Contract Administrator.

#### **Compliance information**

- 1.7 **DOCUMENTATION REQUIRED FOR CODE COMPLIANCE**  
Information may be required either as a condition of the contract documents or as a condition of the building consent may include the following: -  
- Applicators approval certificate from the manufacturer / importer / distributor  
- Manufacturer's, importer's or distributors warranty  
- Installer / applicator's warranty  
- LBP Record of Work  
- Producer Statement - Construction from the applicator / installer  
Producer Statement - Construction review from an acceptable suitably qualified person

Refer to the general sections for the requirements for compliance information to be provided by the contractor.

Refer to the building consent for the requirements for compliance information to be provided by the contractor.

Obtain required documents from the relevant parties for delivery to the contract administrator after the final inspection has been carried out by the Building Consent Authority.

#### **Substitutions**

- 1.8 **ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS**  
Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier. Where more than one named supplier, any one of the named suppliers will be acceptable.
- 1.9 **NO SUBSTITUTIONS**  
Where specifically stated in a section, substitutions are not permitted to any of the specified systems, components and associated products listed in that section.
- 1.10 **PROPOSED SUBSTITUTIONS**  
A substitution may be proposed where specified products are not reasonably available. A substitution may also be proposed by the Contractor where the Contractor considers a proposed substitution to be an alternative to the specified product. Except where a specified product is not available, the Contract administrator is not bound to accept any substitutions. Where branded work sections are included in this specification, substitution of those products or systems will not be allowed.
- 1.11 **NOTIFICATION OF SUBSTITUTIONS**  
Notify proposed substitution of specified products. Notification to include but not be limited to:  
- Product identification  
- Manufacturer's name, address, telephone and facsimile numbers, website and email address  
- Detailed comparison between the properties and characteristics of the specified product and the proposed substitution  
- Statement of NZBC compliance including durability  
- Details of manufacturer warranties

plus an assessment of

- Any changes required to the programme including any extension of time required
- Any consequential effects of the proposed substitution
- Allowance for time and cost for re-design and documentation (if applicable)
- Allowance for time and cost for obtaining an amendment to the Building Consent (if applicable)
- Any change in cost associated with the proposed substitution

and if requested

- All current manufacturer's literature on the product
- Accreditations and appraisals available
- Reference standards
- Product limitations
- Samples
- List of existing installations in the vicinity of the project

#### 1.12 ACCEPTANCE OF SUBSTITUTIONS

The Contract administrator must advise of acceptance of substitutions in writing.

#### **Amendment to issued Building Consent**

#### 1.13 CONTRACTOR AMENDMENTS TO BUILDING CONSENT

Where the contractor has sought acceptance of a substitution or a variation which is for the contractor's own convenience and the substitution or variation requires an amendment to the Building Consent, the contractor must apply for and obtain the required amendment.

The contractor must:

- Obtain approval for substitutions from the Contract administrator.
- Prepare and provide to the BCA all documentation required for the amendment.
- Pay all fees and other costs associated with this amendment.
- Where the amendment affects other approved plans, also amend those plans.

#### 1.14 PRINCIPALS AMENDMENTS TO BUILDING CONSENT

Where the principal is proposing a substitution or a variation which requires an amendment to the Building Consent, the contractor must provide to the principal information that the contractor has that is required for the amendment.

The principal will:

- Prepare and provide to the BCA all documentation required for the amendment.
- Pay all fees and other costs associated with this amendment.
- Where the amendment affects other approved plans, also amend those plans.

#### **Manufacturer's documents**

#### 1.15 BRANDED WORK SECTIONS

Branded sections may be included in this specification relating to specific products and systems to be installed as part of the contract works. Where branded sections are included, substitutions to the branded products and systems will not be allowed.

#### 1.16 CROSS REFERENCED WORK SECTIONS

If any related work is cross referenced to a generic work section, but only the equivalent branded section is included in the specification, use that branded section. Confirm with the Contract administrator if there is any doubt.

#### 1.17 MANUFACTURER'S AND SUPPLIER'S REQUIREMENTS

Manufacturers and supplier's requirements, instructions, specifications or details mean those issued by them for their particular material, product or component and are the latest edition.

#### 1.18 MANUFACTURER'S AND SUPPLIER'S DOCUMENTS

Refer to individual sections for a detailed list of manufacturer's and supplier's documents relating to work on this project. Retain current copies of the documents listed, and all other relevant manufacturer's technical literature, on site. Make this information available

to all personnel and ensure they are familiar with requirements for handling, storing, preparing for, fixing and finishing all products before commencing work. Provide a copy of all listed manufacturer's literature to the Contract administrator.

**1.19 ONGOING MAINTENANCE REQUIREMENTS**

Refer to individual sections for details of manufacturer's and supplier's requirements for ongoing maintenance necessary to ensure continuing compliance with the durability requirements of the NZBC. Provide a copy of literature detailing ongoing maintenance and inspection requirements to the Contract administrator.

**As built drawings**

**1.20 PROVIDE AS BUILT DRAWINGS**

Provide as built drawings where specified in the work sections and as required by the BCA.

**Operation and maintenance**

**1.21 PROVIDE OPERATION AND MAINTENANCE INFORMATION**

Unless addressed elsewhere in this specification provide operation and maintenance documentation necessary for the principal to operate and maintain the works. Provide documentation no later than the date of practical completion or the date on which the principal takes occupation of the works. This documentation is to include: -

- A complete list of subcontractors' names, addresses and telephone numbers noting which portions of the contract each provided
- A complete list of equipment and appliances including serial numbers, manufacturer's names and sources of supply
- Copies of all manufacturer's product literature containing maintenance requirements/instructions
- Final As-Built drawings (as required by the work sections)
- Originals of all warranties and guarantees properly executed.

Submit in final form in a hard cover, "clear view" loose-leaf binder, with contents index, contractor's name, date of practical completion and titled on the binding edge "Operation and maintenance information for (project name)".

## **1240 ESTABLISHMENT**

### **1. GENERAL**

This general section relates to site establishment including:

- Notices and approvals
- Site preparation
- Temporary construction

#### **Notices and approvals**

#### **1.1 STATUTORY OBLIGATIONS**

Comply with all statutory obligations and regulations of regulatory bodies controlling the execution of the works.

#### **1.2 BUILDING CONSENT AUTHORITY AND NETWORK UTILITY APPROVALS**

Attend on Building Consent Authority officers, statutory and network utility inspectors, as necessary to obtain approvals (in addition to building consent approval) for and the satisfactory completion of, the works.

#### **1.3 NOTIFY NETWORK UTILITY OPERATORS**

Notify all network utility operators of proposed works before commencing site operations. Ascertain location of services or confirm that none exist in the vicinity of the works. Take all necessary precautions to avoid damage to existing services.

#### **Site preparation**

#### **1.4 GROUND CONDITIONS**

Refer to the soils investigation report included in the consulting engineers documentation.

#### **Temporary construction**

#### **1.5 HOARDINGS, GANTRIES, LIGHTING**

Provide temporary fencing, hoardings, planked footways, guard rails, gantries and lighting as necessary to protect the public and others, for the proper execution of the works and to meet the requirements of territorial or other authority.



## **1256 WASTE MANAGEMENT**

### **1. GENERAL**

This general section relates to the implementation of a site waste management plan.

#### **1.1 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

REBRI Resource Guides

Website: [www.rebri.org.nz/](http://www.rebri.org.nz/)

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

#### **1.2 ABBREVIATIONS**

The following abbreviations are used in this specification:

REBRI                      Resource Efficiency in the Building and Related Industries

#### **Requirements**

#### **1.3 WASTE MANAGEMENT PLAN**

Prepare and submit a waste management plan in line with the guidelines provided in the REBRI Guides. [www.rebri.org.nz/](http://www.rebri.org.nz/)

The submitted plan to include the following factors:

- site planning and material storage
- waste management
- purchasing
- recycling
- salvage.

#### **1.4 RECORD KEEPING**

Maintain a record of waste materials, recycled, reused and disposed of by the project using the REBRI Waste Management Plan and REBRI C&D Waste Transfer Form or a form generated by the contractor containing the same information.

- For each material recycled from the project, include the amount (in cubic metres or tonnes), or in the case of reuse, state quantities by number, type and size of items, and the destination (i.e. recycling facility, used building materials yard).
- For each material land filled, include the amount (in cubic metres or tonnes) of material and the identity of the landfill, clean fill and/or transfer station.

If requested, submit to the Contract Administrator the REBRI Waste Management Plan, REBRI C&D Waste Transfer Forms or bills, invoices and other documentation confirming that all materials have been received at the required locations.

#### **1.5 ENSURE**

Ensure all site management and staff, subcontractors, material and product suppliers and waste disposal companies are made aware that this is a REBRI project and provide access to or copies of the waste management plan.

#### **Equipment**

#### **1.6 CONTAINERS**

Provide appropriately sized and sited containers for the storage of reusable, recyclable and waste products. Clearly label each container.

#### **Conditions**

#### **1.7 STORAGE**

Store all materials so they are not damaged prior to use.

- 1.8      **PLANNING**  
Plan the measurement and ordering of materials and components to minimise waste.
- Application**
- 1.9      **DEMOLITION**  
- Sort concrete and concrete block waste for recycling as aggregate, sub-base material or fill.
- 1.10     **SITE CLEARING**  
- Grind, chip or shred vegetation for mulching and composting on site.  
- Provide suitable on-site locations for the disposal of excavated rock, soil and vegetation.
- 1.11     **CONCRETE**  
- Plan for maximum re-use of concrete formwork.  
- Separate and recycle concrete.  
- Provide a suitable on-site location for the disposal of excess concrete.
- 1.12     **WOOD**  
- Separate and recycle wood offcuts and waste.  
- Separate timber for reuse  
- Provide a suitable storage area for sizeable off-cuts for use as spacers or blocking.  
- Separate CCA treated timber from untreated timber.  
- Chip untreated timber for mulching and composting on site.
- 1.13     **PLASTERBOARD**  
- Include for both horizontal fitting of sheets and customised sheet lengths.  
- Retain larger off-cuts for use around doors, windows or built-in items.
- 1.14     **PLUMBING**  
- Select plumbing materials with a high recycled content.  
- Ensure that reusable packaging materials are returned to the vendors.  
- Retain PVC off-cuts for use as stubs.  
- Separate and recycle plastics.
- 1.15     **ELECTRICAL**  
- Select electrical materials with a high recycled content.  
- Ensure that reusable packaging materials are returned to the vendors.  
- Separate and recycle metals and wire.  
- Separate and recycle plastics.
- Completion**
- 1.16     **CLEANING**  
All cleaning materials used on the project to be biodegradable and non-toxic.

## **1260 PROJECT MANAGEMENT**

### **1. GENERAL**

This general section relates to project management requirements including:

- Meetings
- Communicating and recording
- Programming
- Health and safety

#### **Site Meetings**

### **1.1 SITE MEETINGS**

Meetings to normally be held: Fortnightly

The following persons to attend:

- Principal
- Project manager
- Contractor
- Services consultants when needed
- Subcontractors when needed (contractor to inform them).

### **1.2 SITE MEETING MINUTES**

The project manager is to keep full minutes of all site meetings and arrange distribution to all those involved within 3 working days.

The minutes are to record

- Documentation and information issued and required
- Directions and variations issued
- Confirmation of contract insurances
- Programme
- General business
- Site health and safety
- Payment claim processing including costing variations

#### **Reporting**

### **1.3 CONTRACTORS DETAILED STATUS REPORT**

A Contractors detailed status report is required to address the following:

- A progress performance report based on the current contract construction programme addressing actual progress against programme of all activities and any variance from the programme.
- Details of measures being taken to get work back on programme where there has been a delay.
- Details of any future events that will or are likely to affect compliance with the programme.
- Variation report including progress on agreed variations, variations to be agreed and anticipated variations and the time implication of variations.
- Procurement progress on parts of the work being undertaken under a monetary allowance including the time by which direction must be given on monetary allowances to conform with the construction programme.
- Details of any discrepancies in the contract documents that require clarification or determination.
- A list of information requests by the contractor, the date when they were made, the person who they were directed to and the date by which a response is required.
- A report on compliance with the issued Building Consent and any parts of the work that have not been passed by the BCA inspector.
- A report on compliance with the issued Resource Consent and any compliance issues.
- A report of site health and safety including any notifiable incidents.

#### **Communicating and recording**

1.4 MEANS OF COMMUNICATION

Communications between the parties shall be as follows: -

Directions: In writing delivered by email with a copy by post or hand  
Meeting minutes: In writing delivered by email  
RFI's: (Requests for information) by email or in writing to the contract administrator

1.5 RECORDS

Ensure all records specified are kept, held and collated on site in a form that makes the information easily accessible when it is needed. Distribute copies as and when necessary to those persons entitled under the contract to that information.

1.6 PROGRESS PHOTOGRAPHS

Take digital photographs from positions agreed with the contract administrator at specified frequency and provide copies to the contract administrator.

Frequency: Monthly

Copies required: 1 electronic copy delivered on disk or by email

**Programming**

1.7 WORKING HOURS RESTRICTIONS

Work on site is restricted to:

Weekdays: 7am – 6pm

Saturdays: 8am – 2pm

Work outside these hours may be permitted, but 24 hours notice is required in writing to the contract administrator before proceeding. Obtain any necessary permits and permission for such work.

**Health and safety**

1.8 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety in Employment Act 1992. Comply with all relevant New Zealand safety legislation.

Take all practical steps to make the site and the contract works safe and to provide and maintain a safe working environment. Ensure that all those working on or visiting the site are aware of the rules governing site safety, are properly supervised and are not unnecessarily exposed to hazards.

Identify any significant hazards.

Maintain proper procedures for dealing with any emergencies that may arise. Immediately investigate accidents, identify their cause and maintain a register of accidents and serious harm. Provide a copy of any report which the contractor is required to make to a public authority on any accident which is associated with carrying out the contract works and results in serious harm to any person.

Refer to individual work sections for detailed requirements on this project.

1.9 SUSPENSION OF HAZARDOUS WORK

On the request of the contract administrator, acting on reasonable grounds, suspend any identified hazardous activities and proceed to eliminate, isolate or minimise them in order to comply with the Act, without prejudice to any other rights of the principal under the contract.

1.10 SITE SAFETY PERSON

Appoint a suitably qualified site safety person to co-ordinate site safety and to attend all site meetings.



1.11 HEALTH AND SAFETY PLAN

Prepare and submit to the contract administrator before commencing work on site a health and safety plan. Include in that plan all people on site and the general public, as well as the following items and any other necessary item:

- identification of existing and potential construction hazards and risks
- safety procedures to eliminate, isolate or minimise construction hazards
- the equipment to be used to minimise the hazards
- the maintenance of a register of hazards for the site
- the name and qualifications of the site safety person
- emergency procedures
- first aid facilities and safety equipment
- the methodology for notifying, recording and investigating accidents and injuries.

Keep a copy of the plan in the site office

1.12 COMPLY WITH SITE SAFETY PLAN

Carry out all construction operations in accordance with the submitted health and safety plan.

1.13 INFORM EMPLOYEES OF HAZARDS

Inform employees and others on the site of:

- hazards they may be exposed to while working
- hazards they may create while working which could harm others
- how these hazards may be minimised
- emergency procedures
- the location of first aid facilities and safety equipment.

1.14 HEALTH AND SAFETY REGULATIONS, CODES AND GUIDES

Comply with:

- Relevant New Zealand safety legislation including "Health and Safety in Employment Regulations 1995".
- OSH publications including "Guidelines for the provision of facilities for general safety in the construction industry".
- Relevant codes of practice, guides, guidelines and standards.

Until further regulations are made under the Health and Safety in Employment Act 1992 to cover them, the enactments repealed by the Act continue in force until revoked.

1.15 EXPLOSIVES

Do not use explosives except with the written approval of the territorial authority/office of OSH. Comply with their safety requirements and use construction blasters holding a current certificate of competence issued under the Health and Safety in Employment Regulations 1995.

1.16 POWDER-ACTUATED FASTENING TOOLS

Powder-actuated fastening tools to be used only by workers holding current certificates of competence in their name, issued under the requirements of the Health and Safety in Employment Regulations 1995.

1.17 SMOKE FREE REQUIREMENTS

Do not smoke on site except in a designated location, in accordance with the Smoke Free Environments Act 1990. This location to be determined by the contractor with the agreement of the contract administrator.

1.18 RESTRICTIONS

Do not:

- light rubbish fires on the site
- bring dogs on to or near the site
- bring radios/audio players on to the site.

## 1270 CONSTRUCTION

### 1. GENERAL

This GENERAL section relates to common requirements for construction issues including: -

- Quality assurance
- Noise and nuisance
- Set out
- Common execution requirements
- Common materials requirements
- Supply of spare materials
- Common requirements for samples and tests
- Final presentation and cleaning
- Commissioning

#### Quality control and assurance

### 1.1 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy, including:

- Concrete quality and finish.
- Dimensional accuracy of structural column locations (following completion of foundations).
- All perimeter columns and frames for plumb.
- Levels of all floors relative to the site datum.
- Framing timber moisture content.

Where any material, quality or dimension falls outside specified or required tolerances, obtain written direction from the contract administrator. Where building consent approval is affected, confirm remedial action with the Building Consent Authority.

Provide all materials, plant, attendances, supervision, inspections and programming to ensure the required quality standards are met by all project personnel.

#### Noise and nuisance

### 1.2 LIMIT CONSTRUCTION NOISE

Minimise the effects of noise generation by including in the planning of the work such factors as placing of plant, programming the sequence of operations and other management functions. Limit construction noise to comply with the requirements of NZS 6803, the requirements of the Resource Management Act sections 326, 327 and 328 and the Health and Safety in Employment Regulations clause 11.

### 1.3 ACCEPTABLE NOISE LEVELS

Refer to NZS 6803 Tables 2 and NZS 6803, tables 3 for the upper limits of construction work noise in residential and industrial areas over the various time periods, particularly 0730 to 1800 hours. Note also the allowed adjustments and exemptions in NZS 6803, 6. Do not exceed these limits.

### 1.4 PROVIDE INFORMATION TO NEIGHBOURS

Provide information to neighbours of any noise generation from the site liable to constitute a problem. Explain to them the means being used to minimise excessive noise and establish with them the timings most suitable for the noise generating work to be carried on.

Discuss with any complainant the measures being used to minimise noise. Where possible modify these measures to accommodate particular circumstances. Finally, determine the sound level at the location under discussion using methods and observation reporting as laid down in NZS 6803. If the noise level is above the upper limits of NZS 6803, tables 2 and NZS 6803, tables 3, cease the noise generating operation and remedy the problem.

1.5 **DIRT AND DROPPINGS**  
Remove dirt and droppings deposited on public or private thoroughfares from vehicles servicing the site to the satisfaction of the appropriate authorities and the contract administrator.

1.6 **DAMAGE AND NUISANCE**  
Take all precautions to prevent damage and nuisance from water, fire, smoke, dust, rubbish and all other causes resulting from the construction works.

**Set-out and tolerances**

1.7 **SURVEY INFORMATION**  
Locate and verify survey marks and datum points required to set out the works. Record and maintain their position. Re-establish and replace disturbed or obliterated marks.

1.8 **SET-OUT AND DATUM**  
Set out the work to conform with the drawings. Establish a permanent site datum to confirm the proposed building ground floor level and its relationship to all other existing and new building levels.

1.9 **SET-OUT BY LICENSED CADASTRAL SURVEYOR**  
Before commencing construction provide the contract administrator with a certificate prepared by a licensed cadastral surveyor that the set-out is complete and that the building is accurately placed on the site.

During construction provide the contract administrator with a certificate, prepared by the same licensed cadastral surveyor confirming the set-out of the foundations and grid lines. Necessary adjustments are to be determined and agreed to by the contract administrator before proceeding further.

1.10 **CONFIRM HEIGHT IN RELATION TO BOUNDARY**  
Provide a certificate prepared by a licensed cadastral surveyor that the building has been constructed within the allowed height in relation to boundary. Provide the certificate to the local authority. Provide a copy of the certificate to the contract administrator

1.11 **USE OF SET-OUT INSTRUMENTS**  
Permit without charge, the use of instruments already on site for checking, setting out and levels.

1.12 **CHECK DIMENSIONS**  
Check all dimensions both on drawings and site, particularly the correlation between components and work in place. Take all dimensions on drawings to be between structural elements before linings or finishes, unless clearly stated otherwise.

1.13 **TOLERANCES**  
All work to be level, plumb, and true to line and face. Unless otherwise specified in specific work sections of this specification, tolerances for structural work shall comply with the following:

Concrete construction:	To NZS 3109 Concrete construction Clause 3.9 Tolerances for reinforcement Table 5.1 Tolerance for precast components Table 5.2 Tolerance for in situ construction To NZS 3114 Concrete surface finishes
Structural steelwork:	To NZS 3404:1997 Steel structures standard Section 14.4 Tolerances (after fabrication) Section 15.3 Tolerances (erection)
Timber framing:	To NZS 3604 Timber-framed buildings Clause 2.2 Tolerances Table 2.1 Timber framing tolerances

Refer to work sections for tolerance requirements for finishes.

## **Execution**

- 1.14 **EXAMINE PREVIOUS WORK**  
Before commencing any part of the work carefully examine the previous work on which it may depend. Report in writing to the contract administrator defects that may affect the quality of the proposed work and obtain instructions. Commencing work on any part means that previous work is accepted as being satisfactory for work of the required standard.
- 1.15 **WORKER QUALIFICATIONS**  
All work to be level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.
- 1.16 **MINIMISE DELAYS DUE TO WEATHER**  
Use appropriate techniques and methods to prevent damage and minimise delays due to weather.

## **Materials**

- 1.17 **NEW PRODUCTS AND MATERIALS**  
Materials and products to be new unless stated otherwise, of the specified, and complying with all cited documents.
- 1.18 **COMPATIBILITY OF MATERIALS AND FINISHES**  
Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.
- 1.19 **STORING PRODUCTS AND MATERIALS**  
Take delivery of and store products, materials and components in accordance with codes of practice and the product manufacturer's or supplier's stated requirements. Maintain the proper condition of any protective packaging, wrappings or supports during delivery, unloading and storage.
- 1.20 **HANDLING PRODUCTS AND MATERIALS**  
Handle products, materials and components in accordance with codes of practice and the manufacturer's or supplier's stated guidelines. Avoid distortion and any contact with potentially damaging surfaces or conditions.
- 1.21 **SUBSTRATE CONDITIONS**  
Ensure substrate conditions are within the manufacturer's or supplier's stated guidelines both before and during the installation of any material, product or system. Obtain written instructions on the necessary action to rectify unsatisfactory conditions.
- 1.22 **INSTALLING PRODUCTS AND MATERIALS**  
Install in accordance with the manufacturer's or supplier's technical literature. Ensure that all installers are familiar with the required substrate conditions and the manufacturer's or supplier's specified preparation, fixing and finishing techniques.
- 1.23 **COMPLY WITH STANDARDS**  
Comply with the relevant and/or cited Standard for any material or component. Obtain certificates of compliance when requested by the contract administrator.
- 1.24 **CONDITION OF MATERIALS AND COMPONENTS**  
To be in perfect condition when incorporated into the work.
- 1.25 **INCOMPATIBLE MATERIALS AND METALS**  
Separate incompatible materials and metals with separation layers, sleeves or gaskets of plastic film, bituminous felt or mastic or paint coatings, installed so that none are visible on exposed surfaces.

## **Samples and tests**



1.26

#### **SAMPLES AND PROTOTYPES**

Where specified in the work sections, submit samples, prepare sample panels, and construct prototypes for review as to appearance, form and conformance with the drawings and specifications. Submit all information required to assist the review process, including technical data, manufacturer's literature, independent appraisals and producer statements.

Timing for the provision and review of samples, sample panels and prototypes to be included in the contract programme. Allow a minimum of 10 working days for each review. Proceed only after instructions to proceed have been issued in writing by the contract administrator.

In situ work may be incorporated in the finished work if so confirmed, otherwise allow to remove completely and replace.

1.27

#### **CONTROL STANDARD**

Obtain the contract administrator's confirmation of material, component and work samples which then become the quality control standard. Remove from the site any rejected samples. Retain confirmed samples with care on site for comparison throughout the contract. Remove from the site when no longer required.

#### **Spares**

1.28

#### **SPARES**

Collect, protect and store safely all spare materials required under the contract. Give the contract administrator an inventory of all spares.

#### **Final presentation and cleaning**

1.29

#### **REMOVE TEMPORARY PROTECTION**

Remove all temporary markings, coverings, labels and protective wrappings unless instructed otherwise.

1.30

#### **REPLACE DAMAGED MATERIALS**

Replace all materials or component damaged during the works to the standard of and integral with the original.

1.31

#### **COMPLETE ALL SERVICES**

Ensure all services are complete and operational, with all temporary labelling removed, required labelling fixed and service instructions provided.

1.32

#### **CLEANING BY CONTRACTOR**

Clear the contract works of all construction materials, waste, dirt and debris. Clean the contract works including:

- Wipe all surfaces to remove construction dust
- Clean out service ducts and accessible concealed spaces
- Clean out all gutters and rainwater heads
- Wipe dust from both sides of glass. Take particular care when removing paint or cementitious materials to not damage the glass.
- Remove adhesive residue left by labels and other temporary protection/markings
- Clean out the interior of all cabinetry
- Wash down external concrete including driveways and concrete masonry. Take care when waterblasting to not cause damage to the surface or allow water to enter the building.
- Remove rubbish and building material from the area immediately adjacent to the contract works

1.33

#### **CLEANING BY COMMERCIAL CLEANER**

Use a commercial cleaning firm to clean the whole of the interior of the building, including all appliances, equipment, fittings, surfaces and finishes to leave it without any blemish. Cleaning to include:

- Clean and wash down all external surfaces to remove dirt, debris and marking.
- Clean all interior surfaces including cabinetwork, joinery, sanitary and hardware items.



- Vacuum or polish all floor finishes.
- Clean and polish all glass, both sides.

### **Commissioning**

1.34

#### **MOVING PARTS**

Adjust, ease and lubricate all doors, windows, drawers, hardware, appliances, controls and all moving parts to give easy and efficient operation.

1.35

#### **SECURITY AT COMPLETION**

Remove any temporary lock cylinders and complete final keying prior to handing over keys to the principal on completion of the works. Leave the works secure with all accesses locked. Account for all keys/cards/codes and hand to the principal along with an itemised schedule, retaining a duplicate schedule signed by the principal as a receipt.

## **2210 PREPARATION AND GROUNDWORK**

### **1. GENERAL**

This section relates to the clearance, excavation and backfilling of the site area in preparation for:

- footings and floor slabs
- backfilling behind basement retaining walls

#### **Documents**

#### **1.1 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

- |          |   |
|----------|---|
| NZS 3604 | Timber-framed buildings   |
| OSH      | Approved code of practice for safety in excavation and shafts for foundations |

#### **1.2 SITE SAFETY**

Provide adequate support for all excavations. Cover holes and fence off open trenches and banks.

#### **1.3 ARCHAEOLOGICAL DISCOVERY**

If fossils, antiquities and other items of value are found refer to the general section 1220 PROJECT for actions to be taken with archaeological discovery.

### **2. PRODUCTS**

#### **2.1 EXCAVATED CLEAN FILL**

Clean, free of contamination, mineral soil from other formations in the excavation which may be selected and approved as suitable for filling by having grading and moisture content properties that will allow recompaction to 95% of maximum density.

#### **2.2 SAND FILL**

Clean sand of such grading in particle size to achieve mechanical compaction to 90% maximum density.

#### **2.3 HARD FILL**

Scoria or crushed rock to GAP (General All Passing) 40 grading.

#### **2.4 GRANULAR FILL**

Approved screened crushed gravel or scoria, graded in size from 20mm to 7mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.

#### **2.5 DRESSING COURSE**

Scoria to GAP 20 grading, or "dirty footpath scoria", or equivalent "all in" graded crushed metal aggregate.

#### **2.6 FREE-DRAINING AGGREGATE**

Scoria or crushed gravel graded 50 to 14 clean.

### **3. EXECUTION**

#### **3.1 WASHOUT BAY FOR TRUCK**

Provide a designated area for trucks to be washed down to avoid mud and dirt being carried off site.

#### **3.2 EXCAVATION GENERALLY**

Carry out excavation, using plant suitable for the purpose, to the guidelines set by the OSH publication: Approved code of practice for safety in excavation and shafts for foundations.

- 3.3      **BURNING OF MATERIALS**  
Burning of materials is not permitted on site.
- 3.4      **PROTECT EXISTING WORK**  
Protect from damage existing buildings, structures, roads, paving and services nominated on the drawings as being retained.
- 3.5      **PROTECT TREES**  
Protect from damage trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained. Ensure existing levels are undisturbed beneath the dripline of retained trees.
- 3.6      **EROSION CONTROL**  
Ensure measures are in place to contain silt dislodged as a result of water infiltration and to prevent it being carried off site with stormwater.
- 3.7      **SURFACE PREPARATION**  
Comply with NZS 3604, section 3.5, **Site preparation**. Remove all turf, vegetation, trees, topsoil, stumps, uncontrolled fill and rubbish from the area to be built on.
- 3.8      **UNDERGROUND ELEMENTS AND SERVICES**  
Break out and remove old foundations, slabs, drainage pipes, manholes, tanks, cables and redundant services. Report for instructions when any unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to territorial authority approval.
- 3.9      **STOCKPILE TOPSOIL**  
Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials. Spread and level where directed before completion of the works.
- 3.10     **GENERAL EXCAVATION**  
Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water.
- 3.11     **ROCK EXCAVATION**  
If rock is found at any level above the underside of the structural foundations, or above required base levels for site service trenches, immediately notify the owner. Obtain written instructions from the owner on the proposed approach to rock excavation, or consequent alterations to subgrade construction. Confirm any changes with the territorial authority.
- 3.12     **FOUNDATION EXCAVATION**  
Take foundation excavations to depths shown. Keep trenches plumb and straight, bottoms level and free of soft spots, stepped as detailed and clean and free of water.
- 3.13     **STANDARD OF COMPACTION**  
Place fill in layers of not more than 150mm and compact to achieve 95% of maximum dry density. For granular fill material, the fill shall be compacted to 80% of saturated dry density.
- 3.14     **GRANULAR BASE FOR SLABS**  
To conform to NZS 3604, section 7.5.3, **Granular base**. Consolidate with a vibrating roller. Blind the surface with 20mm of coarse sand or sand/cement and roll ready to receive a damp-proof membrane.
- 3.15     **GENERAL BACKFILLING**  
Obtain written confirmation from the owner before using any excavated material. Compact approved backfilling in 150mm layers with the last 200mm in clean topsoil, lightly compacted and neatly finished off.
- 3.16     **SURPLUS MATERIAL**  
Remove surplus and excavated material from the site.

## 3155F FIRTH RIBRAFT® FLOOR SYSTEM

### 1. GENERAL

This section relates to the Firth RibRaft® floor system, a non specific design reinforced concrete waffle raft floor slab-on-ground.

#### Related work

#### Documents

#### 1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Specification for concrete surface finishes
NZS 3604	Timber-framed buildings
AS/NZS 4671	Steel reinforcing materials

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

#### 1.2 MANUFACTURER'S DOCUMENTS

**Firth** Industries documents relating to work in this section are:

**Firth** RibRaft® Floor System Manual\*

**Firth** RibRaft® floor system: Opus Appraisal Certificate

**Firth** RibRaft® Flooring Solutions (Introductory brochure)

\* A copy of this manual must be held on site.

Copies of the above documents are available from Firth Information Service

Web: [www.firth.co.nz](http://www.firth.co.nz)

Email: [info@firth.co.nz](mailto:info@firth.co.nz)

Telephone: 0800 800 576

Facsimile: 0800 800 530

Further information and/or names of tradespeople who have installed **Firth** RibRaft® floors are available by phoning Firth Information Service 0800 800 576.

#### Requirements

#### 1.3 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Firth** RibRaft® Floor System product or component, or associated **Firth** products.

#### 1.4 QUALIFICATIONS

Tradespeople to be competent, experienced and familiar with the **Firth** RibRaft® Floor System materials and techniques specified.

#### 1.5 QUALITY RECORDS

Keep accurate records relating to strength and quality of materials used during construction. Include records of workmanship during construction and photographs of as-built details. Make the information available to the Building Consent Authority inspector on request.

### 2. PRODUCTS

#### Materials

#### 2.1 BLINDING

50mm maximum compacted GAP 7.

- 2.2 **TIMBER FORMWORK**  
No. 2 framing and dressing or merchantable grade radiata pine boards to NZS 3631.
- 2.3 **DAMP-PROOF MEMBRANE**  
0.25mm minimum polyethylene to NZS 3604: clause 7.5.4, Damp-proof membrane (DPM).
- 2.4 **POLYSTYRENE PODS**  
**Poly Palace** Recycled Polystyrene pods approved for use with the Firth Ribraft system
- 2.5 **REINFORCEMENT**  
Bars to AS/NZS 4671. Grade 500E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings.
- 2.6 **INTERNAL CORNER REINFORCEMENT**  
Minimum 2 x D10 bars Grade 300E to AS/NZS 4671.
- 2.7 **MESH**  
665 welded reinforcing mesh to AS/NZS 4671.
- 2.8 **TYING WIRE**  
Mild drawn steel wire not less than 1.2mm diameter.
- 2.9 **CONCRETE - RIBRAFT® APPLICATIONS**  
20 MPa 100mm slump mix in either 13mm or 19mm nominal aggregate size.  
**Firth Raftmix™** for direct placement and **Firth Raftmix™** Pump for pump applications.
- 2.10 **NORMAL CONCRETE - NON RIBRAFT® APPLICATIONS**  
Normal concrete 20 MPa grade, maximum aggregate size 19mm to NZS 3104 for concrete work where **Firth Raftmix™** or **Firth Raftmix™** Pump are not appropriate.

### **Components**

- 2.11 **SPACERS**  
**Firth** proprietary spacers.

## **3. EXECUTION**

### **Conditions**

- 3.1 **STORAGE**  
Take delivery of and accept all materials and accessories dry and undamaged. Store on timber fillets on hard ground protected from weather, contamination and damage in a secure area clear of any building operation.
- Handle and store reinforcing steel and accessories without damage or contamination. Ensure reinforcement is clean and remains clean so that at the time of placing concrete it is free of all loose mill scale, loose rust and any other contamination that may reduce bonding capacity. Store steel fabric flat.
- 3.2 **HANDLING**  
Avoid distribution and contact with damaging substances. Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage.
- Application - RibRaft® floor system**
- 3.3 **SITE CLEARANCE**  
Clear the slab area of any vegetation and topsoil down to the subgrade level.
- 3.4 **BUILDING PLATFORM**  
Create a building platform to a level surface approximately 330mm below finished floor level. Cut and/or fill sloping sites. Confirm finished floor level.



- 3.5 **POST-CUT INSPECTION**  
Inspect and confirm that the soil conditions are as anticipated by the geotechnical investigation and report and conform to the requirements of the **Firth RibRaft®** manual. Refer to **Firth RibRaft®** Floor System Manual Section 1 - Design Information, 3.5 Foundation Soils.
- 3.6 **TEMPORARY BUILDING PLATFORM DRAINAGE**  
Construct suitable drainage to keep excessive ground water off the building platform during and after construction as required.
- 3.7 **HARDFILL**  
Place hardfill and ensure it is spread and compacted with mechanical compaction.
- 3.8 **UNDERGROUND SERVICES**  
Ensure underfloor services are installed in the subsoil or hardfill in locations as shown on the drawings and according to **Firth RibRaft®** floor system requirements. Refer to **Firth RibRaft®** Floor System Manual Section 2 - Installation Information, 3.4 Plumbing and Services.
- 3.9 **BLINDING LAYER**  
Spread GAP 7 blinding layer to a minimum 500mm past the outside edge of the slab, compact to a level layer no greater than 50mm thick and no higher than 305mm below finished ground level.
- 3.10 **FORMWORK**  
Construct formwork as required, well braced and tied to remain in position, straight and plumb during construction. Ensure formwork will provide for the topping depth, including rebates and the required concrete finish.
- 3.11 **INSTALL DAMP-PROOF MEMBRANE**  
Apply DPM to the prepared basecourse extending to the outside of all edge beams or fold and staple up the inside of the formwork. Overlap all joints in the DPM sheets a minimum 150mm. Tape laps and penetrations with 50mm wide pressure sensitive plastic tape. Ensure DPM is not damaged during the construction process. Repair all damage to DPM before proceeding with following procedures.
- 3.12 **PLACE POLYSTYRENE PODS**  
Place polystyrene pods in a regular waffle pattern using the spacers in the specified grid pattern to fit the floor plan. Cut pods on site with a saw or suitable hot wire as required. Cut holes for services and trim around piles as required on site.
- 3.13 **INSTALL SPACERS**  
Install spacers and locations to the **Firth RibRaft®** floor system requirements.
- Form standard ribs between pods using **Firth** 100mm spacers. Place the spacers at a minimum of one spacer along each edge of each pod or part pod. The ribs in both directions form a waffle pattern throughout the slab.
- Form the edge beam using **Firth** 300mm spacers. Place the spacers at 1200mm centres maximum along the perimeter of the slab at least and one spacer per pod or part pod.
- Form ribs to support loadbearing walls using **Firth** 300mm spacers. Place the spacers at a minimum of one spacer along the edge of each pod or part pod.
- 3.14 **PLACE REINFORCING STEEL: RIB STEEL**  
Place rib reinforcing steel in the bottom of the internal ribs and supported in the correct position by the **Firth** spacers. Lap all steel 480mm minimum. At the junction with the edge beam, each rib steel bar shall sit on top of the edge beam bars and extend to the outermost bar. Allow for 75mm cover to the edge of the beam. Place 1 x HD12 bar in each 100mm wide rib and 2 x HD12 bars in each 300mm wide rib.

- 3.15 **PLACE REINFORCING STEEL: EDGE BEAM STEEL**  
Place the two edge beam reinforcing bars in the bottom of the edge beam and supported in the correct position by the **Firth** spacers. Tie one edge beam bar below the mesh at the perimeter of the area covered by the polystyrene pods. Lap all steel 480mm minimum. At corners, the inner bottom bars and the top bars cross each other and extend to 75mm from the outside face of the edge beam. Tie these bars together where they cross. Tying of edge beam steel is only required at corners.
- 3.16 **PLACE REINFORCING STEEL: RE-ENTRANT CORNER STEEL**  
Place two D10 bars, 1200mm in length across the corner. Tie to the top of the mesh at re-entrant corners at 200mm centres with 50mm side cover from the internal corner.
- Install specified steel to Firth RibRaft® Floor System Manual Section 2 - Installation Information, 3.9 Reinforcing Steel. Ensure specified minimum cover requirements are maintained.
- 3.17 **PLACE REINFORCING MESH AND CHAIRS**  
Place reinforcing mesh over the pods and support on the mesh chairs spaced at 1200mm centres minimum, with two mesh chairs minimum placed per pod and with one mesh chair minimum per part pod. Lap mesh 225mm minimum and tied at all laps.
- 3.18 **FORM SLAB AND OPENING REBATES**  
Form rebates, as detailed on drawings.
- Form a minimum 50mm rebate in slab for masonry veneer construction with a width dependent on the veneer width, cavity width and overhang. Waterproof the rebate with a bituminous sealer on both the vertical and horizontal faces.
- 3.19 **STARTERS FOR MASONRY WALL CONSTRUCTION**  
Install wall starter bars in the correct position for the masonry block series being used to NZS 4229 and RibRaft® manual.
- 3.20 **UNDERFLOOR HEATING**  
Where underfloor inslab heating system is required ensure installation is completed to manufacturer's requirements.
- 3.21 **TOPPING SLAB DEPTH**  
85mm minimum plus additional cover as required.
- 3.22 **PRE-PLACEMENT INSPECTION**  
Arrange for excavations, formwork and reinforcement to be inspected and passed by the Building Consent Authority.
- 3.23 **CONCRETE PLACEMENT AND COMPACTION**  
Ensure the rib and edge beam canals are clean, free of debris. Pour the floor in a single pour using only **Firth Raftmix™** or **Firth Raftmix™** Pump concrete and ensuring that the pods remain in position during placing. Pour concrete onto the top of each pod prior to filling the ribs around the pod to help prevent them from floating and lifting.
- Use **Firth Raftmix™** for placement in the floor directly from the concrete truck chute or **Firth Raftmix™** Pump concrete for placement in the floor by concrete pump.
- Compact concrete using a suitable poker vibrator for the ribs and ground beams and into all corners of the formwork. Screed as required. Confirm levels with a laser level.
- 3.24 **CONCRETE FINISHING**  
Float and trowel to provide a U3 finish to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes.
- 3.25 **CONCRETE CURING**  
Curing of the concrete slab must take place immediately after finishing the concrete to NZS 3109 by one of the following curing methods:  
- ponding or continuous sprinkling of water

- placing a wet covering or plastic membrane over the slab
- the use of liquid membrane curing compounds

### 3.26 SHRINKAGE CONTROL JOINTS

Cut shrinkage control joints as shown on the plans after hardening to a depth of 25mm within 24 hours in summer or 48 hours in winter.

Where shrinkage control joints have not been shown on the plans, position the shrinkage control joints to coincide with major changes in the floor plan. Agree position of shrinkage control joints with the designer.

Bay dimensions formed by the shrinkage control joints to be limited to a maximum ratio of length to width of 2 to 1 with a maximum dimension of 6 metres. Place the shrinkage control joints over the 100mm wide internal ribs wherever possible. Where a shrinkage control joint runs along the line of a 300mm wide loadbearing rib, locate the cut directly above one edge of the 300mm rib. Do not place supplementary reinforcing bars (including re-entrant corner steel) across any shrinkage control joints.

### 3.27 CLEAN OUT SHRINKAGE CONTROL JOINTS

Clean out control joints. If required fill with suitable flexible sealant.

#### **Application - other concrete work**

### 3.28 PLACE CONCRETE

Do not place fresh concrete against the preceding layer after more than 45 minutes, or such lesser time as required by the circumstances, to NZS 3109: clause 7.4, Handling and placing.

### 3.29 SCREED THE SURFACE

Screed the concrete surface by straight edge or vibrating screed immediately after compaction and to tolerances in NZS 3109: table 5.2, Tolerances for in situ construction.

### 3.30 CONCRETE FINISHING

Screed and provide a U3 finish to NZS 3114: table 2, Classes of floor, exterior pavement and invert finishes.

#### **Finishing**

### 3.31 STRIKE FORMWORK

Strike formwork after at least 12 hours after the slab has been finished without damaging or overloading structure.

### 3.32 SURFACE DEFECTS

Make good surface defects immediately after forms are stripped. Make good hollows or bony areas with suitable patching mortar, finished to the same tolerances as the parent concrete. Fill any tie rod holes with 1:2 mortar.

#### **Completion**

### 3.33 LEAVE

Leave work to the standard required by following procedures.

### 3.34 CLEAN UP

Clean up surrounding areas following completion of the concrete placement.

### 3.35 REMOVE

Remove debris, unused materials and elements from the site.

## 3820 CARPENTRY

### 1. GENERAL

This section relates to the supply and erection of light timber framing, floors, flooring underlays and decking.

#### 1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
AS/NZS 2904	Damp-proof courses and flashings
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3622	Verification of timber properties
NZS 3640	Chemical preservation of round and sawn timber
AS/NZS 4347	Damp-proof courses and flashings - Methods of test
FTMA	Frame and Truss Manufacturers Association of New Zealand Inc - Code of Practice

**\*A copy of NZS 3604 Timber-framed buildings, must be held on site.**

#### 1.2 DIMENSIONS

All timber sizes except for battens are actual minimum dried sizes.

### 2. PRODUCTS

#### 2.1 TIMBER FRAMING, TREATED

Species, grade and in service moisture content to NZS 3602, NZBC B2/AS1 and treatment to NZS 3640, NZBC B2/AS1. Structural grade (SG) to NZS 3604, NZS 3622 with properties to NZS 3603.

#### 2.2 TIMBER TRUSSES

To FTMA Code of Practice. Moisture content 16% at supply

#### 2.3 NAILS

Type to NZS 3604, section 4, **Durability**, and of the size and number for each particular types of joint as laid down in the nailing schedules of NZS 3604, sections 6-10.

#### 2.4 BOLTS AND SCREWS

Bolts and screws of engineering and/or coach type complete with washers, to the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6-10.

#### 2.5 NAIL PLATES

Comply with the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6-10. Plates to the plate manufacturer's design for the particular locations as shown on the drawings.

#### 2.6 CONNECTORS

Comply with the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6-10. Connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

#### 2.7 CORROSION RISKS

For exterior timber, timber in damp areas and timber subject to occasional wetting, use stainless steel (or equivalent) fixings, connectors, etc, in all zones, with the timber treatments CuAz (Preservative code 58) and ACQ (Preservative code 90).



- 2.8 **FLASHINGS**  
To NZBC E2/AS1, 4.0 **Flashings**. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

- 2.10 **POLYETHYLENE DPC**  
Polyethylene film to AS/NZS 2904 and AS/NZS 4347. Thickness 500 microns minimum, manufactured for use as a damp-proof course and concealed flashings to doors and windows.

### **Interior Trim**

- 2.9 **TIMBER TRIM**  
To NZS 3610 and to profiles detailed on the drawings. Timber species, grade and treatment to NZS 3602.
- 2.10 **MDF TRIM**  
Refer to drawings for type.
- 2.11 **NAILS**  
Bright steel to dimension requirements of NZS 3604. Use galvanized where prone to dampness.
- 2.12 **BRADS**  
Bright steel of a length three times the thickness of the member being fixed. Use cadmium plated where prone to dampness.
- 2.13 **SCREWS, STEEL**  
Bright steel of a length to penetrate the substrate up to the shank. Use stainless steel in wet areas.
- 2.14 **SCREWS, CHROME PLATED**  
Chrome plated of a length to penetrate the substrate up to the shank.

## **3. EXECUTION**

- 3.1 **EXECUTION GENERALLY**  
To NZS 3603 and NZS 3604 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).
- 3.2 **SEPARATION**  
Separate all timber framing timbers from concrete by:  
- a full length damp-proof membrane overlapping timber by at least 6mm; or  
- a 12mm minimum free draining air space
- 3.3 **ATTENDANCE**  
Provide and fix blocks, noggs, openings and other items as required by other trades.
- 3.4 **MOISTURE CONTENT**  
Maximum allowable equilibrium moisture content (EMC) for non air-conditioned or centrally heated buildings for framing to which linings are attached.  
Framing at erection: 20% maximum  
Framing at enclosure: 16% maximum  
Framing at lining: 12% maximum
- 3.5 **SET-OUT**  
Set out framing in accordance with the requirements of NZS 3604 and as required to support sheet linings and claddings.



- 3.6 **FRAMING WALLS**  
Frame to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to NZS 3604, section 8, **Walls**.
- 3.7 **FRAMING ROOFS**  
Frame to required loading and bracing complete with valley boards, ridge boards and purlins. Design and fit roof trusses complete with anchorage. All fabricated and fastened to NZS 3604, section 9, **Posts** and 10, **Roof framing**.
- 3.8 **FRAMING CEILINGS**  
Frame to required loading and bracing complete with runners and battens set out to support ceiling lining. All fabricated and fastened to NZS 3604, section 13, **Ceilings**. Trim for openings in ceilings and hatches to NZS 3604 section 13.3, **Openings in ceilings**. Provide blocking for water tanks located in the ceiling space to NZS 3604, section 13.4, **Water tanks in roof space**.
- 3.110 **POLYETHYLENE DPC TO TIMBER**  
Lay polyethylene DPC under treated and untreated timber, including LOSP treated timber, of all timber framed walls on concrete in a single layer with 50mm overlaps at joints to provide a waterproof barrier. Lay DPC between dissimilar materials where required.

#### **Application - Interior trim**

- 3.9 **NAIL FIX**  
Use full lengths. Fit with scribed internal joints, mitred external joints and returned on itself at stop ends. Fix plumb, level and true to line and face using 40mm or 50mm brads to suit, ensuring fixing to a minimum depth of 25mm into framing timber. Leave secure and with no movement possible. Punch brads and fill with stopping compound to maintain the smooth surface.
- 3.10 **ADHESIVE FIX**  
Use full lengths. Fit with scribed internal joints, mitred external joints and returned on itself at stop ends. Fix plumb, level and true to line and face using wallboard adhesive.
- 3.11 **PNEUMATIC FASTENER FIX**  
Use full lengths. Fit with scribed internal joints, mitred external joints and returned on itself at stop ends. Fix plumb, level and true to line and face using resin coated narrow crown staples. Use fastener length to provide fixing depth into timber frame equal to the moulding thickness. Leave secure and with no movement possible. Fill with stopping compound to maintain the smooth surface.
- 3.12 **PUNCH**  
Punch all nail heads below the face of trim ready to receive stopping, as specified under painting preparation.
- 3.13 **COMPLETION**
- 3.14 **COMPLETE**  
Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.
- 3.15 **REPLACE**  
Replace damaged or marked elements. Remove unused materials from the site.

## 4161M TEKTON WEATHERIZATION SYSTEM

### 1. GENERAL

This section relates to the application of **Marshall Innovations Limited Tekton® Weatherization System** which consists of:

- **Tekton® Building Wrap** (also called **Tekton HouseWrap**)
- **Tekton® Seam Tape**
- **Protecto Wrap One Piece Sill Tape**
- **TRADE-SEAL** (penetration seal)

#### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following definitions apply specifically to this section:

Wall underlay      the same meaning as defined in NZBC E2/AS1, covering kraft based and synthetic wall underlays, sometimes called, wall wraps, building wraps or building papers.

#### Documents

#### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1      Durability  
NZBC E2/AS1      External moisture

#### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

Specification for **Tekton® Weatherization System**

Specification for **Tekton® Building Wrap**

Brochure for **Tekton® HouseWrap**

Specification for **One Piece Sill Tape**

Brochure for **One Piece Sill Tape**

Specification for **TRADE-SEAL**

Brochure for **TRADE-SEAL**

BRANZ Appraisal 621 - The Tekton® Weatherization System

BRANZ Appraisal 548 - Tekton® Building Wrap

BRANZ Appraisal 591 - One Piece Sill Tape Flexible Flashing

Manufacturer/supplier contact details

Company:      **Marshall Innovations Limited**

Web:            [www.mwnz.com](http://www.mwnz.com)

Email:          [info@mwnz.com](mailto:info@mwnz.com)

Telephone:      0800 776 9727

#### Warranties

#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:      For **Tekton® Building Wrap**  
15 years:      For **Tekton® Seam Tape**  
15 years:      For **Protecto Wrap One Piece Sill Tape**  
15 years:      For **TRADE-SEAL**

- Provide this warranty on the manufacturer/supplier standard form.

- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### Requirements

1.5 **QUALIFICATIONS**  
Work to be carried out by tradespeople experienced, competent and familiar with the **Marshall Innovations Limited** materials and techniques specified.

1.6 **NO SUBSTITUTIONS**  
Substitutions are not permitted to any of the specified **Marshall Innovations Limited** systems, components and associated products listed in this section.

## 2. **PRODUCTS**

### **Materials**

2.1 **TEKTON BUILDING WRAP**  
**Tekton® Building Wrap**, a synthetic breather-type wall underlay, as a coated spun-bonded polypropylene product approximately 0.6mm thick. Supplied in rolls 2740mm x 37m and 1370mm x 37m.

2.2 **TEKTON SEAM TAPE**  
**Tekton® Seam Tape**, a white polypropylene film coated with a cold weather acrylic adhesive.

2.3 **TRADE-SEAL**  
**TRADE-SEAL**, a one piece self adhesive EPDM collar for pipes and conduits that penetrate the cladding/wrap/underlay. Provides secondary protection air and moisture seal, and is available in sizes to suit penetration diameters from 8mm to 220mm.

2.4 **ONE PIECE SILL TAPE**  
**Protecto Wrap One Piece Sill Tape**, a wall opening flexible flashing system, a polyethylene faced, modified SBS rubberized asphalt, self adhesive membrane. Covered on the underside by a paper backing and the upper face by white polyethylene sheeting in two parts, printed with Protecto Wrap, 1.0mm thick supplied in rolls 150mm wide and 20m long.

### **Accessories**

2.5 **FIXINGS**  
Staples, clouts or other temporary fixings to attach the wall underlay to the framing.

2.6 **BUILDING WRAP/WALL UNDERLAY RESTRAINTS**  
Polypropylene tape or galvanized wire or mesh, to NZBC E2/AS1, clause 9.1.8.5, **Wall framing behind cavities**, for intermediate restraining of the building wrap/wall underlay from bulging into the drained cavity where stud spacings are greater than 450mm. Wire or tape to be run horizontally at 300mm centres.

## 3. **EXECUTION**

### **Conditions**

3.1 **GENERAL REQUIREMENTS**  
To NZBC E2/AS1 Table 23 Properties of Roof Underlays and Wall Underlays; and manufacturers technical literature.  
Note: Care should be taken not to expose the underlay to continuous wet and windy conditions.

3.2 **STORAGE**  
Store all products under clean dry conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor and protected from sunlight, UV radiation and moisture. Rolls of **Tekton® Building Wrap** to be stored on end.

3.3 **PRE-INSTALLATION REQUIREMENTS**  
Before starting work, check that the framing will allow work of the required standard. The framing must be free from any sharp protrusions that may damage the wrap/underlay.

Carry out remedial work identified before the installation of **Tekton® Weatherization System**.

#### **Installation - generally**

- 3.4      **STANDARDS AND TOLERANCES**  
To NZBC B2/AS1 and NZBC E2/AS1. Refer to the general section 1270 CONSTRUCTION for general requirements.

#### **Installation - Tekton® Building Wrap**

- 3.5      **WRAP/UNDERLAY GENERALLY**  
To comply with Marshall Innovations Limited specification for **Tekton® Weatherization System**, BRANZ Appraisal 621 - The **Tekton® Weatherization System** and BRANZ Appraisal 548 - Tekton® Building Wrap.

Face branded side of the wrap/underlay away from the framing. Run horizontally and extend from upper side of the top plate to the underside of bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs.

Ensure horizontal laps no less than 75mm with the direction of the lap ensuring that water is shed to the outside. End laps to be made over framing and be no less than 150mm wide.

- 3.6      **FIXINGS**  
Fix the wrap/underlay into place using 6mm to 8mm zinc plated staples, hot dip galvanised large head clouts, tek screws or proprietary wrap/underlay fixings. Care to be taken when fixing in windy conditions, due to large sail area created by roll widths.
- 3.7      **POSITION ROLL**  
Position roll against the framing with a short length of wrap/underlay free of the roll. Align the guide marks printed on the **Tekton® Building Wrap** with visible studs and nail/staple to the framing.
- 3.8      **FIX TO FRAMING**  
Unroll wrap/underlay across framing and fix to all framing members at a maximum of 300mm centres. Keep straight and taught over framing. Unroll wrap/underlay across framing and fix to all framing members at a maximum of 300mm centres. Keep straight and taut over framing.
- 3.9      **WRAP/UNDERLAY OVER OPENINGS**  
Run wrap/underlay over any openings and leave covered until windows and doors are ready to be installed.
- 3.10     **FORM OPENINGS**  
Form openings by cutting wrap/underlay at a 45 degree diagonal in from each corner. Fold and staple wrap/underlay to the inside of the framed opening and trim excess wrap/underlay to finish flush with internal face of framing.
- 3.11     **APPLY SEAM TAPE**  
Apply **Tekton® Seam Tape** to all horizontal and vertical building wrap/underlay joints. Lap joint to sit halfway under the tape width. Press all tape firmly into position to enhance adhesion. Use **Tekton® Seam Tape** to repair small rips, punctures or tears in the building wrap/underlay and tape into place. Ensure overlapping material extends at least 150mm beyond the damaged area.
- 3.12     **INSTALL PENETRATION SEAL**  
For pipe and conduit penetrations of the cladding/wrap/underlay use the appropriate sized **TRADE-SEAL**, to ensure a tight fit around the pipe. Install the **TRADE-SEAL** to Marshall Innovations Limited requirements. Push back the collar to fit the cavity width. Ensure the **TRADE-SEAL** exposure to weather and UV does not exceed 90 days.

#### **Installation - One Piece Sill Tape**



3.13 SILL TAPE GENERALLY

To comply with Marshall Innovations Limited specification for **Tekton® Weatherization System**, BRANZ Appraisal 621 - The **Tekton® Weatherization System** and BRANZ Appraisal 591 - One Piece Sill Tape

3.14 PREPARATION

Ensure all surfaces are clean, dry and free of any dust or sharp protrusions. When used in conjunction with LOSP treated timber, the solvent must be allowed to evaporate prior to installation of the tape. Do not install when temperature is below 5 degrees.

3.15 PRIMER/ADHESIVE

Warm **One Piece Sill Tape** in cooler conditions before applying. In extreme conditions use **Protecto Tak Primer** to enhance adhesion.

3.16 SILL AREA

Measure and mark 150mm up from the left hand side bottom corner of opening. Measure sill length. Measure and cut a length of **One Piece Sill Tape** 300 mm longer than sill length. Roll up the cut length with branded face to inside of the roll. Peel back 50mm of backing paper to expose black adhesive. Align **One Piece Sill Tape** with 150mm mark on jamb and flush with inside edge of the opening. Apply tape down frame and into corner. Ensure divided side of tape faces to the outside of the opening.

When the sill jamb junction is reached ensure tape is pressed firmly into corner. Continue removing backing paper and sticking **One Piece Sill Tape** across the length of the sill and up the other jamb. Keep tape flush with inside edge of opening.

Fold the upper front piece of branded flap back into opening to expose lower section of combination tape. Starting at one end, remove release film and fold flexible membrane around onto the face of opening (Do not overstretch membrane). For ease of installation, adhere middle and ends of membrane onto face of opening before removing release film. Fold the branded flap forward and cut at corners. Fold branded flap over the top of the exposed membrane.

3.17 TOP CORNERS

Cut a 300mm length of **One Piece Sill Tape**. Remove the backing paper and fold tape in half, keeping adhesive membrane to the outside of fold. Position tape into corner. Adhere tape down side, then across top of opening. Press tape firmly into corner. The divided side of tape must face to the outside of opening.

Fold branded flap back into opening to expose lower section of combination tape. Remove release film and fold flexible membrane onto face of opening. (Do not overstretch membrane). For ease of installation adhere ends of membrane onto the face of opening before removing release film.

Fold branded flap forward and cut at corners. Fold branded flap over top of exposed membrane.

When correctly installed to top corners, the tape should extend 150mm down the jamb and 150mm across the lintel and be folded 50mm approx. out onto face of opening.

After installation of **One Piece Sill Tape** firmly smooth all tape to ensure maximum adhesion and ensure it is covered within 4 weeks. Adhesion increases after tape has been in place for a period of time.

3.18 HEAD FLASHING

For the taping of head flashings use **Protecto Wrap Head Flashing Tape** with **Protecto Tak** primer.

3.19 REPAIRS

Repair **One Piece Sill Tape** by covering with a second piece of tape that extends 50mm beyond the damaged area. Ensure tape surface is clean and dry before overlaying.



Should air become trapped behind membrane at any stage of installation, roll trapped air to the outside of the tape.

**Completion**

**3.20 ROUTINE CLEANING**

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

**3.21 DEFECTIVE OR DAMAGED WORK**

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.

## 4161T THERMAKRAFT UNDERLAYS, FOILS AND DPC

### 1. GENERAL

This section relates to the application of **Thermakraft** Industries (NZ) Ltd, DPC, DPM, underfloor foil insulation, wall underlays and roofing underlays:  
- for use in residential applications

#### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

NZMRM                      New Zealand Metal Roofing Manufacturers Inc.

The following definitions apply specifically to this section:

Wall underlay            the same meaning as defined in NZBC E2/AS1, covering kraft based and synthetic wall underlays, sometimes called, wall wraps, building wraps or building papers.

#### Documents

#### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC C/AS1-AS7 Protection from fire

NZBC E2/AS1            External moisture

AS 1530.2                Methods for fire tests on building materials, components and structures - Test for flammability of materials

NZS 2295                Pliable, permeable building underlays

AS/NZS 2904            Damp-proof courses and flashings

NZS 3604                Timber-framed buildings

AS/NZS 4389            Safety Mesh

AS/NZS 4534            Zinc and zinc/aluminium-alloy coatings on steel wire

NZMRM                      NZ Metal Roof and Wall Cladding - Code of Practice

#### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

**Thermakraft** documents relating to this part of the work:

**Thermakraft** product manual and technical data sheets.

BRANZ Appraisal 329 - **Supercourse 500** Damp-Proof Course and Concealed Flashing

BRANZ Appraisal 560 - **Mirrablack** Damp Proof Course and Concealed Flashing

Manufacturer/supplier contact details

Web:                      [www.thermakraft.co.nz](http://www.thermakraft.co.nz)

Telephone:              0800 806 595

#### 1.4 MANUFACTURER'S WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution. Thermakraft Industries Ltd warrant performance of products if design and installation complies with relevant technical literature, NZBC, and recognised industry Codes of Practice. Copy of Thermakraft Product Warranty available on request.

#### Requirements

#### 1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified materials, or associated products, components or accessories.

#### 1.6 INSTALLATION SKILL LEVELS

Installers to be experienced in the installation of **Thermakraft** products and familiar with **Thermakraft** Industries technical literature and the related documents listed in this design i.e. NZMRM NZ Metal Roof and Wall Cladding - Code of Practice.

## 2. PRODUCTS

### Materials

#### DPM

##### 2.1 DAMP-PROOF MEMBRANE - MEDIUM DUTY

**Thermathene Black™**, a minimum of 250 microns polyethylene film, which compiles to NZS 3604, 7.5.4, **Damp-proof Membrane**, to NZBC E2/AS1. Refer to SELECTIONS for type of jointing tape.

#### DPC

##### 2.2 EMBOSSED POLYETHYLENE

**Supercourse 500**, hi-impact polyethylene film to AS/NZS 2904 and embossed on both sides. Thickness 500 microns minimum, manufactured for use as a damp-proof course and concealed flashings around doors and windows and to BRANZ Appraisal 329.

##### 2.3 HEAVY KRAFT BITUMINOUS COATED AND POLYMERIC FILM LAMINATE

**Thermakraft MirraBlack DPC**, a bitumen saturated kraft with high strength polymeric film, to BRANZ Appraisal 560.

### Wall underlays

##### 2.4 BITUMINOUS HEAVY WEIGHT UNDERLAY

**Thermakraft 213™**, bituminous heavy weight underlay to NZS 2295.

### Roofing underlay

##### 2.5 BITUMINOUS SELF-SUPPORTING ROOFING UNDERLAY

**Thermakraft 215™**, bituminous self-supporting roofing underlay to NZS 2295.

### Accessories

##### 2.6 STUD STRAPS - POLYETHYLENE

**Thermastrap 201 & 203**, 19mm wide polyethylene straps.

##### 2.7 WIRE NETTING

75mm galvanized hexagonal wire netting to AS/NZS 4534.

##### 2.8 GUTTER AND UNDER FLASHINGS

**Thermakraft 215™**, bituminous breather type underlay cut to width for use under valley, apron flashing and internal gutters.

##### 2.9 TAPE

**Thermakraft** tapes to compliment the underlay. Pressure sensitive aluminium foil tapes for joining foil insulation and vapour barriers. **Thermakraft Aluband™ Window SealingTape** can be used to repair damaged bituminous underlays.

## 3. EXECUTION

### Conditions

##### 3.1 GENERAL REQUIREMENTS

Design application and installation of **Thermakraft** Building products to NZBC E2/AS1, BRANZ Appraisals, **Thermakraft** Technical Literature and Industry Codes of Practice.

##### 3.2 STORAGE

Store building underlays and accessory materials, under conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor and protected from sunlight, UV radiation and moisture.

- 3.3      **INSPECTION**  
Before starting work, check that the building construction phase will allow work of the required standard. Carry out remedial work identified before laying underlay.

**Application - DPC/ DPM**

- 3.4      **DPC TO LOSP TREATED TIMBER**  
Lay Supercourse 500 / MirraBlack DPC under LOSP or CCA treated bottom plate of all timber framed walls on concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier.
- 3.5      **DPC TO TIMBER / STEEL**  
Lay DPC under the bottom plate of all timber / steel framed walls on concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier.
- 3.6      **DPM TO CONCRETE FLOOR**  
Lay DPM under concrete floor substrate over sand binding, in a single layer with 150mm overlaps at joints to provide a waterproof barrier.

**Application - wall underlay**

- 3.7      **WALL UNDERLAY**  
Fix horizontally to outside face of framing in true alignment, with succeeding sheets overlapping 150mm to NZBC E2/AS1, 9.1.7, **Wall underlay** and refer to **Thermakraft** industries for requirement for fastenings. Fix to **Thermakraft** Industries Technical Data specifications. Scribe neatly around penetrations and openings to leave no gaps. For gaps around Poly Butyl pipe systems, refer to pipe manufacturer's technical specifications. Keep clean, undamaged and without visible weather deterioration until closed in.
- 3.8      **INSTALL STUD STRAPS**  
Over underlay, install 19mm wide polyethylene straps horizontally at 300mm centres, draw taut and fix to studs with stainless steel staples.

**Application - Roofing underlay**

- 3.9      **WIRE NETTING**  
Lay 75mm galvanized wire netting at right angles across the purlins and drawn taut before fixing. Tie edges of netting together with galvanized wire clips.
- 3.10      **ROOF UNDERLAY**  
Lay vertically over purlins on wire netting with a 150mm side lap. Fix securely to purlins with galvanized fixing clips. Lay underlay to avoid excessive dishing between purlins. When used vertically limit individual runs to 10 metres for bituminous based underlays. Do not lay vertically on roof pitches under 10°.
- 3.11      **GUTTER UNDER FLASHINGS**  
Lay **Thermakraft 215™** bituminous breather type underlay cut to width by manufacturer for use as an underlay to valley, apron flashings, and internal gutters. Lap under flashings with adjoining underlays.

**Completion**

- 3.12      **CLEAN UP**  
Clean up as the work proceeds.
- 3.13      **LEAVE**  
Leave work to the standard required by following procedures.
- 3.14      **REMOVE**  
Remove debris, unused materials and elements from the site.

## 4223S SHADOWCLAD® PLYWOOD CLADDING

### 1. GENERAL

This section relates to the use of the CHH Woodproducts' Shadowclad® range of shiplap plywood exterior claddings.

#### Documents

#### 1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS/NZS 1604.3	Specification for preservative treatment - Plywood
AS/NZS 1170.2	Structural design actions - Wind actions
AS/NZS 2269.0	Plywood - structural - Specifications
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings

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

#### 1.2 MANUFACTURER'S DOCUMENTS

CHH Woodproducts documents relating to work in this section are:

**Shadowclad®** specification and installation manual

**Ecoply®** specification and installation guide

Copies of the above literature are available at

Web: [www.chhwoodproducts.co.nz/](http://www.chhwoodproducts.co.nz/)

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

Telephone: 0800 326 759

#### 1.3 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

#### Performance

#### 1.4 FIXINGS, WIND

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by NZS 3604 and the wind loads on various wall areas as give AS/NZS 1170.2.

#### 1.5 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed cladding system, including all penetrations.

### 2. PRODUCTS

#### Materials

#### 2.1 SHADOWCLAD® PLYWOOD CLADDING

Radiata pine veneer ply sheet to AS/NZS 2269.0. Treated LOSP Azole H3.1 to AS/NZS 1604.3.

#### 2.2 EXTERIOR CAVITY WALL BATTENS

Radiata pine battens, minimum 20mm thickness, width and height to match timber framing studs. To NZS 3602, table 1, reference 1D.10.



- 2.3 **EXTERIOR CAVITY CLOSER/VERMIN-PROOFING**  
**Shadowclad®** cavity base closure with upstand one side 10mm and the other 75mm. Length to suit cavity.

- 2.4 **EXTERIOR TRIM**  
Radiata pine battens, trim and covers to profiles as detailed or as required by the cladding manufacturer. Clears grade or finger-jointed, treated H3.1.

#### **Components**

- 2.5 **NAILS**  
Refer to the **Shadowclad®** specification and installation manual, 5.0 Sheet fixing requirements for size and use.  
- Minimum 65mm x 3.2mm for cavity construction.
- 2.6 **FLASHINGS**  
To NZBC E2/AS1, 4.0 **Flashings** and NZBC E2/AS1, 9.8 **Plywood Sheet**. Refer to the **Shadowclad®** specification and installation manual. **Shadowclad®** aluminium flashings compatible with adjacent materials and fixings.
- 2.7 **FLASHING TAPE**  
Flexible flashing tape to NZBC E2/AS1, 4.3.11 Flexible flashing tape, UV resistant for exposed applications.

#### **Accessories**

- 2.8 **SEALANT**  
Refer to the plywood manufacturer's requirements for elastomeric sealant to waterproof penetrations.

### **3. EXECUTION**

#### **Conditions**

- 3.1 **HANDLE**  
Handle sheets carefully and reject all those with damaged faces or edges.
- 3.2 **STORE**  
Store sheets in stacks clear of the ground, supported without sagging on evenly spaced horizontal bearers. Protect from damage and weather.
- 3.3 **SUBSTRATE**  
To NZS 3604 and the manufacturer's requirements.
- 3.4 **SUPPORT**  
Fully support all edges and joints.
- 3.5 **EXPANSION**  
Provide 2-3mm gap at all edges of cladding for sheet expansion.  

<b>Shadowclad®</b> Texture:	Maintain 2mm minimum expansion gap. Refer Shadowclad® specification and installation manual.
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- 3.6 **FRAMING MOISTURE CONTENT**  
Maximum moisture content 18%.

#### **Application**

- 3.7 **FIX UNDERLAYS AND RIGID AIR BARRIERS**  
Fix to framing, with laps and fixing to the cladding manufacturer's requirements. Make good any damage before or during fixing of boarding before fixing continues. Note the NZBC E2/AS1: Table 23 does not allow bitumen based underlay in direct contact with LOSP treated plywood.

- 3.8 **INSTALL DRAINED CAVITY**  
20mm minimum thickness drained cavity to NZBC E2/AS1: 9.0 **Wall claddings**, where required. Fix vertical cavity battens to wall framing studs and to nogs to achieve battens at 450mm centres maximum. The battens are fixed by the cladding fixings which will penetrate the wall framing studs over the wall underlay. Seal the top of the cavity. Install a cavity closer/vermin proofing at the base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Do not use horizontal cavity battens except when closing off the top of a cavity from all roof spaces and enclosed soffits to prevent entry of moist air. Use cavity spacers where fixing is required between cavity battens.

- 3.9 **PENETRATIONS**  
Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:
- wall/cladding underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
  - claddings neatly finished off to all sides of openings
  - installation of flashings (those required to be installed prior to installation of penetrating elements).

- 3.10 **SEALING**  
Seal cut edges of plywood before fixing with Metalex clear.

- 3.11 **FIXING SHADOWCLAD® PLYWOOD CLADDING**  
Fit and fix to E2/AS1, 9.8 **Plywood sheet**. Fix at 150mm centres at sheet edges and no closer than 7mm to the sheet edge, except for the following: -

Sheet edge with top lap:	Place fixings the width of the top lap plus minimum 7mm from the edge of the sheet.
Sheet edge with bottom lap:	Place fixings through the bottom lap to the sheet side of the capillary groove.

Fix intermediate supports at 300mm centres. With the exception of bottom laps, fix through the full sheet thickness. Do not fix through grooves.

- 3.12 **INSTALL COVERS AND TRIMS**  
Install as detailed on the drawings and in accordance with the cladding manufacturer's requirements.

- 3.13 **INSTALL FLASHINGS**  
Install flashings and covers as detailed on the drawings and to NZBC E2/AS1, 4.0 **Flashings**, NZBC E2/AS1, 9.8 **Plywood Sheet**, and in accordance with **Shadowclad®** recommended details.

- 3.14 **COMPLETE**  
Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.

#### **Completion**

- 3.15 **REPLACE**  
Replace all damaged or marked elements.
- 3.16 **LEAVE**  
Leave work to the standard required for following procedures.
- 3.17 **REMOVE**  
Remove debris, unused materials and elements from the site.

- 3.18 **PROTECTION**  
Protect this work as it proceeds, and when completed, from the weather and until it is covered, coated or sealed.

## 4230 WALL CLADDING

### 1. GENERAL

This section relates to the supply and installation of exterior cladding, including:

- associated flashings
- timber fascias
- timber barges
- timber trims

#### Documents

#### 1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 1491	Finger jointed structural timber
AS/NZS 2269.0	Plywood - Structural - Specification
AS/NZS 2908.2	Cellulose-cement products - Flat sheets
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards fascia boards and flooring
NZS 3631	New Zealand timber grading rules
BRANZ BU 441	Sealed joints in external claddings - 2. Sealants

#### Performance

#### 1.2 PERFORMANCE

Accept responsibility for the weathertight performance of the completed cladding system, including all penetrations.

### 2. PRODUCTS

#### 2.1 FIBRE-CEMENT SOFFIT LINING

Cellulose cement autoclaved sheets to AS/NZS 2908.2.

#### 2.2 TIMBER FASCIAS AND BARGE BOARDS

Dressing grade to NZS 3631 and treated to NZS 3602, table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance. Finger jointed timber to AS/NZS 1491.

#### 2.3 NAILS, SCREWS AND FASTENINGS

Metal, size and pattern, to cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604, section 4, Durability.

#### 2.4 FLASHINGS

To NZBC E2/AS1, 4.0, **Flashings** and to NZBC E2/AS1 Table 21: **Compatibility of materials in contact** and table 22: **Compatibility of materials subject to run-off**.

Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

### 3. EXECUTION

#### 3.1 MOISTURE CONTENT

Maximum allowable moisture content to NZS 3602 for:

Equilibrium moisture content (EMC)

- Framing: 20% at closing in
- Weatherboards: 14% at time of fixing
- Exterior joinery and trim: 14%

- 3.2 **EXECUTION METHODS AND PRACTICES**  
To NZS 3604 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).
- 3.3 **PENETRATIONS**  
Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:
- wall underlay/rigid air barrier to openings finished and dressed off with flashing tape ready for the installation of window and door frames and other penetrations
  - claddings neatly finished off to all sides of openings
  - installation of flashings (those required to be installed prior to installation of penetrating elements).
- 3.4 **PRIME TIMBER TRIM**  
Prime all front and back faces, edges and end grain before fixing exterior trim, to the finish and quality specified in painting sections.
- 3.5 **INSTALL FLUSH JOINTED FIBRE CEMENT SOFFIT SHEETS**  
Cut sheets dry, and scribe fit to fully support all edges and joints. Fit expansion joints to limit finished areas to 9 metre x 6 metres maximum, confirm with the sheet manufacturer's requirements. Flush joints with bedding compound reinforcing tape and finishing compound to flush width of 150mm. Refer to the sheet manufacturer's requirements and details.
- 3.6 **INSTALL EXTERIOR TIMBER FINISHINGS**  
Install timber fascias, barge boards, facings, beads, trim and enclosures level, true to line and face, with all end grain sealed and joints mitred.
- 3.7 **INSTALL FLASHINGS**  
Install flashings, covers and soakers as detailed on the drawings and to NZBC E2/AS1.
- 3.8 **USE OF SEALANTS**  
Selection and use of sealants to follow BRANZ BU 441 Sealed joints in external claddings - 2. Sealants.
- 3.9 **COMPLETE**  
Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.
- 3.10 **REPLACE**  
Replace damaged or marked elements. Remove unused materials from the site.

## 4241M METALCRAFT ROOFING PROFILED CLADDING

### 1. GENERAL

This section relates to the supply and fixing of **Metalcraft Roofing** profiled cladding complete with accessories.

#### 1.1 ABBREVIATIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc

#### Documents

#### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
AS/NZS 1170.2	Structural design actions - Wind actions
AS 1397	Steel sheet and strip - hot-dipped, zinc-coated or aluminium/zinc-coated
AS 3566	Self-drilling screws for the building and construction industries
NZS 3604	Timber-framed buildings
NZMRM	NZ Metal roof and wall cladding - Code of practice

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

#### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:  
Available on the website or by contacting Metalcraft Roofing.

Manufacturer/supplier contact details  
Company: **Metalcraft Roofing**  
Web: [www.metalcraftroofing.co.nz](http://www.metalcraftroofing.co.nz)

#### Warranties

#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against:

15 years	Failure of coating adhesion (manufacturer's standard warranty)
15 years	Weatherproofing failure caused by material penetration as a result of corrosion (manufacturer's standard warranty)
5 years	Weatherproofing failure caused by substandard workmanship

Commence the warranty from the date of completion of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### Requirements

#### 1.5 QUALIFICATIONS

Roofers to be **Metalcraft Roofing** Approved Installers, or experienced, competent wall cladding installers familiar with **Metalcraft Roofing** products.

#### 1.6 MAINTENANCE INSTRUCTIONS

Provide one bound copy of all relevant **Metalcraft Roofing** maintenance information on completion of the roofing work.



## **Performance**

- 1.7 **FIXINGS, WIND**  
Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by NZS 3604 or AS/NZS 1170.2 and the wind loads on various wall areas as given by AS/NZS 1170.2. Confirm with Metalcraft Roofing the fastener type and fixing pattern for the load capacity required.
- 1.8 **CO-ORDINATE**  
Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the wall cladding.
- 1.9 **PERFORMANCE**  
Accept responsibility for the weather-tight performance of the completed wall cladding system, including all penetrations through the walls and junctions with other cladding materials and parapets.

## **2. PRODUCTS**

### **Materials**

- 2.1 **METALCRAFT CLADDING PROFILES**  
Refer to SELECTIONS / drawings for type.  
- Pre-finished galvanized steel with formability G550 steel sheet coated to AS 1397, pre-treated, primed, top-finished and back-coated. Zinc coating class: ZM 275
- 2.2 **FLASHINGS GENERALLY**  
Formable grade 0.55mm BMT for galvanized, Zinalume<sup>®</sup> and pre-coated steel to the same standards as the profiled sheets, notched where across profile.
- 2.3 **WALL FLASHINGS**  
Supplied by **Metalcraft Roofing** to match or to suit the cladding.

### **Components**

- 2.4 **FASTENERS GENERALLY**  
Minimum Class 4 durability and not less than the roofing material being fixed. Screw fasteners to be head stamped identifying the manufacturer and class.
- 2.5 **FIXING SCREWS**  
To AS 3566. Screws appropriate to the roofing material and the supporting structure, and wind load as required by **Metalcraft Roofing**, and with a durability not less than the material fixed.
- 2.6 **RIVETS**  
Sealed aluminium, minimum diameter 4.8mm.

### **Accessories**

- 2.7 **SEALANT**  
Neutral curing silicone or polymer sealant as required by **Metalcraft Roofing** and used as directed.
- 2.8 **CLOSURE STRIPS**  
Polyurethane profiled closed cell foam strips to fit the sheet profile.  
Brand: Ecofoam  
Profile: To suit selected cladding profile

## **3. EXECUTION**

### **Conditions**

- 3.1 **INSPECTION**  
Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could damage the roofing.
- 3.2 **FRAMING TIMBER MOISTURE**  
When continuous metal cladding etc. Runs along a long continuous timber member and is directly fixed to it, the timbers equilibrium moisture content (EMC) to be 18% or less. For flashings in this situation (sometimes called transverse flashings) the framing EMC to be maximum 16%, and preferably as low as 12%. Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.
- 3.3 **STORAGE**  
Take delivery of and accept packs of roofing dry and undamaged on delivery. Reject all damaged material. Store on a level firm base clear of the ground, with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets.
- 3.4 **HANDLING**  
Avoid distortion and contact with damaging substances, including cement. Do not drag sheets across each other or other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof.
- 3.5 **SEPARATION**  
Isolate dissimilar materials in close proximity as necessary by painting the surfaces or fitting separator strips of compatible materials. Place isolators between metals and treated timber and cement based materials. Do not use unpainted lead sheet in contact with or allow water run-off onto galvanized steel or Zinalume®.
- Application**
- 3.6 **VERTICAL SET-OUT**  
Set cladding to vertical plumb lines and maintain verticality. Carefully set out to allow cover flashings of equal width at the ends of the building. Lay sheets with side laps away from the line of sight ensuring ends of sheets are true to line. Check during fixing to eliminate creep or spread and to keep fastenings in line. Ensure all exposed fastenings are set to a line.
- 3.7 **FORMING**  
Form stop-ends and downturns to **Metalcraft Roofing** recommendations.
- 3.8 **END LAPS**  
End laps are not recommended, except where specifically detailed to **Metalcraft Roofing** requirements.
- 3.9 **SEAL CUT EDGES**  
In very severe marine environments seal cut edges of pre-coated steel sheet with edge protection lacquer before fixing to the cladding manufacturer's requirements.
- 3.10 **THERMAL MOVEMENT**  
Roof fixing and jointing to conform with **Metalcraft Roofing** requirements for thermal movement.
- 3.11 **FIXING GENERALLY**  
Install and fix in accordance with the **Metalcraft Roofing** installation manual and the NZMRM NZ Metal roof and wall cladding - Code of practice and to **Metalcraft Roofing** required fixing patterns and details for each area of the building roofing. Use only screws as required by **Metalcraft Roofing**. Paint colour matched fixings and accessories before installation.
- 3.12 **WALL UNDERLAYS**  
Ensure that the appropriate wall underlays have been installed and fixed correctly, before proceeding with installation of the cladding.

- 3.13      **PENETRATIONS**  
Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:
- wall underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames and other penetrations
  - claddings neatly finished off to all sides of openings
  - installation of flashings (those required to be installed prior to installation of penetrating elements).
- 3.14      **MARKING AND CUTTING**  
Cut only by shearing tools. Do not use black lead pencils for marking Zinalume<sup>®</sup>, Colorsteel<sup>®</sup> products.
- 3.15      **FIX SHEETS**  
Fix sheets in place using the fastening system required by **Metalcraft Roofing** for specified profiles, making due allowance for dynamic local wind pressures on the building and thermal movement in the sheet.
- 3.16      **FIX FLASHINGS AND CAPPINGS**  
Flash parapets, walls and penetrations, cap corners and edges to detail in Metalcraft Roofing installation manual and to the NZMRM NZ Metal roof & wall cladding - Code of practice and **Metalcraft Roofing** requirements. Cut accurately and fix using sealant and rivets/ screws to detail to form a weatherproof cover. Ensure flashings are designed and installed to avoid water ponding.
- Completion**
- 3.17      **REPLACE**  
Replace damaged or marked elements,
- 3.18      **LEAVE**  
Leave this work complete with all necessary flashings, undercloaks, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.
- 3.19      **REMOVE**  
Remove all trade rubbish, swarf and unused materials from the roof and surrounds daily during the work. Sweep down at the end of each day, and clean out spoutings, gutters and rainwater pipes on completion of the roof. Remove debris, unused materials and elements from the site.

## 4311M METALCRAFT ROOFING PROFILED ROOFING

### 1. GENERAL

This section relates to the supply and fixing of **Metalcraft Roofing** profiled roofing complete with accessories.

#### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc

#### Documents

#### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS/NZS 1170.2	Structural design actions - Wind actions
AS 3566	Self-drilling screws for the building and construction industries
NZS 3604	Timber-framed buildings
NZMRM	NZ Metal roof and wall cladding - Code of practice

#### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:  
Are available on the website or by contacting Metalcraft Roofing.

For technical assistance contact **Metalcraft Roofing**

Web: [www.metalcraftroofing.co.nz](http://www.metalcraftroofing.co.nz)

#### Warranties

#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against:

15 years	Failure of coating adhesion (manufacturer's standard warranty)
15 years	Weatherproofing failure caused by material penetration as a result of corrosion (manufacturer's standard warranty)
5 years	Weatherproofing failure caused by substandard workmanship

From: Date of completion of installation

#### Requirements

#### 1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

#### 1.6 QUALIFICATIONS

Roofers to be **Metalcraft Roofing** Approved Installers, or experienced, competent roofers familiar with **Metalcraft Roofing** products.

#### 1.7 MAINTENANCE INSTRUCTIONS

Provide one bound copy of all relevant **Metalcraft Roofing** maintenance information on completion of the roofing work.

#### Performance

#### 1.8 FIXINGS, WIND

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by NZS 3604, or by wind

loads given by AS/NZS 1170. 2. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply. Confirm with Metalcraft Roofing the fastener type and fixing pattern for the load capacity required.

1.9 CO-ORDINATE

Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof.

1.10 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets.

2. PRODUCTS

**Materials - General**

2.26 WIRE NETTING

75mm galvanized hexagonal wire netting to AS/NZS 4534.

2.15 BITUMINOUS SELF-SUPPORTING ROOFING UNDERLAY

**Thermakraft 215™**, bituminous self-supporting roofing underlay to NZS 2295.

2.1 METALCRAFT ROOFING PROFILES

MC700

2.2 FLASHINGS GENERALLY

Formable grade 0.55mm BMT for galvanized, Zinalume® and pre-coated steel, and 0.90mm BMT for aluminium to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

2.3 FLASHINGS TO VERGE, RIDGE AND HIP

Supplied by **Metalcraft Roofing** to match or to suit the roofing.

**Components**

2.4 FASTENERS GENERALLY

Minimum Class 4 durability and not less than the roofing material being fixed. Screw fasteners to be head stamped identifying the manufacturer and class.

2.5 FIXING SCREWS

To AS 3566. Screws appropriate to the roofing material and the supporting structure, and wind load as required by **Metalcraft Roofing**, and with a durability not less than the material fixed.

2.6 RIVETS

Sealed aluminium, minimum diameter 4.8mm.

**Accessories**

2.7 SEALANT

Neutral curing silicone or polymer sealant as required by **Metalcraft Roofing** and used as directed.

2.8 CLOSURE STRIPS

Polyurethane profiled closed cell foam strips to fit the sheet profile.

Brand: Ecofoam

Profile: To suit selected cladding profile

3. EXECUTION

**Conditions**



- 3.1      **INSPECTION**  
Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could damage the roofing.
- 3.2      **FRAMING TIMBER MOISTURE**  
When continuous metal cladding etc. Runs along a long continuous timber member and is directly fixed to it, the timbers equilibrium moisture content (EMC) to be 18% or less. For flashings in this situation (sometimes called transverse flashings) the framing EMC to be maximum 16%, and preferably as low as 12%. Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.
- 3.3      **STORAGE**  
Take delivery of and accept packs of roofing dry and undamaged on delivery. Reject all damaged material. Store on a level firm base clear of the ground, with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets.
- 3.4      **HANDLING**  
Avoid distortion and contact with damaging substances, including cement. Do not drag sheets across each other or other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof.
- 3.5      **SEPARATION**  
Isolate dissimilar materials in close proximity as necessary by painting the surfaces or fitting separator strips of compatible materials. Place isolators between metals and treated timber and cement based materials. Do not use unpainted lead sheet in contact with or allow water run-off onto galvanized steel or Zinalume®.
- Application**
- 3.6      **SET-OUT & LAYING**  
Carefully set out to allow cover flashings of equal width at the ends of the building. Lay sheets with side laps away from the prevailing wind ensuring ends of sheets are true to line. Check during fixing to eliminate creep or spread and use string lines along purlin centres to keep fastenings in line.
- 3.7      **FORMING**  
Form stop-ends and downturns to **Metalcraft Roofing** recommendations.
- 3.8      **END LAPS**  
End laps are not recommended, except where specifically detailed to **Metalcraft Roofing** requirements.
- 3.9      **THERMAL MOVEMENT**  
Roof fixing and jointing to conform with **Metalcraft Roofing** requirements for thermal movement.
- 3.10     **FIXING GENERALLY**  
Install and fix in accordance with the **Metalcraft Roofing** and Cladding Systems Manual and the NZMRM NZ Metal roof and wall cladding - Code of practice and to **Metalcraft Roofing** required fixing patterns and details for each area of the building roofing. Use only screws as required by **Metalcraft Roofing**. Paint colour matched fixings and accessories before installation.
- 3.12     **WIRE NETTING**  
Lay 75mm galvanized wire netting at right angles across the purlins and drawn taut before fixing. Tie edges of netting together with galvanized wire clips.
- 3.14     **ROOF UNDERLAY**  
Lay vertically over purlins on wire netting with a 150mm side lap. Fix securely to purlins with galvanized fixing clips. Lay underlay to avoid excessive dishing between purlins. Scribe around and fit neatly to all penetrations. Avoid prolong exposure by installing the

roof immediately. Installation to comply with NZBC E2/AS1 8.1.5.1, **Underlay support** and NZMRM Code of Practice.

3.15 GUTTER AND UNDER FLASHINGS

Lay **Thermakraft 215™** bituminous breather type underlay cut to width by manufacturer for use as an underlay to valley and apron flashings. Lap under flashings with adjoining underlays. Fix **Thermakraft 210™** bituminous breather type underlay soffit liner from top plate down 150mm past ribbon plate.

3.11 MARKING AND CUTTING

Cut only by shearing tools. Do not use black lead pencils for marking Zinalume®, Colorsteel® products.

3.12 FIX SHEETS

Fix sheets in place using the fastening system required by **Metalcraft Roofing** for specified profiles, making due allowance for dynamic local wind pressures on the building and thermal movement in the sheet.

3.13 FLASH

Flash roof to parapets, walls and penetrations to detail in Metalcraft Roofing installation manual and to the NZMRM NZ Metal roof & wall cladding - Code of practice and **Metalcraft Roofing** requirements. Cut accurately and fix using sealant and rivets to detail and to **Metalcraft Roofing** requirements to form a weatherproof cover. Ensure flashings are designed and installed to avoid water ponding.

3.14 FIX RIDGES AND HIPS

Cut accurately and fix using primary fasteners to the purlins. Join using neutral curing silicone or polymer sealant and sealed rivets to detail and to the NZMRM NZ Metal roof and wall cladding - Code of practice. Ensure flashings are designed and installed to avoid water ponding.

3.15 FIX VERGE AND CAP FLASHINGS

Cut accurately and fix using primary fasteners to the purlins. Join using neutral curing silicone or polymer sealant and sealed rivets to detail and to the NZMRM NZ Metal roof and wall cladding - Code of practice. Ensure flashings are designed and installed to avoid water ponding.

3.16 PENETRATIONS

Flash and overflash all penetrations through the roof.

3.17 PENETRATIONS AND JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of the roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof. Required work includes the following:

- underlay turned up at wall and parapet lines
- underlay finished and dressed off to all openings, ready for the installation of skylights and other penetrations
- roofing installation neatly finished to all sides of openings and to all wall and parapet junctions
- installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).

**Completion**

3.18 REPLACE

Replace damaged or marked elements.

3.19 LEAVE

Leave this work complete with all necessary flashings, undercloaks, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.

3.20

#### REMOVE

Remove all trade rubbish, swarf and unused materials from the roof and surrounds daily during the work. Sweep down at the end of each day, and clean out spoutings, gutters and rainwater pipes on completion of the roof. Remove debris, unused materials and elements from the site.

# 4521AR APL RESIDENTIAL ALUMINIUM WINDOWS AND DOORS

## 1. GENERAL

This section relates to the fabrication, supply and installation by a **Vantage** fabricator of:

- Residential aluminium windows and doors
- Hardware and furniture
- Flashings and sealants

### 1.1 ABBREVIATIONS AND TERMS

SLS	Serviceability limit state
ULS	Ultimate limit state
WANZ	Windows Association of Zealand
PQAS	Powder Coating Quality Assurance System

#### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External moisture
NZBC F4/AS1	Safety from falling
NZBC H1/VM1	Energy efficiency
NZBC H1/AS1	Energy efficiency
AS/NZ 1580	Methods of test for paints and related materials - Determination of dry film thickness on metallic substrates - Non destructive methods
AS/NZS 1170.2	Structural design actions - Wind loads
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1734	Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate
AS/NZS 1866	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
AAMA 2604.05	Performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
NZS 3604	Timber-framed buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
BS 3900	Methods of tests for paints, Part C5: Determination of film thickness
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
WANZ	Window installation system - An Alternative Solution for the installation of windows and doors
WANZ	Powder Coating Quality Assurance System (PQAS)
BRANZ BU 337	Protecting Window Glass from Surface Damage
US Federal Specification	
TT-S-001543A	Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)
TT-S-00230C	Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures)

### 1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are contained within:

- Altherm Specifier's Guide
- First Specifier's Guide
- Vantage Specifier's Guide

Copies of the above literature are available from:

Web: [www.vantagejoinery.com](http://www.vantagejoinery.com)  
Email: [specifiersguide@aplnz.co.nz](mailto:specifiersguide@aplnz.co.nz)  
Telephone: 09 309 3251

Facsimile: 09 309 3298

### **Warranties**

- 1.4 **WARRANTY - MANUFACTURER/FABRICATOR**  
Provide a material manufacturer/fabricator warranty:  
5 years: For fabrication

- 1.5 **WARRANTY - INSTALLER**  
Provide an installer warranty:  
2 years: For installation

- Provide this warranty in the installer standard form.

### **Requirements**

- 1.6 **NO SUBSTITUTIONS**  
Substitutions are not permitted to any specified **APL** aluminium system, or associated components and products.

- 1.7 **QUALIFICATIONS**  
Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.

- 1.8 **COMPLIANCE**  
Windows and doors to be manufactured and installed to NZBC E2/AS1.

- 1.9 **CERTIFICATION**  
Provide evidence of a certificate by a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the requirements of NZS 4211

### **Performance**

- 1.10 **PERFORMANCE - WINDOWS AND DOORS**  
To NZS 4211, including:  
- deflection, opening sashes, air infiltration, water penetration, ultimate strength, torsional strength of sashes, marking.

- 1.11 **STRUCTURAL/WEATHER-TIGHTNESS**  
The structural and weather-tight performance of the completed joinery, the glazing and infill panels is the responsibility of the window fabricator.

### **Performance - Wind (design by contractor)**

- 1.12 **DESIGN PARAMETERS - NON SPECIFIC DESIGN**  
Design the installation to the wind zone parameters of NZS 3604, table 5.1.  
Refer to SELECTIONS for wind zone.

### **Finishes**

- 1.13 **CERTIFY COATINGS - POWDER COATING**  
Certify on request, compliance with this specification and support with control and sampling records. Test for film thickness to BS 3900, part C5, method No. 4, using method (b) or to AS/NZ 1580.108.1 for certifying thickness and method (a) where any dispute arises as to the thickness provided.  
The coating should be applied by an applicator who can certify that the coating has been applied in accordance with the specification.

## **2. PRODUCTS**



## **Materials**

- 2.1 **ALUMINIUM EXTRUSIONS**  
Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating.
- 2.2 **ALUMINIUM SHEET AND STRIP**  
Complying with AS/NZS 1734 of suitable thickness. Rolled for anodising or powder coating.  
Alloy designation: 5251 - H16 or 5005 - H16
- 2.3 **STAINLESS STEEL SHEET AND STRIP**  
Type: 316 austenitic steel  
Finish grade: 2B (satin lustre)
- 2.4 **GLASS**  
Refer to the glazing section for glass types and installation.

## **Reveals**

- 2.5 **REVEALS - TIMBER PAINTED**  
Timber reveals for paint finish with all sides primed grooved for wall linings or flush finished for architraves.

## **Flashings**

- 2.6 **FLASHINGS GENERALLY**  
To NZBC E2/AS1, 9.1.10 **Windows and Doors**. Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

## **Components for installation - cavity systems**

- 2.7 **WANZ CAVITY CLOSER**  
Flashing device (unperforated) to close the cavity above the window or door unit to direct water that occasionally penetrates the wall cladding into the cavity spaces adjacent to the window.
- 2.8 **WANZ SUPPORT BAR**  
Extruded aluminium support bar with built in drainage and ventilation to NZBC E2/AS1, and support bar location bracket, to provide continuous support to the window unit. Size to suit cladding type.

## **Components**

- 2.9 **GLAZING GASKETS**  
Thermoplastic rubber. Do not stretch glazing gaskets during installation. Measure and cut gaskets 5-10% over length before installation.
- 2.10 **HARDWARE AND FURNITURE**  
Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Refer to SELECTIONS for type and finish. Key alike all lockable window hardware able to be keyed alike.
- 2.11 **SAFETY STAYS**  
Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Table 2, Acceptable opening sizes for barriers.
- 2.12 **FIXING BRACKETS**  
Designed by manufacturer to specific design.

- 2.13 WEATHERING/INSTALLATION SEALANT  
Building sealant used in accordance with manufacturer's instructions for weather sealing aluminium frames to the cladding, complying with US Federal Specification TT S 0011534A, or a one-part polyurethane moisture curing, elastic joint sealant of medium modulus ( $\pm 25\%$  movement) to US Federal Specification TT S 00230C.

#### **Finishes**

- 2.14 DURALLOY POWDER COATED ALUMINIUM  
Polyester powder organic coating in accordance with WANZ Powder Coating Quality Assurance System and AS 3715.

### **3. EXECUTION**

#### **Conditions - generally**

- 3.1 DO NOT DELIVER  
Do not deliver to site any elements which cannot be unloaded immediately into suitable conditions of storage.
- 3.2 UNLOAD WINDOW JOINERY  
Unload, handle and store elements in accordance with the window manufacturer's requirements.
- 3.3 AVOID DISTORTION  
Avoid distortion of elements during transit, storage and handling.
- 3.4 PREVENT DAMAGE  
Store windows and doors on site in a clean and dry environment in such a manner as to prevent damage to prefinished surfaces. Stack the units in a vertical position resting on their sills, with layers interleaved between to prevent rubbing. Keep paper and cardboard wrappings dry.
- 3.5 PROPRIETARY ELEMENTS  
Fix in accordance with the window manufacturer's requirements.
- 3.6 PROTECTIVE COVERINGS  
Retain protective coverings and coatings to BRANZ BU 337 and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.
- 3.7 ADDITIONAL PROTECTION  
Supply and fix additional protection as necessary to prevent marking of surfaces which will be visible on completed work.

#### **Conditions - fixings and fastenings**

- 3.8 SUPPLY OF FIXINGS  
Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the ULS wind pressure stated in SELECTIONS. Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 316 stainless steel or if not exposed to the weather may they be hot-dip galvanized steel with a coating weight of 610 g/m<sup>2</sup> complying with AS/NZS 4680.
- 3.9 INSTALLATION FIXING  
To NZBC E2/AS1, 9.1.10.8, **Attachments for windows and doors**. Fix windows/doors through reveal to frame with a pair of 75 x 3.15mm minimum galvanised jolt head nails or a pair of 8 gauge x 65mm minimum stainless steel screws. Fix at a maximum of 450 centres along all reveals and a maximum of 150mm from reveal ends. Ensure fixings do not penetrate metal flashings.  
Install packers between reveals and framing at fixing points, except at the head.

## Assembly

- 3.10 **FABRICATION**  
Fabricate frames as detailed on shop drawings. Install glazing, hinges, stays and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.
- 3.11 **TIMBER / PVC REVEALS**  
Before fixing to aluminium frames, ensure that timber reveals which are being painted have been primed on all surfaces. Securely fix reveals through aluminium fin.
- 3.12 **HARDWARE GENERALLY**  
Factory fit all required and scheduled hardware. Account for all keys and deliver separately to the site manager.
- 3.13 **SAFETY STAYS**  
Factory fit safety stays to all windows scheduled for safety stays and to all windows where safety stays are required to comply with NZBC F4/AS1 4.0, Opening windows.

## Installation - windows and doors

- 3.14 **SUPPLY OF FIXINGS**  
Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the ULS wind pressure stated in SELECTIONS.
- 3.15 **EXPOSED FIXINGS AND FASTENINGS**  
Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 304 stainless steel.
- 3.16 **PROTECTED FIXINGS AND FASTENINGS**  
Fixings and fastenings not exposed to the weather may be hot-dip galvanized steel with a coating weight of 610 g/m<sup>2</sup> complying with AS/NZS 4680.
- 3.17 **CORROSION PROTECTION**  
Before fixing, apply suitable barriers of bituminous coatings, stops or underlays between dissimilar metals in contact, or between aluminium in contact with concrete.
- 3.18 **CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS**  
Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.
- Required preparatory work includes the following:
- wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1:9.1.5 **Wall underlays to wall openings.**
  - Full height 20mm jamb battens to NZBC E2/AS1 figure 72A (direct fix only)
  - claddings neatly finished off to all sides of openings
  - installation of flashings (those which are required to be installed prior to frames).
  - application of waterproof sealer to all door and window sills in concrete floor or concrete sill situations. To door sills only, apply a suitable membrane over the sealer
  - all in accordance with the shop drawings, where applicable.
- 3.19 **INSTALLATION**  
Fix to comply with the reviewed shop drawings and installation details including flashings and bedding compounds, pointing sealants and weathering sealants.
- 3.20 **INSTALLATION CAVITY CONSTRUCTION**  
Install to WANZ Installation System details and drawings including WANZ cavity closers, sill support bars and support angles.  
For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to NZBC E2/AS1, figure 62(d).

3.21 **INSTALL FLASHINGS**

Install flashings to heads, jambs and sills of frames as supplied and required by the window manufacturer and as detailed on the drawings. Finish head flashings to match window finish.

Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.

Except where window/door frames are recessed, ensure that head flashings over-sail unit by 30mm minimum at each end.

3.22 **COMPLETE AIR SEAL**

To NZBC E2/AS1:9.1.6 **Air seals**. Form an air-tight seal by means of proprietary expanding foam or sealants used with PEF backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

3.23 **FIX HARDWARE**

Fix all sash and door hardware and furniture as scheduled.

**Application - jointing and sealing**

3.24 **SEAL FRAMES ON SITE**

Seal frames to each other and to adjoining structure and finishes, all as required by the window and sealant manufacturer and to make the installation weathertight.. In very high and extra high or greater wind zones, seal between the window head and the head flashing. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

3.25 **PREPARE JOINTS**

Ensure joints are dry. Remove loose material, dust and grease. Prepare joints in accordance with the sealant manufacturer's requirements, using required solvents and primers where necessary. Mask adjoining surfaces which would be difficult to clean if smeared with sealant.

3.26 **BACK UP**

When using back-up materials do not reduce depth of joint for sealant to less than the minimum required by the manufacturer of the sealant. Insert polyethylene rod or tape back-up behind joints being pointed with sealant.

3.27 **SEALANT FINISH**

Tool sealant to form a smooth fillet with a profile and dimensions required by the sealant manufacturer. Remove excess sealant from adjoining surfaces, using the cleaning materials nominated by the sealant manufacturer and leave clean.

**Cleaning**

3.28 **REMOVE TRADE DEBRIS**

Remove trade debris by appropriate means on a floor by floor basis as each floor is completed and again before any work is covered up by others. Arrange for general removal.

3.29 **TRADE CLEAN**

Trade clean window frames, operable windows and doors, glass and other related surfaces inside and out at the time of installation to remove marks, dust and dirt, to enable a visual inspection of all surfaces.

**Completion**

- 3.30      **PROTECTIVE COVERINGS**  
Retain protective coverings and coatings and keep in place during the fixing process.  
Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades.  
Remove protection on completion.
- 3.31      **REPLACE**  
Replace damaged, cracked or marked elements.
- 3.32      **PROTECTION**  
Protect finishes against damage from adjacent and following work.
- 3.33      **IN-SITU TOUCH-UP TO POWDER COATED ALUMINIUM**  
In situ touch-up of polyester or fluoropolymer coated aluminium is only permitted to minor surface scratching. Otherwise replace all damaged material.
- 3.34      **SAFETY**  
Indicate the presence of transparent glasses for the remainder of the contract period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface. Masking tape must not be used for this purpose.
- 3.35      **MANIFESTATIONS**  
Apply manifestations to comply with NZS 4223.3, 303.1 Manifestations.



## **4555 GARAGE DOORS**

### **1. GENERAL**

This section relates to the manufacture, supply and installation of garage door systems including required opening/operating systems.

#### **Documents**

#### **1.1 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

AS/NZS 1170	Structural design actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
NZS 3604	Timber-framed buildings
AS/NZS 4505	Garage doors and other large access doors

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

#### **Performance**

#### **1.2 LOADS - SPECIFIC DESIGN**

Garage doors complete with hinges, roller assemblies and fasteners to comply with wind and seismic load performance requirements to NZS 3604, table 5.4, AS/NZS 1170 and NZS 1170.5.

#### **1.3 RESPONSIBILITY FOR PERFORMANCE**

Accept responsibility for the structural and weathertight performance of the completed garage door installation.

#### **Performance - Wind (design by contractor)**

#### **1.4 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR**

Design the installation to the manufacturers requirements and as appropriate for the project wind design stated in the general section 1220 project.

### **2. PRODUCTS**

#### **2.1 GARAGE DOOR**

Manufacture to AS/NZS 4505 complete with a compliance label.

#### **2.2 MOTORISED DOOR OPENER**

### **3. EXECUTION**

#### **3.1 PREPARATION FOR INSTALLATION**

Check that the trimmed and lined openings are formed and constructed to suit the required door units. Do not proceed until openings are properly formed.

#### **3.2 MANUFACTURER'S REQUIREMENT FOR INSTALLATION**

Install door, track and operating equipment complete with all specified and necessary accessories and hardware to the manufacturer's requirements.

#### **3.3 START UP**

Carry out start up procedures and verify proper performance of the doors.

#### **3.4 ADJUSTMENT**

Lubricate bearings and sliding parts and adjust doors to operate easily, free of warp, twist or distortion with a weathertight fit round the entire perimeter.

3.5      **DEMONSTRATION**  
Carry out start up procedures and verify proper performance of the door. Demonstrate the operation of the door to the principal/principal's representative. Set security features to principal's requirements. Reset security features at practical completion of the contract works.

3.6      **OPERATING INSTRUCTIONS AND MAINTENANCE PROCEDURES**  
Provide operating instructions for the garage doors and associated opening equipment. Provide a list of all components requiring regular maintenance.

**Completion**

3.7      **ENSURE**  
Ensure all elements are free of marks or blemishes, with all moving parts working fully and freely.

3.8      **REPLACE**  
Replace damaged, cracked or marked elements.

3.9      **LEAVE**  
Leave work to the standard required by following procedures.

3.10     **REMOVE**  
Remove all debris, unused materials and elements from the site.

# 4610MR METRO GLASSTECH RESIDENTIAL GLAZING

## 1. GENERAL

This section relates to the supply and fixing of **Metro GlassTech** products for external and internal joinery in residential type buildings and includes:

- windows and doors
- mirrors

### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

PVB	Polyvinyl Butyral
CIP	Cast in place

### Documents

### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B1/AS1	Structure
NZBC F2/AS1	Hazardous building materials
NZBC F4/AS1	Safety from falling
NZBC H1/AS1	Energy Efficiency
NZS 3604	Timber-framed buildings
NZS 4211	Performance of windows
NZS 4218	Thermal insulation - Housing and Small Buildings
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4666	Insulating glass units
BRANZ BU 337	Protecting window glass from damage

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:  
**Metro GlassTech** Catalogue & Reference and Guide - 6th edition

Manufacturer/supplier contact details

Company:	<b>Metro GlassTech</b>
Web	<a href="http://www.metroglasstech.co.nz">www.metroglasstech.co.nz</a>
Email:	<a href="mailto:info@metroglasstech.co.nz">info@metroglasstech.co.nz</a>
Telephone:	0800 65 89 45

### Warranties

### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years:	for insulating glass units
10 years:	for laminated safety glass
10 years:	for toughened safety glass

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of completion of this part of the contract work.

### Requirements

- 1.5      **SAMPLES**  
Submit samples of selected glass for review if required.

**Performance**

- 1.6      **ENERGY EFFICIENCY**  
Provide glazing to meet the energy requirements of NZS 4218 and NZBC H1/AS1 for housing small buildings.

**2.      PRODUCTS**

- 2.1      **NO SUBSTITUTIONS**  
Substitutions are not permitted to any specified **Metro GlassTech**, products or systems.

**Materials**

- 2.2      **CLEAR FLOAT GLASS**  
Clear ordinary annealed transparent float glass for general window glazing. Thickness as required by NZS 4223.1 and NZS 4223. Supp 1.

- 2.3      **LAMINATED GLASS**  
Safelite Grade A Safety Glass to AS/NZS 2208 with PVB or CIP resin interlayer.

- 2.4      **TOUGHENED GLASS**  
Tempafloat Grade A Safety Glass to AS/NZS 2208.

- 2.5      **GLASSTECH INSULATING GLASS UNITS (IGU'S)**  
IGU's to AS/NZS 4666 and the IGU Manufacturers Association (IGUMA) requirements.

**Materials, mirrors**

- 2.6      **MIRROR GLASS**  
Clear annealed mirror float glass, including silver, activation, passivation and two protective coats.

**Components, general**

- 2.7      **JOINTING AND SEALING MATERIALS**  
Ensure jointing, putty and sealing materials are compatible with glass substrates. Confirm compatibility with laminated glass, IGUs and coatings.

**Components, aluminium glazing**

- 2.8      **GLAZING TAPE AND GASKETS**  
Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

- 2.9      **SETTING BLOCKS**  
Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

**Components, mirrors**

- 2.10      **MIRROR ADHESIVE**  
Adhesive mirror-mastic and double-sided adhesive tape.

**3.      EXECUTION**

**Conditions**

- 3.1 **GENERAL REQUIREMENTS**  
To NZS 4223.1, NZS 4223.3, NZS 4223.4 and NZBC B1/AS1, 7.0 **Glazing**. All external glazing is wind and watertight on completion.
- 3.2 **DELIVERY**  
Keep glass dry and clean during delivery and bring on to site when ready to glaze directly into place. Comply also with the storage requirements set out in BRANZ BU 337.
- 3.3 **GLASS CONDITION**  
All glass to have undamaged edges and surfaces.
- 3.4 **GLASS THICKNESS**  
If not specifically stated in the glazing schedule determine the minimum thickness of glass for each sheet as required by NZS 4223.1, NZS 4223.3, NZS 4223.4, and NZS 4223. Supp 1.  
Determine the final glass thickness based on whether wind loading or human impact considerations govern.
- 3.5 **REBATE DIMENSIONS**  
Provide rebates for glazing to the widths and depths necessary for each situation including minimum glass edge cover to NZS 4223.1, Section 4 Glazing.

#### **Conditions - human impact safety requirements**

- 3.6 **SAFETY GLAZING, GENERAL REQUIREMENTS**  
Glazing of doors, side panels, low level and window seat glazing, shower doors and screens, bath enclosures, stairwell landings and similar locations, to NZS 4223.3 and NZBC B1/AS1, 7.0 **Glazing**, in respect of, thickness, maximum areas and requirements for Grade A Safety Glass.
- 3.7 **SAFETY GLAZING MATERIAL**  
Use only materials from NZS 4223.3, Appendix 3.A Schedule of safety glazing materials that also comply with the relevant requirements of AS/NZS 2208. Ensure material is permanently marked and if cut by the distributor or installer mark each piece to NZS 4223.3, clause 303.7 Identification of safety glazing materials.
- 3.8 **CONTAINMENT**  
Edge cover to comply with NZS 4223.1, Section 4 Glazing, table 5. Otherwise to NZS 4223.3, clause 303.2 Containment.

#### **Assembly**

- 3.9 **WORKING OF GLASS**  
All working of glass as required in NZS 4223.1.

#### **Application aluminium**

- 3.10 **INSTALL GLASS TO ALUMINIUM FRAMES**  
Install glass to NZS 4223.1.  
- Bead glaze to Section 4 Glazing.  
- Channel glaze to Section 4 Glazing, and Section 5 for Framed, Unframed, Partly Framed Glass Assemblies.
- 3.11 **INSTALL SAFETY GLASS**  
To NZS 4223.3, as modified by NZBC F2/AS1 and NZBC B1/AS1, 7.0 **Glazing**.

#### **Application - mirrors**

- 3.12 **MIRRORS, ADHESIVE FIXED**  
Fix with adhesive mirror-mastic and double-sided adhesive tape. Adhesive mastic area 0.25 m<sup>2</sup> per 1 m<sup>2</sup> of mirror.

#### **Finishing**



3.13 SAFETY  
Indicate the presence of transparent glass for the construction period, with tape or signs compatible with the glass type.

3.14 MANIFESTATIONS  
To NZS 4223.3, clause 303.1 Manifestation (making glass visible).

**Completion**

3.15 TRADE CLEAN  
Remove safety indicators and trade clean at completion of the building as required by the contract documents.

3.16 REPLACE  
Replace damaged, cracked or marked glass that occurs during glazing.

3.17 LEAVE  
Leave work to the standard required by following procedures.

3.18 REMOVE  
Remove debris, unused materials and elements from the site.

## **4621 GLASS BLOCK WALLING**

### **1. GENERAL**

This section relates to the setting of glass blocks, jointed with mortar, horizontally reinforced and perimeter sealed to form panels in prepared openings.

#### **Documents**

#### **1.1 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

NZBC B1/VM1	Structure
NZBC G6/VM1	Airborne and impact sound
AS/NZS 1170.2	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
NZS 3117	Pigment for Portland cement and Portland cement products
NZS 3604	Timber-framed buildings
NZS 4210	Masonry construction: materials and workmanship

US Federal Specification

TT-S-001543A: Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)

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

#### **Requirements**

#### **1.2 QUALIFICATIONS**

Glass block installers to be competent workers, experienced and familiar with the materials and techniques specified.

#### **Performance**

#### **1.3 FIXINGS, WIND**

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by NZS 3604 and the wind loads on various wall areas as given by AS/NZS 1170.2.

#### **1.4 FIXINGS, EARTHQUAKE**

Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604 and as required by NZS 1170.

#### **1.5 CALCULATIONS**

Provide structural calculations and details and other evidence prior to commencing work that the glass block panels comply with the wind and earthquake loadings as required by AS/NZS 1170 and NZS 1170.5.

### **2. PRODUCTS**

#### **Materials**

#### **2.1 GLASS BLOCKS**

As supplied by owner.

#### **Components**

#### **2.2 BONDBREAK TAPE**

Bondbreak tape for sliding joint.

#### **2.3 COMPRESSIVE STRIP**

100mm wide x 10mm thick dense elastic non-ageing material.

## **Accessories**

- 2.4 **SEALANT**  
Sealant to comply with US Federal Specification TT-S-001543A.
- 2.5 **MORTAR**  
Mortar to comply with NZS 4210. Unless stated otherwise by the proprietary system, mix 1:3:1/2 white cement, sand, hydrated lime by volume.

## **3. EXECUTION**

### **Conditions**

- 3.1 **HANDLE**  
Handle cartons during unloading, storing, unpacking and placing without chipping, soiling or damaging the blocks in any way.
- 3.2 **STORE**  
Store cartons and blocks on level hard standings in stacks and protect them from damage.
- 3.3 **COMPLY**  
Comply with the requirements of NZS 4210 for reinforcement, cement-based materials, additives and mortar (excepting mix).
- 3.4 **CHECK**  
Check that the openings and support frames (if being used) are the correct sizes, are straight, level, and plumb, are fixed to the glass block suppliers design requirements, block modules and the proposed installation technique.
- 3.5 **COMMENCING THIS WORK**  
Do not commence work until the openings and support frames are satisfactory for the specified work.
- 3.6 **TOOLS**  
Use only tools with rubber or soft nylon heads to tamp the glass blocks. Do not use wooden handles of trowels.
- 3.7 **PROPRIETARY SYSTEMS**  
Follow the glass block supplier's requirements when installing.
- 3.8 **EXTERNAL OPENINGS**  
Fit aluminium perimeter frame complete with flashings and sealants.

### **Application**

- 3.9 **SLIDING JOINT**  
Provide bondbreak tape to the perimeter of the glass block wall between the mortar and the edge support to prevent the mortar sticking.
- 3.10 **ERECTION**  
Space glass blocks evenly across opening allowing 8-10mm for the joints. Spread the mortar course and place horizontal reinforcing into mortar. Locate vertical steel (if required). Lay only as many course as the mortar can support. Set blocks true to line and plane, with the minimum of tapping and without realignment after initial placement.

### **Application - jointing**

- 3.11 **LAY MORTAR**  
Lay mortar joints full depth and full width without furrowing. Do not re-temper mortar. Discard within 90 minutes of initial mixing.

Joints: 8 - 10mm  
Vertical joints on curves: 20mm maximum around exterior faces

- 3.12 **STRIKE JOINTS**  
Strike while the mortar is still plastic. Carefully tool to bring the fine sand to the surface to provide a smooth, dense, slightly concave surface.
- 3.13 **RAKE OUT JOINTS**  
Rake out joints where sealant is required while the mortar is still plastic.
- 3.14 **CLEAN SURPLUS MORTAR**  
Clean surplus mortar from the face of glass blocks while still plastic, using clean, damp sponges, soft bristle brushes, or soft paper towels. Rinse and/or replace regularly to avoid abrasion of the blocks.
- 3.15 **INSTALL SEALANT**  
Use only the sealant specified by the glass block supplier. Surfaces to receive sealant to be clean, dry and free of paint and excess mortar. Mask either side of the joint and tool off neatly before the sealant forms a skin. Remove excess sealant as work progresses.
- Completion**
- 3.16 **PROTECTION**  
Protect glass block walls from applied loads and potential damage until mortar is full strength and silicone sealant completely cured. For a possible strong wind face loading within 48 hours of completion, temporarily shore the external walls using clean, soft surface material where glass contact is made.
- 3.17 **CURING**  
Prevent mortar drying out rapidly by keeping damp and protected from direct sun and drying wind for 7 days from completion of the wall.
- 3.18 **REPLACE**  
Replace damaged, scratched or cracked blocks.
- 3.19 **CLEANING**  
After completion of curing, clean and wash surfaces with detergent in warm water and dry with a soft clean cloth to leave shining, free of water marks, stains, scratches, cracks, marks and other imperfections.
- 3.20 **LEAVE**  
Leave work to the standard required by following procedures.
- 3.21 **REMOVE**  
Remove debris, unused materials and elements from the site.

## 4710P PINK® BATTS® & PINK® BATTS® SILENCER® INSULATION

### 1. GENERAL

This section relates to Tasman Insulation **Pink® Batts®** insulation materials installed into residential buildings.

It includes:

Thermal:

- **Pink® Batts® Wall Insulation (Pink® Batts® Ultra®)**
- **Pink® Batts® Ceiling Insulation (Pink® Batts® Ultra®)**
- **Pink® Batts® Skillion Roof Insulation**

#### Documents

### 1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC H1/AS1	Energy efficiency
AS/NZS 3000	Electrical installations
NZS 4218:2004	Energy Efficiency - Small building envelope
NZS 4220	Code of practice for energy conservation in non-residential buildings
NZS 4243.1	Energy Efficiency - Large buildings - Building thermal envelope
NZS 4246	Energy efficiency - Installing insulation in residential buildings
AS/NZS 60598.2.2	Luminaires- Particular Requirements - Recessed luminaires
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance

### 1.2 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents related to this section are:

Tasman Insulation New Zealand: Product Data Sheets

BRANZ Appraisal 632 - **Pink® Batts® SnugFloor®** Underfloor Insulation

Manufacturer/supplier contact details

Company: **Tasman Insulation New Zealand**

Web: [www.pinkbatts.co.nz](http://www.pinkbatts.co.nz)

Telephone: 0800 PINK BATTS (746 522)

#### Warranties

### 1.3 GUARANTEE

Provide a Tasman insulation guarantee.

- For **Pink® Batts®** insulation products.
- Provide on completion of the installation, a **PinkFit® Home Insulation Installation Guarantee** form, to confirm the insulation has been installed to NZS 4246.

#### Requirements

### 1.4 QUALIFICATIONS, PINK® BATTS® AND PINK® BATTS® SILENCER®

Installers to be **PinkFit® - Preferred Pink® Batts® installers**. A list of approved installers can be obtained from the web, by telephone or from the local building supplies merchant.

Web: [www.pinkbatts.co.nz](http://www.pinkbatts.co.nz)

Telephone: Freephone 0800 746 534 (0800 PINKFIT)

### 1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Tasman Insulation **Pink® Batts®** insulation or associated products, components or accessories.

## 2. PRODUCTS

#### Materials - thermal



- 2.1 **PINK® BATTS® CEILING INSULATION**  
**Pink® Batts® Ceiling Insulation (Pink® Batts® Classic and Pink® Batts® Ultra®)** is a light weight flexible bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R values and thickness options.  
NOTE: When insulation abutting or covering recessed downlights is intended to be in contact with IC, CA 80, CA 135 luminaries the insulation must withstand a 30s Needle Flame test to AS/NZS 60695.11.5. Pink® Batts® insulation meets this requirement.
- 2.2 **PINK® BATTS® WALL INSULATION**  
**Pink® Batts® Wall Insulation (Pink® Batts® Classic and Pink® Batts® Ultra®)** is a light weight flexible bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R values and thickness options.
- 2.3 **PINK® BATTS® SKILLION ROOF INSULATION**  
**Pink® Batts® Skillion Roof Insulation** is bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.  
NOTE: When insulation abutting or covering recessed downlights is intended to be in contact with IC, CA 80, CA 135 luminaries the insulation must withstand a 30s Needle Flame test to AS/NZS 60695.11.5. Pink® Batts® insulation meets this requirement.

### **Components**

- 2.4 **FASTENERS**  
Insul anchors complete with retaining washer.
- 2.5 **TAPES**  
Proprietary plastic tape stapled across framing to retain insulation in unlined wall and ceiling locations.
- 2.6 **ADHESIVE TAPE**  
Pressure sensitive adhesive tape.

### **3. EXECUTION**

- 3.1 **STORAGE**  
Accept materials undamaged and dry and store in a location that protects them from the weather and damage. Avoid distortion, stretching, compression, puncturing and damage to edges of materials. Do not use damaged or wet insulation materials.
- 3.2 **HANDLING**  
Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.
- 3.3 **INSPECTION**  
Before starting installation of blankets and slabs, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, wall underlays and vapour barriers are in place.

### **Application - general**

- 3.4 **INSTALL INSULATION - GENERAL**  
Lay, install, fit and fix to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope, and to manufacturer's requirements. Install in housing to NZS 4218 and NZS 4246. Install in large buildings to NZS 4243.1 and NZS 4220. Allow insulation to re-loft/relax prior to installation. Do not cover vents. Allow a clear gap around metal flues as recommended by the fireplace manufacturer. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

### 3.5 RECESSED LIGHT FITTINGS - CLEARANCE

Non-residential applications;

The clearance between insulation and recessed downlights

- 100mm gap to AS/NZS 3000, figure 4.9.
- Provide larger clearances where required by the light manufacturer.

Residential applications;

- Ensure new recessed downlights are one of the new classes classified in AS/NZS 60598.2.2; CA 80, CA 135, IC and IC - F
- Classification type CA 80, CA 135, to AS/NZS 60598.2.2; insulation can abut the sides (wrapping around the sides)
- Classification type IC and IC - F, to AS/NZS 60598.2.2; insulation can abut and cover over the top of the downlight
- Provide larger clearance where required by the light manufacturer.
- In a retrofit situation where recessed downlights are unclassified or unknown, ensure 100mm clearance from the insulation to AS/NZS 3000, figure 4.9.

#### **Application, thermal insulation**

### 3.6 INSTALL PINK® BATTS® CEILING INSULATION

Ensure that the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Insulate around vents (not over them) to allow unhindered ventilation.

Fit **Pink® Batts® Ceiling Insulation** beneath electrical wiring and plumbing. Install to the outer edge of the top plate. Maintain a 25mm gap clearance between the **Pink® Batts®** insulation and roof underlay. Refer to NZS 4246 for installation guidelines and Pink® Batts® Product Data Sheets, for detailed installation instructions.

### 3.7 INSTALL PINK® BATTS® WALL INSULATION

Ensure the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Fill gaps around windows and doors with off-cuts. Insulate around vents (not over them) to allow unhindered ventilation.

Fit **Pink® Batts® Wall Insulation** behind electrical wiring and plumbing. Ensure there are no gaps, folds or undesirable compression at edges.

Refer to NZS 4246 for installation guidelines and Pink® Batts® Product Data Sheets, for detailed installation instructions.

### 3.8 FIT PINK® BATTS® SKILLION ROOF INSULATION

Ensure that the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5mm-10mm to ensure a friction fit.

#### **Completion**

### 3.9 CLEAN UP

Clean up as the work proceeds, so no spare offcuts or any other matter or item remain behind claddings or linings.

### 3.10 LEAVE

Leave work to the standard required by following procedures.

### 3.11 REMOVE

Remove debris, unused materials and elements from the site.

## **4821 FLASHINGS**

### **1. GENERAL**

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

#### **Documents**

#### **1.1 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries - General requirements and mechanical properties
NZS 3604	Timber-framed buildings
NZMRM - CoP	NZ Metal roof and wall cladding - Code of practice (CoP)

#### **Requirements**

#### **1.2 QUALIFICATIONS**

Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.

#### **1.3 VERIFY DIMENSIONS**

Verify dimensions against site measurements prior to fabrication.

#### **Standards of performance**

#### **1.4 DURABILITY REQUIREMENTS**

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. The Building Code B2, 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to NZBC B2/AS1 Table 1: Durability Requirements of Nominated Building Elements and NZBC E2/AS1 Table 20 Material selection.

#### **1.5 COMPATIBILITY REQUIREMENTS**

Each flashing material shall be selected in accordance with NZBC E2/AS1 Table 20 to minimise corrosion. Refer to either NZS 3604 Clause 4.2 or AS/NZS 2728 for the relevant exposure conditions. For compatibility of materials in contact and subject to run-off, refer to NZBC E2/AS1 table 21 and NZBC E2/AS1 table 22.

#### **1.6 DESIGN**

For flashings where there are no specific details or drawings, provide a full size mock up of the flashing to integrate components into the weathertight system. Co-ordinate with the trades affected by the installation.

### **2. PRODUCTS**

#### **2.1 FLASHING MATERIALS**

Acceptable materials for flashings are described in NZBC E2/AS1, 4.0. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the building and cladding materials and their fixings.

#### **2.2 FLASHING FABRICATION**

Fabricate flashings generally to NZBC E2/AS1, 4.0, from a ductile grade of metal designed for lateral strength by folding, stiffening or ribbing on external edges, having a maximum un-stiffened width of 300mm. Provide all hooks, hems, kick outs, bird's beaks,

stop ends, soft edges and turn downs etc. to NZBC E2/AS1, 4.0, or as shown on the drawings.

2.3 **FIXINGS**

Rivets, screws, nails and cleats to be compatible with the materials being fastened. Fasteners complying with the corrosion requirements of AS 3566 are suitable for use with ZINCALUME® steel products. Use only low carbon non-conductive sealing washers.

2.4 **JOINTS - SEALANTS**

Neutral Curing silicone or MS polymer sealant as required, with low resistance to compression and be-able to withstand large temperature variations. MS polymer sealant to be used where the sealant is exposed and the surrounding surfaces are to be subsequently painted or coated.

2.5 **JOINTS - SOLDER**

Eutectic solder of 60% tin/40% lead using a suitable proprietary flux.

3. **EXECUTION**

**Conditions**

3.1 **DELIVERY**

Keep flashings dry in transit. Take delivery of flashings in an undamaged condition. Reject all damaged materials.

3.2 **STORAGE**

Store materials and accessories on a level, firm base, in dry conditions, well ventilated, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until fixed.

3.3 **HANDLING**

Avoid distortion and contact with potentially damaging surfaces/substances. Do not drag flashings across each other, or across other surfaces. Protect edges, corners and surfaces from damage.

3.4 **SUBSTRATE**

Do not commence work until the substrate is of the standard required by the installer for the specified flashings, level and in true alignment.

3.5 **PROTECT**

Protect surfaces, window and door joinery, and finishes already in place, from the possibility of damage during the installation process.

3.6 **CONFIRM LAYOUT**

Before commencing work confirm the proposed installation of the flashings and expansion joints and other visual considerations of the finished work.

3.7 **CO-ORDINATE INSTALLATION**

Co-ordinate installation of flashings with associated trades.

**Application**

3.8 **INSTALLATION**

Install flashings in accordance with NZMRM - CoP and in compliance with NZBC E2/AS1, 4.0 Flashings. For very high wind zones and where the pitch of the roof is below 15° the flashing joint laps shall be sealed with sealant at each end of the lap to prevent the ingress of water.

Refer to NZBC E2/AS1 Table 7 for general dimensions of flashings.

3.9

#### **FIXINGS**

Fix flashings with fasteners appropriate to the situation. For fixing flashings with proprietary brackets or clips ensure they are aligned to allow for movement and are compatible with the flashing material.

Fix screws with the shank perpendicular to the surface of the flashing with the washer fitted firmly against the flashing. Screws to be compatible with the flashing material.

Rivets 'blind' or 'pop' are to be sealed when used. Aluminium rivets are compatible with zinc or AZ coated steel. Monel and stainless steel rivets can be used to fix galvanized steel flashings. Minimum diameter of rivet to be used is 4.0mm. Drill hole 1mm larger than the rivet size. Seal head of rivet with neutral cured silicone.

3.10

#### **JOINTING - SEALANTS**

Clean surfaces to be lapped using a solvent ensuring all traces of the solvent are removed with a clean rag. Apply sealant by gun in a continuous bead of approximately 5mm diameter. Width of sealant when compressed should not exceed 25mm. Sealant joints shall be mechanically fixed for strength. Refer to NZMRM - CoP for details.

3.11

#### **JOINTING - SOLDER**

Solder joints in galvanized steel and non-ferrous metals when specified with lead/tin solder. Clean joint ensuring it is dry and free of grease immediately prior to applying a proprietary flux. Lap the flashing 25mm in the direction of the water flow and fasten the lap with rivets or screws at 50mm centres. Completely sweat the joint to avoid leaving any flux residue. Wash down the joint to remove any trace of flux.

3.12

#### **FINAL INSPECTION**

A final inspection by the installer to take place after completion of the flashing work. Any defects or subsequent damage to be made good.

#### **Completion**

3.13

#### **PROTECT**

Protect new work from damage.

3.14

#### **REPLACE**

Replace all damaged or marked elements.

3.15

#### **LEAVE**

Leave work to the standard required for following procedures.

3.16

#### **REMOVE**

Remove debris, unused materials and elements from the site.



## 5113G GIB® PLASTERBOARD LININGS

### 1. GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber framed walls and ceilings to form:

- standard systems
- bracing systems
- wet area systems

#### 1.1 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

AWCINZ Association of Wall and Ceiling Industries New Zealand

#### Documents

#### 1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC E2/AS1	External moisture
AS 1397	Steel sheet and strip - hot-dipped, zinc-coated, or aluminium/zinc-coated
AS/NZS 2588	Gypsum plasterboard
AS/NZS 2589	Gypsum linings - Application and finishing
NZS 3604	Timber-framed buildings
AS/NZS 4600	Cold-formed steel structures
BRANZ technical paper P21:	A wall bracing test and evaluation procedure
NASH	Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria

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

#### 1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section are:

- GIB® Site Guide (Jan 2010)
  - GIB® Noise Control Systems (March 2006)
  - GIB Aqualine® Wet Area Systems (March 2007)
  - GIB® Ezybrace® Systems (June 2011)
  - GIB® Ezybrace® Software (2011)
  - GIB® Goldline® Platinum Tape-on Trims
- BRANZ Appraisal 294 (2011) - GIB® Ezybrace® Systems  
BRANZ Appraisal 427 - GIB Aqualine® Wet Area Systems

Copies of the above literature are available at

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

Telephone: 0800 100 442

#### Requirements

#### 1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

#### 1.5 INSTALLER WORK SKILLS AND QUALIFICATIONS

GIB® plasterboard fixers and plasterers to be experienced competent workers, familiar with GIB® plasterboard lining systems installation and finishing techniques. Submit evidence of experience on request. For example:

- National Certificate of Interior Systems; or
- Certified Business member of AWCINZ.

#### Performance

## 1.6 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
  - before applying finish coatings or decorative papers,
- so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

## 1.7 BRACING REQUIREMENTS

Provide braced wall systems using GIB® Ezybrace® Systems (June 2011) or GIB® Ezybrace® Software (2011) to meet the requirements of NZS 3604 when tested to BRANZ Technical paper P21. Alternatively use GIB® Ezybrace® for Steel Frame Housing (NASH) Software 2011 to meet the requirements of NASH Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria. Refer to drawings for location and type.

## 2. PRODUCTS

### Materials

### 2.1 GIB® PLASTERBOARD

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS/NZS 2588.

GIB® Standard plasterboard

GIB Wideline® plasterboard

GIB Braceline® & GIB® Noiseline dual purpose wall bracing & noise control plasterboard

GIB Aqualine® wet area plasterboard

### Components

### 2.2 SCREWS

GIB® Grabber® drywall screws.

### 2.3 TAPE ON TRIMS AND EDGES

GIB® Goldline® tape-on trims

### 2.4 CONTROL JOINTS

GIB® Goldline® tape-on trims

### Accessories

### 2.5 ADHESIVE

GIBFix® One ultra low VOC water based wallboard adhesive

GIBFix® All-Bond solvent based wallboard adhesive

### 2.6 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®
Finishing compound:	GIB ProMix® All Purpose, GIB® Trade Finish®, GIB® Trade Finish® Lite, GIB ProMix® Lite, GIB® U-Mix, GIB Plus 4®

### 2.7 JOINTING TAPE

GIB® paper jointing tape.

### 2.8 GAP FILLER

GIB® Gap Filler ultra low VOC multi-purpose acrylic flexible filler

## 3. EXECUTION

### Conditions

- 3.1 **STORAGE**  
Store GIB® plasterboard sheets and accessories in dry conditions stored indoors out of direct sunlight in neat flat stacks on either an impervious plastic sheet or clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material. Refer to GIB® Site Guide (Jan 2010).

- 3.2 **LEVELS OF PLASTERBOARD FINISH**  
Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589.

- 3.3 **CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE**  
Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

**Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified plasterboard Level of Finish has been achieved.**

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard **prior** to the application of a range of decorative finishes under various lighting conditions. Refer to **AS/NZS 2589**.

- 3.4 **SUBSTRATE**  
Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements. Refer to GIB® Site Guide (Jan 2010).

- 3.5 **TIMBER FRAME MOISTURE CONTENT**  
Maximum allowable moisture content to AS/NZS 2589 for timber framing at lining: 18% or less for plasterboard linings. Refer to NZBC E2/AS1 and GIB® Site Guide (Jan 2010).

- 3.6 **PROTECTION**  
Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide.

#### **Application**

- 3.7 **LINING WALLS AND CEILINGS GENERALLY**  
Form to GIB® Site Guide (Jan 2010). Ensure bulk insulation thickness shall not exceed that of the wall framing.

- 3.8 **BOARD ORIENTATION**  
Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.

- 3.9 **FORM WET AREA SYSTEMS**  
Form to GIB Aqualine® Wet Area Systems.

- 3.10 **FORM BRACING SYSTEMS**  
Form to GIB® Ezybrace® Systems (June 2011).

- 3.11 **FORM CONTROL JOINTS**  
Form control joints to GIB® Site Guide.

- 3.12 **INSTALL TAPE-ON TRIMS**  
Install to GIB® Goldline® Tape-on trims literature.

#### **Finishing**

- 3.13 **FINISHING GENERALLY**  
To GIB® Site Guide (Jan 2010) and AS/NZS 2589.

### **Completion**

- 3.14      **REPLACE**  
Replace damaged sheets or elements.
- 3.15      **CLEAN DOWN**  
Clean down completed surfaces to remove irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean.
- 3.16      **REMOVE**  
Remove debris, unused materials and elements from the site.
- 3.17      **LEAVE**  
Leave work to the standard required by following procedures.

## **5230 INTERIOR DOORS**

### **1. GENERAL**

This section relates to the supply and installation of interior doors.

#### **1.1 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZS 3602	Timber and wood-based products for use in building
NZS 3610	Specification form profiles of mouldings and joinery

### **2. PRODUCTS**

#### **2.1 TIMBER**

To NZS 3602.

#### **2.2 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES**

Proprietary profiles as selected by owner. Pencil radius corners of profiled schedules for paint finish.

#### **2.3 DOORS, PAINTED**

Doors as scheduled.

#### **2.4 CAVITY SLIDERS**

Doors hung within a proprietary cavity slider frame and complete with brand-matched sliding door gear.

#### **2.5 DOOR HINGES**

Size and gauge to carry door. 3 hinges per door.

#### **2.6 SLIDING DOOR GEAR**

To suit door/sash size and glazed weight and as detailed.

### **3. EXECUTION**

#### **3.1 SITE MEASURE**

Confirm framed openings on site for dimension, plumb and straightness prior to fabrication or ordering of timber joinery. Confirm lintel head and sill deflection for sliding or bi-fold door systems is within the manufacturer's specified tolerances. Provide not less than 10mm unless otherwise required.

#### **3.2 EXECUTION GENERALLY**

Manufacture to the methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

#### **3.3 FACTORY FIT HARDWARE**

Factory fit the following where specified: -  
- Hinges

#### **3.4 FACTORY FINISHING**

Before delivery to site: -

- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

#### **Internal doors**



- 3.5      **INTERNAL JOINERY FRAMES**  
Fabricate as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish.
- 3.6      **DOOR LINERS, EXTENDED**  
Heads and jambs finished 30mm, rebated for wall linings and extended a minimum of 10mm. 10mm planted door stops. Hang doors on hinges, sliding and bi-fold gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.
- 3.7      **CAVITY SLIDERS**  
Install in accordance with the door manufacturer's requirements, allowing for removal of top trim for maintenance.
- Completion**
- 3.8      **CHECK**  
Check and adjust operation of all sashes, doors, hardware and furniture.
- 3.9      **TEMPORARY PROTECTION**  
On completion remove any temporary protection and leave ready for following work.

## **6211 WALL TILING**

### **1. GENERAL**

This section relates to the supply and installation of ceramic wall tiles.

It includes:

- timber substrate walls

#### **Documents**

#### **1.1 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS 3740	Waterproofing of wet areas within residential buildings
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
AS ISO 13007.1	Ceramic tiles - Grouts and adhesives: Terms, definitions and specifications for adhesives
AS ISO 13007.3	Ceramic tiles - Grouts and adhesives: Terms, definitions and specifications for grouts
BRANZ	Good practice guide - Tiling

#### **Requirements**

#### **1.2 QUALIFICATIONS**

Tilers to be experienced, competent trades people familiar with the materials and techniques specified.

#### **1.3 NO SUBSTITUTIONS**

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

#### **1.4 ADHESIVES COMPATIBILITY**

Adhesives selected for use on proprietary substrates or waterproof membranes to have documented compatibility approval from the respective manufacturers.

### **2. PRODUCTS**

#### **Materials**

#### **2.1 WALL TILES**

Refer to owners selection selection.

#### **Accessories**

#### **2.2 LIQUID WATERPROOFING MEMBRANE**

To AS 3740.

#### **2.3 GROUT**

Cement based, compressible and to suit particular location/use. To AS ISO 13007.3.

#### **2.4 TILE ADHESIVE**

To AS ISO 13007.1.

#### **2.5 MOVEMENT JOINT SEALANT**

To BRANZ Good practice guide: Tiling, section 5.0.

- Neutral cured sealant for areas where waterproof membranes are used or where used against aluminium.

- Acid cured sealant except for areas where waterproof membranes are used or where used against aluminium.

Note: Check compatibility of membrane and sealant, use bond breaking tape to separate them if required.

### **3. EXECUTION**

#### **3.1 DELIVERY, STORAGE AND HANDLING**

Take delivery of materials and goods and store on site and protect from damage.  
Protect finished surfaces, edges and corners from damage.  
Move/handle goods in accordance with manufacturer's requirements.  
Reject and replace goods that are damaged or will not provide the required finish.

#### **3.2 CHECK TILES**

Check tiles to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern. Reject tiles that are damaged.

#### **3.3 CONFIRM LAYOUT**

Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.

#### **3.4 SETTING OUT**

Before commencing the setting out confirm the number and location of cut tiles. Minimise in number with no cut tiles less than half size and only at the perimeter of the work.

#### **Conditions**

#### **3.5 SERVICES AND ACCESSORIES**

Ensure that all services and accessories are in place and located to suit the tile layout, and that the substrate, background and adjoining surfaces (with the preparation called for in this section) are of the quality necessary to allow tiling of the required standard.

#### **3.6 SUBSTRATE TEMPERATURE**

Do not carry out tiling where the substrate temperature is below 5°C or above 40°C.

#### **3.7 LIGHTING**

Light the tile work as closely and clearly as possible to that of the finished lighting, to ensure that differences in plane surface are highlighted during installation.

#### **Application - preparing new surfaces**

#### **3.8 NEW SHEET LININGS**

Remove contaminants that may affect bonding or adhesion. Surface to finish clean and dry with a texture to give a complete key to the tile manufacturer's requirements and with a maximum variation in the background plane of 4mm in 2 metres.

#### **Application - waterproof membranes**

#### **3.9 INSTALL WATERPROOFING MEMBRANE**

Install waterproofing membrane between the tile adhesive and the substrate. Reinforce all junctions of the waterproofing membrane to BRANZ Good practice guide - Tiling; 7.0 Waterproofing interior wet areas. Unless otherwise specified or shown on the drawings, install waterproof membranes as follows: -

##### **Bath**

- To 150mm minimum around the sides and along walls horizontally 150mm minimum.

##### **Splashback to a vanity**

- To 300mm minimum up wall behind the vanity.

- To the floor level at least twice the width of the vanity and 500mm min beyond it at each end.

#### **3.10 LIQUID WATERPROOFING MEMBRANE**

Apply the selected liquid waterproof membrane system to the membrane manufacturer's requirements and in accordance with AS 3740 and to BRANZ Good practice guide - Tiling, 7.0 Waterproofing interior wet areas.

## **Application - tile installation**

### **3.11 TILE FIXING GENERALLY**

To AS 3958.1. Apply adhesive, prepare and fix tiles by the method required by the adhesive manufacturer and tap them firmly into place.

### **3.12 FITTING TILES**

Ensure cut edges are smooth and installed without jagged or flaked edges. Do not install single tiles in more than one piece. Maintain the heights of wall tile work in full courses to the nearest dimension. Within allowed tolerances, ensure corners of tiles are flush and level with corners of adjacent tiles. Keep joint lines, including mitres, straight and of an even width. Fully bed trim units, moulded or shaped pieces and other accessories with an appropriate bedding material. Fix accessories level, plumb and true to the designated projection at detailed locations and heights.

### **3.13 MOVEMENT JOINTS**

Provide movement joints with a minimum width of 4mm, carried through tile and bedding and where substantial movement is anticipated, through the rigid sheet to the structure. Install joints over expansion joints, at junctions between different backgrounds, abutting other materials, at storey heights horizontally and 3 to 4 metres vertically, at internal corners and at junctions with floors and columns. Ensure joints are clean, formed, filled and with sealant inserted to the sealant manufacturer's requirements.

### **3.14 TILE FINISH AND JOINTS**

Ensure finished surfaces are flat and true to a tolerance of  $\pm 4\text{mm}$  in 2 metres from the required plane. Clean surplus bedding material from joint spaces and tile surface. Ensure joint widths are consistent throughout the installation with 1.5mm width for dust-pressed tiles and 6mm for extruded tiles, measured at the tile face. Ensure joint alignment is consistent throughout the installation and to a tolerance of  $\pm 4\text{mm}$  in 2 metres from the detailed joint alignment.

### **3.15 THIN BED FIXING**

Apply adhesive to a maximum 3mm bed thickness with a minimum of voids.

Occasionally remove a tile as fixing proceeds to check the maintenance of adequate contact with the adhesive.

## **Grouting**

### **3.16 APPLY GROUTING**

Remove spacers. Apply grouting mix to as large an area as can be worked before setting commences. Work with a grouting tool back and forth until joints are completely filled with no adhesive showing. Avoid damage to the surface of tiles, using masking tape where necessary. Finish to the depth of the cushion and flush with surface to cushion edge and square edge tiles. Remove surplus grout with a damp cloth and tool the joints to finish the grout uniform in colour, smooth and without voids, pinholes or low spots.

## **Cleaning**

### **3.17 CLEAN TILES**

Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave them completely clean and without blemish. Finally polish glazed tiles with a clean dry cloth.

## **Completion**

### **3.18 ROUTINE CLEANING**

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused and temporary materials and elements from the site.

3.19

**DEFECTIVE OR DAMAGED WORK**

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.



## **6414 CORK SURFACING**

### **1. GENERAL**

This section relates to the supply and installation of cork tiles to floors.

#### **1.1 ABBREVIATIONS AND DEFINITIONS**

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

#### **Documents**

#### **1.2 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC D1/AS1	Access routes
NZS/AS 1884	Floor coverings - Resilient sheet and tiles - Laying and maintenance practices
AS/NZS 3661.1	Slip resistance of pedestrian surfaces - Requirements
BRANZ BU 330	Thin flooring materials - 2 Preparation and laying

#### **Warranties**

#### **1.3 WARRANTY - MANUFACTURER/SUPPLIER**

Provide a material manufacturer/supplier warranty:

1 year: For materials

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

#### **1.4 WARRANTY - INSTALLER/APPLICATOR**

Provide an installer/applicator warranty:

1 year: For execution

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

#### **Requirements**

#### **1.5 SAMPLES**

Refer to the general section 1270 CONSTRUCTION for details of how samples will be reviewed.

#### **1.6 QUALIFICATIONS**

Work to be carried out by trades people experienced, competent and familiar with the materials and techniques specified.

#### **1.7 NO SUBSTITUTIONS**

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

#### **Performance**

#### **1.8 SLIP RESISTANCE FOR ACCESS ROUTES**

Slip resistance for cork to comply with NZBC D1/AS1: 2.0 Level access routes and 3.0 Ramps.

- when in place on a level access route, to have a mean coefficient of friction ( $\mu$ ) not less than 0.4 when tested in accordance with AS/NZS 3661.1.

- when in place on a sloping access route, to have a coefficient of friction ( $\mu$ ) not less than  $0.4 + 0.0125S$  ( $S$  = slope of surface expressed as a percentage).

## 1.9 PROVIDE EVIDENCE

Provide evidence that the cork surfacing complies with the standard of performance specified.

## 2. PRODUCTS

### Materials

## 2.1 CORK TILES

Tiles cut from compressed blocks of natural cork granules, bonded with natural resins.

## 3. EXECUTION

### Conditions

## 3.1 DELIVERY, STORAGE AND HANDLING

Take delivery of materials and goods and store on site and protect from damage. Protect finished surfaces, edges and corners from damage. Move/handle goods in accordance with manufacturer's requirements. Reject and replace goods that are damaged or will not provide the required finish.

## 3.2 PREPARATION

Check that each colour supplied is from the same batch. Check that tinted tiles supplied are from the same batch and check natural coloured tiles for consistency of tone and texture. Follow the cork supplier's requirements for working temperatures and conditions before, during and after laying. Protect work from solar heat gain and switch off under-floor heating during and for 48 hours either side of the work period.

## 3.3 DO NOT START

Do not start work before the building is enclosed, wet work is complete, doors are hung and lockable, finishes and trim complete and good lighting is available.

## 3.4 INSPECT

Inspect the substrate to ensure it is a suitable finish. Do not start work if it will not allow work of the required standard

## 3.5 PROTECTION

Protect adjoining work surfaces and finishes during the cork tile installation.

## 3.6 TECHNIQUE

Before beginning the installation confirm the proposed layout of material, location of seams and other visual considerations of the finished work.

## 3.7 LAYING GENERALLY

Carry out the whole of this work to NZS/AS 1884, BRANZ BU 330 and the flooring manufacturer's requirements.

### Application - substrate preparation

## 3.8 PREPARING NEW CONCRETE

Clear substrate of debris, clean off surface contamination and carry out surface repairs using a proprietary levelling compound. Carefully feather out at perimeters of repaired areas. Grind level, then vacuum to remove dust. Check for moisture content by hygrometer to BRANZ BU 330 and do not commence laying until readings for the whole area show 75% relative humidity or less.

### Application - laying

- 3.9        **CORK TILE PREPARATION**  
Follow the cork supplier's recommendations for working temperatures and conditions before, during and after laying. Protect work from solar heat gain and switch off under-floor heating during and for 48 hours either side, of the work period.

- 3.10       **CORK APPLICATION**  
Apply adhesive as required by the supplier of the cork tiles.

- 3.11       **LAY CORK TILES**  
Lay tiles point to point. Firmly roll on to the adhesive to avoid leaving corners or edges sitting proud.

- 3.12       **LEAVE CORK TILE**  
Leave cork tile surfaces free of adhesive, dirt and debris.

**Finishing**

- 3.13       **COATING CORK TILES**  
Refer to the cork tile supplier's recommendations and prepare and finish the surface with high quality, UV inhibited, polyurethane. Physically protect the surface from marking or damage before and after coating.

**Completion**

- 3.14       **ROUTINE FLOORING**  
Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused and temporary materials and elements from the site.

- 3.15       **DEFECTIVE OR DAMAGED WORK**  
Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Leave work to the standard required for following procedures.

## **6511 CARPETING**

### **1. GENERAL**

This section relates to the supply and installation of carpet laid conventionally (stretched),.

It includes:

- carpet underlay
- woven sheet carpet

It is not suitable for natural fibre floor coverings.

#### **1.1 ABBREVIATIONS AND DEFINITIONS**

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

#### **Documents**

#### **1.2 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS/NZS 2455.1 Textile floor coverings - Installation practice - General

#### **Warranties**

#### **1.3 WARRANTY - MANUFACTURER/SUPPLIER**

Provide a material manufacturer/supplier warranty:

1 year: For materials

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of practical completion of the contract works.

#### **1.4 WARRANTY - INSTALLER/APPLICATOR**

Provide an installer/applicator warranty:

1 year: For execution

- Provide this warranty on the installer/applicator standard form.
- Commence the warranty from the date of practical completion of the contract works.

#### **Requirements**

#### **1.5 QUALIFICATIONS**

Carpet layers to be experienced, competent trades people familiar with the materials and the techniques specified, and with AS/NZS 2455.1.

#### **1.6 MOISTURE CONTENT OF CONCRETE SLAB**

Concrete slab is to be cured and dried to a relative humidity of not exceeding 75% or until the moisture content does not exceed 5.5%, in accordance with AS/NZS 2455.1.

#### **1.7 NO SUBSTITUTIONS**

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

#### **1.8 SAMPLES**

Provide samples of each carpet for review of colour, design and quality. Submit on request samples of underlay and accessories offered.

#### **1.9 RESERVE MATERIAL**

Supply reserve carpet, all suitably packaged for delivery and storage.

## **2. PRODUCTS**

### **Materials**

- 2.1 UNDERLAY  
To AS/NZS 2455.1 Soft underlay and underlays manufacturer's requirements.

- 2.2 CARPET  
To AS/NZS 2455.1 Textile floor coverings.

### **Components**

- 2.3 BINDER BARS  
Anodised aluminium section with fluted face.

- 2.4 DIVIDER STRIPS  
Hardwood strips 20mm x 15mm or as specified.

- 2.5 EDGE GRIPPER  
To AS/NZS 2270.  
Timber/plywood with steel grippers to carpet manufacturer's requirements, constructed of sufficient pins and nails so as to withstand a minimum stretching force of 6580N over a 1220 mm length.

### **Accessories**

- 2.6 ADHESIVE, UNDERLAY  
To AS/NZS 2455.1, clause 1.5.3. and underlay manufacturer's requirements.

- 2.7 ADHESIVE, CARPET  
To AS/NZS 2455.1, clause 1.5.3. and carpet manufacturer's requirements.

- 2.8 TAPE  
To carpet manufacturer's requirements.

## **3. EXECUTION**

### **Conditions**

- 3.1 DELIVERY  
Take delivery of materials and goods and store on site and protect from damage.  
Accept rolls of carpet and accessories undamaged and dry.

- 3.2 HANDLE AND STORE  
Handle carpet on flat dollies using carpet cradles, with probes on fork- lifts and without sharp bending or folding. Store carpet in flat bins with a maximum height of three rows.  
Keep dry. Protect from damage.

- 3.3 INSPECTION  
Before starting work inspect the substrate to ensure that it will allow work of the required standard, and that all fittings and fixtures around which the carpet is to be scribed are in place.

- 3.4 PROTECTION  
Protect adjoining work surfaces and finishes during the carpet installation.

- 3.5 TAPE  
Tape for binding and seaming using type and width required by the carpet manufacturer to suit the specified carpet and the standard of performance required.

- 3.6 LAYOUT  
Plan the general layout so that:  
- seams run lengthways



- traffic runs along the seam
- light from windows is not across the seam
- pile faces away from the light source.

### 3.7 TEMPERATURE

Acclimatise carpet to a room temperature above 15°C through the whole of the installation.

### 3.8 FLOOR PREPARATION

Prepare floor and check conditions required for laying to AS/NZS 2455.1, section 2.

#### **Application - substrate preparation**

### 3.9 PREPARING NEW CONCRETE FLOOR

To be level, smooth, clean, cured and dry. Remove loose material and dust. Refer to 6192 FLOORING SUBSTRATE PREPARATION.

### 3.10 PREPARING NEW WOOD PRODUCT FLOOR

To be level, sanded smooth and dry with loose material and dust removed. Check for moisture content and do not commence laying until readings for the whole area show a moisture content of:

- 8 - 12% for air conditioned buildings
- 10 - 14% for intermittently heated buildings
- 12 - 16% for unheated buildings

#### **Application - carpet laying**

### 3.11 INSTALLATION, UNDERLAY

Installation to underlay manufacturer's requirements. Lay at right angles to the carpet direction.

### 3.12 INSTALLATION, CONVENTIONAL SYSTEM

Tape carpet joints, fix grippers to floor and install underlay and carpet to AS/NZS 2455.1, section 3. Stretch carpet tight in both width and length evenly without bowing, square with walls.

### 3.13 UNDERLAY TO STAIRS

Cut underlay into pads to cover tread and riser and to the width of the stair carpet less 50mm. Fix to tread and riser to prevent movement and wrinkling.

### 3.14 LAYING TO STAIRS

Provide a minimum additional length of carpet equivalent to one tread and riser to allow for shifting. Conceal by substituting for the underlay at the top or bottom of the stair flight. Fit stair nosing as detailed and to the nosing manufacturer's requirements.

### 3.15 FIXING TRIMS

Fix binder bars, carpet to carpet bars, and trims to all junctions with other materials and to carpet edges, to the carpet manufacturer's requirements. Ensure that junctions with other materials are neatly formed, with bars and trim securely fastened to the substrate, 20mm from each end and at a maximum of 100mm centres.

#### **Completion**

### 3.16 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused and temporary materials and elements from the site.

### 3.17 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Leave work to the standard required for following procedures.

## **6700 PAINTING GENERAL**

### **1. GENERAL**

This section relates to the general matters related to painting work

#### **1.1 ABBREVIATIONS**

The following abbreviations are used throughout this part of the specification:

APAS	Australian Paint Approval Scheme
MPNZA	Master Painters New Zealand Association Inc.
VOC	Volatile organic compound

#### **Documents**

#### **1.2 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

AS/NZS 2311	Guide to the painting of buildings
AS/NZS 2312	Guide to the protection of structural steel against exterior atmospheric corrosion by the use of protective coatings
AS/NZS ISO 9001	Quality management systems - requirements
OSH	Guidelines for the provision of facilities and general safety in the construction industry
OSH	Guidelines for the management of lead-based paint
MPNZA	Specification manual
MPNZA	Painters hazard handbook
Health and Safety in Employment Act 1992	

#### **Requirements**

#### **1.3 NO SUBSTITUTIONS**

Substitutions are not permitted to any specified manufacturer's system, or associated components and products.

#### **1.4 QUALIFICATIONS**

Painters to be a member of MPNZA and experienced competent workers, familiar with the materials and the techniques specified.

#### **1.5 CONTROL SAMPLES**

Prepare samples of the finished work as scheduled, including preparation and colour as specified. Obtain written approval of the appearance before proceeding. Refer to SELECTIONS for requirements.

#### **1.6 HEALTH AND SAFETY**

Refer to the requirements of the Health and Safety in Employment Act and OSH: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards is not possible then minimise hazards in this work on site by using the proper equipment and techniques as required in the MPNZA Painters hazard handbook. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put in place procedures for dealing with emergencies.

Refer to OSH: Guidelines for the management of lead-based paint for the required procedures and precautions when:

- treating/removing lead-based paint
- burning off paint
- sanding off paint
- using solvent based paint removers.

#### **1.7 MATERIAL SAFETY DATA SHEET**

Obtain from each paint manufacturer the material safety sheet for each product used. Keep sheets on site and comply with the required safety procedures.

## **Warranties**

- 1.8 **WARRANTY**  
Warrant this work under normal environmental and use conditions against failure.  
2 years:                      Warranty period

## **Performance**

- 1.9 **MANUFACTURER'S INSPECTION**  
Allow the paint manufacturers to inspect the work in progress and to take samples of their products from site if requested.
- 1.10 **INSPECTION OF WORK**  
Inspection of the whole of the work at each of the stages scheduled may be made. Agree a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.

## **2. PRODUCTS**

### **Materials**

- 2.1 **PAINT TYPES**  
Use the manufacturer's complete system and only the products specified.
- 2.2 **MATERIALS GENERALLY**  
Use only the Manufacturer's products which are guaranteed for their consistency and performance under AS/NZS ISO 9001 and APAS approval, prepared, mixed and applied as directed in the Manufacturer's specification sheets, specification manuals and product data sheets.
- 2.3 **THINNERS AND ADDITIVES**  
Only use thinners or additives within the stated limits for the particular situations specified.

### **Accessories**

- 2.4 **FILLERS**  
For recommendations on; fillers, stopping, paint strippers, cleaning agents, etching solutions, mould inhibitors, rust inhibitors, knotting and other commodities used for the surface preparation, refer to the manufacturer of the specified coating.

## **3. EXECUTION**

### **Conditions**

- 3.1 **EXECUTION**  
To conform to manufacturer's requirements and those methods, practices and techniques contained in AS/NZS 2311, the MPNZA Specification manual, and OSH Guidelines for the provision of facilities and general safety in the construction industry.
- 3.2 **PREPARE**  
Prepare surfaces to the coating manufacturer's requirements.
- 3.3 **COATED SURFACES**  
Ensure that substrate surfaces are able to achieve the specified finish.
- 3.4 **PRE-PRIMED SURFACES**  
Sand down any breakdown or damage of the primer to a sound surface and immediately re-prime.

- 3.5 **BRUSH DOWN**  
Brush down surfaces immediately before application, to remove dust, dirt and loose material.
- 3.6 **COMPATIBILITY**  
Check that materials are as required by the paint manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other. Use paint from the same manufacturer for each paint system. If not compatible, obtain instructions before proceeding.
- 3.7 **TREATED SURFACES**  
Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.
- 3.8 **ANCILLARY SURFACES**  
The coatings listed in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.
- 3.9 **HARDWARE**  
Do not paint hinges or hardware that cannot be removed. If items can be removed, carefully remove hardware, fixtures and fittings before commencing work. Set aside where they cannot be damaged or misplaced and replace on completion.
- 3.10 **PROTECTION**  
Use dropsheets, coverings and masking necessary to protect adjoining fixtures, fittings and spaces from paint drops, spots, spray and damage.

**Preparation - unpainted and pre-primed timber and wood based products**

- 3.11 **MOISTURE CONTENT**  
Ensure moisture content at the time of application is near to the equilibrium moisture content pertaining to the particular locality in which the timber is used, without any excessive moisture content gradient between core and surface.
- 3.12 **PREPARING DRESSED TIMBER**  
Ensure dressed timber is smooth, free from raised or woolly grain, planing burrs or other machining defects. Slightly round or ease sharp edges to ensure they can be properly coated. Sand timber to bring up to a smooth finish along the direction of the grain. Sand timber back to new condition timber that has been weathered.
- 3.13 **PREPARING ROUGH SAWN TIMBER**  
Thoroughly brush along the direction of the grain to remove dust and dirt.
- 3.14 **PREPARING PRE-PRIMED TIMBER**  
Check pre-prime coat for damage, powdering, weathering or loss of adhesion. Where primer is sound, thoroughly brush along the direction of the grain to remove dust and dirt. If there is doubt, sand back and re-prime.
- 3.15 **TIMBER SPECIES**  
Check that the preparation and paint system is suitable for the timber species.
- 3.16 **PREPARING DAMAGE AND DEFECTS**  
Scrape clean loose or soft material holes, depressions, resin or gum pockets, knot holes, surface splits, checks, or any localised decay. Apply primer and/or sealer specified and fill these areas with linseed oil putty or other appropriate filler.
- 3.17 **FIXINGS**  
Take timber fixings below the painted or clear finished surface. Leave corrosion resistant timber fixings flush with clear finished surfaces.



- 3.18 **CLEANING**  
Remove grease and oil by wiping down with solvent or water-based degreasing agent. Remove resin by wiping down with solvent or water-based degreasing agent or heating and scraping. Remove sanding dust. Bad staining may be untreatable and require replacement of timber, discuss with paint manufacturer and main contractor.
- Preparation - unpainted linings**
- 3.19 **PREPARING PLASTERBOARD**  
Check that joints are prepared to a smooth level surface finish. Fill cracks and surface imperfections with the sheet manufacturer's required stopping compound and lightly sand smooth. Remove dust. Surface moisture content not to exceed 12% at time of coating.
- Preparation - painted surfaces generally**
- 3.20 **SURFACE PREPARATION**  
Refer to the Manufacturer's specification sheets and product data sheets. Carry out the preparatory work required by them for each of the substrates.
- For interior surfaces such as paper faced plasterboard use the Manufacturer's recommended finishing compound as an aid to achieving a Level 5 finish.
- 3.21 **MOULD**  
Sterilise surface mould by washing or sponging the whole surface with a one part sodium hypochlorite household bleach to three parts clean water solution. Allow bleach to act for 30 minutes and wash off with clean water. Wash cloths and sponges regularly in clean water. Reapplication may be necessary. Treat with anti-mould solution to the treatment manufacturer's requirements.
- 3.22 **GAP FILLING**  
Fill cracks, holes, indented and damaged surfaces with putty, plaster filler, wood filler, or plastic wood, as appropriate and in accordance with the paint manufacturer's requirements. Allow to dry or set before sanding back level with the surface. Prime coat or seal the timber before using putty. Wet cement or gypsum base plasters before applying filler. Use only Portland cement base types, or water-insoluble organic-based gap fillers in exterior or wet areas.
- Application - before applying final coatings**
- 3.23 **OFF-SITE WORK**  
Carry out off-site preparation and coating under cover, in a suitable environment and with adequate lighting. Store items both before and after coating in a clean, dry area, protected from the weather and mechanical damage, properly stacked and spaced to permit air circulation and to prevent sticking of surfaces.
- 3.24 **PRIMING JOINERY**  
Before priming preservative treated timber ensure that any cut surfaces have been retreated. Liberally coat end grain, allow to soak in and then recoat. Ensure LOSP treated joinery has dried sufficiently to lose odour.
- 3.25 **CONCEALED JOINERY SURFACES**  
Apply off-site coatings to all surfaces including those which will be concealed when incorporated into the building.
- 3.26 **CONCEALED METAL SURFACES**  
Apply primer to suit the coating system to all metal surfaces which will be concealed when incorporated into the building.
- 3.27 **DOORS**  
Prime or seal and paint all six faces of doors before hanging.



## **Application - generally**

### **3.28 PAINTING GENERALLY**

Comply with the paint manufacturer's requirements and any additional requirements in this specification.

### **3.29 MIXING**

Thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.

### **3.30 ENVIRONMENT**

Paint exterior surfaces only in favourable weather conditions:

- warm dry days without frost or heavy dews
- avoid painting in direct sunlight any surfaces that absorb heat excessively
- as far as possible apply paint in the temperature range 15°C to 25°C
- do not paint if temperatures fall outside the range of 10°C and 35°C unless paints with the necessary temperature tolerance have been specified
- do not apply solvent borne paint if moisture is present on the surface

### **3.31 SEQUENCE OF OPERATIONS**

Painting work to generally follow the following sequences:

- complete surface preparation before commencing painting
- apply paint in the specified sequence using the specified paint
- allow full drying time between coats to the paint manufacturer's requirements
- do not expose primers, undercoats and intermediate coats beyond manufacturers stated instructions before applying the next coat
- finish broad areas before painting trim
- ensure batch numbers of tins are matched for whole areas
- internally, paint ceilings before walls and walls before joinery, trim and other items

### **3.32 PAINT APPLICATIONS**

Select brush, roller, or pad and apply paint to the requirements of the paint manufacturer and to obtain a smooth even coating of correct thickness, uniform gloss and colour.

### **3.33 DRYING TIME**

Before handling or applying the next coat of paint, give each coat the full drying time as required by the paint manufacturer. Ensure that surfaces are dry and that condensation does not occur before the paint reaches surface-dry condition.

### **3.34 LIGHTLY SAND**

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. Remove dust immediately before applying the next coat.

### **3.35 DEFECTIVE WORK**

Correct defective work immediately and re-coat as required, following precisely the paint system specified.

### **3.36 EACH COAT**

Each coat of paint and the completed paint system to have the following qualities and properties:

- uniform finish, colour, texture, sheen and hiding power
- the specified number of coats applied
- no blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, brush marks, ladder marks and blistering
- proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application

## **Completion**

- 3.37      **CLEAN**  
Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at completion of the building works. Clean glass inside and out to a shining finish.
- 3.38      **CLEAN EQUIPMENT**  
Use the Manufacturer's environmental wash system for the cleaning of water-based paint and plasters from brushes, rollers, plastering or spray equipment to separate the solids from the water component for safe disposal.
- 3.39      **LEAVE**  
Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.
- 3.40      **REMOVE**  
Remove dropsheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.
- 3.41      **REPLACE HARDWARE**  
Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

## **7112 RAINWATER STORAGE TANKS**

### **1. GENERAL**

This section relates to the installation of domestic rainwater storage tanks.

#### **Related work**

#### **1.1 RELATED SECTIONS**

Refer to 7431 DRAINAGE GENERAL for general requirements

Refer to 7411 RAINWATER SPOUTING SYSTEMS for downpipe installation

Refer to electrical section/s for electrical connections

#### **Documents**

#### **1.2 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC G1/AS1	Personal Hygiene
NZBC G12/AS1	Water Supplies
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent application
AS/NZS 1546.1	On-site domestic wastewater treatment units - septic tanks
AS 2070	Plastic materials for food contact use
AS/NZS 2845.1	Water supply - Mechanical backflow prevention devices - materials, design and performance requirements
AS/NZS 3000	Electrical installations
AS/NZS 3500.1	Plumbing and drainage - water services
AS/NZS 3500.3	Plumbing and drainage - stormwater drainage
AS/NZS 4020	Testing of products for use in contact with drinking water
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
AS/NZS 4766	Polyethylene storage tanks for water and chemicals
ATS 5200.026	Technical Specification for plumbing and drainage products - Cold water storage
HB 230	Rainwater Tank Design and Installation Handbook

#### **Requirements**

#### **1.3 HEALTH REQUIREMENTS**

Refer to The Ministry of Health publication "Household water supplies: The selection, operation, and maintenance of individual household water supplies" for guidance.

#### **1.4 QUALIFICATIONS**

Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.

#### **Performance**

#### **1.5 PRODUCER STATEMENT**

Provide a producer statement from a suitably qualified person for:

Manufacture of tanks

Producer statements to be in the form required by the Building Consent Authority.

#### **1.6 DESIGN AND INSTALLATION**

To HB 230 Rainwater Tank Design and Installation Handbook, to AS/NZS 3500.3 and to NZBC G1/AS1 and NZBC G12/AS1.

#### **1.7 TESTING OF PRODUCTS**

Materials used in the manufacture of rainwater tanks to be tested to AS/NZS 4020.

### **2. PRODUCTS**

#### **Components**

- 2.1 **RAINWATER STORAGE TANK**  
 - Above ground tank manufactured from polyethylene to AS/NZS 4766 and to AS 2070.  
 Tanks to be fitted with a secure fitting lid to provide internal access for cleaning or inspection.
- Accessories**
- 2.2 **TANK FITTINGS**  
 Fittings kit supplied with the tank for complete installation.
- 2.3 **UPVC PIPES AND FITTINGS**  
 Unplasticised PVC pipe and fittings to AS/NZS 1260.
- 2.4 **POLYETHYLENE PIPES AND FITTINGS**  
 High density polyethylene pipe and fittings to AS/NZS 4130.
- 2.5 **WATER PUMP**  
 Pump designed to pressurised water supply from tank into the building.
- 2.6 **TANK VENT**  
 Vent with insect proof stainless steel mesh fitted on top of the tank.
- 2.7 **FIRST FLUSH WATER DIVERTER**  
 Wall mounted or underground system specific to installation. To prevent the first flow of water from the roof entering the water storage tank.
- 2.8 **FILTER SYSTEM**  
 Inline cartridge filter housing fitted between the first flush diverter and the inlet, or a 955 micron filter tank screen system fitted within the tank.
- 2.9 **TANK VACUUM SYSTEM**  
 Designed to suck from the bottom of the tank when the tank is full to overflowing. System to include anti siphon device.
- Uniseals for pipe connections to the top of the tank.
- 2.10 **TANK BASE BEDDING**  
 Clean sand or concrete 100 to 150mm thick.
- 2.11 **CONCRETE**  
 To NZS 3104: Prescribed mix 17.5 MPa: For in situ tank base and water pump pad.
- 3. EXECUTION**
- Conditions**
- 3.1 **SITE ACCESS**  
 Transportation on site to the position of the tank is at the risk and responsibility of the contractor. Make provision for manoeuvring and unloading of tank
- Application - site**
- 3.2 **SITE EXCAVATION FOR ABOVE GROUND TANK**  
 Select level site, free of sharp protrusions. Form solid pad with a bed of sand or concrete, screeded level to a minimum depth of 50mm. Extend pad 500mm pass base of tank. On a sloping site excavate fully into bank and provide 600mm clearance from the tank to the base of the cut. Do not place tank on any fill, over in ground pipes, cables or underground structures.
- 3.3 **ABOVE GROUND TANK INSTALLATION**  
 Position tank on the prepared compacted level base.

- 3.4 **LAYING AND JOINTING**  
Lay in straight lines between changes of line or grade from the lower end of the drain with sockets pointing uphill. Set each pipe true to line and grade and each joint completed before the next pipe is laid.

**Application - fittings**

- 3.5 **WATER PUMP INSTALLATION**  
Install pump on a solid base bolted down through base plate. Place weather tight housing over the pump and secure to base. Connect to water supply and power supply
- 3.6 **BACK FLOW PREVENTION DEVICES**  
Install to AS/NZS 2845.1, to AS/NZS 3500.1 and to NZBC G12/AS1.

**Application - connections**

- 3.7 **FIRST FLUSH WATER DIVERTER**  
Install either adjacent to the tank or underground, first flush water diverter. Connect downpipes from the roof gutter to the first flush water diverter. Connect the first flush diverter to the top of the tank. Refer to manufacturer's installation details.
- 3.8 **FILTER INSTALLATION**  
Install proprietary in-line filter before the inlet connection.
- 3.9 **INLET CONNECTION**  
Install inlet pipe into top of tank at manufacturer's designated mounting area using a Uniseal type connection.
- 3.10 **OUTLET CONNECTION**  
Install pipe to manufacturer's installation details. To the outlet connect a floating arm draw-off to deliver water from 100mm below the surface. From the base connection run a flexible hose to the pump. Install ball valve in line between base connection and water pump. Support all pipework at outlet.
- 3.11 **OVERFLOW PIPE**  
Install pipe to manufacturer's installation details and connect into stormwater system or directed away from base of tank into garden.
- 3.12 **PIPE SEALS**  
Insert Uniseals in clean cut holes of the correct size. Insert Uniseal into hole with widespread facing the pipe to be inserted. Lubricate the pipe with detergent and push through the Uniseal. Use only on top of tank connections.
- 3.13 **ELECTRICAL CONNECTION**  
Installation to AS/NZS 3000. Allow to connect up water pump and water treatment unit to the power supply as provided.

**Commissioning**

- 3.14 **POST INSTALLATION TESTING**  
Test and commission the completed system to manufacturer's requirements and AS/NZS 3500.1.16 Testing and Commissioning. At the completion and testing of the water service, check all valves and other components to confirm their correct performance.

**Completion**

- 3.15 **REPLACE**  
Replace damaged or marked elements.
- 3.16 **LEAVE**  
Leave work to the standard required by following procedures.



- 3.17      CLEAN  
Clean and flush out the whole installation. Remove silt and debris.
- 3.18      REMOVE  
Remove debris, unused materials and elements from the site.

# 7123AF AQUATHERM FUSIOTHERM® HOT & COLD WATER SYSTEM

## 1. GENERAL

This section relates to **aquatherm Fusiotherm®** and piped water supply systems from the network utility supply authority water main to designated points and appliances, distributing piped hot water to appliances, and the installation of tapware.

### Documents

#### 1.1 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC G12/AS1	Water supplies
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design, and performance requirements
AS 2845.3	Water supply - Backflow prevention devices - Field testing and maintenance
AS/NZS 3500.1	Plumbing and drainage - Water services
AS/NZS 3500.5	Plumbing and drainage - Housing installations
NZS 4617	Tempering (3-port mixing) valves
NZS 7702	Specification for colours for identification, coding and special purposes
DIN 8077	Polypropylene (PP) Pipes - PP-H, PP-B, PP-R, PP-RCT - Dimensions
DIN 8078	Polypropylene (PP) Pipes - PP-H, PP-B, PP-R, PP-RCT - General quality requirements and testing.
Plumbers, Gasfitters and Drainlayers Act 2006	
NZ Backflow Testing Standard: Master Plumbers, Gasfitters and Drainlayers NZ Inc, NZ Backflow Testing Standard 2011, Field testing of backflow prevention devices and verification of air gaps.	

#### 1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

**Fusiotherm®** Pipe systems technical manual - For the application in sanitary and heating  
BRANZ Appraisal 539 - **fusiotherm®** Piping System  
BRANZ Appraisal 629 - **aquatherm®** - **lilac** Piping System

Copies of the above literature are available from **aquatherm**

Web: [www.aquatherm.co.nz](http://www.aquatherm.co.nz)  
Email: [sales@aquatherm.co.nz](mailto:sales@aquatherm.co.nz)  
Telephone: 0-9-570 7204  
Facsimile: 0-9-570 7206

### Warranties

#### 1.3 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Warranty period: 2 years

#### 1.4 MATERIAL WARRANTY

Provide an **aquatherm** GmbH materials and installation warranty in the supplier's standard form including €4,500,000 cover for third party legal liability.

Warranty period: 10 years

From: Date of completion of system testing

### Requirements

- 1.5 **NO SUBSTITUTIONS**  
Substitutions are not permitted to any specified **aquatherm Fusiotherm®** or associated products, components or accessories.

- 1.6 **QUALIFICATIONS**  
Plumbers to be certified **aquatherm Fusiotherm®** installers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

- 1.7 **INFORMATION FOR MAINTENANCE MANUAL**  
Supply maintenance manual information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

### **Performance**

- 1.8 **DURABILITY**  
**Fusiotherm®** meets the 50 year durability requirements of NZBC B2/AS1 for pipes cast into concrete to Aquatherm requirements.

- 1.9 **TESTING**  
Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Ensure that any connected tapware is isolated before commencing testing. Test to **aquatherm Fusiotherm®** testing procedures as applicable. Provide completed test records in the **aquatherm** New Zealand Products Catalogue standard form.

## **2. PRODUCTS**

### **Materials**

- 2.1 **FUSIOTHERM POLYPROPYLENE PP-R 80 WATER PIPE**  
**Fusiotherm®** pipes to DIN 8077 and DIN 8078 complete with fusion welded fittings and accessories brand-matched.

- 2.2 **VALVES**  
Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief valve, pressure relief valve and isolating valves to NZBC G12/AS1.

- 2.3 **TEMPERING VALVE**  
Tempering valve to NZS 4617 to NZBC G12/AS1.

- 2.4 **BACKFLOW PREVENTION DEVICES**  
Provide backflow prevention devices to AS/NZS 2845.1 where it is possible for water or contaminants to backflow into potable water supply. Refer to NZBC G12/AS1, 3.4 Backflow protection, and NZBC G12/AS1, table 2, Selection of Backflow Prevention.

- 2.5 **INSULATION**  
Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements.

### **Components**

- 2.6 **PIPE CLAMPS**  
**Fusiotherm®** proprietary pipe clamps and clips.
- 2.7 **VALVES**  
**Fusiotherm®** proprietary valves and ball cocks as selected and required.

## **3. EXECUTION**

### **Conditions**

- 3.1 **HANDLE AND STORE**  
Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover, out of direct sunlight, on a clean level area, stacked to eliminate movement and away from work in progress to **Fusiotherm**® Pipe systems technical manual, section 4 Installation principles.
- 3.2 **CORE HOLES AND SLEEVES**  
Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.
- 3.3 **FASTENING TECHNIQUE**  
Fix pipework using **Fusiotherm**® proprietary pipe brackets, spacing to **Fusiotherm**® Pipe systems technical manual, section 4 Installation principles. Ensure brackets are set out as fixed or sliding points **Fusiotherm**® Pipe systems technical manual, section 4 Installation principles.
- 3.4 **CONCEAL**  
Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.
- 3.5 **IN CONCRETE INSTALLATION**  
Install directly in concrete to **Fusiotherm**® pipe installation procedures.
- 3.6 **IN GROUND INSTALLATION**  
Install to AS/NZS 3500.5. 2.13.4 **Under concrete slabs**.
- 3.7 **THERMAL MOVEMENT**  
Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations. Install pipework to **Fusiotherm**® Pipe systems technical manual, section 4 Installation principles.
- 3.8 **PIPE SIZE**  
Flow rates to each outlet to be no less than those given in NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures, with pipe size as determined in NZBC G12/AS1, table 4, Tempering valve and nominal pipe diameters and the **Fusiotherm**® Pipe systems technical manual.

#### **Application - jointing**

- 3.9 **FUSIOTHERM POLYPROPYLENE PP-R 80 WATER SUPPLY**  
Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes complete with all fittings, support and fixing, fusion weld joints and install to manufacturers specifications, all to NZBC G12/AS1. Conceal pipework and pressure test before the wall linings are fixed.

#### **Application - distribution systems**

- 3.10 **COLD WATER INSTALLATION**  
From connection point, size the runs and branches to deliver the acceptable flow rate to NZBC G12/AS1, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures. Lay out pipes in straight runs with support spacing to NZBC G12/AS1, table 7, Water supply pipework support spacing firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with bends to **Fusiotherm**® requirements, complete with necessary valves and fittings.
- 3.11 **MAIN ISOLATING VALVE**  
Install a **Fusiotherm**® isolating ball valve in an accessible position at the point of entry to the building.

- 3.12 **IN LINE FILTER**  
Install an in line filter immediately adjacent to the isolating valve in an accessible position to allow for easy cleaning.
- 3.13 **HOT WATER PIPEWORK**  
Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to NZBC G12/AS1, table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with bends to **Fusiotherm**® requirements, complete with all necessary valves and fittings.
- 3.14 **INSULATION**  
Lag all pipes with insulation to the manufacturer's requirements.
- 3.15 **WATER HEATING INSTALLATION**  
Install hot water cylinders/heaters complete to the manufacturer's requirements and with seismic restraint as required to storage cylinders, to NZBC G12/AS1. Valve-vented systems to NZS 4607. Install tempering valve and overflow tray where required.
- 3.16 **INSTALL TEMPERING VALVE**  
Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions.

#### **Installation - tapware**

- 3.17 **INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED**  
Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.
- 3.18 **INSTALLING TAPWARE**  
Install to manufacturer's requirements.
- 3.19 **INSTALLING BACKFLOW PREVENTION DEVICE**  
Provide and install backflow prevention device as near as practicable to the potential source of contamination, and in an accessible position for maintenance and testing to AS 2845.3 or NZ Backflow Testing Standard.

#### **Completion**

- 3.20 **FLUSH OUT PIPEWORK**  
Flush out pipework. Remove all filters, clean and reassemble.
- 3.21 **REPLACE**  
Replace damaged or marked elements.
- 3.22 **LEAVE**  
Leave work to the standard required by following procedures.
- 3.23 **REMOVE**  
Remove debris, unused materials and elements from the site.



## 7125 SOLAR WATER HEATING SYSTEM

### 1. GENERAL

This section relates to solar water heating systems installed onto a building roof.

#### Documents

#### 1.1 DOCUMENTS REFERRED TO

Documents referred to in this part of the specification are:

NZBC B1/AS1	Structure
NZBC G12/AS1	Water supplies
NZS 3604	Timber-framed buildings
AS/NZS 1170.2	Structural design actions - Wind actions
AS/NZS 2535.1	Test methods for solar collectors - Thermal performance of glazed liquid heating collectors including pressure drop
AS/NZS 2712	Solar and heat pump water heaters - Design and construction
AS/NZS 3350.1	Safety of household and similar electrical appliances - General requirements
AS/NZS 3500.1	Plumbing and drainage - Water services
AS/NZS 3500.4	Plumbing and drainage - Heated water services
AS/NZS 4020	Testing of products for use in contact with drinking water
NZS 4617	Tempering (3-port mixing) valve
MoBIE	DBH - Solar water heaters - Guidance for supplies, installers and building consent authorities - December 2009

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

#### Requirements

#### 1.2 QUALIFICATIONS

Work to be carried out by a specialist solar water heating installer or by a registered plumber for the installation of the solar hot water system.

#### 1.3 ON GOING MAINTENANCE INSTRUCTIONS AND OWNERS GUIDE

Provide details of the manufacturer's ongoing maintenance instructions and owners guide to satisfy the performance requirements of AS/NZS 3500.4, 12 Operation and maintenance. Provide a copy to the home owner at the completion of the contract.

#### Warranties

#### 1.4 WARRANTY

Warrant this part of the work under normal environmental and use conditions against failure of materials and execution:

Materials: 2 years from date of commissioning of the installation.

Execution: 2 years from date of commissioning of the installation.

#### Performance

#### 1.5 PRODUCER STATEMENT - INSTALLATION

Provide a producer statement from the accredited installer in the form acceptable to the Building Consent Authority. The Producer Statement must verify that the installation complies with the AS/NZS 3500.4 Plumbing and drainage - Heated water services, naming the installer and the person responsible for verification of the installation and for the post installation tests.

#### 1.6 MANUFACTURER'S INSPECTIONS

Permit the manufacturer's representative to inspect the work in progress by the accredited installer.

## **2. PRODUCTS**

### **Materials**

#### **2.1 EVACUATED - TUBE COLLECTOR**

Parallel rows of sealed transparent glass tubes surrounding a tubular absorber and connected to a heat exchanger manifold at the top of the tube array. Manufacturer the solar water heating systems and components to AS/NZS 2712.

### **Components**

#### **2.2 PIPEWORK**

Copper tubing, cross-linked polyethylene pipe, polybutylene pipe (PE-x) or polypropylene random copolymer (PP-r), each used within the temperature / pressure / service life relationship, performance limitations as recommended by the manufacturer, for this application.

#### **2.3 TEMPERING VALVE**

Tempering valve to comply with NZS 4617 Tempering (3-port mixing) valve and NZBC G12/AS1, 5.0 Water supplies, G12/AS1, table 4, G12/AS1, figure 16, and G12/AS1, 6.14 Safe water temperatures.

#### **2.4 CIRCULATING PUMP**

Electrical circulating pump complete with pressure switch, electrical connections and fittings.

#### **2.5 TEMPERATURE CONTROL PANEL**

Proprietary control panel with temperature sensors to automatically control the use of the circulating pump.

#### **2.6 TIME CLOCK**

Proprietary time clock suitable to automatically control the use of the electric booster to the water storage cylinder.

## **3. EXECUTION**

### **Conditions**

#### **3.1 DELIVERY**

Take delivery of the solar water heating system and all accessories. Reject any damaged components.

#### **3.2 STORAGE**

Store materials and accessories on a level, firm base, in dry conditions, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until installed.

#### **3.3 BUILDING STRUCTURE**

Confirm the building structure is to the standard required by the manufacturer's accredited installer for the installation of the solar water heating system. Install the unit on a roof area that has been constructed to NZS 3604, section 10, **Roof framing** and NZBC B1/AS1, and be capable to take the filled weight of the unit.

#### **3.4 CONFIRM LAYOUT**

Before commencing work confirm the proposed location of solar water heating collector, layout of pipe runs and positions of valves and pumps.

#### **3.5 CO-ORDINATE SERVICES**

Co-ordinate and co-operate with other sub-trades to avoid any conflict with the installation of the system with other subcontractors work.

- 3.6 **PROTECT SURFACES**  
Protect surfaces, equipment and finishes already in place from the possibility of damage during the installation process.
- Application**
- 3.7 **INSTALLATION**  
Install solar water heating system to required configurations and to the (MoBIE) DBH Solar water heaters - Guidance for supplies, installers and building consent authorities - December 2009.
- Locate the heater as close as possible to the most frequently used hot water outlet. Locate in a position as close as possible to the existing hot water heater in pre-heater configurations. Install the solar water heater at least 2.5 metres above the highest hot water outlet to be serviced to provide adequate flow. Complete installation of the solar water heating system to AS/NZS 3500.4, 6 Installation of solar water heaters.
- 3.8 **POSITIONING OF COLLECTOR**  
To NZBC G12/AS1, 4.0 **Location of Solar Water Heaters**. Locate the solar water heating collector so as to be clear of shade 3 hours either side of solar noon at any time of the year. Install at an angle  $\pm 20^\circ$  of the angle of latitude and facing as close as possible to true north. Position the unit as high as possible on the roof to provide the greatest head of water.
- 3.9 **MOUNTING OF COLLECTOR**  
Install the solar water heating collector to the manufacturer's installation manual, either directly to the roof structure or on a suitable designed frame fixed to the roof structure. Do not rely on the pipe connections for structural strength. To fix the unit to a roof in non-cyclonic conditions select a position on the roof, free of shade of at least 3 metres square. For a tiled roof remove a row of tiles above the unit to expose the rafters, move the unit into place and secure the stainless steel straps to the unit using the M10 bolts supplied. Screw the straps into the rafters and replace the tiles. For a profiled steel roof secure the straps as for a tiled roof. Fix the straps through the peak of the roofing profile into a purlin below using self-tapping stainless steel screws. Isolate the fixing straps from the roofing material with a strip of neoprene rubber.
- For fixing solar water heating systems in cyclonic locations use brackets that comply with AS/NZS 1170.2.
- 3.10 **PLUMBING CONNECTIONS**  
Plumbing connections are to be carried out by a registered plumber and are to comply with AS 3500.1, 2 Materials and products and to AS3500 4, 2 Materials and products and the manufacturer's installation manual.
- 3.11 **WET BACK CONNECTION FOR OPEN VENTED INSTALLATION**  
Connect wetback from a solid fuel heater to the solar water heating system. The piping between the solar water heating system and the wet back to be at least 20mm diameter. Kept pipe length to a minimum. The pipe returning from the wet back outlet to the solar water heating system should not at any location be less than a  $30^\circ$  angle to the horizontal plane. No valves or constrictions are allowed in the inlet or outlet path between the solar water heating system and the wet back. Fit a thermostat and solenoid valve set at a maximum temperature of  $90^\circ\text{C}$  to provide over-heating protection.
- 3.12 **INSTALL ELECTRIC CIRCULATING PUMP**  
Install primary circulating pump and controller, to draw the colder water from the lower section of the container and to circulate the water through the collectors before returning it to the container. Support the pump rigidly on a properly designed base and the piping system arranged so that no perceptible vibration is transmitted to the collector or the building. Fit the controller in an accessible position with a warning notice affixed to the inside of the controller box showing the voltage used, the control wiring diagram and identification of control components fitted and the name of the supplier.

- 3.13 **TEMPERING VALVES**  
Install the tempering valve that is part of the system. Where a circulating pump is installed then the tempering valve must be fitted after the circulating pump. Where a circulating pump is not fitted then a regulating device may need to be fitted to the cold water inlet to the tempering valve to avoid a large differential pressure between hot and cold water supplies. Fit a non return valve to the tempering valve.
- 3.14 **ELECTRICAL CONNECTIONS**  
Connect the solar water heating system with a fixed wiring connection to the weatherproof junction box positioned at the top of the installation. Run wiring in either metal or uPVC conduit. The electrical circuit to have an isolating switch fitted at the electrical switch board to provide a means of isolating the installation in compliance with AS/NZS 3350 1 7.12.2. The element requires a 10 amp single-phase electrical supply for the 1.2kW and 2.4kW elements, or a 15 amp single-phase electrical supply for the 3.6kW element.
- Ensure that the cold water inlet pipe and the hot water outlet pipe are earthed. Fill the storage tank with water before the power supply is turned on.
- 3.15 **INSTALL TIME CLOCK**  
Install a time clock in a position for easy access.
- 3.16 **FROST PROTECTION**  
Fit frost protection mechanism to the solar water heating system to the manufacturer's recommendations.
- Commissioning**
- 3.17 **POST INSTALLATION TESTING**  
Test and commission the completed system to manufacturer's installation manual and AS/NZS 3500.4, 11 Testing and commissioning.
- Completion**
- 3.18 **CLEANING**  
Remove debris, unused materials and elements from the site. Clean soiled or marked work. Replace damaged, cracked or marked elements. Leave the whole of this work to the standard required by the manufacturer.

## 7411C CONTINUOUS SPOUTING RAINWATER SYSTEMS

### 1. GENERAL

This section deals with **Continuous Spouting NZ Ltd** rainwater disposal systems including spouting and downpipes, in various metal substrates.

#### 1.1 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Association

#### Documents

#### 1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E1/AS1	Surface Water
NZBC E2/AS1	External moisture
BS EN 988	Zinc and zinc alloys. Specification for rolled flat products for building
AS 1566	Copper and copper alloys - Rolled flat products
AS/NZS 2179	Rainwater goods, accessories and fasteners
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
NZMRM	NZ Metal roof and wall cladding - Code of practice

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

#### 1.3 MANUFACTURER'S DOCUMENTS

**Continuous Spouting New Zealand Ltd** documents relating to work in this section are: Continuous Spouting, Fascia, Spouting, Downpipes.

Copies of the above literature are available from **Continuous Spouting NZ Ltd**:

Web:	<a href="http://www.continuous.co.nz">www.continuous.co.nz</a>
Email:	<a href="mailto:sales@continuous.co.nz">sales@continuous.co.nz</a>
Telephone:	0800 50 1993

<b>Area Contact</b>	<b>E-mail</b>
Wellington	<a href="mailto:wellington@continuous.co.nz">wellington@continuous.co.nz</a>

#### Warranties

#### 1.4 MANUFACTURER'S WARRANTY

Provide **Continuous Spouting NZ Ltd** warranty covering material and installation in the standard form.

Product performance, life expectancy and warranty are dependent upon environment, maintenance and material selection. Refer to **Continuous Spouting NZ Ltd** for the appropriate warranty terms, conditions and environmental considerations based on performance requirements to AS/NZS 2728.

#### Requirements

#### 1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.



- 1.6 **QUALIFICATIONS**  
**Continuous Spouting** NZ Ltd installers and local agents to be experienced competent tradesmen, familiar with the materials and the techniques specified.

**Performance**

- 1.7 **TEST**  
Test the completed rainwater disposal system with water to ensure spoutings are laid to correct falls, that both spouting and downpipes are unobstructed and that no ponding occurs in spoutings.

- 1.8 **DESIGN**  
Layout, falls and capacity of spouting to falls and the size and position of downpipes to comply with NZBC E1/AS1. Refer to NZMRM NZ Metal roof and wall cladding - Code of practice recommendations, sections 8.4 Gutters and 8.5 Downpipes.

**2. PRODUCTS**

**Materials**

- 2.1 **COLORCOTE® ZINCALUME**  
Colorcote ZRX™ manufactured from Zincalume™ AZ150 coated steel, to AS/NZS 2728.
- 2.2 **UPVC WHITE SPOUTING/DOWNPipes**  
Marley uPVC spouting and downpipe systems in white uPVC.

**Products**

- 2.3 **SPOUTING**  
Manufactured by **Continuous Spouting** NZ Ltd using onsite plant to provide made to measure continuous lengths of spouting. Complete with matching brackets and screws. Spouting to be sized to comply with NZBC E1/AS1 and installed to NZBC E2/AS1 8.1.6.
- 2.4 **UPVC DOWNPIPES**  
To suit the spouting system, pipes solvent cement jointed and complete with stand-off brackets, galvanized screws and accessories, brand matched and complete to the manufacturer's specifications.

**Components**

- 2.5 **DOWNPipe SPREADERS**  
To comply with E2/AS1 figure 20.
- 2.6 **DROPPERS**  
Material to match spouting, sized to fit inside the downpipe.
- 2.7 **BRACKETS**  
Material to match the spouting.
- 2.8 **SEALANT**  
Neutral cure silicone or Fixall Hitack MS Polymer sealant.

**3. EXECUTION**

**Conditions**

- 3.1 **HANDLE AND STORE**  
Handle and store downpipes, spouting and accessories to avoid damage. Store on site under cover, on a clean level area, stacked to eliminate movement and away from work in progress. Avoid exposure to sunlight if strippable film is still on the product.

- 3.2      **SUBSTRATE**  
Check that fascias, barge or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.
- 3.3      **THERMAL MOVEMENT**  
Make adequate provision in the fixing and jointing of the spouting for thermal movement in the length of the spouting.
- 3.4      **CORROSION**  
Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.
- Check compatibility of metals used for rainwater goods, against the materials being used for roofing and flashings.
- 3.5      **INSTALLATION GENERALLY**  
Install to NZMRM NZ Metal roof and wall cladding - Code of practice recommendations where not otherwise specified.
- 3.6      **INSTALL METAL SPOUTING**  
Establish minimum falls necessary (minimum 1:500) to outlets to prevent ponding and screw fix brackets true-to-line between 800mm to 900mm centres maximum. In areas where snow fall is possible the centres should be reduced to 600mm and snow strap fitted. Cut out neatly for and fit the pre-formed downpipe dropper and seal and rivet around the joint. All installation to NZMRM NZ Metal roof and wall cladding - Code of practice recommendations section 8.4 Gutters.
- 3.6      **INSTALL UPVC DOWNPIPES**  
Assemble downpipes, solvent welded complete, fit to outlets, galvanized screw fix with pipe clips to rigidly stand 25mm off the wall, plumb and discharging into the stormwater gully or pipe inlet to the downpipe manufacturer's required practice.
- 3.7      **INSTALL DOWNPIPE SPREADERS**  
Install downpipe spreaders where required to NZMRM NZ Metal roof and wall cladding - Code of practice, clause 8.5.1 Downpipe spreaders. Proved spreaders to downpipes that discharge on to a lower roof. Ensure spreaders do not discharge directly over fasteners or laps. Spreaders to have holes equalling twice the diameter of the downpipe.
- 3.8      **INSTALL SUMPS**  
Install sumps where required to NZMRM NZ Metal roof and wall cladding - Code of practice, clause 8.6 Sumps
- 3.9      **INSTALL OUTLETS AND OVERFLOWS**  
Install outlets and overflows where required to NZMRM NZ Metal roof and wall cladding - Code of practice, clause 8.6.2 Outlets and overflows
- 3.10      **INSTALL SUMP PROTECTION**  
Install leaf guards of the same area as the sump. Set the leaf guard above the calculated level of flow; not directly in the outlet
- Completion**
- 3.11      **REPLACE**  
Replace damaged or marked elements.
- 3.12      **LEAVE**  
Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

3.13

**REMOVE**

Remove debris, unused materials and elements from the site.

## **7420 SANITARY SYSTEMS**

### **1. GENERAL**

This section relates to above ground gravity flow sanitary systems;

- for foul water
- from sanitary fixtures to first underground drain connection
- including system wastes, floor wastes, floor waste gullies, traps, vents and valves
- with associated components and accessories to make the system work

#### **1.1 DOCUMENTS**

Documents referred to in this section are:

- NZBC G1/AS1 Personal hygiene
- NZBC G13/AS1 Foul water - Sanitary plumbing
- AS 2887 Plastic waste fittings
- AS/NZS 1260 PVC-U pipes and fittings for drain, waste and vent applications
- AS/NZS 2032 Installation of PVC pipe systems
- AS/NZS 3500.2 Plumbing and drainage - Sanitary plumbing and drainage
- Plumbers, Gasfitters and Drainlayers Act 2006

#### **1.2 QUALIFICATIONS**

Carry out all work under the direct supervision of a certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006.

### **2. PRODUCTS**

#### **2.1 PVC-U WASTE, DISCHARGE AND VENT PIPES**

PVC-U pipe to AS/NZS 1260 complete with fittings brand-matched to the pipe manufacturer's requirements.

#### **2.2 EXPOSED PIPES AND TRAPS**

Chrome plate on copper pipes and associated copper and brass fittings.  
White polybutylene or PVC, including all associated fittings.

### **3. EXECUTION**

#### **3.1 EXECUTION GENERALLY**

Carry out this work and complete all tests to NZBC G1/AS1: 2.0, 3.0 and NZBC G13/AS1.

#### **3.2 ELECTROLYTIC ACTION**

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

#### **3.3 INSTALL TRAPS, WASTE AND VENT PIPES**

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500.2 /NZBC G13/AS1 and AS/NZS 2032. Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

#### **3.4 PENETRATIONS**

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

#### **3.5 TEST**

Test soil and waste disposal systems to ensure no leakage exists and leave in proper working order.

#### **3.6 CLEAN UP**

Remove labels and clean fittings. Remove unused materials from the site.

## **7430 DRAINAGE**

### **1. GENERAL**

This section relates to the supply and laying of gravity foul water (sewage), stormwater and field drains.

#### **1.1 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

NZBC B1/AS1	Structure
NZBC E1/AS1	Surface water
NZBC G13/AS2	Foul Water
NZBC G13/AS3	Plumbing and Drainage
AS/NZS 1254	PVC-U pipes and fittings for Stormwater and Surface Water applications
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of Polyethylene pipe systems
AS/NZS 2566.1	Buried Flexible Pipelines - Structural Design
AS/NZS 2566.2	Buried Flexible Pipelines - Installation
NZS 3104	Specification for concrete production
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
AS/NZS 4671	Steel reinforcing materials
AS/NZS 5065	Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications
Plumbers, Gasfitters and Drainlayers Act 2006	

#### **1.2 AS-BUILT DRAWINGS**

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

#### **1.3 QUALIFICATIONS**

Drainlayers to be experienced, competent and familiar with the materials and techniques specified. Carry out all work under the direct supervision of a certifying drainlayer under the Plumbers, Gasfitters and Drainlayers Act 2006.

### **2. PRODUCTS**

#### **2.1 CONCRETE**

17.5 MPa prescribed mix to NZS 3104.

#### **2.2 REINFORCEMENT**

Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671.

#### **2.3 PVC-U PIPES**

PVC-U pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.

#### **2.4 GULLY TRAPS**

To NZBC G13/AS2: 3.3 Gully traps, complete with grating.

#### **2.3 PUMP**

Submersible high-head pump designed to macerate and carry effluent into pressure pipe

#### **2.5 DRAINAGE AND FILLING MATERIALS**

Granular:	Clean gravel or crushed stone or a blend of these. Particle size from minimum 7mm to maximum 20mm.
Selected:	Fine grain soil or granular material suitable for bedding; excluding topsoil.
Ordinary:	Top soil or other excavated materials.



### **3. EXECUTION**

#### **3.1 EXCAVATE**

Excavate for drains to a firm even base with correct gradients set in straight runs.

#### **3.2 MANUFACTURER'S REQUIREMENTS**

All drainage installations to the pipe and fitting manufacturer's requirements.

#### **3.3 DRAINAGE GENERALLY**

Carry out drainage work and tests to AS/NZS 3500.2 (sanitary drainage) as modified by NZBC G13/AS3, NZBC G13/AS2 (foul water), AS/NZS 3500.3 (stormwater drainage) as modified by NZBC B1/AS1: 6.0. Lay uPVC pipe systems to relevant sections of AS/NZS 2032, NZS 2566.1 and AS/NZS 2566.2. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033 and NZS 2566.1.

#### **3.4 LAY FOUL WATER DRAINS**

Lay drains in straight runs to correct gradients, to discharge into the existing drain. Set inspection fittings on a concrete base.

#### **3.5 INSTALL GULLY TRAPS**

Set on concrete 50mm above the surrounding ground or paving and brought up to protect the top of the fitting. Trowel off.

#### **3.6 LAY STORMWATER DRAINS**

Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the water storage tanks with overflow pipe to soakage pit approved by the BCA.

#### **3.7 CONCRETE ENCASEMENT**

Concrete encase shallow drains and drains under driveways, on a 100mm deep 17.5 MPa concrete bed reinforced with three 10mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100mm 17.5 MPa concrete.

#### **3.8 FIELD TEST**

Field test drains for watertightness (PVC-U to AS/NZS 2032 or AS/NZS 2566. 2 Appendix N) to the satisfaction of the territorial authority inspector.

#### **3.9 BACKFILL**

Backfill drain lines in 150mm layers, well tamped but without disturbing the drains. Finish off with 150mm of topsoil, slightly mounded above the finished ground line.

## **7556 SOLID FUEL SPACE HEATING SYSTEM**

### **1. GENERAL**

This section relates to the supply and installation of domestic, solid fuel burning, space heating appliances.

#### **Documents**

#### **1.1 DOCUMENTS**

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
AS/NZS 2918	Domestic solid fuel burning appliances - Installation
AS/NZS 3500.4	Plumbing and drainage - Heated water services
AS/NZS 3869	Domestic solid fuel burning appliances - Design and construction
AS/NZS 4013	Domestic solid fuel burning appliances - Method for determination of flue gas emission

National Environmental Standards for Air Quality: Woodburner design standard  
Plumbers, Gasfitters and Drainlayers Act 2006

#### **Warranties**

#### **1.2 WARRANTY - INSTALLER**

Provide the installer's warranty for the installation, to the contract administrator.

2 years                      For installation of the fire, wet back and flue kit

Provide this warranty in the approved installer's standard form.  
Warranty to commence from the date of completion of the installation.

#### **1.3 WARRANTY - MATERIALS**

Provide the manufacturer's warranty for the supply of materials and proprietary products, to the contract administrator.

2 years:                      For the supply of the fire, wet back and flue kit

Provide this warranty in the approved manufacturer's standard form.  
Warranty to commence from the date of completion of the installation.

#### **Requirements**

#### **1.4 NO SUBSTITUTIONS**

Substitutions are not permitted to any specified products, or associated products, components or accessories.

#### **1.5 QUALIFICATIONS**

Work to be carried out by the manufacturer's accredited tradesmen registered with the NZ Home Heating Association or certifying plumber under the Plumbers, Gasfitters and Drainlayers Act 2006, competent and familiar with the materials and techniques specified.

#### **1.6 MANUFACTURER'S INSTALLATION AND OPERATIONAL DETAILS**

Provide installation details and ongoing operational and maintenance instructions to the contractor and owner.

#### **Performance**

#### **1.7 COMPLIANCE WITH STANDARDS**

Solid fuel-burning appliances installed to AS/NZS 2918, and to comply with the requirements of AS/NZS 4013, where required by the regulatory authority, and the appliance identified by a compliance plate fixed to the appliance and marked 'Tested to AS/NZS 4013'.

- 1.8 **DURABILITY**  
Solid fuel-burning appliances to be installed to comply with NZBC B2/AS1 Table 1 Durability requirements of nominated building elements.
- 1.9 **FINAL INSPECTION AND TEST**  
Undertake final tests to show the installation complies with AS/NZS 2918 and AS/NZS 4013, and has been tested for leakage and proved to be fully operational.
- Carry out testing at the time of completion of installation. Test and demonstrate the system according to manufacturer's specification.
- 1.10 **PRODUCER STATEMENT - INSTALLATION**  
Provide a producer statement by the installer in the form as required by the Building Consent Authority. The Producer Statement must verify that the design complies with AS/NZS 2918 Domestic solid fuel burning appliances - Installation, naming the installer and the person responsible for verification of the installation and for the post installation tests.

## **2. PRODUCTS**

### **Materials**

- 2.1 **FREE STANDING SOLID FUEL HEATER**  
Solid fuel heating appliance comprising of free standing base, firebox, firebricks, door, outer casing to firebox with hearth, wetback, and complete with stainless steel flue, flue shield, outer shield, ceiling plate and ceiling sleeve, flashing and weather cowl.
- Designed and manufactured to AS/NZS 3869 Domestic solid fuel burning appliances - Design and construction and tested to AS/NZS 2918 appendix E and F.
- 2.2 **FLUE SYSTEM**  
All seams in the stainless steel flue pipe to be lock-folded or continuously welded to AS/NZS 2918.4.2. Joints between sections of flue pipe to be push fitted with the upper section entering the lower section and secured with 3 fasteners to prevent accidental separation. For vitreous enamelled flue pipe sections within a room, these may be joined without fasteners using a series of overlapping sections having a minimum overlap of 50mm.
- Flue systems beyond the wall or ceiling penetrations to be provided with either a double casing or a tested single casing to AS/NZS 2918 clause 4.5.1. Flue pipe casings fabricated from copper or brass to have at least a 25mm minimum air gap from the flue pipe.

## **3. EXECUTION**

### **Conditions**

- 3.1 **DELIVERY**  
Keep materials dry in transit. Take delivery of materials in an undamaged in condition. Reject all damaged materials.
- 3.2 **STORAGE**  
Store materials and accessories on a level, firm base, in dry conditions, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until installed.

### **Application**

- 3.3 **INSTALLATION**  
Install the heater and flue to AS/NZS 2918. Refer to the manufacturer's installation instructions for specific model details. For free standing appliances, bolt base down securely to floor to manufacturer's specifications. Commission unit to ensure installation

is compliant to the manufacturer's specifications. External requirements to AS/NZS 2918.4.9.

3.4

#### **WETBACK**

Install wetback system to AS/NZS 3500.4. Connect wetback from a solid fuel heater to the hot water cylinder. The piping between the hot water cylinder and the wetback, to be at least 20mm diameter. Keep pipe length to a minimum. The pipe returning from the wetback outlet to the hot water cylinder should not at any location be less than a 30° angle to the horizontal plane.

No valves or constraints are allowed in the inlet or outlet path between the wetback and the hot water cylinder. Fit a thermostat and solenoid valve set at a maximum temperature of 90°C to provide over-heating protection. Refer to hot and cold water system section.

#### **Completion**

3.5

#### **CLEANING**

Remove debris, unused materials and elements from the site. Clean soiled or marked work. Replace damaged, cracked or marked elements. Leave the whole of this work to the standard required by following procedures.

3.6

#### **PROTECT**

Protect new work from damage.

## 7701P PDL ELECTRICAL

### 1. GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- Phone / Data / TV Wiring
- security system

#### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

MCB	miniature circuit breaker
RCCB	residual current-operated circuit breakers
RCBO	residual current-operated circuit breaker with over current protection
RCD	residual current device
PCB	printed circuit board
TPS	tough plastic sheathed
GLS	general lighting service
CFL	compact fluorescent lamp
ELV	extra low voltage
PTC	permit to connect
SIA	security integration architecture
LED	light emitting diode
LCD	liquid crystal display
VDI	voice, data, image
PIR	passive infrared
SENZ	Schneider Electric New Zealand
TCF	Telecommunications Carriers' Forum

#### Documents

#### 1.2 DOCUMENTS REFERRED TO

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC F7/AS1	Warning systems
NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 2201.1	Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Typical New Zealand installation conditions
AS/NZS 3080	Telecommunications installations - Generic cabling for commercial premises
AS/NZS 3085.1	Telecommunications installations - Basic requirements
AS/NZS 3100	Approval and test specification - general requirements for electrical equipment
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth - leakage devices)
AS/NZS 3350.1	Safety of household and similar electrical appliances - General requirements
AS/NZS 3439.3	Low - voltage switchgear and controlgear assemblies - Particular requirements for low - voltage switchgear and controlgear assemblies



	intended to be installed in places where unskilled persons have access for their use - Distribution boards
AS 3786	Smoke alarms
NZS 4961	Electric cables
AS/NZS 5000.2	Electric cables - Polymeric insulated - For working voltages up to and including 450/750 V
AS/NZS 60598.2.2	Luminaires - Particular requirements - Recessed luminaires
AS/NZS 61008.1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - General rules
AS/NZS 61009.1	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - General rules
AS/NZS ISO/IEC 15018	Information technology - Generic cabling for homes
PTC 225	Star-wiring boxes and small office/home office (SOHO) cabling installations

TCF Premises Wiring Code of Practice 2011  
Electricity (Safety) Regulations 2010

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents related to this section are:

<b>PDL</b>	Catalogue and price guide
<b>PDL</b>	600/500 series

Copies of the above literature are available from Schneider Electric New Zealand Ltd

Web:	PDL: <a href="http://www.pdl.co.nz">www.pdl.co.nz</a>
Clipsal:	<a href="http://www.clipsal.co.nz">www.clipsal.co.nz</a>
Email:	<a href="mailto:sales@nz.schneider-electric.com">sales@nz.schneider-electric.com</a>
Freecall:	0800-652-999
Freefax:	0800-101-152

### Requirements

#### 1.4 COMPLY

Comply with the Electrical (Safety) Regulations (2010), AS/NZS 3000, AS/NZS 3008.1.2, the New Zealand Electrical Codes of Practice and TCF Premises Wiring Code of Practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

#### 1.5 QUALIFICATIONS

Carry out work under the supervision of an electrical licensed supervisor.

#### 1.6 QUALIFICATIONS - SECURITY SYSTEM

Installation by an installer licensed under the Private Investigators and Security Guards Act. Installation of security equipment to comply with AS/NZS 2201.1 Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance.

#### 1.7 SAFETY OF INSTALLATION - DESIGN BY ELECTRICIAN

Before installation work commences provide a declaration of conformity. The declaration of conformity is to comply with the Electrical (Safety) Regulations (2010), regulations 57 and 58. It must be signed by the designer of the installation.

#### 1.8 ELECTRICAL CERTIFICATE OF COMPLIANCE

Supply a certificate of compliance (CoC) to the owner, and if required the NUO, as required by the Electricity (Safety) Regulations (2010), prior to connection.

- Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
- Arrange for an inspector to inspect as required by regulation 70.

- 1.9 **ELECTRICAL SAFETY CERTIFICATE**  
Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations (2010), to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.
2. **PRODUCTS**
- 2.1 **MAINS SUPPLY, SINGLE PHASE**  
Tough plastic sheathed neutral screened cable to AS/NZS 5000.2 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.
- 2.2 **CABLES**  
Tough plastic sheathed copper conductors to AS/NZS5000.2, stranded above 1.0mm<sup>2</sup>, and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.
- |                    |   |
|--------------------|---|
| Lighting circuits: | Domestic: 1.0mm <sup>2</sup> on 10 amp MCBs   |
| Lighting circuits: | Commercial: 1.5mm <sup>2</sup> on 16 amp MCBs   |
| Power circuits:    | 2.5mm <sup>2</sup> on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction             |
|                    | 2.5mm <sup>2</sup> on 16 amp MCBs for domestic insulated construction, or filled cavity                   |
|                    | 2.5mm <sup>2</sup> on 20 amp MCBs for unenclosed or unfilled cavity construction                          |
|                    | 2.5mm <sup>2</sup> on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres |
| Range circuits:    | Single phase: 6mm <sup>2</sup> on 32 amp MCBs   |
- Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions may be above 35°C.
- 2.3 **METER BOX**  
Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.
- 2.4 **DISTRIBUTION BOARD**  
Flush or surface mount boards manufactured to AS/NZS 3439.3 and installed in accordance with AS/NZS 3000. Manufactured from engineering grade resin with a glow wire rating of 850°C, complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.
- 2.5 **CIRCUIT PROTECTION**  
General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCDs meet Type A and comply with AS/NZS 61008.1, AS/NZS 61009.1, or AS/NZS 3190. MCB breaking capacity to be determined for each installation. Generally 4.5kA is used for residential applications.
- 2.6 **WALL BOXES**  
Single grid size or equivalent to be manufactured from either plastic or metal, with 2 or more gang sizes to be manufactured in metal.
- 2.7 **SWITCH UNITS**  
Single pole switches to be sixteen amp minimum rated, double pole or intermediate to be 10 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2 way units.
- 2.8 **HOT WATER SYSTEM SWITCH**  
One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

- 2.9 **SWITCHED SOCKET UNITS**  
10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3133, AS/NZS 3100, and AS/NZS 3112, single or multi gang as detailed.
- 2.10 **SMOKE ALARMS**  
Type 1 domestic smoke alarm to NZBC F7/AS1. 1.2 Descriptions of alarm systems. Alarm to AS 3786. A wired 230 volt ionised smoke detector type.
- 2.11 **SURGE PROTECTION**  
Protection for the homes appliances with medium surge protection devices fitted to the switchboard. For variable electronic equipment fit fine surge protection to switched socket outlets.
- 2.12 **DOOR BELL SYSTEM**  
Complete with transformer for mounting on distribution board.
- 2.13 **DATA WIRING**  
To AS/NZS ISO/IEC 15018. Cables and RJ45 connectors Telepermitted to PTC225 standards. Category 6 rated or higher cable.
- 2.14 **TV CABLING**  
75 Ohm co-axial TV cable with television socket outlet.
- 2.15 **LIGHT FITTINGS**  
Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.90 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 240v rated, bayonet cap; Fluorescent triphosphor 2700K; CFL; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise.
- 2.16 **RESIDENTIAL RECESSED LIGHT FITTINGS**  
Residential recessed luminaires to AS/NZS 60598.2.2, types IC-F, IC, CA-80 or CA-135 only.
- 2.17 **EXHAUST FANS**  
Ceiling or Wall mounted exhaust fans for controlled replacement of surrounding air, and compliant with AS/NZS 3350.1, externally ducted.
- 2.18 **HEATED TOWEL RAILS**  
Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with AS/NZS 3350.1, scratch resistant finish.

### **Security System**

- 2.19 **CONTROL PANEL**  
Control panel system with a minimum of one installer code, one master code, 6 zones minimum and 6 user codes. The installer to select codes to suit installation.
- 2.20 **DETECTORS**  
There are two main types of detectors:  
  - Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight.
  - Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.
- 2.21 **AUDIBLE DEVICES**  
Internal sirens can be either a 12V Piezo Siren or a Horn speaker with a sound pressure level of no less than 95db.

External siren can be either a stainless steel design or have hardened plastic casing. Both designs to be fully weatherproof but not limited to IP66 Rating. The siren box to contain a strobe diffuser in either blue or red. The siren shall contain a horn speaker, 12v

speaker or an electronic siren. The external siren box to have both a cover and rear wall tamper mechanism.

**2.22 CABLING**

Security alarm wiring to NZS/AS 1125 for cables.

Security alarm wiring to be multi stranded cable and not single stranded.

**2.23 PERIPHERALS**

All detectors, control panels and equipment housings, to be fitted with anti-tamper devices, programmed in such a manner that any attempt to compromise the system will give a tamper indication when the system is unset and a tamper alarm when the system is set.

The standard keypad manufactured of moulded hardened plastic with either a LED or LCD screen. Wherever possible the keypad should match the style of the wiring accessories in; dimensions, colour and aesthetics.

**2.24 COMMUNICATIONS**

All control panels are to have a digital dialler built into the PCB, with the options for both monitoring and remote dial in windows based software. The digital dialler shall have all the industry standard communication formats, they include: contact I.D and SIA, and NZ Telepermit certification.

The remote software shall be able to upload / download programming changes and or history events and change status of the security alarm (this option has to be able to be turned off if required).

**3. EXECUTION**

**3.1 MAIN SUPPLY**

Lay underground mains to the network utility operator's requirements. Excavate trench, install cable and marker tape and backfill.

**3.2 METER BOX**

Fit to meter box manufacturer's and network utility operator's requirements where detailed. Recess into external wall in sheltered area and flashed to weatherproof to NZBC E2/AS1 fig 69. Arrange for meter installation inspection and connection.

**3.3 DISTRIBUTION BOARD**

Fit to board manufacturer's requirements where detailed and to AS/NZS 3000. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

**3.4 CIRCUIT PROTECTION**

Install MCBs at distribution board to AS/NZS3000 to protect each final sub circuit.

**3.5 EARTH BONDS**

Bond together and to earth all plumbing fittings not adequately isolated, to AS/NZS 3000; the Electricity (Safety) Regulations 2010 and the fitting manufacturer's requirements.

**3.6 MAIN EARTH**

Provide a plastic toby box or uPVC tube to contain and protect the earth pin. Fix the connecting earth wiring closely and securely against wall surfaces.

**3.7 EARTH LEAKAGE PROTECTION**

RCD protection installed to AS/NZS 3000.

**3.8 DOMESTIC INSTALLATIONS**

Install RCD protection 30mA at the distribution board for all final sub circuits controlling socket outlets or lighting points, or directly connected hand held electrical equipment to AS/NZS 3000.



- 3.9 HIGH RISK AREA INSTALLATIONS**  
 Use fixed wired RCD protected socket outlets to 30mA or 10mA in areas that may represent increased risk of electric shock to the user:
- Areas frequented by infants (AS/NZS 3000 recommends 10mA)
  - Wet areas: bathrooms, laundries, kitchens
  - Near pools and water features
  - Where intended for use with cleaning equipment
  - Hand held tools subject to movement in use, i.e. workshops, garages
- 3.10 SET-OUT**  
 Unless specifically detailed, the position of outlets and equipment shown on drawings is indicative of requirements. Study documents and site conditions to ensure no conflict with other services or features will arise. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.
- 3.11 CABLING**  
 Install wiring systems to AS/NZS 3000.3
- Adhere to this standard at all times to all requirements.
- Basic requirements or recommendations:  
 All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.
- 3.12 CABLING CIRCUITS**  
 Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.
- 3.13 WALL BOXES**  
 Flush mounted in cavity construction and selected as appropriate to fit products to be mounted. Fix vertically mounted wall boxes to studs. Fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.
- 3.14 SWITCH AND SOCKET UNITS**  
 Fit all single and double switch units and socket at the following heights (to the centre of the unit) unless shown otherwise on the drawings.
- |               |                          |
|---------------|--------------------------|
| Switch units: | 1000mm                   |
| Socket units: | 150mm above work benches |
|               | 400mm elsewhere          |
- Mount light switches and switch socket outlets vertically and socket units horizontally. Label all switch units that control electrical equipment or special lighting circuits by colour filled engraving on the switch.
- 3.15 ISOLATING SWITCHES**  
 Locate isolating switches in agreed positions when not specifically shown on the drawings.
- 3.16 LIGHT FITTINGS**  
 Install light fittings in locations and at heights detailed, and in accordance with the fitting manufacturer's requirements.
- 3.17 EXTRA LOW VOLTAGE LIGHTING**  
 Where remote transformers are used for ELV lamps, connect from transformer to lamp with minimum 2.5mm<sup>2</sup> conductor, to ensure voltage drop in transformer and conductor



does not exceed 0.8 volts. Lamps rated at 50 watt or greater to be wired so as to connect no more than one lamp per transformer, located as close as practicable to the lamp. Ensure transformers and rear of light fittings are adequately ventilated and clear of any thermal insulation.

### 3.18 RECESSED LIGHT FITTINGS - CLEARANCE TO INSULATION

Non-residential applications;

The clearance between insulation and recessed downlights;

- Leave 100mm gap to AS/NZS 3000, figure 4.9.
- Provide larger gaps where required by the downlight manufacturer.

Residential applications;

- Ensure new recessed downlights are one of the new classes classified in AS/NZS 60598.2.2; CA 80, CA 135, IC and IC - F.
- Classification type CA 80, CA 135, to AS/NZS 60598.2.2; insulation can abut the sides (wrapping around the sides)
- Classification type IC and IC - F, to AS/NZS 60598.2.2; insulation can abut and cover over the top of the downlight
- Provide larger gaps where required by the light manufacturer.
- In a retrofit situation where the insulation is non-approved or unknown, ensure 100mm clearance from the insulation to AS/NZS 3000, figure 4.9.

### 3.19 HOT WATER SYSTEM

Wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted as specified under the hot and cold water system section/s.

### 3.20 TELEPHONE WIRING

Install telephone cable to telephone outlet positions shown on the drawings. Install in conduit for outlets on masonry surface. Fix and connect outlets to NZ Telecom requirements and terminate wiring at incoming terminal block.

### 3.21 DATA WIRING

Install data wiring to outlet positions shown on the drawings. Install in conduit for outlets on masonry surface.

### 3.22 TV CABLING

Run cabling concealed below the roof and fit outlets where shown on the electrical drawings. Ensure the system is suitable for high quality reception of all VHF and UHF channels - Sky TV installation practices minimum. Cable penetrations through the cladding to be weatherproofed to comply with NZBC E2/AS1.

### 3.23 SMOKE ALARMS

Install smoke alarms to NZBC F7/AS1 and to the alarm manufacturer's requirements, fitted neatly and without damage to the surrounding finish.

### 3.24 SURGE PROTECTION

Install surge protection devices to manufacturer's requirements and in accordance with AS/NZS 3000. When fitting medium protection at the switchboard, protect the device by a dedicated MCB.

### 3.25 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.

### 3.26 BATHROOM ELECTRICAL FIXTURES

Install electrical fixtures specified in other parts of this specification. Connect the following bathroom and toilet electrical items:

Heated towel rails:	Install to manufacturers requirements and installed in accordance with AS/NZS 3000 and NZBC G9/AS1.
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Exhaust fans:	Install exterior ducted fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and NZBC G4/AS1.
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### **Security System**

3.27

#### **SECURITY SYSTEM**

Install to the system manufacturer's requirements, control panel, detectors and associated equipment fitted neatly and without damage to surrounding finishes. Installation of security equipment to AS/NZS 2201.1 Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance. All 230V mains power connections to the security panel are to be in accordance with AS/NZS 3100. The 230V power is to be switched using a Schneider single gang isolator switch or similar.

3.28

#### **COMPLETION**

Leave installation operating correctly, with equipment clean and all lamps operational.

**Building Consent Application — use this Checksheet for:**  
**Single Residential Dwelling and Accessory Buildings**

— including single stand-alone dwellings, dwelling additions and/or alterations, re-piling, garages, decks, gazebos, sheds, retaining walls etc.

— **An Application Form is attached to this checksheet —**

**(Please include this checksheet with your application)**

**Address of project:** 142 Huia St, Waikanae

This checksheet shows you the information that has to be supplied with your building consent application. Please attach **2 copies** of the following information (unless otherwise specified) with your completed Building Consent Application form.

Please tick relevant box in the Customer Use column as you attach the information. If the box is not relevant to your application, write NA across the box. Please check each section carefully and complete those sections that are relevant to your project.

**Once you have attached all the required information, please check for completeness as an incomplete application or lack of any supporting information will mean that your application cannot be accepted for processing.**

CUSTOMER USE

COUNCIL USE



**1. GENERAL**

Complete this section for all applications



**a. Building Consent Application Form (1 copy)**

Completed and signed by the owner or by an agent on behalf of the owner.



**b. Proof of ownership (1 copy)**

One recent copy of current certificates/s of title (i.e. not older than 3 months) or where applicable one copy of purchase agreement (if recently purchased) or one copy of relevant portions of current lease



**c. Locality Plan (1:500) showing:**

Physical location of the subject building in relation to streets or landmarks, north point, name of building and lot and DP number.



**d. Site Plan (1:100) showing:**

Dimensions of all boundaries, north point, finished floor levels, ground contours (extended to boundaries) and/or levels, site area, street name and number, lot and DP number, outline of building, distance to boundaries and the position of swimming or spa pools. Include on the site plan the designated wind zone of the site (e.g. specific design, very high, high, medium or low).



**e. Application Fee**

Applications will not be accepted without payment of the appropriate fees. Fees payable are set out in the published fee schedule of the council that has jurisdiction over the project site.



**For office use only** Receiving Officer:



## 2. CHANGE OF USE

Complete for all existing buildings where the proposal involves forming a household unit where one did not exist before

*Example: the conversion of a garage or shed into a residential unit*

☐

### a. Assessment of the building for compliance with the building code

☐

Section 115(a) of the Building Act 2004 requires that the building, in its new use, complies fully with all clauses of the building code.

☐

### b. Reasonably practicable

☐

The above assessment must relate to all building code clauses. If the proposal is for the project to meet anything less than full compliance with any clauses, your application must clearly state your reasoning, with supporting documentation, and show how you will meet the highest level of compliance that can be considered reasonably practicable.

## 3. FOUNDATIONS / FLOOR

Complete for all new buildings, for existing buildings where the footprint of the building will change or where an additional storey is being added.

☒

### a. Foundation Plan (1:100 / 1:50) showing:

☐

- Dimensions of all new foundations
- Sub-floor, including bracing
- Footing details
- If a concrete slab, show basic details including reinforcing and contractions joints
- Piles and footing
- If the addition is an upper storey show details on upgrading existing foundations, joints, piles etc
- Indicate ventilation to sub floor spaces

☐

### b. Subfloor bracing

☐

Provide subfloor bracing plan and calculations for all piled structures. Where the structure is specifically engineered, this should be included with the structural calculations.

Subfloor bracing plan and calculations are required where an additional storey is to be added.

## 4. CONSTRUCTION

Complete for all new structures or alterations to existing structures.

☐

### a. Existing floor plan (1:100 / 1:50) showing:

☐

(For additions and alterations only)

- All levels
- All designated spaces
- All removals
- Sanitary fixtures
- Smoke detectors

**b. Proposed floor plans (1:100 / 1:50) showing:**

- Room dimensions
- Location of partitions
- All designated spaces
- All floors (new or altered)
- Location of sanitary fixtures
- Stairs, barriers, handrails, floor joists and beams
- Floor joist layout for each level with timber floors
- Smoke detectors
- Note where wall will form part of the swimming pool fence

**c. Pre-nail Truss and Frames:**

- Specific design wall framing requires clarification
- Truss layout must be supported by design certification and design of fixing details, including consideration of load paths to ground
- Lintels carrying point loads, such as from girder trusses, require specific engineering design

**d. Wall bracing plan (1:100 / 1:50) showing:**

- Bracing details and calculations for wall bracing (also required for existing lower storeys where an additional storey is being added)
- Sub-floor bracing for decks projecting more than 2m from the house
- Location, type and number of bracing elements to indicate compliance with NZS 3604:1999 (include calculations)
- If the bracing was specifically designed by a structural engineer, provide calculations (required for specific design wind zones and lateral distribution of upper floor loads where lower storey bracing is provided in walls beyond the upper storey footprint)

**e. Sections and details (1:50 / 1:20 / 1:10) showing:**

- Foundation details involving reinforcing and connections
- Stairs, handrails, decks and decking
- Insulation systems and materials to floors, walls and roof
- Barriers providing safety from falling. Specific engineering design required where detail does not comply with NZBC B1/AS2
- Framing sizes, beams, lintels
- Roof cladding, eaves, fascias, gutters
- Flashings to openings
- Fire rated systems on all walls – closer than 1 metre to boundary
- Stud heights of rooms and total height from lowest ground floor level to top of ridge
- Window and door installation details
- Retaining wall details e.g. type, height of retained ground, relationship to boundary, waterproof membrane and proposed drainage

**f. Fire Report:**

For domestic dwellings of 4 storeys or more, or buildings providing more than one household unit





## 5. EXTERNAL

Complete for new buildings or existing buildings with alternations to the external shell



### a. Elevations (1:100 / 1:50) showing:



Accurate lines form boundary to boundary on each elevation, relevant District Plan daylight control lines, the maximum height on each elevation, location of door and window openings, fixed and opening sashes, sill heights, floor levels in relation to ground levels, exterior cladding nominated to all elevations, down pipes and spouting, ventilators to sub-floor area (suspended floors only)



### b. Risk assessment



*(Risk matrix in E2/AS1 may be used for buildings within scope)*

Consider exposure, design and detailing to support appropriate selection of cladding



### c. Cladding details (1:50 / 1:20 / 1:10)



Provide details around all penetrations, joinery and other junctions at a level appropriate to the level of risk e.g. roof/wall, balcony/wall, junction of different types of cladding, back flashing details for cavity systems



### d. Production certification



Supply copies of product certificates relied on as compliance documents



### e. Alternative solutions



If the proposal uses products or systems that are not covered in the Acceptable Solutions of clause E2 of the building code provide supporting current information including test results (fully signed reports), case studies, expert opinion (including evidence of experience/qualification, basis for forming opinion and statement of independence) etc to demonstrate compliance.

## 6. SERVICES

Complete for all projects with new installations or alteration of plumbing or drainage services



### a. Plumbing and Drainage plan 1:100 / 1:50) showing:



*Note: if you have supplied drainage details for surface water disposal on the site plan, no drainage plan is required.*

- Sizes of pipe work and drains
- Fixtures and fittings, hot water system(s)
- If the building is more than one storey with sanitary fittings on upper floors, provide an isometric layout showing wastes, pipes and falls
- Drainage layout with inspection bends and junctions indicated for both sewer and storm water
- Any other drainage on site including council mains and retaining wall field drains
- Ventilation of sanitary rooms
- Calculations for sizing of down pipes
- Gully traps including overflow relief gullies

**7. STRUCTURAL**

Complete for all projects incorporating specific structural design

**a. Structural calculations**

If any design work required the services of a structural engineer, attach 2 copies of the calculations with this. The calculations must be prefaced with information explaining the design philosophy and justification of assumptions and methodologies used in analysis

**b. Expert Opinion (Producer Statements):**

If this application for consent relies on any expert opinion including producer statements certifying compliance with the New Zealand Building Code, a copy must be attached with this application. (Note all structural producer statements are required to have accompanying calculations)

**8. SPECIFICATIONS**

Complete for all applications

*Note: the specification must be specific to the project and cover all aspects of the proposed work.*

**a. Specification: General**

- Elements of structure (size, spacing, timber treatment)
- Finish or fixings to meet durability requirements
- Plumbing and drainage materials and design that installation is to comply with
- Wet area surfaces
- Ventilation systems
- Flooring slip resistance for access routes
- Glazing
- Type of smoke detectors (including existing smoke detectors where they will remain)

**b. External claddings**

For each of the following claddings provide details of the product name, manufacturer, maintenance requirements and warranties offered

- Building wraps
- Wall claddings
- Roof claddings
- Membranes (roof and decks)
- Tanking
- Joinery

**9. DEMOLITION / REMOVAL**

Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings.

**a. Means of barricading the site**

Provide details of temporary barriers, gates which swing inwards or other means of restricting public access to the area




☐
**b. Proposed tipping location for demolition materials (address/landfill)**
☐
☐
**c. Hazardous building material**
☐

Provide safety plan detailing the safe handling and disposal of hazardous materials

☐
**d. Site management plan covering**
☐

Management to control silt runoff, noise and dust

☐
**e. Proposed destination for relocate building**
☐
☐
**f. Access to and from the site including (use of kerb crossings)**
☐
☐
**g. Specify termination of existing services**
☐

- Water
- Sewer
- Storm water

☐
**h. Details about the building such as:**
☐

Number of storeys, type of materials the building is constructed (Photographs of the building would be useful)

**Note**

You will need to contact the relevant service authorities specified below to advise them of the extent of your work:

Electricity, gas, drainage, water, transport, telecommunications, cable television or any other services that may be affected.

**Transportation of relocated building**

You will be required to contact and provide details to Councils Transportation and Traffic Department.

## 10. OTHER APPROVALS

Please check territorial authority regarding the requirement for other approvals required and fees payable. These may include:

- Consents under the Resource Management Act
- Approvals under bylaws including earthworks, vehicle crossings, road openings and water connections.

Show the location of swimming or spa pools on the property and describe how compliance with the fencing of Swimming Pools Act will be achieved.

**The issuing of a building consent does not relieve the owner of any duty or responsibility under any other act.**

The following Councils developed this checksheet in partnership: Kāpiti Coast District, Porirua City, Wellington City, Hutt City, and Upper Hutt City.

# FORM 436

## PROCESSING CHECKLIST

BC:	130379
Category:	2.

Key	
N/A <input type="checkbox"/>	Not Applicable to this application. (The deletion of whole sections as N/A is permitted. For alternatives comment below each section).
No <input type="checkbox"/>	Plans, specifications & documentation not complying with the Building Code &/or Bld Act (The reason specified alongside each prompt)
Yes <input type="checkbox"/>	Plans, specifications & documentation complying with Category Bld Code &/or Bld Act (The reason specified alongside each prompt)
Note	The further information requests are identified by hand written numbers and corresponding on FIR letters / e-mails sent

Site Plan (NZS 3604 Sec 3.4, 4,5 Code clB1, B2,E1, E2 F1&F2 Sect. 72, 75 BA04)	
N/A <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/>	Comments
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Wind zone High V/High Specific (GIS) <i>As noted by designer</i>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Flooding / ponding hazards (GIS)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Slippage / fault line hazards (GIS)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Erosion, river & coastal hazards (GIS)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Subsidence / soft soil hazards (Site inspection notes) <i>SED Foundation design provided</i>
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Corrosion zone (Sea spray or <u>Zone 1</u> )
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Soil contamination (F1 GIS)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Distances to boundaries / sitting (District plan)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Floor levels / contours (E2/AS1 & NZS 3604 E1)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Two or More Allotments (Sec 75 – 83 Bld Act)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Noise / sound insulation (airport & highway)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	CT/221 notice reviewed
Additional Comments	

Specific Design (Verified Online PS2, B1, B2, VM1)	
N/A <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/>	Comments
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	PS1 Design Certificate (B1 B2 VM1) <i>John O'Hagan ISP</i>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	PS2 Peer Review (B1 B2 VM1)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Calculations (VM1)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	CPeng (Verified Online)
Additional Comments	<i>Concrete Rib-Raft Foundation Design</i>

Concrete / Foundation Plan (NZS 3604, NZS 4210 & 4229 E2/AS1)	
N/A <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/>	Comments
<b>Layout</b>	
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Layout dimensions (NZS 3604)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Control joints (NZS 3604)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Slab thickening (NZS 3604, cl 7.5)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Alternative (specify reason)
<b>Section</b>	
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Depth & width (NZS 3604)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Reinforcement (NZS 3604:B2)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Plate fixings (NZS 3604:B2 cl 7.5)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	DPM (NZS 3604:B2)

<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Engineer design and Calcs (B1;B2)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Concrete strength (B1;B2 cl 4.8.2) <i>25MPa</i>
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Foundation wall tanking (B2, E2)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	<i>* Column footing detail not provided by engineer.</i>

Timber/Subfloor (NZS3604 NZS 3602 & 3640, B1, B2)	
N/A <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/>	Comments
<b>Layout</b>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Layout dimensions
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Bearers details (B1,B2)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Joist details (B1;B2)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
<b>Section</b>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Foundation type/size (NZS 3604;B2)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Piles post sizes & treatment (NZS 3604;3602;3640;B2)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Pile c/c (NZS 3604)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Fixing (NZS 3604;B2)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Coatings (durability) (NZS 3604;B2)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Ventilation & Access to sub floor spaces (NZS 3604)
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
* If the addition is an upper storey show details on upgrading existing foundations, joints, piles, etc (may require Engineer design)	
Additional Comments	

Floor plans / layout (B1, B2, C1-4, D1, E3, F7, G1, G2, G12 G3, G9, G11, G13)	
N/A <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/>	Comments
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Room dimensions
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Sectional lines
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Location of partitions
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	All designated spaces
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Lintels (NZS 3604;B2)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Beams (NZS 3604, B2 by engineer)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Point loads by engineer or pre-nailer (B1 B2)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Smoke detectors (F7)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Wet areas / WCs (D1, Table 2; B2) <i>Acrylic Units</i>
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Kitchen (G3)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
* Changes to existing work requires both an existing floor plan & a proposed floor plans. * Facility provided for washing utensils / food G3, Section 1.1 & Figure 1: * Preparation Area and Access to Facility Paragraphs 1.1.2 and 1.5	
Additional Comments	

Wall Framing (B1, B2, B3)	
N/A <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/>	Comments
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Identify engineering / Structural items/ portals (B1 B2)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	By pre-nailer or to NZS 3604 (B1 B2)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Fixing types (NZS 3604 B1 B2)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Stud c/c as per wind zone (NZS 3604 B1 B2)
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Building wrap (NZS 3604) <i>Tekton for ply 215 for trapezoidal</i>
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Stud heights of rooms (NZS 3604 B1 B2)
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	



## Roof (NZS 3604, 3602 & 3640 B1B2E2 E2/AS1).

N/A ☐ No ☐ Yes ☐

Comments

### Trussed / by purliner or Framed roof (NZS 3604)

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Fixing layout & details (B1 B2)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Correct layout (B1)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Max span (12m or Engineer) (B1)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Purlin or batten c/c (B1 B2)	* Solar panel - clarify size & penetration detail - refer to G17/AS2 for structural requirements of supportive frames
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Rafters / Beams (B1 B2)	* Skillion roofs require 7 KN connections - see T10.18
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ceiling joists	* Clarify support to lower end of rafters over dining room see pg 15
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Alternative (specify reason)	Generic engineered rafters to gallery.

### Roof cladding - Metal; Profiled Metal; Masonry, Membranes (Code E2, E2/AS1 B2)

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Pitch / profile / grade (E2)	6° trapezoidal endura. to main roof 3° to gallery * Confirm crest height E2/AS1 8.4.5
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Underlay (E2)	Thermalcraft 215
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Flashings (E3; E2, B1 B2)	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Parapets (B1 E2 B2)	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Membrane Roofs and substrate (Code E2/AS1 B2)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Gutters, Barges & Fascias detail (Refer E2, section 8.3, cl 8.3.9)	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alternative (specify reason)	

Installation of profiled metal roof cladding shall be by trained installers, approved by the tile manufacturer or NZ agent. In some cases experienced builders undertake installation, refer E2, section 8.4, cl 8.4.2 'General'

Additional Comments	Barge	backing	Solar panel connections	gutter	apron	parallel apron	flue - small roof area above
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## Claddings (Code B1 & B2 E2/AS1, Branz good practice Guides & Weather tightness Vol 12&3)

N/A ☐ No ☐ Yes ☐

Comments

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Risk matrix Cavity or direct (E)						
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Building wrap (NZS 3604)	215 to metal cladding					
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Brick Veneer (E2/AS1; B2)						
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Timber Weatherboard (E2 Branz Timber Guide Vol 1&2; B2)						
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stucco (B1 NZS 3604 Branz good practice guide; B2)						
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Profiled Metal (E2 Metal Roofing Practice; B2)	* A number of faces indicate trapezoidal metal direct fixed where the risk score exceeds 6. - cladding details to be checked after RFI point returned.					
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Plywood (E2; B2)						
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fiber Cement W/b (E2; B2)						
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Board & Batten (Brans good practice guide; B2)						
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fiber Cement Sheet (E2; B2)						
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Weathertightness details (E2; B2)						
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Alternative (specify reason)						
Additional Comments	Metal	ply	excav	excav	inter car	inter treatment	top of wall	bot of wall	garage
	✓✓✓	✓			✓	* detail 12 - sheets	✓	✓	✓

## Bracing (NZS 3604 B1, B2, E3)

N/A ☐ No ☐ Yes ☐

Comments

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Subfloor bracing (B1 & NZS 3604)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wall bracing (B1 & NZS 3604)	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Roof bracing (B1 & NZS 3604)	* locate or provide
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Bracing calculations (B1 & NZS 3604)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Provide bracing plan layout (B1 & NZS 3604)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Double top plate (if > 5m) (B1 & NZS 3604. Required where ceiling lining density is ,600kg per m3 e.g. pinex)	As indicated in cross sections
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Indicate dragon tie (if > 6m) (B1 & NZS 3604)	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diaphragm ceilings (if > 7.5m) (B1 & NZS 3604)	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Check for distribution (B1 & NZS 3604)	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alternative (specify reason)	
Additional Comments				

**Light & Ventilation** *B1 G4, Clause 1.2 ; G4, clause 1.3 G7,G9 F2*N/A ☐ No ☐ Yes ☐

Comments

**General**

- |   |                                   |
|---|-----------------------------------|
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Vent 5% (G4)                      |
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Light 10%. (G7)                   |
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Electrical (G9)                   |
| <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Mechanical ventilation (G4)       |
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Exterior space for awareness (G7) |

**Glazing**

- |   |                                  |
|---|----------------------------------|
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Safety glass (F2)                |
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Wind zone (B1. NZS 3604 NZS4223) |
| <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Visual manifestation (NZS 4223)  |
| <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Alternative (specify reason)     |

Additional  
Comments**Insulation** *(BRANZ Home Insulation Guide, NZS 4218, AS/NZS 2918)*N/A ☐ No ☐ Yes ☐

Comments

- |   |                              |
|---|------------------------------|
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Floor (H1)                   |
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Wall (H1)                    |
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Roof (H1)                    |
| <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | Windows / glazing (H1)       |
| <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Alternative (specify reason) |

Additional  
Comments**Stairs / Landings / Handrails** *(D1, sec 4)*N/A ☐ No ☐ Yes ☐

Comments

- |  |  |
|--|--|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Stair tread & risers (D1)                |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Landing size (D1)                        |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Handrail (D1)                            |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Riser opening ( min) where children (D1) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Head Height (D1)                         |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Alternative (specify reason)             |

Stair type: Minor Private: Max rise 220mm/Min tread 220mm, Secondary Private: Max rise 200mm/Min tread 250mm, Main Private: Max rise 190mm/Min tread 280mm.  
(Main private includes exterior stairs)

Additional  
Comments**Decks / Balconies / Barriers** *(D1, F4 & NZS 3604, Section 6 & 7)*N/A ☐ No ☐ Yes ☐

Comments

- |  |   |
|--|---|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Barrier & deck fixing durability (D1 B1 B2 F4)                                |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Top rails, balusters, bottom rails, palings (D1 B1)                           |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | If Engineer then calculations required (B1 B2)                                |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Max 3m height or Engineer (B1 B2)   |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Deck joist sizes, grade, treatment, span & spacing (D1 B1 B2)                 |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Piles & bearers the correct grade, treatment, size, spacing & span (D1 B1 B2) |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Slip resistance (D1)  |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Appropriate waterproofing membrane (B1 B2)                                    |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Stringer size & connections (D1 B1 B2)  |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Thresholds (D1 E2)  |
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | Alternative (specify reason)  |

Additional  
Comments

**Fire (Residential) ( NZBC F7;Cdoc)**N/A ☐ No ☐ Yes ☐

Comments

☐ ☐ ☒ Travel distances max 24m (C3.15)☐ ☐ ☒ Smoke detectors (F7)☐ ☐ ☒ Wood burners (F7)☒ ☐ ☐ Garage fire wall details (C7 (C7.10 C7.8)☐ ☐ ☐ Alternative (specify reason)Additional  
Comments**Swimming Pool & Fencing Fencing of Swimming Pools Act 1987'**N/A ☐ No ☐ Yes ☐

Comments

☐ ☐ ☐ Refer to Compliance for sign off☐ ☐ ☐ Specific Engineering Design☐ ☐ ☐ Proprietary system/design☐ ☐ ☐ Section/construction☐ ☐ ☐ Pool backwash discharging the sewer☐ ☐ ☐ Fence height☒ ☐ ☐ Gate(s) / door(s) open outward**Ambiguity / Contradictions**N/A ☐ No ☐ Yes ☐

Comments

☐ ☐ ☐ Manufacturers Specs☐ ☐ ☐ Engineer compared with Designer/Arch☐ ☐ ☐ Any Other contradictionsAdditional  
Comments**Alternative Solutions**

Record assessment, decision and reasons for decisions below. Has the designer substantiated why they believe the proposal complies with the building code? Is there a determination on a similar proposal? Has corroborative evidence been provided (peer review, appraisal or determination)? Include reference to comparison with acceptable solutions, other documents / standards / best practice guides / publications, expert opinion, determinations, in-service history, product certification, professional judgment, building code objectives. Refer BRANZ Bulletin # 456 (Dec 2004). List any conditions / communications / actions:

# This sheet relevant to plumbing & drainage only

N/A ☐ No ☐ Yes ☐

Comments

## General

- ☐ ☐ ☒ Kitchen area (G3/AS1)
- ☐ ☐ ☒ Laundry...
- ☐ ☐ ☒ Bathrooms
- ☐ ☐ ☒ Location of sanitary fixtures
- ☐ ☐ ☒ Plumbing layout
- Plumber's Reg no. Peter Jackson Drainlayers Reg no. Peter Jackson 11499

Additional Comments

## Effluent Disposal Systems

- ☐ ☐ ☒ Engineering Site Investigation
- ☐ ☐ ☒ Design Specification & Producer Statement

The design criteria should include; Capacity based on bedroom numbers, Loading calculation, site evaluation, soil profile, site characteristics.

Additional Comments

not provided now provided Dave Miller environmental Engineer ✓

## Water Supplies

- ☐ ☐ ☒ G 12 Solar Hotwater system
- ☐ ☒ Town supply
- ☐ ☐ ☒ Private scheme
- ☐ ☐ ☒ Type & location Roof catchment running to 3x25K tank one to be used for
- ☒ ☐ ☐ Alternative (specify reason) fire fighting purposes

Additional Comments

notes on Plan re water potability solar panel details \*

## Sanitary Drainage

- ☐ ☐ ☒ G13 N2/AS3500
- ☐ ☐ ☒ Layout
- ☐ ☒ Council availability or
- ☐ ☐ ☐ Septic tank design & calcs full engineer design provided scanned to BOC 9/1/2013 O.K. ✓
- ☒ ☐ ☐ Alternative (specify reason)

Additional Comments

## Stormwater Drainage

- ☐ ☐ ☒ E1
- ☐ ☐ ☒ Layout
- ☐ ☒ Council availability
- ☒ ☐ ☐ Alternative (specify reason)

Additional Comments

overflow from tank 1 to be confined to the site

## Sanitary Plumbing

- ☐ ☐ ☒ G13 N2/AS3500
- ☐ ☐ ☒ Layout
- ☒ ☐ ☐ Alternative (specify reason)

Additional Comments

no town services  
P+D pack + Solar producer statement  
GIS checked ✓  
D.p checked ✓  
old subdivision no 221 notice

\* advised solar panel information  
provided and scanned to BOC  
network to grant P+D portion  
of the Building Consent



**Accessibility (D1, G5, F8, NZS 4121)**N/A ☐ No ☐ Yes ☐

Comments

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Car parks
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Projections
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Kerb ramps
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Footpaths / Ramps / Landings
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Entrances
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Public Facilities
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Lifts
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Stairs
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Stair / handrails
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Doorways / Doors / Corridors / Lobbies
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Controls
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Places of assembly / entertainment / Recreation
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Warning Systems
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Toilet Facilities / Laundering
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Food preparation / accommodation
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Signs
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Residential Accessibility (D1)
Additional Comments	

**Commercial Fire report (C1, C2, C3, C4)**N/A ☐ No ☐ Yes ☐

Comments

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Purpose group FHC
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Fire cell separation / use of building
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	f- rating
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	s- rating
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Occupancy numbers
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Means of escape
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Travel distances
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	External walls/unprotected areas
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Fire resistance to supporting elements/floors/ walls
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Risks to/below escape routes
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Fire safety precautions
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	SFI's / SDI's
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Signs
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Hazardous agents / materials / substances on site
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Referral to DRU
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	

**Solid Waste (G15)**N/A ☐ No ☐ Yes ☐

Comments

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Waste bin area
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Environmental health referral
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	

**Hazardous Agents, Materials and substances (F1-F3)**N/A ☐ No ☐ Yes ☐

Comments

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Waste bin
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Environmental health referral
Additional Comments	



## Work Sheet

### General stamp prompts:

Wind Zone  
Corrosion  
Cladding  
Electrical  
Bracing Highlighted  
Boundary setting out  
Engineers design and addendum

Set Status  
Complete checklist  
Addendum and note re fire report  
Section 72 / ponding  
Set inspections

List further information requested, info received, records / reference of communication etc.  
via Phone / Email / letter / counter / fax

List further information requested, info received, records / reference of communication etc.  
via Phone / Email / letter / counter / fax

Page 9 of 12

**Change of Use – Sec 114:** (Record decisions and basis for decisions – confirm whether sec 115 applies)

Date:

**Alteration to Existing Building - Sec 112** (Record decisions and basis for decisions – confirm whether sec 118 applies and if so, has it been complied with?). List conditions / communications / actions:

Date:

**Hazards – Sec 71-74 :** (Record decisions and basis for decisions – see under "site plan above already done")

Date:

**Compliance Schedule – Sec 100 - 107:** (Record if new / amended compliance schedule required, and attach copy of replica compliance schedule. Ensure that note is recorded on building consent that new / amended compliance schedule will be issued).

Date:

Note :- Refer to the associate code clause along side each prompt above for compliance or reason of decision

**Plan checked yet Unsatisfactory**

Refer to the official request for further information correspondence (letter, email or phone call) for final list of required information. For acceptance of returned information refer to addendum to form 436

Signature, name & date

Bldg:

Plumbing: Simon Copp 27/6/2013

Fire:

I am satisfied on reasonable grounds that the provisions of the Building Code are met and the

**Building consent may be granted (refer Bld Act Sec 49(1))**

No Further Information Requests have been made.

Signature, name & date

Bldg:

( for all pages except those listed below )

Plumbing: Simon Copp 9/7/2013

(For pages 6 of 11 unless otherwise listed)

Fire:

( As listed on page 7 of 11)

This page is to be read in conjunction with the Request for Further Information (RFI) letter, email or phone correspondence (refer to pages 9&10 for phone correspondence) associated with BC .....

RFI#	Reason for acceptance of returned / revised information or reference to location within revised information of item accepted as complying with the provisions of the Building Code	Date reviewed and Satisfied on reasonable ground as complying with the Building Code
1	Sheet 9 - now provided of SORC pg 12	29/7/13
2	Pg 38 " " " "	I
3	revised to 7.0kN	
4	Stringer now provided of joist hangers.	
5	36mm - ok	
6	Confirmation provided by the manufacture allowing the use of the trapezoidal profile direct fixed.	30/7/13
7	Now provided Sheet 14 - pg 19	29/7/13
	Detail 12 on Sheet 18 revised also as per email request 29/7/13	30/7/13

I am satisfied on reasonable grounds that the provisions of the Building Code are met and the Building consent may be granted (refer Bld Act Sec 49(1)). All previous Further Information Requests now satisfactory

Bldg:



Signature, name &amp; date

30/7/13

Plumbing:

-

Fire:

-

**NOTE:**  
ONLY PAGE 1 OF  
ADDENDUM WILL  
BE SIGNED BY  
THE AUTHORISED  
BUILDING  
CONTROLS  
OFFICER

**Addenda to Form 436**  
**Allocation of work to approvals officer outside current competency**

Building Category	Circle Appropriate Category	0	1	2	3

1) Authorized by Team Leader of delegate	Level of supervision required	Reason for decision
Name, Signature & date:	Coaching Mentoring Peer review on completion	In training Vetting one level above competency Other
2) Approval Officer undertaking training	Record of Learning	Decision
Name, Signature & date:		I am satisfied on reasonable grounds that the provisions of the Building Code are met and the building consent may be granted (Refer Bld Act 49(1))
Current competency level Category 0, 1 or 2		
3) Coach / Mentor / Peer reviewer	Training needs identified	Comments
Name, Signature & date:		I am satisfied on reasonable grounds that the provisions of the Building Code are met and the building consent may be granted (Refer Bld Act 49(1))
Current competency level Category 1, 2 or 3		

**Allocation Notes**

- Categories of building are determined on receipt of application
- All applications are re assessed for the category and allocated to each appropriate Officer at the earliest opportunity and then placed in processing shelves accordingly
- Approvals staff are aware of their own competency level and check the allocation of work.
- Approvals staff may select, for training purpose, a consent 1 (one) category higher than their current competency for the purpose of increasing their skill level provided they gain approval from the Team Leader Building Consent Approvals. Once approval is given the Team Leader Building Consent Approvals will arrange for the appropriate supervision and final peer review.



## Jaime Sherlock

**From:** Mike Robertson [Mike.R@adarchitecture.co.nz]  
**Sent:** Tuesday, 30 July 2013 10:01 a.m.  
**To:** Jaime Sherlock  
**Subject:** RE: 142 Huia Street, Waikanae  
**Attachments:** 11090\_DRK\_Esther\_Peterson\_Waikanae\_REV4\_Sht18.pdf

Hi Jaime,

Revised detail 2/18 attached.

The stop ending refers to the bottom of the metal cladding at the foundation detail 1/21. There is a metal base flashing to close off the air gaps of the cladding crests.

Cheers.

Regards,

Mike Robertson **ADNZ ( Professional ), LBP ( Design 2 )**  
Architectural Designer

*"Always check the LBP register to ensure your building practitioner is licensed."*



The Pier, 6-8 Seaview Road  
P.O. Box 1585, Paraparaumu Beach 5252  
Mobile : 027 2824589  
Tel : 04 2985662 Extn 15  
Fax : 04 2985663

[www.adarchitecture.co.nz](http://www.adarchitecture.co.nz)  
[www.adarchitecture.co.nz/ada-blog](http://www.adarchitecture.co.nz/ada-blog)

---

**From:** Jaime Sherlock [mailto:jaime.sherlock@kapiticoast.govt.nz]  
**Sent:** 29 July 2013 17:03  
**To:** Mike Robertson  
**Subject:** RE: 142 Huia Street, Waikanae

Thanks Mike,

I have run over the details now and detail 12 on sheet 18; the corner flashing abuts the ply- please revise. And David Bullock has said the LT7 is to be stop ended, can you clarify where?

Cheers

**Jaime Sherlock**  
**Building Control Officer**  
**Āpiha Whakatū Whare**

Kāpiti Coast District Council  
Tel 04 296 4700  
[www.kapiticoast.govt.nz](http://www.kapiticoast.govt.nz)

---

**From:** Mike Robertson [mailto:Mike.R@adarchitecture.co.nz]

30/07/2013

**Sent:** Monday, 29 July 2013 2:58 p.m.  
**To:** Jaime Sherlock  
**Subject:** RE: 142 Huia Street, Waikanae

Hi Jaime,

Letter attached from Dimond confirming the suitability of the cladding to be direct fixed.  
Cheers.

Regards,

Mike Robertson **ADNZ ( Professional )**, **LBP ( Design 2 )**  
Architectural Designer

*"Always check the LBP register to ensure your building practitioner is licensed."*



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[www.adarchitecture.co.nz/ada-blog](http://www.adarchitecture.co.nz/ada-blog)

---

**From:** Jaime Sherlock [<mailto:jaime.sherlock@kapiticoast.govt.nz>]  
**Sent:** 29 July 2013 12:01  
**To:** Mike Robertson  
**Subject:** RE: 142 Huia Street, Waikanae

Hi Mike,  
Thanks for the returned info so far.  
I'm ok with all points except 6. An out of date version of E2/AS1 is cited and only a statement is made regarding the use of direct fixed cladding but no evidence to support it. I will need a little more on this or alternatively the cladding could be placed on cavity with the use of a cavibatt type system,

Cheers  
Jaime

**Jaime Sherlock**  
**Building Control Officer**  
**Āpiha Whakatū Whare**

Kāpiti Coast District Council  
Tel 04 296 4700  
[www.kapiticoast.govt.nz](http://www.kapiticoast.govt.nz)

---

**From:** Mike Robertson [<mailto:Mike.R@adarchitecture.co.nz>]  
**Sent:** Friday, 26 July 2013 1:29 p.m.  
**To:** Jaime Sherlock  
**Cc:** 'Judith Kunz'  
**Subject:** RE: 142 Huia Street, Waikanae

30/07/2013

Hi Jaime,

Please find attached revised plans and information relating to your RFI questions below :

- 1 – Post footing and connection details on revised sheets 09 and 10.
- 2 – Solar panel fixing detail attached.
- 3 – Skillion rafter fixings on revised sheet 14.
- 4 – Rafter support on revised sheet 15.
- 5 – Roofing profile attached.
- 6 – Dimond installation info attached. On page 2, the last paragraph states that Dimond vertical run cladding does not require a cavity batten system and is considered an alternative solution.
- 7 – Roof bracing on revised sheet 14.

If you have any further queries, let me know.

Cheers.

Regards,

Mike Robertson **ADNZ ( Professional ), LBP ( Design 2 )**  
Architectural Designer

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**From:** Jaime Sherlock [<mailto:jaime.sherlock@kapiticoast.govt.nz>]  
**Sent:** Thursday, 25 July 2013 4:50 p.m.  
**To:** Peter Davis  
**Subject:** 142 Huia Street, Waikanae

Hi Peter  
Sorry for the delay in reviewing this plan. Please see RFI below

Regards,

**Jaime Sherlock**  
**Building Control Officer**  
**Āpiha Whakatū Whare**

Kāpiti Coast District Council  
Tel 04 296 4700  
[www.kapiticoast.govt.nz](http://www.kapiticoast.govt.nz)

30/07/2013

Dimond Auckland  
48 Victoria Street  
Onehunga, Auckland

P O Box 13 546, Onehunga, Auckland 1643  
Telephone: 09 622 4626  
Facsimile: 09 634 6231

# Dimond

29 July 2013

Kapiti Coast District Council  
KAPITI

Dear Sir,

**RE: Assessment of Direct fixed Vertical LT7 cladding**  
On site address 142 Huia St, Waikanae, Wellington

E2/AS1 Wall cladding risk Matrix 9 on the worst elevation  
Wind zone: Very High  
Number of floor levels 1

E2/AS1 allows corrugate to be used vertically on walls with a risk matrix of 19, but the 18 mm rib height and loser lap detail on corrugate are not as effective as the 36 mm rib height and tighter overlap of the LT7 profile, in providing better weather tightness.  
The open ribs of LT7 will allow an air passage up the profile, should condensation require drying.

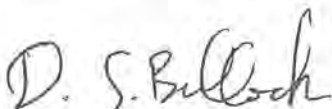
Having viewed the elevations and details as supplied by Mike Robertson, A.D.Architecture, We recommend flashings cover the wall cladding a minimum cover of 100 mm. and the LT7 is stop ended.

Provided this is achieved, Dimond confirm the LT7 used as vertical wall cladding, on a non cavity wall, will meet the performance criteria in clause E2 of the New Zealand Building code, for a period of not less than 15 years provided it is maintained in line with the guidelines and details contained in The Dimond current literature.

This covers the cladding against perforation as a result of corrosion for a period of 15 years.  
This statement is based on over 30 years past performance of the LT7 profile in N.Z. used as both commercial and residential applications.

A copy of these recommendations is available through The Dimond website [www.dimond.co.nz](http://www.dimond.co.nz)

Yours faithfully

  
David Bullock  
Technical Services Manager

25 July 2013

David Reid Homes  
PO Box 148  
Paraparaumu 5254

**Building Consent: 130379**

Dear Sir/Madam

**Request for further information**

<b>Description:</b>	New single-level building.
<b>Location:</b>	142 Huia Street, Waikanae
<b>Legal Description:</b>	LOT 10 DP 22652 BLK VI KAITAWA SD

Following checking of your Building Consent it is apparent that further information is required.

**Information Needed:**

- 1) Post footing detail not provided by the engineer as stated on sheet 9, also please provide the connection detail for the post.
- 2) Solar panels; please provide the size and fixing penetration details. Refer to G12/AS2 for the structural requirements to the supporting frames.
- 3) Skillion roof fixing require 7kN fixings- refer to table 10.18 of NZS 3604:2011 for clarity.
- 4) Please clarify support to the lower end of the rafters over the dining room area. i.e. where they appear to attach to the trusses.
- 5) Please confirm crest height of the 3° roof cladding.
- 6) Wall cladding: a number of faces on the provided risk matrix that exceed 6 indicate direct fixed vertical trapezoidal metal cladding. As this is outside of E2/AS1 please revise the details or provide evidence in support of the design. Please note the cladding details will be reviewed on return of this point.
- 7) Please clarify or locate roof bracing details.

We have suspended your application and will not proceed any further with its processing until the above information is received. Please send it to us by 25/08/13. If we do not receive it by this date, we may not be able to issue your Building Consent.

Please contact me if you would like to discuss this matter.

Yours faithfully

Jaime Sherlock

Direct line tel. no. (04) 296 4730

30/07/2013



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---

**Jaime Sherlock**

**From:** Mike Robertson [Mike.R@adarchitecture.co.nz]  
**Sent:** Friday, 26 July 2013 1:29 p.m.  
**To:** Jaime Sherlock  
**Cc:** 'Judith Kunz'  
**Subject:** RE: 142 Huia Street, Waikanae  
**Attachments:** 11090\_DRK\_Esther\_Peterson\_Waikanae\_REV4.pdf; A3 complete - AS2 fixing details metal roof only.pdf; DIMOND\_INSTALLATION\_INFORMATION.pdf; Roofing LT7.pdf

*Part info  
 item 6 - none require  
 This info is not yet scanned in,  
 [Signature]*

Hi Jaime,

Please find attached revised plans and information relating to your RFI questions below :

- 1 - Post footing and connection details on revised sheets 09 and 10.
- 2 - Solar panel fixing detail attached.
- 3 - Skillion rafter fixings on revised sheet 14.
- 4 - Rafter support on revised sheet 15.
- 5 - Roofing profile attached.
- 6 - Dimond installation info attached. On page 2, the last paragraph states that Dimond vertical run cladding does not require a cavity batten system and is considered an alternative solution.
- 7 - Roof bracing on revised sheet 14.

If you have any further queries, let me know.  
 Cheers.

Regards,

Mike Robertson **ADNZ ( Professional ), LBP ( Design 2 )**  
 Architectural Designer

*"Always check the LBP register to ensure your building practitioner is licensed."*

**A.D**  
**architecture**  
 LTD



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[www.adarchitecture.co.nz](http://www.adarchitecture.co.nz)  
[www.adarchitecture.co.nz/ada-blog](http://www.adarchitecture.co.nz/ada-blog)

**From:** Jaime Sherlock [mailto:jaime.sherlock@kapiticoast.govt.nz]  
**Sent:** Thursday, 25 July 2013 4:50 p.m.  
**To:** Peter Davis  
**Subject:** 142 Huia Street, Waikanae

Hi Peter  
 Sorry for the delay in reviewing this plan. Please see RFI below

Regards,

29/07/2013

**Jaime Sherlock**  
**Building Control Officer**  
**Āpiha Whakatū Whare**

Kāpiti Coast District Council  
Tel 04 296 4700  
[www.kapiticoast.govt.nz](http://www.kapiticoast.govt.nz)

25 July 2013

David Reid Homes  
PO Box 148  
Paraparaumu 5254

**Building Consent: 130379**

Dear Sir/Madam

**Request for further information**

**Description:** New single-level building.  
**Location:** 142 Huia Street, Waikanae  
**Legal Description:** LOT 10 DP 22652 BLK VI KAITAWA SD

Following checking of your Building Consent it is apparent that further information is required.

Information Needed:

- 1) Post footing detail not provided by the engineer as stated on sheet 9, also please provide the connection detail for the post.
- 2) Solar panels; please provide the size and fixing penetration details. Refer to G12/AS2 for the structural requirements to the supporting frames.
- 3) Skillion roof fixing require 7kN fixings- refer to table 10.18 of NZS 3604:2011 for clarity.
- 4) Please clarify support to the lower end of the rafters over the dining room area. i.e. where they appear to attach to the trusses.
- 5) Please confirm crest height of the 3° roof cladding.
- 6) Wall cladding: a number of faces on the provided risk matrix that exceed 6 indicate direct fixed vertical trapezoidal metal cladding. As this is outside of E2/AS1 please revise the details or provide evidence in support of the design. Please note the cladding details will be reviewed on return of this point.
- 7) Please clarify or locate roof bracing details.

We have suspended your application and will not proceed any further with its processing until the above information is received. Please send it to us by 25/08/13. If we do not receive it by this date, we may not be able to issue your Building Consent.

Please contact me if you would like to discuss this matter.

Yours faithfully

Jaime Sherlock

Direct line tel. no. (04) 296 4730

29/07/2013

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# BUILDING CONSENT DOCUMENTATION FILED

<b>Building Consent Number:</b> 130379A.
<b>Street Address:</b> 142 Holo St, Waikanae

Tick indicates documents (s) included in this Building Consent							✓
Building Consent Application							
Application checksheet							
Costing schedule							
Plans and specifications							
Invoice and receipt							
Processing records/checksheets							✓
Inspection page printouts							✓
1-5							✓
Building consent and memorandum							
Inspection reports							
Application for CCC							
Code of Compliance Certificate							
Producer statements and supporting documentation							
Peer review documents							
Fire design documents							
Requests for further information and other correspondence							
Amendments							
Supplementary information							
Energy work certificates							
Notices to Fix							

This form comprises part of the Building Consent documentation and indicates the contents of the Building Consent File.



# CODE COMPLIANCE CERTIFICATE REVIEW CHECKSHEET

Criteria: All building work except for minor works or major projects.  
Refer QAS: B14, B15, B16



Address of Project:

Date:

BC No:

	N/A	Yes	No
Application for Code Compliance Certificate (Form 278) completed?			
Confirm all required inspections and been completed and passed			
If Inspections have been missed, what supporting info and method of verification has been provided to compensate for missed inspections?			

	N/A	Yes	No
Work in accordance with approved consent and approved amendments			
If no, has NTF been issued?			
Have items of non-compliance been resolved and NTF uplifted?			

Note: If work is not in accordance with consent, (and approved amendments) or NTF matters have not been resolved, suspend application for Code compliance Certificate.

## Supporting documentation required in building consent addenda. Form completed during BC Approval process

Tick indicates yes, N/Z indicates considered – but not applicable	Req'd	Supplied	Accept
copy of electrical certificate			
copy of gas certificate			
an "as-built" drainage plan			
plumbing (Form 125) for pressure test and installation piped services			
drainage (Form 126) for stormwater installation			
drainage (Form 127) for private sewer installation			
a Construction Review (PS4) statement for Structural engineering			
a Construction Review (PS4) statement for Fire engineering			
a Construction Review (PS4) statement for Geo-technical engineering			
Roof cladding warranty			
Solar water heating technical specifications			
wall cladding/texture coating installation applicator warranty			
a copy of the lift certificate			
a certificate from the fire alarm installer			
a certificate from the sprinkler certifier			
a copy of wet-area membrane installers warranty			
A copy of deck membrane manufacturer's installers warranty/guarantee			
FPIS (verifier) Fire Systems Certification			
Specified Systems – Make - Model - Location			
A copy of windows			
A copy of water tank warranty			
A copy of septic tank warranty			
Record of work			

## Jaime Sherlock

---

**From:** Graham Wilson [Graham.Wilson@davidreidhomes.co.nz]  
**Sent:** Tuesday, 6 May 2014 5:08 p.m.  
**To:** Jaime Sherlock; Yaqi Wang  
**Cc:** Judith Kunz  
**Subject:** FW: 142 Huia St Waikanae.

Hi Jamie,

On the 31<sup>st</sup> July last year I contacted Craig from ISP Paraparaumu to check that the compaction to the new fill area at 142 Huia St was suitable for building on.  
Craig did the compaction test on 1 August and Yaqi confirmed that the ground was suitable on the same day..  
There was no boxing in place at the time.

It took a further 3-4 weeks to box the perimeter, install the plumbing and drainage and prep the ribraft for pouring.

Hi Graham,

Craig has checked the bearing capacity of the fill. It is acceptable. Thanks.

Regards,

**Yaqi(Chi Chi) Wang**  
Structural Engineer

Regards,  
Graham Wilson  
David Reid Homes - Wellington Region

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

---

**From:** Judith Kunz  
**Sent:** Tuesday, 6 May 2014 8:59 a.m.  
**To:** Graham Wilson  
**Subject:** FW: 142 Huia St Waikanae.

Hi Graham

I should discuss with you:-

Regards,  
Judith Kunz  
David Reid Homes - Kapiti

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

---

**From:** Jaime Sherlock [<mailto:jaime.sherlock@kapiticoast.govt.nz>]  
**Sent:** Friday, 2 May 2014 11:33 a.m.  
**To:** Judith Kunz  
**Subject:** FW: 142 Huia St Waikanae.

Hi Judith  
I copied you in to this email back in November and have not had a reply to date. Could you chase this up

7/05/2014

please?

Regards,

**Jaime Sherlock**  
Building Control Officer  
Āpiha Whakatū Whare

Kāpiti Coast District Council  
Tel 04 296 4700

[www.kapiticoast.govt.nz](http://www.kapiticoast.govt.nz)

---

**From:** Jaime Sherlock  
**Sent:** Friday, 1 November 2013 12:29 p.m.  
**To:** 'WangY@isp.co.nz'  
**Cc:** 'judith.kunz@davidreidhomes.co.nz'  
**Subject:** 142 Huia St Waikanae.

Hi Yaqi

I have an amendment to building consent application here from David Reid Homes (BC130379) for the dwelling. The change is that the dwelling is being placed a further 2m out over the fill area.

Included in the application is an email from you to Graham Wilson dated 1 August 2013 confirming the bearing capacity is acceptable.

Can you clarify whether the check was carried out for the new siting?

Our preslab inspection was carried out a month later so the boxing may not have been in place at that stage, so I just want to make sure this was accounted for.

Cheers  
Jaime

**Jaime Sherlock**  
Building Control Officer  
Āpiha Whakatū Whare

Kāpiti Coast District  
Council  
Tel 04 296 4700

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**This sheet relevant to plumbing & drainage only**

N/A No Yes

☐ ☐ ☐

Comments

**General**

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Kitchen area (G3/AS1)	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Laundry...	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Bathrooms	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Location of sanitary fixtures	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Plumbing layout	
	Plumber's Reg no.....	Drainlayers Reg no.....
Additional Comments		

**Effluent Disposal Systems**

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Engineering Site Investigation
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Design Specification & Producer Statement
<i>The design criteria should include; Capacity based on bedroom numbers, Loading calculation, site evaluation, soil profile, site characteristics.</i>	
Additional Comments	

**Water Supplies**

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	G 12
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Town supply
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Private scheme
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Type & location
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	

**Sanitary Drainage**

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	G13
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Layout
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Council availability or
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Septic tank design & calcs
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	

**Stormwater Drainage**

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	E1
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Layout
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Council availability
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	

**Sanitary Plumbing**

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	G13
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Layout
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	

Plumbing + Drainage moved 2.0m

Accessibility (D1, G5, F8, NZS 4121)	
N/A No Yes	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Comments
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Car parks
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Projections
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Kerb ramps
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Footpaths / Ramps / Landings
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Entrances
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Public Facilities
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Lifts
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Stairs
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Stair / ramp/ handrails
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Doorways / Doors / Corridors / Lobbies
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Controls
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Places of assembly / entertainment / Recreation
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Warning Systems
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Toilet Facilities / Laundering
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Food preparation / accommodation
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Signs
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Residential Accessibility (D1)
Additional Comments	

Commercial Fire report (C/VM1, C/As1, C/AS2, C/A34, C/AS4, C/AS5, C/AS6, C./AS7, F6, F7, F8)	
N/A No Yes	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Comments
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Risk Group
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Fire cell separation /use of building
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Life rating FRR
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Property rating FRR
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Occupancy numbers
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Means of escape
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Travel distances
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	External walls/unprotected areas / Cladding properties
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Fire resistance to supporting elements/floors/ walls
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Risks to/below escape routes
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Fire safety systems
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Internal surface linings
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Signs
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Hazardous agents / materials / substances on site
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Referral to NZFS Fire Engineering unit
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	

Solid Waste (G15)	
N/A No Yes	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Comments
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Waste bin area
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Environmental health referral
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Alternative (specify reason)
Additional Comments	



<b>Change of Use – Sec 114:</b> <i>(Record decisions and basis for decisions – confirm whether sec 115 applies)</i>		
Date:		
<b>Alteration to Existing Building - Sec 112</b> <i>(Record decisions and basis for decisions – confirm whether sec 118 applies and if so, has it been complied with?). List conditions / communications / actions:</i>		
Date:		
<b>Hazards – Sec 71-74 :</b> <i>(Record decisions and basis for decisions – see under "site plan above already done")</i>		
Date:		
<b>Compliance Schedule – Sec 100 - 107:</b> <i>(Record if new / amended compliance schedule required, and attach copy of replica compliance schedule. Ensure that note is recorded on building consent that new / amended compliance schedule will be issued).</i>		
Date:		

*Note :- Refer to the associate code clause along side each prompt above for compliance or reason of decision*

**Plan checked yet Unsatisfactory**

Refer to the official request for further information correspondence (letter, email or phone call) for final list of required information. For acceptance of returned information refer to addendum to form 436

Signature, name & date

Bldg:

 1/11/13

Plumbing:



Fire:

I am satisfied on reasonable grounds that the provisions of the Building Code are met and the

**Building consent may be granted (refer Bld Act Sec 49(1))**

No Further Information Requests have been made.

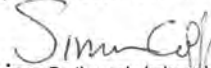
Signature, name & date

Bldg:

( for all pages except those listed below )

 7/5/14

Plumbing: Portion only (relevant NZBC clauses E1,G10,G11,G12,G13)  
(For pages 6 of 11 unless otherwise listed )

 25/10/2013

Fire:

( As listed on page 7 of 11)

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[illegible]

<b>Refusal of Consent</b> <input type="checkbox"/> Letter one sent <input type="checkbox"/> Letter two sent		<b>Consent Refused</b> <input type="checkbox"/> Signature: _____ Date: _____
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<p>I am satisfied on reasonable grounds that the provisions of the Building Code are met and <b>the Building consent may be granted (refer Building Act Sec 49(1)). All previous Further Information Requests now satisfactory</b></p>		<p><b>NOTE:</b> ONLY PAGE 1 OF ADDENDUM WILL BE SIGNED BY THE AUTHORISED BUILDING CONTROL OFFICER</p>
<p>Building:</p>	<p>Signature, name and date</p>	
<p>Plumbing:</p>		
<p>Fire:</p>		

By K. H. C. Time 1:15**Advice of licensed building practitioner(s)**

Owner must notify names of licensed building practitioners before restricted building work commences

Send or deliver this form to:

Building Control, Kāpiti Coast District Council, Private Bag 60-601, Paraparaumu 5254.  
For enquiries, phone (04)296 4700. eMail: [kapiti.council@kapiticoast.govt.nz](mailto:kapiti.council@kapiticoast.govt.nz)Council use only:  
BC Application #

130379

**The building (project location)**

Building name (if applicable)	
Building street address	142 HUIA STREET, WAIKANAЕ

**The project**

Building consent number	130379
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**The owner (must be completed and all details must be the owner's)**

Owner's name (for individuals, state the preferred form of title, e.g. Mr, Mrs, Ms, Miss, Dr. For companies, trusts and other organisations provide a contact person's name)	JULES ESTER & DANA PETERSON		
Address	142 HUIA STREET WAIKANAЕ	Date:	30.08.2013.
Owner's contact details	Landline: 293.8777 Mobile: 0274 761234 (J) After hours:	Fax:	Email: <a href="mailto:dana@fentilfarm.co.nz">dana@fentilfarm.co.nz</a>

**Licensed building practitioners engaged to carry out/supervise restricted building work**

Particular work to be carried out or supervised	Name	Licensing class	Licensed building practitioner number (or registration number if treated as being licensed under section 291 of Act)
CONSTRUCTION OF 3 bdrm Sgl level DWELLING (NEW)	CHRIS MOORE	CARPENTRY	BP105907.
INSTALLATION OF ROOF SPOUTING & COLORSTEEL CLADDING	CHRIS BURGESS	METAL TILE ROOF	BP112371
PLUMBING, DRAINAGE & SOLAR SYSTEM	PETER JACKSON PETER JACKSON PLUMBING	PGDB	11499
ELECTRICAL	ROB WILKINSON BRIEN ELECTRICAL	EWAB	E17151

Note: Continue over page if necessary