

Specification Option Report



Homeworx Design and Build
<http://www.homeworx.co.nz>
invoice@homeworx.co.nz
06 838 8343

Project Name: Schmidli Home

Project Address: Silverton Road Poraite, Napier, Hawkes Bay, New Zealand, 4000

Preliminary and General

Design	Design Costs
Building Consent	Building Consent Fees
Colour Consultation	Colour Consultation
Guarantee	Ten Year Guarantee
Maintenance	30 day full maintenance period with 12 month non-wear and tear maintenance period

Floor

Floor	Engineered Floor 25 mpa concrete and insulating pods
-------	--



Framing

Frames	Frames 2.400 typical stud height
Trusses	Trusses H1.2 Scissor Trusses to living area.
Building wrap	RAB Board 6mm 3.000
Soffit Lining	6.0 mm Hardiflex 3000 x 1200
Soffit Lining	6.0 mm Hardiflex 3000 x 1200
Soffit Jointers	Hardies PVC Jointer 2400 mm x 5.0 mm

Purlins 75 x 50 mm Radiata H1.2 Kiln Dried Gauged SG8

Interior Ceiling Linings

Ceiling Gib 10 mm Ultraline 4800 x 1200 Pearlcoat

Ceiling Gib Garage 10 mm Standard Gib Board 4800 x 1200

Ceiling Gib Wardrobes 10 mm Standard Gib Board 2400 x 1200

Ceiling Gib Bathrooms 10 mm Aqualine 2400 x 1200

Low VOC Glue for Ceiling Gib Bostik Wallboard Gold Adhesive 375 ml



Interior Wall Linings

Wall Lining 10 mm Standard Gib Board 4800 x 1200

Wall Lining Wardrobes 10 mm Standard Gib Board 2400 x 1200

Wall Lining Bathrooms 10 mm Aqualine 2400 x 1200

Wall Lining Garage 12.0 mm Untreated CD Plywood F8 Structural
2400 x 1200

Low VOC Glue for Wall Gib Bostik Wallboard Gold Adhesive 375 ml

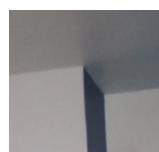


Interior Finishings

Gibstopping Ceiling Level 4 Gibstopping

Gibstopping Walls Level 4 Gibstopping

Wall to Ceiling Joint Square Stopping



Window Architraves	60 x 12 mm Architrave Bevelled Single No 20 MDF	
Interior Door Architraves	60 x 12 mm Architrave Bevelled Single No 20 MDF	
Skirting	85 x 12 mm Architrave Bevelled Single No 32 MDF	
Wet Area Skirting	90 x 10 mm Radiata Finger Jointed Single Bevelled Skirting No 32	
Wardrobe Shelving	18.0 mm MDF Easiplank 2400 x 300	
HWC Shelving	100 x 25 mm Radiata Untreated Kiln Dried Dressed 4 Sides Dressing Grade	

Interior Painting Dulux Wash and Wear (up to four colour choices)



Interior Doors & Joinery

Single Hung Doors	Single Hung Flush Panel 2.000 MDF 3mm skins
Double Hung Doors	Double Hung Flush Panel 2.000 MDF 3mm skins
Passage Door Hardware	Windsor Futura Brushed Nickel Passage Set- Apex
Dummy Door Hardware	Windsor Futura Brushed Nickel Dummy Lever Set - Helix Apex

Privacy Door Hardware	Windsor Futura Brushed Nickel Privacy Set - Apex	
Doorstops	Mardecco 5036 concealed fix	
Magnetic Doorstop	MBN5019 Mardeco Brushed Nickel Magnetic Door Stop	
Entry Doorstop	38mm Doorstop Ali Floor Mount	
Door Painting	Door Spraying - Paint Finish (2.2m flush door)	
Electrical		
27 Interior Downlights	Kore LED 13w 850 lumen dimmable sk warm white 110mm trim diameter	
6 Exterior Wall Lights	Varde 6w AC LED Up/Down Wall Light - Black	
2 Vanity Downlights	Kore LED 13w 850 lumen dimmable sk warm white 110mm trim diameter	
7 Two Way Switching	Two way switching	
2 x Install Owner Supplied Fitting	Install surface mounted light bre Kitchen Pendants (Owner to supply light fittings)	

5 Single Power Point (Appliances)	Single power point	
18 Double Power Point	Double power point	
1 Garage Door	Auto door socket	
2 Shower Fans	Manrose 150mm shower fan Ducted through roof	
4 Voice and Data	Voice data socket -single	
2 Television	Television ariel socket	
1 TV & Sky	TV and Sky TV triple ariel socket	
2 Cavius Smoke Detector	Cavius smoke detector	
Exterior downlights	Kore LED 13w 850 lumen dimmable sk warm white 110mm trim diameter Entry	
Steam Exhaust	Roof vent Bathroom fans and kitchen rangehood.	
2 x Master bedroom wall lights	Install surface mounted light bre Owner to supply fittings	

x Exterior power points

Exterior Power Point



Mains Cable

Copper Mains Cable bre

Effluent System

Waste water treatment connection

Finishing

Floor Tiles

Tile Allowance \$60 m²
Bathroom & Ensuite Tiles: Portino Grey Matt
600x600. No vanity tile splashbacks. Confirmed
with Annika 18/12/2018

Carpet

Pleasant Point

House Clean

Home wash down



Window Clean

Window Clean (Inside and Out)



Home Clean

Construction Clean



Laminate Flooring

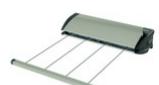
Quickstep Laminate Flooring
Colour: Saw Cut Oak Grey. Confirmed with
Annika 18/12/2018.



Exterior

Clothesline

Sun King Retracting 6 Line Stone Colour



Clothesline Posts

Sun King Retracting Line Post Kit (Stone)

Site Tidy

Kanga Hire and Operator

Kitchen

Kitchen Tapware

Waipori Kitchen Sink Mixer



Kitchen Joinery \$18131

Kitchen Joinery and Bench



Gas Cooktop

Ilve 60cm gas Cooktop ILGP64X
Confirmed 19/01/2019



Oven

Ilve 60cm 9 Function Built in Oven ILO60DCX
Confirmed 19/01/2019



Dishwasher

Ilve 60cm freestanding Dishwasher IVFSD61
Confirmed 19/01/2019



Power Pack Rangehood

Ilve 60cm Low Noise Powerpack Rangehood
CU8960
Confirmed 19/01/2019



Microwave

Panasoni 27L Flat Bed stainless Microwave NN-SF574SQPQ (No turntable)



Fridge

Westinghouse WBE4500SA-R Fridge
To be confirmed whether left or right hinge
before ordering.



Splashback Allowance \$500

Glass Splashback

Plumbing and Drainage

Hot Water

250 Litre mains Pressure hot water cylinder



Heating & Cooling

Bedroom Heater

Artisan 1000 Watt Panel heater wall mounted



Air Conditioning

Daikin Cora FTXM 71 Inverter Wall Mounter Air Conditioner



Esuite Ceiling

Heat Lamp



Bathroom & Laundry

Bathroom Shower

Clearlite Millennium Moulded Wall 900 x 900
Clearlite Millennium Encl 900 angle wall m/wall



Bathroom Shower Mixer

Curb shower mixer



Bathroom Shower Rose

Curb slide shower



Bathroom Towel Rail

COsmo Single Towel Rail 900mm Chrome

Bathroom Vanity

Newtech Citi 2 drawer vanity. White gloss, wall hung



Bathroom Vanity Tapware

Curb Swivel Basin Mixer



Toilet

Heirloom Centro Wall Faced Toilet



Toilet Roll Holder

Caroma Cosmo Toilet Roll Holder



Ensuite Shower

Clearlite Millennium Moulded Wall 900 x 900
Clearlite Millenium Encl 900 2S Square M/Wall



Ensuite Shower Mixer

Curb shower mixer



Ensuite Shower Rose

Curb slide shower



Ensuite Towel Rail

Cosmo Single Towel Raill 600mm Chrome



Ensuite Vanity

Newtech Citi 2 drawer vanity. White gloss, wall hung



Ensuite Vanity Tapware

Curb Swivel Basin Mixer



Ensuite Toilet

Heirloom Centro Wall Faced Toilet



Ensuite Toilet Roll Holder

Caroma Cosmo Toilet Roll Holder



Laundry Unit \$2,346.00

Joinery Allowance

Laundry Tap

Waipori Kitchen Sink Mixer



Exterior Wall Cladding

Garage Door Surround

16.0 mm Hardies Linea Preprimed Grey Facia
180 x 4200

Exterior Paint

Dulux Weathershield X10



Main Cladding

9.0 mm Hardies Axon Panel 2750 x 1200
Colour: Dulux Silkwort. Confirmed with Annika
18/12/2018



Feature Cladding 1

138 x 20 Vulcan Weatherboard Cladding Band
Sawn Face Finish WB12 Uncoated
Natural stain



Feature Cladding 2

180 x 20 Abodo Vulcan Weatherboard Cladding
Band Sawn Face Finish WB12 Uncoated
Natural stain

Exterior Joinery

Windows

Aluminium joinery, double glazed, architraves to
jambs
Colour: Sandstone Grey. Confirmed with Annika
18/12/2018



Entry Door

Axis AX00
Colour: Sandstone Grey. Confirmed with Annika
18/12/2018



Entry Door Handle	Windsor Nitro 450mm Confirmed Front Door handle with Annika 13/12/2018	
Joinery Hardware	Urbo Hardware - Black No Double tongue	
Joinery Glass	Grey Tint Double Glaze	
Obscure Glass	Satinlite Double Glaze Satinlite Obscurity confirmed with Annika 13/12/2018	
Garage Door	Flat Panel Embossed Colour: Sandstone Grey. Confirmed with Annika 18/12/2018	

Roof & Fascia

Roof	Colorsteel Corrugate Colour: Sandstone Grey. Confirmed with Annika 18/12/2018	
Fascia	Axent Fascia - James Hardie Colour: Sandstone Grey. Confirmed with Annika 18/12/2018	
Gutter	135 Continuous Colorsteel Gutter	
Downpipes	PVC Downpipes paint finish	

Analytical Research Laboratories



890 Waitangi Road,
Awatoto,
PO Box 989
Napier 4140

Phone: 0800 100 668
Fax: (06) 835 9223
Email: arl@arllab.co.nz
Website: www.arllab.co.nz

Customer: HOMEWORK
336 MEEANEE ROAD

Supplier ID: -
NAPIER 4210

Service Person: Customer Centre
Name:
Email: gordon@homeworx.co.nz

Customer No: 60886542
Samples Received: 01/03/2019 12:20
Report Issued: 08/03/2019
Total samples: 1
Order Number: HOMEWORK
60886542-HOMEWORK

WATER ANALYSIS REPORT - DRINKING WATER

Water Type: Drinking Water - Untreated	Supply Code: -	Source Code: -	
Sample Name: SCHMIDL	Lab Number: 1732619	Temp on receipt oC:	22.1
Date & Time Sampled:	01/03/2019 12:00	Temp when sampled oC:	-
<hr/>			
Nutrient	Result	Uncertainty of measurement +/-	
pH	7.4	0.15	
Calcium mg/L	108	-	
Magnesium mg/L	3.85	-	
Potassium mg/L	2.62	-	
Sodium mg/L	24.7	1.48	
Copper mg/L	0.0100	0.003	
Zinc mg/L	<0.01	-	
Manganese mg/L	<0.01	0.015	
Iron mg/L	<0.01	-	
Conductivity mS/m at 25oC	64.870	-	
Total Dissolved Solids mg/L **	435	-	
Total Alkalinity (as CaCO ₃) mg/L	262	-	
Chloride mg/L	35	-	
Hardness (as CaCO ₃) mg/L	285	-	
Bicarbonate me/L (as CaCO ₃)	5.2	-	
Free Carbon Dioxide mg/L	13	-	
Boron mg/L	<0.1	-	
Ammoniacal Nitrogen mg/L	0.0500	-	
Nitrate-Nitrogen mg/L	4.05	0.12	
Langelier's Saturation Index (LSI)	0.3	-	

Analysis comment:

Karen Cooper, NZCS, for ARL

Relevant test methods, and their statistical information, are available upon request. Results apply to the sample(s) as received * Test was subcontracted to an outside facility. Bacteriological test(s) subcontracted to Hills Laboratory (IANZ accredited). ** Calculated from conductivity test result. Metals (total) determined directly by EPA 200.2 digestion and ICP-MS. Unless prior authorisation is given in writing, this document may only be reproduced in full.

To be valid for compliance testing, samples must not be frozen and must arrive at the laboratory at a temperature not higher than 10°C or not higher than the original temperature at point of sampling.



Tests indicated as not accredited are outside the scope of the laboratory's accreditation.

Tests not Accredited

Tests subcontracted

Failed NZDWS

Analytical Research Laboratories



890 Waitangi Road,
Awatoto,
PO Box 989
Napier 4140

Phone: 0800 100 668
Fax: (06) 835 9223
Email: arl@arllab.co.nz
Website: www.arllab.co.nz

Customer:	HOMEWORX 336 MEEANEE ROAD	Customer No:	60886542
		Samples Received:	01/03/2019 12:20
		Report Issued:	08/03/2019
		Total samples:	1
	NAPIER 4210	Service Person:	Customer Centre
		Name:	
Supplier ID:	-	Email:	gordon@homeworx.co.nz
<i>60886542-HOMEWORX</i>			

WATER ANALYSIS REPORT - DRINKING WATER

Water Type: Drinking Water - Untreated	Supply Code: -	Source Code:	-
Sample Name: SCHMIDL	Lab Number: 1732619	Temp on receipt oC:	22.1
Date & Time Sampled:	01/03/2019 12:00	Temp when sampled oC:	-
Nutrient	Result	Uncertainty of measurement +/-	
Aluminium (Total) mg/L	<0.020	0.022	
Arsenic (Total) mg/L	<0.002	0.0026	
Barium (Total) mg/L	<0.14	0.21	
Cadmium (Total) mg/L	<0.0008	0.0013	
Chromium (Total) mg/L	<0.01	0.004	
Mercury (Total) mg/L	<0.0014	0.0018	
Molybdenum (Total) mg/L	<0.014	0.0065	
Nickel (Total) mg/L	<0.016	0.008	
Lead (Total) mg/L	<0.002	0.0041	
Antimony (Total) mg/L	<0.004	0.0075	
Selenium (Total) mg/L	0.002040	0.0024	
Uranium (Total) mg/L	<0.004	0.0063	

Analysis comment:

Karen Cooper, NZCS, for ARL

Relevant test methods, and their statistical information, are available upon request. Results apply to the sample(s) as received * Test was subcontracted to an outside facility. Bacteriological test(s) subcontracted to Hills Laboratory (IANZ accredited). ** Calculated from conductivity test result. Metals (total) determined directly by EPA 200.2 digestion and ICP-MS. Unless prior authorisation is given in writing, this document may only be reproduced in full.

To be valid for compliance testing, samples must not be frozen and must arrive at the laboratory at a temperature not higher than 10°C or not higher than the original temperature at point of sampling.



Tests indicated as not accredited are outside the scope of the laboratory's accreditation.

Tests not Accredited

Tests subcontracted

Failed NZDWS

Analytical Research Laboratories



890 Waitangi Road,
Awatoto,
PO Box 989
Napier 4140

Phone: 0800 100 668
Fax: (06) 835 9223
Email: arl@arllab.co.nz
Website: www.arllab.co.nz

Customer: HOMEWORK
336 MEEANEE ROAD

Customer No: 60886542
Samples Received: 01/03/2019
Report Issued: 08/03/2019

NAPIER 4210

Service Person: Customer Centre
Name:

Order Number: HOMEWORK

Supplier ID: -

Email: gordon@homeworx.co.nz

60886542-HOMEWORK

COMMENTS: Reference - Drinking Water Standards for NZ (2005, Revised 2008). Guidelines for Drinking Water Quality (WHO; 4th Edition (2011))

BACTERIA Total Coliforms - Total Coliforms is a generic term to describe a group of bacteria present all around us, most of which are not dangerous to human health. Total coliforms include bacteria that are found in the soil, in water that has been influenced by surface water, and in human or animal waste. However, these bacteria are not naturally present in groundwater and are an indication of general environmental contamination of the supply. A positive test for coliform bacteria can be a reasonable indication for the presence of other pathogenic bacteria.

Escherichia Coli (E. coli) - Unlike other bacteria that comprise the total coliform group of organisms, *E. coli* is generally not found growing and reproducing in the environment. **Consequently, *E. coli* is considered to be a species within the Coliform group that is the best indicator of recent faecal pollution** and the potential for the presence of more dangerous disease causing organisms (or pathogens).

If *E. coli* is present in your water sample, it is strongly advisable that you find an alternative drinking supply until you have eliminated them by treating the water. In the short term, an alternative to treatment is to use of bottled water. Contact a local water reticulation engineer for treatment options.

TOTAL HARDNESS - The most desirable range of total hardness is between 80 and 100 mg/L. Total hardness is a term to describing the accumulation of dissolved calcium and magnesium (largely as carbonates), and other minerals as it "percolates" through the earth. Total hardness less than 80 mg/L may result in corrosive water, while hardness above 100 mg/L may result in the need for more soap during bathing and laundering. Excessive hardness may also lead to scale deposits in pipes, heaters, and boilers. Water softeners will reduce hardness to acceptable levels, but will result in increased sodium concentrations (see Sodium.) Hardness values exceeding 500 mg/L are generally unsuitable for domestic purposes without treatment.

IRON - The recommended limit is 0.3 mg/L. Excessive iron is a nuisance, resulting in the staining (red through brown) of laundry, bathroom fixtures, crockery and clothing. It may also cause undesirable taste in beverages. If left to stand, water from the tap containing high iron levels can result in a red/brown sediment. Reticulated waters with high iron levels can encourage the growth of iron bacteria causing blockages. Iron in drinking water is not a health concern unless at extreme levels. Iron removal units will reduce iron concentrations.

TOTAL ALKALINITY - The acceptable limit is 500 mg/L. Excessive alkalinity may cause stomach upset and encrustation of utensils, pipes, and inside water heaters. High levels can also impart a 'flat' taste to the water and cause "itchy" skin when bathing.

TOTAL DISSOLVED SOLIDS - Levels less than 500 mg/L are considered good. Total dissolved solids indicate the amount of chemical substances dissolved in the water. At increasing levels, palatability decreases. Levels in excess of 1000 mg/L may produce a bad taste.

CHLORIDE - The recommended limit is 250 mg/L. Excessive chlorides give the water a "salty" taste, usually noticeable at about 350 mg/L.

COPPER - Recommended limit is 2 mg/L. Copper usually arises from the corrosive action of water by leaching the copper pipelines. Concentrations above 1 mg/L may cause staining of sanitary ware and laundry. Concentrations above 5 mg/L can impart and colour and bitter taste to the water.

pH - The generally acceptable range for drinking water is between pH 6.5 to 8.5. The pH is the measurement of the water's acidity or alkalinity. Levels below 6.5 may be corrosive, while levels above 8.5 may create scaling problems and impart a bitter taste.

CONDUCTIVITY - Most drinking waters have conductivity measurements below 200 mS/m. The conductivity of water is used to calculate the concentration of dissolved solids.

SODIUM - Over 200 mg/L is considered high and may cause corrosion of the water supply system particularly if the water is warm and alkaline. At this level it may also impart a salty taste. Healthy people drinking water with levels of 200 mg/L or less will cause no harm, however for people on salt-restricted diets or those suffering from hypertension, congestive heart failure or heart disease, the recommended limit is 20 mg/L. Consult your Doctor or use an alternative supply for drinking.

Note: Water softening devices usually increase sodium concentration, while reverse osmosis and distillation units will reduce it.

POTASSIUM - The recommended limit is 20 mg/L. Levels above 100 mg/L may cause a laxative effect, while levels above 340 mg/L may affect taste.

CALCIUM - The recommended limit is 200 mg/L. Excessive calcium may contribute to the formation of kidney or bladder stones. Calcium also contributes to the hardness of water and may cause problems with laundering, washing and bathing. Because calcium is the major contributor to water hardness, consult the comments for Total Hardness.

MAGNESIUM - The recommended limit is 150 mg/L. Magnesium is another element that contributes to the hardness and taste of water. Excessive magnesium may impart a bitter taste, but is normally not a health hazard. Water softeners will reduce the level of both calcium and magnesium in the water.

BICARBONATE - The recommended limit is 1000 mg/L. High levels of bicarbonate can result in a fine white suspension (sodium bicarbonate.) Excessive bicarbonates contribute to the production of scale inside water heaters and hot water jugs.

NITRATE AND NITRITE NITROGEN (NO₃ + NO₂ - N) - The recommended limit is 11.4 mg/L. If these limits are exceeded, excessive fertiliser use, human and/or animal waste contamination should be suspected and an investigation carried out to determine the source. The concentration nitrite and nitrate above the recommended limit (expressed as nitrogen) is potentially dangerous for bottle fed infants because of its ability to cause Methaemoglobinemia or "Blue Baby Syndrome" in which the blood loses its ability to carry sufficient oxygen. In the event that you have high nitrate/nitrite in your water it is important to find an alternative source for making infant formulas. It is important to note that nitrate and nitrite concentrations cannot be reduced by water softeners or boiling.

LANGELIER'S SATURATION INDEX (LSI) - A measure of waters ability to form or remove a calcium carbonate scale on surfaces. Desired measure is between -0.5 and 0.5. Above 0.5 - scale forming, can cause issues concerning water flow and quality. Below -0.5 Not scale forming. Possible corrosion.

Analytical Research Laboratories



890 Waitangi Road,
Awatoto,
PO Box 989
Napier 4140

Phone: 0800 100 668
Fax: (06) 835 9223
Email: arl@arllab.co.nz
Website: www.arllab.co.nz

Customer:	HOMEWORX 336 MEEANEE ROAD	Customer No:	60886542
		Samples Received:	01/03/2019
		Report Issued:	08/03/2019
	NAPIER 4210	Service Person:	Customer Centre
		Name:	
Supplier ID:	-	Email:	gordon@homeworx.co.nz

60886542-HOMEWORX

Drinking Water Methods Summary

The following table, as required by the Drinking-Water Standards New Zealand (Section 8.3.6), provides a brief description of the methods, and their reporting limits, used in analysis of the Drinking Water sample(s), as supplied.

A 'Reporting Limit' is a figure, which represents the lowest result to which the laboratory is confident to report to. Taking into account the sample supplied, the instrument sensitivity and the uncertainty of measurement for each analysis. Reporting Limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that additional dilutions are performed during the analysis.

Test	Method Description	Reporting Limit
Escherichia coli (E.coli)	Using Colilert 18 Test Kit System	1 MPN/100mL
Total Coliforms		1 MPN/100mL
pH	Using a calibrated pH meter	N/A
Calcium		0.1 mg/L
Magnesium		0.1 mg/L
Potassium		0.1 mg/L
Sodium		0.1 mg/L
Zinc		0.01 mg/L
Manganese		0.01 mg/L
Iron		0.01 mg/L
Boron		0.1 mg/L
Copper		0.01 mg/L
Conductivity	Using a calibrated conductivity meter	1 mS/m
Total Dissolved Solids	Calculation based upon Conductivity	10 mg/L
Alkalinity	Titration with hydrochloric acid	5 mg/L
Chloride	Potentiometric titration / ISE?	2 mg/L
Hardness (as CaCO ₃)	Calculation based upon Ca and Mg concentration	5 mg/L
Bicarbonate (as CaCO ₃)	Calculation based upon Alkalinity	0.1 me/L
Free carbon dioxide	Titration with sodium hydroxide	5 mg/L
Nitrate-N*	Reduction to nitrite via cadmium column, with analysis on Flow Injection Analyser (FIA)	0.02 mg/L
Nitrite-N*		0.02 mg/L
Ammoniacal-N*	Berthelot reaction with analysis on FIA	0.02 mg/L
Antimony		0.004 mg/L
Aluminium		0.02 mg/L
Arsenic		0.002 mg/L
Barium		0.14 mg/L
Cadmium	Based upon the US EPA 200.2 extraction and US EPA 200.8 analysis (ICP-MS)	0.0008 mg/L
Chromium		0.01 mg/L
Lead		0.002 mg/L
Mercury		0.0014 mg/L
Molybdenum		0.014 mg/L
Nickel		0.016 mg/L
Selenium		0.002 mg/L
Uranium		0.004 mg/L

* Results stated as 'nitrogen component', NOT as nitrate, nitrite or ammonia

Analytical Research Laboratories



890 Waitangi Road,
Awatoto,
PO Box 989
Napier 4140

Phone: 0800 100 668
Fax: (06) 835 9223
Email: arl@arllab.co.nz
Website: www.arllab.co.nz

Customer:	HOMEWORX 336 MEEANEE ROAD	Customer No:	60886542
		Samples Received:	01/03/2019 12:20
		Report Issued:	02/03/2019
		Total samples:	1
NAPIER 4210	Service Person: Customer Centre Name:	Order Number:	HOMEWORX MICRO
Supplier ID: -	Email: gordon@homeworx.co.nz	<i>60886542-HOMEWORX MICRO</i>	

WATER ANALYSIS REPORT - DRINKING WATER

Water Type: Drinking Water - Untreated	Supply Code: -	Source Code:	-
Sample Name: SCHMIDL MICRO	Lab Number: 1732620	Temp on receipt oC:	21.1
Date & Time Sampled:	01/03/2019 12:00	Temp when sampled oC:	-
Nutrient	Result	Uncertainty of measurement +/-	
Total Coliforms MPN/100 mL	<1	-	
E. coli MPN/100 mL	<1	-	

Analysis comment:

Karen Cooper, NZCS, for ARL

Relevant test methods, and their statistical information, are available upon request. Results apply to the sample(s) as received * Test was subcontracted to an outside facility. Bacteriological test(s) subcontracted to Hills Laboratory (IANZ accredited). ** Calculated from conductivity test result. Metals (total) determined directly by EPA 200.2 digestion and ICP-MS. Unless prior authorisation is given in writing, this document may only be reproduced in full.

To be valid for compliance testing, samples must not be frozen and must arrive at the laboratory at a temperature not higher than 10°C or not higher than the original temperature at point of sampling.



Tests indicated as not accredited are outside the scope of the laboratory's accreditation.

Tests not Accredited

Tests subcontracted

Failed NZDWS

Analytical Research Laboratories



890 Waitangi Road,
Awatoto,
PO Box 989
Napier 4140

Phone: 0800 100 668
Fax: (06) 835 9223
Email: arl@arllab.co.nz
Website: www.arllab.co.nz

Customer: HOMEWORKX
336 MEEANEE ROAD

Customer No: 60886542
Samples Received: 01/03/2019
Report Issued: 02/03/2019

NAPIER 4210

Service Person: Customer Centre
Name:

Order Number: HOMEWORKX MICRO

Supplier ID: -

Email: gordon@homeworx.co.nz

60886542-HOMEWORKX MICRO

COMMENTS: Reference - Drinking Water Standards for NZ (2005, Revised 2008). Guidelines for Drinking Water Quality (WHO; 4th Edition (2011))

BACTERIA Total Coliforms - Total Coliforms is a generic term to describe a group of bacteria present all around us, most of which are not dangerous to human health. Total coliforms include bacteria that are found in the soil, in water that has been influenced by surface water, and in human or animal waste. However, these bacteria are not naturally present in groundwater and are an indication of general environmental contamination of the supply. A positive test for coliform bacteria can be a reasonable indication for the presence of other pathogenic bacteria.

Escherichia Coli (E. coli) - Unlike other bacteria that comprise the total coliform group of organisms, *E. coli* is generally not found growing and reproducing in the environment. **Consequently, *E. coli* is considered to be a species within the Coliform group that is the best indicator of recent faecal pollution** and the potential for the presence of more dangerous disease causing organisms (or pathogens).

If *E. coli* is present in your water sample, it is strongly advisable that you find an alternative drinking supply until you have eliminated them by treating the water. In the short term, an alternative to treatment is to use of bottled water. Contact a local water reticulation engineer for treatment options.

TOTAL HARDNESS - The most desirable range of total hardness is between 80 and 100 mg/L. Total hardness is a term to describing the accumulation of dissolved calcium and magnesium (largely as carbonates), and other minerals as it "percolates" through the earth. Total hardness less than 80 mg/L may result in corrosive water, while hardness above 100 mg/L may result in the need for more soap during bathing and laundering. Excessive hardness may also lead to scale deposits in pipes, heaters, and boilers. Water softeners will reduce hardness to acceptable levels, but will result in increased sodium concentrations (see Sodium.) Hardness values exceeding 500 mg/L are generally unsuitable for domestic purposes without treatment.

IRON - The recommended limit is 0.3 mg/L. Excessive iron is a nuisance, resulting in the staining (red through brown) of laundry, bathroom fixtures, crockery and clothing. It may also cause undesirable taste in beverages. If left to stand, water from the tap containing high iron levels can result in a red/brown sediment. Reticulated waters with high iron levels can encourage the growth of iron bacteria causing blockages. Iron in drinking water is not a health concern unless at extreme levels. Iron removal units will reduce iron concentrations.

TOTAL ALKALINITY - The acceptable limit is 500 mg/L. Excessive alkalinity may cause stomach upset and encrustation of utensils, pipes, and inside water heaters. High levels can also impart a 'flat' taste to the water and cause "itchy" skin when bathing.

TOTAL DISSOLVED SOLIDS - Levels less than 500 mg/L are considered good. Total dissolved solids indicate the amount of chemical substances dissolved in the water. At increasing levels, palatability decreases. Levels in excess of 1000 mg/L may produce a bad taste.

CHLORIDE - The recommended limit is 250 mg/L. Excessive chlorides give the water a "salty" taste, usually noticeable at about 350 mg/L.

COPPER - Recommended limit is 2 mg/L. Copper usually arises from the corrosive action of water by leaching the copper pipelines. Concentrations above 1 mg/L may cause staining of sanitary ware and laundry. Concentrations above 5 mg/L can impart and colour and bitter taste to the water.

pH - The generally acceptable range for drinking water is between pH 6.5 to 8.5. The pH is the measurement of the water's acidity or alkalinity. Levels below 6.5 may be corrosive, while levels above 8.5 may create scaling problems and impart a bitter taste.

CONDUCTIVITY - Most drinking waters have conductivity measurements below 200 mS/m. The conductivity of water is used to calculate the concentration of dissolved solids.

SODIUM - Over 200 mg/L is considered high and may cause corrosion of the water supply system particularly if the water is warm and alkaline. At this level it may also impart a salty taste. Healthy people drinking water with levels of 200 mg/L or less will cause no harm, however for people on salt-restricted diets or those suffering from hypertension, congestive heart failure or heart disease, the recommended limit is 20 mg/L. Consult your Doctor or use an alternative supply for drinking.

Note: Water softening devices usually increase sodium concentration, while reverse osmosis and distillation units will reduce it.

POTASSIUM - The recommended limit is 20 mg/L. Levels above 100 mg/L may cause a laxative effect, while levels above 340 mg/L may affect taste.

CALCIUM - The recommended limit is 200 mg/L. Excessive calcium may contribute to the formation of kidney or bladder stones. Calcium also contributes to the hardness of water and may cause problems with laundering, washing and bathing. Because calcium is the major contributor to water hardness, consult the comments for Total Hardness.

MAGNESIUM - The recommended limit is 150 mg/L. Magnesium is another element that contributes to the hardness and taste of water. Excessive magnesium may impart a bitter taste, but is normally not a health hazard. Water softeners will reduce the level of both calcium and magnesium in the water.

BICARBONATE - The recommended limit is 1000 mg/L. High levels of bicarbonate can result in a fine white suspension (sodium bicarbonate.) Excessive bicarbonates contribute to the production of scale inside water heaters and hot water jugs.

NITRATE AND NITRITE NITROGEN (NO₃ + NO₂ - N) - The recommended limit is 11.4 mg/L. If these limits are exceeded, excessive fertiliser use, human and/or animal waste contamination should be suspected and an investigation carried out to determine the source. The concentration nitrite and nitrate above the recommended limit (expressed as nitrogen) is potentially dangerous for bottle fed infants because of its ability to cause Methaemoglobinemia or "Blue Baby Syndrome" in which the blood loses its ability to carry sufficient oxygen. In the event that you have high nitrate/nitrite in your water it is important to find an alternative source for making infant formulas. It is important to note that nitrate and nitrite concentrations cannot be reduced by water softeners or boiling.

LANGEIER'S SATURATION INDEX (LSI) - A measure of waters ability to form or remove a calcium carbonate scale on surfaces. Desired measure is between -0.5 and 0.5. Above 0.5 - scale forming, can cause issues concerning water flow and quality. Below -0.5 Not scale forming. Possible corrosion.

Analytical Research Laboratories



890 Waitangi Road,
Awatoto,
PO Box 989
Napier 4140

Phone: 0800 100 668
Fax: (06) 835 9223
Email: arl@arllab.co.nz
Website: www.arllab.co.nz

Customer: HOMEWORKX
336 MEEANEE ROAD

Customer No: 60886542
Samples Received: 01/03/2019

Report Issued: 02/03/2019

NAPIER 4210

Service Person: Customer Centre

Order Number: HOMEWORKX MICRO

Name:

Supplier ID: -

Email: gordon@homeworkx.co.nz

60886542-HOMEWORKX MICRO

Drinking Water Methods Summary

The following table, as required by the Drinking-Water Standards New Zealand (Section 8.3.6), provides a brief description of the methods, and their reporting limits, used in analysis of the Drinking Water sample(s), as supplied.

A 'Reporting Limit' is a figure, which represents the lowest result to which the laboratory is confident to report to. Taking into account the sample supplied, the instrument sensitivity and the uncertainty of measurement for each analysis. Reporting Limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that additional dilutions are performed during the analysis.

Test	Method Description	Reporting Limit
Escherichia coli (E.coli)	Using Colilert 18 Test Kit System	1 MPN/100mL
Total Coliforms		1 MPN/100mL
pH	Using a calibrated pH meter	N/A
Calcium		0.1 mg/L
Magnesium		0.1 mg/L
Potassium		0.1 mg/L
Sodium		0.1 mg/L
Zinc		0.01 mg/L
Manganese		0.01 mg/L
Iron		0.01 mg/L
Boron		0.1 mg/L
Copper		0.01 mg/L
Conductivity	Using a calibrated conductivity meter	1 mS/m
Total Dissolved Solids	Calculation based upon Conductivity	10 mg/L
Alkalinity	Titration with hydrochloric acid	5 mg/L
Chloride	Potentiometric titration / ISE?	2 mg/L
Hardness (as CaCO ₃)	Calculation based upon Ca and Mg concentration	5 mg/L
Bicarbonate (as CaCO ₃)	Calculation based upon Alkalinity	0.1 me/L
Free carbon dioxide	Titration with sodium hydroxide	5 mg/L
Nitrate-N*	Reduction to nitrite via cadmium column, with analysis on Flow Injection Analyser (FIA)	0.02 mg/L
Nitrite-N*		0.02 mg/L
Ammoniacal-N*	Berthelot reaction with analysis on FIA	0.02 mg/L
Antimony		0.004 mg/L
Aluminium		0.02 mg/L
Arsenic		0.002 mg/L
Barium		0.14 mg/L
Cadmium		0.0008 mg/L
Chromium		0.01 mg/L
Lead		0.002 mg/L
Mercury		0.0014 mg/L
Molybdenum		0.014 mg/L
Nickel		0.016 mg/L
Selenium		0.002 mg/L
Uranium		0.004 mg/L

* Results stated as 'nitrogen component', NOT as nitrate, nitrite or ammonia



New Home

PROJECT SPECIFICATION

Schmidli Home

50 Silverton Road

Poraiti

Napier

Issued for Consent

PROJECT OVERVIEW

Scope

Single level timber framed home on concrete ribraft floor. Colorsteel corrugate roof with Axon Panel and Abodo Vulcan cladding.

Address

Site Address	50 Silverton Road
Suburb	Poraiti
City	Napier
Lot #	1
DP #	522712

Site Conditions

Wind Zone	EH - Extra High Wind Speed
Earthquake Zone	Zone 3
Exposure Zone	Zone C - Medium
Snow Loading Zone	Zone N1

TABLE OF CONTENTS

Preliminaries & General.....	4
Project Quality.....	4
Works Management.....	5
Project Overview	7
Carpentry.....	14
Timber Framing	14
GIB® Plasterboard Sheets.....	18
James Hardie Eaves & Soffits	20
Abodo Weatherboard Cladding	22
Plasterwork.....	31
Plasterboard Finish.....	31
Roofing	33
Profiled Metal Roofing	33
Aluminium Joinery.....	40
Aluminium Windows & Doors	40
Insulation	43
Pink® Batts® Insulation.....	43
Tiling	48
Tiling.....	48
Painting & Decorating.....	55
General.....	55
Floor Coverings	58
Carpet & Resilient Floor Coverings.....	58
Overlay Flooring	60
Plumbing.....	64
Workmanship	64
Materials	66
Systems	67
Elements.....	68
Drainlaying.....	69
Workmanship	69
Electrical	71
Workmanship	71
Systems	73
Materials & Control.....	73

1 PRELIMINARIES & GENERAL

1.1 Project Quality

1.1.1 Protection

Precautions

Take all appropriate precautions to protect all third party property, services, etc. and indemnify the Principal against any claims arising from the construction operations. Any damage to third party property caused by construction activities or failure to protect shall be rectified as soon as possible by the person causing the damage, or by appropriately qualified trades-persons employed by the person responsible for the damage if necessary.

Adverse Weather

Suspend operations during weather which would affect the quality of work in progress. Secure the works as soon as possible against adverse weather, dust and vandals. Avoid structural damage that is caused by overloading.

Protect Finished Work

Adequately protect all finished work and maintain until the date of Practical Completion. Each trade shall protect the work of all other trades, and each trade is responsible for making good any damage they cause to finished works. Arrange special protection as required for windows and doors, finished timber work, plumbing fittings and hardware, and cabinets and other joinery.

1.1.2 Responsibility

Contractor Responsibility

The Contractor will be held responsible for the full period of his legal responsibility in connection with this Contract for ensuring that all work execution, materials, and fittings, are completely in accordance with Contract requirements.

Guarantees

Contractor is responsible to the Principal for the appropriateness and fitness, in relation to a reasonable expectation or requirement, of all of the materials and workmanship incorporated into the works by himself or his subcontractors; for this reason few specific guarantees are required in these contract documents.

The terms and conditions of any warranty or guarantee required or provided shall not in any way negate the minimum remedies available under common law as if no warranty or guarantee had been furnished.

Good Trade Practice

Workmanship in all trades is required to be equal to or better than recognised good trade practice.

Notification

Should any tradesperson consider that the surface finish or general conditions of previous work are unsatisfactory to ensure a proper finish for their own work thereon, that tradesperson shall give immediate notice to the Contractor or Architect/Designer as appropriate and shall not proceed until necessary improvements have been made. Failing such notice the trade concerned will not be relieved of the responsibility for a poor finish due to such unsatisfactory condition.

Substrates

Specialist Finishes Subcontractors are responsible for ensuring that substrates are completely appropriate for them to achieve first class results, and to this end shall, in sufficient time, instruct the Contractor with regard any fixings, primings, sealings or whatever for the substrate that vary in any way from the substrate manufacturer's standard recommendations. The contractor shall advise the Architect/Designer with regard these variances, and not proceed until the Architect/Designer has agreed to them.

Watertightness Detailing

The Contractor and all Subcontractors affected shall be jointly and severally responsible for completion of the whole of the works in a completely watertight condition and shall therefore examine all details to be satisfied that this condition can be achieved. If any detail is considered unsatisfactory the Architect/Designer shall be notified immediately and he will then either interpret the detail to the Contractor's satisfaction, or accept responsibility for watertightness at points in question, always assuming reasonable workmanship.

Systems Installation

For all electronic/ electrical/ mechanical operating systems all work and all necessary materials and items incidental to the primary item specified, that are incorporated into the works, shall be such as to leave a neat, efficient, easily maintained and robust installation, completely in accordance with all recommendations of the primary items manufacturers. Where appropriate source all parts of a system from a single supplier or manufacturer.

Compatibility

Ensure that all parts of a construction or finish are compatible and that their individual use is approved by the manufacturers and/or suppliers of other parts of the system.

1.2 Works Management

1.2.1 Setting Out

Basic Site Setout

The Contractor is responsible for accurate setting out of the works. It is recommended that the Contractor engage a Registered Surveyor to establish the basic site setout and the floor levels.

Setout Info for Subcontractors

The Contractor shall provide all necessary setting out information and component dimensions for subcontractors and shall check and be responsible for the accuracy of their work.

1.2.2 Co-ordination of the works

Co-ordinate the works of all trades to ensure efficient progress of the works. Ensure that all holes, sleeves, penetrations, supports etc. that are required for services are correctly incorporated as work proceeds. Identify and sufficiently forward notify the appropriate persons of all deadlines for the supply of components, fittings, information, etc.

1.2.3 Authorities and Charges

Building Code

Comply with all relevant provisions of the NZ Building Code, and with all relevant territorial or statutory authority regulations, by-laws, obligations etc. Give all required notices.

Consents

The Principal has obtained a Land Use Consent. The Principal has applied for and paid for the Project Information Memoranda, the Building Consent and other approvals required for the works to start. The PIM and Building Consent will be forwarded to the contractor as quickly as possible after they are issued by the Territorial Authority.

Note: It is an offence under the Building Act to carry out work not in accordance with a building consent.

Building Consent Conditions

Should the building consent be subject to any conditions which modify the contract documents in any way, the Architect/Designer reserves the right to negotiate any or all of these modifying conditions with the Building Consent Authority. If after these negotiations additional work is required, it will be handled as a variation to the contract.

Code Compliance Certificate

The Principal will apply for the Code Compliance Certificate and any other licenses or approvals for the building to be used. However Practical Completion will NOT be certified until the CCC inspection has occurred and any additional works required by the local Building Consent Authority has been completed. To this end it is recommended that the Contractor obtains all required certificates, guarantees, as-built drawings, etc. required for the CCC application as work proceeds, to facilitate application for the CCC as soon as the works are completed. For his part, the Principal hereby undertakes to apply for the CCC within one day of all required material being in hand. Likewise, the Contractor should have the capacity available to attend upon as soon as possible to any items identified by the Building Consent Authority as being required prior to the issue of the CCC.

1.2.4 Standards

New Zealand Standards (NZS), Australian Standards (AS), joint Standards (AS/NZS), British Standards (BS), Acts of Parliament, Regulations made thereunder, Codes of Practice, and any specific Manufacturer's Instructions or Manufacturer's Recommendations that are referred to in the Contract Documents shall all be deemed to be the latest published edition thereof at the time of drawings issue and shall be followed by the Contractor and all Subcontractors to the full extent applicable consistent with the intent of this Contract. Documents cited within other cited publications are deemed to form part of this specification.

Where Standards have a number of Divisions, e.g. AS/NZS 3500.1, AS/NZS 3500.2, etc., each of the Divisions relevant to this project is deemed to form part of this specification.

Retain current copies of significant cited documents and manufacturer's technical literature on the site.

1.2.5 Cleaning and Completion

Site Cleaning

Clear construction debris and rubbish from the works at regular intervals, and additionally if so instructed by the Architect/Designer. Clean each space thoroughly before commencing any finishing works.

Practical Completion

In preparation for the Practical Completion inspection carry out the following:

- Clean the works thoroughly, removing all debris, surplus materials, splashes, marks, temporary markings, etc. All cleaning methods and materials shall be as recommended by the manufacturer of the item being cleaned.
- Remove protective wrappings and coverings unless otherwise directed.
- Touch up minor painting faults, carefully matching colour, and brushing out edges. Repaint any badly marked surfaces back to suitable break lines.
- Adjust, ease and/or lubricate as required all doors, drawers, controls and other moving parts to ensure their efficient operation.
- Any other works required to leave all spaces ready for immediate occupation and all electronic / electrical / mechanical systems fully operational.
- Clean out all spoutings, gutters, downpipes, and gullies and flush out all drains.
- Clean all sanitary appliances and check all aspects of the water services.
- Thoroughly re-inspect all aspects of the works (and have any defects fully rectified) to be certain that the works are completely ready for the Practical Completion inspection - if an unreasonable number of items are noted by the Architect/Designer during the inspection it will be terminated and then rescheduled for at least a week forward to allow for proper completion to be achieved.

Certification

Note that a Code Compliance Certificate must be obtained before Practical Completion will be certified. Obtain all required certificates, guarantees, as-built drawings etc. as work proceeds to enable the CCC application to be submitted as soon as construction is completed.

1.3 Project Overview

1.3.1 Protection

Take all appropriate precautions to protect all third party property, services, etc., and indemnify the Principal against any claims arising from the construction operations. Any damage to third party property caused by construction activities or failure to protect shall be rectified as soon as possible by the person causing the damage, or by appropriately qualified trades-persons employed by the person responsible for the damage if necessary.

Suspend operations during weather which would affect the quality of work in progress. Secure the works as soon as possible against adverse weather, dust and vandals. Avoid structural damage that is caused by overloading.

Adequately protect all finished work and maintain until the date of Practical Completion. Each trade shall protect the work of all other trades, and each trade is responsible for making good any damage they cause to finished works. Arrange special protection as required for windows and doors, finished timber work, plumbing fittings and hardware, cabinets and other joinery, and similar items.

1.3.2 Responsibility

The Contractor will be held responsible for the full period of his legal responsibility in connection with this Contract for ensuring that all work execution, materials, and fittings, are completely in accordance with Contract requirements.

The Contractor is responsible to the Principal for the appropriateness and fitness, in relation to a reasonable expectation or requirement, of all of the materials and workmanship incorporated into the works by himself or his subcontractors; for this reason few specific guarantees are required in these contract documents. The terms and conditions of any warranty or guarantee required or provided shall not in any way negate the minimum remedies available under common law as if no warranty or guarantee had been furnished.

No apparent expression of the Architect's/Designer's reasonable satisfaction shall be deemed to be acceptance of defective materials or workmanship within the terms of the Contract or to be an authority for any Variation except where such Variation is authorised as provided for in the Contract. Instructions that are given verbally are deemed to be instructions for proper execution of the works and do not involve extra charges.

Workmanship in all trades is required to be equal to or better than recognised good trade practice. The Contractor shall provide all necessary setting out information and component dimensions for subcontractors and shall check and be responsible for the accuracy of their work.

Should any tradesperson consider that the surface finish or general conditions of previous work are unsatisfactory to ensure a proper finish for their own work thereon, that tradesperson shall give immediate notice to the Contractor or Architect/Designer as appropriate and shall not proceed until all necessary improvements have been made. Failing such notice the trade concerned will not be relieved of responsibility for a poor finish due to such unsatisfactory condition.

Specialist Finishes Subcontractors are responsible for ensuring that substrates are completely appropriate for them to achieve first class results, and to this end shall, in sufficient time, instruct the Contractor with regard any fixings, primings, sealings or whatever for the substrate that vary in any way from the substrate manufacturer's standard recommendations. The Contractor shall advise the Architect/Designer with regard these variances, and not proceed until the Architect/Designer has agreed to them.

The Contractor and all Subcontractors affected shall be jointly and severally responsible for completion of the whole of the works in a completely watertight condition and shall therefore examine all details to be satisfied that this condition can be achieved. If any detail is considered unsatisfactory the Architect/Designer shall be notified immediately and he/she will then either interpret the detail to the Contractor's satisfaction, or accept responsibility for watertightness at the points in question, always assuming reasonable workmanship.

Ensure that all materials or items incorporated into any particular construction or finish are compatible and that their individual use is approved by the manufacturers and/or suppliers of the other parts of the system.

For all electronic/electrical/mechanical operating systems all work and all necessary materials and items incidental to the primary item specified, that are incorporated into the works, shall be such as to leave a neat, efficient, easily maintained and robust installation, completely in accordance with all of the recommendations of the primary items' manufacturers. Where appropriate, source all parts of a system from a single supplier or manufacturer.

The Contractor shall make provision for all temporary works and services required for the satisfactory completion of the contract works. The Contractor shall pay all associated costs and fees; carry out all necessary maintenance, alterations and servicing requirements; and remove temporary works and services on completion of the contract works. Temporary works and services shall comply with the requirements New Zealand Building Code.

1.3.3 Specification

This Specification covers contract administration, standards, materials quality, workmanship and the scope of works only: the exact nature of the works and all specialist items, descriptions, etc., are contained on the drawings, which also take full precedence.

All clauses in all specification sections apply to their full extent and meaning to the entire Contract. Trade sections and paragraphs have been introduced into this specification for reference only and it shall not be construed that each trade section is a complete segregation of the materials and labour of that trade. The onus is on all trades to be conversant with any and all clauses which in any way affect their work.

(Be aware that the 'scope' noted in the 'Project Overview', and scope and general extent clauses within this specification, are included to provide a general indication only and must NOT be interpreted as schedules of quantities - the exact nature and extent of all aspects of the works are shown on the drawings).

1.3.4 Standards

New Zealand Standards (NZS), Australian Standards (AS), Joint Standards (AS/NZS), British Standards (BS), Acts of Parliament, Regulations made thereunder, Codes of Practice, and any specific Manufacturer's Instructions or Manufacturer's Recommendations that are referred to in these Contract Documents shall all be deemed to be the latest published edition thereof at the time of drawings issue, and shall be followed by the Contractor and all Subcontractors to the full extent applicable consistent with the intent of this Contract. Documents cited within other cited publications are deemed to form part of this specification.

Where Standards have a number of Divisions, e.g. AS/NZS 3500.1, AS/NZS 3500.2, etc., each of the Divisions relevant to this project is deemed to form part of this specification.

Retain current copies of significant cited documents and manufacturer's technical literature on the site.

1.3.5 Authorities and Charges

Comply with all relevant provisions of the NZ Building Code, and with all relevant territorial or statutory authority regulations, by-laws, obligations, etc. Give all required notices.

The Principal has obtained a Land Use Consent. The Principal has applied for and paid for the Project Information Memoranda, the Building Consent and other approvals required for the works to start. The PIM and Building Consent will be forwarded to the Contractor as quickly as possible after they are issued by the Territorial Authority. Note: It is an offence under the Building Act to carry out work not in accordance with a Building Consent.

Should the Building Consent be subject to any conditions which modify the requirements of the Contract Documents in any way, the Architect/Designer reserves the right to negotiate any or all of these modifying conditions with the Building Consent Authority. If after these negotiations additional work is required, it will be handled as a Variation to the Contract.

1.3.6 Code Compliance Certificate

The Principal will apply for the Code Compliance Certificate (CCC) and any other licenses or approvals for the building to be used. However, Practical Completion will NOT be certified until the CCC inspection has occurred and any additional works required by the local Building Consent Authority have been completed. To this end it is recommended that the Contractor obtains all required certificates, guarantees, Producer Statements, as-built drawings, etc., required for the CCC application as work proceeds, to facilitate application for the CCC as soon as the works are completed. For his part, the Principal hereby undertakes to apply for the CCC within one day of all required material being in hand. Likewise, the Contractor should have capacity available to attend as quickly as possible to any items identified by the Building Consent Authority as being required prior to the issue of the CCC.

1.3.7 Coordination of the Works

Coordinate the works of all trades to ensure efficient progress of the works. Ensure that all holes, sleeves, penetrations, supports, etc., that are required for services are correctly incorporated as work proceeds. Identify and sufficiently forward-notify the appropriate persons of all deadlines for the supply of fittings, components, information, etc.

1.3.8 Documents Interpretation

Except where they are clearly to the contrary, all dimensions are deemed to be to the bare surface of concrete, masonry, timber framing or other basic construction material. All figured dimensions take precedence over scaled sizes. Where any detail is included in more than one drawing the larger scale detail takes precedence. Where any ambiguity exists refer to the Architect/Designer for interpretation.

The word 'provide' and the word 'fix' used separately in the Documents shall be taken to mean 'provide and fix' unless otherwise stated.

When the term 'allow' occurs in the Documents, except with reference to Monetary Allowances, the cost of the item shall be at the risk of the Contractor.

The terms 'approved', 'directed', and 'selected' when used in the Documents refers to the approval, direction or selection of or by the Architect/Designer. Please give adequate notice of when these decisions are required. 'Architect/Designer' shall mean the Architect or Designer, their representative or any Consulting Engineer engaged by the Architect/Designer.

1.3.9 Work Shown and Mentioned

The Contract Documents show the extent and nature of the works but there is no warranty expressed or implied that they show each and every minor detail or item required to be included by the Contractor. Should any material, structural member, fixing, or item or work appear to be inadequately described, yet obviously necessary for the neat, strong and satisfactory completion of the work, it shall be incorporated into the Contract Works.

1.3.10 Site Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance. Comply with the relevant provisions of the New Zealand Building Code, in particular Clause F5.

So far as is reasonably practicable and according to a PCBU's (person conducting a business or undertaking) primary duty of care, take all necessary steps required 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 site safety rules and are not unnecessarily exposed to hazards.

Each PCBU, so far as is reasonably practicable, must ensure the health and safety of workers, and that other people are not put at risk by its work. If more than one PCBU has a duty in relation to the same matter, each PCBU with the duty must, so far as is reasonably practicable, consult, co-operate with, and co-ordinate activities with all other PCBUs who have a duty in relation to the same matter. PCBUs can enter reasonable agreements with other PCBUs to meet their duties, but cannot contract out of their duties.

Notify WorkSafe as soon as possible when a notifiable event occurs. Take all reasonable steps to preserve the site of the notifiable event in accordance with WorkSafe requirements. Ensure that the site of the event is not disturbed until authorised otherwise by WorkSafe. Keep records of all notifiable events.

Scaffolding shall comply with all Statutory and Local Authority Regulations, with the WorkSafe 'Best Practice Guidelines for Scaffolding', AS/NZS 1576 (Scaffolding equipment), AS/NZS 4576 (Guidelines for Scaffolding), and AS/NZS 4994 (Roof edge scaffolding), and shall be maintained for the duration and removed on completion.

The use of ballistic fixings must absolutely comply with all relevant safety recommendations at all times. No rubbish fires are allowed on site. Portable/personal disc/tape players, radios and iPods must not be used anywhere on the site. No smoking on site, except in the designated location in accordance with the Smoke Free Environments Act 1990, the location of which will be determined by the Contractor, with the approval of the Principal.

A PCBU's primary duty of care includes, but is not limited to, so far as is reasonably practicable:

- providing and maintaining a work environment that is without risks to health and safety;
- providing and maintaining safe plant and structures;
- providing and maintaining safe systems of work;

- ensuring the safe use, handling and storage of plant, structures and substances;
- providing adequate facilities for the welfare at work of workers in carrying out work for the business or undertaking, including ensuring access to those facilities;
- providing any information, training, instruction, or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking;
- monitoring the health of workers and the conditions at the workplace for the purpose of preventing injury or illness of workers arising from the conduct of the business or undertaking.

Before commencing work on the site, PCBU's and staff must become familiar with the Hazardco site specific safety plan and complete relevant induction cards, or shall prepare and submit to the contract administrator an alternative health and safety plan for approval before commencing work. The health and safety plan includes, but not be limited to:

- the health and safety of all people on the site and on other properties, and the general public;
- 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.

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

1.3.11 Cleaning and Completion

Clear construction debris and rubbish from the works at regular intervals, and additionally if so instructed by the Architect/Designer. Clean each space thoroughly before commencing any finishing works.

In preparation for the Practical Completion inspection carry out the following:

- Clean the works thoroughly, removing all debris, surplus materials, splashes, marks, temporary markings, etc. (All cleaning methods and materials shall be as recommended by the manufacturer of the item being cleaned).
- Remove protective wrappings and coverings unless otherwise directed.
- Touch up minor painting faults, carefully matching colour, and brushing out edges. Repaint any badly marked surfaces back to suitable break-lines.
- Adjust, ease and/or lubricate as required all doors, drawers, controls and other moving parts to ensure their efficient operation.
- Any other works required to leave all spaces ready for immediate occupation and all electronic/electrical/mechanical systems fully operational.
- Clean out all spoutings, gutters, downpipes, and gullies and flush out all drains.
- Clean all sanitary appliances and check all aspects of the water services.
- Thoroughly re-inspect all aspects of the works (and have any defects fully rectified) to be certain that the works are completely ready for the Practical Completion inspection - if an unreasonable number of items are noted by the Architect/Designer during the inspection it will be terminated and

then rescheduled for at least a week forward to allow proper completion to be achieved.
(Note that a Code Compliance Certificate must be obtained before Practical Completion will be certified. Obtain all required certificates, guarantees, as-built drawings, etc., as work proceeds to enable the CCC application to be submitted as soon as construction is completed).

2 CARPENTRY

2.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

2.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

2589:2017(AS/NZS)	Gypsum linings - Application and finishing
3604:2011(NZS)	Timber-framed buildings

2.3 General

This section includes the receiving, stacking and storage of all Carpenter's materials and the fabrication, erection and fixing of all framing, sheathings and finishing timbers, including all work incidental to neatly finishing in other trades and all temporary work and temporary bracing.

The Carpenter shall attend upon all trades, and shall supply and fix all obviously necessary but not specifically mentioned fixings and materials.

2.4 Timber Framing

2.4.1 Scope

Supply and install timber framing to the floors, walls, roofs, and other timber framed elements, as identified and detailed on the drawings. All aspects of this work shall be in accordance with NZS 3604, product manufacturers' recommendations, and as shown on the drawings and the specification.

2.4.2 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All work shall be carried out to current best trade practise by experienced and competent tradesmen, familiar with the materials and installation techniques, in accordance with NZS 3604 and as shown on the drawings.

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings prior to installing timber framing.

Co-ordinate with other trades to install timber framing as required.

2.4.3 Timber Framing

Timber Treatment

All non-durable timber framing shall be appropriately treated against moisture and/or insect decay by treatment plants with recognised quality assurance systems that are administered by the Timber Preservation Council (NZTPC). Treatment of timber and wood-based building products shall be to the requirements of NZS 3602 as an absolute minimum, and all treated timber shall be identified and marked as required.

Carefully manage treated framing during installation to avoid accidental use of timber with a lower performance or durability treatment than that required or specified.

Storage & Handling

Check timber framing upon delivery and reject sub-standard or damaged material.

Store timber framing dry under cover, fillet stacked and well clear of the ground, and protect from damage, moisture, and contamination.

Ensure all appropriate personal protection equipment is worn at all times when handling and cutting treated framing.

Framing Installation

All timber framing members, including all dwanging, strutting, blocking, bracing etc, shall be sized, setout, fitted and fixed to the requirements of NZS 3604 and as shown on the drawings to accommodate structural loadings, cladding and lining setout and support, and the installation of other building components, fixtures and fittings.

All framing shall be erected without deviation, true to line, level, angle and plumb, and evenly aligned and square, and within the tolerances allowed in NZS 3604 Table 2.1. Framing members accurately cut, lapped, housed, joined, and seated so as to provide full contact over the bearing surfaces.

Temporarily prop, brace, tie, and secure framing members and elements as required until the framing is complete and self supporting. Leave in place for safety purposes as long as required.

Protect timber framing as required during installation against damage and moisture, and against significant variation of moisture content until ready for lining. Avoid ponding of water around floor plates.

Concrete Separation

Separate timber framing with an approved continuous damp proof course when in direct contact with concrete or masonry. Ensure that the DPC material is compatible with the timber treatment.

Free draining separations to external vertical faces shall be 12mm minimum and as noted on the drawings.

Framing Protection

Protect timber framing as required during installation against damage and moisture, and against significant variation of moisture content until ready for lining. Avoid ponding of water around floor plates.

2.4.4 Steel Fixings

Fastenings and Connectors

Unless otherwise noted or specified, timber framing fastenings and connectors shall be as specified in the relevant fixing schedules of NZS 3604 or have an equivalent capacity as specified therein. Timber framing connectors and fixings shall comply with the product information as required in NZS 3604 2.4.6, and shall be used and installed in accordance with the manufacturer's recommendations. Pre-drill nail holes in split-prone framing as necessary.

Durability of Fixings & Fastenings

Unless otherwise noted or specified, the minimum durability of timber framing fixings and fastenings, excluding nails and screws, shall comply with the durability requirements of NZS 3604 Table 4.1.

Galvanised steel fixing components, excluding nails and screws, shall have galvanised coating masses in accordance with NZS 3604 Table 4.2.

Unless noted or specified otherwise, the materials for nails and screws shall be as given in NZS 3604 Table 4.3.

Steel fixings and fastenings in contact with timber treated with copper based timber preservatives (H3.2 or higher) shall be in accordance with NZS 3604 4.4.4.

Stainless steel nails shall be minimum Grade 304 unless otherwise specified or noted.

Bolts and Coachscrews

Unless specified or shown otherwise, all bolted and coach screwed connections shall be M12 or M16 in accordance with the relevant fixing requirements given in NZS 3604.

Bolted and coach screwed connections shall have either a 50mm x 3mm square, or a 55mm x 3mm round, washer to each head and nut for M12 and M16 fixings. Washers shall be of the same material and durability as the bolt or coach screw.

2.4.5 Wall Framing

Plates

Top and bottom plates shall be to the dimensions and layout shown on the drawings. Unless specified or shown otherwise, top and bottom plates shall be fixed in accordance with NZS 3604 7.5.12 and Tables 8.18 and 8.19, true to line and level or angle.

Joints in top plates shall be made over a stud or over blocking between studs, and all top plate connections shall be in accordance with NZS 3604 8.7.3. Form all holes and edge notches in top and bottom plates in accordance with NZS 3604 8.7.5.

Studs

Studs shall be to the dimensions and spacings shown on the drawings, and installed true to line and plumb in both directions between top and bottom plates.

Unless noted otherwise, non-load bearing wall studs shall be to the spacings given in NZS 3604 Table 8.4, stud width as shown on the drawings.

Form all holes and edge notches in studs in accordance with NZS 3604 8.5.1.5. Do not notch, check, cut, or bore holes in the middle third of any trimming stud.

Should the need arise, studs shall be straightened in accordance with NZS 3604 8.5.3 with prior approval from the Architect/Designer only.

Unless noted otherwise, studs in loadbearing walls for 3 kPa floor loads shall be in accordance with NZS 3604 Table 14.10.

Lintels

Lintels shall be to the dimensions and locations shown on the drawings, and installed true to line and level, and shall be supported by a 45mm thick doubling stud or jack stud fixed to a trimming stud, and secured against uplift in accordance with NZS 3604 8.6.1.8 as required.

The thickness of a lintel may be made from two or more members, where each member is the length of the lintel, in accordance with NZS 3604 2.4.4.7.

Sill & Head Trimmers

Unless specified or shown otherwise, sill and head trimmers to openings shall be the same width as the wall stud and to the thickness given in NZS 3604 Table 8.15, and installed at the required opening height true to line and level, and supported by a 45mm thick doubling stud or jack stud fixed to a trimming stud.

Dwangs

Dwangs shall be the same width and thickness as the wall stud, and installed at the centres noted on the drawings, and accurately cut and fixed in place true to line and level and flush with stud edges.

Dwangs fixed in accordance with NZS 3604 Table 8.19.

Ribbon Boards

Ribbon boards shall be as dimensioned and located on the drawings, and installed on edge and checked 25mm into studs at the required height, true to line and level, and fixed in place in accordance with NZS 3604 Table 8.19.

2.4.6 Posts

Timber posts shall be to the sizes and locations shown on the drawings, and installed true to line and plumb each way, and supported at the base by steel post brackets as detailed.

Base bracket brand name & type:

2.4.7 Roof Framing

Ceiling Runners

Unless specified or shown otherwise, ceiling runners shall be to the dimensions and spacings given in NZS 3604 Table 10.4. Ceiling joists shall be supported by ceiling runners with proprietary steel hangers or 50mm x 50mm timber hangers in accordance with NZS 3604 10.2.1.7.6.

Proprietary hanger brand name & type:

Purlins

Purlins shall be to the dimensions and spacings shown on the drawings and as required by the cladding material, and fixed to rafters and/or trusses in accordance with NZS 3604 Table 10.10 (purlins on their flat) and/or Table 10.11 (purlins on their edge).

Purlins on their flat shall be continuous over a minimum of two spans.

Provide all necessary blocking and lateral support to purlins laid on edge in accordance with NZS 3604 10.2.1.16.6, and as detailed.

Extend purlins to form gable verges as detailed and in accordance with NZS 3604 10.2.1.15.

Roof Trusses

Roof trusses shall be Specific Engineering Design (SED) in accordance with NZBC B1/VM1 and manufactured by an accredited fabricator, and shall comply with all aspects of NZS 3604 10.2.2. Roof trusses shall be fabricated to meet the specific design requirements of the roof including, but not limited to; roof layout, pitch, and details, in accordance with the drawings and specification.

Roof trusses shall be supported and fixed to the truss fabricator's specifications but shall be no less than that required by NZS 3604 Tables 10.14 and 10.15. Roof trusses shall be braced as shown on the drawings and in accordance with NZS 3604 10.3.

Roof Bracing

Roof bracing shall be as shown on the drawings and in accordance with NZS 3604 10.3 and 10.4 as necessary.

2.4.8 Ceiling Framing

Ceiling framing shall be to the dimensions, layout, spacings, and details shown on the drawings, and shall be installed true to line, level and plane, and securely fixed in accordance with NZS 3604 Table 13.3.

2.5 GIB® Plasterboard Sheets

2.5.1 Scope

Supply and install the selected GIB® Plasterboard sheets, complete with all accessories, as sheet lining material to the walls, ceilings and other elements identified on the drawings. All aspects of this work shall be in complete accordance with Winstone Wallboards Ltd technical literature and installation guidelines (call Winstone Helpline on 0800 100 442 or check www.gib.co.nz for the latest editions) and other relevant product manufacturers' recommendations.

Substitution of any specified GIB® system, GIB® System component or GIB® plasterboard is not permitted.

2.5.2 Performance

To the areas noted on the drawings as 'General Plasterboard Wall or Ceiling Lining', comply with all relevant aspects of the [GIB® Site Guide \(2014\)](#) publication, complete with all recommended components and accessories, and other relevant manufacturers recommendations.

Wet Area Plasterboard Linings - GIB Aqualine® Wet Area Systems. To the areas noted as 'Wet Area' on the drawings, additionally comply with all relevant aspects of the [GIB Aqualine® Wet Area Systems \(2007\)](#) publication, [BRANZ Appraisal No.427 \(2007\)](#), and other relevant product manufacturers' recommendations. Refer to separate specification GIB Aqualine® Wet Area Systems.

Bracing Performance - GIB EzyBrace® Systems - Timber Framing. To the timber framed elements noted as 'Bracing' on the drawings, additionally comply with all relevant aspects of the [GIB EzyBrace® Systems \(2016\)](#) publication and GIB Ezybrace® Bracing Software according to the specified bracing unit rating, [BRANZ Appraisal No.928 \(2016\)](#), and other relevant product manufacturers' recommendations. Refer to separate specification GIB EzyBrace® Systems.

2.5.3 GIB Plasterboard

GIB® Standard plasterboard, 10mm thick.

Refer specifications summary for location

GIB Aqualine® plasterboard, 10mm thick.

Refer specifications summary for location

GIB Ultraline®, 10mm.

Refer specifications summary for location

2.5.4 Fixings

Fix sheets with adhesive and GIB® Grabber® drywall screws in accordance with Winstone Wallboards Ltd requirements.

2.5.5 Level of Plasterboard Finish

To the areas noted as a specific Level of Finish (3-5) on the drawings, additionally comply with all relevant aspects of Winstone Wallboards Ltd literature and AS/NZS 2589, complete with all system accessories, and other relevant product manufacturers' recommendations.

NOTE: Unless stated otherwise, Level 4 is the default Level of Finish.

2.5.6 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to ensure that appropriate clearances are allowed from adjacent internal linings, fixtures, products, and associated services, etc, that the sheets correctly allow for door and window installation, and that services penetrations are correctly handled to maintain sheet integrity.

2.5.7 Workmanship

All installation work shall be carried out by experienced tradesmen familiar with the techniques and materials specified and in accordance with the current requirements of Winstone Wallboards Ltd.

2.5.8 Delivery & Handling

Store GIB® plasterboard sheets undercover inside a watertight building and keep sheets dry at all times. Stack sheets flat on a dry level surface in accordance with Winstone Wallboards Ltd recommendations. Avoid damage to sheet edges, ends, and surfaces. Carry all sheets on edge. Do not use damaged or faulty sheets.

2.5.9 Preparation

Check that the timber framing elements are in accordance with NZS 3604, or in accordance with NZS 3603 and AS/NZS 1170 for specific design, and otherwise in accordance with the specified Level of Finish and Winstone Wallboards Ltd requirements. Framing shall be plumb and in true alignment, complete and suitable for the sheets, and maximum moisture content 18% or as recommended by Winstone Wallboards Ltd. Ensure that the framing is true to line and plane and with no projections due to structural and bracing bracketry etc. Ensure that all framing brackets, plates, braces and hold-downs etc. are correctly installed.

Check that the building has been completely finished to all penetrations including doors, windows, services, etc so that the sheets can be installed without being affected by any weather conditions. Check junctions to all other building elements and ensure that all necessary works have been completed eg. flooring, setout of services, etc. that will enable the sheets and accessories to be installed. Clear building debris and rubbish from framing voids and keep clean until GIB sheet linings are installed.

2.5.10 Installation

Install the sheets, complete with all accessories, to the framing in accordance with the relevant Winstone Wallboards Ltd recommendations and literature, and as noted and detailed on the drawings.

2.5.11 Completion

Ensure that the sheets have been cut, fitted and joined, and fixed correctly. Check for damage and replace as necessary.

Clean up thoroughly on completion and remove all waste and rubbish from site.

Provide a copy of the Winstone Wallboards Ltd maintenance requirements to the owner.

2.6 James Hardie Eaves & Soffits

2.6.1 Scope

Scope

Supply and install the specified James Hardie products as a fibre-cement sheet lining material to the eaves and soffits identified on the drawings, complete with all accessories. All aspects of this work shall be in complete accordance with James Hardie Eaves And Soffits Installation Manual (check www.jameshardie.co.nz, or call 0800 808 868 for the latest edition) and other relevant product manufacturers' recommendations.

2.6.2 Eaves & Soffit Lining

HardieFlex Sheet 6mm. 6mm thick fibre-cement sheet lining with an un-sanded surface finish. The sheets are to be finished with a paint system. Installed in accordance with the [James Hardie Eaves And Soffits Installation Manual](#) to the locations shown on the drawings.

2.6.3 Co-operation

Co-operation

Co-ordinate with other trades to ensure that the panels correctly allow for fascia and wall cladding installation and associated flashings etc., and that services penetrations are correctly handled to maintain full weathertightness and sheet integrity.

Ensure that other trades are aware of the James Hardie Safe Working Practices.

2.6.4 Preparation

Preparation

Check that the timber framing elements are in accordance with NZS 3604, or in accordance with NZS 3603 and AS/NZS 1170 for specific design, and in accordance with James Hardie requirements. The fascia and framing shall be in true alignment, complete and suitable for the sheets, and maximum moisture content as per NZS 3602. Ensure that the framing is true in line with no projections due to structural and bracing bracketry etc. Ensure that any hold-downs from the roof framing to the wall framing are correctly installed.

Check that the building underlay or rigid air barrier to the wall framing has been installed in full accordance with the manufacturer's requirements and the drawings. Check junctions to all other building elements and ensure that all necessary works have been completed eg. flashings etc that will enable the sheets and all accessories to be installed.

2.6.5 Flexible Sealant

SIKA AT Facade

Flexible silicone sealant to be SIKA AT Facade. Use to seal the sheets and accessories in accordance with the sealant manufacturer's recommendations and to James Hardie requirements. Ensure sealant compatibility with selected finish.

2.6.6 Workmanship

All installation work shall be carried out by an LBP, or supervised by an LBP, in accordance with James Hardie Eaves And Soffits Installation Manual and other relevant product manufacturers' recommendations.

2.6.7 Delivery & Handling

Carry all sheets on edge. Stack sheets flat on a level platform off the ground ie. use the supplied delivery pallet on level ground (if no pallet then evenly spaced bearers on level ground at 600mm c/s maximum). Keep sheets and accessories dry at all times. Avoid damage to sheet edges, ends, and surfaces. Keep uPVC flashings etc. out of direct sunlight, and store all accessories on flat and avoid

damage. All installers to be familiar with and comply with the James Hardie Safe Working Practices in the Installation Manual, to use appropriate safety gear, and in particular to be aware to avoid breathing silica dust. Do not use any damaged or blemished sheets or accessories.

2.6.8 Installation

Install the sheets to the framing in accordance with the Installation Manual, complete with all accessories eg. mouldings, sealant, underflashings, etc.

Ensure that all cut edges of panels are primed prior to installation with Dulux Primacryl, Resene Quick Dry, or similar. Ensure that the bottom edge of the fascia forms a drip edge of 15mm minimum to the sheet. Seal around services penetrations to maintain weathertightness and air pressure resistance.

2.6.9 Fixings

Fix HardieFlex Sheet 6mm sheets with galvanised nails in accordance with James Hardie requirements.

2.6.10 Completion

Ensure that the sheets have been fixed correctly, that all joints and accessories have been completed correctly, and that all penetrations have been taped correctly. Check that no damage has occurred to any installed sheet element or associated component, replace as necessary. Ensure that the sheets are painted within 90 days of the sheet installation, complete with all accessories and flashings. Hand over a copy of the latest edition of the James Hardie HardieFlex Eaves Lining Product Warranty to the client. Hand over a copy of the latest James Hardie Eaves And Soffits Installation Manual to the client for their maintenance information.

2.7 Abodo Weatherboard Cladding

2.7.1 Scope

Supply and install Abodo Weatherboard Cladding, as specified herein, to the locations identified on the drawings, complete with all system components and accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with the [Abodo CodeMark Weatherboard Cladding System Manual \(2016\)](#) and Abodo product literature (check abodo.co.nz, or email info@abodo.co.nz, or call 09 249 0100 for the latest editions), and other relevant product manufacturers' recommendations, within the conditions and limitations of the Abodo Weatherboard Cladding CodeMark Certificate of Conformity.

Abodo Weatherboard Cladding is CodeMark assured to comply with the New Zealand Building Code: [CodeMark Certificate of Conformity No.CMA-CM40070-R02](#), issued by CertMark New Zealand.

No substitutions are permitted for Abodo Weatherboard Cladding.

For the purpose of this specification, the Abodo CodeMark Weatherboard Cladding System Manual (2016) publication is referred to as the 'Abodo Cladding Manual'.

2.7.2 Requirements

Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

Warranty

Abodo Wood Ltd 'Built-to-Last Warranty':

- 15 Year Warranty - for all Abodo Weatherboard Cladding materials installed, according to the warranty conditions.
- Provide the Abodo Wood Ltd 'Built-to-Last Warranty' on the manufacturer's standard warranty form.
- Commence the warranty from the date of permanent installation.

Substitutions

Abodo Weatherboard Cladding shall be as specified herein and as indicated on the approved drawings. The substitution of Abodo Wood branded products for alternative brands is not permitted under any circumstances.

The substitution of a specified Abodo Wood product for an alternative Abodo Wood branded product by the Contractor shall only be permitted with the Architect's/Designer's written authorisation, and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate alternative Abodo Wood branded products to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Contractor.

Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected Abodo Weatherboard Cladding materials and work shall be repaired and/or replaced to the satisfaction of the Architect/Designer, without delay and at no additional cost to the Principal.

Should a problem be encountered with any Abodo Wood product during use or delivery, immediately contact the Abodo Wood on 09 2490 100. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question, and where possible, the document batch numbers and/or manufacturing details.

2.7.3 Cladding Material

Vulcan Cladding

Abodo Weatherboard Cladding, including weatherboards and timber mouldings, shall be manufactured from [Vulcan Cladding](#) - thermally modified Radiata pine (*Pinus radiata*), engineered with a vertical grain orientation.

Quality:

- Select Grade: Front face and edges virtually free of any defects but with one edge knot and one small face defect allowed per piece in 20% of boards only. Back side with some defects permitted.

Substrate Colour:

- Chocolate brown (timber will weather to grey unless pigmented coating is applied and maintained).

Face Finish:

- Fine bandsawn face.

Durability:

- Thermally modified to TM230 schedule. No chemical preservatives used.
- Tested by SCION, and approved for uses described in NZS 3602:2003 Table 2A. Equivalent to H3.1 (NZS 3640). Durability Class 2 (EN 350-1).
- Available optionally H3 treated with Protim preservation system - Durability class 1 (EN 113), H3 (AS 1604), H3.1 (NZS 3640).
- Thermally modified timber is resistant to most wood-boring insects but is not always resistant to termites.

Moisture Content:

- Approximately 7% MC (+/-2%) at time of despatch.

Construction:

- Laminated wood with vertical grain orientation.
- New generation polyurethane adhesive - VOC, solvent and formaldehyde free. Exterior Type 1 - AS/NZS 4364. Approved for Service Class 3 (exposed exterior applications).

Coatings:

- Vulcan Cladding will take most stains, penetrating oils and paints well, though uptake of coating is generally higher than normal.
- At least one coat must be applied all sides, including back face and ends, and at least two coats to the front face and edges with Abodo Protector, Resene Woodsman or other approved proprietary wood stain.
- Vulcan Cladding is available factory pre-coated with 1 or 2 coats.
- Refer to Coating clause.

Vulcan Weatherboard Profile: Refer to Weatherboard Profile clause.

2.7.4 Weatherboard Profile & Orientation

Vertical - Zara WB12 138x20 (118mm cover) - Vulcan Cladding

Vulcan Cladding Profile - Zara WB12 138x20 (118mm cover). A 138mm wide x 20mm thick, secret-fixed, interlocking weatherboard. Installed vertically to the locations and details shown on the approved drawings in accordance with the Abodo Cladding Manual.

Installed Location:

Vertical - Zara WB12 180x20 (160mm cover) - Vulcan Cladding

Vulcan Cladding Profile - Zara WB12 180x20 (160mm cover). A 180mm wide x 20mm thick, secret-fixed, interlocking weatherboard. Installed vertically to the locations and details shown on the approved drawings in accordance with the Abodo Cladding Manual.

Installed Location:

2.7.5 Coating*Wood Oil Finish - Vulcan Cladding*

Abodo Vulcan Cladding Coating - Wood Oil Finish - Abodo Protector, to the colour specified. Refer to specification section Painting & Decorating.

Abodo Vulcan Cladding weatherboards and timber mouldings shall be supplied factory-coated with at least one coat of Abodo Protector applied to all faces and edges.

All site-cut ends, notches and holes in Abodo Vulcan weatherboards and timber mouldings must be sealed with one coat of Abodo Protector.

Following installation, the Abodo Vulcan Cladding shall be coated with one additional coat of Abodo Protector, applied to all exposed surfaces.

The use and application of Abodo Protector shall be carried out in strict accordance with the manufacturer's requirements.

2.7.6 Accessories*Cavity Battens*

Cavity Battens - refer to Cavity Battens clause.

Cavity Closure Strip

Cavity Closure Strip - refer to Cavity Closure Strip clause.

Flashings

Flashings - refer to Flashings clause.

Weatherboard Fixings

Weatherboard Fixings - refer to Fixing clause.

Adhesive Sealant

Adhesive sealant shall be SIKA Sikaflex® 11FC or equivalent polyurethane-based joint sealant and adhesive. Use to seal and adhere Abodo weatherboards and accessories in accordance with the sealant manufacturer's recommendations and the Abodo Cladding Manual.

2.7.7 Cavity Battens

Timber Cavity Battens, 20mm Cavity - Vertical Weatherboards

Timber Cavity Battens (non-structural) - to form a nominal 20mm deep drained cavity for vertical weatherboards - Abodo CB-H-20x45 Castellated Cavity Battens. 45 wide x 20mm thick, H3.1 treated Radiata pine, bevelled and castellated cavity battens, incorporating 25mm wide x 6mm deep rebates alternating at 100mm centres either side of the batten.

Fixing to Timber Framing:

- Fix castellated cavity battens to timber framing using 40 x 2.5mm hot-dip galvanised flat head nails.

Installed horizontally, with batten edges sloping down and away from the framing, at maximum 480mm vertical centres, to the layout and details shown on the drawings and in accordance with the Abodo Cladding Manual.

2.7.8 Cavity Base Closer

uPVC

uPVC Cavity Base Closer. Punched with 3-5mm holes or slots complying with NZBC E2/AS1 Paragraph 9.1.8.3. Fitted to the base of the drained cavity, above window and door heads, and inter-storey junctions. Installed in accordance with the Abodo Weatherboard Cladding Manual to the locations and details shown on the drawings.

2.7.9 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works, including membranes, flexible underlays, rigid air barriers, and trims and any other related works are completed in accordance with the Abodo Weatherboard Cladding Manual.

Coordinate with trades the locations of pipes, outlets, cables, meter boards and other fittings installed by others, and to install Abodo Weatherboard Cladding as required.

2.7.10 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner (LBP). On completion of the installation, the installing LBP shall complete and sign a Restricted Building Work (RBW) memorandum, and shall issue a copy to the Building Consent Authority and to the Main Contractor (as applicable).

Installation work shall be carried out by suitably qualified and experienced tradespersons, familiar with the specified products and the required construction and installation techniques, in accordance with Abodo Weatherboard Cladding Manual and to fully comply with all warranty requirements.

All work shall be such as to leave a neat, efficient, robust and weathertight installation, to the required standard, free from damage and defects, including surface marking.

Make all necessary provisions to protect adjacent finished work and surfaces from damage during installation.

2.7.11 Delivery & Handling

Take delivery of materials undamaged. Reject any item found to be defective or damaged and contact the supplier for replacement.

Store Abodo weatherboards and accessories undercover, flat and true, clear of the ground by at least 100mm and supported on dry and clean timber bearers spaced at maximum 900mm centres in accordance with Abodo recommendations. Keep stored weatherboards and accessories dry and protected from damage and contamination.

Do not use damaged or defective weatherboards or accessories. Should a problem be encountered with any Abodo product, immediately contact Abodo on 09 249 0100. Do not continue to use the product that is not performing to specification or expectation. Keep samples of the product in question and where possible, document batch numbers and/or manufacturing details.

Handle weatherboards in accordance with the manufacturer's recommendations and in a manner that prevents damage and surface marking.

Installers shall be familiar with, and comply with, the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.

Installers shall conform with all relevant [WorkSafe NZ](#) Guidelines and Codes of Practice - including the [Best practice guidelines for working at height in NZ](#), and the [OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#).

2.7.12 Preparation

Vertical Cladding - Timber Frame, Rigid Wall Underlay

Vertical Weatherboard Cladding - installed over a drained cavity, on timber framed walls with a rigid wall underlay; check all aspects of preparatory works, including but not limited to:

- Check that the timber wall framing complies with NZS 3604, or is in accordance with NZS 3603 and AS/NZS 1170 for specific design, and in accordance with the requirements of the Abodo Cladding Manual.
- Check that the framing has studs at maximum 600mm centres, nogs/dwangs at maximum 480mm centres, is plumb and in true alignment, includes all blocking required for cavity battens and fixing at openings, joints, corners and soffits etc., and has a maximum moisture content of 20% at the time of cladding installation.
- Check that the rigid wall underlay has been installed in accordance with the manufacturer's requirements, and is over-fixed with a flexible wall underlay.
- Check that flexible wall underlay (if required by RAB manufacturer) has been installed over the rigid wall underlay in accordance with NZBC requirements and the manufacturer's recommendations, and with all finishing tapes, flashings, etc., at windows, doors, corners and penetrations all correctly incorporated to provide a continuous seal.
- Check that all preparatory materials are lapped such that any water will run down to the exterior.

- Check that any rigid air barrier to unlined gables and external garage walls is overlaid with an absorbent flexible wall underlay in accordance with E2/AS1 Table 23, and the manufacturer's recommendations.
- Check that the ground levels are sloping away from the building so that there will be no ponding water against the building, and that the ground will be remain clear of the cladding by at least 100mm at all times in accordance with E2/AS1.

2.7.13 Installation

Zara WB12 Vertical Weatherboard

General installation of Abodo Zara WB12 Vertical Weatherboard Cladding:

Over the flexible wall underlay, install and fix the specified cavity battens and cavity closure to wall framing according to the layout and details shown on the drawings.

Back-flash all internal and external corners with corner flashings as detailed on the drawings and in accordance with the Abodo Cladding Manual.

Carefully set-out and secret-fix Zara WB12 weatherboards to the wall framing through the cavity battens, vertically to straight plumb lines, with side-laps directed away from prevailing weather, and level along the baseline, minimum 50mm, or as detailed, below the bottom plate or floor structure.

From each leading corner, interlock and fix vertical Zara WB12 weatherboards in accordance with the Abodo Cladding Manual and as detailed on the drawings, keeping cladding lines plumb, straight and true.

Always use full length weatherboards where possible. Where joints are unavoidable, joints shall be formed over a nog/dwang line and cavity batten, and with 50mm wide PVC flashing tape applied to the back face of the boards along the joint. Weatherboard joints shall be scarfed at 35°, centred over the double dwangs/nogs, and fixed with a single fixing located minimum 12mm from the end (front edge) of each board. The scarf joint shall have adhesive sealant applied before fixing. Only if specified and shown on the drawings, the joint shall be covered with a flat soaker - as specified. Joints shall be located so as to avoid clustering, and shall be offset by at least 480mm from joints in boards either side of the joint. The use of end-matched joints made off nog/dwang fixing lines is subject to the Architect's/Designer's express approval only.

Internal and external corners, eaves junctions, windows, doors and other openings in the weatherboard cladding shall be constructed and made weathertight as detailed on the drawings in accordance with the Abodo Cladding Manual.

2.7.14 Flashings

Flashings - Aluminium

Flashings used in conjunction with the Abodo weatherboard cladding system shall be manufactured from Grade 5005 H32 aluminium coil, 0.70mm thick, and formed to suit the details indicated on the approved drawings in accordance the Abodo Weatherboard Cladding Manual. Flashing materials shall comply with the requirements of NZBC E2/AS1 Tables 20, 21 and 22.

Standard concealed metal corner (internal/external) back flashings for Abodo weatherboard cladding systems include:

- Hemmed Internal 90° Corner Flashing: 50mm, 70mm, 90mm.
- Hemmed External 90° Corner Flashing: 50mm, 90mm.
- Hemmed W Internal 90° Corner Flashing: 70mm.
- Hemmed Internal 135° Corner Flashing: 50mm.
- Hemmed External 135° Corner Flashing: 50mm.
- Unhemmed 90° Corner Flashings: 100mm, 120mm.
- Unhemmed W Internal 90° Corner Flashing: 100mm.

Unhemmed metal corner back flashings may be used with flat profile weatherboards (Hector, Rusticated) provided minimum 75mm cover is obtained behind weatherboards.

For Extra High Wind Zones and higher, corner back-flashings require minimum 75mm cover and folded hems.

2.7.15 Fixing

Screw Fixing into Timber - Secret Fix Weatherboards WB10, WB10P, WB12

Fix paint-finished Abodo Secret Fix Weatherboards (WB10, WB10P, WB12) with Grade 316 Stainless Steel Screws in accordance with Abodo fixing requirements and as shown on the drawings.

Fixing to Timber Framing over 20mm Cavity Battens (non-structural):

- Fix to timber framing using minimum 6g x 50mm countersunk head, self-drilling, stainless steel screws.
- The screw length must allow minimum 30mm penetration into timber framing.
- Increase fixing size when fixed through a rigid wall underlay, in accordance with the Abodo Cladding Manual.

Fixing to Timber Framing and 20mm Structural Cavity Battens:

- Fix to batten and timber framing using minimum 6g x 40mm countersunk head, self-drilling, stainless steel screws.
- The screw length must allow minimum 30mm penetration into the structural cavity batten and timber framing combined.
- Increase fixing size when fixed through a rigid wall underlay, in accordance with the Abodo Cladding Manual.

Fixing to 45mm Structural Cavity Battens:

- Fix to structural batten using minimum 6g x 40mm countersunk head, self-drilling, stainless steel screws.
- The screw length must allow minimum 30mm penetration into the structural cavity batten.

Single fix weatherboards at every fixing point, with screws located along the positioning groove 12mm from the edge of the tongue, and no closer than 12mm from the end of the board.

Do not allow weatherboard fixings to penetrate through flashings under any circumstances.

Set countersunk screw heads flush with the timber surface.

Fix Abodo Timber Mouldings using 40-50mm x 2.8mm Grade 316 Stainless Steel Annular Grooved Flat Head Nails.

2.7.16 Completion

Check that the Abodo Weatherboard Cladding system has been correctly installed and fixed to the layout and details shown on the drawings and in accordance with the requirements of the Abodo Cladding Manual.

Check that all joints, associated trim and accessories are correct, that junctions with other materials and elements are sealed, and the weatherboard cladding system is weathertight.

Check for damage and defects - replace or repair as necessary to the required standard.

Ensure that the work of other trades does not negatively impact on or reduce the minimum clearances required by the NZ Building Code, between the cladding and ground, roof and/or deck junctures.

Leave all of this work complete and weathertight and to the required standard in accordance with the Abodo Wood Ltd 'Built-to-Last Warranty'.

Leave the completed works and surrounding surfaces clean and free of debris and rubbish. Remove all rubbish and excess material from the site.

Complete and sign the Restricted Building Work (RBW) memorandum, and the Abodo Wood Weatherboard Cladding System Quality Assurance Checklist. Issue a copy of the RBW document to the Building Consent Authority and to the Main Contractor (as applicable).

Issue to the Owner a copy of the Abodo Weatherboard Cladding maintenance requirements, and a copy of Abodo Wood Ltd 'Built-to-Last Warranty'.

3 PLASTERWORK

3.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

3.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

2588:1998(AS/NZS) Gypsum plasterboard

2589:2017(AS/NZS) Gypsum linings - Application and finishing

3.3 Plasterboard Finish

3.3.1 Scope

Plasterboard linings shall be finished to the specified finish level.

3.3.2 Plasterboard Finish Level

Level 4 Finish, in accordance with AS/NZS 2589. Unless specified otherwise, all decorated plasterboard shall be finished to Level 4 Finish.

All joints and interior angles shall have shall have jointing tape embedded in jointing compound and minimum of two separate coats of jointing compound applied over all joints, angles, fastener heads and accessories.

Jointing and finishing compounds shall be applied and finished evenly and free of ridges and tool marks in preparation for decoration in accordance with the manufacturer's requirements.

Agree in writing with the Decorator that a Level 4 Finish has been achieved when complete and before decorating commences.

3.3.3 Jointing Tape

Plasterboard sheet joints shall be reinforced with a suitable paper jointing tape compatible with the jointing and finishing compounds.

3.3.4 Workmanship

Plasterboard finishing work shall be carried out by experienced applicators familiar with the application and finishing techniques and materials specified and in accordance with the manufacturer's requirements.

Plasterboard linings shall be finished to the specified finish level in accordance with AS/NZS 2589.

Make all necessary arrangements for the quality assessment of plasterboard finishes prior to commencing decorating.

Protect surrounding surfaces from jointing compound splashes and sanding dust.

Handle and store plasterboard finishing materials and accessories in accordance with the manufacturer's requirements. Keep products dry and protect from damage. Do not use damaged or faulty products or products beyond their expiry date.

Dry powder compounds mixed to the manufacturer's instructions.

3.3.5 Installation

Ensure that plasterboard sheets have been installed correctly to the sheet manufacturer's requirements, that they are clean and dry, and that fixing heads are correctly set.

Install all necessary metal beads and trim to corners and edges and metal control joints as required and as shown on the drawings.

Apply jointing and finishing compounds to the required build and specified finish level in accordance with the manufacturer's instructions. Reinforce joints with the selected jointing tape. Where required sand top coats smooth and even with fine sandpaper, as recommended by the manufacturer, when completely dry.

3.3.6 Completion

Ensure that the plasterboard sheets have been finished correctly to the specified finish level. Check for damage and repair as necessary. Ensure that assessment of the plasterboard finish level has been carried out and that agreement that the finish level is acceptable for subsequent decorating has been provided.

Clean up thoroughly on completion and remove all waste and rubbish from site.

4 ROOFING

4.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

4.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

NZBC B2

Durability

NZBC E2/AS1

External Moisture

NZMRCM Code of Practice

NZ Metal Roof and Wall Cladding Code of Practice - Version 2.2

4.3 Profiled Metal Roofing

4.3.1 Scope

Extent of Work

The following is a list and a general description of the extent of the Profiled Metal Roofing works, which are more specifically defined in the contract documents, required for the completion of the contract works: Roof

4.3.2 Requirements

Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

Warranty - Roofing Material

Roofing Material Product Warranty. Warrant this work against failure of materials under normal use and environmental conditions:

- 15 Years for Perforation: according to the roofing material manufacturer/supplier warranty conditions.
- 15 Years for Coatings: according to the roofing material manufacturer's warranty conditions.
- Provide the Product Warranty on the roofing manufacturer's Standard Warranty Form.
- Commence the warranty from the date of practical completion of the contract works.

Warranty - Installation

Installation Warranty. Warrant this work under normal environmental conditions and use against waterproofing failure:

- 15 Years for Workmanship.
- Provide the Installation Warranty on the roofing installer's Standard Warranty Form.
- Commence the warranty from the date of practical completion of the contract works.

Include a copy of the roofing manufacturer's maintenance requirements with the Installation Warranty.

Wind Performance - Extra High Wind Zone

Profiled Metal Roofing Wind Performance - Non-Specific Design Wind Zone Classification:

- NZS 3604 Wind Zone: EH = Extra High.
- Wind Speed: <55m/s.
- Ultimate Limit State: 1.82kPa.

Refer to the roofing manufacturer's technical literature for wind load design parameters.

4.3.3 Roofing Profile

Corrugated Profile - C2

Corrugated Profiled Metal Roofing. Standard corrugated profile; 18mm nominal crest height; 76mm nominal crest pitch. Manufactured from the material type, thickness and finish specified.

Minimum roof pitch: 8° (1:7).

Corrugated metal roofing shall be fixed with self-drilling screws through the profile crest in accordance with the requirements of the NZMRC Code of practice.

Sheets shall be continuous from ridge to gutter, or where a step is designed into the roof, sheets shall be continuous from ridge to step and step to gutter. Sheet ends must be stop-ended under flashings.

Installed in accordance with the requirements of the roofing manufacturer's technical literature and the NZMRC Code of Practice, to the locations and details shown on the drawings.

Installed Location:

4.3.4 Roofing Material

Corrugate Colorsteel

0.4mm BMT prepainted corrugated roofing.

4.3.5 Components & Accessories

Roof Underlay

Roof Underlay. Refer to separate specification section.

Screw Fasteners - Corrugated/Trapezoidal Profiles

Screw Fasteners - Corrugated and Trapezoidal Profiles. Screw fasteners shall be self-drilling screws complying with AS 3566 Class 4 or Class 5, as appropriate, and be no less than the durability of the roofing material being fixed.

Fastener type and placement (frequency) shall be appropriate for the environmental conditions, and the specified roofing profile and material, and the supporting structure material; all in accordance with the NZMRC Code of Practice.

Screw fasteners for pre-painted roofing must be pre-painted prior to installation for an accurate colour match.

Sealant

Sealant. Use only neutral-curing silicone sealant that is compatible with the specified metal roofing and flashing materials and finishes, and suitable for the required application and use, in accordance with the sealant manufacturer's instructions and to the NZMRC Code of Practice recommendations. All sealed joints must be mechanically fastened, and excess sealant neatly removed to prevent unnecessary dirt buildup. Sealant shall only be used to seal between two metal surfaces, do not fill holes or gaps with sealant.

4.3.6 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate to ensure that all roof members required for ridges, hips, valleys, barges, penetrations, junctions with vertical faces, etc. are correctly installed.

Coordinate with the roof drainage system, and generally with other trades as required, to install the specified profiled metal roofing.

Ensure that each section of roof is waterproofed as soon as possible after preparatory work is complete; allow to carry out the works in several operations if necessary to comply with this condition.

4.3.7 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques, in accordance with the requirements of the NZMRC Code of Practice, and to fully comply with all warranty requirements. All work shall be such as to leave a neat, efficient, robust and weathertight installation.

All cutting, fixing and installation techniques, fasteners and sealants shall be exactly as recommended by the roofing manufacturer in accordance with the NZMRC Code of Practice, and with the use of suitable tools and equipment appropriate for the application.

Always maintain isolation of dissimilar materials in accordance with the NZM RM Code of Practice. Isolate dissimilar materials (metal and nonmetal) in close proximity as necessary by painting the surfaces or fitting separator strips. Place isolators between metals and treated timber or cement-based materials. Do not use unpainted lead-sheet or copper materials to come in contact, or allow runoff from these, with galvanised or Zincalume® materials.

4.3.8 Delivery & Handling

Upon delivery to site, inspect roofing materials and reject those items that are found to be damaged, defective or contaminated. Contact the manufacturer/supplier for replacement of rejected items at time of delivery to site.

Store profiled metal roofing, flashings and accessories undercover, clear of level ground, on bearers at evenly spaced centres as recommended by the roofing manufacturer. Keep stored materials and accessories dry and protected from damage and contamination at all times.

Handle materials in accordance with the manufacturer's requirements and in a manner that prevents damage to or deterioration of the material, including surface marking. Do not used damaged or defective materials or products, or products that are beyond their designated shelf life.

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.

Installers shall conform with all relevant [WorkSafe NZ](#) Guidelines and Codes of Practice - in particular the [Best practice guidelines for working on roofs](#) and the [OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#).

For all work undertaken on the roof, installers shall always wear soft, clean footwear with a light-coloured sole. Do not walk on translucent/natural lighting sheet.

4.3.9 Preparation

General

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades has been completed to specification and as shown on the approved drawings.

Do not commence installation until all necessary preliminary works by others is complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades is complete.

Supporting timber structures shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content in accordance with the requirements of NZS 3603 at the time of installation.

Supporting lightweight steel framed structures shall meet the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria.

Supporting steel structures shall comply with NZS 3404.

Roof Structure Check

Roof Structure - check all aspects of preparatory works, including but not limited to:

- Check that the purlins are set-out to the required set-out and spacings, are straight and true to line and plane, and are securely fixed.
- Check that barge and fascia boards have been installed to the correct line and plane, with all edge blocking complete and secure.
- Check that valley gutter and hidden gutter framing is to the required dimensions, with solid backing supports securely fixed, true to line and plane.
- Check that internal gutter membrane linings are properly dressed back and adhered to a solid substrate along the roof edge as shown on the drawings.
- Check that trimming for roof penetrations, and roof/wall junction blocking, and all necessary work by other trades is complete.
- Check that solid backing required for fully supported roofing is complete and securely fixed in accordance with the approved drawings.

4.3.10 Installation

Roof Underlay

Install roof underlay in accordance with the underlay manufacturer's requirements with minimum 150mm side and end laps, and lapped such that any water will be shed to the outside of the underlay.

Non self-supporting underlay must be supported by hexagonal galvanised wire mesh, safety mesh or alternative support, as specified and/or shown on the drawings, in accordance with the underlay manufacturer's recommendations.

Underlay shall be installed in a manner so that it is sufficiently tensioned without sagging, overhangs fascia boards 20mm - 25mm, and finished along roof edges, ridges, valley gutters, roof/wall junctions and at penetrations to the details shown on the drawings.

Underlayment for fully-supported roofing shall be in accordance with NZM RM Code of Practice - Sections 4.3.11 Separation, 11.4.2 Substrate, and 11.5.1 Ventilation.

Roofing - Corrugated/Trapezoidal Profile

Install profiled metal roofing in accordance with the NZM RM Code of Practice and as shown on the drawings, and to fully comply with all warranty requirements. As shown on the drawings, confirm any specific roofing detailing requirements prior to installation.

Accurately set-out roofing sheets exactly square to the building axis and with sheets lapped away from the prevailing wind; maintain this accurate set-out throughout installation. Check for and eliminate any creep and/or spread of sheets during installation.

Cut metal roofing and flashings by shear only – do not use abrasive cutting tools on or near the roof. Do not use black lead pencils for marking pre-finished roofing and flashings.

Prevent contact with, or run-off from, incompatible materials in accordance with the recommendations in the NZM RM Code of Practice. Observe the roofing material manufacturer's recommendations where flues discharge above roofs, and for the installation of solar heating panels. Protect roofing surfaces from damage at all times; replace the whole sheet where a significant depth of the material or coating has been damaged (including flashings).

Screw-fixed sheets shall be fixed with fasteners appropriate for the roofing profile and material, substrate/structure and the environment in accordance with the Roofing Industries Profile Technical Summary and the NZM RM Code of Practice recommendations (minimum Class 4).

Screw fastening placement and spacings shall be strictly in accordance with the roofing manufacturer's requirements and the NZM RM Code of Practice, to fully comply with the Wind Zone requirements, purlins spacings, etc.

Use fixing systems that will accommodate thermal expansion for long lengths and/or dark colours.

All roofing jointing techniques and sealants shall be in accordance with the roofing manufacturer's recommendations and the NZM RM Code of Practice, and shall be compatible with the roofing material and finish. Joints shall be sealed with an approved neutral-cure sealant or approved closed-cell lap tape.

Ridges, hips, barges and flashings generally, shall be in accordance with the NZM RM Code of Practice and the roofing manufacturer's requirements.

Flashings

Install flashings to roof edges, ridges, roof/wall junctions, parapets and roof penetrations as detailed on the drawings and in accordance with the NZM RM Code of Practice and the roofing manufacturer's requirements.

All flashings shall be neatly formed and finished, securely fastened to the structure, weatherproof and have falls set to avoid water ponding.

For highly visible flashings, plan each flashing joint and/or junction with specific regard to aesthetic requirements.

Penetrations

Penetrations greater than 150mm in any direction must have support framing installed around the perimeter of the penetration. Penetration flashings shall not rely solely on silicone sealant to achieve weathertightness of the flashing.

Flash pipes penetrating the roofing with a proprietary pipe collar flashing.

Cleaning

Completely clean off all drill and other swarf and pop-rivet shanks as the work proceeds (at least daily), and keep them and other rubbish out of the spoutings.

Remove associated trade debris from the roof and from the site progressively, and on completion leave the roof and rainwater system completely clean.

4.3.11 Completion

Check that the profiled metal roofing and associated components and flashings have been installed and finished correctly.

Check for defective work and materials - replace and/or repair as necessary.

Sweep down the completed roof and clean out spouting, gutters and rainwater pipes.

Leave all of this work complete and weathertight in accordance with the roofing manufacturer's requirements and the NZM RM Code of Practice, and to fully comply with all warranty requirements.

Leave the completed works and surrounding surfaces clean and free of debris and rubbish. Remove all rubbish and excess material from the site.

Issue to the Owner a copy of the roofing manufacturer's maintenance requirements on completion.

Issue to the Owner the roofing material manufacturer/supplier 'Product Warranty', and a copy of the installer's 'Installation Warranty'

5 ALUMINIUM JOINERY

5.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

5.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

4223.3:2016(NZS)	Glazing in buildings - Part 3: Human impact safety requirements
4223.4:2008(NZS)	Glazing in buildings - Part 4: Wind, dead, snow, and live actions

5.3 Aluminium Windows & Doors (NZS 4211)

5.3.1 Alternatives

The materials and elements specified indicate the required standards for these works. Alternatives which are equal to or superior to these materials and elements may be tendered for approval.

Thermal performance (NZBC H1/AS1) must be as required to meet the Designer's Thermal Evaluation.

5.3.2 Installation Type

Timber Frame Installation - Cavity Construction

All windows (and aluminium frame external doors) installation work shall be exactly in accordance with NZBC E2/AS1, the Windows Association's Windows Installation System (WANZ:WIS), and details on the drawings or supplied by the windows manufacturer.

Check framing alignment, and that window openings are square and the correct size for fitting tolerances.

Prepare framing openings by neatly cutting the building wrap at 45° into the corners, turning wrap through the frame depth and fixing to the inside face, flashing the bottom corners with moulded plastic and over-flashing the full sill and 200mm up the jambs with the specified flexible flashing tape, stapled to hold the stretched external corners. At head corners install flashing tape 200mm each way from the corners.

Install the WANZ extruded aluminium support bar with built in drainage and ventilation to NZBC E2, to provide continuous support to the window unit. Install the head cavity closer, positioned to provide a 15mm drip edge to the cladding.

Set shims or pack as necessary and install the frames exactly true and square, blocked-up off the support bar as required. Use appropriate separators between aluminium and other materials, and fix securely with due regard for any anticipated movements and for linings, trim etc.

Install the head flashing, extending 35mm up behind the cladding (and in turn over-flashed with an additional piece of wrap cover extended up under the wrap or flashing or eaves above), sloping at 15° down to the exterior, and turning down to cover the top of the aluminium frame by at least 10mm, before finishing with a 5mm 45° 'kick out'. Upstand the head flashing ends as detailed. Install jamb flashings/ sealant or scribes as detailed.

After frames installation install closed cell backing rods as required and expanding foam air-seal the gap between framing and liners.

5.3.3 Interior Finish

Architraved.

5.3.4 Reveal

Timber reveals for paint finish with all sides primed.

5.3.5 Glass Platform

Double Glazed.

5.3.6 Workmanship

These windows will be manufacturerd in workshops containing all mechanical equipment appropriate for the work, and by experienced and competent tradesmen who are familiar with the techniques and materials specified.

The manufacturer will co-ordinate with other trades to establish the exact sizes for all frames before fabrication. Frames and sashes will be fabricated true, square, rigid, and 'out of wind', with all joints strongly mechanically fixed, and with mitres tight and fully sealed. Potential thermal, wind and seismic movements will be accommodated within the construction. All cavities will drain to the exterior, and all drilling swarf etc. will be removed during fabrication.

Stays, hinges, running gear and glazing will be installed as scheduled (the Designer will be notified if any scheduled hardware of fixing position appears to be inappropriate for this project).

Hardware will be fixed true to line and position, and adjusted and oiled as required for correct operation.

Glass will be cut true and square, sized to provide correct edge clearances, blocked into place as required, and all units will be delivered either pressure fit, pocket glaze, or beaded/wedged, unless site glazing is required. Glazing gaskets will be compatible with all adjacent materials, and cut 1% over-length to absolutely avoid stretching during installation. Frames will be braced etc. as necessary for transportation to the site.

Flashings as detailed will be supplied. Flashing materials will be compatible with the windows.

5.3.7 Delivery and Installation

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and the construction principles that are embodied in the Acceptable Solutions.

Arrange for delivery of windows to the site only when a suitable storage situation is available for them, handle the windows in accordance with the manufacturers requirements, avoid any frame distortion, avoid rubbing damage, avoid contact with concrete, plaster, mud etc. and keep them dry. Retain protective coverings for as long as possible, and remove them at completion.

Experienced and competent tradesmen who are familiar with the techniques and materials specified shall carry out all installation work. Fix in accordance with the manufacturer's instructions. Take utmost care to avoid damage to anodized or powder coated surfaces - correction of any such disfigurement requires written authority - replace any badly damaged items.

Use fixings compatible with the materials involved, as recommended by the windows manufacturer and to comply with the DWP requirements, basically aluminium or Type 316 stainless steel where exposed externally; galvanized to AS/NZS 4680, 610g/m², may be used where not exposed.

Thoroughly check all preparatory work to openings prior to installation, including underlay, corner seal tapes, adjacent cladding, pre-installed flashings, waterproofing systems etc. as appropriate. Use inert barriers or coatings to prevent contact between dissimilar metals or between aluminium and concrete.

Install flashings as detailed and supplied by the windows manufacturer, installed tightly and neatly with absolute minimum tolerances, with head weathering jamb, jamb weathering sill, and sill open (draining) to exterior. Except where the window is recessed all head flashings shall extend 30mm minimum beyond the frame.

Air-seal all frame perimeters to adjacent structure to a depth of 15 - 20mm with expanding foam or appropriate sealant including a PEF rod at head, sill and jambs to retard the spread of sealant.

Weather-seal frame jambs etc. to adjacent surfaces (or to each other) as detailed or as required by the windows manufacturer, to achieve a fully watertight installation. In preparation for sealant the joints shall be clean, dry, and primed if necessary. Insert closed cell polyethylene backer rods or a polyethylene tape slip layer if required. Mask adjacent surfaces if appropriate, install the sealant fully in accordance with the sealant manufacturer's recommendations, and finish to even smooth surfaces.

Remove trade debris progressively, appropriately clean any affected adjacent surfaces, thoroughly clean the windows, check that all hardware is in full working order, and provide safety indication of the glass for the balance of adjacent works.

6 INSULATION

6.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

6.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

4218:2004(NZS)	Energy efficiency - Small building envelope
4218:2009(NZS)	Thermal insulation - Housing and small buildings
NZBC H1/AS1	Energy efficiency

6.3 Pink® Batts® Insulation

6.3.1 Scope

Supply and install Pink® Batts® Insulation, as specified herein, to the locations identified on the drawings, complete with all accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with Tasman Insulation technical information and installation requirements (check pinkbatts.co.nz, call 0800 746 522, or email customer@pinkbatts.co.nz for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for Pink® Batts® Insulation.

Pink® Batts® insulation is certified under the GREENGUARD Certification Program (UL 2818). Being certified for indoor air quality gives an assurance that products meet strict chemical emissions limits (including minimal levels of VOCs and formaldehyde), to help create healthier indoor environments.

6.3.2 Requirements

Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

Warranty - applies to BRANZ Appraised Pink® Batts® Ceiling & Wall products

Pink® Batts® Lifetime Product Warranty:

- 50 Years Warranty for BRANZ Appraised Pink® Batts® ceiling and wall products installed according to the warranty conditions.

- Provide the Pink® Batts® Lifetime Product Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of permanent installation.

Substitutions

Pink® Batts® Insulation shall be as specified herein and as indicated on the approved drawings. The substitution of Pink® Batts® branded products for alternative brands is not permitted under any circumstances.

The substitution of a specified Pink® Batts® product for an alternative Pink® Batts® branded product by the Installer ([PinkFit®](#) or other) shall only be permitted with the Architect's/Designer's written authorisation, and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate alternative Pink® Batts® branded products to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Installer.

Inspections

Carry out all necessary pre-installation and pre-line inspections of Pink® Batts® Insulation for each area of work in accordance with the requirements of industry best practice recommendations and manufacturer guidelines.

Complete a Pre-Installation Checklist prior to installation, and a Pre-Line Checklist before handing over for subsequent work.

Note: Pink® Batts® checklist applies only to Pinkfit.

6.3.3 Wall Thermal Insulation

Pink® Batts® Ultra® R2.6 Wall

[Pink® Batts® Ultra® R2.6 Wall](#) - product code 7127126. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-2.6. 90mm thick x 560mm wide x 1140mm long segments.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of [BRANZ Appraisal No.238 \(2012\)](#).

Pink® Batts® Ultra® R2.6 Wall is licenced with Environmental Choice New Zealand: Thermal Building Insulants [Licence No.2504017](#).

Installed as wall cavity thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

6.3.4 Ceiling Thermal Insulation

Pink® Batts® Classic R3.6 Ceiling

[Pink® Batts® Classic R3.6 Ceiling](#) - product code 7110136. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-3.6. 180mm thick x 432mm wide x 1220mm long segments.

BRANZ Appraised for use as a thermal insulating material for ceilings of domestic and commercial buildings according to the conditions and limitations of [BRANZ Appraisal No.238 \(2012\)](#).

Pink® Batts® Classic R3.6 Ceiling is licenced with Environmental Choice New Zealand: Thermal Building Insulant [Licence No.2504017](#).

Installed as ceiling thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

6.3.5 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with trades to install Pink® Batts® Insulation as required.

6.3.6 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

The building envelope must be fully enclosed and weatherproof, with construction materials framing at or below the required moisture content, before insulation installation commences.

All installation work shall be carried out by registered PinkFit® Installers, or by experienced and competent installers, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements.

Carry out all necessary pre-installation and pre-line inspections of Pink® Batts® Insulation for each area of work in accordance with the requirements of industry best practice recommendations and the manufacturer's guidelines. Inspect all Pink® Batts® insulation work before it is closed off with linings or made inaccessible.

Insulation should be installed without leaving gaps or compressing the material. Always maintain full insulation thickness to ensure that the stated thermal and acoustic values are achieved. Do not install insulation into closed cavities with a cavity depth less than the insulation's stated thickness.

6.3.7 Delivery & Handling

Store the Pink® Batts® Insulation materials undercover, in a weatherproof environment, off the floor, on a flat, even surface in accordance with the manufacturer's requirements. Keep materials dry and protected from damage, moisture and contamination at all times.

Do not use damaged or defective materials.

Should a problem be encountered with any Pink® Batts® Insulation product, immediately contact Pink® Batts® on 0800 746 522. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question and where possible, the bale package documentation with batch number and/or date of manufacture.

Handle Pink® Batts® Insulation products in accordance with the manufacturer's requirements and in a manner that prevents damage to and contamination of the product. Ensure installed Pink® Batts® Insulation remains dry at all times.

Installers shall be familiar with and comply with the manufacturer's [Safety Data Sheet](#) precautions for use, and use recommended safety gear when handling materials.

Conform with all relevant [WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#).

6.3.8 Installation

General

Install Pink® Batts® Insulation in accordance with NZS 4246 and the manufacturer's requirements.

Each installation is unique, so prior to installation:

- check for all hazards that may cause injury; and
- carry out any required repair work before starting installation; and
- ensure there's adequate lighting to identify any hazards; and
- treat all electrical cables as live, being careful not to cut or expose cables and wires; and
- beware of other sharp objects (protruding nails, splinters etc.), pests (bees and wasps), loose boards and pipe work.

Pink® Batts® Wall

Pink® Batts® wall insulation segments shall be oversized by no more than 10mm than the wall framing spacings. If cutting is required, cut oversize by 5mm to ensure a good friction fit.

Friction fit the insulation segments between wall framing members ensuring there is no undue compression, gaps, creases, tucks or folds, and the insulation is finished flush with the framing edges.

Firmly butt all insulation segment joins together, ensuring there are no gaps, and maintain full thickness of the insulation to ensure maximum thermal performance.

Fit Pink® Batts® insulation tight and close around electrical cables and pipes. As necessary, partially cut and fit insulation around cables and pipes. Take extreme care when working around exposed electrical cables - treat all cables as live.

Pink® Batts® Ceiling - Truss/Framed Roof

Pink® Batts® insulation segments shall be oversized by no more than 10mm wider than the ceiling framing spacings.

Lay the insulation segments over the ceiling, friction fitted between the ceiling joists/truss chords, ensuring there is no undue compression, gaps, creases, tucks or folds in the insulation.

Firmly butt all insulation segment joins together, ensuring there are no gaps, and maintain full thickness of the insulation to ensure maximum thermal performance.

Cover the entire ceiling, including the outer edge of the top plate of external walls - the insulation must cover at least 50% of external top plates.

Maintain a minimum 25mm clearance between the top of the ceiling insulation and any roofing material, including underlay. If required, trim the insulation or use a thinner product around the perimeter.

Ensure that the appropriate clearances are maintained for electrical equipment, heating and ventilation equipment, heated flues and pipes, etc. Where possible, place insulation beneath electrical wiring and plumbing. Take extreme care when working around exposed electrical cables - treat all cables as live.

6.3.9 Completion

Check that all specified Pink® Batts® Insulation products have been installed correctly in accordance with the manufacturer's requirements.

Check for damage and defects - replace damaged and defective insulation as necessary to the required standard.

Check that the installed insulation will be adequately protected for durability and performance in accordance with the manufacturer's warranty requirements.

Leave all of this work complete, and in the condition required for proper performance, including for the installation of subsequent linings, in accordance with the manufacturer's warranty requirements.

Leave adjacent surfaces and finished work clean and free of damage. Remove all associated rubbish and waste material from site.

Issue to the Owner a copy of the Pink® Batts® Lifetime Product Warranty for all Pink® Batts® Insulation products installed.

7 TILING

7.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

7.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

BRANZ Good Practice Guide Tiling

7.3 Tiling

7.3.1 Scope

Supply, install and finish all Tiling works, complete with all necessary components and accessories required for proper installation and performance, as specified herein and to the locations, layouts and details shown on the approved drawings. All aspects of this work shall be carried out to comply with the New Zealand Building Code and relevant standards, and in accordance with the approved project design documentation, and with any relevant product manufacturers' technical literature.

7.3.2 Requirements

Quality Assurance

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of Tiling work are carried out to the highest standard.

Inspection & Acceptance of Tiling Work

Carry out all necessary pre-installation, installation and finishing inspections of Tiling for each area of work in accordance with the requirements of industry best practice recommendations and code of practice guidelines.

Complete all necessary Pre-Installation/Application Checklists prior to installing proprietary under-tile waterproofing systems and heating systems and floor levelling systems, and relevant Installation/Application Checklists.

Complete all necessary Installation/Application Sign-Off Certificates and before undertaking subsequent work or handing over.

Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected Tiling materials and work shall be repaired and/or replaced to the satisfaction of the Architect/Designer, without delay and at no additional cost to the Principal.

7.3.3 Aluminium Trim

Aluminium Square-Edge Tile Trim

Aluminium Square-Edge Tile Trim. Square profiled extruded aluminium edge trim for tiling. Sized to suit the thickness of the tiling installation. Finish and colour as specified. Installed to the locations and details shown on the drawings.

Finish & Colour:

7.3.4 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install tiling as required, and to ensure that:

- appropriate tolerances and clearances allow for adjacent finishes, fixtures and fittings, etc; and
- penetrations for piped and cabled services are correctly located to maintain tile integrity and tiling performance.

7.3.5 Workmanship

Where required by the NZ Building Act 2004, it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All Tiling work shall be carried out to best trade practice by qualified and experienced tradespersons, familiar with the specified materials and installation and finishing techniques, in accordance with AS 3958.1 and relevant product manufacturers' technical literature, to the layout and details shown on the approved drawings, and to fully comply with all warranty requirements.

Submit evidence of experience on request, e.g. National Certificate in Floor and Wall Tiling, or certified member of Master Plasterers and Tilers Association.

All substrate preparation, tile laying and tiling accessories application and finishing techniques shall be exactly as recommended by the specified product manufacturer. All work shall be such as to leave a neat, efficient and robust installation.

Interior wet-area tiling shall be waterproof and installed over a waterproof membrane as shown on the drawings.

Exterior floor tiling shall be waterproof and weathertight, and where necessary installed over a waterproof membrane as shown on the drawings.

As recommended by the tile manufacturer, use only an approved adhesive that is compatible with the specified tile, its substrate and its application/use.

Where necessary, delay tiling to allow maximum curing and settling and initial creep of the substrates, particularly to load bearing structural elements.

Do not cover or bridge movement control joints with tiles and tile underlay.

Tiling shall not be undertaken when the ambient and surface temperatures are outside the specified product manufacturer's permissible temperature range.

Where necessary, mask off and protect from contamination adjacent surfaces, joinery, fixtures and finished work before commencing.

Exterior tiling shall not be undertaken during inclement weather. As necessary and in accordance with the manufacturer's requirements, protect exterior tiling from rain, hot dry winds and direct sunlight to aid proper drying and curing.

Leave all tiled surfaces clean, sound, and free from blemishes of any kind.

7.3.6 Delivery & Handling

Upon delivery to site, inspect the tile packs and reject those items that are found to be damaged, defective or contaminated. Contact the supplier for replacement of rejected items at time of delivery to site.

Do not use damaged, defective or contaminated materials, or products that are beyond their designated shelf life.

Store all tiling materials undercover, in a weatherproof environment, off the floor, on a flat, even and level surface in accordance with the manufacturer's requirements. Keep products and materials dry, out of direct sunlight and protected from damage, moisture and contamination at all times.

Handle tiling materials in accordance with the manufacturer's requirements and in a manner that prevents damage to and contamination of the materials and works.

Installers shall be familiar with and comply with all associated product Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials.

Installers shall conform with all relevant [WorkSafe NZ](#) Guidelines and Codes of Practice - including the [OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry](#).

7.3.7 Preparation

General

All substrates to be tiled shall be structurally sound, even and smooth, clean, dry, and free from dirt, dust, grease, oil, wax, paint residue, loose plaster and laitance, curing compounds and other materials and contaminants likely to affect the bonding and performance of the specified tile adhesive and grout.

Carry out all necessary moisture readings of substrates. Do not commence installation until the moisture readings for the whole area are below the required level.

Carry out all necessary substrate inspections and preparatory work in accordance with the relevant product manufacturer's recommendations prior to application.

Check that the substrate is free of voids and depressions, and is in correct alignment - true to line, level and/or plumb, and to the falls indicated on the drawings.

Check that all fixtures, fittings and embedded items are correctly installed, and that all substrate edges are completed as detailed.

Confirm the location of any movement control or crack control joints prior to commencement of the works, and ensure that they are appropriately trimmed. Do not cover or bridge movement control joints with tiles, adhesive and grout.

Allow self-levelling underlays and mortar screeds to properly cure in accordance with the manufacturer's recommendations before commencing tiling.

Allow new concrete substrates to cure for at least four weeks prior to tiling.

Ensure that the back of each tile is clean and free from dust or other contaminants prior to laying.

The commencement of work on each section/area shall be deemed to indicate full acceptance by the Tiler that all preparatory works by other trades are appropriate to achieve the required finished results.

New Concrete Floor

New Concrete Floor - check all aspects of preparatory works, including but not limited to:

- Check that the concrete slab has been formed and finished to the levels and falls indicated on the drawings, including any tanking or waterproofing requirements.
- New concrete floors must have aged for a minimum of 28 days, and have dried over the entire area to a relative humidity of 75% or less.
- Grind off any high spots, and using a proprietary levelling compound repair flush with feathered edges any low spots or damaged areas, then grind smooth.
- Mechanically grind or acid etch very dense concrete surfaces and any surface that is glazed to the extent that may compromise adhesion.
- Leave the surface clean, free of dust and surface contaminants.
- Check that any protruding or exposed bare metal has been treated with a suitable corrosion-inhibiting primer.

7.3.8 Installation

Floor Tiles

Floor Tiles. Install floor tiles by direct-stick method to clean, dry and properly prepared substrates in accordance with AS 3958.1 and the adhesive manufacturer's instructions. Accurately set-out and lay tiles to the layout and details shown on the drawings. Confirm the floor tile layout and pattern requirements prior to installation.

As required by the adhesive manufacturer, seal or prime porous substrates or substrates where dusting or powdering exists. The use and application of adhesive shall be exactly to the adhesive manufacturer's instructions.

All tile cutting, boring and shaping shall be carried out using appropriate tools and equipment and methods suitable for the tile type and in accordance with the tile manufacturer's recommendations. Only install cut tiles that have smooth, uniform cut edges - do not use tiles with jagged or flaked edges.

Mechanically mix powdered adhesive at the recommended ratio with clean potable water to a smooth, lump-free paste in accordance with the manufacturer's requirements. Do not mix more than can be used within the specified open time.

Apply tile adhesive evenly using a suitably notched trowel to properly prepared substrates in accordance with the manufacturer's instruction.

- Do not apply more adhesive than can be covered within the specified open time.
- Do not over spread the adhesive, and avoid surface skinning - particularly when used in unfavourable conditions such as direct sunlight, wind and/or high temperatures.
- Ensure to follow the adhesive manufacturer's recommended setting and curing periods.

Lay floor tiles into adhesive to achieve maximum contact and bonding before skinning occurs. Re-trowel any adhesive that has skinned - do not apply water to skinned adhesive. Where necessary, back-butter tiles with adhesive to ensure maximum contact and bonding - do not spot-fix floor tiles.

Floor tiles shall be laid so that the finished surface and edges are true and even, level and/or to the falls shown on the drawings, and finished flush with adjoining finished work as appropriate or as detailed.

Tile joints shall be to the required layout, uniform, accurately aligned, straight and true to line, and set even and parallel to the specified joint width.

Where indicated on the drawings, return floor tiles along walls, upstands, toe spaces, etc., to the height and details shown on the drawings.

Remove excess adhesive from tile joints as each tile is laid to ensure full depth grouting can be achieved, and leave the tile surface completely clean.

Edge Trim

Edge Trim. As required and indicated on the drawings, install all necessary tiling edge trim - including edge cappings, corner mouldings, transition strips, etc., - all neatly finished, accurately aligned and true, to the required layout and as detailed on the drawings.

Movement Control Joints

Movement Control Joints. Form movement control joints in tiling to the locations and details shown on the drawings and in accordance with AS 3958.1.

Movement control joints in tiling shall coincide with control joints in the substrate and structure, and at junctions between dissimilar substrates and other surface finish materials in the same plane.

Ensure to carry movement control joints through tiling from the substrate. Do not bridge movement control joints with underlayment, membranes, adhesive or tiles.

Seal movement control joints after grouting with the specified flexible sealant in accordance with the sealant manufacturer's instructions and as detailed.

Proprietary movement control joints shall be installed in strict accordance with the manufacturer's instructions and to the layout and details shown on the drawings. Finish tiling against proprietary movement control joints as detailed.

Grouting

Grouting. Grouting shall be in accordance with the grout manufacturer's requirements and recommendations. Coloured grout shall be to the colour specified.

Prior to grouting, ensure that the tile adhesive has completely set, and that the tile joints are clean, dry and free from excess adhesive and any foreign material. Rake out any excess adhesive from joints to ensure a maximum, uniform grout joint is achieved. Tile spacers must be removed prior to grouting.

Mechanically mix powdered tile grout with clean water at the required ratio to a smooth, lump-free paste in accordance with the manufacturer's requirements. Do not mix more than can be used within the manufacturer's specified open time. Ensure to follow the manufacturer's recommended drying and curing periods.

Apply tile grout evenly with a rubber squeegee or grouting float, ensuring that the tile joints are completely filled and smoothed to a dense, uniform surface. Do not spread more grout than can be cleaned within the specified open time. Remove excess grout immediately. In hot or windy conditions, dampen the joints to prevent the grout from drying out too quickly.

Clean the tiles with a damp sponge when the grout joints have firmed, making sure not to wash-out the joints. Finish grout joints to a smooth, uniform effect and leave grout free of pin holes and blemishes.

Allow grout joints to dry before cleaning with a clean, dry, soft cloth, to completely remove any grout haze and residue from the surface of the tiles.

Protection

Protection. Take all necessary measures to protect exterior tiling from the extremes of weather and climate during the fixing and grouting operation and for as long as possible thereafter.

Keep the working area cordoned off during the whole tiling installation. Protect completed tiling from excessive loads, damage and contamination until hand-over or as directed.

Restrict foot traffic from completed floor tiling in accordance with the tile manufacturer's time frames for 'set-to-light-foot-traffic' and 'ready-for-service-use'.

Where necessary, cover completed floor tiling with a heavy-duty temporary floor protection such as Ovaboard, Ram Board, Buffalo Board; laid in accordance with the manufacturer's requirements.

Protect exterior tiling, immediately after laying and grouting, from rain and moisture for at least 24 hours, and from frost and strong sunlight after laying in accordance with the tile adhesive and grout technical specifications.

7.3.9 Completion

Check that all Tiling work has been correctly installed to the required layout, and that all tile joints, edge-trimming and other detailing is correctly finished, grouted and sealed.

Check all Tiling installations for damage, marks and defects - repair or replace as necessary. Carry out any repairs to the required standard.

Thoroughly clean tiled surfaces in accordance with the manufacturer's recommended procedures and techniques. Lightly buff where appropriate.

Leave this work complete and to the required standard, and in accordance with the associated warranty requirements.

Clean up thoroughly, and leave adjacent surfaces and finished work clean and free of damage and contamination. Remove all associated rubbish from site.

Protect the completed installation from damage, trafficable dirt and grime, and stains as necessary until hand-over as scheduled or directed.

Issue to the Owner a copy of all relevant product manufacturers' maintenance requirements, and a copy of relevant manufacturer Product Warranties and the installer/applicator Installation Warranty for the installed products and completed works.

8 PAINTING & DECORATING

8.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

8.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

8.3 General

8.3.1 Alternatives

The materials specified in this section or on the drawings indicate the required standards for these works. Alternatives which are considered equal to or superior to these may be tendered for approval (in writing, and they must NOT be used unless they are approved in writing).

8.3.2 Co-operation

Co-operate with all trades and attend upon Concretor, Joiner, Carpenter, etc. to ensure that the surfaces provided by these trades are completely suitable for the Painter works that are required.

8.3.3 Preparation

No painting or varnishing or other surface coating work shall be undertaken unless the surfaces to be coated are in a correct and proper condition to ensure first class results.

Inspect the works of other trades on which Painter work is scheduled and report to the Main Contractor and the Architect/Designer any defects or irregularities that would affect the permanency or finish of the painting work, and do not proceed until the defects or irregularities have been completely rectified. Failure to examine and report will be construed as an acceptance that all preparatory works are completely satisfactory.

This clause does not relieve the Painter of any of the usual preparatory work to surfaces customarily performed by this trade.

Clean down all surfaces with sugar soap, strippers, mould killers, etching agents, etc. as required. Sand or rub all sharp edges off exterior timbers and other materials as appropriate before painting. Finish rub down ALL surfaces. Ensure that the moisture content of all substrates is appropriate. Remove locks, fastenings, and similar hardware before painting and refix on completion. Remove all electrical switch and power plates before painting and refix them on completion. Mask adjacent surfaces as required to a true line and remove the masking on completion. Dust and wipe down all surfaces for Painter work and completely remove all dust, rubbish, dirt etc. from areas involved immediately prior to commencement. To each area of the works complete all surface preparation before applying paint to any surface.

8.3.4 Protection

Take adequate precautions to prevent paint spots falling on prefinished or similar surfaces, and extreme care to keep absorbent materials (e.g. cedar, sawn framing, decking, paving) completely clean during all adjacent painting work. Correction of any such disfigurement shall be to the Architect/Designer's approval.

8.3.5 Qualifications

The Painting Subcontractor must be a member of the Master Painters Association. All work shall be of the highest reasonable standard, and executed by experienced and competent tradesmen to the Architect/Designer's approval.

8.3.6 Workmanship

Strictly adhere to all Manufacturers' instructions.

Strictly observe Manufacturers' requirements with regard to surface and air temperatures for painting. No work shall be carried out on surfaces that are not completely dry, and no external work shall be carried out during damp or wet conditions.

In all finishes any irregularities or brushmarks or dust etc. in each preceding coat shall be rubbed down to provide a smooth clean surface for the following coat. Each coat shall be finished over all surfaces before a further coat is applied, and each coat shall be completely dry before subsequent coats. Finish broad areas before painting trim, paint ceilings before walls and walls before joinery, trim and other items.

Each coat and the full completed system shall be of uniform finish, colour, texture and sheen, shall have proper covering of thin edges, corners, end grain etc. and shall be free of blemishes such as runs, sags, fat edges, entrained hairs, brush marks, starved patches etc.

8.3.7 General

The schedules indicate the general extent of the works to be carried out but are in no way exhaustive in their description of the actual items for painter work. Complete all work necessary for the proper and entire completion of the works. All items and portions of items reasonably inferable but not specifically mentioned are deemed included, i.e. cupboard interiors, the top and bottom of doors, unseen cabinetry tops, etc. All doors shall have equal painter work on ALL surfaces.

Where timber work is specified for priming before fixing the priming shall be thoroughly brushed in to all surfaces, and all exterior timber work for paint finishing shall be fully primed within one week of fixing. Should more than one month elapse between priming and undercoating the timber shall be fully reprimed.

Stopping up work shall be carried out immediately the priming or sealing coat is dry, and shall be solidly placed to finish clean and dry. Stopping tinted to match the timber for clear finished work.

Paint putties within one month of glazing timber frames; paint to impinge on glass to assist sealing.

8.3.8 Materials

All Painter materials shall be ready mixed and delivered in unopened containers. Materials shall be used only for the purpose and in the manner intended by the manufacturer; any apparent scheduled discrepancy in this respect shall be referred to the Architect/Designer immediately for clarification.

Where surfaces are specified to be finished in a particular manner or material, all preparatory work, priming, or undercoating, that is necessary to ensure a proper finish shall be provided, irrespective of any apparent omission herein.

Thinning shall only be to manufacturer's specification. Thoroughly stir as required to lift any settled pigment and ensure the paint is homogeneous. Paints shall be factory or shop tinted to the colour required. Undercoats shall be fully tinted to match the final colour scheduled. All paints shall have the finished film thickness that is specified by the manufacturer (checked by monitoring the coverage per litre).

8.3.9 Completion

Allow to touch up to approval any Painter work which is damaged during the finishing works of other trades. Replace all hardware, remove all masking, covers, containers etc., thoroughly clean all affected surfaces, and leave all spaces ready for immediate occupation. Avoid scratching or abrading glass or hardware during any cleaning.

9 FLOOR COVERINGS

9.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

9.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

9.3 Carpet & Resilient Floor Coverings

9.3.1 Scope

Supply and install the specified Floor Coverings and flooring products to the areas and surfaces, layouts and details shown on the drawings, complete with all accessories. All aspects of this work shall be in accordance with the specified floor covering manufacturers' technical literature and installation requirements, relevant Standards and Code requirements, other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for the specified Floor Coverings and flooring products.

9.3.2 Floor Coverings

Carpet

Carpet flooring; to the specified product, pile style and content, and colour and pattern. Installed in accordance with the manufacturer's requirements and AS/NZS 2455.1 to the locations and layout shown on the drawings.

Vinyl Sheet - Homogeneous

Homogeneous vinyl sheet flooring; polyurethane (PUR) reinforced, to the specified product, thickness, and colour and pattern. Installed in accordance with the manufacturer's requirements and AS/NZS 1884 and AS/NZS 4586 to the locations and layout shown on the drawings.

9.3.3 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Co-ordinate with other trades as required to install the specified floor coverings and accessories.

9.3.4 Workmanship

All installation work shall be carried out by experienced and competent floor layers, familiar with the products specified and installation techniques, under the direct supervision of a Registered National Flooring Association (NFA) Member, in accordance with the manufacturer's installation requirements, NZS/AS 1884, AS/NZS 2455.1, AS/NZS 2455.2 and AS/NZS 4586 as relevant, and as noted and detailed on the drawings.

Use only approved adhesives that are compatible with the specified floor covering product and the substrate as recommended by the floor covering manufacturer.

The building must be fully enclosed and weathertight with all doors and necessary fittings and trim installed prior to laying floor coverings.

9.3.5 Delivery & Handling

Store and handle all floor covering products and accessories in accordance with the manufacturer's recommendations. Store products and accessories under cover and out of direct sunlight on a flat and level surface; keep dry and protect from damage and contamination at all times.

Do not use damaged or defective flooring products or accessories, or products that are beyond their designated shelf life. Do not damage or mark or distort flooring products and accessories during handling.

Allow floor coverings and accessories to properly condition for a minimum of 24 hours, or as recommended by the manufacturer, prior to laying in accordance with the manufacturer's requirements. Unless recommended otherwise by the manufacturer, do not lay floor coverings below 15°C room temperature.

9.3.6 Substrate Preparation

General

Ensure the substrate surface is free of oil, grease and other contaminants, then sweep or vacuum as required to ensure it is absolutely clean. Ensure that any expansion or crack control joints are appropriately trimmed - do not install floor coverings over them.

The commencement of work on each section of floor shall be deemed to indicate a full acceptance by the relevant Flooring Subcontractor that all preparatory works by other trades are appropriate to achieve the required finished results.

9.3.7 Installation

Carpet Floor Coverings - Conventional Stretch-in

Install by conventional stretch-in method carpet floor coverings, and accessories, including all jointing, in accordance with the manufacturers' recommendations, procedures and techniques, AS/NZS 2455.1, and as shown on the drawings.

Allow the carpet underlay and carpet floor coverings to properly condition in accordance with the manufacturers' recommendations prior to laying. Turn underfloor heating systems off 48 hours prior to installation and leave off during installation and for a minimum of 48 hours after completion.

Thoroughly clean each area before commencing work. Seal or prime as necessary any porous surface receiving floor covering adhesive, and apply adhesive exactly to the manufacturer's recommendations.

Confirm the location of all carpet joints and seams prior to laying. Install carpet rolls in consecutive sequence and in the same direction. Do not install carpet underlay and carpet floor coverings over expansion joints - use only the specified expansion joint cover strip and neatly finish the underlay and carpet flooring in accordance with the cover strip manufacturer's requirements.

Install edge grippers and lay the carpet underlay at right angles to the direction of the carpet floor covering with joints no less than 300mm from any seam in the carpet. Staple or adhesive fix underlay to substrates in accordance with the manufacturer's recommendations.

Carpet flooring installed flat and taut and evenly tensioned both ways by power stretching sequence. All seams and cross joins to be close-fitting and fused together with hot melt tape. Cut and properly prepare cross joins to ensure accurate pattern alignment.

Accurately install stair tread nosings and lay pre-cut carpet pieces to each stair tread and riser and finish neatly into or under the nosing edge as necessary.

Install any required carpet skirting, capping and edge trim, transition strips and naplock bars, as noted and detailed on the drawings; all finished straight and level and true to line.

Keep the working area cordoned off and protected during installation and protect completed installation work from damage and contamination until hand over of the works as programmed/scheduled.

9.3.8 Completion

Ensure that the specified floor coverings have been installed correctly, and that all seams, joints and accessories have been and completed correctly. Check for damage and defects and repair or replace as necessary.

Thoroughly clean the installed floor coverings in accordance with the manufacturers' recommended techniques and procedures.

Carry out any product specific finishing/polishing applications as recommended only by the floor covering manufacturer.

Leave the works area clean and remove all rubbish and waste material from the site.

Protect the completed works from damage, trafficable dirt and grime, and stains as necessary while other works are in progress.

Issue to the Owner a copy of the Manufacturers' maintenance requirements and a copy of the Manufacturers' Materials Warranties and the Applicators' Installation Warranties for all of the installed floor coverings.

9.4 Overlay Flooring

9.4.1 Scope

Supply and install the specified Overlay Floorings to the locations, layouts and details shown on the drawings, complete with all accessories. All aspects of this work shall be in accordance with the manufacturers' technical literature and installation requirements, relevant Standards and Code requirements, other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for the specified Overlay Floorings.

9.4.2 Overlay Flooring

Engineered Timber Overlay Flooring - Floating

Engineered Timber Interlocking Overlay Flooring: prefinished, engineered timber interlocking plank flooring, to the specified product, and surface layer wood species and finish, and size. Installed as a floating overlay floor covering in accordance with the manufacturer's requirements, and as specified, to the locations, layout and details shown on the drawings.

Manufacturer & brand name:

Species/colour code:

Finish:

Board size:

Location:

Manufactured Laminate Overlay Flooring - Fixed

Laminate Strip Overlay Flooring: prefinished, manufactured laminate interlocking plank flooring, to the specified product, and species and finish, and size. Installed as a fixed overlay floor covering in accordance with the manufacturer's requirements, and as specified, to the locations, layout and details shown on the drawings.

9.4.3 Substrate Type

Concrete Floor - Manufactured Laminate Overlay Flooring (fixed)

The specified fixed Manufactured Laminate Overlay Flooring is to be installed over a concrete floor.

9.4.4 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Co-ordinate with trades the locations of pipes, cables, outlets, and other fittings installed by others, and to install the specified Overlay Flooring as required.

9.4.5 Workmanship

All installation work shall be carried out by experienced and competent installers, familiar with the products specified and installation techniques, in accordance with the manufacturer's installation requirements, AS/NZS 4586, and as noted and detailed on the drawings.

Use only approved adhesives that are compatible with the specified overlay flooring product and the substrate as recommended by the overlay flooring manufacturer.

The building must be fully enclosed and weathertight with all doors and necessary fittings and trim installed prior to laying overlay floorings.

9.4.6 Delivery & Handling

Store and handle overlay flooring products and accessories in accordance with the manufacturer's recommendations. Store products and accessories under cover and out of direct sunlight on a flat and level surface; keep dry and protect from damage and contamination at all times.

Do not use damaged or defective overlay floorings or accessories, or products that are beyond their designated shelf life. Do not damage or mark or distort overlay flooring and accessories during

handling.

Allow overlay floorings and accessories to properly condition prior to laying in accordance with the manufacturer's requirements. Refer to the manufacturer's installation recommendations for minimum and maximum floor and ambient temperatures.

9.4.7 Substrate Preparation

General

Ensure the substrate surface is free of oil, grease and other contaminants, then sweep or vacuum as required to ensure it is absolutely clean. Ensure that any expansion or crack control joints are appropriately trimmed - do not install overlay flooring over them.

The commencement of work on each section of floor shall be deemed to indicate a full acceptance by the relevant Flooring Subcontractor that all preparatory works by other trades are appropriate to achieve the required finished results.

New Concrete Floors

New concrete substrates must be allowed to properly dry out and be compliant with NZS 3114 'U3 Surface Finish' and with the overlay flooring manufacturer's requirements and must have aged for a minimum of 28 days prior to laying the overlay floor coverings.

Check for moisture content by hygrometer reading to BRANZ BU330 - do not commence laying overlay flooring until the substrate is surface-dry and the moisture readings are less than 70% relative humidity over the entire surface.

Substrate surfaces must not deviate more than 3mm over 3000mm in any direction and have no abrupt variation greater than 1mm over 250mm.

Grind off any high spots on the concrete slab, and using the specified proprietary levelling compound repair flush with feathered edges any low spots or damaged areas then grind smooth.

Lightly grind or shot blast any surface that is glazed to the extent that may compromise the adhesion of the vapour barrier and/or acoustic underlay. Leave the surface clean and free of dust and contaminants etc.

Location:

9.4.8 Installation

Manufactured Laminate Overlay Flooring - Fixed

Install the specified manufactured laminate overlay flooring and accessories in accordance with the manufacturer's recommendations, procedures and techniques, and as shown on the drawings.

Allow manufactured laminate overlay flooring to properly condition in accordance with the manufacturer's recommendations prior to laying.

Confirm the overlay flooring layout pattern and direction prior to laying. Do not install overlay floor coverings over expansion joints - use only the specified expansion joint and neatly finish overlay flooring in accordance with the manufacturer's requirements.

Manufactured laminate overlay flooring accurately laid, fitted and jointed, and fully bonded to the substrate without cupping or surface deviation. Leave expansion gap at all fixed objects, walls and

flooring transitions and junctions. Remove excess adhesive as the work proceeds. Accurately install stair tread nosings and adhesive fix pre-cut manufactured laminate overlay pieces to each stair tread and riser and neatly finish to the nosing edge as detailed. Install any required manufactured laminate skirting, capping and edge trim, transition strips and bars, as noted and detailed on the drawings; all finished straight and level and true to line.

Keep the working area cordoned off and protected during installation and protect completed installation work from damage and contamination until hand over of the works as programmed/scheduled.

9.4.9 Completion

Ensure that the specified Overlay Floorings have been installed correctly, and that all joins and accessories have been and completed correctly. Check for damage and defects and repair or replace as necessary.

Thoroughly clean the installed overlay flooring in accordance with the manufacturers' recommended techniques and procedures.

Carry out any product specific finishing/polishing applications as recommended only by the floor covering manufacturer.

Leave the works area clean and remove all rubbish and waste material from the site.

Protect the completed works from damage, trafficable dirt and grime, and stains as necessary while other works are in progress.

Issue to the Owner a copy of the Manufacturer's maintenance requirements and a copy of the Manufacturer's Material Warranty and the Applicator's Installation Warranty for the installed overlay flooring.

10 PLUMBING

10.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

10.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

1546.1:2008(AS/NZS)	On-site domestic wastewater treatment units - Septic tanks
1596:2014(AS/NZS)	The storage and handling of LP Gas
4607:1989(NZS)	Installation of thermal storage electric water heaters: valve-vented systems
4692.1:2005(AS/NZS)	Electric water heaters - Energy consumption, performance and general requirements
5601.1:2013(AS NZS)	Gas installations - Part 1: General installations
AS/NZS 3500.5:2012	Plumbing and drainage - Part 5: Housing installations
NZBC G11	Gas as an Energy Source
NZBC G12	Water Supplies
NZBC G13	Foul Water

10.3 General

Carry out all works necessary to leave the water, waste, vent and soil systems serving the sanitary fittings and the plumbing hardware shown on the drawings or specified below in correct working order complete with all ancillary systems (safetrays, floor drains, overflows, relief valves, etc.) required, and with all normal incidentals customarily installed by this trade.

Comply with the Building Code, Territorial Authority By-laws and statutory authority Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange for all tests and pay all fees and customary charges in connection with the required works.

10.4 Workmanship

10.4.1 Co-operation

Co-operate with all other trades. Attend upon Concretor, Drainlayer and Carpenter to set out the exact positions of pipe runs before adjacent work is put in hand, and to ensure that all pipes, sleeves, fixings, flashings etc. are correctly incorporated into the structure as construction proceeds.

10.4.2 Workmanship

All plumbing work shall be carried out by, or under the direct control of, properly qualified tradesmen, and shall be to recognised high standards.

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials only to approval. Install seismic restraints to storage tanks and HWCS.

Weatherseal wherever pipes, screws, bolts or other fastenings penetrate an external surface, and particularly roofing; seal with gaskets, flashings (and overflashings if necessary) or mastic as appropriate - any damage that results from failure of such seals will be made good at the Plumber's expense.

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Plumber's expense.

10.4.3 Pipework

Joints between pipes of different materials shall always be to the approval of the TA Plumbing Inspector.

Pipework set-out neatly with a minimum number of bends, and more or less parallel to and at right angles to structural elements - avoid diagonal piping.

All internal pipework shall be concealed except where otherwise is either shown or approved. Exposed pipework shall be accurately and neatly run. Arrange all pipework (and particularly traps) in a manner which will allow maximum future accessibility for repairs or maintenance. Arrange for access panels to any primary maintenance positions, and install conveniently located isolating valves for each group of fittings. Wingbacks securely and squarely fixed. Crox unions usually acceptable only at the final connection to fittings. Install white plastic flanges where pipes penetrate linings in visible locations.

Where pipes are covered with nail fixed linings and trim ensure that their positions are marked on the linings to minimise the risk of subsequent nailings penetrating the pipe. Any such damage shall be rectified immediately, with all consequential damage made good.

Set pipework out in straight runs to even gradients. Fix all pipes to the structure sufficiently to fully support and to prevent sagging or vibration. Clips and saddles shall be the same material as the pipe. Exterior pipes on stand-off brackets. Fixings to the exterior or damp locations shall all be hot dip galvanized unless otherwise noted. Sleeves for pipes or drains penetrating concrete or masonry shall be uPVC, 20mm minimum larger internal diameter than the external diameter of the pipe, finished flush with concrete or masonry, and packed and mastic sealed.

Close open ends of the systems during construction to prevent the entry of foreign matter.

10.4.4 Temperature Movement

All work shall respect in full all probable thermal movements - layouts, fixings and jointings shall be arranged to allow thermal movement without risk of prejudice to watertight conditions, or risk of damage from straining of the pipes which will generate failures.

In particular, observe best local trade practice to avoid problems arising from freezing conditions.

10.4.5 Excavation

Allow to carry out all excavation that is required to suit the services installed by this trade. Check for other services before excavation. Trenches true to line and level, base of trenches clear of loose material, and shore trenches as required to suit the ground conditions. Backfilling shall be carried out by this trade, and be to the requirements specified in Siteworks.

10.4.6 Testing

All plumbing services shall be completed in stages which will allow for proper testing under normal working pressures prior to the application of insulation, concealment or other enclosure. Testing of piped water services shall be by hydrostatic testing in accordance with AS/NZS 3500.1 and shall not show any leakage when subjected to a hydrostatic pressure of 1500kPa for a period of not less than 30 minutes. All leaks remedied and retested. On completion the whole of the plumbing services to be subjected to full operational tests in the presence of the plumbing inspector, with any defects revealed in these tests properly remedied.

10.4.7 Warranties

Warranty cards and manufacturer's guarantees for all items supplied and installed by this trade shall be correctly filled in and handed over prior to Practical Completion.

10.5 Materials

10.5.1 Materials

Materials shall be delivered with packaging and labeling intact. Incidentals (jointing compounds, PTFE tape, seals, washers, silfos, solvent cements, etc.) shall be completely appropriate for the application involved. The use of imperfect items or items damaged in any way is always subject to approval.

10.5.2 Alternatives

The materials and elements specified indicate the required standards for these works. Alternatives which are equal to or superior to these materials and elements may be tendered for approval.

10.5.3 Materials Separation

Separate dissimilar metals in any circumstances which could produce contact or electrolytic action by a water film, with thick plastic tape, bituminous felt or other inert material. Pipes in contact with or built into concrete or masonry shall be fully spiral wrapped in Denso tape or equal.

10.6 Systems

10.6.1 Wastes & Vents

All traps sized to AS 3500.2. Wastes and vents all uPVC. Wastes shall be to AS 3500.2 falls as a minimum. Vents shall be generally as indicated, but avoid where permissible in compliance with AS 3500.2, or shall be combined above the flood level of the fittings.

Fit bird proof domes to all vents.

10.6.2 Cold Water System

Supply From New Connection to Reticulated Supply

All cold water supply pipework shall be polybutylene, arranged and fixed so that all joints are in a fully 'relaxed' condition, without any stress or tension.

Make complete arrangements for the installation of a new connection to the reticulated supply in the street and the main feed and toby in the position shown. Lay on a 20mm main from the toby along the route shown on the Site Plan to the connection position noted on the Floor Plan (pipe depth, protection, backfilling, signal strip etc. to comply with all Supply Authority requirements). At the connection position take a branch feed off for the hosecocks (and reticulate to the positions shown and install angle hosecocks) and toilet cisterns and then take the main feed through an accessibly positioned cleanable in-line sediment and dirt filter.

Primary distribution from the water filter shall be in 20mm piping, reducing to 12mm for the final feed to individual items. Install conveniently located isolating valves to turn off each group of fittings, and install a small isolating valve alongside each toilet cistern not integrally fitted with one. (Note that these isolating valves and the hosecocks are not covered by the Plumbing Hardware Prime Cost Sum).

10.6.3 Hot Water System

Electric Storage, High Pressure Hot Water Cylinder

Supply the electric storage high pressure hot water cylinder noted on the drawings and install it where shown. Where appropriate install the cylinder on a safetray, with its drain discharging in a visible location.

Install temperature and pressure relief valves, cold water expansion valves, flow control valves, line strainers, pressure limit valves, and non-return/isolating valves as required to leave the hot water system in full design operational order. Install a tempering valve for each cylinder to control the hot water temperature at any sanitary fixture used for personal hygiene at not more than 55°C.

Check that the water pressure is suitable for the cylinders operation, and install PRV's if excessive. Pressure relief discharges shall be copper and to the exterior in approved positions.

Flush all pipework before making the final connections. Lag the main distribution pipes full length with wall pipe insulation.

Showers shall have priority feeds, without 'tees', and the pipework layout shall ensure that the showers temperature and pressure remain as even as possible.

Irrespective of whether a mixing device is installed, the storage water heater control thermostat shall be set at a temperature of not less than 60°C to prevent the growth of Legionella bacteria.

10.6.4 Gas Fitting

Scope

9kg LPG cylinder for gas cooktop is included in the Plumbing trade, although all work must be carried by Registered Gasfitters, and be in complete accordance with all relevant Regulations and standards and be in full accordance with best trade practice.

Obtain all necessary permits and pay all fees. If necessary obtain a Dangerous Goods Licence for the storage installation in the name of the Owner; and if the Owner's signature is required forward all relevant papers to the Architect/Designer.

10.7 Elements

10.7.1 Sanitary Fittings

Fix all of the sanitary fittings as scheduled on the drawings and specifications addendum. All fittings checked on delivery for 'perfect' condition. Supply and fix all normal accessories that are not usually supplied with the fitting. The Plumber is responsible for fittings from delivery until Practical Completion of the contract.

10.7.2 Appliances

All appliances are exactly identified on the drawings notes. Main Contractor will establish, in consultation with the Plumber and Electrician, which of them will be supplied by each of these trades.

11 DRAIN LAYING

11.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

11.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

1546.1:2008(AS/NZS)	On-site domestic wastewater treatment units - Septic tanks
BS 5572	Code of practice for sanitary pipework
NZBC G13	Foul Water

11.3 General

Carry out all required works to leave the sewer and stormwater systems shown on the drawings in correct working order complete with all normal incidentals.

Comply with Local Authority By-laws and Health Department Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange all tests and pay all fees and customary charges in connection with the works.

11.4 Workmanship

11.4.1 General

Carry out all required works to leave the sewer and stormwater systems shown on the drawings in correct working order complete with all normal incidentals. Comply with Local Authority By-laws and Health Department Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange all tests and pay all fees and customary charges in connection with the works.

11.4.2 Co-operation

Cooperate with all trades and attend upon the Concretor and Plumber to set out exact pipe runs before any adjacent work is put in hand and ensure that all sleeves etc. are correctly incorporated as work proceeds.

11.4.3 Materials

All pipes and other materials shall comply with the appropriate Standards, and shall be protected from damage of any kind until installation is complete. All incidentals appropriate for the applications involved. Concrete shall be 17.5MPa and as specified under Concretor, Mortar shall be as specified in Blocklayer.

11.4.4 Workmanship

All drainlaying shall be carried out by, or under direct control of, properly qualified tradesmen, and shall be to recognised high standards. Ensure cast-in items are installed when required so that no delay is caused by this trade. Adequately protect all adjacent surfaces - clean down to remove dirt etc., and any damage shall be made good by the appropriate trade at the Drainlayer's expense.

On completion of drainlaying clean up full area affected by this trade to the condition it was in before drainlaying commenced.

Site is to be returned as close as possible to its present condition on completion of the contract.

11.4.5 Excavation

As required for sewer and stormwater. Check for other service lines before excavation - the Drainlayer is responsible for making good any damage. Trenches true to line and with even gradients between gullies, soil stack terminations or downpipes, etc.

Keep the bottom of trenches clear of loose material. All pipes shall be laid in appropriate bedding material, compacted as required. Shore trenches if required to suit ground conditions. Backfilling shall be by this trade, to the standards required in Siteworks.

12 ELECTRICAL

12.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

12.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

3000:2007(AS/NZS)	Electrical installations (known as the Australia/New Zealand Wiring Rules)
3085.1:2004(AS/NZS)	Telecommunications installations - Basic requirements
NZECP 54	Recessed luminaires

12.3 Workmanship

12.3.1 General

Supply and install all materials, including all necessary minor and incidental items, for proper completion of all of the electrical services specified or shown on the drawings. The contract will not be deemed to be complete until the Electrician has provided an Electrical Certificate of Compliance in accordance with NZECP 11 (made available to the Contractor in time for the Code Compliance Certificate application).

Obtain all necessary permits and consents, serve all notices and pay all fees in and customary charges connection with the works.

The position of switches, light and power outlets and other fittings, although shown specifically in some instances, are in general only shown diagrammatically. The exact location of each of these items will be as directed on site by the Owner in conjunction with the Architect/Designer; the Electrician shall give reasonable notice of when this information is required. Items positioned in contravention of this shall be repositioned if directed, including rewiring if necessary, all at the Electrician's expense.

Unless drawn or specified otherwise the mounting height to the centreline of the following items above the floor shall be:

- 1000mm for lighting switches;
- 2000mm for wall mounted lights;
- 2100mm for the bayonet of pendant lights;
- 300mm for power points, except at benches.

(Notify the Architect/Designer if either the actual fitting or mounting position seem to make the mounting height noted above inappropriate).

Warranty cards and manufacturers guarantees for items supplied and installed by this trade shall be filled in correctly and handed over at Practical Completion. Arrange all circuits to obtain an optimum balance of the system, and check and reconnect where necessary to achieve this on completion. Leave the works clean and tidy and in full operational order.

12.3.2 Co-operation

Co-operate with all other trades and attend upon the Concretor and Carpenter to set out all required penetrations and to ensure that all wiring and fittings are correctly incorporated as work proceeds. The Carpenter will provide and fix all necessary dwangs and timber supports in locations determined by the Electrician.

12.3.3 Workmanship

All electrical work shall be carried out by, or under the direct control of, registered tradesmen, and shall be to recognized high standards. All work shall be such as to leave a neat, efficient and robust installation. Neatly label switchboards to identify each circuit.

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604: 2011 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials shall be only to approval.

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Electrician's expense.

12.3.4 Wiring

Joints within cable runs will not normally be accepted. TPS cable shall be adequately supported, and clipped at regular intervals. At terminations all strands of conductors shall be fully secured in a terminal block or clamped under a screw head washer; do not cut away any strands. Wiring which terminates in enclosed fittings and/or where subject to heat liable to cause deterioration, shall be high temperature type, with the tails made off with heat resisting sleeves, to protect the permanent wiring.

Conceal all wiring except as noted on drawings or below. All wiring cast into concrete shall be run in conduit pipes. All cables shall be stranded (single core is unacceptable).

Generally, do not run TPS horizontally within timber walls except in the area up to 300mm above floor. Wire in the ceiling framing and drop vertically to outlets and switches.

Do not run TPS horizontally within partitions except in the area up to 300mm above floor. Wire in the ceiling void and drop vertically to outlets and switches. Principal wiring in the ceiling void shall be supported on adequate catenaries.

Wire exterior lighting in screened cable.

12.4 Systems

12.5 Materials & Control

12.6