

5201 INTERIOR DOORS

1. GENERAL

This section deals with the supply and installation of interior doors.

1.1 RELATED SECTIONS

Refer to GLAZING for glass type and thickness

1.2 DOCUMENTS

Documents referred to in this section are:

NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber framed buildings
NZS 3610	Specification form profiles of mouldings and joinery

2. PRODUCTS

2.1 TIMBER

To NZS 3602.

2.2 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES

Traditional profiles to NZS 3610. Proprietary profiles and special profiles as detailed.
Pencil radius corners of profiled schedules for paint finish.

2.3 INTERIOR DOORS, TIMBER VENEER

Solid/hollow core doors as scheduled complete with matching 6 mm clashing strip to both sides and to the exposed edge of cavity slider doors.

2.4 INTERIOR CAVITY SLIDER

Solid/hollow core door hung within a proprietary cavity slider frame and complete with brand-matched sliding door gear.

2.5 GLAZED DOORS

Solid timber framed, stop end jointed and bead glazed.

2.6 DOOR HINGES

Size and gauge to carry door. 3 hinges per door.

2.7 INTERIOR SLIDING DOOR GEAR

To suit door/sash size and glazed weight and as detailed.

2.8 INTERIOR SLIDING-FOLDING DOOR GEAR

Bi-fold pattern to suit size and weight of doors and as detailed.

3. EXECUTION

3.1 SITE MEASURE

Confirm framed openings on site for dimension, plumb and straightness prior to fabrication or ordering of timber joinery. Confirm lintel head and sill deflection for sliding or bi-fold door systems is within the manufacturer's specified tolerances. Provide not less than 10 mm unless otherwise required.

3.2 EXECUTION GENERALLY

Manufacture to the methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.3 FACTORY FIT HARDWARE

Factory fit the following where specified: -

- Hinges

3.4 FACTORY FINISHING

Before delivery to site: -

- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

Internal doors

3.5 INTERNAL JOINERY FRAMES

Fabricate as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish.

3.6 INTERNAL DOOR FRAMES, SOLID REBATED

Fabricate as detailed. Hang doors to operate freely on hinges, sliding, or bi-fold gear and to the door manufacturer's requirements. Pre drill for fixings through frame. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.7 INTERNAL DOOR LINERS

Heads and jambs finished minimum 18 mm, with 10 mm planted door stops. Width to match width of lined walls. Hang doors on hinges, sliding, or sliding-folding gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.8 INTERNAL DOOR LINERS, EXTENDED

Heads and jambs finished 30 mm, rebated for wall linings and extended a minimum of 10 mm. 10 mm planted door stops. Hang doors on hinges, sliding and bi-fold gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

3.9 INTERNAL CAVITY SLIDERS

Install in accordance with the door manufacturer's requirements, allowing for removal of top trim for maintenance.

Completion

3.10 CHECK

Check and adjust operation of all sashes, doors, hardware and furniture.

3.11 TEMPORARY PROTECTION

On completion remove any temporary protection and leave ready for following work.

5502 JOINERY FIXTURES

1. GENERAL

This section deals with fabrication, including off site finishing and installation of cabinetwork and joinery items, fitting out of specialty spaces and cupboards and fabrication and installation of timber staircases.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC D1/AS1	Access routes, 4.0 Stairways
AS/NZS 1859.2	Reconstituted wood based panels - Dry processed fibreboard
AS/NZS 1860.1	Particleboard flooring - Specifications
NZS 3602	Timber and wood-based products for use in building

2. PRODUCTS

2.1 TIMBER BOARDS AND FRAMES

Carefully sawn to minimise the inherent warping, twisting and bowing of the selected species and to give a finish suitable for clear finishing.

2.2 STAIRCASE ELEMENTS

Timber selections to NZS 3602.

2.3 PLYWOOD PANEL

Urea formaldehyde resin hot-press bonded timber veneers, select grade interior.

2.4 PARTICLEBOARD

Urea-formaldehyde resin bonded medium density particleboard to AS/NZS 1860.1.

2.5 MEDIUM DENSITY FIBRE BOARD

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2.

2.6 MEDIUM DENSITY FIBRE BOARD, PRINTED

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 with a dry stamping foil of polyester film with barrier and adhesive layers impregnated with a decorated photogravure print.

2.7 MEDIUM DENSITY FIBRE BOARD, MELAMINE

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 overlaid both sides with melamine resin impregnated sheet.

2.8 MEDIUM DENSITY FIBRE BOARD, WOOD VENEER

Urea-formaldehyde resin bonded wood fibre sheet to AS/NZS 1859.2 overlaid with natural wood veneer.

2.9 BACKING BOARD

Urea-formaldehyde resin bonded very fine wood fibre sheet to AS/NZS 1859.2.

2.10 PRE-FINISHED BACKING BOARD

Urea-formaldehyde resin bonded fine wood fibre sheet to AS/NZS 1859.2, veneered one side with melamine sheet.

2.11 BENCHTOPS

As detailed on the drawings and as required for specified fittings and appliances.

2.12 CARCASE CONNECTORS

One-piece steel, straight deep-cut thread, fibre board screws with press fit plastic trim cap or tight joint connectors.

2.13 CARCASE FASTENERS

Knock down type centric sphere zinc alloy connectors with connecting bolts, sleeves and dowels, to suit each particular fastening location.

- 2.14 **BUTT HINGES**
Butt, broad butt, flush butt or overlay, steel, zinc-plated steel, stainless steel, or brass, to suit the location, or as detailed.
- 2.15 **CONCEALED HINGES**
All-metal zinc alloy with automatic spring and screw-fixed. Plastic button door stops.
- 2.16 **DRAWER RUNNERS**
Single action under mounted or side mounted powder coated runners or groove mounting type, precision running ball-mounted single-stage extension, bright steel finish system.
- 2.17 **GLUES AND ADHESIVES**
As approved by the manufacturer for the timber, timber product, or pre-finished timber product joint being used.
- 2.18 **LIGHT DUTY COATING SYSTEM**
Single pack, clear or pigmented nitro-cellulose or pre-catalysed lacquer.
- 2.19 **MEDIUM DUTY COATING SYSTEM**
Two pack, clear or pigmented acid catalysed coating.
- 2.20 **HEAVY DUTY COATING SYSTEM**
Two pack, clear or pigmented polyurethane coating.
- 3. EXECUTION**
- 3.1 **JOINERY FIXTURES GENERALLY**
Execution to include those methods, practices and processes contained in the current syllabus for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). Take responsibility for the completed joinery fixtures including fittings included within fixtures and the on site installation.
- 3.2 **SITE MEASURE**
Site check and confirm dimensions after wall linings have been fixed. Verify positions of electric power outlets, wiring to light fittings included in joinery fixtures, water supplies and waste pipe locations.
- 3.3 **FABRICATION QUALITY**
Carry out machining within the practices required for the particular timber, wood product or pre-finished wood product being used. Machine drill and cut holes and recesses and form joints to the componentry manufacturer's requirements. Ensure work is accurate, square and true to line and face.
- 3.4 **FABRICATE JOINERY FIXTURES**
Carry out jointing, dowelling and other operations necessary for the proper assembly of the fittings as detailed, with fixings concealed unless otherwise detailed. Use glue joints where provision for shrinkage is not required, with contact surfaces, glueing and pressure all applied to the glue manufacturer's requirements. Locate and drive connectors and fasteners to the bolt manufacturer's requirements. Scribe fit adjustable shelves with 4 shelf pins and locate force fit pin holes at 50 mm maximum centres in solid cheeks. Hang doors on concealed hinges.
- 3.5 **MAKE CUT OUTS FOR APPLIANCES AND FITTINGS**
Obtain fitting templates from the appliances and other fittings to be installed within joinery fixtures and bench tops. Ensure appliances and fittings can be installed with the required tolerances and clearances. Where bench tops are being provided under other work sections, provide templates and confirm dimensions to others.
- 3.6 **FABRICATE DRAWERS**
Construct drawers as detailed, using proprietary metal section drawer runners. Fit drawers with 3 mm clearance into the drawer space.

- 3.7 **FABRICATE TIMBER STAIRS**
To NZBC D1/AS1: 4.0 Closed type, unless detailed otherwise. House and wedge treads and risers 15 mm into strings, all glued, wedged and blocked. Form nosing overhangs of 25 mm by splaying risers forward to finish flush with the front of the treads. Fabricate and install the handrails and balustrading as detailed, complete with associated metal componentry and hardware.
- 3.8 **TRANSIT AND DELIVERY**
Load, transport and unload fittings without distortion or damage and keep covered to protect from the weather. Do not deliver fittings until floor, wall and ceiling surfaces are in place and the fittings can be placed in their final location.
- 3.9 **INSTALL JOINERY FIXTURES**
Scribe fit on site and install level, square, plumb and true to line and face.
- 3.10 **WARDROBE AND COAT CUPBOARD**
Fit out with 300 mm wide melamine faced board shelf, on ex 25 mm scotia bead to back and ends. Exposed edges clashed to match. Fit a selected white powder-coated aluminium coat rail to the front edge of the shelf. Shelf heights as shown on the drawings.
- 3.11 **STORAGE CUPBOARD**
Fit out with 5 full depth melamine faced board shelves of thickness to suit span supported on ex 25 mm beads along back and ends. Exposed edges clashed to match. Shelf heights as shown on the drawings.
- 3.12 **LINEN CUPBOARD**
Fit out with 2 full depth 19 mm x 70 mm timber slat shelves on ex 25 mm scotia bead along ends. Shelf heights as shown on the drawings.
- 3.13 **COATING SYSTEM, PREPARATION**
 - Fill timber defects with proprietary wood filler. (e.g. cracks, holes, etc)
 - Sand timber to a smooth even finish using 180 grit paper.
 - Remove all sanding dust using air guns and tack rags.
 - Ensure substrate is free from dust, grease, dirt and other contaminants.
 - Ensure moisture content of the timber is less than 15% immediately before commencing coating operations.
- 3.14 **COATING SYSTEM, APPLICATION**
To coating manufacturer's requirements.

6201 TILING

1. GENERAL

This section deals with the supply and setting of ceramic tiles to walls and floors, over concrete, masonry and lined timber substrates.

1.1 DOCUMENTS

Documents referred to in this section are:

AS 2358	Adhesives - For fixing ceramic tiles
AS 3740	Waterproofing of wet areas within residential buildings
AS 3958.1	Ceramic tiles, 3958 - Guide to the installation of ceramic tiles
BS 6431	Ceramic floor and wall tiles
BRANZ Good practice guide	Tiling

1.3 QUALIFICATIONS

Carry out tiling work using competent tilers, experienced with the materials and techniques specified.

1.4 ADHESIVES COMPATIBILITY

Adhesives selected for use on proprietary substrates or waterproof membranes to have documented compatibility approval from the respective manufacturers.

1.5 SAMPLES

Submit samples of the tiles specified, sufficient to show the pattern and the range of colour finish.

2. PRODUCTS

2.1 TILES

To BS 6431, parts 1 to 23 inclusive. Refer to SELECTIONS for type and location.

2.2 RIGID SHEET UNDERLAYS

Refer to CARPENTRY.

2.3 SHEET WATERPROOFING MEMBRANE

Proprietary sheet waterproofing system.

2.4 LIQUID WATERPROOFING MEMBRANE

To AS 3740.

2.5 UNDERTILE HEATING

Proprietary electric undertile heating system complete with thermostat/controller.

2.6 CEMENT BASED SCREED

Mix of 3:1 Portland cement, wash-mix sand, gauged with liquid polymer additive to the tile manufacturer's requirements.

2.7 TILE ADHESIVE

To AS 2358.

2.8 GROUT

Cement based, compressible and to suit the particular location and use.

2.9 MOVEMENT CONTROL JOINT SEALANT

To BRANZ Good practice guide: Tiling, section 5.0, Detailing.

3. EXECUTION

- 3.1 **HANDLING AND STORAGE**
Take delivery of packets of tiles undamaged and dry. Handle tiles with care to avoid chipping, soiling and damage. Store on hard level standings in non-traffic, non work areas that are enclosed, clean and dry.
- 3.2 **CHECK TILES**
Check tiles to ensure that they are as specified, from the same batch, of a consistent colour and pattern and sufficient to complete the work. Reject tiles that vary widely in colour or pattern. Reject tiles that are damaged.
- 3.3 **CONFIRM LAYOUT**
Before commencing work confirm the proposed layout of tiles and expansion joints and other visual considerations of the finished work.
- 3.4 **SETTING OUT**
Before commencing the setting out confirm the number and location of cut tiles. Minimise in number with no cut tiles less than half size and only at the perimeter of the work.
- 3.5 **SUBSTRATE**
Ensure that all services and accessories are in place and located to suit the tile layout, with the substrate required for tiling work. Commencement of the work means the substrate and environment are accepted by the tile layer as satisfactory.
- 3.6 **TEMPERATURE**
Do not carry out tiling where the ambient temperature is below 5°C, or onto a substrate with a temperature higher than 40°C.
- 3.7 **TILING GENERALLY**
Prepare surfaces and carry out the tiling work in accordance with AS 3958, part 1, as modified by BRANZ Good practice guide: Tiling.
- 3.8 **NEW CONCRETE AND MASONRY WALLS PREPARATION**
Air dry concrete walls for 4 weeks before applying mortar or adhesive. Remove all contaminants affecting bonding or adhesion by steam cleaning. Surface to finish clean and dry, with a texture giving a complete key.
- 3.9 **EXISTING WALL SURFACES PREPARATION**
Remove all paint and other finishes sufficiently to obtain a key and prepare surface in accordance with the adhesive manufacturer's requirements and with a maximum variation in background of ± 4 mm in 2 metres lineal.
- 3.10 **EXISTING SHEET WALL LININGS PREPARATION**
Remove all contaminants that may affect bonding or adhesion. Surface to finish clean and dry with a texture providing a complete key, to the sheet manufacturer's requirements and with a maximum variation in the background plane of ± 4 mm in 2 metres.

Remove all paint and other finishes from existing sheet linings. Surface to finish clean and dry with a texture providing a complete key.
- 3.11 **CONCRETE FLOORS PREPARATION**
Remove from the surfaces all contaminants such as paints, oils, release and curing compounds. Remove all projections, unevenness and loose material to leave a clean, dust and dirt-free surface.

Remove all existing finishes down to the concrete. If the exposed concrete finish is not suitable then scabble the surface to expose the coarse aggregate.
- 3.12 **TIMBER FLOORS PREPARATION**
Confirm with the owner that the deflection of the timber floor is within the range of $\frac{1}{360}$ th span. Remove from the surface all existing finishes, punch nail heads and sand to a smooth, clean, dust-free surface.

- 3.13 **LAYING SHEET WATERPROOFING MEMBRANE**
Install to manufacturers requirements and to BRANZ Good tiling practice, 7.0
Waterproofing interior wet areas.
- 3.14 **APPLYING LIQUID WATERPROOFING MEMBRANE**
Apply the selected liquid waterproof membrane system to the membrane manufacturer's requirements and in accordance with AS 3740 and to BRANZ Good tiling practice, 7.0
Waterproofing interior wet areas.
- 3.15 **INSTALL WATERPROOFING MEMBRANE**
Install waterproofing membrane between the tile adhesive and the substrate. Reinforce all junctions of the waterproofing membrane to BRANZ Good tiling practice; 7.0
Waterproofing interior wet areas. Unless otherwise specified or shown on the drawings, install waterproof membranes as follows: -
- Unenclosed shower cubicle
To 1800 mm above floor and 300 mm above shower rose.
To at least 1500 mm from shower rose.
To the floor within 1500mm of the shower rose.
- Bath with a shower over and no shower screen
To 1500 mm from the shower rose and top edge.
To 1800 mm above base of bath.
To the floor within 1500mm of the shower rose.
- Bath with shower over and a screen for the shower
To 1800 mm height around sides of bath.
- Bath
To 150 mm minimum around the sides and along walls horizontally 150 mm minimum.
- Splashback to a vanity
To 300 mm minimum up wall behind the vanity.
To the floor level at least twice the width of the vanity and 500 mm min beyond it at each end.
- 3.16 **INSTALL UNDERTILE HEATING**
Clean thoroughly and prepare as for tiling. Remove any paint overspray and plaster spills. Ensure that waterproofing has been completed. Install electric undertile heating system to manufacturers requirements with the element connected to a continuity tester during installation. Leave ready for tiling and connection to the electrical system.
- 3.17 **LAYING CEMENT SCREED**
Apply a proprietary cement slurry bond coat over the whole of the floor to the tile manufacturer's requirements. Mix and place a 40 mm thick mortar bed over the bond coat and firmly tamp, screed and compact to the required level. Form screeds with a deviation from plane of not more than 5 mm over 3 metres.
- In waterproofed areas where the cement screed has been laid over the waterproofing membrane, prepare the screed surface by applying a further waterproof coating before laying tiles.
- 3.18 **FALLS**
Form screeds in areas where water is used in significant amounts with a deviation from plane of not more than 5 mm over 3 metres. Unless otherwise specified form screeds with the following falls:
- | | |
|----------------|---|
| 1 : 40 minimum | For tiled decks which also act as a roof |
| 1 : 40 minimum | For paving over ground |
| 1 : 40 minimum | For shower bases |
| 1 : 40 | For shower bases for people with disabilities |
| 1 : 50 minimum | For commercial kitchens |

- 3.19 **TILE FIXING GENERALLY**
Apply adhesive, prepare and fix tiles by the method required by the adhesive manufacturer and tap them firmly into place.
- 3.20 **TILE FIXING, CONCRETE, CEMENT-BASED ADHESIVE, THICK BED**
Apply and float thick bed cement-based adhesive to a maximum 6 mm bed thickness to the tile manufacturer's requirements. Rib surface with a notched trowel, press tiles and beat it into place with 3 mm joints, and to obtain required coverage of adhesive on the back of each tile.
- 3.21 **TILE FIXING, CONCRETE, CEMENT-BASED ADHESIVE, THIN BED**
Apply and float thin bed cement-based adhesive to a minimum 3 mm bed thickness to the tile manufacturer's requirements. Rib surface with a notched trowel, press tiles and beat it into place with 3 mm joints, and to obtain required coverage of adhesive on the back of each tile.
- 3.22 **TILE FIXING, RIGID SHEET LININGS**
Refer to 3801 CARPENTRY for the installation of rigid sheet linings.

Prime the surface after the curing of any waterproof membrane. Spread adhesive to a uniform minimum thickness of 3 mm and rib it with a notched trowel to the tile manufacturer's requirements. Press tiles and beat it into place to obtain the required coverage by adhesive on the back of each tile.
- 3.23 **TILE FIXING, INTERIOR TIMBER FRAMED FLOORS**
Refer to CARPENTRY for the installation of rigid sheet underlays.

After the curing of any waterproof membrane, prime the surface, spread adhesive to a uniform minimum thickness of 3 mm and rib it with a notched trowel to the tile manufacturer's requirements. Press tiles and beat it into place to obtain the required coverage by adhesive on the back of each tile.
- 3.24 **GROUTING**
Remove spacers. Prepare joints, mix and apply proprietary grout and finish off to the grout manufacturer's requirements. Grout to finish uniform in colour, smooth and without voids, pinholes or low spots.
- 3.25 **MOVEMENT CONTROL JOINTS**
Minimum width of 6 mm, carried through tile and bedding. Where substantial movement is anticipated, carry through the rigid sheet to the structure. Install joints over expansion joints in structure, at junctions between different backgrounds, where abutting other materials, at storey heights horizontally and 3.0 metres vertically, at internal corners and at junctions with floors and columns.

Ensure joints are clean, formed, filled, and the sealant inserted to the sealant manufacturer's requirements.
- 3.26 **CLEAN**
Upon completion of setting and grouting, thoroughly sponge and wash the tiles to leave clean and free of blemish. Finally polish tiles with a clean dry cloth.
- 3.27 **REMOVE**
Remove unused materials from the site.
- 3.28 **PROTECTION**
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6401 VINYL SURFACING

1. GENERAL

This section deals with floor preparation (thin sheet underlays and floor levelling compound) and the supply and installation of PVC sheet, PVC tiles, to floors and PVC sheet to wall surfaces, complete with skirtings, covings, trims and edgings.

1.1 DOCUMENTS

Documents referred to in this section are:

AS/NZS 1859.2 Reconstituted wood-based panels - Dry processed fibreboard
AS/NZS 1859.4 Reconstituted wood-based panels - Hardboard
NZS/AS 1884 Floor coverings - resilient sheet and tiles - laying and maintenance practices.

BRANZ Bulletin 330 Thin flooring materials - 2 preparation and laying

1.2 QUALIFICATIONS

Carry out work using competent, experienced layers, familiar with the materials and techniques specified.

1.3 SAMPLES

Submit samples of sheet, tile and accessories to the owner, sufficient to show the pattern and the range of colour finish.

2. PRODUCTS

Floors

2.1 THIN FIBREBOARD UNDERLAY

Medium density fibreboard to AS/NZS 1859.2.

2.2 HARDBOARD UNDERLAY

High density standard hardboard sheet to AS/NZS 1859.4.

2.3 VINYL SHEET AND TILES

High vinyl content homogeneous monolayer flexible PVC sheet/tile flooring.

2.4 VINYL COVINGS

Commercial coving: pencil cove method, with butterfly mitres to all external and internal corners. Domestic coving: pencil cove or fillet cove method.

2.5 WALL AND FLOOR VINYL JOINING STRIP

White PVC floor to wall finishing strip.

2.6 THERMO-WELDING

Manufacturer supplied colour matched weld rod.

Walls

2.7 VINYL SHEET WALL COVERING

High vinyl content homogenous flexible PVC sheet wall covering.

3. EXECUTION

Preparing substrate

3.1 NEW CONCRETE

Clear substrate of debris, clean off surface contamination and carry out surface repairs using a proprietary levelling compound. Carefully feather out at perimeters of repaired areas. Grind level, then vacuum to remove all dust. Check for moisture content by hygrometer to BRANZ Bulletin 330 and do not commence laying vinyl until readings for the whole area show 75% relative humidity or less.

- 3.2 **NEW TIMBER BOARD OR PARTICLEBOARD**
Clear substrate of debris, clean off surface contamination and carry out surface repairs using a proprietary levelling compound. Carefully feather out at perimeters of repaired areas. Grind smooth, then vacuum to remove all dust.
- Check for moisture content and do not commence final sanding or laying until readings for the whole area show a moisture content of: -
- 8 -12% for air conditioned buildings
 - 10 -14% for intermittently heated buildings
 - 12 -16% for unheated buildings
- 3.3 **EXISTING CONCRETE**
Strip off existing floor coverings, adhesive and surface contaminants. Ensure concrete is dry and if in doubt check for moisture content by hygrometer to BRANZ Bulletin 330. Do not commence laying vinyl until readings for the whole area show 75% relative humidity or less. Carry out minor repairs using a cement-based levelling compound, carefully feathered out at all perimeters of repaired areas. Grind level, then vacuum to remove all dust.
- 3.4 **EXISTING TIMBER BOARD OR PARTICLEBOARD**
Strip off existing floor coverings, machine sand to remove adhesive and surface contaminants. Then vacuum to remove all dust prior to installing underlay sheets.
- 3.5 **TIMBER BOARD OR PARTICLEBOARD, LAYING THIN FIBREBOARD UNDERLAY**
Lay underlay sheets with joints staggered, with a 0.5 mm gap between sheets and 2 mm gap at all perimeters. Use 18 mm divergent staples at 100 mm centres throughout the whole sheet and 30 mm apart, 18 mm in from the edges of the sheets. Punch staples below the surface and sand joins level.
- 3.6 **TIMBER BOARD OR PARTICLEBOARD, LAYING HARDBOARD UNDERLAY**
Punch existing floor fixings and course sand level. Lay underlay with joints staggered, with a 1 mm gap between sheets and a 2 mm gap at all perimeters. Use 18 mm divergent staples at 100 mm centres throughout the whole sheet and 30 mm apart, 18 mm in from the edges of the sheets. Punch staples below the surface and sand joins level.
- 3.7 **TIMBER BOARD OR PARTICLEBOARD, LAYING MASONITE UNDERLAY**
Underlay with 5.5 mm Masonite with joints staggered and with a 0.4 mm gap between sheets and 3 mm gap at all perimeters. Use 22 mm narrow crown staples at 150 mm centres throughout the whole sheet and 75 mm apart, 10 mm in from the edges of the sheets. Punch staples 0.4 mm below the surface and sand joins level.
- General**
- 3.8 **STORAGE**
Maintain rolls of sheet, packages of tiles and accessories undamaged and dry. Store rolls upright with other material on level surfaces in non-traffic, non-work areas that are enclosed, clean and dry.
- 3.9 **HANDLING**
Avoid distortion, stretching, marking and damage to edges while shifting, unrolling and handling sheet, tiles and accessories. Inspect for any faulty material. Do not use faulty or damaged material.
- 3.10 **BEFORE COMMENCING WORK**
Ensure that the building is enclosed, wet work complete, doors hung and lockable, finishes and trim complete, and good lighting available, before starting work.
- 3.11 **INSPECT**
Inspect the substrate to ensure it is of the standard required for work in this section.

- 3.12 LAYING
Carry out the whole of the work to NZS/AS 1884, BRANZ Bulletin 330 "Thin flooring materials - 2 preparation and laying" and to the flooring manufacturer's requirements.
- 3.13 LAYOUT
Before beginning the installation confirm the proposed layout of material, location of seams and other visual considerations of the finished work.
- Vinyl floor laying
- 3.14 PREPARATION
Check that each colour supplied is from the same batch. Follow the vinyl manufacturer's requirements for conditioning of rolls and the working temperatures and conditions before, during and after laying. Protect work from solar heat gain and switch off under-floor heating during and for 48 hours either side, of the work period.
- 3.15 ADHESIVE APPLICATION
Apply approved adhesive as required by the vinyl manufacturer and without trowel marks after setting. Follow requirements for open time, taking note of substrate porosity, ambient temperature and relative humidity. Remove excess adhesive as the work proceeds using required techniques.
- 3.16 LAYING VINYL SHEET
Roll out, cut, leave to condition and install sheet vinyl to the vinyl manufacturer's requirements. Ensure there are no air bubbles or twisting, that the seams are kept clear of adhesive, and immediately the sheet is adhered roll with a 68 kg roller.
- 3.17 THERMO-WELDING VINYL SHEET
Machine groove and thermo-weld all seams in specified areas, heating the sheet and weld rod to a sufficient temperature to melt and fuse them together into a single mass. Trim the weld to leave a smooth, flush surface with the sheet.
- 3.18 CROSS JOINS
Plan and allow cuts to avoid cross joins. Obtain written approval of the owner before proceeding if cross joins are unavoidable. Cross joins are not acceptable in wet areas.
- 3.19 COVE VINYL
Pencil cove flooring to the specified height and finish off as detailed.
- 3.20 MITRES
Perform butterfly method to internal and external mitres. Thermo-weld mitres.
- 3.21 VINYL TO STAIRCASES
Fit selected nosings to each tread and at the top of each stair flight, in accordance with the nosing manufacturer's requirements. Lay pre-cut vinyl sheets to each tread and riser, pencil coved at the rear of each tread.
- 3.22 LAYING VINYL TILES
Set out from the centre of the area in two preparatory runs and modify to suit before laying tiles from the centre to the vinyl manufacturer's requirements. Ensure air is expelled and, as each section is completed, immediately roll with a 68 kg roller. Complete sections before scribing the perimeter tiles.
- 3.23 FIT VINYL SKIRTINGS
Fit skirtings in accordance with the skirting manufacturer's requirements.
- 3.24 FIT VINYL EDGING
Fit tapered vinyl edging to all borders, except where abutting carpet.
- 3.25 CLEAN
Leave vinyl flooring surfaces free of adhesive, dirt and debris. Vacuum off, damp mop with a low foam neutral detergent, with a pH level of 7 to 8. Allow to dry and finally buff

with a rotary machine using suitable pads at 300 rpm. Polymer polishes to be used only where approved by the vinyl manufacturer and accepted by the owner.

Vinyl sheet to walls

- 3.26 **WALL SURFACES**
Clean off surface contamination, carry out minor repairs and bring to a smooth, even surface.
- 3.27 **APPLY PRIMER OR SEALER FOR VINYL SHEET**
Prime and/or seal porous plaster, concrete and timber substrates to the adhesive manufacturer's requirements.
- 3.28 **FLOOR TO WALL FINISHING STRIP**
Adhere to walls in a true, straight line using contact adhesive. Roll immediately using a seam roller to ensure maximum bond strength is achieved.
- 3.29 **APPLY VINYL WALL SHEET**
Apply sheet to walls and heat weld seams under the technical direction of the wall sheet manufacturer's representative for each particular location.
- Obtain written approval of the proposed joint layout approach from the owner, then adhesive fix either vertically or the T-method, ensuring all corners are wrapped and joints are no closer than 200 mm to internal or external corners.
- Cut vinyl neatly to recess on the floor/wall finishing strip and chemically weld this joint using Werner Mueller, type C welding compound.
- 3.30 **THERMO-WELD VINYL WALL SHEET**
Hand groove and thermo-weld all seams, heating the sheet and weld rod to a sufficient temperature to melt and fuse them together into a single mass. Trim the weld to leave a smooth, flush surface with the sheet.
- Completion**
- 3.31 **ACCEPTANCE**
Arrange for a final inspection of the completed work by the owner. Protect all surfaces until the completion of the works.
- 3.32 **REMOVE**
Remove unused materials from the site.

6501 CARPETING

1. GENERAL

This section deals with the supply and installation of woven or tufted carpet on underlay.

1.1 DOCUMENTS

Documents referred to in this section are:

AS/NZS 2455.1 Textile floor coverings - Installation practice - General

The New Zealand Carpet Manufacturers' Association Conditions of Warranty and Installation Guide

1.3 QUALIFICATIONS

Carpet layers to be experienced competent workers, familiar with the materials and the techniques specified and with AS/NZS 2455.1.

2. PRODUCTS

2.1 UNDERLAY

Refer to SELECTIONS for brand/type.

2.2 CARPET

Refer to SELECTIONS for brand/type and location.

2.3 BINDER BARS

Anodised aluminium section with fluted face.

2.4 DIVIDER STRIPS

Hardwood strips 20 mm x 15 mm or as specified. Refer to SELECTIONS for type and size.

2.5 EDGE GRIPPER

Timber/plywood with steel grippers to carpet manufacturer's requirements.

2.6 STAIR NOSINGS

Refer to SELECTIONS for type.

Accessories

2.7 ADHESIVE, UNDERLAY

To AS/NZS 2455.1, clause 1.5.3. and underlay manufacturer's requirements.

2.8 ADHESIVE, CARPET

To AS/NZS 2455.1, clause 1.5.3. and carpet manufacturer's requirements.

2.9 TAPE

To carpet manufacturer's requirements.

3. EXECUTION

3.1 COMPLY

Comply with the requirements of the carpet manufacturer including preparation of and procedures over the various substrates.

3.2 SUBSTRATE

Before starting work inspect the substrate to ensure it will allow work of the required standard and that all fittings and fixtures around which the carpet is to be scribed, are in place.

- 3.3 PROTECTION
Protect adjoining work surfaces and finishes during installation and make good any damage to same.
- 3.4 TAPE
Tape for binding and seaming to be the type and width required by AS/NZS 2455.1 to suit the specified carpet and the standard of performance required.
- 3.5 LAYOUT
Plan the carpet layout so that: -
- seams run lengthways
- traffic runs along the seam
- light from windows is not across the seam
- pile faces away from the main natural light source.
- 3.6 TEMPERATURE
Acclimatise carpet to a room temperature above 15°C through the whole of the installation.
- 3.7 STORAGE
Keep carpet dry and protected from damage, sharp bending or folding.
- 3.8 PREPARE FLOOR SURFACE
Prepare floors for laying to AS/NZS 2455.1 requirements.
- 3.9 INSTALLATION, UNDERLAY
Installation to AS/NZS 2455.1. Lay at right angles to the carpet direction.
- 3.10 INSTALLATION, CONVENTIONAL SYSTEM
Tape carpet joints, fix grippers to floor and install underlay and carpet to AS/NZS 2455.1, section 3. Stretch carpet tight in both width and length evenly without bowing, square with walls.
- 3.11 INSTALLATION, DIRECT STICK
Installation to AS/NZS 2455.1 requirements. Apply adhesive evenly over the entire substrate surface and lay the carpet with all edges, selvages and joins tightly butted and all completely bonded to the floor surface. Roll the carpet with a clean 25 kg roller and ensure complete contact with adhesive.
- 3.12 INSTALLATION, DOUBLE BOND SYSTEM
Installation to AS/NZS 2455.1 requirements. Apply adhesive on the underlay to AS/NZS 2455.1. and lay the carpet with all edges, selvages and joins tightly butted and all completely bonded to the underlay surface.
- 3.13 INSTALLATION, PRE APPLIED ADHESIVE SYSTEM
Installation to AS/NZS 2455.1 requirements. Lay underlay using solvent free primer to sub floor and to bond the carpet to the underlay. Lay the carpet with all edges, selvages and joins tightly butted and all completely bonded to the underlay surface.
- 3.14 FIT STAIR NOSINGS
Fit stair nosings as detailed and to the nosing manufacturer's requirements.
- 3.15 FIX TRIMS
Fix binder bars, carpet to carpet bars, and trims to all junctions with other materials and to carpet edges, to AS/NZS 2455.1. Ensure that all junctions with other materials are neatly formed, with bars and trims securely fastened to the substrate, 20 mm from each end and at maximum 100 mm centres.
- 3.16 TAKE AWAY
Take away from the site all plant and all materials not used, leaving finished floor clean and without blemish.

3.17

CLEAN

On completion thoroughly vacuum the finished carpet.

6701 PAINTING AND PAPERHANGING

1. GENERAL

This section deals with decorative coating and sealing work on prepared surfaces and with the supply and application of paper-backed wallpaper.

1.1 DOCUMENTS

Documents referred to in this section are:

OSH Guidelines for the management and removal of asbestos

Health and Safety in Employment Act 1992

1.3 MANUFACTURER'S MANUALS

Refer to the paint manufacturer's manuals and follow their preparation, sequence and application requirements applying to each system. Ensure all paint coats in any system are supplied by the same manufacturer.

1.4 QUALIFICATIONS

Carry out work using competent and experienced painters and paperhangers.

1.5 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety in Employment Act 1992 and if elimination or isolation is not possible, then minimise the hazards in this work.

Minimise hazards when carrying out the following:

- Treating or removing lead based paint.
- Burning off paint.
- Sanding off paint.
- Using solvent based paint removers.

1.6 CONTROL SAMPLES

Prepare samples of the finished work as scheduled, including preparation and colour as specified. Obtain approval of the appearance before proceeding. Refer to SELECTIONS for requirements.

2. PRODUCTS

2.1 PAINT

To the paint manufacturer's standards for exterior and/or interior primers, undercoats, sealers, stains, clear coatings, solvent-borne and water-borne paints.

2.2 GAP FILLERS

Linseed oil, putty, plastic wood, wood filler or plastic filler, to suit and to match the surface being prepared.

3. EXECUTION

3.1 INSPECT

Inspect surfaces for painting and report to the owner any that will not, after the preparatory work laid down by the paint manufacturer, allow work of the required standard. Confirm that all areas have adequate lighting and are sufficiently free of other construction activities to enable painting and/or paperhanging work to proceed.

3.2 PROTECT

Cover up adjoining surfaces and areas liable to damage or over-painting.

3.3 REMOVE HARDWARE

Remove hardware and door/window furniture and replace on completion. Do not paint over permanently attached hinges, or any hardware items which cannot be removed. Refer to SELECTIONS for type and location.

- 3.4 **PRIMING AND SEALING**
Ensure that priming and sealing work needed before or during construction is carried out when required.
- 3.5 **ENVIRONMENTAL CONDITIONS**
Carry out work within acceptable temperature and humidity limits, with timber dry, all to the requirements of the paint manufacturer.
- 3.6 **SELECTIONS**
Confirm all selections, colours and finishes for both paint and wallpaper with the owner, before commencing work.
- 3.8 **SHARP EDGES, CRACKS AND HOLES**
Repair as required by the paint manufacturer.
- 3.9 **PREPARE SURFACES**
Prepare surfaces to be coated as required by the paint manufacturer. Make good all damage and defects.
- 3.10 **PAINT APPLICATION**
Apply paint by brush and/or roller to suit the location of the coating and to the paint manufacturer's requirements. Do not spray on site without express permission.
- 3.11 **DEFECTIVE WORK**
Correct defective work immediately. Recoating to follow the selected paint system's requirements.
- 3.12 **SCUFF BETWEEN COATS**
Scuff between all coats to remove any dust pick-up, protruding fibres and coarse particles.
- 3.13 **FINISHED PAINT SURFACES**
Finished paint surfaces to show uniformity of gloss and colour, with the correct thickness for each coat, and freedom from painting defects. Ensure finished work is clean and free of any disfigurement.
- 3.14 **CONFIRM WALLPAPER**
Confirm that all rolls of each pattern are from the same batch.
- 3.15 **WALLPAPER INSTALLATION**
Seal or size walls. Use only full length drops, completely glued, pattern matched and hung vertically without bubbles or visible butt joints. Scribe cut paper onto surrounding trim.
- 3.16 **CLEAN**
Clean adjoining surfaces, glass and fittings of any paint contamination.
- 3.17 **REPLACE**
Replace hardware without damage to the hardware or the adjoining surfaces.
- 3.18 **TAKE AWAY**
Take away from the site unused painting materials and equipment.

7101 HOT AND COLD WATER SYSTEM

1. GENERAL

This section relates to potable water supply connection to the project, and the installation of hot and cold water supply pipework, hot water cylinders and isolation valves.

Related work

1.1 RELATED SECTIONS

Refer to SANITARY FIXTURES, TAPWARE AND ACCESSORIES for sanitary fixtures and tapware selections.

1.2 DOCUMENTS

Documents referred to in this section are:

NZBC B2/AS1	Durability
NZBC G12/VM1	Water supplies
NZBC G12/AS1	Water supplies
NZBC H1/AS1	Energy Efficiency
AS/NZS 2642.2	Polybutylene pipe fittings Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe systems - Mechanical jointing fittings for use with polybutylene pipes for hot and cold water applications
AS/NZS 3500.5	National plumbing and drainage – Domestic installations
NZS 3501	Specification for copper tubes for water, gas and sanitation
NZS 4305	Energy efficiency domestic type hot water systems
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4606.3	Storage water heaters - Specific requirements for water heaters with composite shells
NZS 4607	Installation of thermal storage electric water heaters: valve-vented systems
NZS 4617	Tempering (3-port mixing) valves
DIN 8077	Polypropylene (PP-R) Pipe dimensions
DIN 8078	Polypropylene (PP-R) Pipes Types 1, 2 & 3, General Quality Requirements and Testing.
Plumbers, Gasfitters and Drainlayers Act 1976	

1.4 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a plumber registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

Warranties

1.5 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Warranty period: 2 years

Refer to the PRELIMINARIES AND GENERAL section for the required form of warranty agreement and details of when completed warranty must be submitted.

2. PRODUCTS

2.1 COPPER PIPE

To NZS 3501 complete with copper-alloy compression fittings or crox type joints and seal ring compression joints complete with fittings and accessories brand matched to the pipe manufacturer's requirements with durability to NZBC/AS1 Durability, Table 1 and NZBC G12/AS1 Water supplies Table 1.

- 2.2 **uPVC PIPE**
Complete with fittings and accessories brand matched to the pipe manufacturer's requirements with durability to NZBC B2/AS1 Durability, Table 1 and NZBC G12/AS1 Water supplies Table 1.
- 2.3 **POLYBUTYLENE PIPE**
Polybutylene tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched with durability to NZBC B2/AS1 Durability, table 1 and NZBC G12/AS1 Water supplies table1.
- 2.7 **WATER METER**
To the requirements of the network utility operator.
- 2.8 **VALVES**
Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to NZBC G12/AS1: Water supplies.
- 2.9 **TEMPERING VALVE**
Tempering valve to NZS 4617 to NZBC G12/AS1: Water supplies.
- 2.10 **TANKS**
Pre-formed black polyethylene or stainless steel tank, complete with access opening and lid and overflow tray.

Materials - hot water heating appliances

- 2.15 **GAS HOT WATER HEATER, STORAGE TYPE**
Insulated cylinder to NZS 4305 with an integral gas burner and flue.
- 2.16 **GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE**
Continuous flow unit with an integral gas burner and flue to NZS 4305.

Components

- 2.17 **INSULATION**
Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements and to NZBC H1/AS1.
- 2.18 **PROTECTIVE TAPE**
Plasticised PVC tape system with primer, mastic fixing and outer coating.

3. EXECUTION

- 3.1 **HANDLE AND STORE**
Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.
- 3.2 **EXECUTION GENERALLY**
Generally carry out the whole of this work and tests to NZBC G12/VM1 or G12/AS1: Water supplies.
- 3.3 **CORE HOLES AND SLEEVES**
Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

- 3.4 **CONCEAL**
Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.
- 3.5 **CORROSION**
Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.
- 3.6 **THERMAL MOVEMENT**
Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.
- 3.7 **PIPE SIZE**
Flow rates to each outlet to be no less than those given in NZBC G12/VM1 or G12/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in table 4, Tempering valve and nominal pipe diameters.
- 3.8 **ELECTROLYTIC ACTION**
Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

- 3.9 **EXCAVATE**
Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

Application - jointing

- 3.10 **JOINTING COPPER PIPE**
Braze pipe, fit alloy compression fittings, cross type joints and seal ring compression joints to NZBC G12/AS1: Water supplies.
- 3.11 **JOINTING UPVC PIPE**
Solvent welded joints using spigots and sockets, flanged joints and seal ring compression joints to NZBC G12/AS1: Water supplies.
- 3.12 **JOINTING POLYBUTYLENE PIPE**
Aluminium clamped, seal ring compression or push fit "O" ring seal jointing to pipe system manufacturer's requirements.

Application – pipework installation

- 3.15 **WATER SUPPLY CONNECTION**
Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to NZBC G12/AS1: Water supplies.
- 3.16 **POTABLE WATER SUPPLY PIPEWORK INSTALLATION**
From connection point, run pipes complete with all fittings, support and fixing, joins and install to manufacturers specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to NZBC G12/VM1 or G12/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Pipework support spacing to be firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.
- 3.17 **HOT WATER PIPEWORK**
Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to NZBC G12/VM1 or G12/AS1: Water supplies, table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings.

Lag all pipes with rigid insulation to the manufacturer's requirements and G12/VM1 or G12/AS1: Water supplies.

- 3.18 **EQUIPOTENTIAL BONDING**
Earth metallic water supply pipe and metallic sanitary fixtures to NZBC G12/AS1: Water supplies: 9.0.

- 3.19 **IN LINE FILTER**
Install an in line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

Application - hot water systems

- 3.22 **INSTALL GAS HOT WATER HEATER, STORAGE TYPE**
Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with NZBC G12/AS1: 6.10. Install flue in accordance with the manufacturer's details and requirements.

- 3.23 **INSTALL GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE**
Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with NZBC G12/AS1: 6.10. Install flue in accordance with the manufacturer's details and requirements.

- 3.24 **INSTALL HOT WATER CYLINDER OVERFLOW TRAY**
Install drained overflow tray to hot water cylinder to NZBC G12/AS1: Energy Efficiency.

- 3.25 **INSTALL TEMPERING VALVE**
Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

- 3.26 **PENETRATIONS**
Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

Installation – valves

- 3.27 **INSTALLING BELOW GROUND ISOLATING VALVE**
Install all below ground items such as main isolating valves and water metres in preformed concrete pits or approved equivalent.

- 3.28 **INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED**
Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.

Completion

- 3.29 **LABEL**
Label all pipework with permanent adhesive markers at 3 metre minimum intervals.

- 3.30 **CLEAN IN LINE FILTER**
Clean all in line filters on completion of works.

- 3.31 **REPLACE**
Replace damaged or marked elements.

- 3.32 **LEAVE**
Leave work to the standard required by following procedures.

- 3.33 **REMOVE**
Remove debris, unused materials and elements from the site.

7103 SANITARY FIXTURES, TAPWARE & ACCESSORIES

1. GENERAL

This section deals with the supply and installation of sanitary fixtures, tapware and sanitary accessories.

Related work

1.1 RELATED SECTIONS

Refer to GLAZING for frameless shower and bath screens not included in this section.
Refer to ELECTRICAL for electrical connection of accessories.
Refer to HOT AND COLD WATER SYSTEM for hot water cylinders.
Refer to SANITARY PLUMBING for above ground, non pressure sanitary plumbing.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC E3/AS1	Internal moisture
NZBC F2/AS1	Hazardous building materials
NZBC G1/AS1	Personal hygiene
	2.0 Fixture construction and installation
	3.0 Location of sanitary fixtures
	4.0 People with disabilities
NZBC G12/VM1	Water supplies
NZBC G12/AS1	Water supplies
NZBC G13/AS1	Foul water - sanitary plumbing
AS/NZS 1730	Washbasins
AS/NZS 2023	Baths for ablutionary purposes
AS/NZS 3500.2	Plumbing and drainage - sanitary plumbing and drainage
NZS 3662	Performance of showers for bathing
AS/NZS 3718	Water supply – tapware
NZS 4223	Code of practice for glazing in buildings – human impact safety requirements

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

Requirements

1.4 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a plumber registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

1.5 SAMPLES

Submit samples on request of nominated tapware, along with the relevant manufacturers' technical literature for review.

1.6 SUPPLIER

A specialist in the supply of tapware, and employing experienced architectural representatives available to assist during the course of the installation.

1.7 SUBMIT A SUPPLIER'S SCHEDULE

2. PRODUCTS

2.1 SANITARY FIXTURES

Refer to SELECTIONS for product selection.

2.2 TAPWARE
Refer to SELECTIONS for product selection.

2.3 SANITARY ACCESSORIES
Refer to SELECTIONS for product selection.

3. EXECUTION

Conditions – sanitary fixtures

3.1 DELIVERY
Only deliver to the site fixtures or fittings that can be immediately unloaded into suitable storage or be placed for direct installation.

3.2 STORAGE AND HANDLING
Take delivery of and store components complete with protective casings and coverings in areas that are enclosed, clean and dry and where no work is being done. Remove protection only to the extent that will allow installation.

3.3 QUALITY STANDARDS
Installation work to comply with NZBC G1/AS1, NZBC G12/VM1, NZBC G12/AS1, NZBC G13/AS1 and the fixture manufacturer's requirements.

3.4 SUBSTRATE
Ensure substrate and fixings will allow work of the specified standard.

3.5 CO-ORDINATION
Do not proceed if the points of supply and drainage services do not match the points of the fixtures without force or distortion.

3.6 INSTALLATION REQUIREMENTS
Install to NZBC G1/AS1, NZBC G12/VM1, NZBC G12/AS1, NZBC G13/AS1, NZBC E3/AS1 and to the fixture manufacturer's installation requirements for each component.

3.7 PROVIDE SUPPORT
Confirm fixing points needed for each unit and provide solid noggings at each fixing bracket location.

Conditions - tapware

3.8 RETAIN
Retain tapware in the manufacturer's original packaging and ensure that units are complete with fixings and installation instructions. Label each unit separately with its fitting name and space number.

3.9 STORE
Store tapware packages in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

Conditions – sanitary accessories

3.10 RETAIN
Retain fixtures, fittings and hardware in the manufacturer's original packaging and ensure that units are complete with associated fixings and installation instructions. Label each unit separately to match the submitted and approved schedule.

3.11 PACKAGE
Package fixtures, fittings and hardware units required in clear plastic and label each to match the drawings and the submitted schedule. Place packages in cartons selected for 'level', 'location', and/or 'sector' and label the packages and the cartons similarly.

3.12 **STORE**
Store items in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

3.13 **INSPECTION**
Before starting the installation of proprietary items, check relevant spaces and wall and floor finishes for any condition that would not allow the proper installation of any unit. Do not proceed until such conditions have been remedied.

Application – sanitary fixtures

3.14 **INSTALLING VITREOUS CHINA FIXTURES**
Install to NZBC G1/AS1: Part 3, G12/AS1, G13/AS1 and AS/NZS 3500.2. Carry out preparatory and assembly work, including connections to supply and drainage services and the application of slurries and sealants in sequence. Fit the toilet pan in position, plumb, level, flush and rigid without stressing the attachment points of the component.

3.15 **INSTALLING WASHBASINS**
Install to NZBC G1/AS1, AS/NZS 1730. Set basins firmly to walls or vanities as detailed and to comply with NZBC E3/AS1. Connect through trap to the drainage system.

3.16 **INSTALLING VANITIES**
Install in accordance with the manufacturer's requirements. Seal top and upstand to wall surface to comply with NZBC E3/AS1.

3.17 **INSTALLING SHOWERS**
Install to NZBC G1/AS1 and to NZS 3662. Sit tray firmly in place as detailed, to levels shown and connect to drainage service, ready for following work. Lining materials and finishes to comply with NZBC E3/AS1.

3.18 **INSTALLING SHOWER CABINETS**
Install to NZBC G1/AS1 and to NZS 3662 and in accordance with cabinet manufacturer's details and requirements. Ensure that doors fit closely and accurately. Test for water egress around sides and base. Lining materials and finishes to comply with NZBC E3/AS1.

3.19 **INSTALLING SHOWER ENCLOSURES AND WALL LININGS**
Install in accordance with NZBC E3/AS1 and to the enclosure manufacturer's details and requirements.

3.20 **INSTALLING BATHS**
Install to NZBC G1/AS1. Set firmly in cradle with required points fully supported, level and flush. Connect to supply and drainage services.

3.23 **INSTALLING STAINLESS STEEL FIXTURES**
Carry out preparatory work and fit elements in position plumb, level, flush and rigid without stressing the attachment points in sequence. Connect to supply and drainage services.

3.24 **INSTALLING SINK BENCHES**
Install in accordance with manufacturer's/supplier's requirements. Connect to supply and drainage services.

3.25 **INSTALLING CLEANERS SINKS AND TUB UNITS**
Install in accordance with manufacturer's requirements. Connect to supply and drainage services.

3.26 **INSTALLING CISTERNS**
Fit firmly in place and connect the specified cisterns from the supply services through the flush pipes to the relative fixtures in the positions as detailed all plumb and level.

- 3.27 **INSTALLING SANITARY FIXTURES & ACCESSORIES - PEOPLE WITH DISABILITIES**
Install fixtures to NZBC G1/AS1: Part 3 and Part 4 and to comply with the relevant layouts shown in Figures 5,6,7,8 and 9. Provide number of facilities in accordance with NZBC G1/AS1 tables 1, and 2.

Application – tapware

- 3.28 **GENERAL**
Fit specified to AS/NZS 3718 in accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with NZBC G12/AS1.

Installation – sanitary accessories

- 3.29 **INSTALLING ACCESSORIES**
Fit specified fittings firmly in place at required dimensions relative to floor and adjoining appliances, all plumb and level.

- 3.30 **LOCATE**
Locate units at heights and/or locations shown on the drawings, or as required to comply with NZBC G1/AS1. For any dimension not shown or known, request direction before proceeding.

- 3.31 **CUTTING AND FITTING**
Where cutting and fitting of the substrate is necessary for installing any unit, carry out this work before the painting or finishing of that surface. Remove any hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

- 3.32 **INSTALLING UNITS**
Install each unit in accordance with the proprietary fixture manufacturer's requirements, using the templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

- 3.33 **INSTALLING BATH/ SHOWER SCREEN**
Install to NZBC F2/AS1 and NZS 4223 and to the product manufacturer's requirements. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

Completion

- 3.34 **REPLACE**
Replace damaged or marked elements.

- 3.35 **PROTECTIVE COATINGS**
Leave fixtures, fittings and accessories clean and unblemished with stickers and protective coatings removed, with supply and drainage connections and all parts fully operating and working. Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following work.

- 3.36 **REMOVE**
Remove debris, unused materials and elements from the site.

7201 GAS SYSTEM

1. GENERAL

This section relates to the fabrication, installation and operation of piping systems and appliances for low pressure natural gas. The section also includes the supply of gas appliances, except for gas water heaters supplied under WATER SYSTEM.

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC G10/AS1	Piped services (Gas)
NZBC G11/AS1	Gas as an energy source
NZS 5258	Gas distribution
NZS 5261	Gas Installation
AS/NZS 4129	Fittings for polyethylene pipes for pressure applications
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications - Dimensions for series 2 pipes – gas (nominal outside diameter series)
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications - Dimensions for series 3 pipes – gas (nominal inside diameter series)
AS 5601	Gas Installations
AS 4176	Polyethylene/aluminium and cross linked polyethylene/aluminium macrocomposite pipe systems for pressure applications
Electricity Regulations 1997	
Gas Regulations 1993	
Plumbers, Gasfitters and Drainlayers Act 1976	

1.3 REGULATIONS

Comply with the Gas Regulations, Electricity Regulations and other network utility operator's requirements. Give notices for inspections and carry out tests as required.

1.4 PRIMARY CONNECTION

Include for the cost of the primary gas connection, complete with excavation and backfilling.

1.5 QUALIFICATIONS

Gasfitters to be experienced competent craftsman gasfitters, or registered gasfitters working under the direction of a craftsman gasfitter, familiar with the materials and techniques specified.

1.6 AS-BUILT PLANS

Supply a 1:100 scale as-built plan of gas pipe runs, sizes, componentry and fittings at completion of the installation.

1.7 PIPING DESIGN

Design the piping system with pipe sizes to give a minimum pressure at any appliance inlet of 1.13 kPa for natural gas, when all appliances are in use; and with a maximum design pressure drop from meter outlet to any appliance of 80 Pa. All to NZS 5261 and AS 5601.

1.8 PRESSURE TEST

Pressure test the system for leakage to NZS 5261 before pipework is concealed by linings.

1.9 FINAL INSPECTION AND TEST

Submit the work for inspection and test and prove to the satisfaction of the gas retailer that the installation complies with all Acts and Regulations and has been tested for leakage and proved to be sound.

1.10 CERTIFICATION CERTIFICATE

Provide a Gasfitting Certification Certificate as required by Regulation 24 of the Gas Regulations 1993.

2. PRODUCTS

2.1 PIPEWORK GENERAL

Pipework requirements to NZS 5261, NZS 5261 Table 24 – Gas Pipework and AS 5601 Table 3.1 Consumer piping materials and duty limits.

2.2 COPPER PIPE

Complete with fittings to NZS 5261.

2.3 MACROCOMPOSITE PIPE

Polyethylene/aluminium and cross linked polyethylene/aluminium macrocomposite pipe systems for pressure applications to AS 4176.

2.5 ISOLATING VALVES

Manual shut-off valves to NZS 5261.

2.6 METER

Primary meter to suit design load, supply pressure and pressure drop, supplied and installed by the network utility operator.

3. EXECUTION

3.1 GENERALLY

Carry out the whole of this work to the requirements of NZBC G10/AS1: Piped services (Gas); NZBC G11/AS1: Gas as an energy source and NZS 5261.

3.2 ARRANGE FOR MAINS CONNECTION

Arrange for the network utility operator to connect their distribution system to the primary meter, to NZS 5258.

3.3 METER INSTALLATION

Check the location of the meter enclosure with the owner. Recess or conceal as detailed. The metal frame of the meter acts as a thermal bridge. This may be overcome with the addition of 12 mm bitumen coated softboard of EPS installed to the back of the meter prior to installation. Advise the network utility operator or their agent of the location for the meter. Not all network utility operators install gas meters. Meters are owned by retailers or meter lease companies and installed by them or their agent.

3.4 INSTALL PIPING

Run the system, completely concealed, in the most suitable type of pipe for each part of the installation, bent, supported, jointed and complete with all fittings to NZS 5261. Confirm the type of pipe and its location. Label pipework to distinguish it from other services.

3.5 INSTALL GAS APPLIANCES

Fit and connect the gas appliances to NZS 5261, complete with isolation valves and flues where required and to the appliance manufacturer's requirements.

3.6 CONNECT GAS HOT WATER HEATERS

Connect gas hot water heaters supplied and fitted under HOT AND COLD WATER SYSTEM or by gas fitter, to NZBC G10/AS1; G11/AS1; NZBC G12/AS1 and to NZS 5261 and the water heater manufacturer's requirements.

3.7 REPLACE

Replace damaged, cracked or marked components.

3.8 LEAVE

Leave the installation including appliances clean and in full working order.

3.9 REMOVE

Remove debris and unused materials from the site.

7402 SANITARY PLUMBING SYSTEM

1. GENERAL

This section deals with the supply and fitting of waste disposal pipework, sanitary fixtures and accessories.

1.1 DOCUMENTS

Documents referred to in this section are:

NZBC G1/AS1	Personal hygiene, 2.0 Fixture construction and installation 3.0 Location of sanitary fixtures
NZBC G13/AS1	Foul water - sanitary plumbing
AS/NZS 1260	PVC pipes and fittings for drain, waste and vent applications
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
NZS 7641	Unplasticised PVC waste and ventilating pipe, fittings and accessories, 32 mm, 40 mm and 50 mm

Plumbers, Gasfitters and Drainlayers Act 1976

1.2 QUALIFICATIONS

Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 1976.

2. PRODUCTS

2.1 uPVC WASTE, SOIL AND VENT PIPES

uPVC pipe to NZS 7641 and AS/NZS 1260 complete with fittings brand-matched to the pipe manufacturer's requirements.

2.2 EXPOSED PIPES AND TRAPS

Chrome plate on copper pipes and associated copper and brass fittings.
White polybutylene or PVC, including all associated fittings.

2.3 SEALANT, SANITARY FIXTURES

For between sanitary fixtures and accessories and adjacent floor or wall surfaces.
1-part, silicone, containing mildew resistant agents.
Colour: White

3. EXECUTION

3.1 EXECUTION GENERALLY

Carry out this work and complete all tests to AS/NZS 3500.2.
Carry out this work and complete all tests to NZBC G1/AS1: 2.0, 3.0 and G13/AS1.

3.2 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.3 INSTALL SANITARY FIXTURES

Fit and install sanitary fixtures and associated screens, elements and hardware, plumb, true to line and rigid, to the fixture manufacturer's requirements. Supply standard chrome plated brass wastes and plastic plugs on chrome plated chains with all basins, tubs and baths.

3.4 INSTALL TRAPS, WASTE AND VENT PIPES

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500.2 /NZBC G13/AS1. Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

3.5 PENETRATIONS

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

- 3.6 **INSTALL SANITARY ACCESSORIES**
Install sanitary accessories as selected.
- 3.7 **TEST**
Test soil and waste disposal systems to ensure no leakage exists and leave in proper working order.
- 3.8 **CLEAN UP**
Remove labels and clean fittings. Remove unused materials from the site.

7403 DRAINAGE

1. GENERAL

This section relates to the supply and laying of gravity foul water, stormwater and field drains.

1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B1/AS1	Structure – general, 6.0 Drains
NZBC E1/AS1	Surface water
	3.0 Drainage system materials and construction
NZBC G13/AS2	Foul Water – drainage
AS/NZS 1254	PVC pipes and fittings for storm and surface water applications
AS/NZS 1260	PVC pipes and fittings for drain, waste and vent applications
AS/NZS 1546.1	On-site domestic wastewater treatment units - Septic tanks
AS/NZS 1547	On site domestic wastewater management
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of Polyethylene pipe systems
AS/NZS 2566.1	Buried Flexible Pipelines - Structural Design
AS/NZS 2566.2	Buried Flexible Pipelines - Installation
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 3500.3	Plumbing and drainage - Stormwater drainage
AS/NZS 4671	Steel reinforcing materials
AS/NZS 5065	Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications
NZS 3107	Precast concrete drainage and pressure pipes
NZS 3104	Specification for concrete production
Plumbers, Gasfitters and Drainlayers Act 1976	

1.3 AS-BUILT DRAWINGS

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

1.4 QUALIFICATIONS

Drainlayers to hold a current licence within the terms of the Plumbers Gasfitters & Drainlayers Act 1976 and be experienced, competent and familiar with the materials and techniques specified.

2. PRODUCTS

2.1 CONCRETE

17.5 MPa prescribed mix to NZS 3104.

2.2 REINFORCEMENT

Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671.

2.3 uPVC PIPES

uPVC Pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.

2.5 FIELD DRAINS

Plastic piping for field drains perforated (straight sections or coiled) with filter fabric to prevent silting of the pipe.

2.6 GULLY TRAPS

To NZBC G13/AS2: 3.3 Gully traps, complete with grating.

2.7 SURFACE WATER SUMP GRATINGS

Cast iron frame with lift-up grating.

- 2.8 **STRIP DRAIN CHANNEL**
Proprietary, modular, variable invert, PVC or precast concrete drainage channel sections and drainage sump, embedded in site concrete and fitted with selected metal gratings.
- 2.9 **INSPECTION COVERS**
Cast iron frame with screw-down cover.
- 2.10 **DRAINAGE AND FILLING MATERIALS**
Granular: Clean gravel or crushed stone or a blend of these. Particle size from minimum 7 mm to maximum 20 mm.
Selected: Fine grain soil or granular material suitable for bedding; excluding topsoil.
Ordinary: Top soil or other excavated materials.
3. **EXECUTION**
- 3.1 **EXCAVATE**
Excavate for drains to a firm even base with correct gradients set in straight runs.
- 3.2 **MANUFACTURER'S REQUIREMENTS**
All drainage installations to the pipe and fitting manufacturer's requirements.
- 3.3 **DRAINAGE GENERALLY**
Carry out drainage work and tests to AS/NZS 3500.2 (sanitary drainage) AS/NZS 3500.3 (stormwater drainage) as modified by NZBC B1/AS1: 6.0. Lay uPVC pipe systems to relevant sections of AS/NZS 2032, NZS 2566.1 and AS/NZS 2566.2. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033 and NZS 2566.1.
- 3.4 **LAY FOUL WATER DRAINS**
Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer. Set inspection fittings on a concrete base.
- 3.5 **INSTALL GULLY TRAPS**
Set on concrete 50 mm above the surrounding ground or paving and brought up to protect the top of the fitting. Trowel off.
- 3.6 **LAY STORMWATER DRAINS**
Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.
- 3.7 **LAY SUBSOIL DRAINS**
Lay perforated piping firmly in a granular bed in straight runs to correct gradients, discharging into a cesspit. Carry the granular bed up over the pipes without disturbing them to a total depth of 300 mm and cover with geotextile fabric to the pipe manufacturer's requirements. Carry the high end of all lines up to the surface to allow for flushing out and finish with a protected removable cap.
- 3.8 **LAY SUBSOIL DRAINS TO BASEMENT WALLS**
To NZBC E2/AS1: External moisture, 12.3 Drainage. Lay perforated piping firmly in a granular bed in straight runs to correct gradients, discharging into a cesspit. Carry the granular bed up over the pipes without disturbing them to a total depth of 300 mm and cover with geotextile fabric to the pipe manufacturer's requirements. Carry the high end of all lines up to the surface to allow for flushing out and finish with a protected removable cap.
- 3.9 **INSTALL STRIP DRAIN CHANNEL**
Excavate trench and form site concrete base to fall. Set interlocking channel sections, sumps and accessories in place, all in accordance with the channel manufacturer's requirements. Check falls and install gratings and covers.

- 3.10 **INSTALL SURFACE WATER SUMP**
To NZBC E1/AS1, complete with ceramic half-siphon pipe and cast iron frame with a lift out grating.
- 3.11 **INSTALL STORMWATER INSPECTION CHAMBERS**
To NZBC E1/AS1, with a 75 mm fall across the chamber and with channels to form a cascade where necessary. Channel top should be 100 mm above the pipe soffit. Bench from channels at 1V on 10H. Benching should be made of 17.5 MPa concrete vibrated to smooth finish. Plastering is not allowed. Fit a cast iron cover and frame.
- 3.12 **INSTALL FOUL WATER INSPECTION CHAMBERS**
To NZBC G13/AS2, with ceramic channels to form a 75 mm fall across the chamber. Channel top should be 100 mm above the pipe soffit. Bench from channels 1V on 10H. Benching should be made of 17.5 MPa concrete vibrated to smooth finish. Plastering is not allowed. Fit a cast iron cover and frame.
- 3.14 **CONCRETE ENCASEMENT**
Concrete encase shallow drains and drains under driveways, on a 100 mm deep 17.5 MPa concrete bed reinforced with three 10 mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100 mm 17.5 MPa concrete.
- 3.15 **FIELD TEST**
Field test drains for watertightness (UPVC to AS/NZS 2032 or AS/NZS 2566. 2 Appendix N) to the satisfaction of the territorial authority inspector.
- 3.16 **BACKFILL**
Backfill drain lines in 150 mm layers, well tamped but without disturbing the drains. Finish off with 150 mm of topsoil, slightly mounded above the finished ground line.

7701 ELECTRICAL

1. GENERAL

This section deals with the wiring for power and lighting, electrical automation, VDI and security system complete with componentry and electrical and electrically-powered fittings, for domestic and small scale commercial installations.

1.1 RELATED WORK

Refer to HOT AND COLD WATER SYSTEM for electrical hot water system.

Documents

1.2 DOCUMENTS

Documents referred to in this section are:

NZBC F7/AS1	Warning systems, 3.1 Domestic smoke alarms
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 2293	Emergency evacuation lighting for buildings
AS/NZS 3000	Electrical installations – Australia/New Zealand Wiring Rules
AS/NZS 3008	Electrical installations - Selection of cables - Typical New Zealand installation conditions
AS/NZS 3086	Telecommunications installations – Integrated telecommunications cabling systems for small office/home office premises
AS/NZS 3100	Approval and test specification-general requirements for electrical equipment
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth-leakage devices)
AS/NZS 3350	Safety of household and similar electrical appliances - General requirements
AS/NZS 3439.3	Low-voltage switchgear and controlgear assemblies - Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
AS 1670.6	Fire detection, warning, control and intercom systems – System design, installation and commissioning – Smoke alarms
AS 3786	Smoke alarms
NZS 4301.1	Intruder alarm systems – systems installed in clients premises
NZS 6401	Electric cables PVC insulated for working voltages up to and including 600/1000v
AS/NZS ISO/IEC 15018:	Information technology-generic cabling for homes
Electricity Regulations 1997	
New Zealand electrical codes of practice (ECP)	

1.4 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

MCB	multiple circuit breaker
RCCB	residual current-operated circuit breakers
RCBO	residual current-operated circuit breaker with over current protection
RCD	residual current device
PCB	printed circuit board
PTC	permit to connect
TPS	tough plastic sheathed
GLS	general lighting service
CFL	compact fluorescent lamp
ELV	extra low voltage
SIA	security integration architecture
LED	light emitting diode
LCD	liquid crystal display
VDI	voice, data, image
PIR	passive infrared

Requirements

- 1.5 **COMPLY**
Comply with the Electricity Regulations 1997, AS/NZS 3000, AS/NZS 3008.1.2 and the New Zealand electrical codes of practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.

- 1.6 **QUALIFICATIONS**
Carry out work under the direct supervision of a holder of a practising licence under the Electricity Regulations 1997.

- 1.8 **CERTIFICATE OF COMPLIANCE**
Supply a certificate of compliance to the owner, as required by the Electricity Regulations 1997, and in particular, clauses 16, 34 and 35. The network utility operator is to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.

Warranties

- 1.9 **MANUFACTURERS WARRANTY**
Warrant this system under normal environmental and use conditions against failure of materials and execution.

Materials: 1 year
Execution: 1 year

2. PRODUCTS

- 2.1 **MAINS SUPPLY, SINGLE PHASE**
Tough plastic sheathed neutral screened cable to NZS 6401 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

- 2.2 **CABLES**
Tough plastic sheathed copper conductors to NZS 6401, stranded above 1.0 mm², and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.

Lighting circuits: Domestic: 1.0 mm² on 10 amp MCBs
Lighting circuits: Commercial: 1.5 mm² on 16 amp MCBs
Power circuits: 1.5 mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
2.5 mm² on 16 amp MCBs for domestic insulated construction, or filled cavity
2.5 mm² on 20 amp MCBs for unenclosed or unfilled cavity construction
2.5 mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits: Single phase: 6 mm² on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions may be above 35°C.

- 2.3 **METER BOX**
Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

- 2.4 **DISTRIBUTION BOARD**
Flush surface mount boards manufactured to AS/NZS 3439.3 and installed in accordance with AS/NZS3000. Manufactured from engineering grade resin with a glow wire rating of

850°C, complete with neutral and earth busbars, and insulated comb phase bar.
Distribution boards to have 20% spare capacity for future additions and alterations.

- 2.5 **CIRCUIT PROTECTION**
General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCCBs' meet Type A and comply with AS/NZS 3190. MCBs to 4.5kA or 6kA rated.
- 2.6 **WALL BOXES**
Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal, all screw fixed.
- 2.7 **SWITCH UNITS**
Single pole switches to be sixteen amp minimum rated, double pole or intermediate to be 10 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (Indicator or toggle) units, locator units and 2 way units.
- 2.9 **SWITCHED SOCKET UNITS**
10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3100, AS/NZS 3112 and AS/NZS 3133, single or multi gang as detailed.
- 2.10 **SMOKE ALARMS**
To AS 3786. A wired 230 volt ionised smoke detector type.
- 2.11 **SURGE PROTECTION**
Protection for the homes appliances with medium surge protection devices fitted to the switchboard. For variable electronic equipment fit fine surge protection to switched socket outlets.
- 2.12 **CEILING ROSES**
White plastic mounting base with screwed cover. Terminal type. Cylindrical section TPS for suspended fittings.
- 2.13 **BATTEN HOLDERS**
Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.
- 2.15 **DATA WIRING**
To AS/NZS 3086. Cables and RJ45 connectors Telepermitted to PTC225 standards. Category 7 rated or higher cable.
- 2.16 **TV CABLING**
Co-axial cable and outlets.
- 2.17 **TV AERIAL**
Aerial suitable for both VHF and UHF reception of all local free-to-air broadcast channels.
- 2.18 **LIGHT FITTINGS**
Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.90 minimum. Control gear suitable for dimming if this is required. All fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 240v rated, bayonet cap; Fluorescent triphosphor 2700K; CFL; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise.
- 2.19 **SPACE HEATERS**
Fixed wired room heaters for controlled displacement of warm air, and compliant with AS/NZS 3350. Flush or surface mount, fitted with safety cut-outs.
- 2.20 **EXHAUST FANS**
Ceiling or Wall mounted exhaust fans for controlled replacement of surrounding air, and compliant with AS/NZS 3350, externally ducted.

- 2.21 **HEATED TOWEL RAILS**
Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with AS/NZS 3350, scratch resistant powdercoated or chrome finish.

- 2.22 **OUTDOOR SWITCHES & SOCKETS**
Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches to IP56 minimum, and sockets to IP53 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

Electrical Automation System

- 2.23 **ELECTRICAL AUTOMATION SYSTEM**
Electrical automation system designed to enable if required:
- Lighting – automated control and dimming timer control.
 - Heating including heated towel rails and ventilation systems.
 - Security - programmable to simulate lights and other devices to give appearance home is occupied – ability to interface with security system and smoke detectors to activate lights.
 - Energy efficiency - automatically switch circuits off when not required or on during low tariff times.
 - Appliances.
 - Spa pools.
 - Irrigation systems.

- 2.28 **CABLING**
Security alarm wiring to NZS 4301 for installation.
Security alarm wiring to NZS/AS 1125 for cables.
Security alarm wiring to be multi stranded and not single stranded.

- 2.29 **PERIPHERALS**
Fit anti-tamper devices to detectors, control panels and equipment housings, programmed to give a tamper indication when the system is unset and a tamper alarm when the system is set.

Standard keypad manufactured of moulded hardened plastic with either a LED or LCD screen, to match the style of the wiring accessories in diameter, colour and aesthetics.

- 2.30 **COMMUNICATIONS**
Digital dialler to be built into the PCB of all control panels, with the options for both monitoring and remote dial in windows based software. Digital dialler to comply with all the industry standard communication formats including contact I.D and SIA, and NZ Telepermit certification.

Remote software able to upload / download programming changes and or history events and change status of the security alarm with the ability to be turned off if required.

3. EXECUTION

- 3.1 **MAIN SUPPLY**
Lay underground mains to the network utility operator's requirements. Excavate trench, install cable and marker tape and backfill.

- 3.2 **METER BOX**
Fit to meter box manufacturer's and network utility operator's requirements. Recess into external wall in sheltered area and flash to weatherproof to NZBC E2/AS1 fig 69. Arrange for meter installation and connection.

- 3.3 **DISTRIBUTION BOARD**
Fit to AS/NS 3000 and board manufacturer's requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

- 3.4 **CIRCUIT PROTECTION**
Install MCBs at distribution board to AS/NZS3000 to protect each final sub circuit.
- 3.5 **EARTH BONDS**
Bond together and to earth all plumbing fittings not adequately isolated, to AS/NZS 3000, the Electricity Regulations 1997 and the fitting manufacturer's requirements.
- 3.6 **MAIN EARTH**
Provide a plastic toby box or UPVC tube to contain and protect the earth pin. Fix the connecting earth wiring closely and securely against wall surfaces.
- 3.7 **EARTH LEAKAGE PROTECTION**
Install RCD protection to AS/NZS 3000.
- 3.8 **DOMESTIC INSTALLATIONS**
Install 30mA RCD protection at the distribution board for all final sub circuits to control socket outlets and lighting except for fixed or stationary cooking equipment.
- 3.9 **HIGH RISK AREA INSTALLATIONS**
Install 30mA RCDs at the distribution board for areas not covered in Domestic installations, or using fixed wired RCD protected socket outlets in areas that may represent increased risk of electric shock to the user:
 - Wet areas: bathrooms, laundries, kitchens.
 - Near pools and water features.
 - Where intended for use with cleaning equipment.
 - Hand-held tools subject to movement in use, i.e. work-shops, garages.
- 3.10 **SET-OUT**
The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.
- 3.11 **CABLING**
Install wiring systems to AS/NZS 3000.3. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.
- 3.12 **CABLING CIRCUITS**
Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.
- 3.13 **WALL BOXES**
Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.
- 3.14 **SWITCH AND SOCKET UNITS**
Fit all single and double switch units, all sockets to the following heights (to the centre of the unit) unless shown otherwise on the drawings.
Switch Units: 1000 mm
Socket Units: 150 mm above work benches
400 mm elsewhere

Mount light switches and switch socket outlets vertically and socket units horizontally. Label all switch units that control electrical equipment or special lighting circuits by colour filled engraving on the switch.

- 3.15 **ISOLATING SWITCHES**
Locate isolating switches in positions as confirmed by the owner, when not specifically shown on the drawings.
- 3.16 **LIGHT FITTINGS**
Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer's requirements.
- 3.17 **EXTRA LOW VOLTAGE LIGHTING**
Where remote transformers are used for ELV lamps, connect transformer to lamp with minimum 2.5 mm² conductor. Ensure voltage drop in transformer and conductor does not exceed 0.8 volts. Lamps 50 watt or greater to be wired no more than one lamp per transformer. Locate as close as practicable to the lamp. Ensure transformers and rear of light fittings are adequately ventilated and clear of any thermal insulation.
- 3.19 **TELEPHONE WIRING**
Install telephone cable to telephone outlet positions shown on the drawings. Install in conduit for outlets on masonry surface. Fix and connect outlets to NZ Telecom requirements and terminate wiring at incoming terminal block.
- 3.20 **DATA WIRING**
Install data wiring to outlet positions shown on the drawings. Install in conduit for outlets on masonry surface.
- 3.21 **TV AERIAL AND CABLING**
Fix aerial, run cabling concealed below the roof and fit outlets where shown on the electrical drawings. Ensure the system is suitable for high quality reception of all VHF and UHF channels - Sky TV installation practices minimum. Cable penetrations through the cladding to be weatherproofed to comply with NZBC E2/AS1.
- 3.23 **SMOKE ALARMS**
Install Type 1 domestic smoke alarm system to NZBC F7/AS1 3.1, AS 1670.6 and to the alarm manufacturer's requirements. Fit neatly and without damage to the surrounding finish.
- 3.24 **SURGE PROTECTION**
Install surge protection devices to manufacturer's requirements and in accordance with AS/NZS 3000. When fitting medium protection at the switchboard, protect the device by a dedicated MCB.
- 3.25 **ELECTRIC POWERED FITTINGS AND EQUIPMENT**
Install and wire fittings and equipment to individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.
- 3.26 **BATHROOM ELECTRICAL FIXTURES**
Install all electrical fixtures. Connect the following bathroom and toilet electrical items:
 - Heated towel rails: Install to manufacturers requirements and installed in accordance with AS/NZS 3000 and the NZBC G9/AS1
 - Mirror demisters: Locate centrally above the wash hand basin(s). Connect wiring to room lighting unless specified otherwise.
 - Exhaust fans: Install exterior ducted fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and the NZBC. G4/AS1.
- 3.27 **OUTDOOR/EXTERIOR SERVICES**
Install all wiring systems in accordance with AS/NZS 3000.3 and in accordance with the manufacturer's recommendations:

Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where

underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services.

Use the appropriate rated fittings for power control and power supply. Weather protected switches to IP56, and sockets to IP53 as a minimum. Install to manufacturer's specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs' at the distribution board, or socket outlet. RCDs' are recommended for visible awareness of protection.

3.30 TELEPHONE WIRING TO VDI NETWORK

Terminate incoming Telecom lines at the Home Network distribution cabinet. Telecom Disconnect Test Point installed in the distribution cabinet as per manufacturer's instructions.

3.31 DATA WIRING TO VDI NETWORK

Route category 7 cable from central network distribution board to outlet positions shown on drawings. Install wiring in conduit on masonry surfaces and to manufacturer's instructions.

3.32 TV AERIAL AND CABLING – VDI NETWORK

Fit aerial, install co-axial cabling concealed below the roof and run to Home Network Distribution cabinet. Fit outlets where shown on the electrical drawings. Ensure the system is suitable for high quality reception of all VHF and UHF channels - Sky TV installation practices minimum. Cable penetrations through the cladding to be weatherproofed. Test to ensure adequate TV/video at every outlet with a RF field strength meter.

3.33 LABELLING

Complete all labelling in clear machine printed permanent manner. Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit. Correctly identify all wall outlet locations on a master sheet inside the VDI network distribution cabinet.

Security System

3.34 SECURITY SYSTEM

Install to the system manufacturer's requirements, control panel, detectors and associated equipment fitted neatly and without damage to surrounding finishes. Installation of security equipment to NZS 4301.1 Intruder alarm system. All 230v mains power connections to the security panel are to be in accordance with AS/NZS 3100. The 230V power is to be switched using a PDL single gang Isolator switch or similar.

3.35 COMPLETION

Leave installation operating correctly, with equipment clean and all lamps operational.

4. SELECTIONS

Materials

00 18



Marshall
Waterproofing
Professional Solutions

SPECIFICATION FOR TEKTON BUILDING WRAP

BRANZ Appraisal Certificate # 548 (2007)

www.mwnz.com

TEKTON SPECIFICATION

PRODUCT DESCRIPTION

Tekton Building Wrap is a synthetic breather-type building wrap for use as a wall wrap and air barrier under direct and non-direct fixed wall cladding on timber and steel framed buildings. The product is a coated spun-bonded polypropylene, and is approximately 0.6mm thick. Tekton Building Wrap is supplied in rolls 2740mm x 37m and 1370mm x 74m.

FEATURES /BENEFITS

- Tekton Building Wrap can be used in all wind zones up to and including very high.
- Tekton Building Wrap is fire retardant with a zero flammability index and can be used without restriction on all buildings, however must be separated from fireplaces, heating appliances, flues and chimneys in accordance with the NZ Building Code.
- Tekton Building Wrap can be installed as an air barrier to walls that are not lined, such as gable ends.
- Tekton Building Wrap has superior water hold out - keeping framing drier while permanent cladding is installed.
- Tekton Building Wrap has 50 year durability.
- Tekton Building Wrap can be left exposed for up to 60 days.
- Tekton Building Wrap has optimal surfactant resistance (will not lose integrity if exposed to soaps, detergents and cleaning chemicals).
- Tekton Building Wrap is Branz appraised # 548 (2007)
- Tekton Building Wrap can be used as a non rigid backing material for stucco plaster and as a slip layer over rigid backing for stucco plaster.
- Tekton Building Wrap is compatible with metal cavity battens.

APPLICATION RANGE

TIMBER FRAMED BUILDINGS

- With absorbent wall claddings directly fixed to the framing.
- With absorbent and non-absorbent wall claddings installed over an 18mm minimum drained cavity.
- With masonry veneer.
- In building wind zones up to and including very high.

STEEL FRAMED BUILDINGS

- With absorbent and non-absorbent wall claddings installed over an 18mm minimum drained cavity.
- With masonry veneer.
- In building wind zones up to and including very high.

Tekton Building Wrap can also be used on buildings subject to specific weathertightness design.

STORAGE

Tekton Building Wrap must be stored on its end in a clean and dry environment. It is the responsibility of the installer to protect the roll from damage and weather.

SURFACE PREPARATION

Studs must be provided at a maximum of 600mm centres. Nogs must be fitted flush between the studs at a maximum of 1200mm centres. The framing must be free from any sharp protrusions that may damage the wrap.

TEKTON

INSTALLATION

PLACEMENT

- The branded side of the wrap must face away from the framing.
- The wrap must run horizontally.
- The wrap must extend from the upper side of the top plate to the underside of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs.
- Horizontal laps must be no less than 75mm with the direction of the lap ensuring that water is shed to the outside.
- End laps must be made over framing and be no less than 150mm wide.

It is preferable to tape all joins.

APPLICATION

- Position the roll of Tekton Building Wrap against the framing with a short length of wrap free of the roll.
- Align the guide marks printed on the Tekton Building Wrap with visible studs and nail /staple to the framing

Fix the wrap into place using 6-8mm zinc plated staples, hot dip galvanised large head clouts or proprietary wrap fixings.

- Unroll the wrap across the framing and fix to all framing members at a maximum of 300mm centres.
- Keep the wrap straight and taut over the framing.
- The wrap should be run over any openings and these should be left covered until the windows and doors are ready to be installed. To form the openings cut the wrap at a 45 degree diagonal in from each corner. Fold and staple the wrap to the inside of the framed opening. Excess wrap can be trimmed to finish flush with the internal face of the framing.

- All openings must be detailed using a Branz appraised flexible flashing system like Protecto Wrap One Piece Sill Tape or the Protecto Wrap Sill System.
- Where cavity battens are installed at greater than 450 mm centres, the wrap must be supported between the battens to prevent the wrap bulging into the cavity space when insulation is installed.
- Tekton Building Wrap can be added as a second layer over head flashings as per E2/AS1 or the headflashing can be sealed to the wrap using Protecto Wrap Head Flashing Tape.
- Any damaged areas of the wrap must be repaired by overlapping with new material and taping, or by taping small tears.

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

WARRANTY

Tekton Building Wrap meets the durability requirements of NZBC B2.3.1(a), 50 years and B2.3.1(b), 15 years. Tekton Building Wrap is warranted to be free of defect in manufacture. This warranty is limited to replacement of the Tekton Building Wrap material. Marshall Waterproofing NZ/AUS Ltd (the distributor) is not liable for incorrect installation or any accidental or wilful damage to the product.



BRANZ Appraised

Appraisal No.548 [2013]

BRANZ Appraisals

Technical Assessments of products
for building and construction

BRANZ APPRAISAL No. 548 (2013)

This Appraisal replaces BRANZ
Appraisal No. 548 (2007) dated
27 July 2007.

Amended 17 December 2013

TEKTON® BUILDING WRAP

Marshall Innovations Limited

P O Box 9411
Greerton
Tauranga

Tel: 07 543 0948

Fax: 07 541 1029



BRANZ

BRANZ Limited
Private Bag 50 908
Porirua City
New Zealand

Tel: +64 4 237 1170

Fax: +64 4 237 1171

www.branz.co.nz



Product

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



Scope

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

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

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

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

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

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

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

Building Regulations

New Zealand Building Code (NZBC)

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

Clause B2 DURABILITY: Performance B2.3.1(a), not less than 50 years, B2.3.1(b), 15 years and B2.3.2. Tekton® Building Wrap meets these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Tekton® Building Wrap will contribute to meeting this requirement. See Paragraphs 12.1 – 12.3.

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

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

Technical Specification

4.1 Tekton® Building Wrap is a 100 g/m² light grey sheet polypropylene membrane material approximately 0.6 mm thick.

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

Accessories

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

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

Handling and Storage

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

Technical Literature

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

Design Information

Timber and Steel Framing

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

General

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

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

7.4 Tekton® Building Wrap must not be exposed to the weather or ultra violet light for a total of more than 60 days before being covered by the wall cladding.

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

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

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Wall Wrap Properties	Property Performance Requirement	Actual Property Performance
Absorbency	≥ 100 g/m ²	Classified as non-absorbent (see paragraph 7.4)
Vapour Resistance	≤ 7 MN s/g	Pass
Water Resistance	≥ 20 mm	Pass
pH of Extract	≥ 5.5 and ≤ 8	9.78 (Note 1)
Shrinkage	≤ 0.5%	Pass
Mechanical	Edge tear and tensile strength	Edge tear: Machine direction = 228 N Cross direction = 186 N Tensile strength: Machine direction = 4.4 kN/m Cross direction = 3.9 kN/m
Air Barrier	Air resistance: ≥ 0.1 MN s/ m ³	Pass

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

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

Stucco Plaster

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

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

Structure

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

Durability

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

Serviceable Life

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

Control of Internal Fire and Smoke Spread

10.1 Tekton® Building Wrap has an AS 1530 Part 2 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to Tekton® Building Wrap from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

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

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

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

Installation Information

Installation Skill Level Requirements

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

Wrap Installation

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

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

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

14.4 Tekton® Building Wrap can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3.

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

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

Inspections

14.7 The Technical Literature must be referred to during the inspection of Tekton® Building Wrap installations.

Basis of Appraisal

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

Tests

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

15.2 The following tests have been carried out on Tekton® Building Wrap by BRANZ: Absorbency in accordance with AS/NZS 4201.6, Vapour transmission in accordance with ASTM E 96B, Shrinkage in accordance with AS/NZS 4201.3, Water barrier in accordance with AS/NZS 4201.4 and pH of extract in accordance with AS/NZS 1301.421. A range of these tests were completed before and after Tekton® Building Wrap was exposed to ultra-violet light.

15.3 The Flammability Index of Tekton® Building Wrap has been evaluated in accordance with AS 1530.2.

Other Investigations

16.1 A durability opinion was given by BRANZ technical experts.

16.2 Site inspections were carried out by BRANZ to assess methods used for the installation of Tekton® Building Wrap, and to examine completed installations.

16.3 The marketer's Technical Literature, including installation instructions, have been examined by BRANZ and found to be satisfactory.

Quality

17.1 The manufacture of Tekton® Building Wrap has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ has taken note of product certification by ICC-ES and CCMC covering quality aspects associated with the product.

17.2 The quality of supply to the market is the responsibility of Marshall Innovations Limited.

17.3 Building designers are responsible for the design of the building, and for the incorporation of the wall wrap into their design in accordance with the instructions of Marshall Innovations Limited.

17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Marshall Innovations Limited.

Sources of Information

- AS 1530.2 – 1993 Test for flammability of materials.
- AS/NZS 1301.421s: 1988 Determination of the pH value of aqueous extracts of paper, board and pulp – cold extraction method.
- AS/NZS 4200.1: 1994 Pliable building membranes and underlays – materials.
- AS/NZS 4201.1: 1994 Pliable building membranes and underlays – Methods of test – Resistance to dry delamination.
- AS/NZS 4201.2: 1994 Pliable building membranes and underlays – Methods of test – Resistance to wet delamination.
- AS/NZS 4201.3: 1994 Pliable building membranes and underlays – Methods of test – Shrinkage.
- AS/NZS 4201.4: 1994 Pliable building membranes and underlays – Methods of test – Resistance to water penetration.
- AS/NZS 4201.6: 1994 Pliable building membranes and underlays – Methods of test – Surface water absorbency.
- BS 6538.3: 1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295: 2006 Pliable, Permeable Building Underlays.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.



BRANZ

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

The Appraisal is issued only to Marshall Innovations Limited, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

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

For BRANZ

C Percy
Chief Executive

Amendment No. 1, dated 17 December 2013.

This Appraisal has been amended to fix an editorial error.

Date of issue: 16 December 2013



Thermakraft

THERMAKRAFT 215

**BITUMINOUS
SELF SUPPORTING
ROOFING UNDERLAY**

APPLICATION AND INSTALLATION

Product Description	THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY is specifically designed for use in Domestic and Commercial type buildings. THERMAKRAFT 215 is a breathable, absorbent bituminous wall and roofing underlay. THERMAKRAFT 215 will provide the following functions: • Reduce wind entry into the cavity, thereby assisting the performance of thermal insulation. • Highly water vapour permeable, thereby allowing excess water vapour which might otherwise condense in the structure, to escape. • Provides a temporary protection against wind, dust, rain and other weathering elements until the external cladding is applied.
Applications	THERMAKRAFT 215 is suitable as a wall and roofing underlay where Fire Retardancy is NOT required, and with all cladding types. THERMAKRAFT 215 is self supporting to 1200mm rafter/purlin spacing. THERMAKRAFT 215 can be used as an Air Barrier. THERMAKRAFT 215 must not be left exposed to the elements for more than 7 days. Cladding on the same day is recommended. If Fire Retardancy (FI <5) is required, use Thermakraft COVERIEK407.
Installation Roofing	THERMAKRAFT 215 may be run vertically over purlins with a 150mm lap if roof pitch >8 degrees. Fix securely to purlins with 8mm staples or 20mm clouts. The membrane should be firmly laid to avoid excessive dishing between purlins. THERMAKRAFT 215 may be run horizontally across rafter/trusses with a 150mm lap for roof pitches above 3 degrees. Fix securely with 8mm staples or 20mm clouts.
Control of Condensation	In climatic regions where condensation risks are high, such as cold or high humidity areas, care needs to be taken in specifying the correct design and installation to prevent moisture build-up in the roof cavities. Factors which adversely affect the condensation risk in roofing systems include; • Humid, and/or cold climatic regions • Warm/Skillion roof construction • Low roof cavity air volume and restricted air movement • Omitting Vapour Control Layers • Ceiling penetrations and entry of warm air into roof cavities • Occupancy activities which have high moisture loading on conditioned spaces • Low pitched roof • Bulk insulation • Building structures ability to naturally dry Construction Moisture Skillion and Warm Roof Construction are particularly sensitive to moisture accumulation and the design and installation of roof construction needs to take into account the higher condensation risks. Refer MRM Code of Practice for details.
Storage	THERMAKRAFT 215 should be stored on end in dry conditions. Protect from the weather and direct sunlight.
Roll Dimensions	1250mm x 40.0m = 50m² 20kg 1250mm x 20.0m = 25m² 10kg (2 per pack) 1450mm x 34.5m = 50m² 20kg

For more information regarding Thermakraft **COVERIEK407** FIRE RETARDANT SELF SUPPORTING ABSORBENT BREATHABLE SYNTHETIC NON WOVEN ROOFING UNDERLAY refer to the "DESIGNER and USER GUIDELINES" - Direct and Cavity Fix, or contact Thermakraft Customer Services on **0800 806 595**.

Thermakraft

CI/SfB			
JUNE 2010			

THERMAKRAFT 215

BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY

TECHNICAL SPECIFICATIONS

Technical Data

THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY complies with the requirements of NZBC E2/AS1 Table 23.

Nominal Grammage 400g/m²

NZBC E2/AS1 TABLE 23 AS A WALL UNDERLAY REQUIREMENTS

NZBC E2/AS1 TABLE 23 WALL UNDERLAY PROPERTIES	PROPERTY PERFORMANCE REQUIREMENTS	PROPERTY PERFORMANCE
Absorbency	≥ 100 gsm	Pass
Vapour Resistance	≤ 7 MN.s/g	Pass
pH of Extract	≥ 6 and ≤ 9	Pass
Shrinkage	≤ 0.5%	Pass
Water Resistance	≥ 100mm	Pass
Air Barrier	≥ 0.1 MN.s/m ³	Pass
Duty		Heavy

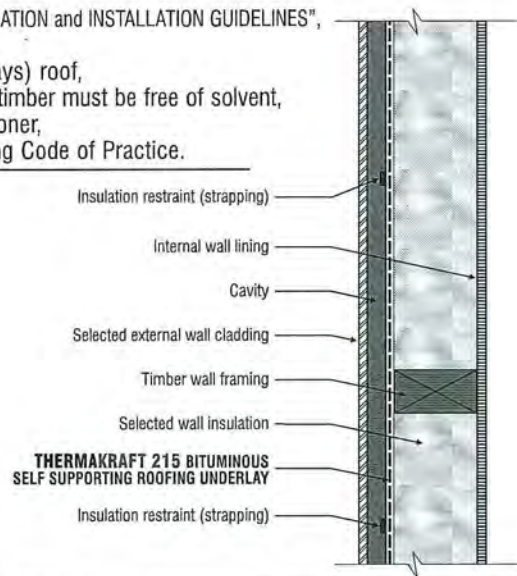
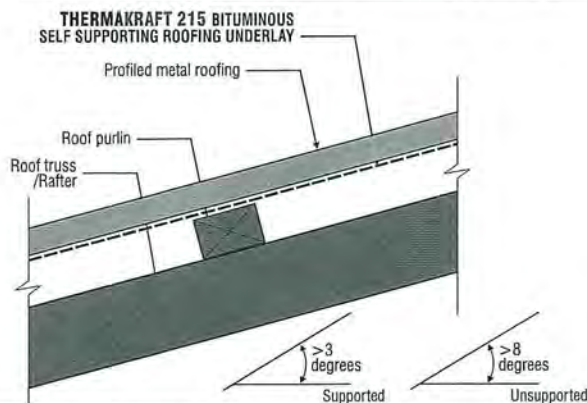
NZS2295:2006 Classification

Flammability Index		Non Fire Retardant
Wind Zone	R2	Up to Very High
NZS2295:2006 Classification	R2	Self Supporting

Durability/Limitations

For **THERMAKRAFT 215** to meet the Performance Requirements of NZBC Clause B2, Durability B2.3.1(a) 50 years and B2.3.1(b) 15 years, E2 External Moisture, **THERMAKRAFT 215:**

- must be installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES",
- run length no greater than 10 metres,
- is not left exposed for more than (7 days) roof,
- when used on LOSP treated timber, the timber must be free of solvent,
- installed by a licensed building practitioner,
- installed in accordance with the Roofing Code of Practice.



The recommendations contained in Thermakraft's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Thermakraft (for example quality of workmanship and design), Thermakraft shall not be liable for the recommendations in that literature and the performance of the Product, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards.

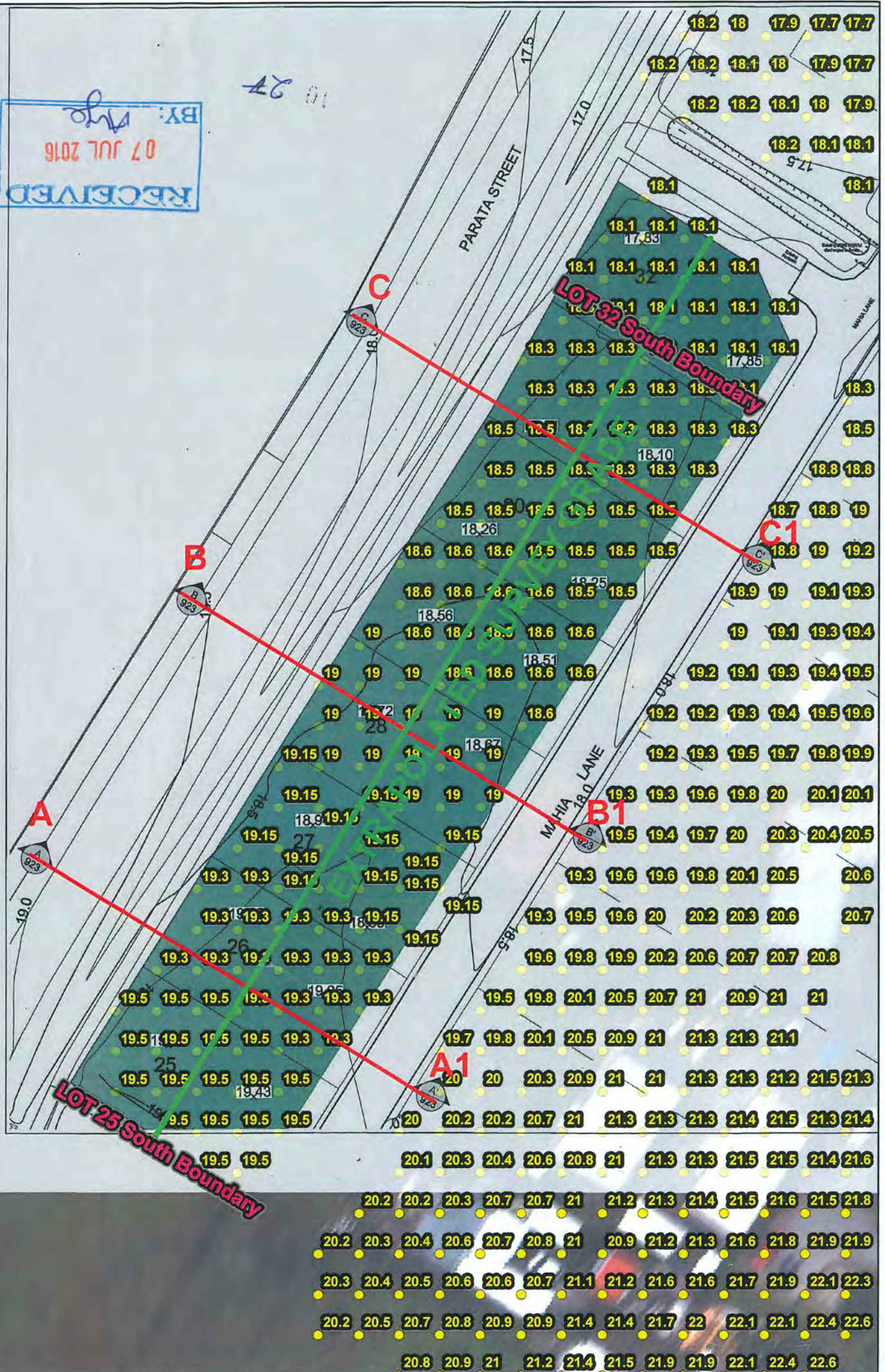
Thermakraft
Industries (NZ) Ltd

E. & O. E.

11 Turin Place, East Tamaki, Auckland, New Zealand
PO Box 58-112, Botany, Manukau 2163, New Zealand
Phone: 09-273 3727 Fax: 09-273 3726 Free Phone: 0800 806 595
Email: sales@thermakraft.co.nz Website: www.thermakraft.co.nz

RECEIVED
07 JUL 2016
BY: *Myo*

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Memorandum from licensed building practitioner: Certificate of design work

Section 45 and section 30C, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

THE BUILDING	
Street address: 25 MAHIA LANE	
Suburb:	
Town/City: WAIKANA E	Postcode:

THE OWNER(S)	
Name(s): ADAM THOMSON (AR THOMSON FAMILY TRUST)	
Mailing address: 4 TARANUI WAY	
Suburb:	PO Box/Private Bag:
Town/City: PAKAPAKA WALK	Postcode:
Phone number: 027 427 9820	Email address:

BASIS FOR PROVIDING THIS MEMORANDUM

I am providing this memorandum in my role as the: Please tick the option that applies ☒

- ☐ **sole** designer of all of the RBW design outlined in this memorandum – I carried out all of the RBW design work myself – no other person will be providing any additional memoranda for the project
- ☐ **lead** designer who carried out some of the RBW design myself but also supervised other designers – this memorandum covers their RBW design work as well as mine, and **no other** person will be providing any additional memoranda for the project
- ☒ **lead** designer for all but specific elements of RBW – this memorandum only covers the RBW design work that I carried out or supervised and the **other** designers will provide their own memorandum relating to their specific RBW design
- ☐ **specialist** designer who carried out specific elements of RBW design work as outlined in this memorandum – other designers will be providing a memorandum covering the remaining RBW design work

IDENTIFICATION OF DESIGN WORK THAT IS RESTRICTED BUILDING WORK (RBW)

I BILL FRANCIS carried out / supervised the following design work that is restricted building work

PRIMARY STRUCTURE: B1

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☐ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
All RBW design work relating to B1 ☐		☐ Carried out ☐ Supervised	
Foundations and subfloor framing ☐	<u>RIB-RAFT BY ENGINEER</u>	☐ Carried out ☐ Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☒ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
Walls ☒	90x45 TIMBER FRAMING	☒ Carried out ☐ Supervised	PG 3
Roof ☒	TRUSS DESIGN BY OTHER	☐ Carried out ☒ Supervised	PG 4
Columns and beams ☒	STEEL COLUMN & BEAM	☒ Carried out ☐ Supervised	PG 3
Bracing ☒	STEEL BRACING	☒ Carried out ☐ Supervised	PG 7
Other ☐		☐ Carried out ☐ Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☐ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
EXTERNAL MOISTURE MANAGEMENT SYSTEMS: E2			
All RBW design work relating to E2 ☐		☐ Carried out ☐ Supervised	
Damp proofing ☒	DPM TO UNDERSIDE OF SLAB DPC TO UNDERSIDE OF BOTTOM WALK	☒ Carried out ☐ Supervised	PE 4
Roof cladding or roof cladding system ☒	PRESSURE TREATED TIMBER TILES	☒ Carried out ☐ Supervised	PE 4
Ventilation system (for example, subfloor or cavity) ☒	VENTED CAVITY BEHIND CLADDING	☒ Carried out ☐ Supervised	PE 5
Wall cladding or wall cladding system ☒	BRICK VENEER	☒ Carried out ☐ Supervised	PE 5
Waterproofing ☐		☐ Carried out ☐ Supervised	
Other ☐		☐ Carried out ☐ Supervised	

Design work that is RBW	Description of RBW	Carried out or supervised	Reference to plans and specifications
Tick ☒ if included. Cross ☐ if excluded	If appropriate, provide details of the RBW	Tick ☒ whether you carried out this design work or supervised someone else carrying out this design work	If appropriate, specify references
FIRE SAFETY SYSTEMS: C1 - C6			
Emergency warning systems Evacuation and fire service operation systems ☒ Suppression or control systems Other	<i>Smoke detectors</i>	☒ Carried out ☐ Supervised	<i>Ref 3</i>
Note: The design of fire safety systems is only restricted building work when it involves small-to-medium apartment buildings as defined by the Building (Definition of Restricted Building Work) Order 2011.			

WAIVERS AND MODIFICATIONS	
Waivers or modifications of the Building Code are required. ☐ Yes ☐ No	
If Yes, provide details of the waivers or modifications below:	
Clause	Waiver/modification required
List relevant clause numbers of building code	Specify nature of waiver or modification of building code required

ISSUED BY

Name and contact details of the licensed building practitioner who is licensed to carry out or supervise design work that is restricted building work.

Name: BILL FRANCIS

LBP or Registration number: 111338

The practitioner is a: ☒ Design LBP ☐ Registered architect ☐ Chartered professional engineer

Design Entity or Company (optional):

Mailing address (if different from below):

Street address/Registered office:

Suburb:

Town/City: PAPAKURA

PO Box/Private Bag: 65

Postcode:

Phone number: 04 2961248

Mobile:

After hours:

Fax:

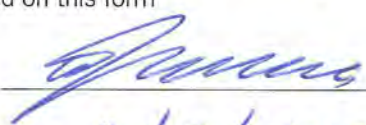
Email address:

Website:

DECLARATION

I BILL FRANCIS LBP, state that I have applied the skill and care reasonably required of a competent design professional in carrying out or supervising the Restricted Building Work (RBW) described in this form, and that based on this, I also state that the RBW:

- Complies with the building code, or
- Complies with the building code subject to any waiver or modification of the building code recorded on this form

Signature: 

Date: 4/7/2016

00 21



Ninth Edition 2012 (3)

AGREEMENT FOR SALE AND PURCHASE OF REAL ESTATE

This form is approved by the Real Estate Institute of New Zealand Incorporated and by Auckland District Law Society Incorporated.

DATE:

07 June 2016

VENDOR: VJ LIMITED

PURCHASER: A R Thompson Family TRUST (Trustees Adam Thompson, Daphne Thompson, Anthony Thompson) *Thompson*

and/or nominee

The vendor is registered under the GST Act in respect of the transaction evidenced by this agreement and/or will be so registered at settlement

Yes/No

PROPERTY

Address: Lot 24 - Mahia Lane, Stage 1 Waikanae North, Waikanae, Kapiti Coast, Wellington

Estate: FEE SIMPLE LEASEHOLD STRATUM-IN-FREEHOLD STRATUM-IN-LEASEHOLD
GROSSEASE(FEE SIMPLE) GROSSEASE(LEASEHOLD) (fee simple if none is deleted)

Legal Description:

Area (more or less):

Lot/Flat/Unit:

DP:

Unique Identifier or CT:

467 sqm

24

476550

656768

Together with all improvements erected thereon

PAYMENT OF PURCHASE PRICE

Purchase price: \$195,000

One hundred and ninety-five thousand dollars

Plus GST (if any) OR Inclusive of GST (if any)
If neither is deleted, the purchase price includes GST (if any)

GST date (refer clause 13.0):

Deposit (refer clause 2.0): \$19,500

Nine thousand, seven hundred and fifty dollars shall be paid to Hornabrook Macdonald Lawyer's Trust Account 12-3110-00611502-02 on the signing of this agreement.

Balance of purchase price to be paid or satisfied as follows:

(1) By payment in cleared funds on the settlement date which is 1st December 2016.

OR

(2) in the manner described in the Further Terms of Sale.

Interest rate for late settlement: 14.00% p.a.

CONDITIONS (refer clause 9.0)

Finance Condition

LIM required: (refer clause 9.2) Yes/No

Lender:

Building report required: (refer clause 9.3) Yes/No

Amount required:

OIA Consent required: (refer clause 9.4) Yes/No

Finance date:

Land Act/OIA date:

TENANCIES (if any)

Name of tenant: Vacant Possession

Bond: \$

Rent: \$

Term:

Right of renewal:

SALE BY:

Professionals

DoubleWinkel Real Estate Ltd
a Member of the Professionals Group
Shop 15, Kapiti Light Complex, SH1
PO Box 26, DXRP60023
PARAPARAUMU 5254
Manager: Edwin Winkel
Salesperson: Eddie Winkel (027 543 1643)

Phone: 04 297 2019

Fax: 04 297 2101

Email: kapiti@dwre.co.nz

16 JUL 2016 10:40 AM

Licensed Real Estate Agent under Real Estate Agents Act 2008

It is agreed that the vendor sells and the purchaser purchases the property, and the chattels listed in Schedule 1, on the terms set out above and in the General Terms of Sale and any Further Terms of Sale.



COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Search Copy



R. W. Muir
Registrar-General
of Land

Identifier **658768**
Land Registration District **Wellington**
Date Issued **21 April 2015**

Prior References
657176

Estate	Fee Simple
Area	467 square metres more or less
Legal Description	Lot 24 Deposited Plan 476550

Proprietors
V J Limited

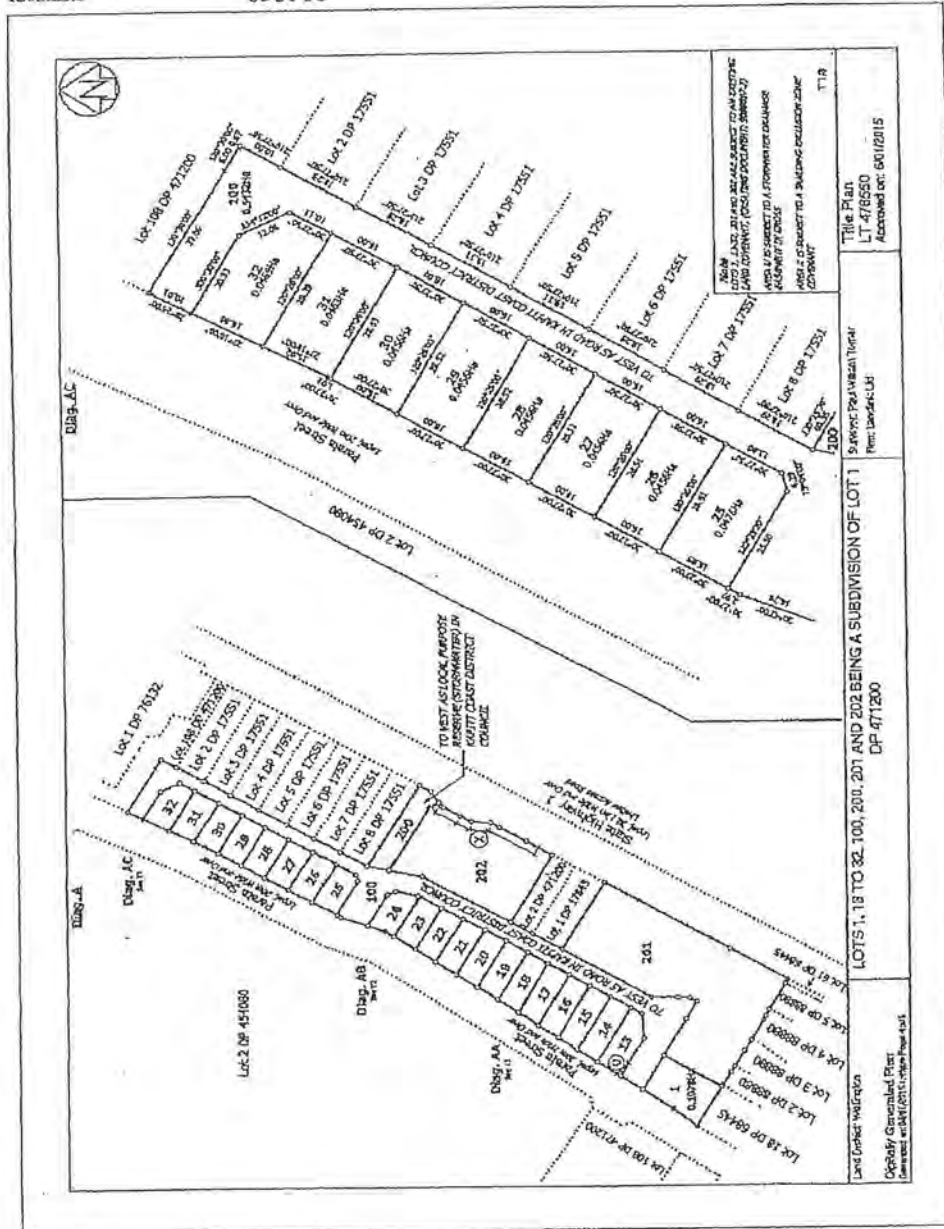
Interests

9099897.6 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 1.10.2012 at 11:53 am
Land Covenant in Easement Instrument 9099897.7 - 1.10.2012 at 11:53 am
9099897.8 Encumbrance to Charles Fleming Retirement Village Limited - 1.10.2012 at 11:53 am
9851253.13 Mortgage to Westpac New Zealand Limited - 14.11.2014 at 4:04 pm
9897467.1 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 21.4.2015 at 11:17 am
10268001.1 Variation of Consent Notice 9897467.1 pursuant to Section 221(5) Resource Management Act 1991 - 19.1.2016 at 4:29 pm
10268001.2 Variation of Consent Notice 9099897.6 pursuant to Section 221(5) Resource Management Act 1991 - 19.1.2016 at 4:29 pm

[Handwritten signatures and initials]

Identifier

658768



[Handwritten signatures and initials]

SCHEDULE 2

(GST Information - see clause 14.0)

This Schedule must be completed if the vendor has stated on the front page that the vendor is registered under the GST Act in respect of the transaction evidenced by this agreement and/or will be so registered at settlement. Otherwise there is no need to complete it.

Section 1

1.	The Vendor's registration number (if already registered): 91-592-460	
2.	Part of the property is being used as a principal place of residence at the date of this agreement. That part is: (e.g. "the main farmhouse" or "the apartment above the shop")	Yes/No
3.	The purchaser is registered under the GST Act and/or will be so registered at settlement.	Yes/No
4.	The purchaser intends at settlement to use the property for making taxable supplies.	Yes/No

If the answer to either or both of question 3 and 4 is "No", go to question 7

5.	The purchaser's details are as follows (a) Full name: A R Thompson Family TRUST (Trustees Adam Thompson, Daphne Thompson, Anthony Thompson) (b) Address: Daphne Thompson (c) Registration number (if already registered):	
6.	The purchaser intends at settlement to use the property as a principal place of residence by the purchaser or a person associated with the purchaser under section 2A(1)(c) of the GST Act (connected by blood relationship, marriage, civil union, de facto relationship or adoption). OR The purchaser intends at settlement to use part of the property as a principal place of residence by the purchaser or a person associated with the purchaser under section 2A(1)(c) of the GST Act. That part is: (e.g. "the main farmhouse" or "the apartment above the shop")	Yes/No Yes/No
7.	The purchaser intends to direct the vendor to transfer title to the property to another party ("nominee")	Yes/No

If the answer to question 7 is "Yes", then please continue. Otherwise, there is no need to complete this Schedule any further.

Section 2

8.	The nominee is registered under the GST Act and/or is expected by the purchaser to be so registered at settlement.	Yes/No
9.	The purchaser expects the nominee at settlement to use the property for making taxable supplies.	Yes/No

If the answer to either or both of questions 8 and 9 is "No", there is no need to complete this Schedule any further.

10.	The nominee's details (if known to the purchaser) are as follows: (a) Full name: (b) Address: (c) Registration number (if already registered):	
11.	The purchaser expects the nominee to intend at settlement to use the property as a principal place of residence by the nominee or a person associated with the nominee under section 2A(1)(c) of the GST Act (connected by blood relationship, marriage, civil union, de facto relationship or adoption). OR The purchaser expects the nominee to intend at settlement to use part of the property as a principal place of residence by the purchaser or a person associated with the purchaser under section 2A(1)(c) of the GST Act. That part is: (e.g. "the main farmhouse" or "the apartment above the shop")	Yes/No Yes/No

WARNING (This warning does not form part of this agreement)

This is a binding contract. Read the information set out on the back page before signing.

Acknowledgements

Where this agreement relates to the sale of a residential property and this agreement was provided to the parties by a real estate agent, or by a licensee on behalf of the agent, the parties acknowledge that they have been given the guide about the sale of residential property approved by the Real Estate Agents Authority.
Where this agreement relates to the sale of a unit title property, the purchaser acknowledges that the purchaser has been provided with a pre-contract disclosure statement under section 146 of the Unit Titles Act 2010.

Signature of purchaser(s)

[Handwritten signatures of purchasers]

Signature of vendor(s)

[Handwritten signatures of vendors]

BEFORE SIGNING THE AGREEMENT

- It is recommended both parties seek professional advice before signing. This is especially so if:
 - there are any doubts. Once signed, this will be a binding contract with only restricted rights of termination.
 - property such as a hotel or a farm is being sold. The agreement is designed primarily for the sale of residential and commercial property.
 - the property is vacant land in the process of being subdivided or there is a new unit title or cross lease to be issued. In these cases additional clauses may need to be inserted
 - there is any doubt as to the position of the boundaries.
 - the purchaser wishes to check the weathertightness and soundness of construction of any dwellings or other buildings on the land.
- The purchaser should investigate the status of the property under the Council's District Plan. The property and those around it are affected by zoning and other planning provisions regulating their use and future development.
- The purchaser should investigate whether necessary permits, consents and code compliance certificates have been obtained from the Council where building works have been carried out. This investigation can be assisted by obtaining a LIM from the Council.
- The purchaser should compare the title plans against the physical location of existing structures where the property is a unit title or cross lease. Structures or alterations to structures not shown on the plans may result in the title being defective.
- In the case of a unit title, before the purchaser enters into the agreement:
 - the vendor **must** provide to the purchaser a pre-contract disclosure statement under section 146 of the Unit Titles Act 2010;
 - the purchaser should check the minutes of the past meetings of the body corporate, enquire whether there are any issues affecting the units and/or the common property, check the body corporate's long term maintenance plan and enquire whether the body corporate has imposed or proposed levies for a long term maintenance fund or any other fund for the maintenance of, or remedial or other work to, the common property.
- The vendor should ensure the warranties and undertakings in clauses 6 and 8:
 - are able to be complied with; and if not
 - the applicable warranty is deleted from the agreement and any appropriate disclosure is made to the purchaser.
- Both parties should ensure the chattels list in Schedule 1 is accurate.
- Before signing this agreement, both parties should seek professional advice regarding the GST treatment of the transaction. This depends upon the GST information supplied by the parties and could change before settlement if that information changes.

THE ABOVE NOTES ARE NOT PART OF THIS AGREEMENT AND ARE NOT A COMPLETE LIST OF MATTERS WHICH ARE IMPORTANT IN CONSIDERING THE LEGAL CONSEQUENCES OF THIS AGREEMENT.

PROFESSIONAL ADVICE SHOULD BE SOUGHT REGARDING THE EFFECT AND CONSEQUENCES OF ANY AGREEMENT ENTERED INTO BETWEEN THE PARTIES.

THE PURCHASER IS ENTITLED TO A COPY OF ANY SIGNED OFFER AT THE TIME IT IS MADE.

AGREEMENT FOR SALE AND PURCHASE OF REAL ESTATE

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DATE:

VENDOR:
VJ LIMITED

Contact Details:
Jonathan Speedy
P O Box 105-422, Auckland 1143
Phone: 021 234 4132
Email: jonathan@covington.co.nz

VENDOR'S LAWYERS:

Firm: Hornabrook Macdonald Lawyers

Individual Acting: Robyn Wasson

Contact Details: Level 5, 12 O'Connell Street, DX
CP21015, AUCKLAND.
Phone: 09 3537999
Fax: 09 3537599
Email: robyn@hmlaw.co.nz

PURCHASER:

A R Thompson Family TRUST (Trustees Adam Thompson, Daphne Thompson, Anthony Thompson)
Thompson Daphne Thompson Thompson

Contact Details:

PURCHASER'S LAWYERS:

Firm: Simpson & Co Kapiti
Individual Acting: Dilison Jo Mary

Contact Details:

LICENSED REAL ESTATE AGENT: DoubleWinkel Real Estate Ltd

Agent's Name: a Member of the Professionals Group

Manager: Edwin Winkel

Salesperson: Eddie Winkel (027 543 1643)

Contact Details: Shop 15, Kapiti Light Complex, SH1
PO Box 28, DXRP60023
PARAPARAUMU
5254

Phone: 04 297 2019

Fax: 04 297 2101

Email: kapiti@dwre.co.nz

00 22



**CONSENT NOTICE
PURSUANT TO SECTION 221 OF
THE RESOURCE MANAGEMENT ACT 1991**

**IN THE MATTER OF A PLAN LODGED FOR
DEPOSIT UNDER NUMBER 476550
AND RESOURCE CONSENT NO. RM 130101**

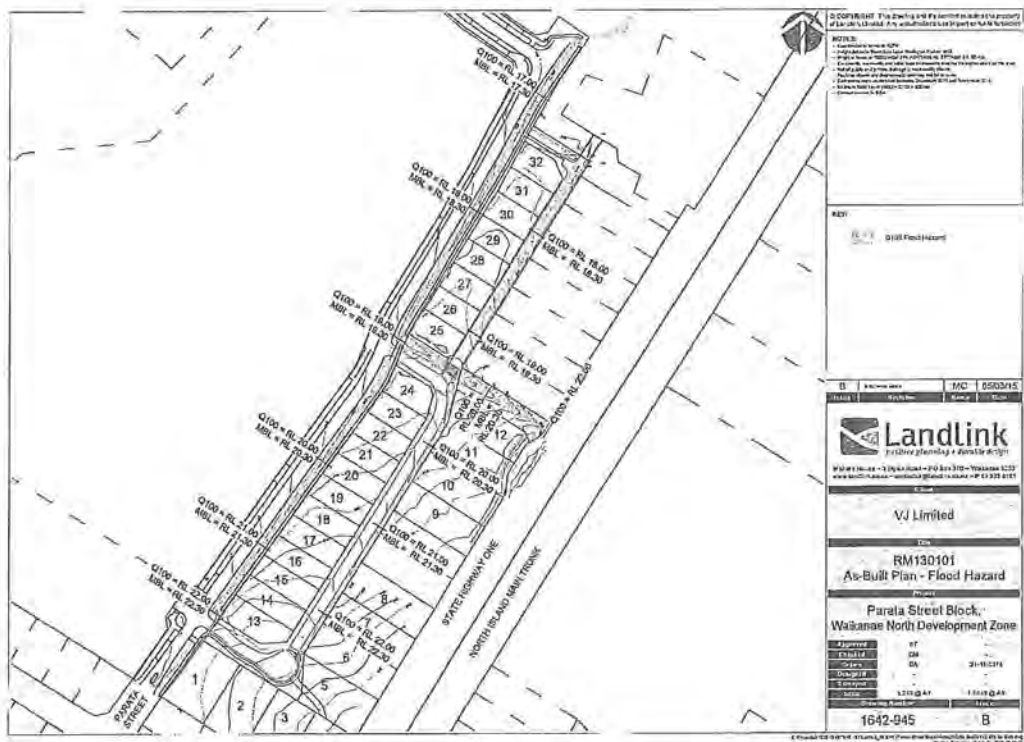
(BEING THE SUBDIVISION OF LOT 1 DP 471200),
AT 19, 27 and 53 State Highway One, Waikanae (Parata Street and Mahia Lane)
FOR V J Limited

The Regional Regulatory Titles Officer at Wellington

PURSUANT to Section 221 of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that it has consented to the subdivision and that the following conditions are to be complied with on a continuing basis:

1. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the following documents:
 - The Design Report for Parata St Block Waikanae North dated 8 October 2013 and prepared by J D Bell of Landlink; and
 - The report on Foundations, Roothing and As Built Earthworks dated 13 November 2014 and prepared by D J Munro of Landlink;which were submitted to Council in relation to application No. RM130101. Copies of the above documents are available from file RM130101 in Council's Office at any time the office is open to the public and are also stored electronically under e-docs reference nos. 555006 and 555011 respectively.
2. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: The owner of the land has ongoing responsibility for the construction and subsequent management and maintenance of any on site stormwater disposal system to meet the performance standards given in the certified stormwater disposal design as set out in the document entitled "*RM130101 – Subdivision of Lot 3 DP 454080 On site attenuation requirements for residential lots*" dated 20 March 2015. This document is stored by Kapiti Coast District Council on file RM130101 and also electronically under e-docs reference no. 555036. The Tank Calculator referred to in the above report is also stored electronically under e-docs no. 555042. Both documents are available in Council's office at any time the office is open to the public.
3. With respect to Lots 201 and 202: It is the ongoing responsibility of the landowner to protect and maintain any existing and proposed flow paths and natural drainage paths unless otherwise certified by Council's Development Engineer. One method of compliance with this requirement is the construction and maintenance of any vehicular access across any stormwater swale in general accordance with the design shown on Landlink Plan number 1642-E2-150 issue A. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555609 and is available at any time the office is open to the public.

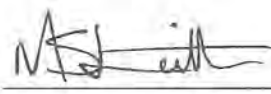
4. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: All residential buildings shall be established so that the underside of the floor joists and/or floor slab is above the minimum build level as shown on the Flood Hazard map prepared by Landlink Limited and identified as Drawing Number 1642-945 Issue B. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555529 and is available at any time the office is open to the public. For ease of identification, an image of the Flood Hazard map is set out below:



5. With respect to Lot 202: The following are prohibited within area "X" as shown on DP 476550 unless otherwise approved by the Kapiti Coast District Council Stormwater Engineer;
- The construction of any buildings or other works other than decks supported on poles;
 - The erection of any fences;
 - Earthworks of any nature;
 - Any other activity that may disturb the satisfactory operation of the secondary overflow path and/or bund area which lies within area "X" on DP 476550.

Issued in respect of application No. RM 130101 on this 17th day of April, 2015.


David Wayne Gair
AUTHORISED OFFICER


Monique Sarah Leith
AUTHORISED OFFICER

**VARIATION TO CONSENT NOTICE
PURSUANT TO SECTION 221(3)
OF THE RESOURCE MANAGEMENT ACT 1991**

IN THE MATTER OF DPs 454080 and 476550

**FOR LOT 3 DP 454080 and Lots 201 and 202 DP 476550;
CTs 658777 and 658778
At Mahia Lane,
For VJ Limited**

To: the Regional Regulatory Titles Officer at Wellington

Please be advised that pursuant to Section 221(3) of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that, in relation to Lot 3 DP 454080 only, it has consented to a variation of the following consent notice conditions from the consent notices dated 9 August 2012 for DP 454080:

1. With respect to Lots 2, 3, 5 and 107: Foundation design and construction for any new building or addition or alterations to a building shall take into account:
 - The findings and recommendations within the document prepared by Landlink Limited, dated 24 May, 2012 and entitled "Statement of Professional Opinion as to Suitability of Land for Building Construction" together with associated documents which were submitted to Council in relation to application No. RM100229; and
 - The requirements and intent of the report entitled "Waikanae Plan Change Application, Assessment of Environmental Effects – Geotechnical" dated August 2006.

Copies of the above documents are available in the Kapiti Coast District Council Office at any time the office is open to the public.

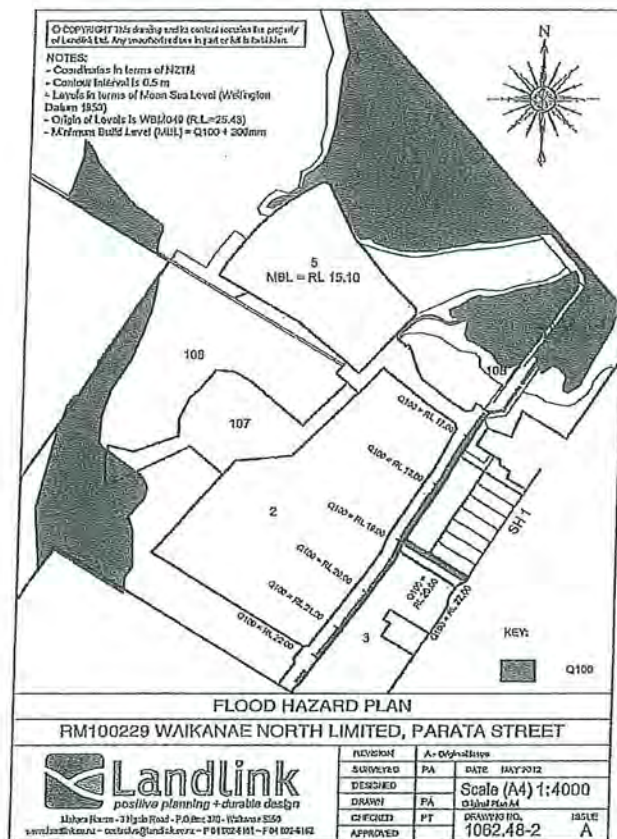
2. With respect to Lots 3 and 5: Any stormwater disposal design related to any development on the land must incorporate provision for and be constructed to the following design criteria to the satisfaction of the Kapiti Coast District Council:
 - provide all roads and vehicle carriageways with a primary system designed to convey the Q10 rainfall event and with a secondary overflow system designed to convey the Q100 rainfall event;
 - include appropriate control structures to ensure the stormwater discharging from lots 3 and 5 meet the parameters specified in the stormwater disposal designed approved under Condition 26;
 - protect and maintain existing overflow and natural drainage paths, unless otherwise altered during stage 1 as approved by the Kapiti Coast District Council Stormwater Engineer; and
 - be verified through hydraulic modelling by a suitably qualified hydrologist or hydraulic modelling specialist, and may be subject to peer review at the consent holder's expense.

It shall be the ongoing responsibility of the owner of the land to maintain any on site system so that it continues to meet the above performance standard as it applied at the time of approval.

4. With respect to Lots 3 and 107: Any habitable buildings shall be established so that the underside of the floor joists and/or floor slab is above the minimum recommended building level, which is 300 millimetres above the modelled 1 in 100 year return period flood level (Q100) as determined by the Kapiti Coast District Council at the time of the construction of the relevant building. Details of the recommended build levels can be obtained by consultation with Kapiti Coast District Council Stormwater Engineer and are, at the date of issue of this consent notice, related to the flood risk shown on the Waikanae north Flood Hazard Mitigation plan prepared by SKM, dated 17 July, 2012 and entitled "Proposed Adjustment to Flood Hazard Extent in the Vicinity of the Waikanae Both Development following Drainage Updates", a copy of which is replicated below for purposes of identification:



Furthermore, the current modelled Q100 levels are, at the date of issue of this consent notice, recorded on Landlink Flood Hazard Plan number 1062.48-2 Issue A, a copy of which is replicated below for purposed of identification:



Note: The above plans are held on Kapiti Coast District Council file RM100029 and are available from Council's office at any time the office is open to the public.

The owners of Lot 3 DP 454080; VJ Limited and the Kapiti Coast District Council hereby agree to change the above so that it reads as follows:

1. With respect to Lots 2, 5 and 107: Foundation design and construction for any new building or addition or alterations to a building shall take into account:
- The findings and recommendations within the document prepared by Landlink Limited, dated 24 May, 2012 and entitled "Statement of Professional Opinion as to Suitability of Land for Building Construction" together with associated documents which were submitted to Council in relation to application No. RM100229; and
 - The requirements and intent of the report entitled "Waikanae Plan Change Application, Assessment of Environmental Effects – Geotechnical" dated August 2006.

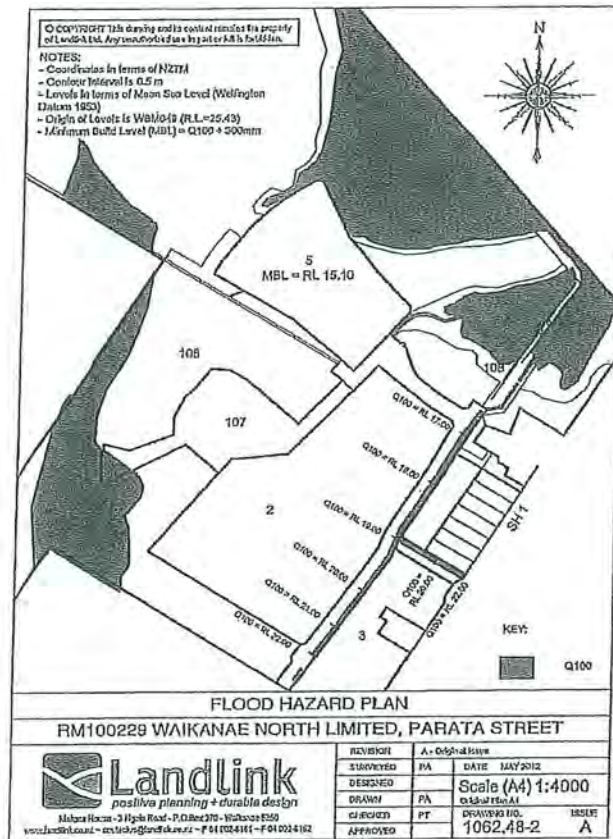
Copies of the above documents are available in the Kapiti Coast District Council Office at any time the office is open to the public.

2. With respect to Lot 5: Any stormwater disposal design related to any development on the land must incorporate provision for and be constructed to the following design criteria to the satisfaction of the Kapiti Coast District Council:
- provide all roads and vehicle carriageways with a primary system designed to convey the Q10 rainfall event and with a secondary overflow system designed to convey the Q100 rainfall event;

- It shall be the ongoing responsibility of the owner of the land to maintain any on site system so that it continues to meet the above performance standard as it applied at the time of approval.

- [illegible]

Furthermore, the current modelled Q100 levels are, at the date of issue of this consent notice, recorded on Landlink Flood Hazard Plan number 1062.48-2 Issue A, a copy of which is replicated below for purposes of identification:



Note: The above plans are held on Kapiti Coast District Council file RM100029 and are available from Council's office at any time the office is open to the public.

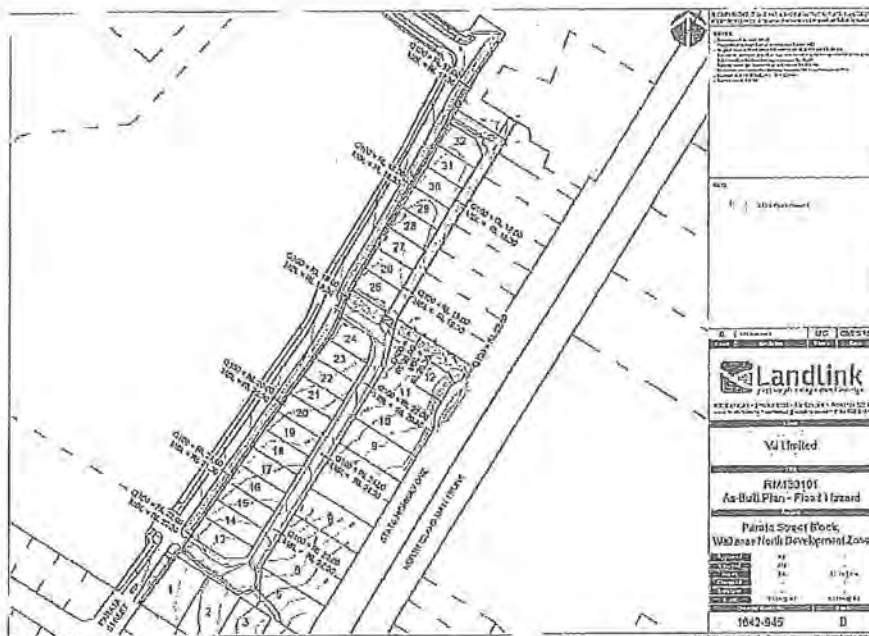
Please be advised that pursuant to Section 221(3) of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that, in relation to Lot 3 DP 454080 and Lots 201 and 202 DP 476550 only, it has consented to a variation of the following consent notice conditions from the consent notices dated 9 August 2012 for DP 454080 and 17 April 2015 for DP 476550:

1. With respect to Lots 1, 13 to 32 and Lots 201 and 202: Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the following documents:
 - The Design Report for Parata St Block Waikanae north dated 8 October 2013 and prepared by J D Bell of Landlink; and
 - The report on Foundations, Roading and As Built Earthworks dated 13 November 2014 and prepared by DJ Munro of Landlink Limited

which were submitted to Council in relation to application No. RM130101. Copies of the above documents are available from file RM130101 in Council's Office at any time the office is open to the public and are also stored electronically under e-docs reference nos. 555006 and 555011 respectively.

2. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: The owner of the land has an ongoing responsibility for the construction and subsequent management and maintenance

3. With respect to Lot 201 and 202: It is the ongoing responsibility of the landowner to protect and maintain any existing and proposed flow paths and natural drainage paths unless otherwise certified by Council's Development Engineer. One method of compliance with this requirement is the construction and maintenance of any vehicular access across any stormwater swale in general accordance with the design shown on Landlink Plan number 1642-E2-150 issue A. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555609 and is available at any time the office is open to the public.
4. With respect to Lots 1, 13 to 32 inclusive and Lots 201 and 202: All residential buildings shall be established so that the underside of the floor joists and/or floor slab is above the minimum build level as shown on the Flood Hazard map prepared by Landlink Limited and identified as Drawing Number 1642-945 issue B. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555529 and is available at any time the office is open to the public. For ease of identification, an image of the Flood Hazard map is set out below:



5. With respect to Lot 202: the following are prohibited within area "X" as shown on DP 476550 unless otherwise approved by the Kapiti Coast District Council Stormwater Engineer:
- The construction of an buildings or other works other than decks supported on poles;
 - The erection of any fences;
 - Earthworks of any nature'
 - Any other activity that may disturb the satisfactory operation of the secondary overflow

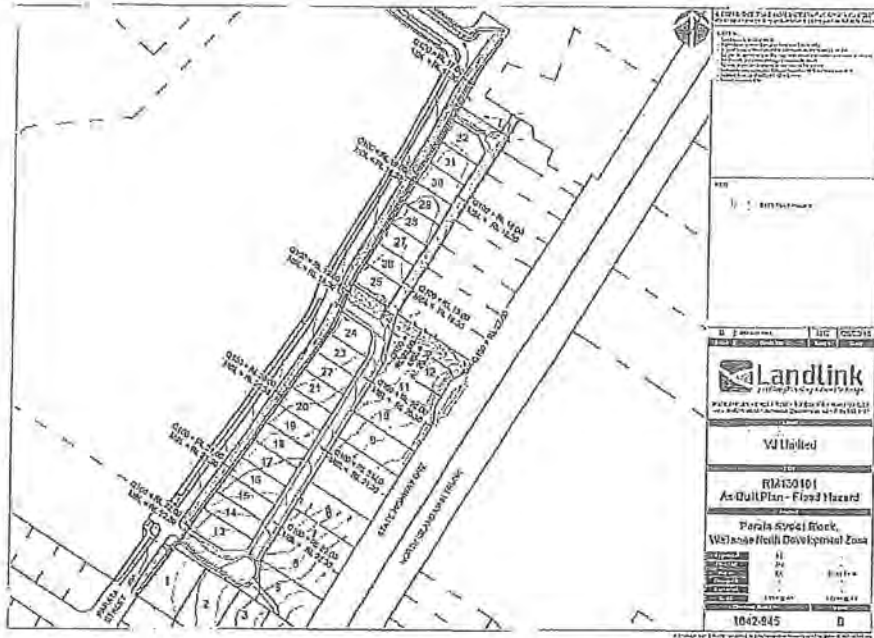
path and/or bund area which lies within area "X" on DP 476550.

The owners of Lots 201 and 202 DP 476550; VJ Limited and the Kapiti Coast District Council hereby agree to change the above so that it reads as follows:

1. With respect to Lots 1 and 13 to 32: Foundation design and construction for any new building or additions and alterations to a building shall take into account the findings and recommendations within the following documents:
 - The Design Report for Parata St Block Waikanae north dated 8 October 2013 and prepared by J D Bell of Landlink; and
 - The report on Foundations, Roading and As Built Earthworks dated 13 November 2014 and prepared by DJ Munro of Landlink Limited

which were submitted to Council in relation to application No. RM130101. Copies of the above documents are available from file RM130101 in Council's Office at any time the office is open to the public and are also stored electronically under e-docs reference nos. 555006 and 555011 respectively.

2. With respect to Lots 1 and 13 to 32 inclusive: The owner of the land has an ongoing responsibility for the construction and subsequent management and maintenance of any on site stormwater disposal system to meet the performance standards given in the certified stormwater disposal design as set out in the document entitled "RM130101 – Subdivision of Lot 3 DP 454080 On site attenuation requirements for residential lots" dated 20 March 2015. This document is stored by Kapiti Coast District Council on file RM130101 and also electronically under e-docs reference no. 555042. Both documents are available in Council's office at any time the office is open to the public.
3. Condition 3 will be removed in its entirety.
4. With respect to Lots 1 and 13 to 32 inclusive: All residential buildings shall be established so that the underside of the floor joists and/or floor slab is above the minimum build level as shown on the Flood Hazard map prepared by Landlink Limited and identified as Drawing Number 1642-945 issue B. A copy of this plan is held on file RM130101 and is also stored electronically at the Kapiti Coast District Council under e-docs reference no. 555529 and is available at any time the office is open to the public. For ease of identification, an image of the Flood Hazard map is set out below:



5. Condition 5 will be removed in its entirety.

Issued by the Kapiti Coast District Council in respect of RM140222A
this 15th day of January, 2016


Marnie Shayne Rydon
Authorised Officer


Rita Louise O'Brien
Authorised Officer

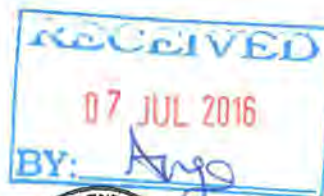
On Behalf of VJ Limited
Date:



00 23

**COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952**

Search Copy



R. W. Muir
Registrar-General
of Land

Identifier 658768
Land Registration District Wellington
Date Issued 21 April 2015

Prior References

657176

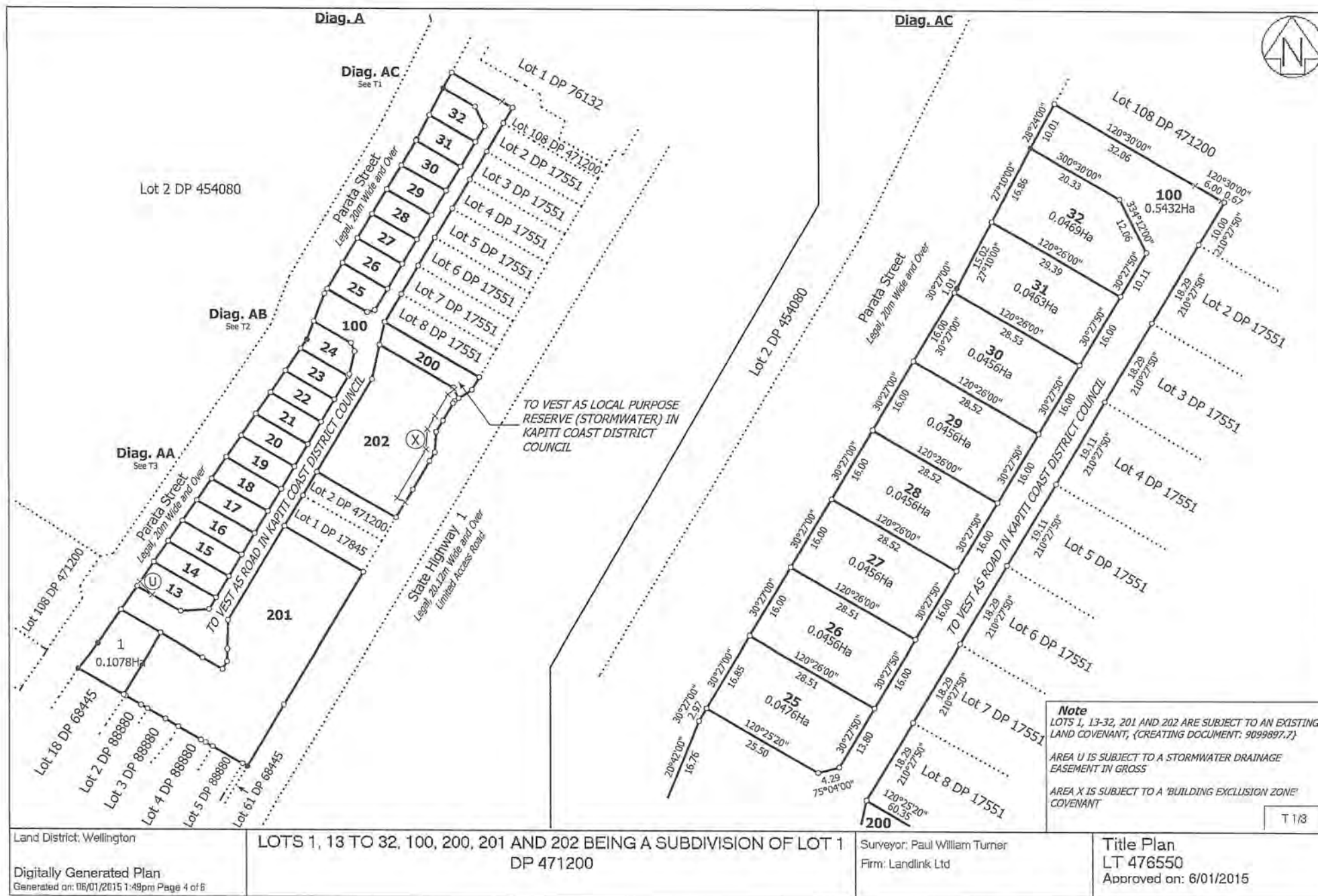
Estate Fee Simple
Area 467 square metres more or less
Legal Description Lot 24 Deposited Plan 476550

Proprietors

V J Limited

Interests

9099897.6 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 1.10.2012 at 11:53 am
Land Covenant in Easement Instrument 9099897.7 - 1.10.2012 at 11:53 am
9099897.8 Encumbrance to Charles Fleming Retirement Village Limited - 1.10.2012 at 11:53 am
9851253.13 Mortgage to Westpac New Zealand Limited - 14.11.2014 at 4:04 pm
9897467.1 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 21.4.2015 at 11:17 am
10268001.1 Variation of Consent Notice 9897467.1 pursuant to Section 221(5) Resource Management Act 1991 - 19.1.2016 at 4:29 pm
10268001.2 Variation of Consent Notice 9099897.6 pursuant to Section 221(5) Resource Management Act 1991 - 19.1.2016 at 4:29 pm



- Bill to email New Site Plan & Certificate of Title

CHECKSHEET: SINGLE RESIDENTIAL DWELLING AND ACCESSORY BUILDING

including single stand-alone dwellings, dwelling additions and/or alterations, re-piling, garages, decks, gazebos, sheds, retaining walls etc.

Kapiti Coast District Council,
175 Rimu Road, Paraparaumu 5032
Private Bag 60601, Paraparaumu 5254
For enquiries, phone 04 296 4700



Address of Project: 25 MARIA LANE, WAIKANA

This checklist shows you the information that has to be supplied with your building consent application. Please attach **2 copies** of the following information (unless otherwise specified) with your completed Building Consent Application Form.

Please tick relevant box in the Customer Use column as you attach the information. If the box is not relevant to your application, write NA across the box. Please check each section carefully and complete those sections that are relevant to your project.

Once you have attached all the required information, please check for completeness as an incomplete application or lack of any supporting information will mean that your application cannot be accepted for processing.

An Application Form is attached to this checklist — Please include this checklist with your application

Customer Use	1	GENERAL	For Office Use Only
		Complete this section for all applications	
☒	a	Building Consent Application Form (1 copy) Completed and signed by the owner or by an agent on behalf of the owner	☒
☐	b	Proof of Ownership (1 copy) <i>Certificate of Title Sale & Purchase</i> One recent copy of <u>current</u> certificate/s of title (i.e. not older than 3 months) or where applicable one copy of purchase agreement (if recently purchased) or one copy of relevant portions of current lease.	☒
☒	c	Locality Plan (1:500) showing: Physical location of the subject building in relation to streets or landmarks, north point, name of building and lot and DP number.	☒
☒	d	Restricted Building Work Does the application involved restricted building work? ☐ Yes ☐ No If Yes, provide certificate(s) of design work and advise Council of your Licensed Building Practitioner(s) as per the Advise of Licensed Building Practitioners Guidance sheet.	☒
☐	e	Inspections and Monitoring Details of proposed inspection regime including monitoring by council officers and other professionals e.g. architects, engineers, surveyors and certification to be supplied on completion.	☒
☒	f	Site Plan (1:100) showing: Dimensions of all boundaries, north point, <u>finished floor levels</u> , ground contours (extended to boundaries) and/or levels, site area, street name and number, lot and DP number, outline of building, distance to boundaries and the position of swimming or spa pools. Include on the site plan the designated wind zone of the site (e.g. specific design, very high, high, medium or low).	☒

For office use only Received on the grounds that all information appears to have been provided to enable assessment for compliance in accordance with the Building Act 2004 and the NZ Building Code: *well said*

Name: *Shant Nayan*

Signature: *Shant Nayan*

☐	g	Application Fee Applications will not be accepted without payment of the appropriate fees. Fees payable are set out in the published fee schedule of the council that has jurisdiction over the project site.	☒
2 CHANGE OF USE Complete for all existing buildings where the proposal involves forming a household unit where one did not exist before. Example: the conversion of a garage or shed into a residential unit			
☐	a	Assessment of the Building for Compliance with the Building Code Section 115(a) of the Building Act 2004 requires that the building, in its new use, complies fully with all clauses of the Building Code.	☐
☐	b	Reasonably Practicable The above assessment must relate to all building code clauses. If the proposal is for the project to meet anything less than full compliance with any clauses, your application must clearly state your reasoning, with supporting documentation, and show how you will meet the highest level of compliance that can be considered reasonably practicable.	☐
3 FOUNDATIONS / FLOOR Complete for all new buildings, for existing buildings where the footprint of the building will change or where an additional storey is being added			
☒	a	Foundation Plan (1:100 / 1:50) showing: • Dimensions of all new foundations • Sub-floor, including bracing • Footing details • If a concrete slab, show basic details including reinforcing and contractions joints • Piles and footing • If the addition is an upper storey show details on upgrading existing foundations, joints, piles etc • Indicate ventilation to sub floor spaces	☒
☐	b	Subfloor Bracing Provide subfloor bracing plan and calculations for all piled structures. Where the structure is specifically engineered, this should be included with the structural calculations. Subfloor bracing plan and calculations are required where an additional storey is to be added	☐
4 CONSTRUCTION Complete for all new structures or alterations to existing structures.			
☐	a	Existing Floor Plan (1:100 / 1:50) showing: (For additions and alterations only) • All levels • All designated spaces • All removals • Sanitary fixtures • Smoke detectors	☐
☒	b	Proposed Floor Plans (1:100 / 1:50) showing: • Room dimensions • Location of partitions • All designated spaces • All floors (new or altered) • Location of sanitary fixtures • Stairs, barriers, handrails, floor joists and beams • Floor joist layout for each level with timber floors • Smoke detectors • Note where wall will form part of the swimming pool fence	☒

☒	c	Pre-nail Truss and Frames - Specific design wall framing requires clarification - Truss layout must be supported by design certification and design of fixing details, including consideration of load paths to ground - Lintels carrying point loads, such as from girder trusses, require specific engineering design	☒
☒	d	Wall Bracing Plan (1:100 / 1:50) showing: - Bracing details and calculations for wall bracing (also required for existing lower storeys where an additional storey is being added) - Sub-floor bracing for decks projecting more than 2m from the house - Location, type and number of bracing elements to indicate compliance with NZS 3604:2011 (include calculations) - If the bracing was specifically designed by a structural engineer, provide calculations (required for specific design wind zones and lateral distribution of upper floor loads where lower storey bracing is provided in walls beyond the upper storey footprint)	☒
☒	e	Sections and Details (1:50 / 1:20 / 1:10) showing: - Foundation details involving reinforcing and connections - Stairs, handrails, decks and decking - Insulation systems and materials to floors, walls and roof - Barriers providing safety from falling. Specific engineering design required where detail does not comply with NZBC B1/AS2 - Framing sizes, beams, lintels - Roof cladding, eaves, fascias, gutters - Flashings to openings - Fire rated systems on all walls – closer than 1 metre to boundary - Stud heights of rooms and total height from lowest ground floor level to top of ridge - Window and door installation details - Retaining wall details e.g. type, height of retained ground, relationship to boundary, waterproof membrane and proposed drainage	☒
☐	f	Fire Report For domestic dwellings of 4 storeys or more, or buildings providing more than one household unit	☒
5 EXTERNAL Complete for new buildings or existing buildings with alternations to the external shell			
☒	a	Elevations (1:100 / 1:50) showing: Accurate lines from boundary to boundary on each elevation, relevant District Plan daylight control lines, the maximum height on each elevation, location of door and window openings, fixed and opening sashes, sill heights, <u>floor levels</u> in relation to ground levels, exterior cladding nominated to all elevations, down pipes and spouting, ventilators to sub-floor area (suspended floors only)	☒
☒	b	Risk Assessment <i>(Risk matrix in E2/AS1 may be used for buildings within scope)</i> Consider exposure, design and detailing to support appropriate selection of cladding	☒
☒	c	Cladding Details (1:50 / 1:20 / 1:10) Provide details around all penetrations, joinery and other junctions at a level appropriate to the level of risk e.g. roof/wall, balcony/wall, junction of different types of cladding, back flashing details for cavity systems	☒
☐	d	Production Certification Supply copies of product certificates relied on as compliance documents	☒
☐	e	Alternative Solutions If the proposal uses products or systems that are not covered in the Acceptable Solutions of clause E2 of the building code provide supporting current information including test results (fully signed reports), case studies, expert opinion (including evidence of experience/qualification, basis for forming opinion and statement of independence) etc to demonstrate compliance.	☒

6		SERVICES	
Complete for all projects with new installations or alteration of plumbing or drainage services ☐			
☒	a	Plumbing and Drainage Plan 1:100 / 1:50) showing: <i>Note: if you have supplied drainage details for surface water disposal on the site plan, no drainage plan is required.</i> - Sizes of pipe work and drains - Fixtures and fittings, hot water system(s) - If the building is more than one storey with sanitary fittings on upper floors, provide an isometric layout showing wastes, pipes and falls - Drainage layout with inspection bends and junctions indicated for both sewer and stormwater - Any other drainage on site including council mains and retaining wall field drains - Ventilation of sanitary rooms - Calculations for sizing of down pipes - Gully traps including overflow relief gullies	☒
7		STRUCTURAL	
Complete for all projects incorporating specific structural design			
☒	a	Structural Calculations If any design work required the services of a structural engineer, attach 2 copies of the calculations with this. The calculations must be prefaced with information explaining the design philosophy and justification of assumptions and methodologies used in analysis	☒
☐	b	Expert Opinion (Producer Statements) If this application for consent relies on any expert opinion including producer statements certifying compliance with the New Zealand Building Code, a copy must be attached with this application. (Note all structural producer statements are required to have accompanying calculations.)	☒
8		SPECIFICATIONS	
Complete for all applications			
<i>Note: the specification must be specific to the project and cover all aspects of the proposed work</i>			
☒	a	Specification: General - Elements of structure (size, spacing, timber treatment) - Finish or fixings to meet durability requirements - Plumbing and drainage materials and design that installation is to comply with - Wet area surfaces - Ventilation systems - Flooring slip resistance for access routes - Glazing - Type of smoke detectors (including existing smoke detectors where they will remain)	☒
☒	b	External Claddings For each of the following claddings provide details of the product name, manufacturer, maintenance requirements and warranties offered - Building wraps - Wall claddings - Roof claddings - Membranes (roof and decks) - Tanking - Joinery	☒

9		DEMOLITION / REMOVAL	☐
Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings.			
☐	a	Means of Barricading the Site Provide details of temporary barriers, gates which swing inwards or other means of restricting public access to the area	☐
☐	b	Proposed Tipping Location for Demolition Materials (address/landfill)	☐
☐	c	Hazardous Building Material Provide safety plan detailing the safe handling and disposal of hazardous materials	☐
☐	d	Site Management Plan Covering Management to control silt runoff, noise and dust	☐
☐	e	Proposed Destination for Relocate Building	☐
☐	f	Access To and From the Site (including use of kerb crossings)	☐
☐	g	Specify Termination of Existing Services • Water • Sewer • Stormwater	☐
☐	h	Details About the Building such as: Number of storeys, type of materials the building is constructed (Photographs of the building would be useful)	☐
		Note: You will need to contact the relevant service authorities specified below to advise them of the extent of your work: Electricity, gas, drainage, water, transport, telecommunications, cable television or any other services that may be affected. Transportation of Relocated Building You will be required to contact and provide details to Councils Transportation and Traffic Department.	
10		OTHER APPROVALS	
Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings.			
☐		Please check Territorial Authority regarding the requirement for other approvals required and fees payable. These may include: • Consents under the Resource Management Act • Approvals under bylaws including earthworks, vehicle crossings, road openings and water connections. Show the location of swimming or spa pools on the property and describe how compliance with the Fencing of Swimming Pools Act will be achieved.	☐

The issue of a building consent does not relieve the owner of any duty or responsibility under any other Act.

DRAINAGE PLAN NOTES:

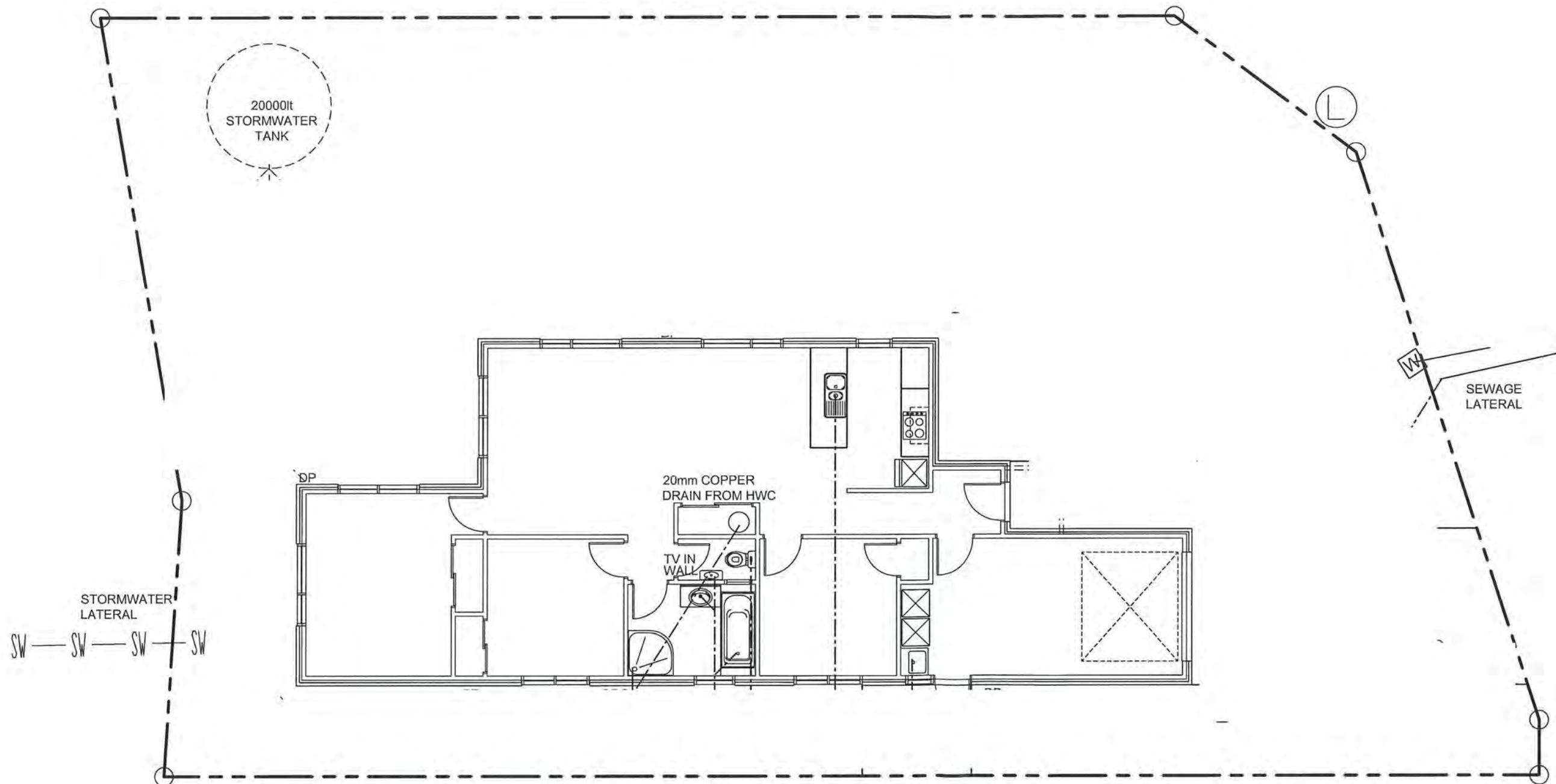
- All Plumbing and Drainage to be in accordance with AS/NZS 3500.2 for ground floor systems and for single stack systems
- Plumber/drainlayer to fill out producer statement and return to council with an as built drainage plan
- Check PIM information for service connections
- pipes to be inspected before covering with sand
- A tempering valve is required to be installed on the hot water service
- No pipes at any point exceed 10m in length from dn 100 vented drain

PIPE GRADIENTS

- Minimum grades for drains and discharge pipes
65Ø & less = 1 in 40
80Ø & 100Ø = 1 in 60

HOT & COLD WATER

- All hot & cold water pipes in house to be run in Iplex K2 pex plumbing system
- 20mm for Main, to bath and to HWC
- 15mm to all other branches
- 15mm to exterior taps



Revisions:
JUNE 2016 rev A

RECEIVED
07 JUL 2016
BY: Ange

30 03

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAE

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
DRAINAGE PLAN

Designer:

COASTAL
ARCHITECTURE LTD.

11 Kodex Place
Paraparaumu
New Zealand

Tel: 04 296 1248
e-mail : billfrancis@paradise.net.nz

Design: Bill Francis
Drawn: bf
Scale: as shown

Job: 1
Page of: 2
Rev: A



All work shall be in accordance with the NZBC. If in doubt ASK. The Contractor must verify all dimensions on the job before commencing any work or shop drawings. Figured dimensions are to be used, scaled dimensions must be verified. This drawing and concept are copyright of Coastal Architecture Ltd. The recipient of this document is prohibited from disclosing its content for any purpose without the prior written consent of Coastal Architecture Ltd

For an attenuated storm water disposal system to work 7,000lt of volume of the tank will need to be above ground to allow gavity to drain the tank 24/7 through the small bore pipe that will be installed

DRAINAGE PLAN

SCALE 1:100

SUPERSEDED

BC 160522

All frost prone pipes are to be lagged with a suitable type of insulation

Revisions:
JUNE 2016 rev A



30 04

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAE

Client:
**AR THOMSOM
FAMILY TRUST**

Drawing Title:
FLOOR PLAN

Designer:

COASTAL
ARCHITECTURE LTD.

11 Kodex Place
Paraparaumu
New Zealand

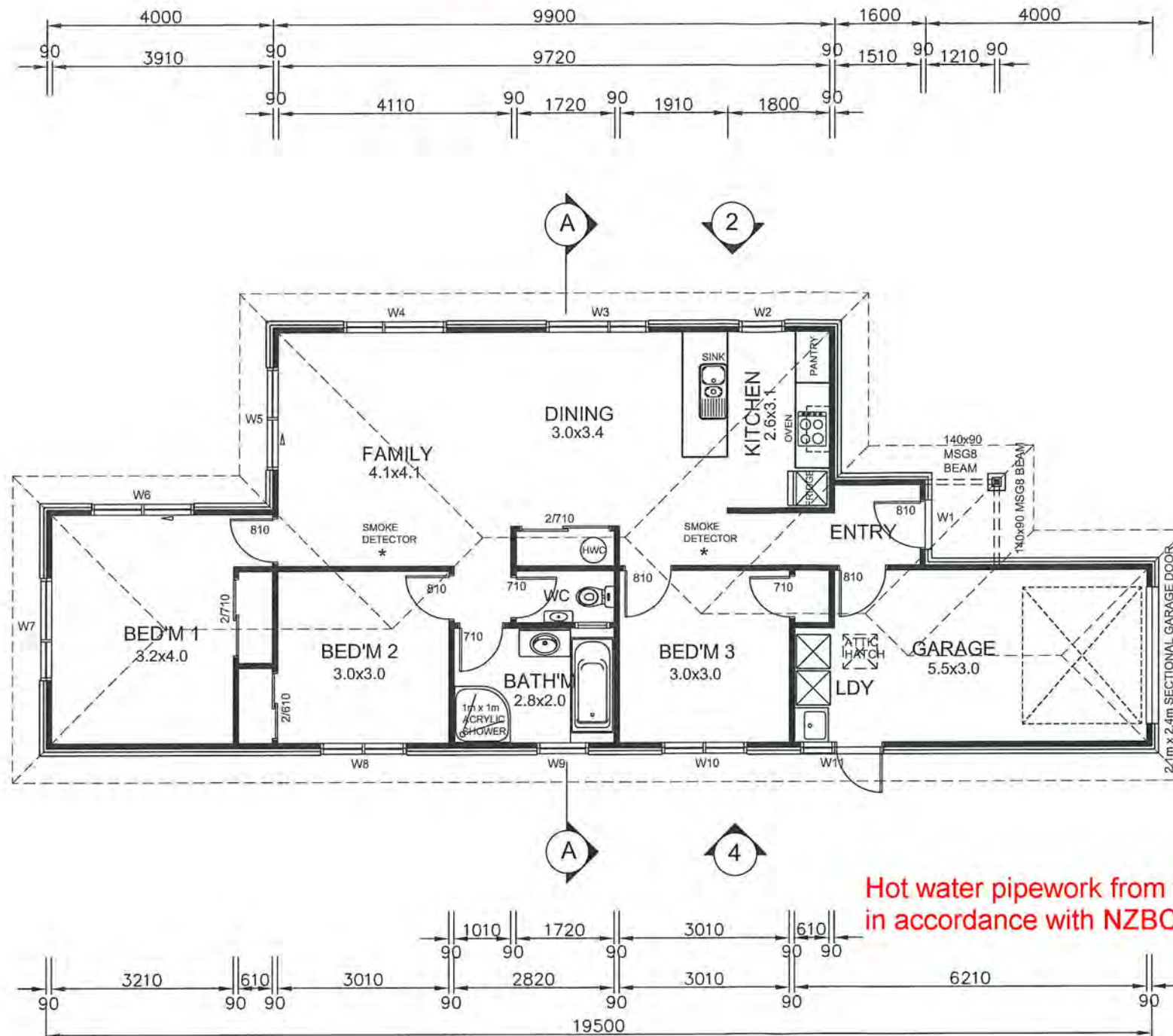
Tel: 04 296 1248
e-mail: billfrancis@paradise.net.nz

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Job: 1 Page of: 3 Rev: A



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Hot water pipework from the HWC is to be insulated in accordance with NZBC H1.

NOTES:

GENERAL NOTES:

- All work must be carried out to conform to relevant sections of the New Zealand Building Code and New Zealand Standards - in particular NZS 3604, NZS 3602 & NZS 4218. All references to Standards shall be taken as reference to the latest revision including amendments.
- Ground bearing must be reconfirmed on site following excavation but prior to placing concrete and reinforcing.
- Confirm site boundaries with licenced surveyor. Fences may not necessarily be on the legal boundary.
- All work to be carried out to best trade practice
- All habitable rooms to have 5% of their floor area as opening windows or approved alternative to achieve ventilation requirements
- Garage spaces within or attached to the building envelope shall have
- A - Openings provided with a 50mm min total level change between the interior & exterior paving
- B - Provision to drain water away from the threshold of the opening. refer to E2 fig 65 & table 18 for overall level change requirements
- Do Not Scale off Building Consent Documentation issued from TA's as the plans may have been scanned and the scale distorted.
- Prenail framing and truss manufacturer to provide lintel sizes and provide a producer statement for framing, window lintels and trusses.
- Window openings to be 20mm larger than window sizes (10mm tolerance each side)
- All bottom plates and framing to shower areas to be H3.1. All framing in other at risk areas such as parapets and enclosed balconys to comply with NZS 3602 for particular situation.
- Allow for dwangs to fix fittings as required by owner.
- Wall junctions shall be framed up with not less than 2 studs blocked and nailed.
- Maximum diameter hole in 90mm stud to be 25mm or 35mm diameter where not more than 3 consecutive studs are drilled.
- Lintels supporting rafters or trusses shall be secured against uplift as per clause 8.6.1.8 & figure 8.12, NZS 3604:2011. 25x1mm strap with 6/30x2.5mm nails into both lintel & stud & 25x1mm strap taken under plate & up 150mm each side of stud fixed with 6/30x2.5mm nails into each side of stud
- Confirm building wrap is able to be used with timber treatment.

FRAMING

Exterior Walls & Internal Load Bearing Walls:

- Up to 2.4m - 90x45 SG8 at 600 crs H1.2

Interior Non Load Bearing Walls:

- Up to 2.4m - 90x45 SG8 at 600 crs H1.2

INTERNAL LININGS

- WALLS:
- Generally - 10mm Standard Gib Board
 - Bathrooms - 10mm Gib Aqualine
- CEILINGS:
- Generally - 13mm Standard Gib
 - Bathrooms - 13mm Gib Aqualine
 - Back block sheet joints and allow for control joints as required by manufacturer

Top Plate Fixing

The fixing of top plates supporting roof trusses to wall studs or lintels shall be in accordance with figure 8.14, 8.15 & 8.18 NZS 3604:2011

Joints in top plates to comply with clause 8.7.3 NZS 3604:2011

Bottom Plate Fixing

10mm Ø cast in @ max 900 crs
12mm Ø cast in @ max 1400 crs
Approved anchors (fixed to manufacturers specific instructions)

- Holes in plates to comply with clause 8.5.1.6 & figure 8.4, NZS 3604:2011
- Refer to Bracing Plan and Manufacturers specifications for additional framing fixings.

FLOOR PLAN

SCALE 1:100

AREA = 110m² (117m² OVER CLADDING)

SUPERSEDEDDRAINAGE PLAN NOTES:

- All Plumbing and Drainage to be in accordance with AS/NZS 3500.2 for ground floor systems and for single stack systems
- Plumber/drainlayer to fill out producer statement and return to council with an as built drainage plan
- Check PIM information for service connections
- pipes to be inspected before covering with sand
- A tempering valve is required to be installed on the hot water service
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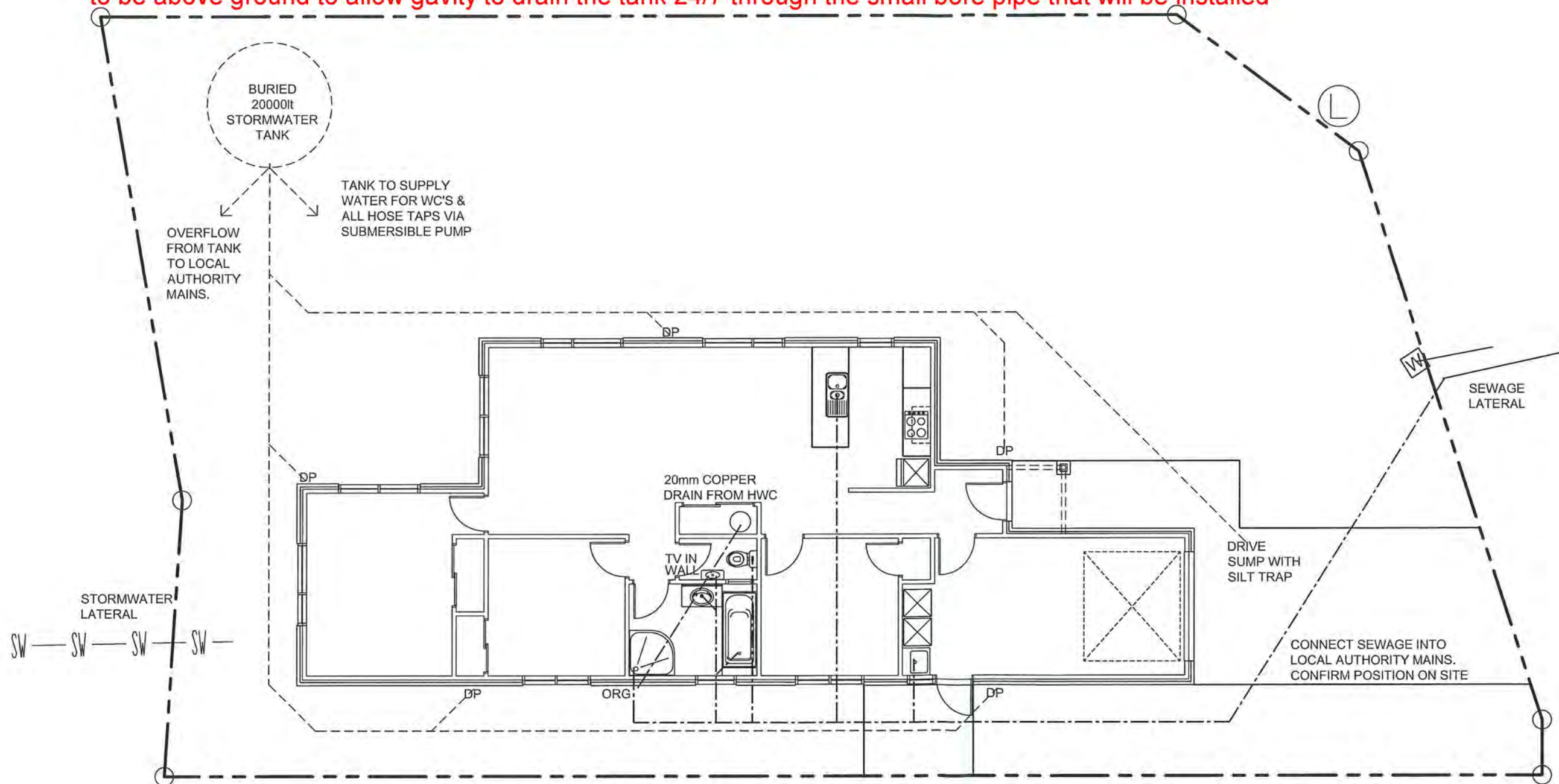
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**DRAINAGE PLAN**

SCALE 1:100

 Revisions:
 JUNE 2016 rev A

 RECEIVED
 07 JUL 2016
 BY: Ange

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 Project:
PROPOSED DWELLING

 LOT 24,
 25 MAHIA LANE,
 WAIKANAE

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 e-mail : billfrancis@paradise.net.nz

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 Page of: 2
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BUILDING CONSENT PRODUCTION CHECKLIST

Proposal: <i>New Dwelling</i>		BC: <i>160529</i>
Address: <i>25 Mahia Lane, Waikanae</i>	Category: Residential: ☒ Commercial: ☐	
Officer:	Date:	

Key	
N/A ☐	Not Applicable to this application. (The deletion of whole sections as N/A is permitted. For alternatives comment below each section),
No ☐	Plans, specifications & documentation not complying with the Building Code &/or Bld Act (The reason specified alongside each prompt)
Yes ☐	Plans, specifications & documentation complying with Category Bld Code &/or Bld Act (The reason specified alongside each prompt)

Site Plan (NZS 3604 Sec 3.4, 4, 5 Code clB1, B2, E1, E2, F1 & F2 Sect. 72, 75 BA04)			
N/A	No	Yes	Comments
☒	☐	☐	Wind zone <i>High</i> VI High Specific <i>(GIS)</i> Site specific (3604)
☒	☐	☐	Flooding / ponding hazards <i>(GIS)</i>
☒	☐	☐	Slippage / fault line hazards <i>(GIS)</i>
☒	☐	☐	Erosion, river & coastal hazards <i>(GIS)</i>
☐	☐	☒	Subsidence / soft soil hazards <i>(Site inspection notes) (engineer)</i>
☒	☐	☐	Corrosion zone Zone D or <i>Zone C</i>
☒	☐	☐	Soil contamination <i>(F1 GIS)</i>
☐	☐	☒	Distances to boundaries / siting <i>(District plan)</i>
☐	☐	☐	Floor levels / contours <i>(E2/AS1 & NZS 3604 E1) (FFL 19.80 contours 19.5-20)</i>
☒	☐	☐	Two or More Allotments <i>(Sec 75 – 83 Bld Act)</i>
☐	☐	☒	Noise / sound insulation <i>(airport & highway) (within SH1 noise corridor)</i>
☐	☐	☒	CT221 notice reviewed
☐	☐	☐	Outstanding Building Consents, No CCC
			BC:
			BC:
Additional comments:			

Ambiguity / Contradictions			
N/A	No	Yes	Comments
☐	☐	☐	Manufacturers Specs
☐	☐	☐	Engineer compared with Designer/Arch
☐	☐	☐	Any Other contradictions
Additional comments:			

Commercial Fire report (CVM1, C/As1, C/AS2, C/A34, C/AS4, C/AS5, C/AS6, C/AS7, F6, F7, F8)			
N/A	No	Yes	Comments
☐	☐	☐	Referral to NZFS Fire Engineering unit
Additional Comments:			



Legend

- Parcel
- Noise Corridor
- Railway
- SH1

1642

8 October 2013

Rita O'Brien
Subdivision Engineer
Kapiti Coast District Council
Private Bag 60601
PARAPARAUMU 5254

Dear Rita

DESIGN REPORT, PARATA ST BLOCK WAIKANAЕ NORTH

Our client is planning the subdivision of Lot 3 DP 454080 in the Waikanae North Development Zone. The exact layout of the proposed subdivision is shown on the attached scheme plan numbered 1642-10B. We have inspected the site for its suitability for subdivision with respect to geotechnical issues, foundations, access and stormwater management. This report has been prepared solely for the purposes of the subdivision and the information supplied should not be used for any other purpose other than assessing the suitability of the land for subdivision.

The site is bounded on the East by State Highway 1 and the West by the newly formed Parata St extension. It falls to the west by about 5 m from SH1 to Parata St. It is gently graded and there are no significant land stability issues. 31 additional lots will be created by the subdivision. Lots 1 to 12 are about 1,000 m² whilst lots 13 to 32 are 450 to 500 m².

Stormwater and Groundwater

The principles of the stormwater management plan are as follows:

- 1) In the design of Stage 1 the Q100 design flow of 0.682 m³/sec was allowed for in the sizing of the attenuation pond. The corresponding flow for the Q10 is 0.428 m³/sec. The above flows were based on the assumption that 15 % of the developed area would be impervious. This allowed for all of the roads in the development and 25 m² per lot. The current design shows an impervious area of 13% of the total being 2880 m² of road and 25 m² x 32 lots = 800 m² giving a total impervious area of 3680m² with the total lot area 27,700 m².
- 2) The above flows for the attenuation allowed 25 m² per lot of paving. A consent notice will be required for each lot to control this.

- 3) Individual households are expected to have sufficient stormwater attenuation tanks to provide hydraulic neutrality. The specific design of these will be carried out in accordance with KCDC requirements once the size of each house is known. These attenuation tanks can provide attenuation and also the necessary storage for rainwater to comply with Plan Change 75. Soakage pits are not recommended as the groundwater in the area is already an issue and this does not need exacerbating. The on site soils are clay and provide no soakage capability.
- 4) Each lot will be provided with a discharge point to take overflow from the attenuation tanks. Lots 1, 2, 3, 4, 5, 6 and 13 will discharge through a subsoil drain in the swale immediately north of the new access road between lots 1 and 13. Lots 7 to 12 will each have an individual connection to the subsoil drain in the swale servicing the access road. Lots 13 to 32 will have individual connections to the existing swale on the western side that services Parata St.

The road servicing lots 25 to 32 will be lowered some 300 mm below the lots. A perforated pipe will run under the road to provide subsoil drainage. The lowered road will also act as a drainage path for any overland flow in extreme storms that comes from the east across SH 1. This overland flow currently causes inundation on these lots. The capacity of the lowered road is about 4 m³/sec. The likely design flow will be considerable less than this. The current design flow from the catchment on the eastern side of SH1 that causes the surface water is 7.96 m³/sec. 5 m³/sec of this is already being diverted down the overflow swale immediately to the south of this. Another portion is already being diverted down the east side of SH1. Therefore it is likely that the surface flows into this area will be about 1 m³/sec as compared to a capacity of 4 m³/sec.

Bridge Access

Access to service lots 25 to 32 will be provided by 2 different methods. A 2 lane bridge will be provided over the overflow swale immediately south of lot 25. This will be sized to ensure that it is flood free in a Q100 event. A culvert will be provided at the north side of lot 32 where the access road crosses the swale between the block and Parata St. The culvert will be sized for the Q10 storm with no overtopping whilst the Q100 storm can pass over the lane with a depth of up to 200 mm as allowed by clause 4.3.4.2 of the SDPR. In a Q100 event where the water may be flowing in this manner the residents of the lane still have flood free access over the bridge which is a maximum of 120 m away from lot 32.

Foundations

90 scala penetrometer tests were carried out on the site. 11 test pits were also excavated. The scala probes extended between 500 and 1800 mm and the test pits went to about 1800 mm. The location of the tests is shown on the attached plan. Tests 1 to 11 were in the road to assist with the design of that whilst the remainder were in the lots to be subdivided. The larger lots, 1 to 12 contain either 3 or 4 tests whilst the smaller lots, 13 to 31 only contain 2 tests except for lot 15 that contains 4 tests. The results from the tests in lots 13 to 31 show a reasonable level of consistency and it was not considered necessary to carry out the additional 30 tests to gain more knowledge of the soil conditions. The results are attached as a table at the end of this report.

The soils typically comprise topsoil overlying deposited clays and gravels. The surfaces of the lots 1 to 12 and the eastern portions of lots 17 to 23 are wet as there is currently very little drainage. This is caused because there is a layer of clay over most of the site immediately below the topsoil. These lots will be provided with subsoil drainage during the development. NZS 3604: 1999 Timber Framed Buildings requires that the number of blows per 75 mm be greater than 3 at a depth of 600 mm or less for the soils to be classified as good ground not requiring specific design. The tests show that the founding levels could be at 600 mm depth for piles on some of the lots whereas others may need to be founded at depths of up to 1200 mm. It is our professional opinion that a house can be constructed on all lots using conventional foundations such as piles or concrete slabs.

We would recommend that the foundations are subject to specific design because:

- 1) The exact location of the house on each lot is not known and may not correlate to the location of the tests.
- 2) Lots 1 to 12 have a gentle slope from east to west that may require some excavation and or filling to create a level building platform.
- 3) The variability of founding depths across all 32 lots is such that it is not possible to certify a consistent depth for all lots.
- 4) Groundwater may need to be controlled in the foundations of some lots particularly if using a concrete slab on grade.

Pavement Design

Typically the road surface will be about 300 mm below the existing ground level. The pavement will be founded about 600 mm below the existing ground. At that depth the penetrometer shows a result of at least 25 mm per blow as per fig. 3.1 of NZS 4404:2010. This equates to a CBR reading of approx. 9.5. Therefore as per the mechanistic design process a pavement thickness of 200 could be acceptable. However the KCDC requirement for a minimum pavement thickness of 300 mm is the governing condition. Care will be taken during the excavation for the pavement to ensure that any unsuitable material is excavated to waste.

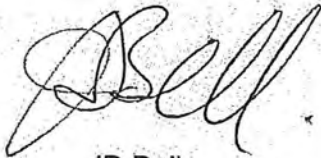
Waste water

The sanitary sewer reticulates from an existing manhole in the existing 150dia SS line at the northern end of the lane (asset ID: 20120920115607) and at a manhole in the centre of the site (WSM00311). The extensions to the mains will follow the natural grade of the land at between 0.8% and 1.0% at depths of 1.2-2.0m along the rear lanes.

The additional design flows from the development are 1.0 litres /sec at WSM0031 and 0.4 litres/sec at asset ID: 20120920115607. The design flow from the catchments east of SH1 is 82.6 litres/sec. The design flow at the critical section downstream of this is 84.03 litres/sec in the 375 mm dia PVC pipe (asset ID 20120411085708). The capacity of this sewer is 105 litres/sec. Therefore there is spare capacity of 22.4 litres/sec.

We trust that the above plan addresses the issues relating to the overall management of stormwater on the development. Please contact the writer if you have any queries.

Yours faithfully
LANDLINK LTD



JD Bell
Engineer

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	23	24
Depth																					
100																					
200				2																	
300	3	4		3				3		3	5						6	2	2		
400	4	3		5	4	2		2	2	3	5	2	2	2	9	3	3	1	2		
500	R	5	4	5	5	2	3	4	1	5	R	5	3	6	3	4	2	2	3	3	3
600		6	6	4	4	1	7	4	2	R		R	3	R	2	4	6	7	6	3	4
700		7	R	3	R	3	7	4	3				7		5	R	4	R	9	5	R
800		8		3		3	6	5	3				R		7		6		7	4	
900		R		R		6	6	5	6						R		8		R	4	
1000						R	9	5	5								R			5	
1100							9	6	6											R	
1200							8	4	6												
1300							R	4	6												
1400								4	5												
1500								R	9												
1600									R												
1700																					
1800																					
1900																					
2000																					
2100																					

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Depth																					
100																					
200																					
300																					
400											4	4			2						
500								2	5		4	3	6	4	3	3	2	2		3	3
600		3	3	7	5	2	10	R	5	2	6	4	4	3	2	3	2	5	3	2	6
700	3	2	2	7	5	3	R		9	6	6	4	3	2	3	4	3	6	2	2	4
800	2	4	R	5	4	6			R	R	6	5	5	2	2	3	3	6	5	3	4
900	1	R		6	5	4					6	6	R	4	2	4	4	5	6	4	5
1000	1			12	5	4					7	6		5	3	6	5	5	6	6	7
1100	4			9	4	5					10	7		6	3	7	6	5	6	8	7
1200	3			5	4	5					8	R		R	5	R	8	4	5	8	7
1300	4			11	6	9					R				R		R	5	6	8	9
1400	R			R	6	7												8	8	8	8
1500					7	7												7	8	7	6
1600					9	R												7	9	7	6
1700					R													6	8	8	8
1800																		6	8	6	7
1900																		7	8	7	6
2000																		6	8		
2100																		7			

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
Depth																					
100																					
200																					
300																					
400	4	8		2			1	2		2	3	2		4							
500	4	6	3	2	4	2	3	3	1	2	4	3		3	2	2					
600	3	4	5	2	3	6	2	4	3	3	4	2		4	3	1				1	
700	5	4	4	5	5	4	4	4	2	3	3	2	3	3	4	2			2	2	3
800	5	7	5	8	5	7	1	R	2	5	5	4	3	4	6	2	2	5	3	2	8
900	6	7	6	8	R	6	4		5	R	6	6	6	8	7	2	6	2	3	3	R
1000	5	6	6	8		R	8		4		4	6	7	6	7	4	5	2	4	4	
1100	10	10	11	11			12		7		9	4	9	6	6	5	7	6	5	4	
1200	R	14	12	10			11		7		6	4	9	8	7	7	8	5	10	5	
1300		10	R	10			10		6		6	4	8	5	8	7	9	8	R	7	
1400		9		R			8		12		7	4	10	6	11	5	8	7		9	
1500		10					10				R	10	9	9		4	13	7		9	
1600		5					9					R	13	R		4		7		10	
1700		5														7		7		13	
1800		6														13		7		R	
1900		8																9			
2000		10																			

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	67	68	69	70	71	72	73	74	75	76	78	79	80	81	82	83	84	85	86	87	88
Depth																					
100																					
200																					
300													2	2	4	4		4	4	4	2
400				3					2		9	2	3	3	3	2	4	4	8	2	3
500	3			4				6	3	3	R	3	7	2	6	1	2	8	R	2	3
600	1	2	6	3	4		4	6	4	5		2	3	3	R	2	6	8		2	3
700	2	3	R	10	5	4	4	R	2	6		3	3	7		4	R	8		4	1
800	2	2		8	5	9	3		3	10		3	4	9		4		5		8	2
900	4	4		4	6	8	5		5	7		3	3	R		R		4		8	3
1000	4	3		5	6	7	6		4	6		2	4					6		R	R
1100	4	2		4	4	7	8		4	R		3	R					R			
1200	6	6		4	4	5	9		10			11									
1300	7	5		5	4	3	R		12			R									
1400	9	5		4	7	3			10												
1500	9	7		5	R	4			10												
1600	10	9		6		6			9												
1700	10	12		6		7			13												
1800		18		7		12															
1900						R															
2000																					

Penetrometer test result Parata Street Block Waikanae North

Blows per 100 mm

Test no	89	90	91	92	93
Depth					
100					
200					
300	2				2
400	5	1	3		3
500	2	3	3	2	3
600	2	5	4	3	4
700	1	4	6	2	5
800	2	1	R	5	15
900	1	2		3	R
1000	4	2		2	
1100	5	7		6	
1200	5	5		7	
1300	5	7		3	
1400	4	7		4	
1500	6	8		R	
1600	R	R			
1700					
1800					
1900					
2000					

Test Pits Parata Street Block Waikanae North

Pit No	94	95	96	97	98	99	100	101	102	103	104
Depth											
100	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
200											
300										Yellow Brown Clay	Clay
400	Grey Brown Clay Gravels	Yellow Clay	Yellow Grey Clay	Clay	Yellow Brown Clay			Yellow Clay	Brown Clay	Gravels	
500											
600		Clayey Gravels		Brown Gravels stained	Grey Clay			Grey Gravels	Gravels	Grey Clay very hard	Brown gravels
700											
800			Grey Clay Gravels			Yellow Brown Clay					
900	Grey clay	Yellow Clay		Grey Gravels merged on slope with clay below	Dark Brown Clay		Yellow Brown Clay	Yellow Clay	Grey Clay		
1000											
1100		Brown Clay Gravels						Grey Gravels very tight			
1200	Grey Gravels		Sandy Silty Clay minor organics, soft								
1300		Grey Gravels		Grey clay very tight							
1400					Sandy Gravels	Gravels		Grey Clay	Gravels very tight		
1500								Grey Gravels			
1600									Grey Clay tight		
1700								Grey Clay			
1800			Sandy Gravels								
1900											

13 November 2014

Rita O'Brien
Subdivision Engineer
Kapiti Coast District Council
Private Bag 60601
PARAPARAUMU 5254

Dear Rita

RM130101 - FOUNDATIONS ROADING AND AS BUILT EARTHWORKS

An original engineering report was provided in October 2013, followed by an update report on 8 November 2013 and finally a report titled "Revisions to Engineering Design VJ Ltd" dated 21 May 2014. This as-built report describes the completed works and notes the changes to the design which have occurred since then.

Copies of all as built drawings are separately appended to this report as part of the overall 224 application.

A Traffic Audit has been prepared by Statham Consulting Limited and is also appended.

Geotechnical and Earthworks

Apart from Roding works, the only significant earthworks were those relating to the general section filling required to provide building platforms 300mm above the Q100 flood levels adjacent to affected properties. This work was undertaken generally in accordance with the design documents to provide flood free building platforms 300 above the estimated Q100 levels. This material was to a maximum depth of 300mm and utilised silty sandy gravel with a predominance of topsoil excavated from the adjoining roads. This material is compacted but is not intended to meet the criteria for engineered fill under NZS 4431, and is not intended to provide the required founding under NZS 3604.

Previously undertaken penetrometer results and test pits are appended. The soils over the extent of the residential lots typically comprise topsoil overlying deposited clays and gravels. The surfaces of the lots 1 to 12 and the eastern portions of lots 17 to 23 are wet as there is currently very little drainage. This is caused because there is a layer of clay over most of the site immediately below the topsoil. NZS 3604: 1999 Timber Framed Buildings requires that the number of blows per 75 mm be greater than 3 at a depth of 600 mm or less for the soils to be classified as good ground not requiring specific design. The tests show that the founding levels could be at 600 mm depth for piles on some of the lots whereas others may need to be founded at depths of up to 1200 mm. It is our professional opinion that a house can be constructed on all lots using conventional foundations such as piles or concrete slabs. We would recommend that the foundations are subject to specific design because

1. The exact location of the house on each lot is not known and may not correlate to the location of the tests.

Mahara House – 3 Ngaio Road - PO Box 370 Waikeanae 5250
www.landlink.co.nz ~ contactus@landlink.co.nz ~ P 04 902 6161 ~ F 04 902 6162

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2. Lots 1 to 12 have a gentle slope from east to west that may require some excavation and filling to create a level building platform.
3. The variability of founding depths across all 31 lots is such that it is not possible to certify a consistent depth for all lots.
4. Groundwater may need to be controlled in the foundations of some lots particularly if using a concrete slab on grade.

Roading

Prior to construction a series of penetrometer tests were undertaken along the length of the proposed road system, to confirm design. These are appended to the Samcon report attached.

The Roding earthworks initially assumed a pavement structure consisting of 150mm layers each of AP65 hardfill, and M4 Basecourse over a prepared and compacted subgrade. An initial Geotechnical investigation including Penetrometer testing which is attached, tended to reinforce this original design.

Apart from minor alterations, the roading has been constructed in accordance with the geometry and levels indicated on the Approved Design. The main exceptions are where changes to levels have been required as a result of remedial works.

Modifications have been made to the subsoil drainage in Mahia Lane North. The original location was under the kerb and channel on the eastern side of the lane, however after the need for substantial remediation works this was shifted to the western side. The subgrade was sloped towards the drain to ensure proper drainage of the sub-base.

An additional subsoil drain has been installed beneath Mahia Lane south, from chainage 180 to 215 to drain a spring encountered beneath the road formation. This discharges into the overflow swale.

During the course of construction ground conditions were encountered in various locations which dictated that the design be modified. In consultation with Graeme Walker of Samcon Ltd, Landlink prepared revisions to the road construction as follows:

PARATA BLOCK REMEDIAL WORK

LOCATION	TREATMENT	DETAILS
Mahia Lane South:		
Ch 10-120	Place grid and cloth. Possible additional layer of metal. Digout for 2 areas of trees roots.	Generally place Tri-Ax 160 Geogrid over Bidim A19 with additional 100mm of hardfill under the specified pavement structure. Locally, Remove Tree Roots, excavate 200 and Provide additional 300 Hardfill to match level over geogrid
Ch 120-152	Excavate unsuitable dispose onsite, place grid and cloth, Import, place and compact hardfill.	Excavate additional 200 and place Tri-Ax 160 Geogrid over Bidim A19. Place 200 additional hardfill under specified pavement structure.
Ch 153 - 210 (Extra depth as specified by Graeme Walker)	Excavate unsuitable to depth of 900mm dispose onsite, Import, place and compact Boulders, Hardfill, GAP 65 and M4 basecourse. Grid and cloth not necessary with this treatment	Over-excavate 900 and reconstruct with 400 boulders, 450 compacted hardfill and additional 50mm AP65.

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Mahia Lane North:		
Ch 17 to Ch 20	Excavate unsuitable dispose onsite, import, place and compact boulders and hardfill.	Over excavate 2m placing 1.3m boulders and 400 compacted hardfill before placing specified pavement structure
Ch 20 to 145	Excavate unsuitable dispose onsite Import place and compact boulders/ hardfill.	Excavate additional 600 and place 600 boulders plus 400 compacted hardfill under specified pavement structure.
Ch 145 to 170	Excavate unsuitable dispose onsite Import place and compact hardfill.	Excavate additional 300 and place 300 compacted hardfill under specified pavement structure.

Access

Individual entrances have not been built during the main construction works. The proposed design can be found on 1641-123E which shows the detail required where an accessway must pass through a stormwater swale. This crossing is awaiting approval by KCDC.

The purpose of such is to standardise the appearance in the development and provide an engineered solution which maintains swale grade and stormwater flow, whilst easing the grade separation through the swale.

A consent notice will require each lot to have a crossing constructed to follow this design.

Yours faithfully
LANDLINK LTD



DJ Munro
 Project Engineer

Encl.

1. Culvert Foundation PS4 and Report (Samcon)
2. Samcon Road Design and Construction Report
3. Samcon Remediation email
4. Preliminary Test Results

APPENDIX 4
PRELIMINARY TEST RESULTS

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	23	24
Test no																					
Depth																					
100																					
200				2																	
300	3	4		3				3		3	5						6	2	2		
400	4	3		5	4	2		2	2	3	5	2	2	2	9	3	3	1	2		
500	R	5	4	5	5	2	3	4	1	5	R	5	3	6	3	4	2	2	3	3	3
600		6	6	4	4	1	7	4	2	R		R	3	R	2	4	6	7	6	3	4
700		7	R	3	R	3	7	4	3				7		5	R	4	R	9	5	R
800		8		3		3	6	5	3				R		7		6		7	4	
900		R		R		6	6	5	6						R		8		R	4	
1000						R	9	5	5								R			5	
1100							9	6	6											R	
1200							8	4	6												
1300							R	4	6												
1400								4	5												
1500								R	9												
1600									R												
1700																					
1800																					
1900																					
2000																					

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm

Test no	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Depth																					
100																					
200																					
300																					
400											4	4			2						
500								2	5		4	3	6	4	3	3	2	2		3	3
600		3	3	7	5	2	10	R	5	2	6	4	4	3	2	3	2	5	3	2	6
700	3	2	2	7	5	3	R		9	6	6	4	3	2	3	4	3	6	2	2	4
800	2	4	R	5	4	6			R	R	6	5	5	2	2	3	3	6	5	3	4
900	1	R		6	5	4					6	6	R	4	2	4	4	5	6	4	5
1000	1			12	5	4					7	6		5	3	6	5	5	6	6	7
1100	4			9	4	5					10	7		6	3	7	6	5	6	8	7
1200	3			5	4	5					8	R		R	5	R	8	4	5	8	7
1300	4			11	6	9					R				R		R	5	6	8	9
1400	R			R	6	7												8	8	8	8
1500					7	7												7	8	7	6
1600					9	R												7	9	7	6
1700					R													6	8	8	8
1800																		6	8	6	7
1900																		7	8	7	6
2000																		6	8		

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm

Test no	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
Depth																					
100																					
200																					
300																					
400	4	8		2			1	2		2	3	2		4							
500	4	6	3	2	4	2	3	3	1	2	4	3		3	2	2					
600	3	4	5	2	3	6	2	4	3	3	4	2		4	3	1				1	
700	5	4	4	5	5	4	4	4	2	3	3	2	3	3	4	2			2	2	3
800	5	7	5	8	5	7	1	R	2	5	5	4	3	4	6	2	2	5	3	2	8
900	6	7	6	8	R	6	4		5	R	6	6	6	8	7	2	6	2	3	3	R
1000	5	6	6	8		R	8		4		4	6	7	6	7	4	5	2	4	4	
1100	10	10	11	11			12		7		9	4	9	6	6	5	7	6	5	4	
1200	R	14	12	10			11		7		6	4	9	8	7	7	8	5	10	5	
1300		10	R	10			10		6		6	4	8	5	8	7	9	8	R	7	
1400		9		R			8		12		7	4	10	6	11	5	8	7		9	
1500		10					10				R	10	9	9		4	13	7		9	
1600		5					9					R	13	R		4		7		10	
1700		5														7		7		13	
1800		6														13		7		R	
1900		8															9				
2000		10																			

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm

Test no	67	68	69	70	71	72	73	74	75	76	78	79	80	81	82	83	84	85	86	87	88
Depth																					
100																					
200																					
300													2	2	4	4		4	4	4	2
400				3					2		9	2	3	3	3	2	4	4	8	2	3
500	3			4				6	3	3	R	3	7	2	6	1	2	8	R	2	3
600	1	2	6	3	4		4	6	4	5		2	3	3	R	2	6	8		2	3
700	2	3	R	10	5	4	4	R	2	6		3	3	7		4	R	8		4	1
800	2	2		8	5	9	3		3	10		3	4	9		4		5		8	2
900	4	4		4	6	8	5		5	7		3	3	R		R		4		8	3
1000	4	3		5	6	7	6		4	6		2	4					6		R	R
1100	4	2		4	4	7	8		4	R		3	R					R			
1200	6	6		4	4	5	9		10			11									
1300	7	5		5	4	3	R		12			R									
1400	9	5		4	7	3			10												
1500	9	7		5	R	4			10												
1600	10	9		6		6			9												
1700	10	12		6		7			13												
1800		18		7		12															
1900						R															
2000																					

Penetrometer Test Results – Parata Street Block, Waikanae North

Blows per 100mm

Test no	89	90	91	92	93
Depth					
100					
200					
300	2				2
400	5	1	3		3
500	2	3	3	2	3
600	2	5	4	3	4
700	1	4	6	2	5
800	2	1	R	5	15
900	1	2		3	R
1000	4	2		2	
1100	5	7		6	
1200	5	5		7	
1300	5	7		3	
1400	4	7		4	
1500	6	8		R	
1600	R	R			
1700					
1800					
1900					
2000					

Test Pits – Parata Street Block, Waikanae North

Depth	Pit Number										
	94	95	96	97	98	99	100	101	102	103	104
100	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
200											
300											
400	Grey Brown Clay Gravels	Yellow Clay	Yellow Grey Clay	Clay	Yellow Brown Clay	Yellow Brown Clay		Yellow Clay	Brown Clay	Yellow Brown Clay	Clay
500										Gravels	Brown gravels
600		Clayey Gravels		Brown Gravels stained	Grey Clay			Grey Gravels	Gravels	Grey Clay very hard	
700											
800	Grey clay		Grey Clay Gravels								
900		Yellow Clay		Grey Gravels merged on slope with clay below	Dark Brown Clay		Yellow Brown Clay	Yellow Clay	Grey Clay		
1000											
1100		Brown Clay Gravels						Grey Gravels very tight			
1200	Grey Gravels		Sandy Silty Clay minor organics, soft	Grey clay very tight							
1300		Grey Gravels									
1400					Sandy Gravels	Gravels		Grey Clay	Gravels very tight		
1500								Grey Gravels	Grey Clay tight		
1600											
1700											
1800			Sandy Gravels					Grey Clay			
1900											

Locality Diagram 1:10,000 @ A3

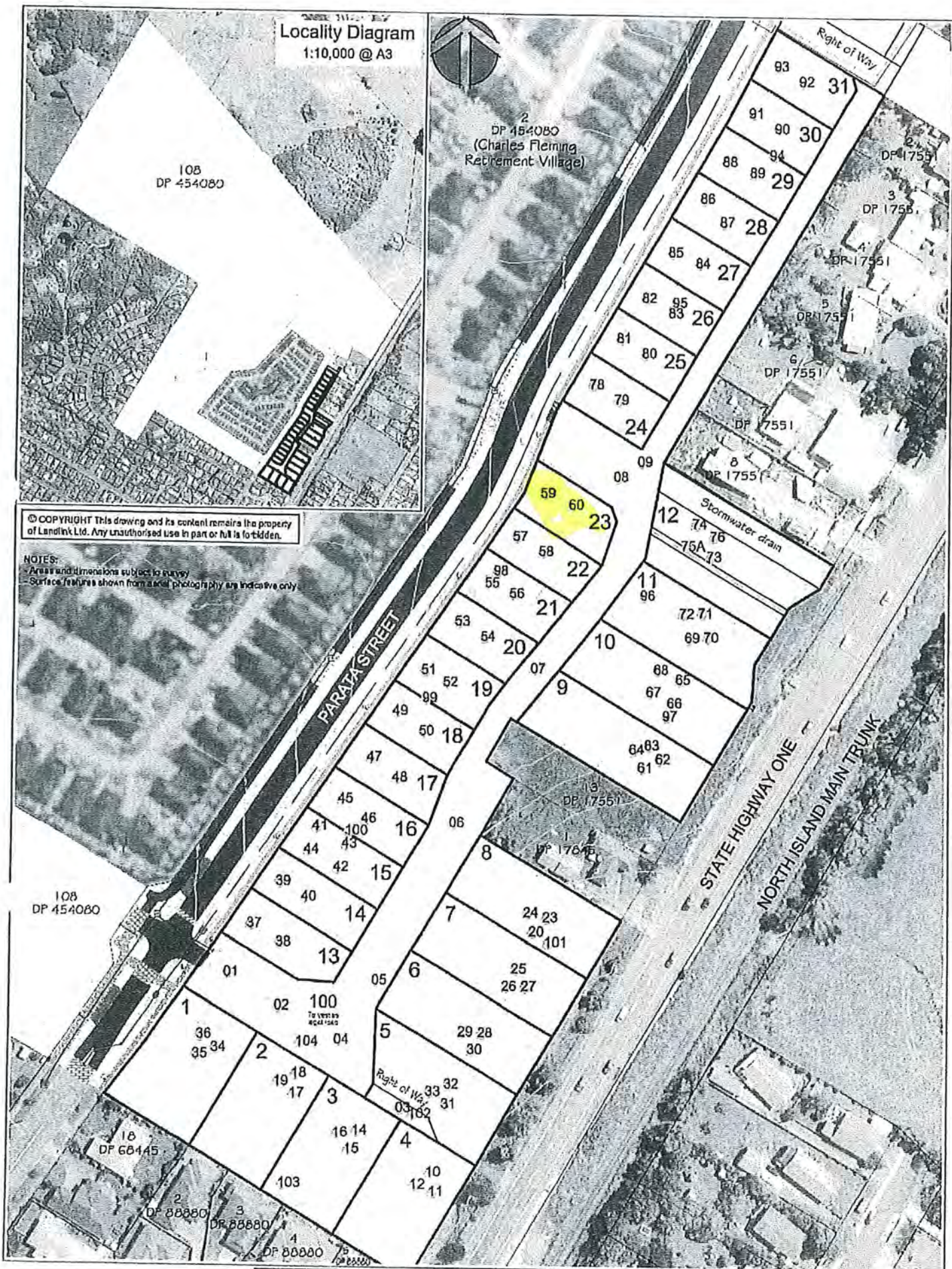


2
DP 454080
(Charles Fleming
Retirement Village)

108
DP 454080

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NOTES:
- Areas and dimensions subject to survey
- Surface features shown from aerial photography are indicative only



108
DP 454080

18
DP 68445

2
DP 88880

3
DP 88880

4
DP 88880



Waikanae Office - 31 Lytle Road - PO Box 370 - Waikanae 5220
www.landlink.co.nz - 0800 888 880 - 0800 888 880

VJ Limited

CLIENT: VJ Limited
TITLE: Tests Pits on Lot 3 DP 454080
PROJECT: Parata Street Block, Waikanae North

REVISION			
A - Original Issue			
SURVEYED	DRAWN	DATE	PROJECT NUMBER
DESIGNED	CHECKED	4 June 2013	1642
BA & PT	PT	SCALE	PLAN NO.
APPROVED	PT	1:1,000 @ A3	4
			A

20 March 2015

RM130101 - SUBDIVISION OF LOT 3 DP 454080

ON SITE ATTENUATION REQUIREMENTS FOR RESIDENTIAL LOTS

Introduction

The concept of hydraulic neutrality of stormwater is a key feature of land development on the Kapiti Coast. Hydraulic neutrality requires that each lot is managed so that the total stormwater flow discharging from the site is no more than the original flow which left the site before it was developed.

The conditions relating to this subdivision are those detailed in its Resource Consent, RM130101 as well as the over-riding conditions and constraints placed on all developments by the Kapiti Coast District Council (KCDC).

In this instance the key requirements are:

1. Site attenuation is required to be designed for a Q100 storm event.
2. Site outflows are to be constrained to the pre-development Q100 and Q10 flows in the respective storm events.
3. Maximum impermeable areas are stipulated in the Waikanae North Design Guide, being section D.10.1-1 of the KCDC District Plan. These include the allowed site coverage for houses in the various precincts, and are detailed further in the examples shown below.
4. Detailed design is required for all components (with supporting calculations).
5. Provision must be made for effective operation and maintenance.

Indicative Design

Attenuation of stormwater can be achieved in a number of ways, summarised as follows:

1. **Sink it:** holds stormwater and slowly infiltrates it into the ground
2. **Slow it:** holds stormwater flow and slowly releases it to the sewer system
3. **Reuse it:** holds stormwater and uses it to meet non-potable water demands
4. **Move it:** directs water flows to a downstream area of storage.

In this development, the 'sink it' option is not likely to be successful because ground conditions are typically of low permeability, however this may be subject to specific site testing. The 'slow it' and 'reuse it' options are the most likely options to be available to landowners, and to assist, the developer has provided for the equivalent of 25m² of paved (impermeable) surface attenuation off-site (in an attenuation pond). This is therefore a 'move it' method for a small part of the attenuation requirement.

The Council recommend using their 'On-site Detention Tank Design' calculator which helps to define the size of an attenuation tank. The attached calculations use this calculator as a base, with modifications made to allow for the specific stormwater conditions that apply to this subdivision. In any given situation, over-attenuation can be

provided for additional paving they might wish to create above that which has been accommodated off site (25m²). Each development will need to calculate their individual tank sizing based on lot area, house size and impervious area. We note that the water reuse standard in the District Plan requires a minimum tank size of 10,000 litres (unless a grey water reuse option is used).

Each individual site will need to prepare a Stormwater Design Report (SDR) to show how their lot will achieve hydraulic neutrality. The SDR will be need to be supported by calculations as summarised below, and appended to this report.

We have prepared 'indicative design calculations' for each precinct type in this subdivision. Lot sizes are approximate as they vary slightly, but we have chosen two lot sizes that demonstrate the requirements over a likely range of sizes.

In utilising the OSD calculator, the relevant rainfall depths for the respective storm events as assessed by Tonkin and Taylor in their report "Waikanae North Stage 2 Stormwater Modelling" dated October 2013 have been referenced. Attenuation volumes have been based on a Q100 event of 171.80 mm, with outfall constrained at a Q10 event of 115.00 mm. The provision for an impermeable area of 25m² has been modelled as "pre-development runoff", and none of the remaining garden or lawn area is assumed to be captured by the attenuation tank.

Precinct 2, example lot 1060m²

Lot size = 1062 m²

a) Building Only

Buildings at 40% coverage (D.1.2.1)

= 425m²

Required tank size

= 7,750 litres (assuming a provision of 25m² impermeable per site).

Outlet Orifice size

= 42mm

Peak Discharge

= 3.6 l/s

b) Maximum Development

Maximum impermeable area (from design guide) of 50% = 531m²

Additional paved area to be attenuated = 531 - 425 = 106 - 25 (allowance) m² = 81 m²/lot

Required tank size

= 9,090 litres (assuming a provision of 25m² impermeable per site).

Outlet Orifice size

= 45mm

Peak Discharge

= 4.2 l/s

The above figures are in addition to the minimum storage requirements under the District Plan

Precinct 4, example lot 601m²

Lot size = 601 m² Approx

a) Building Only

Buildings at 50% coverage (D.1.2.1)	= 301m ²
Required tank size	= 5,490 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice Size	= 36 mm
Peak Discharge	= 2.7 l/s

b) Maximum Development

Maximum impermeable area (from design guide) of 70% = 421m²

Additional paved area to be attenuated = 421-301 = 120 - 25 (allowance)
m² = 95 m²/lot

Required tank size	= 7,070 litres
Outlet Orifice Size	= 40 mm
Peak Discharge	= 3.4 l/s

This level of storage could be reduced by using permeable pavements, or ground soakage to supplement the attenuation.

The above figures are in addition to the minimum storage requirements under the District Plan.

APPENDIX OSD CALCULATIONS

20 March 2015

RM130101 - SUBDIVISION OF LOT 3 DP 454080

ON SITE ATTENUATION REQUIREMENTS FOR RESIDENTIAL LOTS

Introduction

The concept of hydraulic neutrality of stormwater is a key feature of land development on the Kapiti Coast. Hydraulic neutrality requires that each lot is managed so that the total stormwater flow discharging from the site is no more than the original flow which left the site before it was developed.

The conditions relating to this subdivision are those detailed in its Resource Consent, RM130101 as well as the over-riding conditions and constraints placed on all developments by the Kapiti Coast District Council (KCDC).

In this instance the key requirements are:

1. Site attenuation is required to be designed for a Q100 storm event.
2. Site outflows are to be constrained to the pre-development Q100 and Q10 flows in the respective storm events.
3. Maximum impermeable areas are stipulated in the Waikanae North Design Guide, being section D.10.1-1 of the KCDC District Plan. These include the allowed site coverage for houses in the various precincts, and are detailed further in the examples shown below.
4. Detailed design is required for all components (with supporting calculations).
5. Provision must be made for effective operation and maintenance.

Indicative Design

Attenuation of stormwater can be achieved in a number of ways, summarised as follows:

- 1. Sink it:** holds stormwater and slowly infiltrates it into the ground
- 2. Slow it:** holds stormwater flow and slowly releases it to the sewer system
- 3. Reuse it:** holds stormwater and uses it to meet non-potable water demands
- 4. Move it:** directs water flows to a downstream area of storage.

In this development, the 'sink it' option is not likely to be successful because ground conditions are typically of low permeability, however this may be subject to specific site testing. The 'slow it' and 'reuse it' options are the most likely options to be available to landowners, and to assist, the developer has provided for the equivalent of 25m² of paved (impermeable) surface attenuation off-site (in an attenuation pond). This is therefore a 'move it' method for a small part of the attenuation requirement.

The Council recommend using their 'On-site Detention Tank Design' calculator which helps to define the size of an attenuation tank. The attached calculations use this calculator as a base, with modifications made to allow for the specific stormwater conditions that apply to this subdivision. In any given situation, over-attenuation can be

provided for additional paving they might wish to create above that which has been accommodated off site (25m²). Each development will need to calculate their individual tank sizing based on lot area, house size and impervious area. We note that the water reuse standard in the District Plan requires a minimum tank size of 10,000 litres (unless a grey water reuse option is used).

Each individual site will need to prepare a Stormwater Design Report (SDR) to show how their lot will achieve hydraulic neutrality. The SDR will be need to be supported by calculations as summarised below, and appended to this report.

We have prepared 'indicative design calculations' for each precinct type in this subdivision. Lot sizes are approximate as they vary slightly, but we have chosen two lot sizes that demonstrate the requirements over a likely range of sizes.

In utilising the OSD calculator, the relevant rainfall depths for the respective storm events as assessed by Tonkin and Taylor in their report "Waikanae North Stage 2 Stormwater Modelling" dated October 2013 have been referenced. Attenuation volumes have been based on a Q100 event of 171.80 mm, with outfall constrained of a Q10 event of 115.00 mm. The provision for an impermeable area of 25m² has been modelled as "pre-development runoff", and none of the remaining garden or lawn area is assumed to be captured by the attenuation tank.

Precinct 2, example lot 1060m²

Lot size = 1062 m²

a) Building Only

Buildings at 40% coverage (D.1.2.1)	= 425m ²
Required tank size	= 7,750 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice size	= 42mm
Peak Discharge	= 3.6 l/s

b) Maximum Development

Maximum impermeable area (from design guide) of 50% = 531m²

Additional paved area to be attenuated = 531 - 425 = 106 - 25 (allowance)
m² = 81 m²/lot

Required tank size	= 9,090 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice size	= 45mm
Peak Discharge	= 4.2 l/s

The above figures are in addition to the minimum storage requirements under the District Plan

Precinct 4, example lot 601m²

Lot size = 601 m² Approx

a) Building Only		
Buildings at 50% coverage (D.1.2.1)		= 301m ²
Required tank size		= 5,490 litres (assuming a provision of 25m ² impermeable per site).
Outlet Orifice Size		= 36 mm
Peak Discharge		= 2.7 l/s
b) Maximum Development		
Maximum impermeable area (from design guide) of 70% = 421m ²		
Additional paved area to be attenuated = 421-301 = 120 - 25 (allowance) m ² = 95 m ² /lot		
Required tank size		= 7,070 litres
Outlet Orifice Size		= 40 mm
Peak Discharge		= 3.4 l/s

The above figures are in addition to the minimum storage requirements under the District Plan

The above figures could be reduced by using permeable pavements, ground soakage or grey-water re-use ('slow it, sink it or reuse it') to supplement the attenuation ('move it'). As an example the attenuation volume for a house in precinct 4 could be reduced by around 30% if permeable paving systems are used and by around 55% if a grey water re-use system is used.

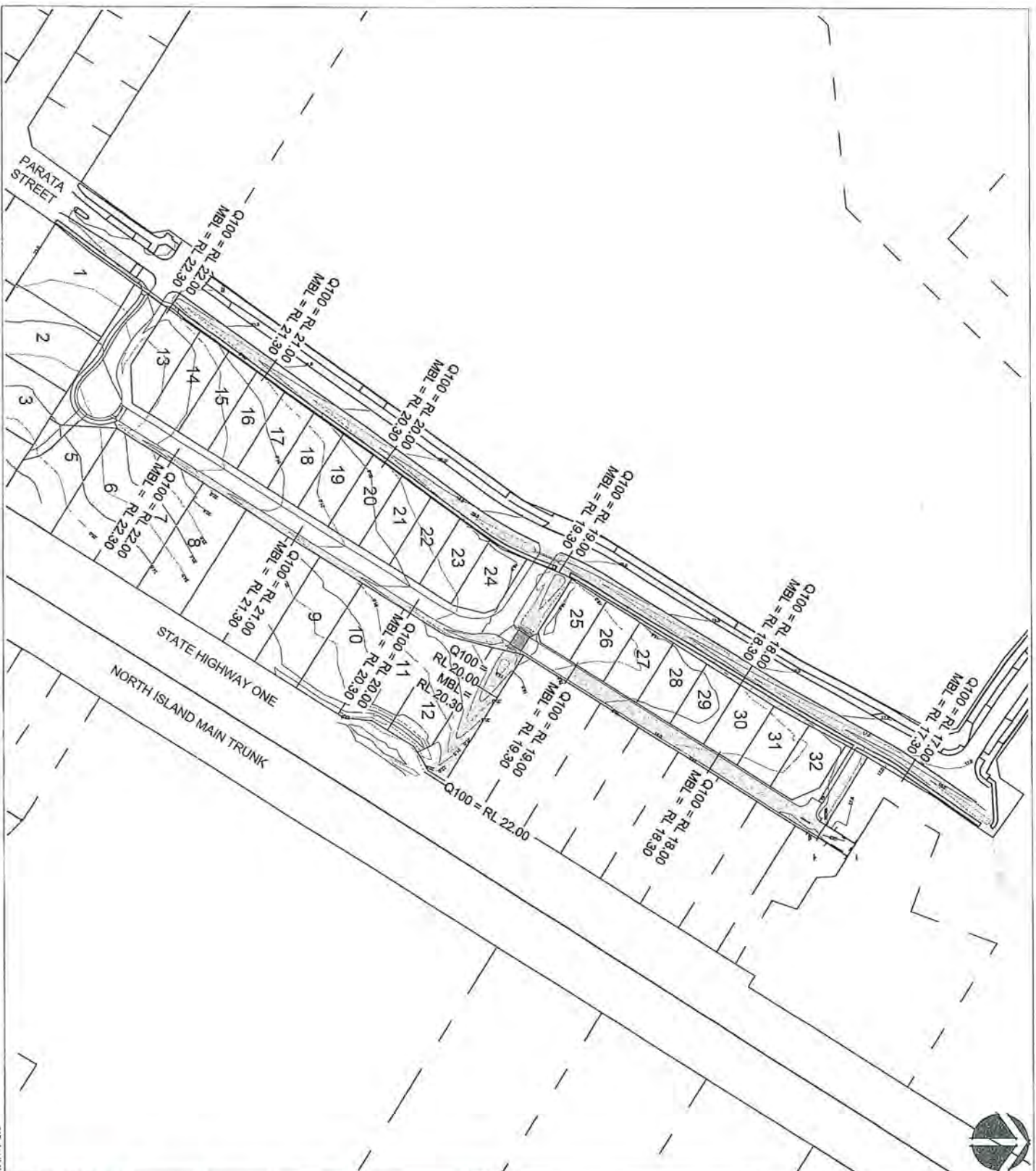
APPENDIX
OSD CALCULATIONS

STORMWATER ON-SITE DETENTION TANK (OSD) DESIGN				23-Mar-15																																																																																																																																																																																				
100 YEAR ARI STORM with 10 YEAR ARI STORM OUTLET																																																																																																																																																																																								
1062m2 Lot with 40% site coverage.																																																																																																																																																																																								
ADDRESS	Walkanae North Project - Parata Block	Calcs By	DJM																																																																																																																																																																																					
NAME		Date	23-Mar-15																																																																																																																																																																																					
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DATA Depth of Tank 1.5 m 10 Year Isohyet Value 115 mm 100 Year Isohyet Value 171.8 mm Time of Concentration 10 min. (10, 15, 20, 30, 60) <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Area (m²)</th> <th>'C'</th> <th>CA (m²)</th> </tr> </thead> <tbody> <tr> <td>Site Area</td> <td></td> <td></td> </tr> <tr> <td>1. EXISTING SITE COVERAGE</td> <td></td> <td></td> </tr> <tr> <td>Existing Roof</td> <td>0</td> <td>0.9</td> </tr> <tr> <td>Existing Paved</td> <td>25</td> <td>0.85</td> </tr> <tr> <td>Existing Garden</td> <td>1037</td> <td>0.35</td> </tr> <tr> <td>TOTAL Existing Area</td> <td>1062</td> <td></td> </tr> <tr> <td>2. PROPOSED DEVELOPMENT</td> <td></td> <td></td> </tr> <tr> <td>Additional/Reduced Roof</td> <td>424.8</td> <td>0.9</td> </tr> <tr> <td>Additional/Reduced Paved</td> <td></td> <td>0.85</td> </tr> <tr> <td>Additional/Reduced Lawn/Garden</td> <td>-424.8</td> <td>0.35</td> </tr> <tr> <td>TOTAL Addition Area (should be zero)</td> <td>0</td> <td></td> </tr> <tr> <td>3. REMAINING UNDRAINED AREA</td> <td></td> <td></td> </tr> <tr> <td colspan="3">(Not routed thru detention tank after development)</td> </tr> <tr> <td>Undrained Roof Area (Normally Zero)</td> <td>0</td> <td>0.9</td> </tr> <tr> <td>Undrained Paved Area (Normally Zero)</td> <td>0</td> <td>0.85</td> </tr> <tr> <td>Undrained Lawn/Garden Area</td> <td>612.2</td> <td>0.35</td> </tr> <tr> <td>TOTAL Extg Not to Tank Area</td> <td>612.2</td> <td></td> </tr> </tbody> </table>					Area (m²)	'C'	CA (m²)	Site Area			1. EXISTING SITE COVERAGE			Existing Roof	0	0.9	Existing Paved	25	0.85	Existing Garden	1037	0.35	TOTAL Existing Area	1062		2. PROPOSED DEVELOPMENT			Additional/Reduced Roof	424.8	0.9	Additional/Reduced Paved		0.85	Additional/Reduced Lawn/Garden	-424.8	0.35	TOTAL Addition Area (should be zero)	0		3. REMAINING UNDRAINED AREA			(Not routed thru detention tank after development)			Undrained Roof Area (Normally Zero)	0	0.9	Undrained Paved Area (Normally Zero)	0	0.85	Undrained Lawn/Garden Area	612.2	0.35	TOTAL Extg Not to Tank Area	612.2																																																																																																																															
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RUNOFF DATA for 10 year Intensity I 75.9 mm/hr Allowable Qmax whole site 8.11 Lost Flows 4.52 Allowable Qmax from tanks = 3.6 l/s Allowable Qave from tanks = 2.3 l/s for 100 year Intensity I 113.4 mm/hr Allowable Qmax whole site 12.11 Lost Flows 6.75 Allowable Qmax from tanks = 5.36 l/s Allowable Qave from tanks = 3.5 l/s (Qmax * 0.65)																																																																																																																																																																																								
Orifice Calculation - PROTECTED DO NOT ENTER ANY FIGURES d= 41.8 mm Q100 outflow= 4.6 for h= 1.5 Q100ave 3.0 Q= 3.6 for h in Q10 Qave 2.3 Q10 0.8963519																																																																																																																																																																																								
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STORMWATER ON-SITE DETENTION TANK (OSD) DESIGN				23-Mar-15																																																																																																																			
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1062m2 Lot with 70% impermeable cover (design guide maximum).																																																																																																																							
ADDRESS		Calcs By		DJM																																																																																																																			
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NOTE: Only fill in the blue (unprotected) cells																																																																																																																							
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Time of Concentration	10 min. (10, 15, 20, 30, 60)																																																																																																																						
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Lost Flows	3.92		5.86																																																																																																																				
Allowable Qmax from tanks =	4.2 l/s		6.25 l/s																																																																																																																				
Allowable Qave from tanks =	2.7 l/s		4.1 l/s (Qmax * 0.65)																																																																																																																				
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STORMWATER ON-SITE DETENTION TANK (OSD) DESIGN				23-Mar-15																																																																																															
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STORMWATER ON-SITE DETENTION TANK (OSD) DESIGN 23-Mar-15 100 YEAR ARI STORM with 10 YEAR ARI STORM OUTLET 601m2 Lot with 70% impermeable cover (design guide maximum).				NOTE: Only fill in the blue (unprotected) cells NOTE A "#DIV/0!" message appearing in a cell means that data has been entered incorrectly NOTE The sum of the existing areas must equal the 'Site Area' * NOTE If pre-development lawn areas are reduced a negative number is required to be entered.																																																																																																																																																																																			
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SUMMARY Tank Volume 7070.0 litres 100 Year Max Discharge 4.4 l/s 10 Year Max Discharge 3.4 l/s Orifice Diameter 40 mm																																																																																																																																																																																							



NOTES:

- 1. Contour lines are at 1m intervals.
- 2. Origin of levels is NZOD datum (1985).
- 3. Elevation, contours and other hydrological data may not be represented on this plan.
- 4. Noted public and private drainage is shown.
- 5. Elevation of water level is shown.
- 6. Elevation of water level is shown.
- 7. Elevation of water level is shown.
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- 31. Elevation of water level is shown.
- 32. Elevation of water level is shown.

KEY:

Q100 Flood Hazard

Issue	Revision	Name	Date
B		MC	05/03/15



Melrose House - 3 Ngaho Road - PO Box 370 - Waikanae 5250
www.landlink.co.nz - contact@landlink.co.nz - P 04 302 8181

Client

VJ Limited

RM130101
As-Built Plan - Flood Hazard

Project
Parata Street Block,
Waikanae North Development Zone

Approved	Checked	Drawn	Designed	Surveyed	Scale	Drawing Number	Issue
PT	DM	BA	-	-	1:750 @ A1	11500 @ A3	B
21-11-2014							

1642-945

B



Parata Street

Mahia Lane

101

26

25

24

24

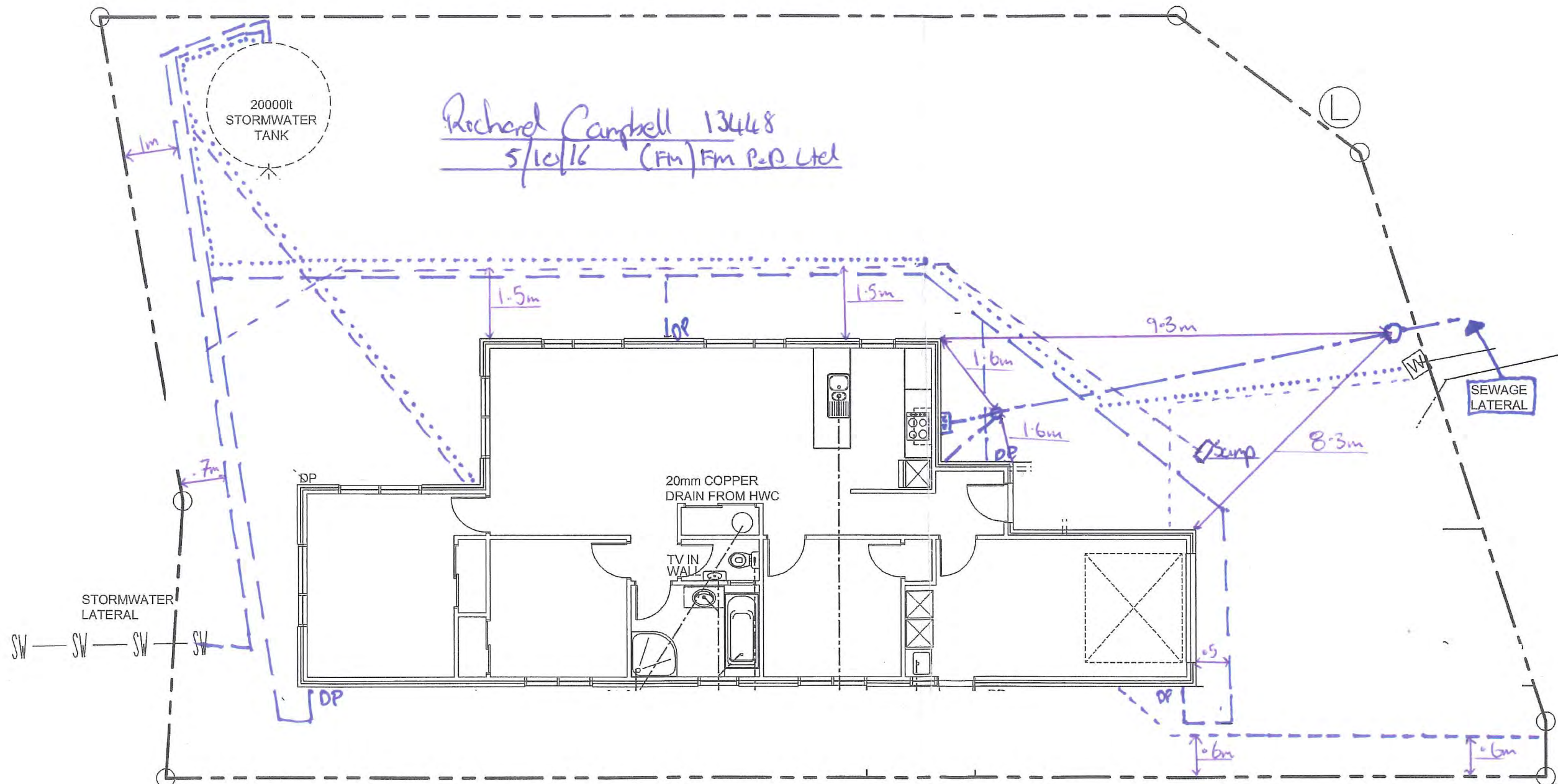
26

— — — = Stormwater
 — — — = Sewer
 - - - - - = Power + telecom trench
 = Water

- All Plumbing and Drainage to be in accordance with AS/NZS 3500.2 for ground floor systems and for single stack systems
- Plumber/drainlayer to fill out producer statement and return to council with an as built drainage plan
- Check PIM information for service connections
- pipes to be inspected before covering with sand
- A tempering valve is required to be installed on the hot water service
- No pipes at any point exceed 10m in length from dn 100 vented drain

- Minimum grades for drains and discharge pipes
 - 65Ø & less = 1 in 40
 - 80Ø & 100Ø = 1 in 60

- All hot & cold water pipes in house to be run in Iplex K2 pex plumbing system
- 20mm for Main, to bath and to HWC
15mm to all other branches
15mm to exterior taps



For an attenuated storm water disposal system to work 7,000lt of volume of the tank will need to be above ground to allow gravity to drain the tank 24/7 through the small bore pipe that will be installed

DRAINAGE PLAN

SCALE 1:100

RECEIVED
07 JUL 2016
BY: Ange

All work shall be in accordance with the NZBC. If in doubt ASK
The Contractor must verify all dimensions on the job before commencing any work or shop drawings. Figured dimensions are to be used, scaled dimensions must be verified.
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——— = Stormwater
 ——— = Sewer
 - - - - - = power + telecom trench
 = Water

BC 160522

DRAINAGE PLAN NOTES:

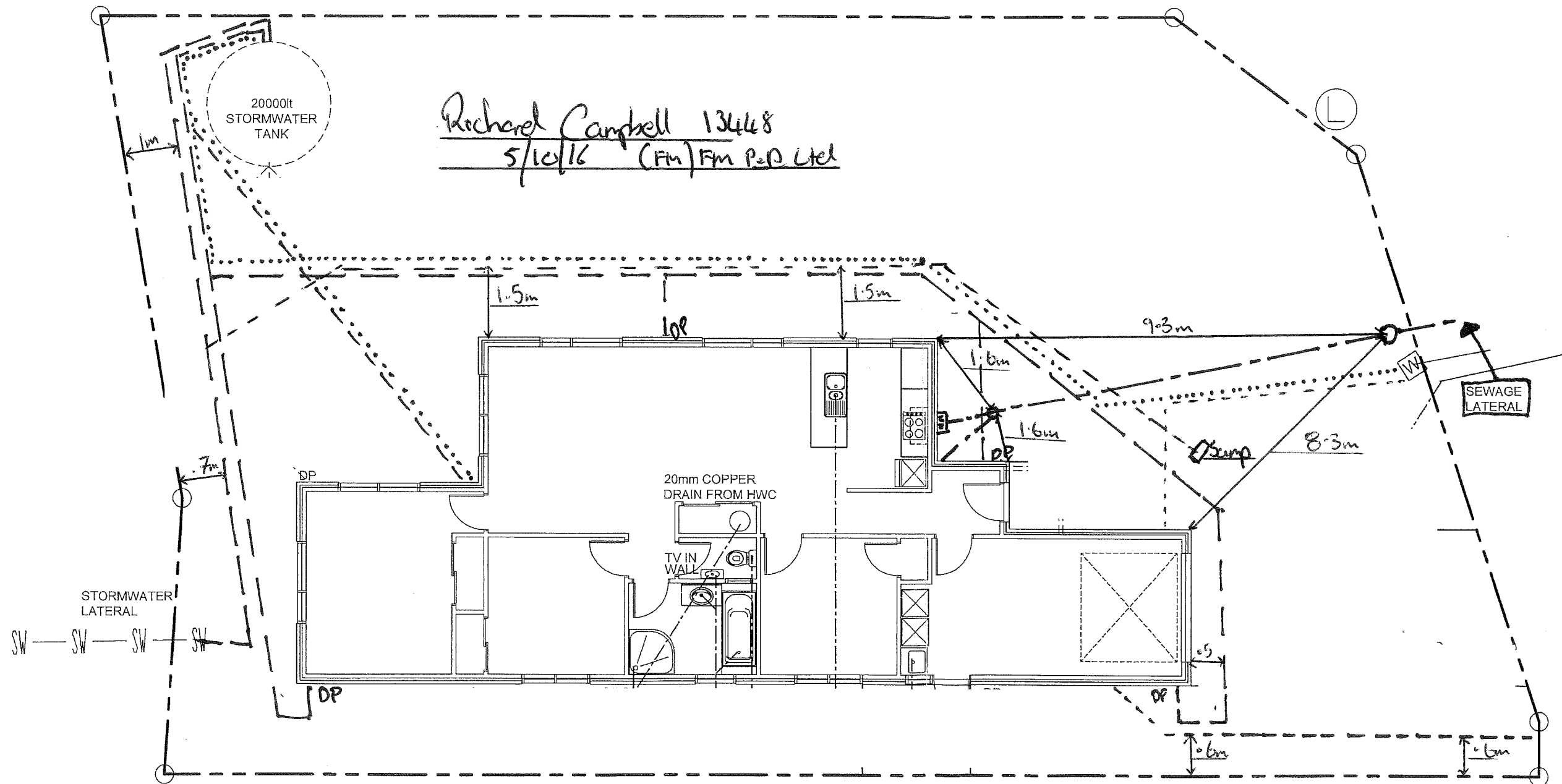
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PIPE GRADIENTS

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HOT & COLD WATER

- All hot & cold water pipes in house to be run in Iplex K2 pex plumbing system
- 20mm for Main, to bath and to HWC
- 15mm to all other branches
- 15mm to exterior taps



BED DRAINS ARE TO BE LAID IN PEA METAL

Requested Information

BC 160529

A drainage inspection is required.

Revisions:
JUNE 2016 rev A
AUGUST 2016 rev B

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANAЕ

Client:
AR THOMSOM
FAMILY TRUST

Drawing Title:
DRAINAGE PLAN

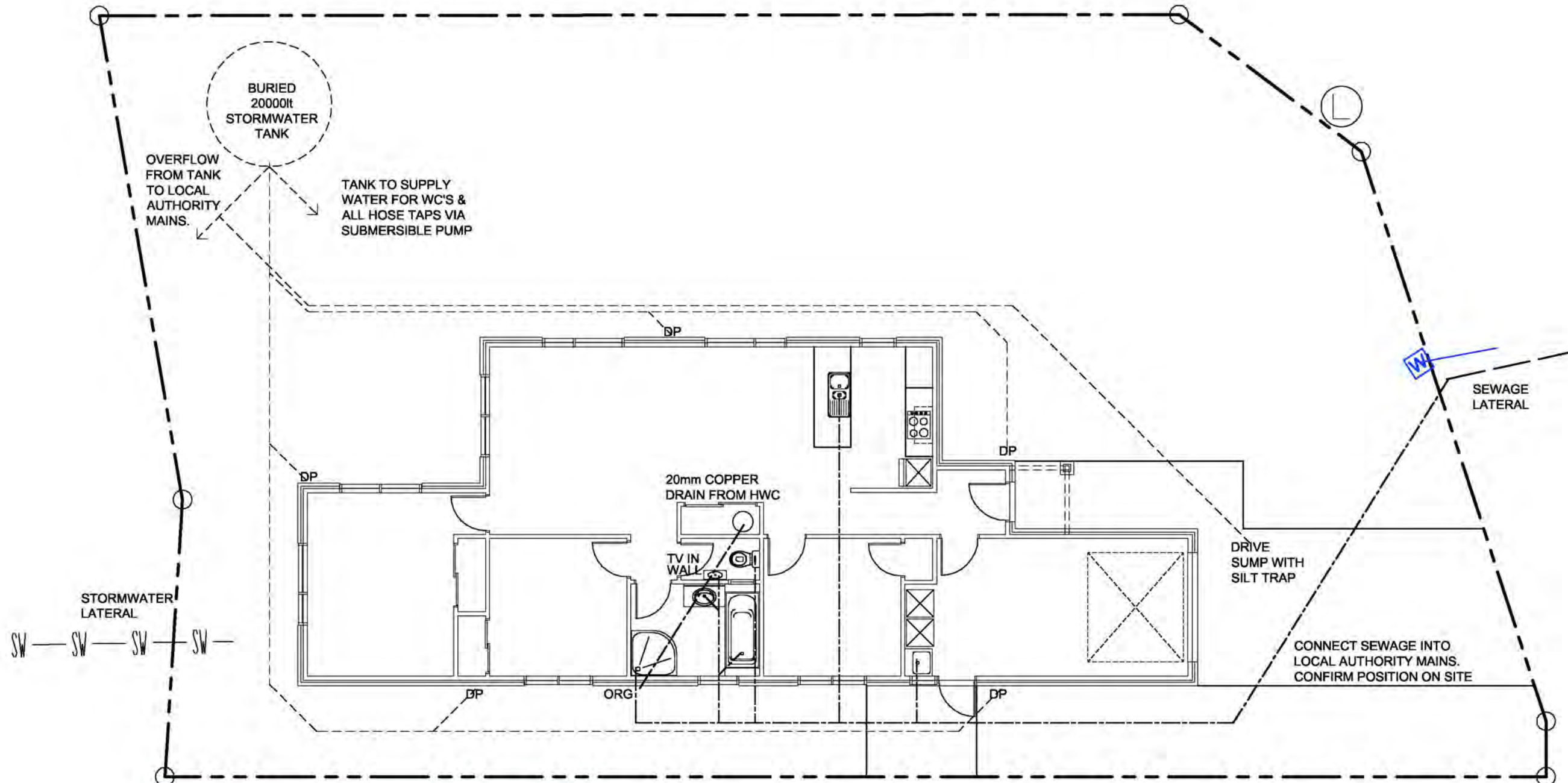
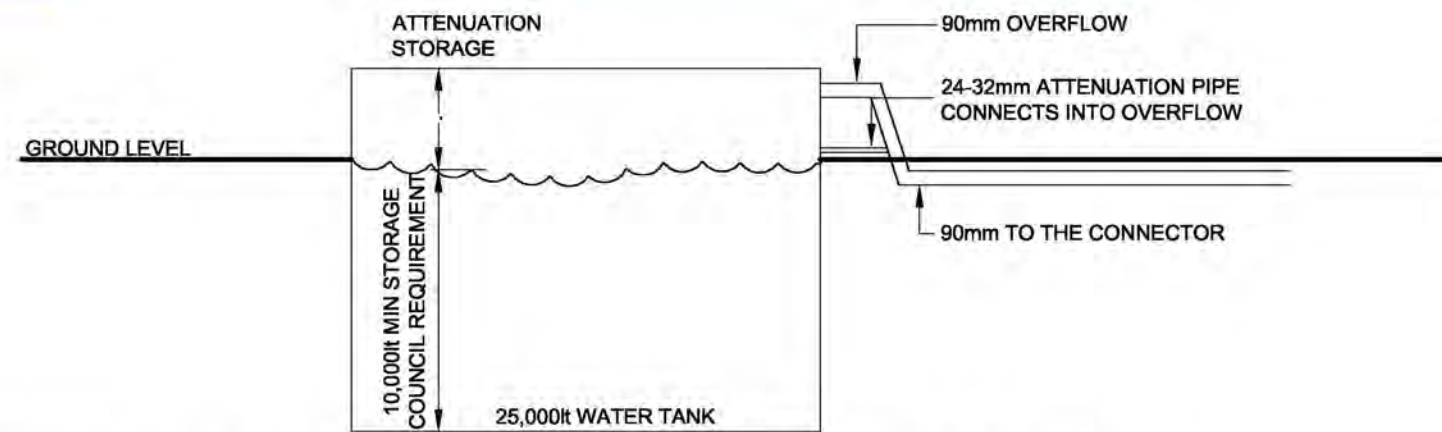
Designer:
COASTAL
ARCHITECTURE LTD.
11 Kodex Place
Paraparaumu
New Zealand
Tel: 04 296 1248
e-mail : billfrancis@paradise.net.nz

Design:
Bill Francis
Drawn:
bf
Scale:
as shown

Job: 1 Page of: 2 Rev: B



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A CERTIFYING PLUMBER/DRAINLAYER TO FILL OUT ATTACHED PRODUCER STATEMENT FORMS AND RETURN TO COUNCIL. ALSO PROVIDE NEAT ASBUILT DRAINAGE PLAN SHOWING SEWER STORMWATER AND WATER.

DRAINAGE PLAN NOTES:

- All Plumbing and Drainage to be in accordance with AS/NZS 3500.2 for ground floor systems and for single stack systems
- Plumber/drainlayer to fill out producer statement and return to council with an as built drainage plan
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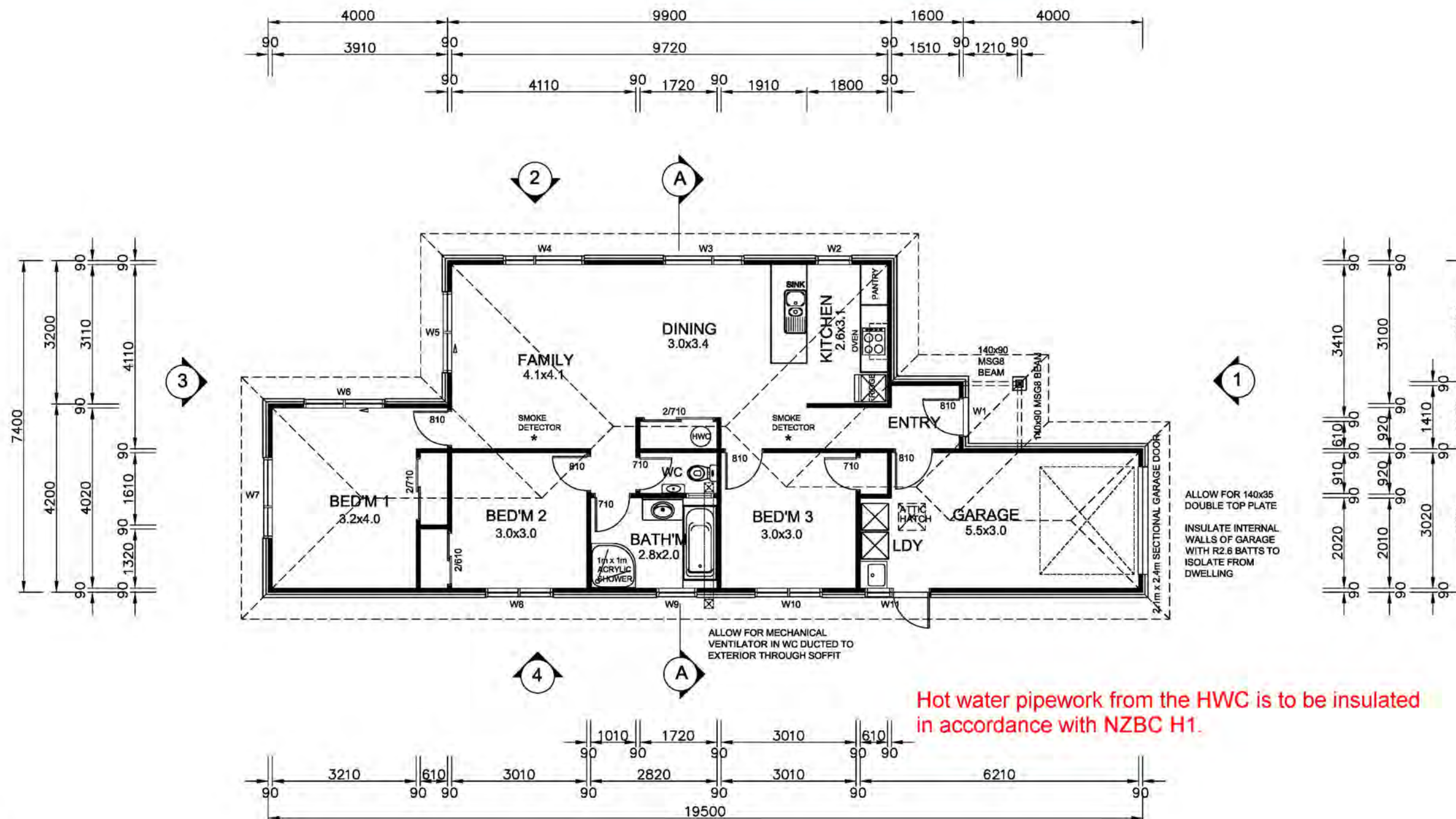
HOT & COLD WATER

- All hot & cold water pipes in house to be run in Iplex K2 pex plumbing system
- 20mm for Main, to bath and to HWC
15mm to all other branches
15mm to exterior taps

BUILDER TO ENSURE THAT PROPOSED FOUNDATION HEIGHT WILL ALLOW A SATISFACTORY DRAINAGE CONNECTION TO THE COUNCILS SEWER.

DRAINAGE PLAN

SCALE 1:100

**NOTES:****GENERAL NOTES:**

- All work must be carried out to conform to relevant sections of the New Zealand Building Code and New Zealand Standards - in particular NZS 3604, NZS 3602 & NZS 4218. All references to Standards shall be taken as reference to the latest revision including amendments.
- Ground bearing must be reconfirmed on site following excavation but prior to placing concrete and reinforcing.
- Confirm site boundaries with licenced surveyor. Fences may not necessarily be on the legal boundary.
- All work to be carried out to best trade practice
- All habitable rooms to have 5% of their floor area as opening windows or approved alternative to achieve ventilation requirements
- Garage spaces within or attached to the building envelope shall have
- A - Openings provided with a 50mm min total level change between the interior & exterior paving
- B - Provision to drain water away from the threshold of the opening. refer to E2 fig 65 & table 18 for overall level change requirements
- Do Not Scale off Building Consent Documentation issued from TA's as the plans may have been scanned and the scale distorted.
- Prenail framing and truss manufacturer to provide lintel sizes and provide a producer statement for framing, window lintels and trusses.
- Window openings to be 20mm larger than window sizes (10mm tolerance each side)
- All bottom plates and framing to shower areas to be H3.1. All framing in other at risk areas such as parapets and enclosed balconys to comply with NZS 3602 for particular situation.
- Allow for dwangs to fix fittings as required by owner.
- Wall junctions shall be framed up with not less than 2 studs blocked and nailed.
- Maximum diameter hole in 90mm stud to be 25mm or 35mm diameter where not more than 3 consecutive studs are drilled.
- Lintels supporting rafters or trusses shall be secured against uplift as per clause 8.6.1.8 & figure 8.12, NZS 3604:2011. 25x1mm strap with 6/30x2.5mm nails into both lintel & stud & 25x1mm strap taken under plate & up 150mm each side of stud fixed with 6/30x2.5mm nails into each side of stud
- Confirm building wrap is able to be used with timber treatment.

FRAMING

Exterior Walls & Internal Load Bearing Walls:

- Up to 2.4m - 90x45 SG8 at 600 crs H1.2

Interior Non Load Bearing Walls:

- Up to 2.4m - 90x45 SG8 at 600 crs H1.2

INTERNAL LININGS**WALLS:**

- Generally - 10mm Standard Gib Board
- Bathrooms - 10mm Gib Aqualine

CEILINGS:

- Generally - 13mm Standard Gib
- Bathrooms - 13mm Gib Aqualine
- Back block sheet joints and allow for control joints as required by manufacturer

Top Plate Fixing

The fixing of top plates supporting roof trusses to wall studs or lintels shall be in accordance with figure 8.14, 8.15 & 8.18 NZS 3604:2011

Joints in top plates to comply with clause 8.7.3 NZS 3604:2011

Bottom Plate Fixing

10mm Ø cast in @ max 900 crs
12mm Ø cast in @ max 1400 crs
Approved anchors (fixed to manufacturers specific instructions)

- Holes in plates to comply with clause 8.5.1.6 & figure 8.4, NZS 3604:2011
- Refer to Bracing Plan and Manufacturers specifications for additional framing fixings.

FLOOR PLAN

SCALE 1:100

AREA = 110m² (117m² OVER CLADDING)

A TEMPERING VALVE IS REQUIRED TO BE INSTALLED ON THE HOT WATER SERVICE ON PERSONAL HYGENE FIXTURES. Max temp 55c

Revisions:
JUNE 2016 rev A

Project:
PROPOSED DWELLING

LOT 24,
25 MAHIA LANE,
WAIKANA E

Client:
**AR THOMSOM
FAMILY TRUST**

Drawing Title:
FLOOR PLAN

Designer:

COASTAL
ARCHITECTURE LTD.

11 Kodex Place
Paraparaumu
New Zealand
Tel: 04 296 1248
e-mail : billfrancis@paradise.net.nz

Design:
Bill Francis

Drawn:
bf

Scale:
as shown

Job: 1 Page of: 3 Rev: A



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