Annexure Schedule Page 2 of 2 Pages

Insert instrument type

Easement instrument

Continue in additional Annexure Schedule, if required

Schedule B

Easement granting right to drain stormwater

All the rights and powers implied in the easement to drain stormwater shall be the same rights and powers implied in respect of the right to drain water set out in the Fifth Schedule of the Land Transfer Regulations 2018.

Appendix 4
NZFE Approval

FIRE EMERGENCY NEW ZEALAND

WHAKARATONGA IWI

Non-Reticulated Firefighting Water Supplies, Vehicular Access & Vegetation Risk Reduction Application for New and Existing Residential Dwellings and Sub-Divisions

Contents

Section A - Firefighting Water Supplies and Vegetation Risk Reduction Waiver

"Fire and Emergency New Zealand strongly recommends the installation of automatic fire detection system devices such as smoke alarms for early warning of a fire and fire suppression systems such as sprinklers in buildings (irrespective of the water supply) to provide maximum protection to life and property".

Waiver Explanation Intent

Fire and Emergency New Zealand [FENZ] use the New Zealand Fire Service [NZFS] Code of Practice for firefighting water supplies (SNZ PAS 5409:2008) (The Code) as a tool to establish the quantity of water required for firefighting purposes in relation to a specific hazard (Dwelling, Building) based on its fire hazard classification regardless if they are located within urban fire districts with a reticulated water supply or a non-reticulated water supply in rural areas. The code has been adopted by the Territorial Authorities and Water Supply Authorities. The code can be used by developers and property owners to assess the adequacy of the firefighting water supply for new or existing buildings.

The Area Manager under the delegated authority of the Fire Region Manager is responsible for approving applications in relation to firefighting water supplies. The Area Manager may accept a variation or reduction in the amount of water required for firefighting for example; a single level dwelling measuring 200^{m2} requires 45,000L of firefighter water under the code, however the Area Managers in Northland have excepted a reduction to 10,000L.

This application form is used for the assessment of proposed water supplies for firefighting in non-reticulated areas only and is referenced from (Appendix B – Alternative Firefighting Water Sources) of the code. This application also provides fire risk reduction guidance in relation to vegetation and the 20-metre dripline rule under the Territorial Authority's District Plan. Fire and Emergency New Zealand are not a consenting authority and the final determination rests with the Territorial Authority.

For more information in relation to the code of practice for Firefighting Water supplies, Emergency Vehicle Access requirements, Home Fire Safety advice and Vegetation Risk Reduction Strategies visit www.fireandemergency.nz

Section B – Applicant Information

Applicants Information	
Name:	N & E Lironi-Irvine
Address:	c/- Thomson Survey Limited, P O Box 372 KERIKERI
Contact Details:	Lynley Newport; 021 684 077
Return Email Address:	lynley@tsurvey.co.nz

Section C – Property Details

Property Details	
Address of Property:	146B Otiria Road, MOEREWA
Lot Number/s:	Lot 2 DP 596306 & Lot 5 DP 25821
Dwelling Size: (Area = Length & Width)	190m2 including the future sleeping pods - see attached plans
Number of levels: (Single / Multiple)	Single - building 4.8m in height

1. Fire Appliance Access to alternative firefighting water sources - Expected Parking Place & Turning circle

Fire and Emergency have specific requirements for fire appliance access to buildings and the firefighting water supply. This area is termed the hard stand. The roading gradient should not exceed 16%. The roading surface should be sealed, able to take the weight of a 14 to 20-tonne truck and trafficable at all times. The minimum roading width should not be less than 4 m and the property entrance no less 3.5 metres wide. The height clearance along access ways must exceed 4 metres with no obstructions for example; trees, hanging cables, and overhanging eaves.

1 (a) Fire Appliance Access / Right of Way	
Is there at least 4 metres clearance overhead free from obstructions?	☑YES ☐NO
Is the access at least 4 metres wide?	☐YES ☑NO
Is the surface designed to support a 20-tonne truck?	☐YES ☑NO
Are the gradients less than 16%	☑YES ☐NO
Fire Appliance parking distance from the proposed water supply is Less than 10 metres	

If access to the proposed firefighting water supply is not achievable using a fire appliance, firefighters will need to use portable fire pumps. Firefighters will require at least a one-metre wide clear path / walkway to carry equipment to the water supply, and a working area of two metres by two metres for firefighting equipment to be set up and operated.

1 (b) Restricted access to firefighting water supply, portable pumps required
Has suitable access been provided? ☑YES ☐ NO
Comments: Internal driveway yet to be fully formed, hence the two 'no' responses above. Refer to photographs provided. The access is over good ground and reasonably level. Property served by shared ROW - refer to photographs provided. This is a solid, well formed shared ROW, access via existing bridge over Otiria Stream, off Otiria Road. The bridge is solid construction to standard suitable for dairy tankers. Access currently restricted via padlocked gates - the code for which can be made available to NZFE if required. Refer also to attached plans, specifically Overall site and Location Plan.

Internal FENZ Risk Reduction comments only:

Click or tap here to enter text.

2. Firefighting Water Supplies (FFWS)

What are you proposing to use as your firefighting water supply?

2 (a) Water Supply Single Dwelling	
Tank	☐ Concrete Tank ☑ Plastic Tank ☐ Above Ground (Fire Service coupling is required - 100mm screw thread suction coupling) ☑ Part Buried (max exposed 1.500 mm above ground) ☐ Fully Buried (access through filler spout) Volume of dedicated firefighting water 10,000litres

2 (b) Water Supply Multi-Title Subdivision Lots / Communal Supply	
Tank Farm	☐ Concrete Tank ☐ Plastic Tank ☐ Above Ground (Fire Service coupling is required - 100mm screw thread suction coupling) ☐ Part Buried (max exposed 1.500mm above ground) ☐ Fully Buried (access through filler spout) Number of tanks provided Click or tap here to enter text. Number of Tank Farms provided Click or tap here to enter text. Water volume at each Tank Farm Click or tap here to enter text. Litres Volume of dedicated firefighting water Click or tap here to enter text. litres

2 (c) Alternative Water Supply	
Pond:	Volume of water: Click or tap here to enter text.
Pool:	Volume of water: Click or tap here to enter text.
Other:	Specify: Click or tap here to enter text.
	Volume of water: Click or tap here to enter text.

Internal FENZ Risk Reduction comments only:

Click or tap here to enter text.

3. Water Supply Location

The code requires the available water supply to be at least 6 metres from a building for firefighter safety, with a maximum distance of 90 metres from any building. This is the same for a single dwelling or a Multi-Lot residential subdivision. Is the proposed water supply within these requirements?

3 (a) Water Supply Location	
Minimum Distance:	*Is your water supply at least 6 metres from the building?* ☑YES ☐ NO
Maximum Distance	*Is your water supply no more than 90 metres from the building?* ☑YES ☐ NO

3 (b) Visibility
How will the water supply be readily identifiable to responding firefighters? E.g.: tank is visible to arriving firefighters or, there are signs / markers posts visible from the parking place directing them to the tank etc.
Comments: Refer to attached plans, specifically Overall Site & Location Plans

3 (c) Security
How will the FFWS be reasonably protected from tampering? E.g.: light chain and padlock or, cable tie on the valve etc.
Explain how this will be achieved: Refer to attached plans, specifically Overall Site & Location Plans

Internal FENZ Risk Reduction comments only:
Click or tap here to enter text.

4. Adequacy of Supply

The volume of storage that is reserved for firefighting purposes must not be used for normal operational requirements. Additional storage must be provided to balance diurnal peak demand, seasonal peak demand and normal system failures, for instance power outages. The intent is that there should always be sufficient volumes of water available for firefighting, except during Civil Défense emergencies or by prior arrangement with the Fire Region Manager.

4 (a) Adequacy of Water supply
***Note:** The owner must maintain the firefighting water supply all year round. How will the usable capacity proposed be reliably maintained? E.g. automatically keep the tank topped up, drip feed, rain water, ballcock system, or manual refilling after use etc.*
Comments: Rainwater and manual top up if required

Internal FENZ Risk Reduction comments only:
Click or tap here to enter text.

5. Alternative Method using Appendix's H & J

If Table 1 + 2 from the Code of Practice is not being used for the calculation of the Firefighting Water Supply, a competent person using appendix H and J from the Code of Practice can propose an alternative method to determine firefighting water supply adequacy.

Appendix H describes a method for determining the maximum fire size in a structure. Appendix J describes a method for assessing the adequacy of the firefighting water supply to the premises.

5 (a) Alternative Method Appendix H & J	
If an alternative method of determining the FFWS has been proposed, who proposed it? Name: Click or tap here to enter text.	
Contact Details: Click or tap here to enter text.	
Proposed volume of storage?	Litres: Click or tap here to enter text.
Comments: Click or tap here to enter text. ** Please provide a copy of the calculations for consideration.*	

Internal FENZ Risk Reduction comments only:
Click or tap here to enter text.

6. Diagram

Please provide a diagram identifying the location of the dwelling/s, the proposed firefighting water supply and the attendance point of the fire appliance to support your application.

Refer to attached Plans and to site Photographs.

Internal FENZ Risk Reduction comments only:

Click or tap here to enter text.

7. Vegetation Risk Reduction - Fire + Fuel = Why Homes Burn

Properties that are residential, industrial or agricultural, are on the urban–rural interface if they are next to vegetation, whether it is forest, scrubland, or in a rural setting. Properties in these areas are at greater risk of wildfire due to the increased presence of nearby vegetation.

In order to mitigate the risk of fire spread from surrounding vegetation to the proposed building and vice-versa, Fire Emergency New Zealand recommends the following;

I. *Fire safe construction*

Spouting and gutters – Clear regularly and consider screening with metal mesh. Embers can easily ignite dry material that collects in gutters.

Roof – Use fire resistant material such as steel or tile. Avoid butanol and rubber compounds.

Cladding – Stucco, metal sidings, brick, concrete, and fibre cement cladding are more fire resistant than wood or vinyl cladding.

II. *Establish Safety Zones around your home.*

Safety Zone 1 is your most import line of defence and requires the most consideration. Safety Zone 1 extends to 10 metres from your home, you should;

a) *Mow lawn and plant low-growing fire-resistant plants; and*
b) *Thin and prune trees and shrubs; and*
c) *Avoid tall trees close to the house; and*
d) *Use gravel or decorative crushed rock instead of bark or wood chip mulch; and*
e) *Remove flammable debris like twigs, pine needles and dead leaves from the roof and around and under the house and decks; and*
f) *Remove dead plant material along the fence lines and keep the grass short; and*
g) *Remove over hanging branches near powerlines in both Zone 1 and 2.*

III. *Safety Zone 2 extends from 10 – 30 metres of your home.*

a) *Remove scrub and dead or dying plants and trees; and*
b) *Thin excess trees; and*
c) *Evenly space remaining trees so the crowns are separated by 3-6 metres; and*
d) *Avoid planting clusters of highly flammable trees and shrubs*
e) *Prune tree branches to a height of 2 metres from the ground.*

IV. *Choose Fire Resistant Plants*

Fire resistant plants aren't fire proof, but they do not readily ignite. Most deciduous trees and shrubs are fire resistant. Some of these include: poplar, maple, ash, birch and willow. Install domestic sprinklers on the exterior of the sides of the building that are less 20 metres from the vegetation. Examples of highly flammable plants are: pine, cypress, cedar, fir, larch, redwood, spruce, kanuka, manuka.

For more information please go to https://www.fireandemergency.nz/at-home/the-threat-of-rural-fire/

If your building or dwelling is next to vegetation, whether it is forest, scrubland, or in a rural setting, please detail below what Risk Reduction measures you will take to mitigate the risk of fire development and spread involving vegetation?

7 (a) Vegetation Risk Reduction Strategy
Refer to attached Plans and to site Photographs. The house site has been cleared to remove mixed species vegetation and increase buffer distance. Remaining vegetation on the site in proximity of dwelling/building consists of individual trees (totara) and sparse mixed species downslope between house site and Otiria Stream. The area of 'bush' from which a 20m setback distance cannot be achieved is on an adjacent site and is covenanted. It consists primarily of totara. A 14.5m separation distance can be achieved between the proposed amenity building and the dripline; and a distance of 11m-14m can be achieved from proposed future sleeping pods and the dripline. The area between, where within the property, is proposed to be maintained in grassed lawn.

Internal FENZ Risk Reduction comments only:

Click or tap here to enter text.

8. Applicant

Checklist	
☑	Site plan (scale drawing) – including; where to park a fire appliance, water supply, any other relevant information.
☑	Any other supporting documentation (diagrams, consent).

I submit this proposal for assessment.

Name: Lynley Newport Dated: 1/08/2024

Contact No.: 021 684 077

Email: lynley@tsurvey.co.nz

Signature: Click or tap here to enter text.

9. Approval

In reviewing the information that you have provided in relation to your application being approximately a Click or tap here to enter text. square metre, Choose an item. *dwelling/sub division, and non-sprinkler protected.*

The Area Manager of Fire and Emergency New Zealand under delegated authority from the Fire Region Manager, Te Hiku, has assessed the proposal in relation to firefighting water supplies and the vegetation risk strategy. The Manager Choose an item. *agree with the proposed alternate method of Fire Fighting Water Supplies. Furthermore; the Manager agrees with the Vegetation Risk Reduction strategies proposed by the applicant.*

Name: Click or tap here to enter text.

Signature: Click or tap here to enter text. Dated: Click or tap to enter a date.

P.P on behalf of the Area Manager

Fire and Emergency New Zealand
Te Tai Tokerau / Northland District

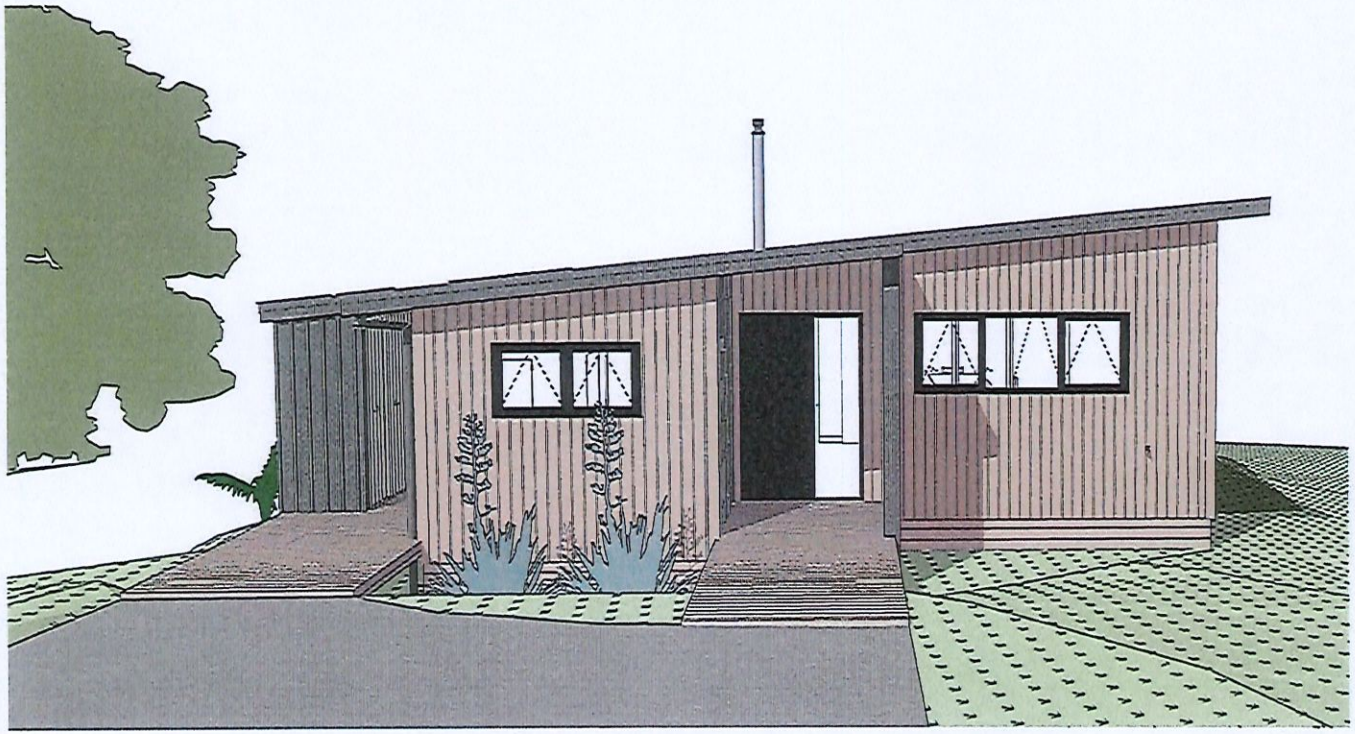
APPROVED
By GoffinJ at 9:16 am, Aug 07, 2024

Jason Goffin- Advisor Risk Reduction

PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS

AT 146B OTIRIA ROAD, MOREWA

for N and E LIRONI-IRVINE



Artistic Impression Only

E 25/07/2024

CONCEPT

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Karin Lindholm Andreassen
LBP: Design 2: 107526

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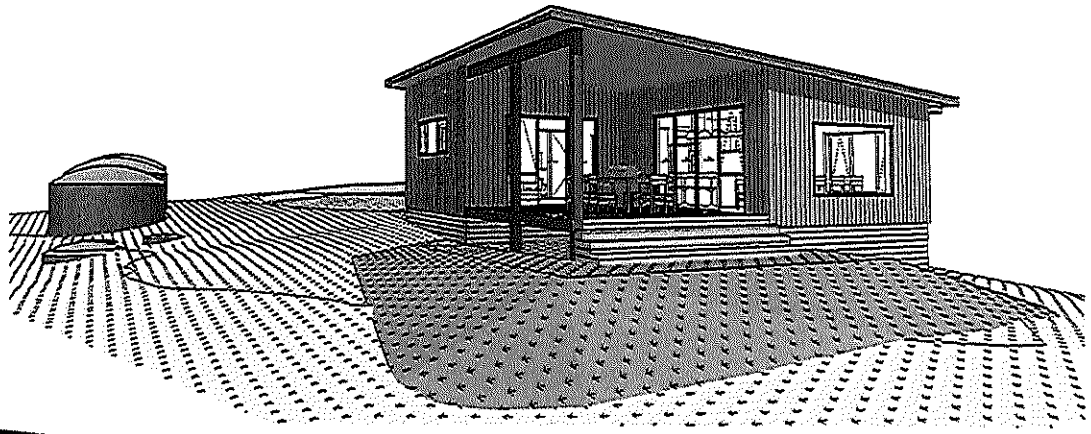

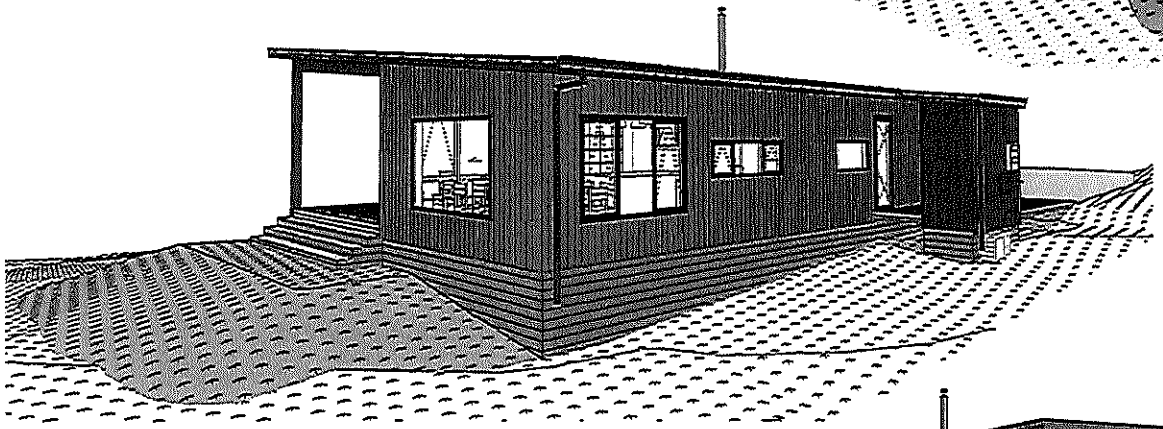

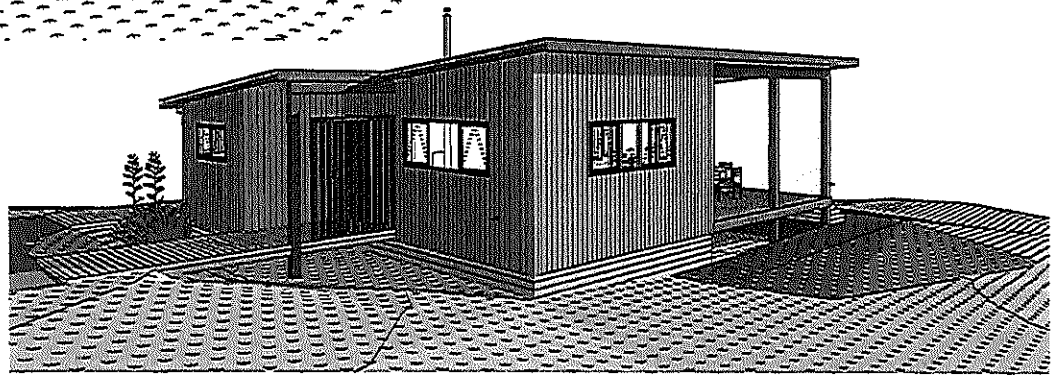

Artistic Impression Only

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All construction to comply with NZS3604:2011 and the NZBC

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PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: 3D VIEWS

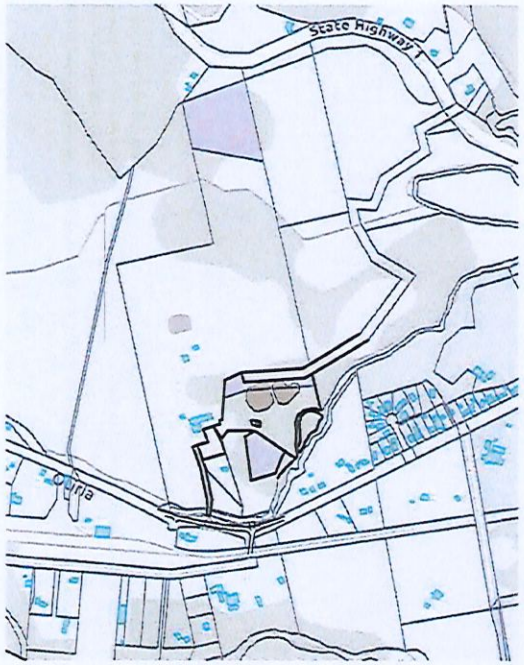
Date: Thursday, 25 July 2024 SCALE:

NORTHPOINT

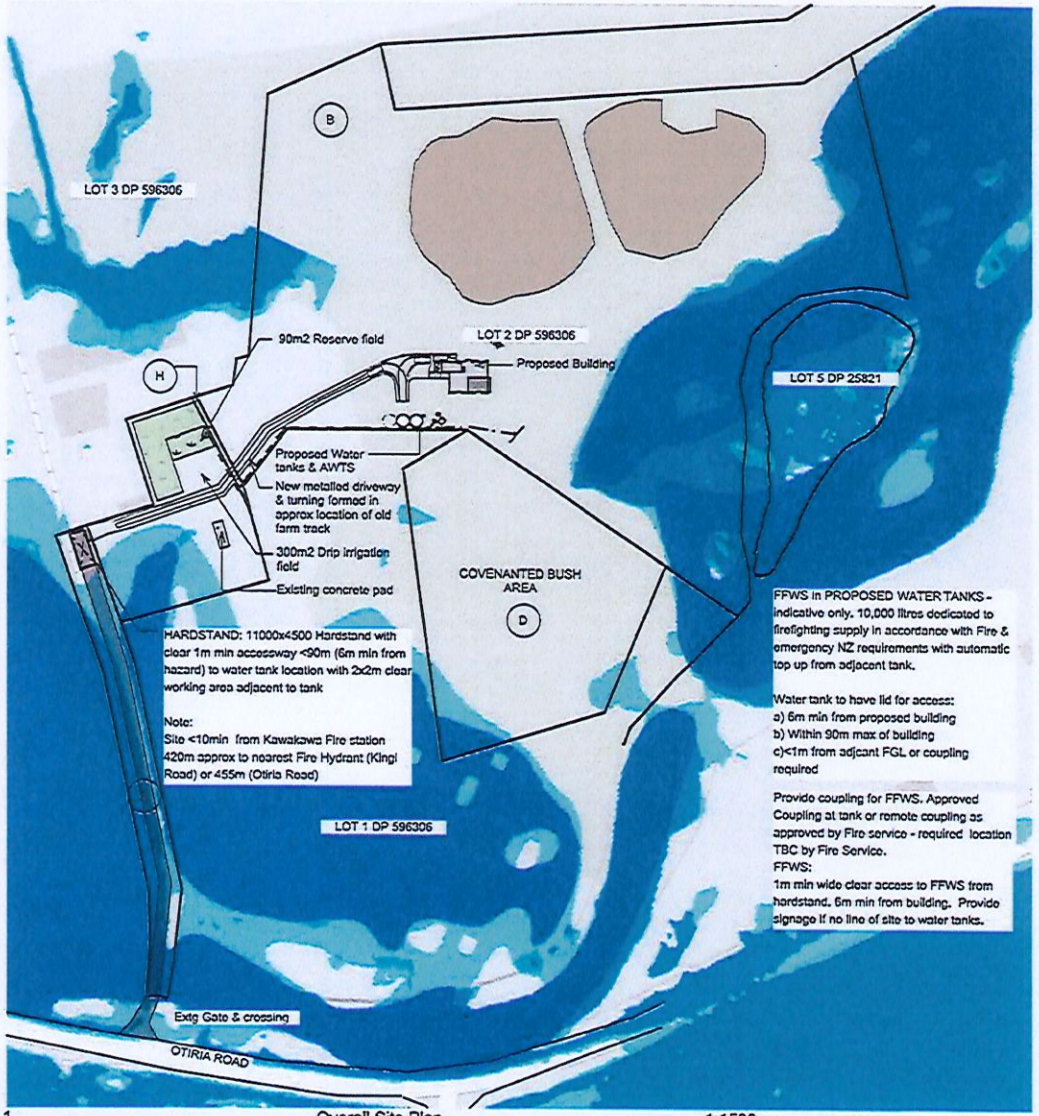
SITE DESCRIPTION:

LOT 2 DP 596306 and LOT 5 DP 25821

SITE AREA: 25580 m2



2 Location Plan 1:10000



1 Overall Site Plan 1:1500

GENERAL NOTES:

PLANNING ZONE: RURAL PRODUCTION
WIND ZONE: HIGH (to NZS3604:2011 Section 5.2)
EXPOSURE ZONE: Zone C
SUBSOIL CLASSIFICATION:C
SOIL CLASS: M

WIND ZONE CALCULATION:
GROUND ROUGHNESS: OPEN (<10 obstructions/ha)
SITE EXPOSURE: EXPOSED
TOPOGRAPHICAL CLASS:
Smooth gradient = >0.13 (1:6.7) = MILD
Zone =Outside Outer zone
Topo Class = T1

NOTES:

1) All construction to comply with NZBC & NZ Standards and LA requirements.

2) All Services locations and connections shown indicative only. Contractor to confirm all existing services runs on site prior to commencing construction

3) Extg. 1m Contours are indicative only from FNDC Maps. Spot levels taken by LINDHOLM DESIGN LTD . All levels to be confirmed on site by builder prior to construction.

4) Buildings and impermeable surfaces from site measure and FNDC Maps - site not surveyed

5) Earthworks and Sediment Control to comply with Geotechnical Report requirements and FNDC Proposed District Plan EW-S5: to comply with "Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region 2016" - refer to accompanying documents for " Building on Small Sites - Doing it Right" for guidance.

6) Earthworks to comply with FNDC Proposed District Plan EW-S3 "Accidental Discovery Protocol"

7) Plans to be read in conjunction with TP58 and Geotech Report

8) Refer to Site & Service Plans for drainage & Services runs and locations

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PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A01 OVERALL SITE AND LOCATION PLAN

Date: Thursday, 25 July 2024 SCALE: 1:1500, 1:10000

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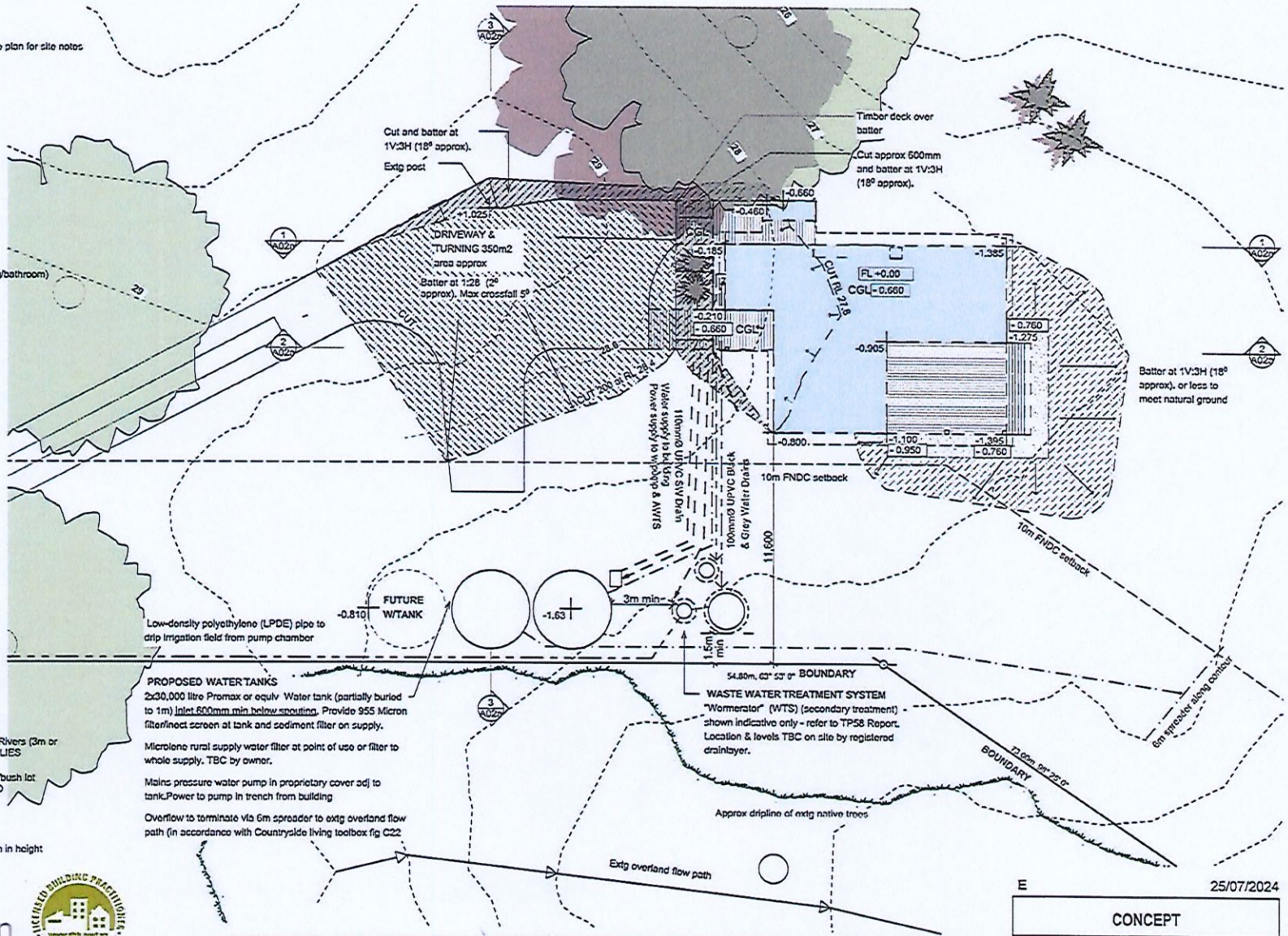

SITE DESCRIPTION:
LOT 2 DP 596306 and LOT 5 DP 25821
SITE AREA: 25580 m2

DISTRICT PLAN COMPLIANCE: RURAL PRODUCTION

RESIDENTIAL INTENSITY:
Permitted = 1 residential unit/12ha of land
Proposed = 1 amenity building proposed (Kitchen/dining/living/bathroom)
= COMPLIES

BUILDING HEIGHT:
Permitted: = 12m max
Proposed: = 4.8m approx = COMPLIES

SUNLIGHT:= COMPLIES

STORMWATER MANAGEMENT: (Impermeable surfaces)
Proposed Roof Area = 147.45 m2 approx
Future PODS Roof Area(3 PODS) = 45.5m2 approx
Driveway (metalled) = 375m2 approx
Total Permitted: = ≤ 15% of gross site area
Total Proposed: = 567.95m2 approx
= 2% approx of gross site area
= COMPLIES

SETBACKS to BOUNDARIES:
Permitted =10m min from any site boundary
Proposed = >10m
= COMPLIES

BUILDING COVERAGE:
Proposed building = 147.45 m2 approx
Future PODS = 14.4m2 approx/POD
Total Permitted: = ≤ 12.5% of gross site area
Total Proposed: =0.8% approx
= COMPLIES

EARTHWORKS VOLUME:
Total Permitted: =5000m3 max in any 12month period
Total Proposed: = <5000m3 approx total cut/fill volume
= COMPLIES

CUT/FILL FACE: = ≤1.5m max permitted = COMPLIES

SETBACK FROM LAKES & RIVERS: = >30m from banks of Rivers (3m or more wide) and Wetlands (with area of 1ha or more) = COMPLIES

FIRE RISK TO RESIDENTIAL UNITS: <20m setback to scrub/bush lot (covenanted bush area) = RESOURCE CONSENT REQUIRED
Refer Consent Notice on title requiring FFWS

HAIL: NOT A HAIL SITE

EARTHWORKS PERMIT: NOT REQUIRED
Proposed excavation and filling >3m from site boundary, <1.5m in height

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PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A02 PART SITE PLAN

Date: Thursday, 25 July 2024 SCALE: 1:200

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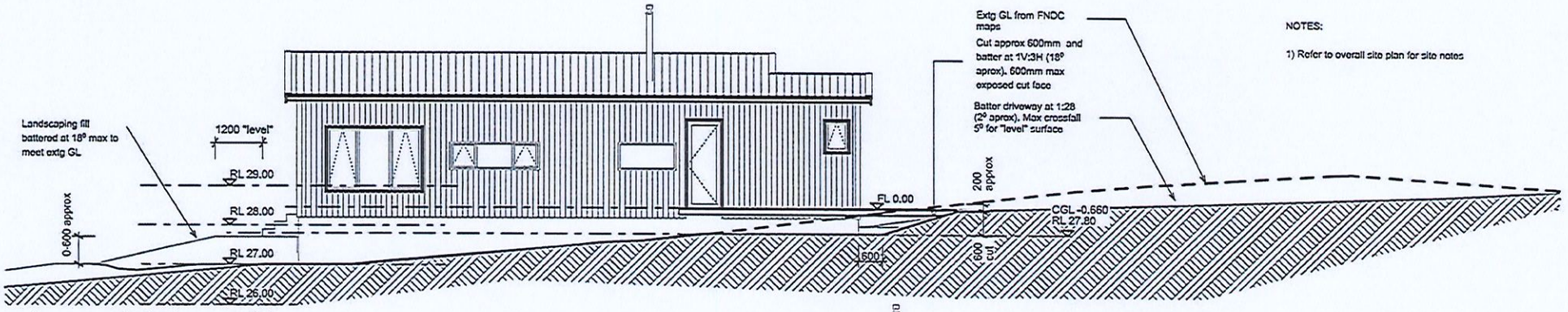
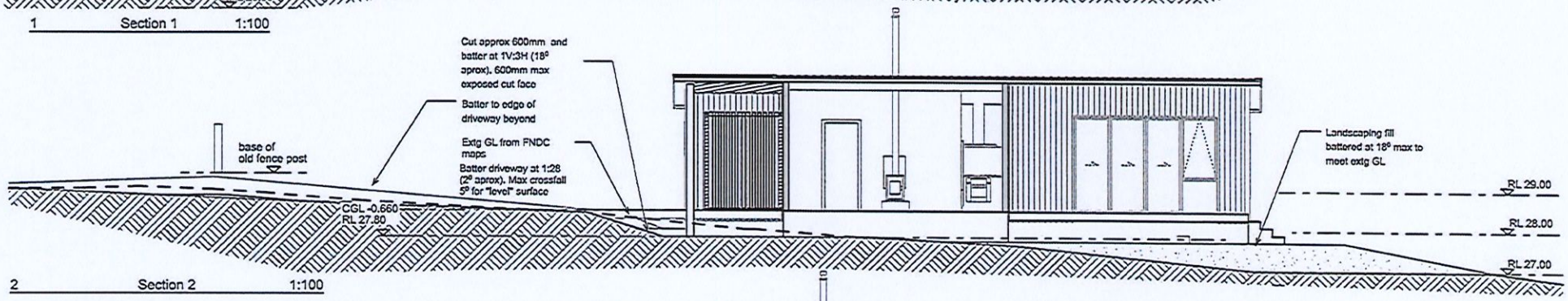
All construction to comply with NZS3604:2011 and the NZBC



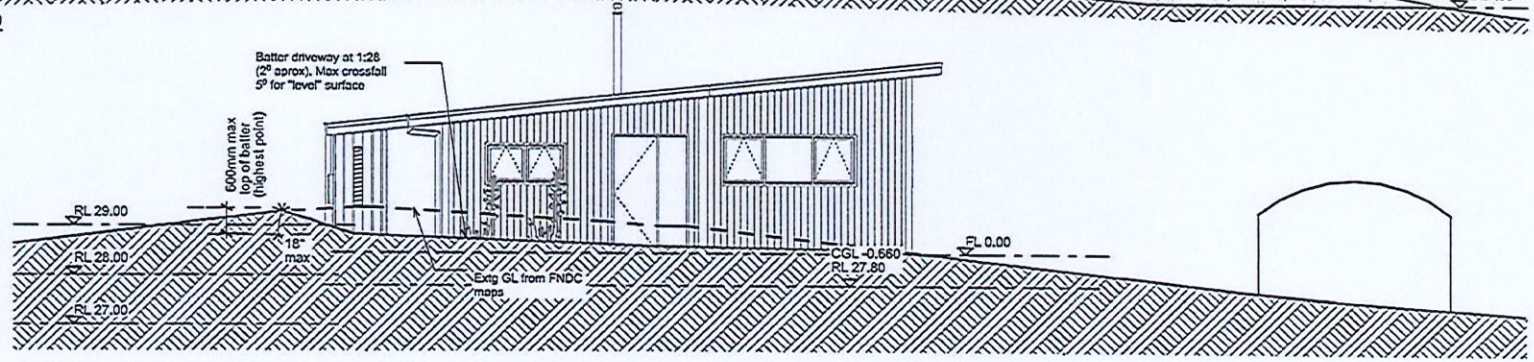
1 Section 1 1:100

NOTES:

1) Refer to overall site plan for site notes



2 Section 2 1:100



3 Section 3 1:100

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PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A02a SITE SECTIONS

Date: Thursday, 25 July 2024 SCALE: 1:100

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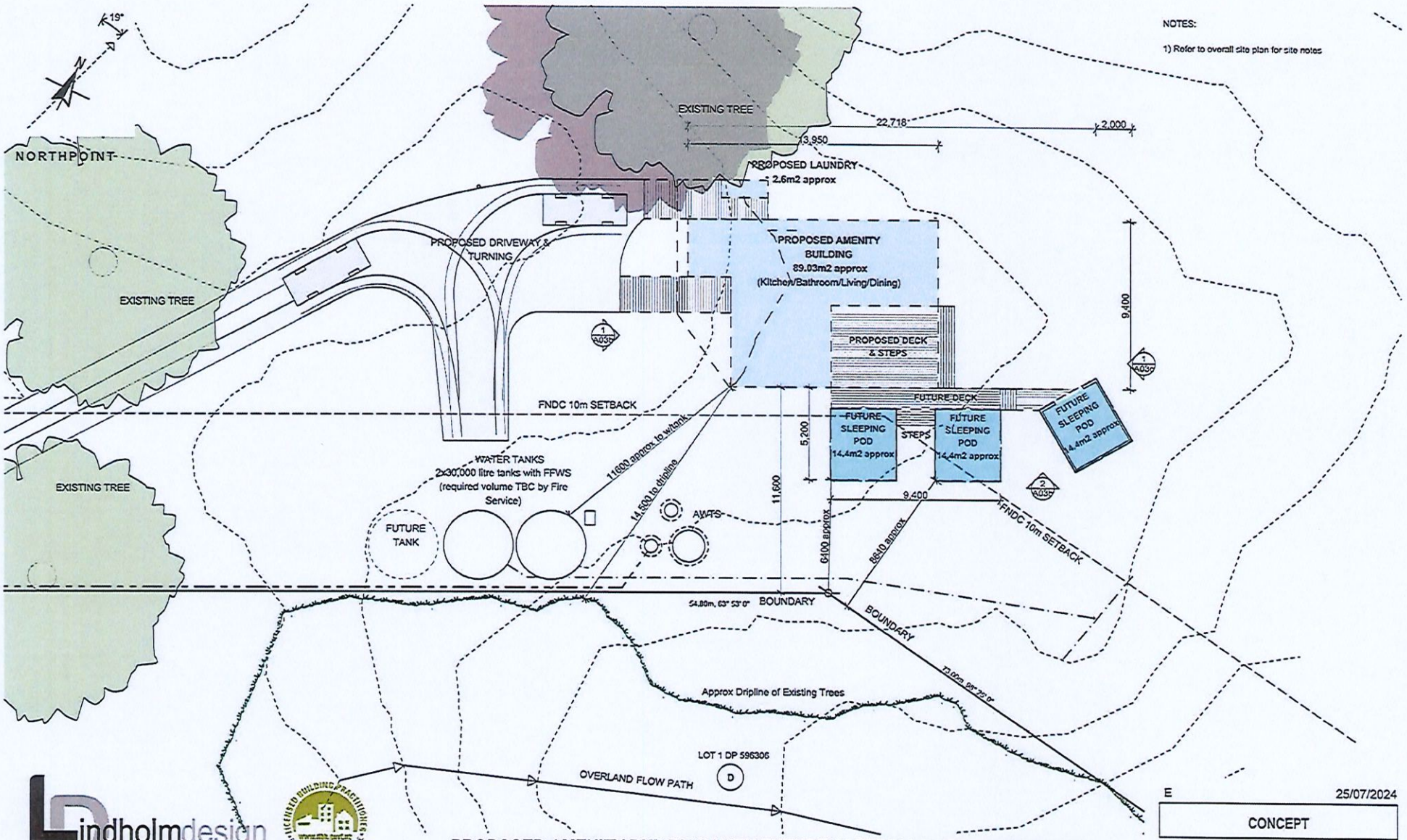
All construction to comply with NZS3604:2011 and the NZBC



NOTES:

1) Refer to overall site plan for site notes

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All construction to comply with NZS3604:2011 and the NZBC

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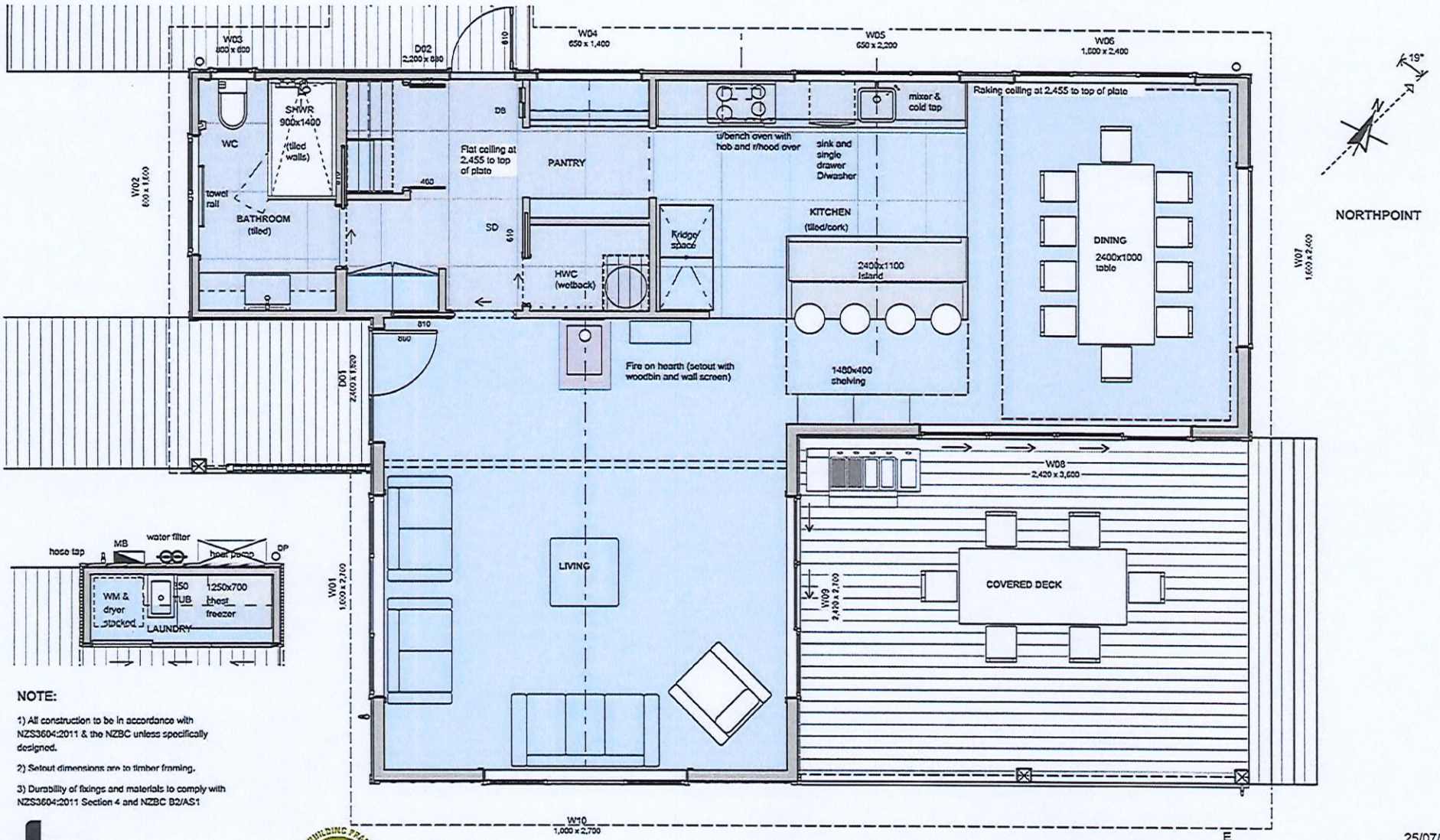
PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A02b SITE PLAN WITH FUTURE SLEEPING "PODS"

Date: Thursday, 25 July 2024 SCALE: 1:200



NOTE:

1) All construction to be in accordance with NZS3604:2011 & the NZBC unless specifically designed.

2) Setout dimensions are to timber framing.

3) Durability of fixings and materials to comply with NZS3604:2011 Section 4 and NZBC B2/AS1

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PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A03 FLOOR PLAN

Date: Thursday, 25 July 2024 **SCALE:** 1:50, 1:250

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CONCEPT

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All construction to comply with NZS3604:2011 and the NZBC

AREAS: approx	
FLOOR AREA	= 89.03m2 approx
LAUNDRY FLOOR AREA:	= 2.6m2 approx
TOTAL FLOOR AREA:	= 91.63m2 approx
ROOF AREA	=147.45 m2 approx

FUTURE AREAS: approx	
FUTURE "SLEEPING POD" FLOOR AREA	=14.4m2/POD
TOTAL FUTURE ADDITIONAL FLOOR AREA:	= 43.2m2

KEY:

- External Cladding 1: "Shadowclad" 12mm grooved ply with selected finish on cavity
- External Cladding 2: Vertical "Dimond" "Styloline" or sim profiled pre-painted metal cladding on cavity
- Typical external timber framed walls: H1.2 SG8 timber framing - No insulation or lining
- W1/D1 — Window/Door Reference. Double glazed & thermally broken frames with glazing to comply with NZS4223: Human impact safety requirements.
- Roof line
- 20mm H1.2 Ply Flooring. H3.1 under shower. Waterproofing membrane under tiled water splash zones or other impervious finish to comply with E3/AS1 as required
- SD — "Type 1" Smoke Detector with 60 Second hush facility to be mounted within 3m of sleeping spaces and on escape paths to comply with NZBC C/AS1 & F7/AS1
- E — Extract ducted to exterior - thru wall. Mechanical extract fans (including associated ducting) must have a flowrate not less than 25l/s for shower space , 50l/s for Kitchen and 40l/s for laundry to comply with NZBC G4/AS1

INSULATION: Minimum requirements to future habitable spaces comply to with NZBC H1: 5th Edition (Refer to BRANZ Calculation Method)

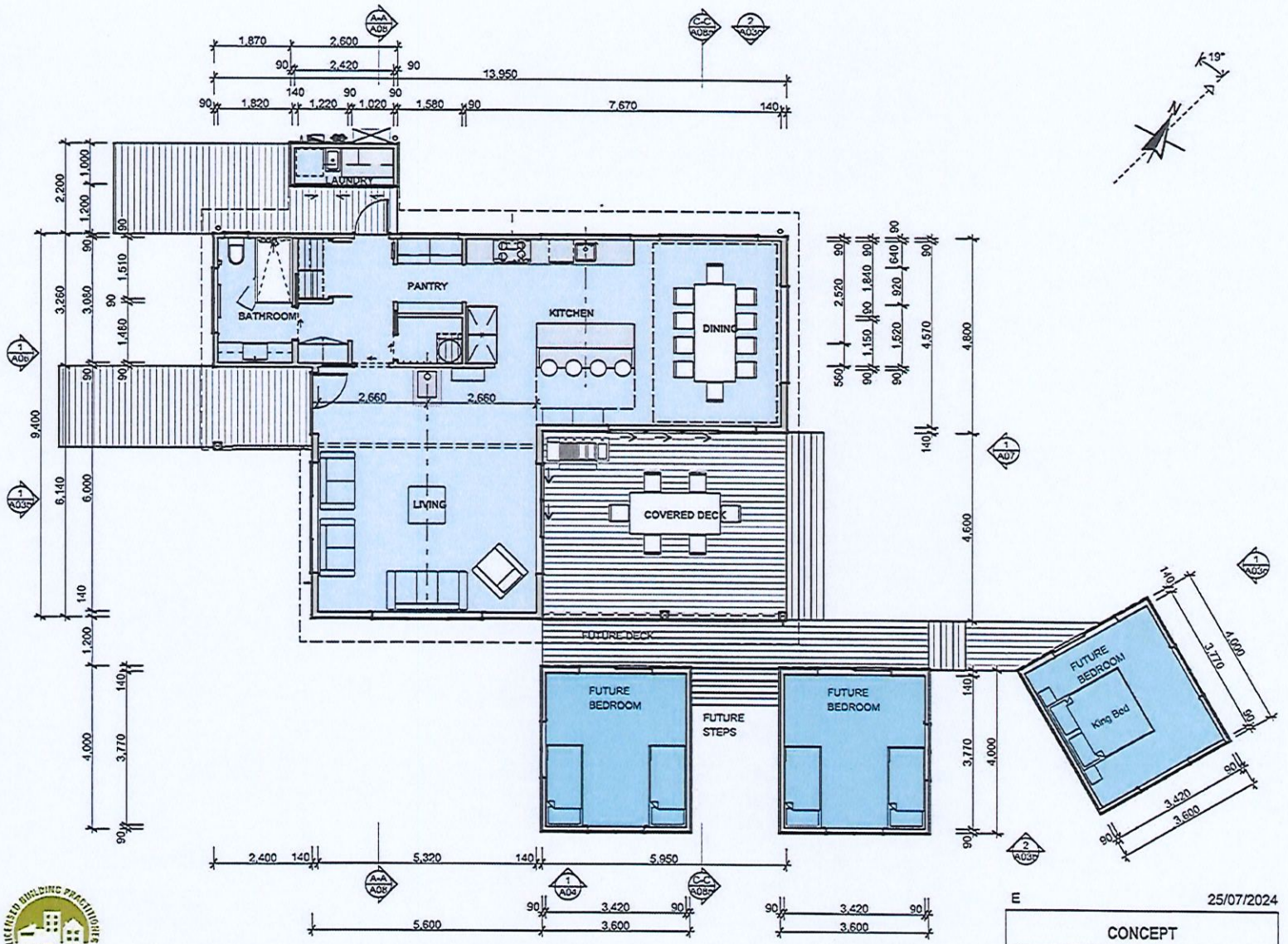
INTERIOR FINISHES: to comply with E3/AS1

a) Seal around all penetrations and at junctions of wall/floor finishes with approved mould resistant silicone sealant to all water splash areas and kitchen benches and between flooring finishes and pre-primed timber skirting or alternative.

b) "Watersplash" areas and surfaces adjacent to sanitary and facilities to be "impervious" to comply with NZBC E3/AS1 3.0

c) Impervious finish to lining to shower 1800mm min high, to extend 50mm above shower rose to E3/AS1.Shower lining to comply with B2/AS1

d) Bench/work surfaces used for food preparation to comply with G3/AS1



Lindholmdesign ARCHITECTURAL SERVICES

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LBP: Design 2: 107526

ADNZ ARCHITECTURAL DESIGNERS NZ

PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A03a FLOOR PLAN & FUTURE

Date: Thursday, 25 July 2024 **SCALE:** 1:100, 1:250, 1:50

E 25/07/2024

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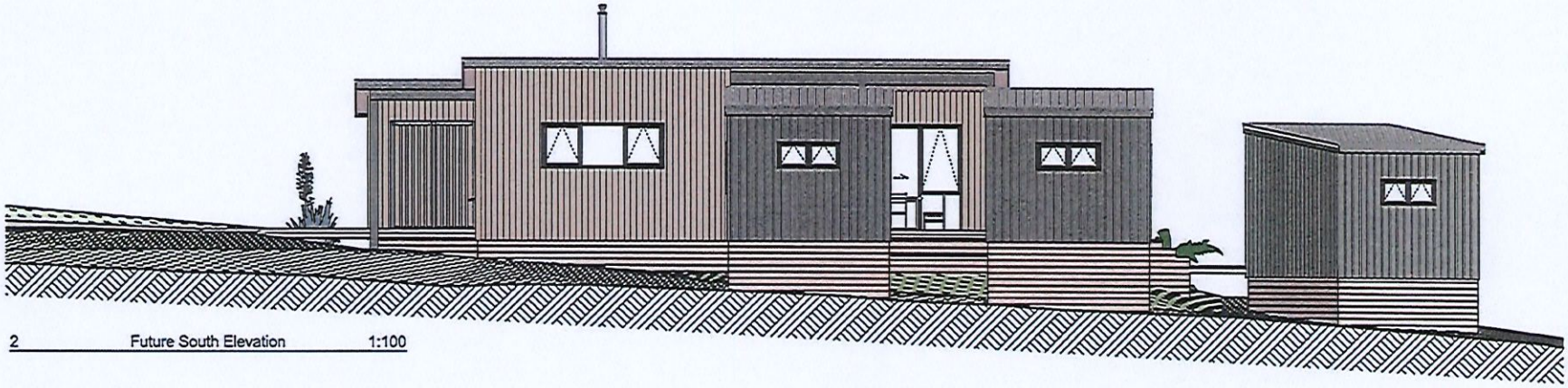
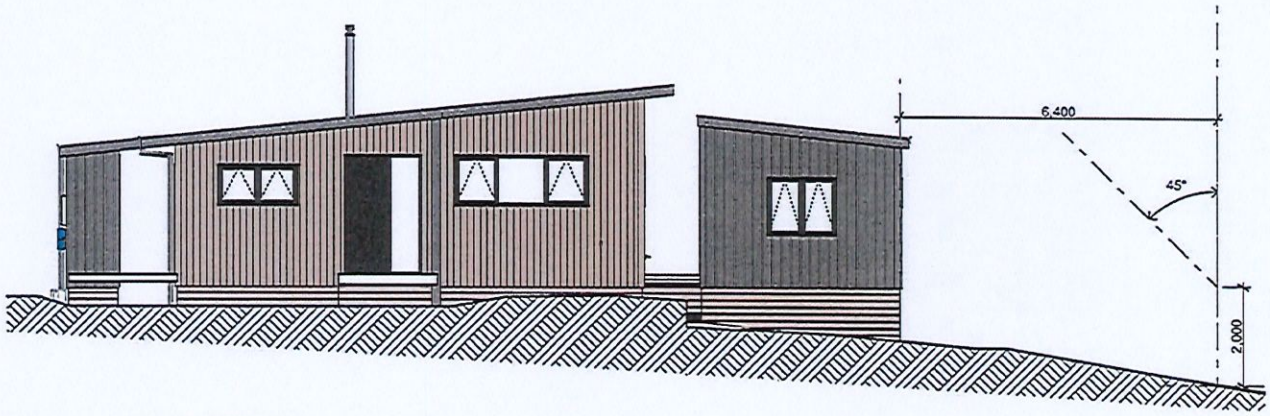


2 Future South Elevation 1:100



1 Future West Elevation 1:100

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Sheet: A03b FUTURE ELEVATIONS - SH 1

Date: Thursday, 25 July 2024 SCALE: 1:100

E 25/07/2024

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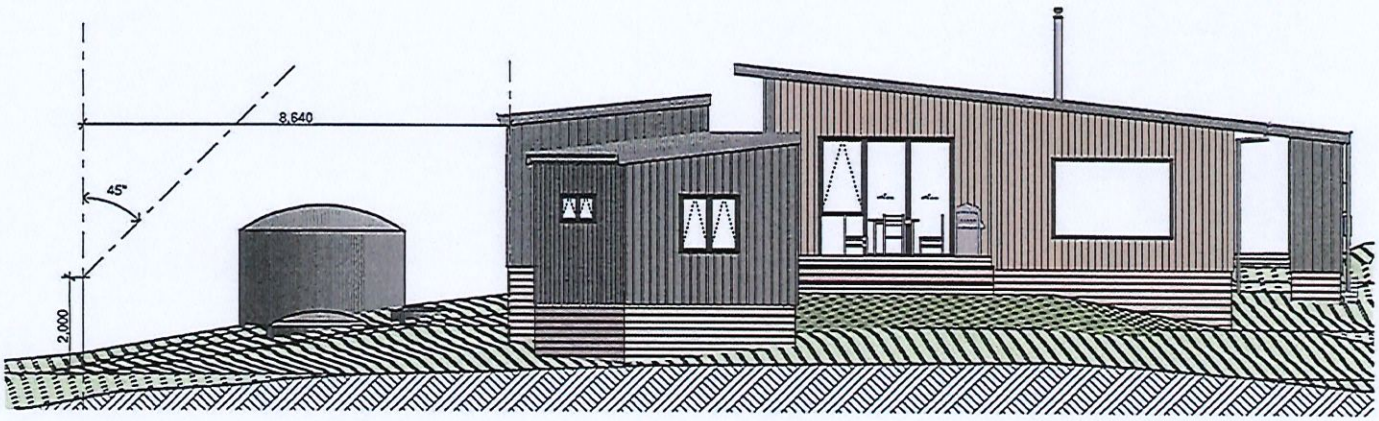
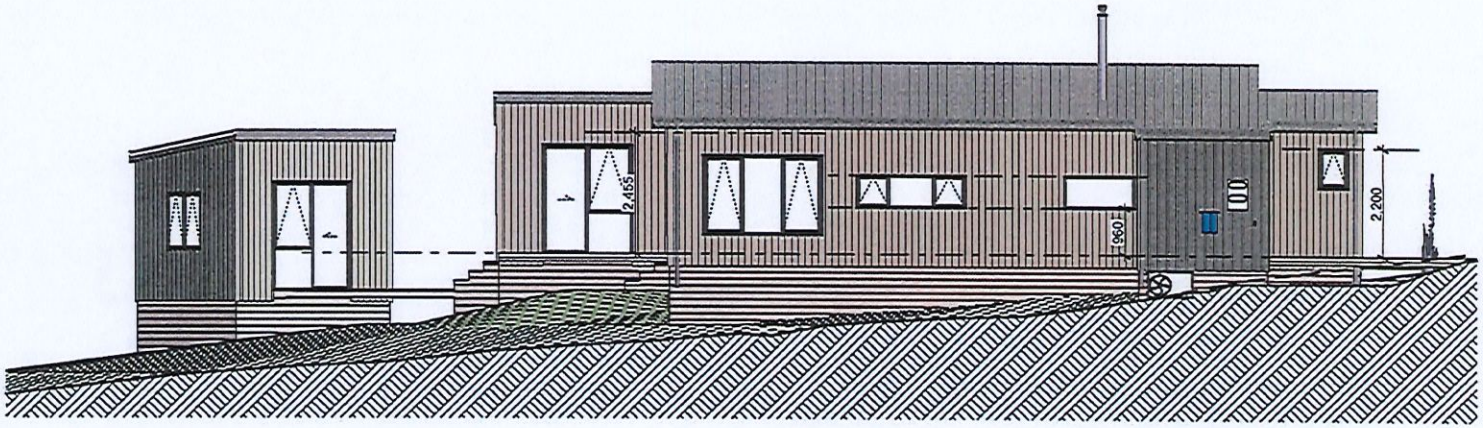


1 Future East Elevation 1:100



2 Future North Elevation 1:100

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Sheet: A03c FUTURE ELEVATIONS - SH 2

Date: Thursday, 25 July 2024 SCALE: 1:100

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All construction to comply with NZS3604:2011 and the NZBC

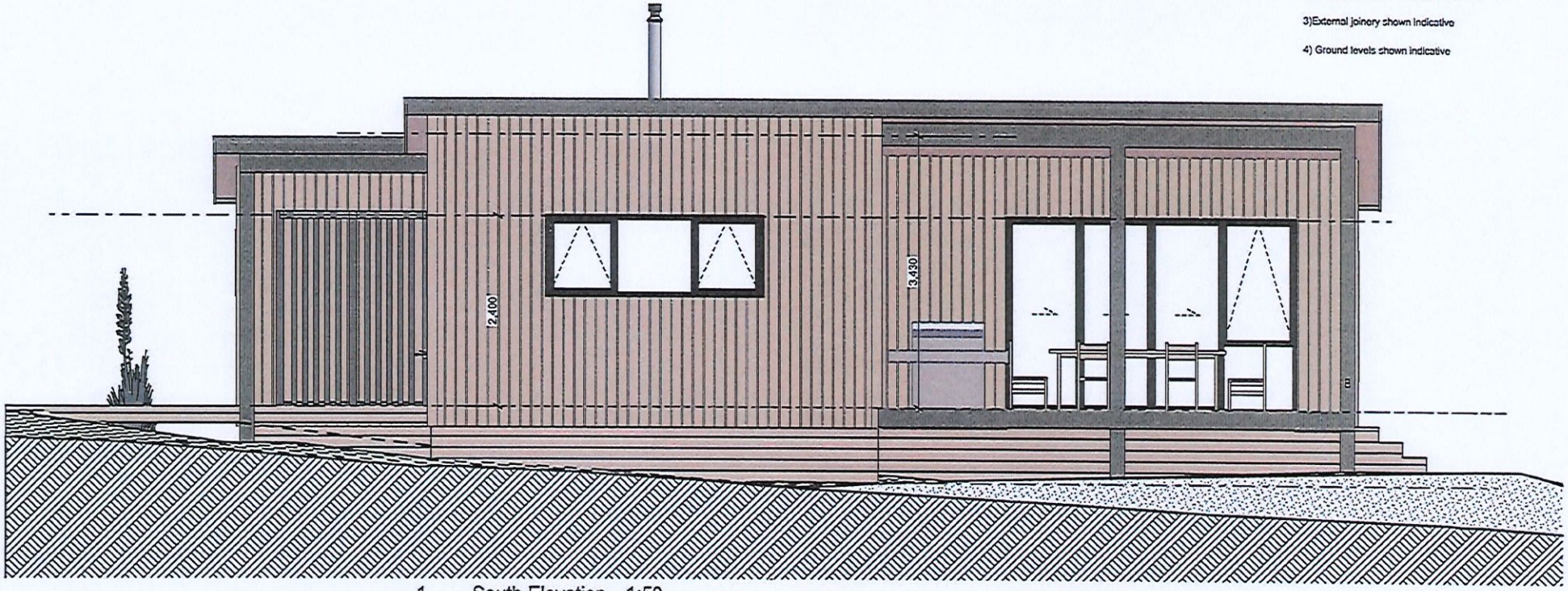
NOTES:

1) All construction to be in accordance with NZS3604:2011 and the NZBC Acceptable Solutions unless specifically designed or approved as Alternative Solution by BCA

2) Durability of fixings and materials to comply with NZS3604:2011 Section 4 and NZBC B2/AS1

3)External joinery shown indicative

4) Ground levels shown indicative



1 South Elevation 1:50

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PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A04 ELEVATIONS - SHEET 1

Date: Thursday, 25 July 2024 SCALE: 1:50

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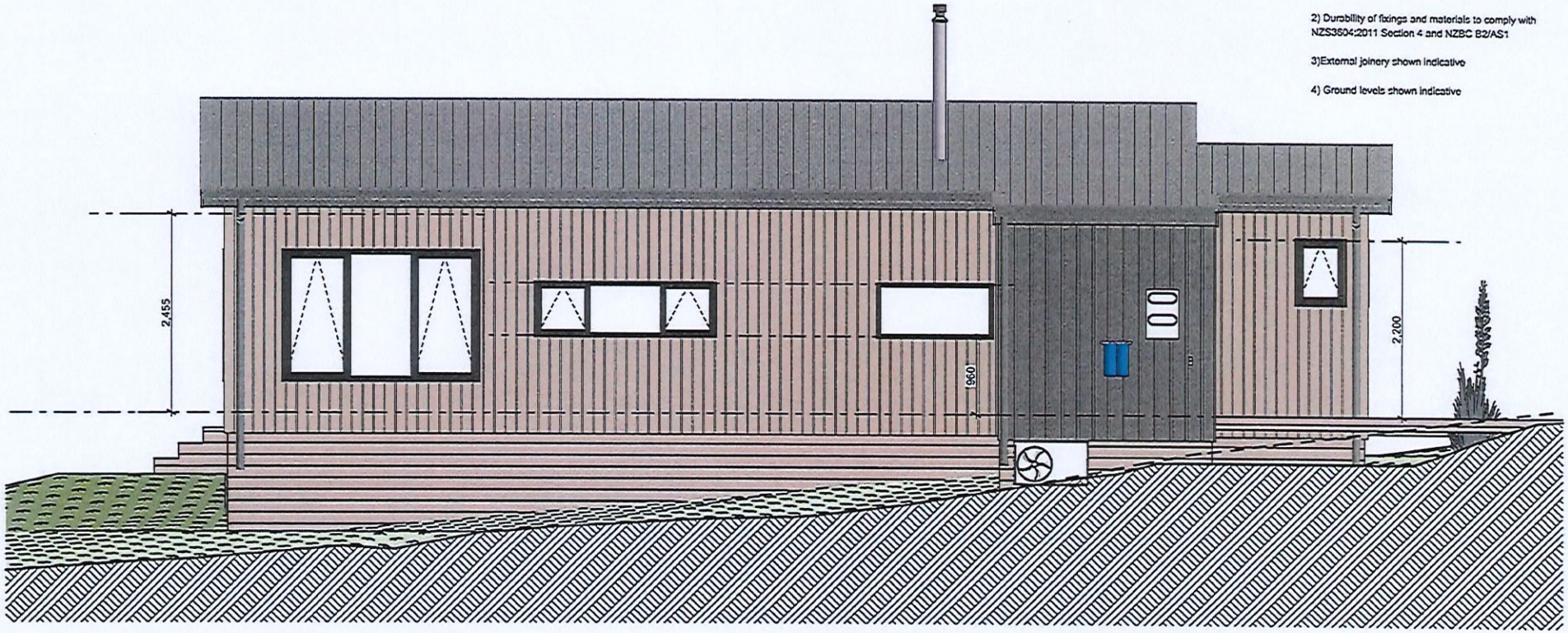

1 North Elevation 1:50

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Sheet: A05 ELEVATIONS -SHEET 2

Date: Thursday, 25 July 2024 SCALE: 1:50

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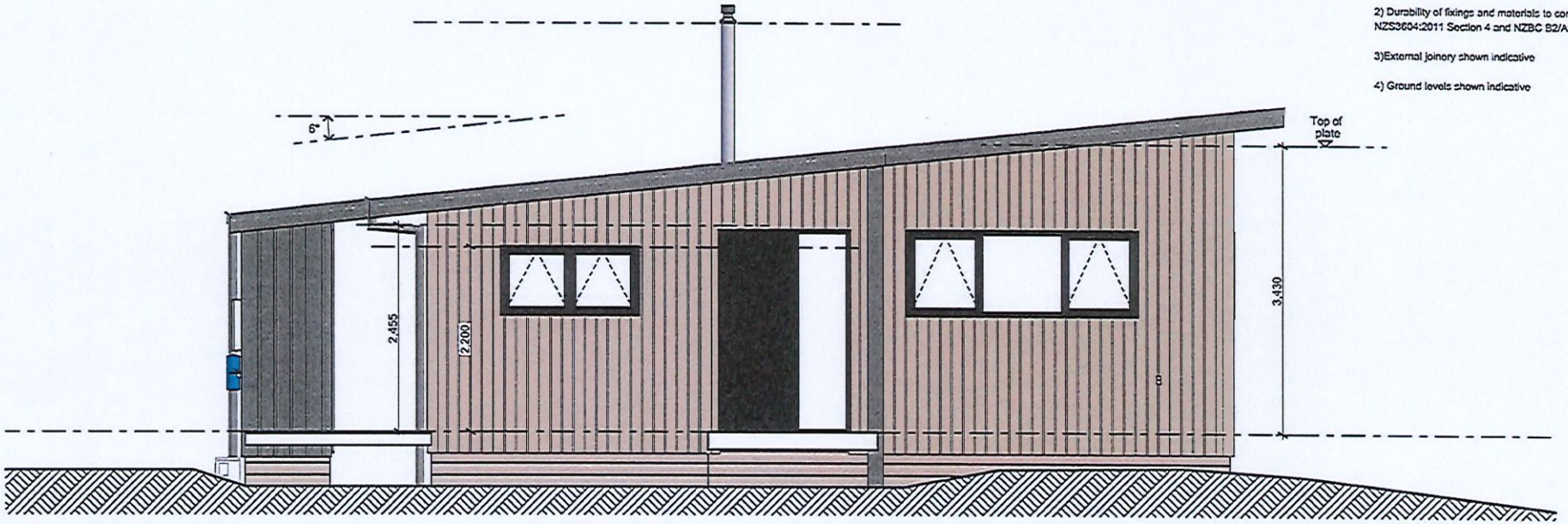
4) Ground levels shown indicative



1 West Elevation 1:50

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PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A06 ELEVATIONS - SHEET 3

Date: Thursday, 25 July 2024 SCALE: 1:50

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2) Durability of fixings and materials to comply with NZS3604:2011 Section 4 and NZBC B2/AS1

3)External joinery shown indicative

4) Ground levels shown indicative

GENERAL NOTES:
PLANNING ZONE: RURAL PRODUCTION
WIND ZONE: HIGH
EXPOSURE ZONE: Zone C
SOIL CLASS: M

1 East Elevation 1:50

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LICENSED BUILDING PRACTITIONER BUILDING CONFIDENCE

A D | N Z
ARCHITECTURAL DESIGNERS NZ

PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A07 ELEVATIONS - SHEET 4

Date: Thursday, 25 July 2024 SCALE: 1:50

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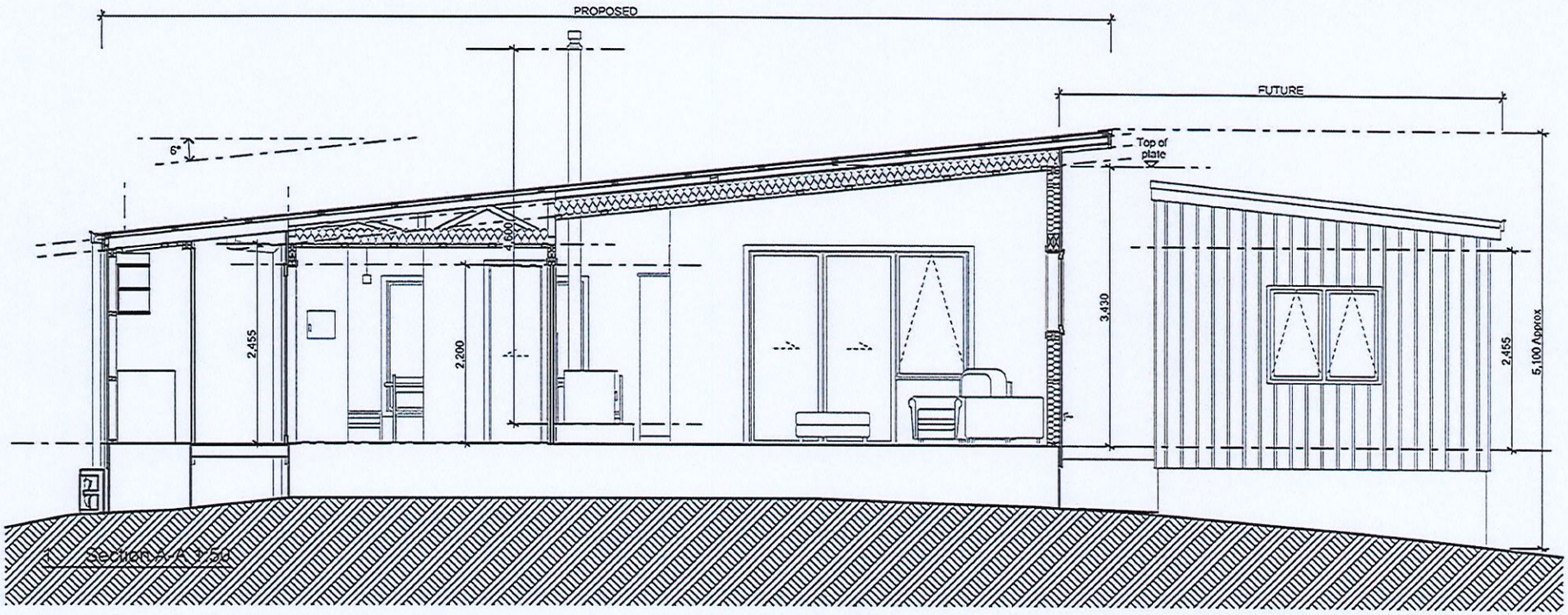

Section A-A 1:50

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PROPOSED AMENITY BUILDING WITH FUTURE SLEEPING PODS at 146B OTIRIA ROAD, MOREWA, LOT 2 DP 596306 and LOT 5 DP 25821 for N and E LIRONI-IRVINE

Sheet: A08 SECTION A-A

Date: Thursday, 25 July 2024 SCALE: 1:50

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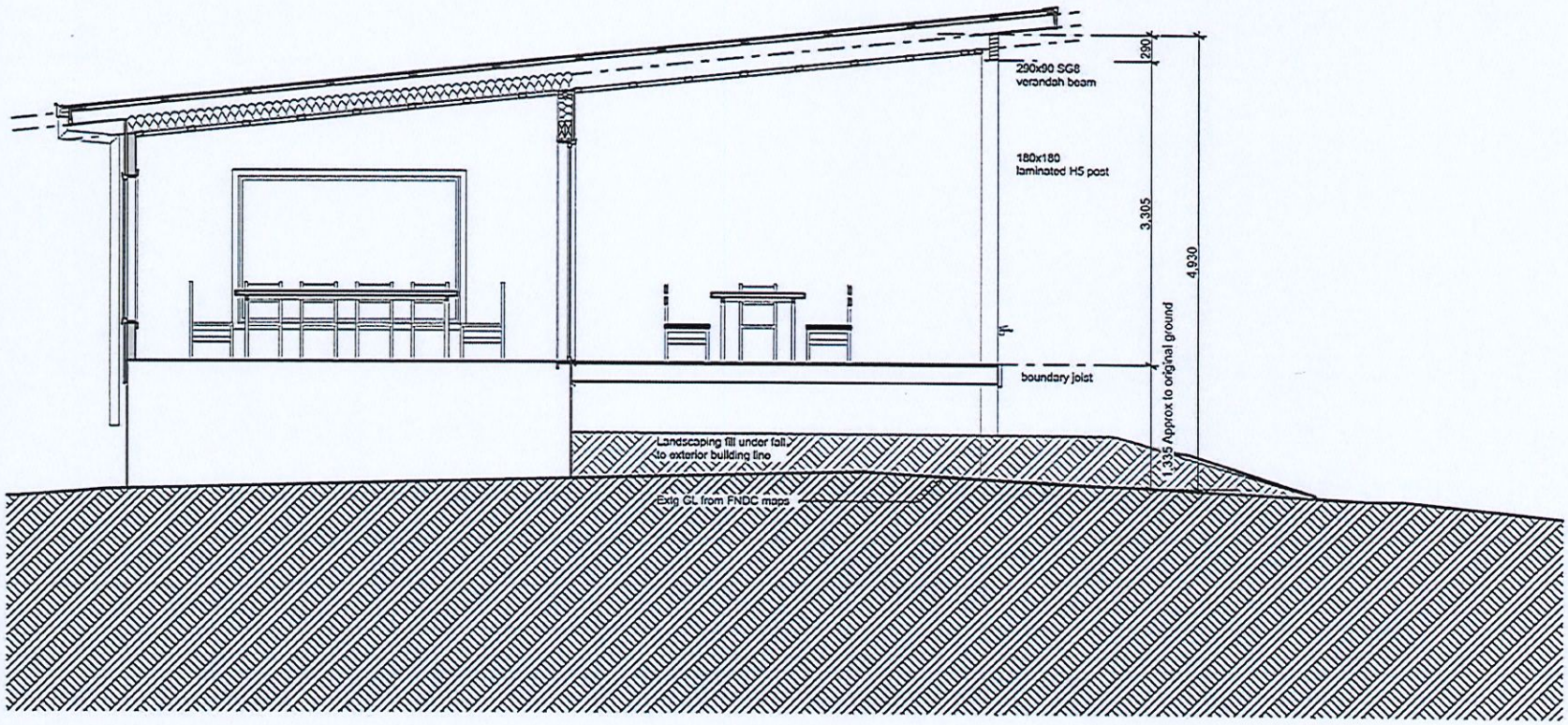

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Sheet: A08a SECTION C-C

Date: Thursday, 25 July 2024 SCALE: 1:50

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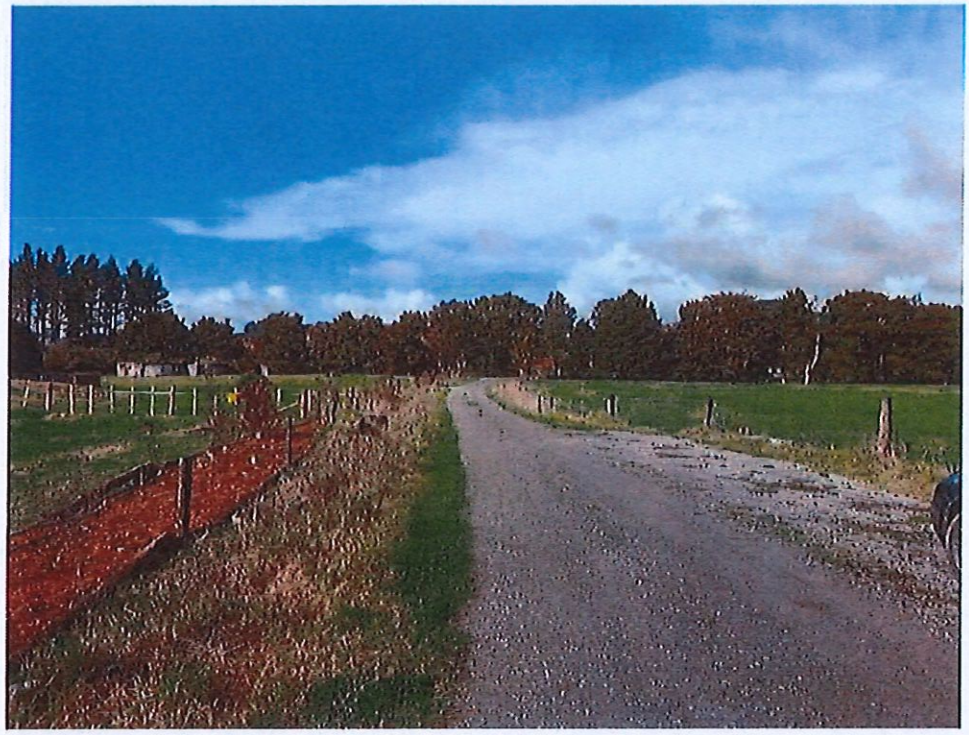


ROW access from property entrance looking back to Otiria Road

First (and metalled) portion of internal driveway – car parked on the ROW shown in first photo

Alignment of internal driveway continuing from metal surface shown in previous photo

Alignment of internal driveway leading to the house site – shown with arrow

Reverse view looking back to ROW from house site

Boundary fence with covenanted bush beyond. House site is around corner out of picture at extreme left of photo – see following photos.

Staked out building footprint. Fence at right of picture is boundary

Staked out house site on grassed area – boundary fence at left of picture

Stake at right of picture depicts building footprint. Fence is boundary fence. Totara at left of fence within covenant area on adjacent site.

Google Maps 146 ~~149~~ Otiria Rd

Image capture: May 2023 © 2024 Google

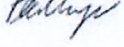
Appendix 5

On site Effluent Disposal Report

WILTON JOUBERT
Consulting Engineers
Wilton Joubert Limited
09 527 0196
PO BOX 11-381
Ellerslie
Auckland 1524

SITE	146B Otiria Road, Moerewa
LEGAL DESCRIPTION	Lot 2 DP 596306 & Lot 5 DP 25821
PROJECT	Proposed Residential Dwelling
CLIENT	Nick & Bes Lironi-Irvine
REFERENCE NO.	134924
DOCUMENT	On-site Effluent Disposal Report
STATUS/REVISION No.	A
DATE OF ISSUE	8 July 2024

Report Prepared For	Email
Nick & Bes Lironi-Irvine	nick@lironi-irvine.nz

Authored by	**S. Page** *Part Dip. (Civil)*	Senior Engineering Technician	shaun@wjl.co.nz	
Approved by	**B. Steenkamp** *(CPEng, BEng Civil, CMEngNZ, BSc (Geology))*	Senior Civil Engineer	BenS@wjl.co.nz	

1. EXECUTIVE SUMMARY

The following table is intended to be a concise summary which must be read in conjunction with the relevant report sections as referenced herein.

Legal Description:	Lot 2 DP 596306 & Lot 5 DP 25821
Site Area:	2.558ha
Development Proposals Supplied:	Concept architectural drawings, prepared by Lindholm Design Ltd (dated 11 June 2024) At this stage, the client has requested we undertake a design that is able to suitably service a 3-bedroom residential dwelling
Associated Documents:	WJL Site Suitability Report (ref: 117996) WJL Geotechnical Review Memorandum (ref: 134798)
Overall Site Gradient within Disposal Area:	Near level
Geology Encountered:	Kerikeri Volcanic Group
Site Soil Category (AS/NZS 1547:2012):	Category 5
Daily Application Rate:	3mm/day
Number of Bedrooms:	3
Max Dwelling Occupancy:	5
Water Source:	Rainwater Collection Tanks (180l/pp/pd)
Daily Wastewater Production:	900L/day
Disposal Area:	300m^2
Reserve Area:	90m^2 (30%)
Application Method:	Surface Laid / Sub-surface: Pressure Compensating Drip Irrigation Lines
Effluent Treatment Level:	Secondary Aerated Package Treatment Plant (<BOD5 20 mg/L, TSS 30 mg/L)
Further Review of Development Proposals Required:	Not anticipated.

2. INTRODUCTION

2.1 SCOPE OF WORK

Wilton Joubert Ltd (WJL) was engaged by **Nick & Bes Lironi-Irvine** to undertake an effluent disposal assessment at the above site, where we understand, it is proposed to construct a new residential dwelling.

2.2 SUPPLIED INFORMATION

At the time of report writing, we have been supplied the following documents:

- Site Suitability Report, dated 13 July 2022 (ref: 117996), prepared by WJL,
- Concept architectural drawings, titled; '*Proposed Dwelling – Option Roof at 146B Otiria Road, Morewa, Lot 2 DP 596306 and Lot 5 DP 25821 for N and E Lironi-Irvine*', dated 11 June 2024, prepared by Lindholm Design Ltd, and
- Geotechnical Review Memorandum, dated 27 June 2024 (ref: 134798), prepared by WJL.

Any revision of drawings and/or development proposals with implications on the wastewater design should be referred back to WJL for review.

3. SITE DESCRIPTION

The property is legally described as Lot 2 DP 596306 and Lot 5 DP 25821 and is located off the northern side of Otiria Road. The site is accessed via a bridge crossing and shared right-of-way (ROW) approximately 90m north of Otiria Road.

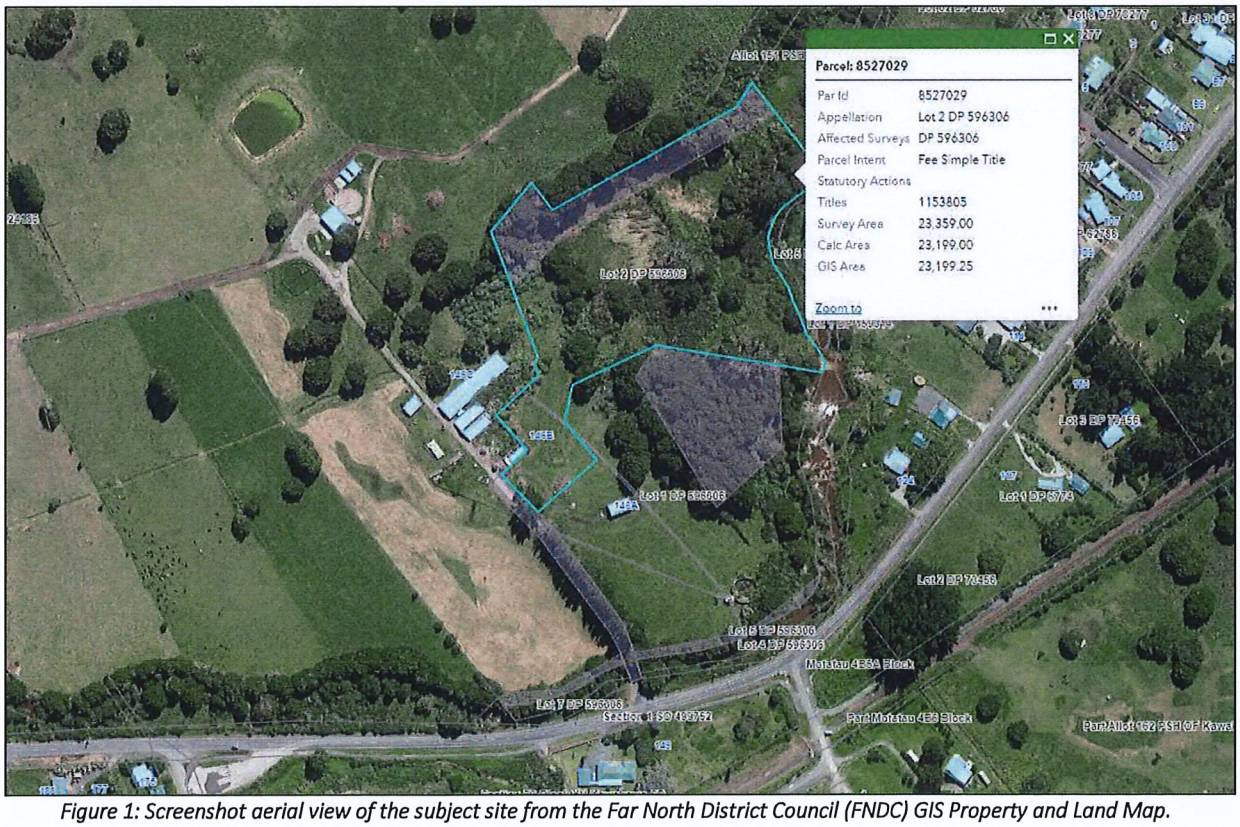


Figure 1: Screenshot aerial view of the subject site from the Far North District Council (FNDC) GIS Property and Land Map. Subject site (Lot 2 DP 596306 portion only) is outlined in cyan.

The 2.558ha property is currently vacant and covered in grass and bush. The ground surface across the western portion of the site, where the proposed development is to be constructed, is gently sloping.

The Far North District Council's (FNDC) GIS Water Services Map indicates that the property is not serviced by public stormwater, wastewater or potable water reticulation.

4. DEVELOPMENT PROPOSALS

At this stage, the client has requested we undertake a design that is able to suitably service a 3-bedroom residential dwelling.

The principal objectives of our investigation were to investigate the soil profile, variability, relative density, and strength of soils together with any observed groundwater levels, other water sources and potential short-circuiting pathways within the proposed effluent disposal area.

5. MAPPED GEOLOGY & SOIL ASSESSMENT

Local geology across the property and wider surrounding area is noted on the GNS Science New Zealand Geology Web Map, Scale 1:250,000, as **Kerikeri Volcanic Group Pleistocene Basalt of Kaikohe – Bay of Islands Volcanic Field**, described as; "*Basalt lava and volcanic plugs*", ref; 'GNS Science Website'.

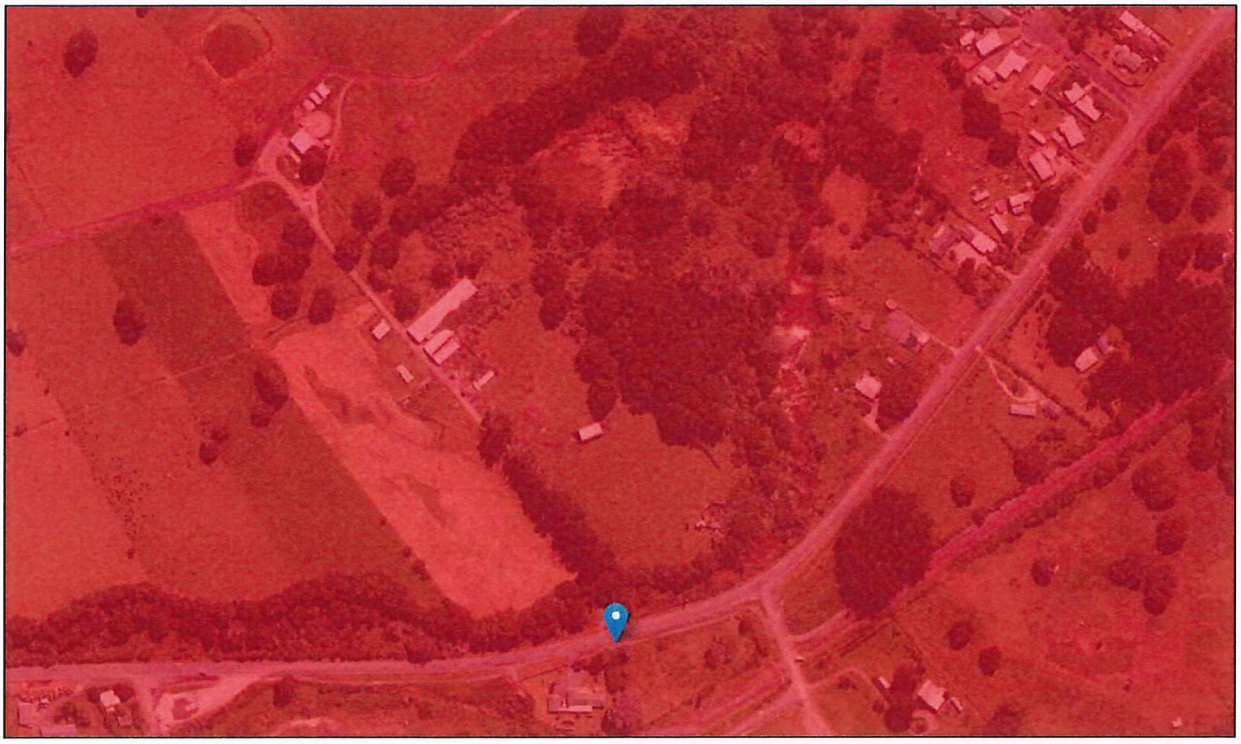


Figure 2: Screenshot aerial view from New Zealand Geology Web Map Hosted by GNS Science.

In addition to the above, our previous Site Suitability Report (ref. 117996), was completed for the subject site and included exploratory hand auger borehole (HA) testing

In general terms, the subsoils encountered in proximity to the proposed wastewater disposal field location consisted predominantly of SILT and Gravelly SILT, with approximately 100mm of TOPSOIL overlying. HA's were terminated at depths of approximately 0.40m to 0.50m below present ground level (bpgl) due to the presence of harder basalt deposits. Refer to the appended 'HA Logs'.

Given the above information, the site's soils have been classified as **Category 5** in accordance with AS/NZS 1547:2012. Based on our investigation, and provided that all report recommendations are followed, WJL considers that there should be no wastewater disposal stability problems associated with the site.

Figure 3: Typical HA soil arisings (HA01).

6. ASSESSMENT CRITERIA

Table 1: Compliance with Section C.6.1.3 of the PRPN

C.6.1.3 Other on-site treated domestic wastewater discharge– permitted activity			
The discharge of domestic type wastewater into or onto land from an on-site system and the associated discharge of odour into air from the on-site system are permitted activities, provided:			
#	Rule	✓/x	Explanation
1	The on-site system is designed and constructed in accordance with the Australian/New Zealand Standard. On-site Domestic Wastewater Management (AS/NZS 1547:2012), and	✓	Design has been carried out in accordance with AS/NZS 1547:2012 and cross referenced to TP58.
2	The volume of wastewater discharged does not exceed two cubic metres per day, and	✓	Total proposed discharge = 900L
3	The discharge is not via a spray irrigation system or deep soakage system, and	✓	Pressure compensated drip irrigation lines proposed
4	The slope of the disposal area is not greater than 25 degrees, and	✓	Disposal area slope near level
5	The wastewater has received secondary or tertiary treatment and is discharged via a trench or bed in soil categories 3 to 5 that is designed in accordance with Appendix L of Australian/New Zealand Standard. On-site Domestic Wastewater Management (AS/NZS 1547:2012); or is via an irrigation line system that is:	✓	Secondary Treatment and Pressure compensated drip irrigation lines proposed
	a) dose loaded, and	✓	Dose loading proposed
	b) covered by a minimum of 50 millimetres of topsoil, mulch, or bark, and	✓	Drip lines to be surface laid on top of a 300mm high raised topsoil bed.
6	For the discharge of wastewater onto the surface of slopes greater than 10 degrees:	n.a	n.a - Disposal area slope near level

	a) the wastewater, excluding greywater, has received at least secondary treatment, and	n.a	"
	b) the irrigation lines are firmly attached to the disposal area, and	n.a	"
	c) where there is an up-slope catchment that generates stormwater runoff, a diversion system is installed and maintained to divert surface water runoff from the up-slope catchment away from the disposal area, and	n.a	"
	d) a minimum 10 metre buffer area down-slope of the lowest irrigation line is included as part of the disposal area, and	n.a	"
	e) the disposal area is located within existing established vegetation that has at least 80 percent canopy cover, or	n.a	"
	f) the irrigation lines are covered by a minimum of 100 millimetres of topsoil, mulch, or bark, and	n.a	"
7	the disposal area and reserve disposal area are situated outside the relevant exclusion areas and setbacks in Table 9: Exclusion areas and setback distances for on-site domestic wastewater systems, and	✓	From on-site investigation the Field positions complies with Table 9 of the PRPN.
8	for septic tank treatment systems, a filter that retains solids greater than 3.5 millimetres in size is fitted on the outlet, and	n.a	
9	the following reserve disposal areas are available at all times:		
	a) 100 percent of the existing effluent disposal area where the wastewater has received primary treatment or is only comprised of greywater, or	n.a	
	b) 30 percent of the existing effluent disposal area where the wastewater has received secondary treatment or tertiary treatment, and	✓	30% reserve area provided
10	the on-site system is maintained so that it operates effectively at all times and maintenance is undertaken in accordance with the manufacturer's specifications, and	✓	Maintenance as outlined within section 12 of this report
11	the discharge does not contaminate any groundwater water supply or surface water, and	✓	Groundwater was not encountered. Appropriate offsets, and conservative loading rates applied to avoid adverse effects on water sources.
12	there is no surface runoff or ponding of wastewater, and	✓	Appropriate application rates applied for subsoil permeation capabilities/site conditions
13	there is no offensive or objectionable odour beyond the property boundary.	✓	WJL anticipated compliance as long as all recommendations within this report are adhered to

7. REQUIRED SETBACK DISTANCES

As per Point 7 above, the disposal and reserve areas must be situated outside the relevant exclusion areas and setbacks described within Table 9 of the PRPN: Exclusion areas and setback distances for on-site domestic wastewater systems:

Table 2: "Table 9" of the PRPN (Proposed Regional Plan for Northland).

Feature	Primary treated domestic wastewater	Secondary treated domestic wastewater	Greywater
Exclusion areas			
Floodplain	5% AEP	5% AEP	5% AEP
Horizontal setback distances			
Identified stormwater flow paths (downslope of disposal area)	5 meters	5 meters	5 meters
River, lake, stream, pond, dam or wetland	20 meters	15 meters	15 meters
Coastal marine area	20 meters	15 meters	15 meters
Existing water supply bore	20 meters	20 meters	20 meters
Property boundary	1.5 meters	1.5 meters	1.5 meters
Vertical setback distances			
Winter groundwater table	1.2 meters	0.6 meters	0.6 meters

In compliance with above:

- There are no mapped flood zones across the disposal area,
- The site is not in proximity to a coastal marine area,
- Groundwater was not encountered in the excavated boreholes conducted by WJL, which were terminated at a maximum depth of 0.5m bpgl due to the presence of harder basalt deposits. Appropriate offsets, and conservative loading rates applied to avoid adverse effects on water sources, and
- Ground water bore sources were not identified within the property or anticipated to exist within proximity to the property's boundaries given a review of NRC bore location maps.

The disposal and reserve fields are proposed to be situated east of the proposed building platform with appropriate offsets to the property's boundary (>1.5m) and the proposed dwelling (>3.0m).

8. DISHARGE DETAILS

Water supply for the proposed dwelling will be sourced from on-site domestic tank supply. A per capita flow allowance of 180 litres/person/day was used in the calculations as outlined in Table 3 below.

Table 3: Design flows for proposed dwelling

Development	3 bedrooms
Combined Occupancy Allowance	5-person peak occupancy
Water Reduction	*no*
Daily Flow Allowances	180L / person / day
Design Flow Rate	900L / day
Water Meter	None required.
Other Notes	No garbage grinder

Note: The client has requested we undertake a design that is able to suitably service a 3-bedroom residential dwelling.

Therefore, for the purpose of this application and design report, the total peak design occupancy is calculated as 5 persons.

9. WASTEWATER TREATMENT

WJL recommends the installation of an approved Secondary Level Treatment Plant to service the proposed dwelling. The client has advised that they intend to install a Natural Flow Series NF11000 treatment system (brochure appended). Discharge from this system is required to be directed to a new disposal field consisting of pressure compensated drip irrigation lines. The basic system requirements are summarised in Table 4 below.

Table 4: Secondary Treatment Requirements

Emergency Storage Capacity	Minimum 1000L (24 hours)
Telemetry Alarm System	Visual and Audible alarm located at plant.
Location	Please refer to Site Plan. More than 3.0m clear of habitable buildings; 1.5m clear of boundaries
Discharge Quality	Secondary Level BOD^5 <= $20g/m^3$, TSS <= $30g/m^3$

10. DESIGN VOLUMES

Maximum Daily Wastewater Discharge = Maximum Occupancy x Flow Allowance (litres/ person/ day). This calculation results in a total wastewater flow rate of 900 litres per day. Since the daily flow does not exceed 2,000 litres, the output complies with the PRPN as a Permitted Activity and a Resource Consent is not required.

The ratio of lot area to design flow = Gross Lot Area (2.558ha) / 900 Max Daily Flow (litres/day). This calculation provides an A:V Ratio of approximately 28.4 m^2/litre/day.

11. LAND DISPOSAL METHOD

Surface Laid Lines

The drip lines are recommended to be surface laid on top of a 300mm high topsoil bed with a daily application rate of 3mm/day. A required disposal field area of 300m^2 amounts.

The drip lines must be securely pinned to the ground's surface and installed in a regular 'grid' pattern as far as practicable, with row spacings of no more than 1.0m. The grid should consist of a minimum of 300 linear metres of drip line split into individual rows not exceeding 65m, with a manual flushing valve at the end of each row. The manual flushing valves must be located within flush boxes for inspection and maintenance purposes. End-feeding the drip lines will lower the cost of installation, with each drip line only requiring one manual flushing valve. 65m long drip lines should be easily flushed by the pump supplied with the system.

The disposal field area must be planted out at a density of at least 1 plant per m^2, to assist in evapotranspiration and nutrient removal. See a summary of the system below. Stripped topsoil from the building platform can be spread out over the recommended field location; however, compaction should be limited.

Table 5: Land Disposal System

LAND DISPOSAL SYSTEM	PCDI drip irrigation (Ref: Soil Assessment)
Type	Surface laid, pressure compensating dripper irrigation lines on top of 300mm raised topsoil bed.
Soil Category	Category 5
Buffer Zone	Not required
Cut-off Drain	Not required
Loading Rate	3mm/day
Loading Method	Pump
Pump	High water level alarm is installed in pump chamber – audible/visual alarm Design head is subject to supplier specs. Pump Chamber Volume is integral to the treatment system Required Emergency Storage volume - >1000L
Primary Disposal Area	300m^2 at 1.0m centres - surface laid
Reserve Disposal Area	90m^2 (30% reserve area)

12. ASSESSMENT OF ENVIRONMENTAL EFFECTS

This report serves as a full AEE. Each section displays compliance with the relevant council standards while providing explanations on how the proposed design of on-site effluent treatment system will prevent adverse effects on the surrounding environment.

In conclusion:

The system has been designed in accordance with AS/NZS 1547:2012. It further complies with the setbacks stipulated in the *P*RPN.

It is anticipated that the proposed secondary treatment system and PCDI disposal system for the site will have a less than minor effect on the environment. The irrigation field area will be surface laid on top of a 300mm raised topsoil bed, with introduced plantings facilitating evapotranspiration and nutrient removal.

Separation distances shall be maintained from the property's boundary and existing vegetation will assist with the retention, breakdown and uptake of effluent at the site and prevent effluent from being washed off-site. Given the appropriate separation distances to water sources, a reserve area of 30% and the discharge of secondary level of effluent treatment, the proposed wastewater disposal is considered to be suitable to protect the environment and the effects are deemed less than minor.

Additionally:

- To protect against any possible failure of the disposal area, the reserve area should remain undeveloped and should be maintained with a grassed/vegetated surface ready for the possible installation of additional drip lines into it.

- To protect the integrity of the disposal area from unwanted damage from persons or animals we recommend that adequate protection measures be put in place.

- To protect the physical treatment plant from misuse or neglect the manufacturer of the plant will supply a detailed maintenance schedule that must be adhered to. It is imperative that the operator of the system both schedule and undertake regular maintenance of the system to ensure its effectiveness.

Based on our site assessment and calculations, we consider that the site is able to provide for the sustainable treatment and land application of domestic effluent generated from the proposed residential dwelling.

Since the discharge volume does not exceed: three cubic metres per day, averaged over the month of greatest discharge, and six cubic metres per day over any 24-hour period, the application falls under a Permitted Activity and Northland Regional Council Resource Consent is not required.

13. LIMITATIONS

The recommendations and opinions contained in this report are based on our visual reconnaissance of the site, information from geological maps and upon data from the field investigation as well as the results of in-situ testing of soil carried out by WJL. Inferences are made about the nature and continuity of sub soils away from and beyond the exploratory holes but cannot be guaranteed. The descriptions detailed on the exploratory borehole logs are based on the field descriptions of the soils encountered.

This assignment only considers the design of a **secondary on-site effluent treatment system** and all drainage designs are up to the connection point for each building face of any new structures/slabs; no internal building plumbing or layouts have been done.

During construction, a person competent to judge whether the conditions are compatible with the assumption made in this report should examine the site. In all circumstances, should variations in the subsoil occur which differ from that described or assumed to exist, the matter should be referred back to WJL.

The performance behaviour outlined by this report is dependent on the construction activity and actions of the builder/contractor. Inappropriate actions during the construction phase may cause behaviour outside the limits given in this report.

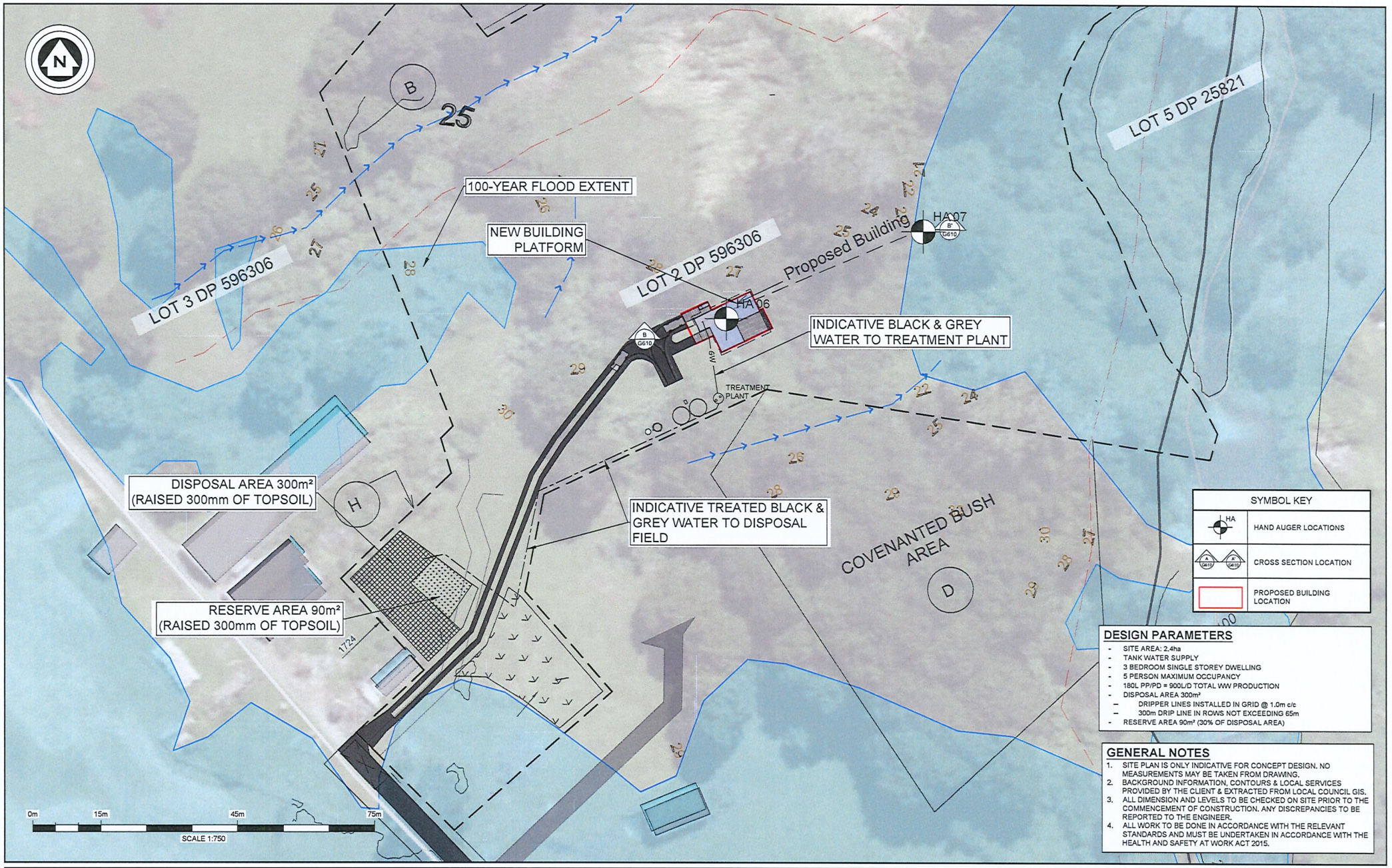
This report has been prepared for the particular project described to us and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Yours faithfully,

Wilton Joubert Ltd.

REPORT ATTACHMENTS

- Site Plan (1 sheet)
- Borelogs (3 sheets)
- Natural Flow Series NF11000 Treatment System Brochure (12 sheets)
- Producer Statement



DESIGN PARAMETERS

- SITE AREA: 2.4ha
- TANK WATER SUPPLY
- 3 BEDROOM SINGLE STOREY DWELLING
- 5 PERSON MAXIMUM OCCUPANCY
- 180L PP/PD = 900L/D TOTAL WW PRODUCTION
- DISPOSAL AREA 300m²
  - DRIPPER LINES INSTALLED IN GRID @ 1.0m c/c
  - 300m DRIP LINE IN ROWS NOT EXCEEDING 65m
- RESERVE AREA 90m² (30% OF DISPOSAL AREA)

GENERAL NOTES

1. SITE PLAN IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. BACKGROUND INFORMATION, CONTOURS & LOCAL SERVICES PROVIDED BY THE CLIENT & EXTRACTED FROM LOCAL COUNCIL GIS.
3. ALL DIMENSION AND LEVELS TO BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN IN ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.

WILTON JOUBERT
Consulting Engineers
Northland: 09 945 4188 Auckland: 09 527 0196
Christchurch: 021 824 063 Wanaka: 03 443 6209
www.wiltonjoubert.co.nz

ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
A	JULY 2024	NPN	ISSUED WITH WASTEWATER REPORT

DESIGNED BY:
DRAWN BY: NPN
CHECKED BY:
SURVEYED BY:

SERVICES NOTE
WHERE EXISTING SERVICES ARE SHOWN, THEY ARE INDICATIVE ONLY AND MAY NOT INCLUDE ALL SITE SERVICES. WILTON JOUBERT LTD DOES NOT WARRANT THAT ALL, OR INDEED ANY SERVICES ARE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING SERVICES PRIOR TO AND FOR THE DURATION OF THE CONTRACT WORKS.

BUILDING CONSENT
DESIGN / DRAWING SUBJECT TO ENGINEERS APPROVAL

DRAWING TITLE: WASTEWATER SITE PLAN

PROJECT DESCRIPTION: PROPOSED DWELLING

PROJECT TITLE:
MOTATAU NO 4A BLK
LOT 2/5 DP 25821 & SEC 14
BLK XV KAWAKAWA SD
146B OTIRIA ROAD
FAR NORTH

ORIGINAL DRAWING SIZE:	OFFICE:
A3	KERIKERI
DRAWING SCALE: 1:750	CO-ORDINATE SYSTEM: NOT COORDINATED

DRAWING NUMBER: 134924-G600 ISSUE: A

HAND AUGER : LOT 2 - HA01

JOB NO.:	117996	SHEET:	1 OF 5
START DATE:	07/06/2022	NORTHING:	GRID:
DIAMETER:	50mm	EASTING:	
SV DIAL:	DR4802	ELEVATION:	Ground
FACTOR:	1.464	DATUM:	

CLIENT: Kelly Morrison
PROJECT: Proposed Subdivision
SITE LOCATION: 146 Otiria Road, Moerewa

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL - dark brown, moist, non plastic	TS							
Kerikeri Volcanic Group	SILT, trace rootlets, brown, dark orange, very stiff, moist, non plastic		0.2	Groundwater Not Encountered					
	0.4m: some fine to coarse angular gravel of volcanic origin		0.4		UTP	-	-	8	
	EOH: 0.50m - (Too Dense To Auger)		0.6					21	
								24	
			0.8						
			1.0						
			1.2						
			1.4						
			1.6						
			1.8						

STRATIGRAPHY: TOPSOIL, FILL, CLAY, SILT, SAND, GRAVEL, PEAT, ROCK

REMARKS
End of borehole @ 0.50m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: NN
CHECKED BY: JM

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : LOT 2 - HA02

JOB NO.: 117996 SHEET: 2 OF 5

START DATE: 07/06/2022 NORTHING: GRID:

DIAMETER: 50mm EASTING:

SV DIAL: ELEVATION: Ground

FACTOR: DATUM:

CLIENT: Kelly Morrison

PROJECT: Proposed Subdivision

SITE LOCATION: 146 Otiria Road, Moerewa

SOIL DESCRIPTION: TOPSOIL, CLAY, SAND, PEAT, FILL, SILT, GRAVEL, ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist, non plastic	TS							
Kerikeri Volcanic Group	SILT, trace rootlets, brown, dark orange streaks, very stiff, moist, non plastic		0.2	Groundwater Not Encountered				12	
	0.3m: angular gravel clasts <40mmØ		0.4					8	
	EOH: 0.40m - (Too Dense To Auger)		0.6					6	
			0.8					15	
			1.0					25	
			1.2						
			1.4						
			1.6						
			1.8						

REMARKS

End of borehole @ 0.40m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: NN

CHECKED BY: JM

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : LOT 2 - HA03

JOB NO.:	117996	SHEET:	3 OF 5
START DATE:	07/06/2022	NORTHING:	GRID:
DIAMETER:	50mm	EASTING:	
SV DIAL:	DR4802	ELEVATION:	Ground
FACTOR:	1.464	DATUM:	

CLIENT: Kelly Morrison
PROJECT: Proposed Subdivision
SITE LOCATION: 146 Otiria Road, Moerewa

SOIL DESCRIPTION: TOPSOIL, CLAY, SAND, PEAT, FILL, SILT, GRAVEL, ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL - some rootlets, dark brown, moist, non plastic	TS TS TS							
Kerikeri Volcanic Group	fine to coarse gravelly SILT, brown, dark grey specks, hard, moist, non plastic		0.2	Groundwater Not Encountered					
	0.4m: strongly cemented clasts <40mmØ		0.4		UTP	-	-		
	EOH: 0.50m - (Too Dense To Auger)		0.6						
			0.8						
			1.0						
			1.2						
			1.4						
			1.6						
			1.8						

REMARKS
End of borehole @ 0.50m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: NN
CHECKED BY: JM

▼ Standing groundwater level
▽ GW while drilling

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WaterFlow
Bringing Clarity to Wastewater

NATURALFLOW™

Series NF11000 Treatment System

System Specifications & Installation Instructions

NaturalFlow Series NF11000

System Specifications & Installation Instructions

Compliance Requirements

All NaturalFlow Treatment Systems meet the requirements of the NZ Building Code G13-VM4.

Section 9 of AS/NZS 1546.1:2008 state that tanks constructed to these Standards will meet the requirements of the Code for Clauses B1 and B2, structure and durability.

Compliance with Section 9 of AS/NZS 1546.1:2008 and also Clauses G13.3.4 relating to on-site treatment and disposal systems and G14.3.1 and 14.3.2 relating to the control of foul water as an industrial waste are covered in the 'NaturalFlow Compliance Requirements' document.

Please feel free to ask for a copy of this complete document, if required.

NaturalFlow Series NF11000

System Specifications & Installation Instructions

The Treatment Process

The NaturalFlow Series NF11000 System comprises of a 1.8m diameter x 1.7m high WORMORATOR® module where the black water (B/W), (which in the NaturalFlow System includes the kitchen sink waste) in order to remove the solids, is directed onto a bed of natural medium lined with a textile cloth which is designed to retain maximum solids.

These residual solids are seeded with tiger worms which proceed, as results of long term testing have shown, to digest them reducing the volume by approximately 95%, leaving only residual vermicasts which are virtually free of harmful bacteria and other pollutants. The B/W then flows through a secondary filter tray which further treats the water reducing the TSS & BOD and also reducing the particle size, in the TSS, to less than 1mm. This secondary treatment tray acts as an in-built outlet filter AS/NZS 1546 1:2008 Clause D3.3. and has a minimum life expectancy of 15 years. It then flows into the Dose Treatment Chamber where it is combined with the grey water (G/W) and settlement and filtration takes place. Its final treatment, through an aerating matrix filter, brings its treatment level up to meet the 20/30 BOD/TSS, Secondary Treatment criteria and it is then reintroduced into the environment in accordance with AS/NZS 1547:2012 and the relevant local authorities' requirements.

The G/W, which is separated at its source from the B/W, flows first into the Grey Water Treatment Tank that retains the bulk of the scum and solids and then trickle filters through an aerating matrix filter and layers of natural media. It is then combined with the B/W in the Wormorator® Chamber for disposal in accordance with AS/NZS 1547:2012 This filter chamber has a buffering capacity of 1000ltrs to contain any surge flows.

The size and extent of the disposal system is determined by the receiving environment and the expected flow volumes. Factors such as soil types, slope and the proximity of potentially sensitive environments such as creeks, wells, bores and other water ways determine the extent, location and type of disposal system chosen.

The Wormorator® and associated dose tank has a 2000ltr reserve capacity where pump loading is necessary to allow for 24hrs emergency storage should a pump fail. The operating capacity of the NaturalFlow Series NF11000 Treatment System is 1600ltrs per day of combined Black and Grey water.

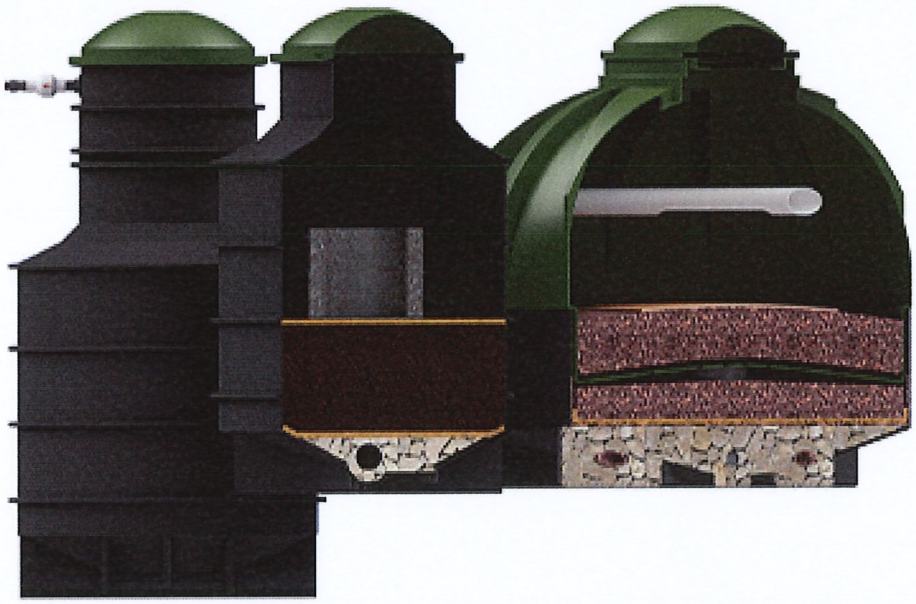
Because the Wormorator® is a dry vault system there is negligible sludge build up so it does not require any regular de-sludging. This specifically meets clause AS/NZS 1547:2012 4.2.2.1 as to de-sludging requirements.

NaturalFlow Series NF11000

System Specifications & Installation Instructions

Wormorator® & Dose Chamber Specifications

Tanks are made of Cotene 9050 which is a linear medium density polyethylene, designed specifically for rotational molding of large tanks and products that require a high level of rigidity. It contains a fully formulated long term UV stabilization package (with a minimum UV8 rating) and is suitable material for wastewater treatment containment meeting all the requirements of Section 4.3.3 of AS/NZS 1547:2012 which cross references the structural performance requirements of its section 2.4.2.3 back to the relevant provisions of AS/NZS 1546.1, which for plastic septic tanks constructed via by rotational molding using thermoplastics (polyethylene) are set out in Section 9 of that Standard. These tanks have an expected lifespan of 50 years.



Dose Chamber

1600ltrs Nominal capacity
1200mm Diameter over main body
732mm Riser Diameter
2125mm O/A height

Grey Water Treatment Tank

1500ltrs Nominal capacity
1200mm Diameter over main body
732mm Riser Diameter
2125mm O/A height

SXL5000 Wormorator® Module

4000ltrs Nominal capacity
1800mm Diameter over main body
2200mm over feet
1700 mm O/A height

NaturalFlow Series NF11000

System Specifications & Installation Instructions

Installation Location and Certification

These tanks are not designed for vehicle loads and shall be located no closer than 1.50m to a driveway, road frontage or a building. If for any reason the tank is located where vehicle traffic may drive over the tank or approach closer than 1.50m, or where it may be trampled on by farm stock then the tank should be protected by a concrete slab designed to support these loads. Surface water must also be diverted from flowing into the installation.

Installation must be certified to AS/NZS 1547:2012, the certificate to be issued and held by the regulatory authority.

High Water Table Installations

All tanks have been engineered and designed with support ribbing for maximum strength, in accordance with the NZC 3604. Clauses B1 and B2 for structure and durability, to withstand any hydraulic pressures, both lateral and uplift, created by high water table conditions, even when the tanks are completely empty at install stage.

As per the NaturalFlow Systems installation instructions, in these conditions, tanks must be anchored in with concrete around base, as per the installation instructions, to height as specified.

Plumbing Pipes and Fittings

All internal plumbing is done with PVC pipes with appropriate connections according to AS/NZS 1260 and AS/NZS 4130.

NaturalFlow Series NF11000

System Specifications & Installation Instructions

Backfill and Bedding

Place and bed to NZBC G13/AS2, using compacted granular metal, in layers not exceeding 100mm.

Electrical

Where a pump is required on a flat site electrical connection must be installed according to AS/NZS 3000 and the control and alarm system must be in a weatherproof housing located in a readily visible position.

NaturalFlow Series NF11000

System Specifications & Installation Instructions

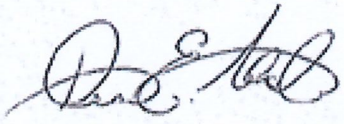
Warranty

WATERFLOW NZ LTD warrants that the NaturalFlow System will be free from defects in material and workmanship for the following periods of time from the date of installation as set out in the following conditions:

1. Roto-Molded tanks 15yrs
2. Filter media 15yrs
3. Dosing float/and or pumps 2yrs
4. WATERFLOW NZ LTD will at its discretion replace or repair such components that prove to be faulty with the same or equivalent part at no charge.
5. Warranty of operation covers the performance of the NaturalFlow systems as connected to the effluent inflow for which they are designed, and also installed to the criteria as set out in the relative installation instructions and procedures.

Warranty excludes defects due to:

A) Failure to use the system in accordance with owner's manual.
B) A force majeure event outside the reasonable control of WATERFLOW NZ LTD such as (but not limited to) earthquake, fire, flood soil subsidence ground water table variations or plumbing fault.
C) Modifications to surrounding landscape contours after installation
D) The actions of a third party
E) The system required to bear loads (either hydraulic or biological) greater than that for which it was designed
F) Any modifications or repairs undertaken without the consent of WATERFLOW NZ LTD
G) Failure, where applicable, to fence and plant land application system (disposal field)



1st June 2014
Dean Hoyle
Managing Director

NaturalFlow Series NF11000

NF11000 Dose | Instructions for Installation

The NaturalFlow system is to be installed or signed off by a registered Drain layer to the design specified by Waterflow NZ Ltd. The following installation instructions and procedures followed correctly will ensure System performance is not compromised in any way.

1. Excavate a 2.5m diameter level platform for the Wormorator® at the appropriate depth to ensure adequate fall for inlet pipe from the source. This has to be installed on virgin ground.

2. Lay 100mm of bedding metal on platform and place Wormorator®. Do this before excavating for dose chamber as this helps keep the excavations to a minimum.

3. Analyze where the dose chamber needs to be placed (this needs to line up with one of the feet at the base of the WORMORATOR®) and excavate a 1.3m diameter level platform 550mm below the Wormorator platform (this allows for 100mm of bedding material).

4. Very carefully drill a 127mm hole with a hole saw at the lowest point of the foot on Wormorator and fit Uniseal (see Uniseal instruction details appendix B below).

5. Lay 100mm of bedding metal on dose chamber platform and place tank.

6. Measure the distance between the Wormorator outlet and dose chamber inlet allowing 50mm both ends to insert into tanks. Mark pipe before inserting to ensure there is 50mm of pipe inside both tanks also fit the directional junction with flow being towards dose chamber.

7. Fit enough riser pipe to directional junction, to bring it up to grey water outlet level.

8. Trench from Dose Chamber outlet to disposal field, ensuring there is a constant fall from outlet to disposal field.

9. Where possible excavate a trench away from System and lay drain coil and drainage metal at the base of the system to drain away any surface or ground water. On a flat or high water table site System must be bedded in as per appendix A below.

10. Take a minimum of 3 photos at this point to showing connections and back fill, to ensure correct installation for sign off.

11. Back fill around the installed tanks until the required depth for the Grey Water module is reached, then excavate a level platform off 1.5m diameter and position tank on 100mm of bedding material and connect to 'riser'.

12. Back fill around tanks with pea-metal or similar. DO NOT back fill with soil or clay of any type as this can cause point pressure on the modules, through expansion and contraction, and will cause distortion.

Caution: System must be protected from excessive super imposed loads both lateral and top loads. E.g. loads from vehicular traffic. There needs to be at least 2m of clearance maintained around system.

Worms: Ensure adequate moisture in the Wormorator® and add worms once installed unless systems is not going to be used within 2 months of installation.

NaturalFlow Series NF11000

NF11000 Pump | Instructions for Installation

The NaturalFlow system is to be installed or signed off by a registered Drain layer to the design specified by Waterflow NZ Ltd. The following installation instructions and procedures followed correctly will ensure System performance is not compromised in any way.

1. Excavate a 2.5m diameter level platform for the Wormorator® at the appropriate depth to ensure adequate fall for inlet pipe from the source. This has to be installed on virgin ground.

2. Lay 100mm of bedding metal on platform and place Wormorator®. Do this before excavating for dose chamber as this helps keep the excavations to a minimum.

3. Analyze where the dose chamber needs to be placed (this needs to line up with one of the feet at the base of the WORMORATOR®) and excavate a 1.3m diameter level platform 550mm below the Wormorator platform (this allows for 100mm of bedding material).

4. Very carefully drill a 127mm hole with a hole saw at the lowest point of the foot on Wormorator and fit Uniseal (see Uniseal instruction details appendix B below).

5. Lay 100mm of bedding metal on dose chamber platform and place tank.

6. Measure the distance between the Wormorator outlet and dose chamber inlet allowing 50mm both ends to insert into tanks. Mark pipe before inserting to ensure there is 50mm of pipe inside both tanks also fit the directional junction with flow being towards dose chamber.

7. Fit enough riser pipe to directional junction, to bring it up to grey water outlet level.

8. Where possible excavate a trench away from System and lay drain coil and drainage metal at the base of the system to drain away any surface or ground water. On a flat or high water table site System must be bedded in as per appendix A below.

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11. Trench from Dose Chamber outlet to disposal field, ensuring there is a constant fall from outlet to disposal field.

12. Back fill around tanks with pea-metal or similar. DO NOT back fill with soil or clay of any type as this can cause point pressure on the modules, through expansion and contraction, and will cause distortion.

Caution: System must be protected from excessive super imposed loads both lateral and top loads. E.g. loads from vehicular traffic. There needs to be at least 2m of clearance maintained around system.

Worms: Ensure adequate moisture in the Wormorator® and add worms once installed unless systems is not going to be used within 2 months of installation.

NaturalFlow Series NF11000

Appendix

Appendix A | High Water Table

For installation in high water table areas, make sure you have a pump to pump away ground water whilst installing. Excavate a pump cavity to one side of the platform and pump ground water away during entire installation process .Half fill dose tank with water, this will flow back into Wormorator as well and will help with resisting the hydraulic uplift (ensure that Wormorator is not completely flooded). Mix 3 bags of cement/cube of GAP20 (or similar) metal to form a mass to stop any hydraulic uplift, and backfill up to the invert with it. Leave water in tanks for at least 12 hours after installation is completed and then pump out to allow Wormorator to dry out.

Appendix B | Instructions for fitting UNISEAL®

1. Cut hole to the Hole saw size indicated for the UNISEAL® you are using. Either 127mm hole for a 4"/100mm pipe or 67.2mm hole for a 2"/50mm pipe.

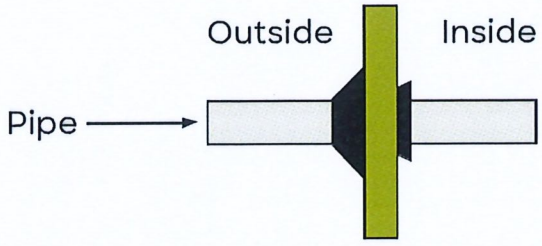
2. Ensure that the hole is clean cut with sharp edges. Irregularities could cause poor seating and ultimate leakage.

3. Insert the UNISEAL® into the hole with the wide side facing the pipe to be inserted.

4. Make certain that the pipe end to be inserted is clean cut. File the edges so that there are no sharp points to cut UNISEAL®.

5. Using Detergent, lubricate the outside of the pipe end to be inserted, then push the pipe through the UNISEAL® from the large flange side. The detergent will be squeezed off as the pipe passes through the UNISEAL®. The co-efficient of friction of the rubber holds the pipe tightly in place.

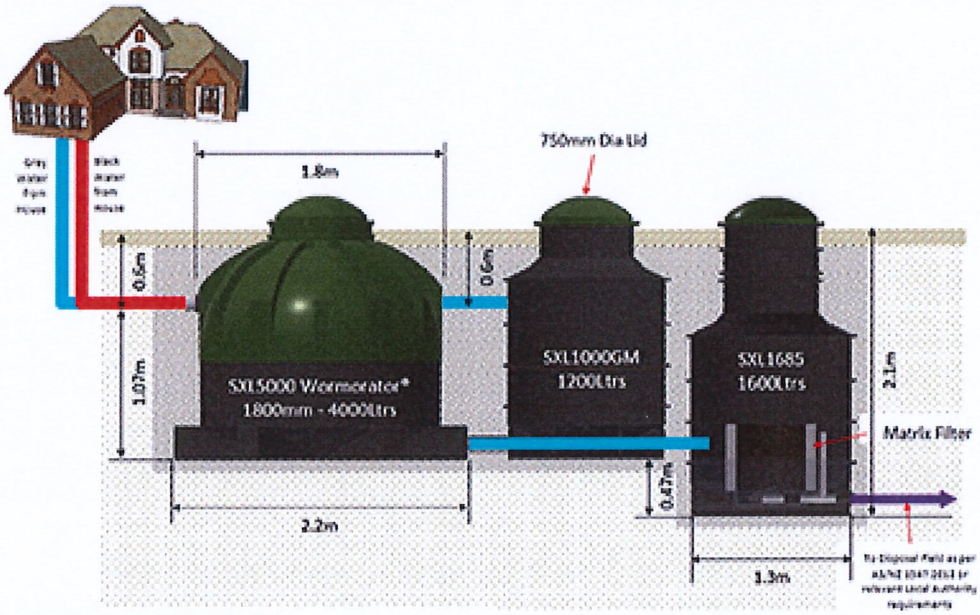
Side Elevation:



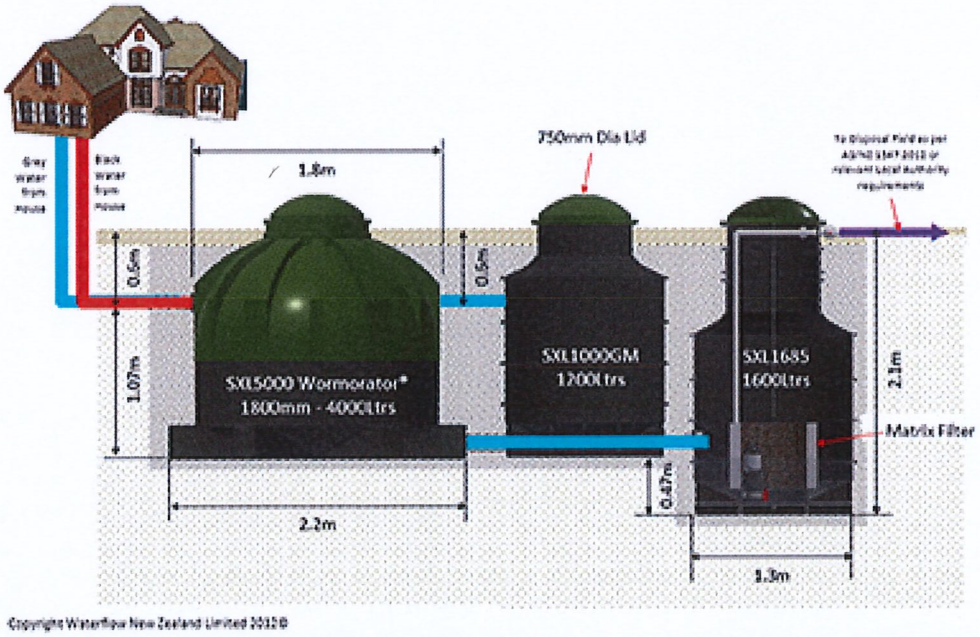
NaturalFlow Series NF11000

NaturalFlow Series NF11000 Flow Charts

Series NF11000 Treatment System Dose



Series NF11000 Treatment System Pump



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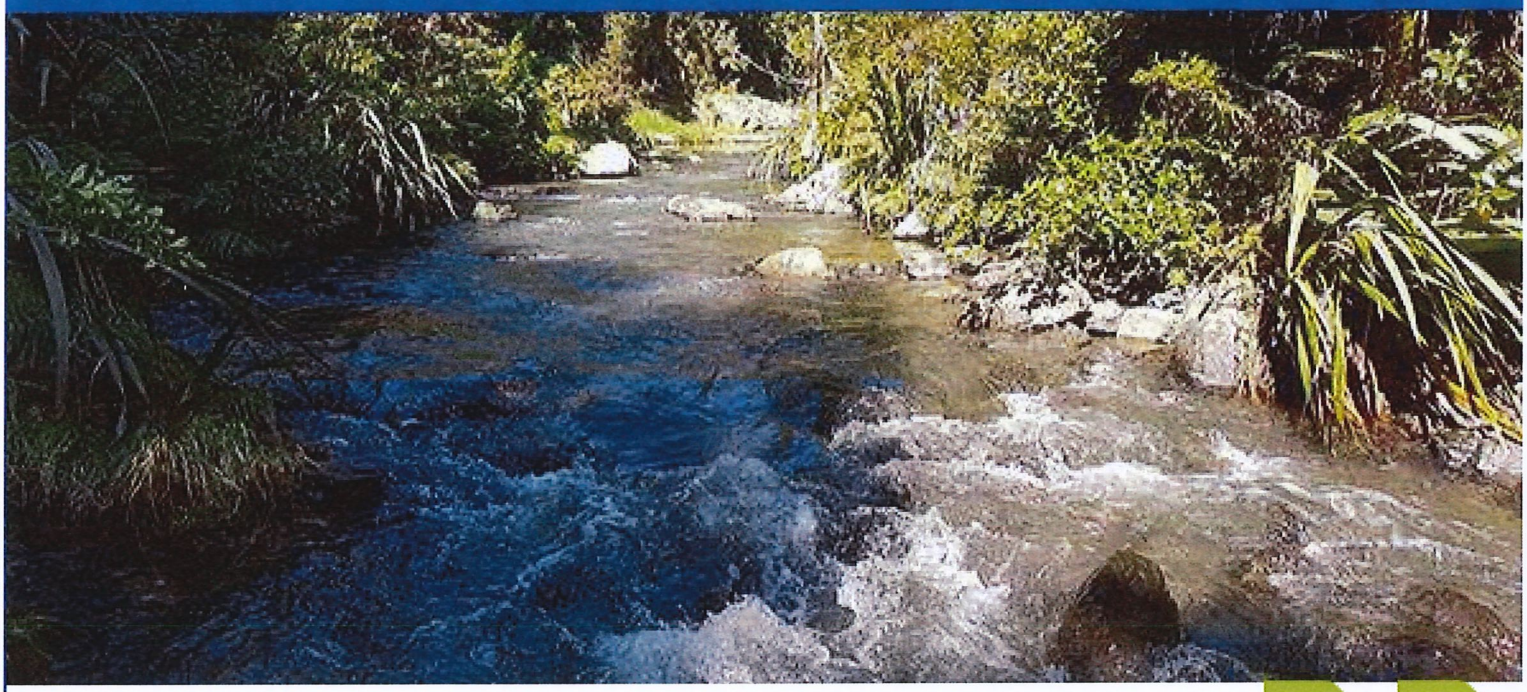

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PRODUCER STATEMENT

DESIGN: ON-SITE EFFLUENT DISPOSAL SYSTEMS (T.P.58)

ISSUED BY: Ben Steenkamp on behalf of Wilton Joubert Ltd (approved qualified design professional)

TO: Nick & Bes Lironi-Irvine (owner)

TO BE SUPPLIED TO: .....Far North District Council.....

PROPERTY LOCATION: 146B Otiria Road, Moerewa

LOT...2.....DP.....596306...VALUATION NUMBER.....

TO PROVIDE : Design an on-site effluent disposal system in accordance with Technical paper 58 and provide a schedule to the owner for the systems maintenance.

THE DESIGN: Has been in accordance with G13 (Foul Water) G14 (Industrial Liquid Waste) B2 (durability 15 years) of the Building Regulations 1992.

As an independent approved design professional covered by a current policy of Professional Indemnity Insurance (Design) to a minimum value of $200,000.00, I BELIEVE ON REASONABLE GROUNDS that subject to:
(1) The site verification of the soil types.
(2) All proprietary products met the performance requirements.
The proposed design will met the relevant provisions of the Building Code and 5.3.11 of The Far North District Council Engineering Standards.

.....(Signature of approved design professional)

CPEng, BEng (Civil), BSc (Geology), CMEngNZ (Professional qualifications)

2001008 (Licence Number or professional Registration number)

Address 196 Centreway Road, Orewa, Auckland

Phone Number 09 527 0196 Fax Number ..... Cell Phone 0272792392
Date 08.07.2024

Note: This form is to accompany every application for a Building Consent incorporating a T.P.58. Approval as a design professional is at Councils discretion.