



Office Use Only Application Number:

APPLICATION FOR RESOURCE CONSENT OR FAST-TRACK RESOURCE CONSENT

(Or Associated Consent Pursuant to the Resource Management Act 1991 (RMA))

(If applying for a Resource Consent pursuant to Section 87AAC or 88 of the RMA, this form can be used to satisfy the requirements of Form 9)

Prior to, and during, completion of this application form, please refer to Resource Consent Guidance Notes and Schedule of Fees and Charges – both available on the Council’s web page.

1. Pre-Lodgement Meeting

Have you met with a Council Resource Consent representative to discuss this application prior to lodgement? Yes / No

2. Type of Consent being applied for (more than one circle can be ticked):

- Land Use Fast Track Land Use* Subdivision Discharge
- Extension of time (s.125) Change of conditions (s.127) Change of Consent Notice (s.221(3))
- Consent under National Environmental Standard (e.g. Assessing and Managing Contaminants in Soil)
- Other (please specify) Papakaigna housing project

**The fast track for simple land use consents is restricted to consents with a controlled activity status and requires you provide an electronic address for service.*

3. Would you like to opt out of the Fast Track Process? Yes / No

4. Applicant Details:

Name/s: Advance Build

Electronic Address for Service (E-mail):

Phone Numbers: Home: _____

Postal Address: _____
(or alternative method of service under section 352 of the Act) _____

Post Code:

5. Address for Correspondence: Name and address for service and correspondence (if using an Agent write their details here).

Name/s: CPPC Planning - Claire Phillips

Electronic Address for Service (E-mail): claire.phillips1@xtra.co.nz

Phone Numbers: Work: 021302340 Home: _____

Postal Address: Po Box 550, Warkworth
(or alternative method of service under section 352 of the Act) _____

Post Code: 0941

All correspondence will be sent by email in the first instance. Please advise us if you would prefer an alternative means of communication.

6. Details of Property Owner/s and Occupier/s: Name and Address of the Owner/Occupiers of the land to which this application relates (where there are multiple owners or occupiers please list on a separate sheet if required)

Name/s: Hone Pani Tamati Waka Nene Harawira and Hilda Mary Halkyard-Harawira as Responsible Trustees jointly, no survivorship

Property Address/
Location: 6a Waimanoni Rd, Awanui

7. Application Site Details:

Location and/or Property Street Address of the proposed activity:

Site Address/
Location: 6a Waimanoni Rd, Awanui

Legal Description: Waimanoni 1A 2C Block Val Number: _____

Certificate of Title: _____
Please remember to attach a copy of your Certificate of Title to the application, along with relevant consent notices and/or easements and encumbrances (search copy must be less than 6 months old)

Site Visit Requirements:

Is there a locked gate or security system restricting access by Council staff? Yes No

Is there a dog on the property? Yes No

Please provide details of any other entry restrictions that Council staff should be aware of, e.g. health and safety, caretaker's details. **This is important to avoid a wasted trip and having to re-arrange a second visit.**

Please give 24 to 48 hours notice before site visit as Whanau live on site.

8. Description of the Proposal:

Please enter a brief description of the proposal here. Attach a detailed description of the proposed activity and drawings (to a recognized scale, e.g. 1:100) to illustrate your proposal. Please refer to Chapter 4 of the District Plan, and Guidance Notes, for further details of information requirements.

Papakainga Housing Consent to relocate 3 brand new pre built dwellings, as well as a cabin to site

Please refer to the AEE for further details

If this is an application for an Extension of Time (s.125); Change of Consent Conditions (s.127) or Change or Cancellation of Consent Notice conditions (s.221(3)), please quote relevant existing Resource Consents and Consent Notice identifiers and provide details of the change(s) or extension being sought, with reasons for requesting them.

9. Would you like to request Public Notification Yes No

10. Other Consent required/being applied for under different legislation (more than one circle can be ticked):

- Building Consent (BC ref # if known) Regional Council Consent (ref # if known)
- National Environmental Standard consent Other (please specify)

11. National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health:

The site and proposal may be subject to the above NES. In order to determine whether regard needs to be had to the NES please answer the following (further information in regard to this NES is available on the Council's planning web pages):

Is the piece of land currently being used or has it historically ever been used for an activity or industry on the Hazardous Industries and Activities List (HAIL) yes no don't know

Is the proposed activity an activity covered by the NES? (If the activity is any of the activities listed below, then you need to tick the 'yes' circle). yes no don't know

- Subdividing land Changing the use of a piece of land
- Disturbing, removing or sampling soil Removing or replacing a fuel storage system

12. Assessment of Environmental Effects:

Every application for resource consent must be accompanied by an Assessment of Environmental Effects (AEE). This is a requirement of Schedule 4 of the Resource Management Act 1991 and an application can be rejected if an adequate AEE is not provided. The information in an AEE must be specified in sufficient detail to satisfy the purpose for which it is required. Your AEE may include additional information such as Written Approvals from adjoining property owners, or affected parties.

Please attach your AEE to this application.

13. Billing Details:

This identifies the person or entity that will be responsible for paying any invoices or receiving any refunds associated with processing this resource consent. Please also refer to Council's Fees and Charges Schedule.

Name/s: (please write all names in full) _____

Email: _____

Postal Address: _____

_____ Post Code: _____

Phone Numbers: Work: _____ Home: _____ Fax: _____

Fees Information: An instalment fee for processing this application is payable at the time of lodgement and must accompany your application in order for it to be lodged. Please note that if the instalment fee is insufficient to cover the actual and reasonable costs of work undertaken to process the application you will be required to pay any additional costs. Invoiced amounts are payable by the 20th of the month following invoice date. You may also be required to make additional payments if your application requires notification.

Declaration concerning Payment of Fees: I/we understand that the Council may charge me/us for all costs actually and reasonably incurred in processing this application. Subject to my/our rights under Sections 357B and 358 of the RMA, to object to any costs, I/we undertake to pay all and future processing costs incurred by the Council. Without limiting the Far North District Council's legal rights if any steps (including the use of debt collection agencies) are necessary to recover unpaid processing costs I/we agree to pay all costs of recovering those processing costs. If this application is made on behalf of a trust (private or family), a society (incorporated or unincorporated) or a company in signing this application I/we are binding the trust, society or company to pay all the above costs and guaranteeing to pay all the above costs in my/our personal capacity.

Name: _____ (please print)

Signature: _____ (signature of bill payer – **mandatory**) Date: 10/11/23

14. Important Information:

Note to applicant

You must include all information required by this form. The information must be specified in sufficient detail to satisfy the purpose for which it is required.

You may apply for 2 or more resource consents that are needed for the same activity on the same form.

You must pay the charge payable to the consent authority for the resource consent application under the Resource Management Act 1991.

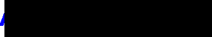
Fast-track application

Under the fast-track resource consent process, notice of the decision must be given within 10 working days after the date the application was first lodged with the authority, unless the applicant opts out of that process at the time of lodgement. A fast-track application may cease to be a fast-track application under section 87AAC(2) of the RMA.

Privacy Information:

Once this application is lodged with the Council it becomes public information. Please advise Council if there is sensitive information in the proposal. The information you have provided on this form is required so that your application for consent pursuant to the Resource Management Act 1991 can be processed under that Act. The information will be stored on a public register and held by the Far North District Council. The details of your application may also be made available to the public on the Council's website, www.fndc.govt.nz. These details are collected to inform the general public and community groups about all consents which have been issued through the Far North District Council.

Declaration: The information I have supplied with this application is true and complete to the best of my knowledge.

Name:  (please print)

Signature:  (signature)

Date: 10/11/23

(A signature is not required if the application is made by electronic means)

Checklist (please tick if information is provided)

- Payment (cheques payable to Far North District Council)
- A current Certificate of Title (Search Copy not more than 6 months old)
- Copies of any listed encumbrances, easements and/or consent notices relevant to the application
- Applicant / Agent / Property Owner / Bill Payer details provided
- Location of property and description of proposal
- Assessment of Environmental Effects
- Written Approvals / correspondence from consulted parties
- Reports from technical experts (if required)
- Copies of other relevant consents associated with this application
- Location and Site plans (land use) AND/OR
- Location and Scheme Plan (subdivision)
- Elevations / Floor plans
- Topographical / contour plans

Please refer to Chapter 4 of the District Plan for details of the information that must be provided with an application. Please also refer to the RC Checklist available on the Council's website. This contains more helpful hints as to what information needs to be shown on plans.

Only one copy of an application is required, but please note for copying and scanning purposes, documentation should be:

UNBOUND

SINGLE SIDED

NO LARGER THAN A3 in SIZE

RESOURCE CONSENT APPLICATION FOR 6A WAIMANONI ROAD, WAIMANONI

UPDATED NOVEMBER 2023

CONTENTS

APPLICANT DETAILS.....	4
PROPOSAL DESCRIPTION.....	5
RECORD OF TITLE AND SITE DESCRIPTION,.....	8
SITE DESCRIPTION.....	8
STATUTORY ASSESSMENT.....	11
FAR NORTH DISTRICT COUNCIL – OPERATIVE DISTRICT PLAN.....	11
FAR NORTH DISTRICT COUNCIL – PROPOSED DISTRICT PLAN.....	12
PUBLIC NOTIFICATION ASSESSMENT.....	13
ASSESSMENT OF STEPS 1 TO 4 (SECTION 95A).....	13
STEP 1: MANDATORY PUBLIC NOTIFICATION IN CERTAIN CIRCUMSTANCES.....	13
STEP 2: IF NOT REQUIRED BY STEP 1, PUBLIC NOTIFICATION PRECLUDED IN CERTAIN CIRCUMSTANCES.....	13
STEP 3: IF NOT PRECLUDED BY STEP 2, PUBLIC NOTIFICATION REQUIRED IN CERTAIN CIRCUMSTANCES.....	14
STEP 4: PUBLIC NOTIFICATION IN SPECIAL CIRCUMSTANCES.....	14
ASSESSMENT OF ENVIRONMENTAL EFFECTS.....	15
EXISTING ENVIRONMENT AND PERMITTED BASELINE.....	15
ENVIRONMENT.....	15
PERMITTED BASELINE.....	15
UNIMPLEMENTED CONSENTS.....	15
ASSESSMENT OF EFFECTS.....	15
RURAL CHARACTER AND AMENITY VALUES.....	15
CULTURAL/HISTORIC HERITAGE.....	16
EARTHWORKS.....	17
TRAFFIC AND ACCESS EFFECTS.....	17
NATURAL HAZARDS AND SERVICING EFFECTS.....	18
SUMMARY.....	19
LIMITED NOTIFICATION ASSESSMENT.....	19
ASSESSMENT OF STEPS 1 TO 4 (SECTION 95B).....	19

STEP 1: CERTAIN AFFECTED PROTECTED CUSTOMARY RIGHTS GROUPS MUST BE NOTIFIED.....	19
STEP 2: IF NOT REQUIRED BY STEP 1, LIMITED NOTIFICATION PRECLUDED IN CERTAIN CIRCUMSTANCES.....	19
STEP 3: IF NOT PRECLUDED BY STEP 2, CERTAIN OTHER AFFECTED PERSONS MUST BE NOTIFIED.....	19
STEP 4: FURTHER NOTIFICATION IN SPECIAL CIRCUMSTANCES.....	20
SECTION 95E STATUTORY MATTERS.....	20
ADJACENT PROPERTIES.....	20
SECTION 104 MATTERS.....	22
ASSESSMENT CRITERIA AND MATTERS FOR CONTROL/DISCRETION.....	22
FAR NORTH DISTRICT PLAN.....	22
OBJECTIVES AND POLICIES.....	25
FAR NORTH DISTRICT COUNCIL – OPERATIVE DISTRICT PLAN.....	25
FAR NORTH DISTRICT COUNCIL – PROPOSED DISTRICT PLAN.....	26
PART II OF THE RESOURCE MANAGEMENT ACT.....	26
CONCLUSION.....	27
Appendix 1 – Record of Title	
Appendix 2 – Architectural Plans	
Appendix 3 – Site Suitability Reports	
Appendix 4 – Wastewater Report	
Appendix 5 – Flood Risk Assessment Report	
Appendix 6 – Stormwater Mitigation Report	
Appendix 7 – Management Plan	
Appendix 8 – NTA Comment	

APPLICANT DETAILS

Applicant: Advance Build

Owner: H5 Whanau Trust
Hone Pani Tamati Waka Nene Harawira and Hilda Mary Halkyard-
Harawira as Responsible Trustees jointly, no survivorship

Site Address: 6A Waimanoni Road, Waimanoni

Legal Description: Waimanoni 1A 2C Block

Site Area: 2.2256 hectares

Consent: Land Use

Activity: Land use consent for the relocation four new prebuilt papakainga dwellings and servicing.

District Plan Zones:
Operative District Plan

Zone
Rural Production

Overlays
Flood Susceptible Land
Coastal Flood Hazard
River Flood Zone

Proposed District plan

Zone
Maori Purpose – Rural

Address for Service: Claire Phillips
Consultant Planner
CPPC Planning
PO Box 550, Warkworth, 0941, New Zealand
Mobile: 021302340
Email: claire.phillips1@xtra.co.nz

PROPOSAL DESCRIPTION

Consent is being sought pursuant to section 88 of the Resource Management Act 1991 for the relocation four new prebuilt papakainga dwellings and servicing. There will be a total of 5 papakainga dwellings at 6a Waimanoni Road, Waimanoni.

The proposal involves the following elements:

- Existing bach is to be removed. Containers on formed concrete pad are also to be removed.
- The construction of four new dwellings, then relocation to the site from the factory. Each of the dwellings will have a finished floor level set in accordance with the engineers report on flooding.
 - House 1 has a floor area of 148.9m² and will contain four bedrooms, bathrooms, laundry, kitchen, living and dining room. House 1 is to have a covered car port with an area of 30m² and will be utilized for parking of two vehicles. Access to this dwelling will be over a new driveway and crossing with Waimanoni Road and is being used in conjunction with the papakainga development. House 1 is located within Zone 1 of the site.



Figure 1: Elevation of House 1

- House 2 has a floor area of 126m² and will contain three bedrooms, study, bathrooms, kitchen and living room. House 2 is to have a covered car port with an area of 36m² and will be utilized for parking of two vehicles. Access to this dwelling will be over a new driveway and crossing with Waimanoni Road and is being used in conjunction with the papakainga development. House 2 is located within Zone 1 of the site. House 2 is located 4 metres to the southern boundary.



Figure 2: Elevation of House 2

- House 3 has a floor area of 136.6m² and will contain three bedrooms, laundry, bathrooms, kitchen, dining and living room. House 3 is to have a covered car port with an area of 35.1m² and will be utilized for parking of two vehicles. Access to this dwelling will be over a new driveway and crossing with Waimanoni Road and is being used in conjunction with the papakainga development. House 3 is located within Zone 2 of the site.



Figure 3: Elevation of House 3

- House 4 has a floor area of 37.6m² and will contain two bedrooms, bathroom and laundry, kitchen and living room. Access to this dwelling will be over a new driveway and crossing with Waimanoni Road and is being used in conjunction with the papakainga development. House 4 is located within Zone 1 of the site.

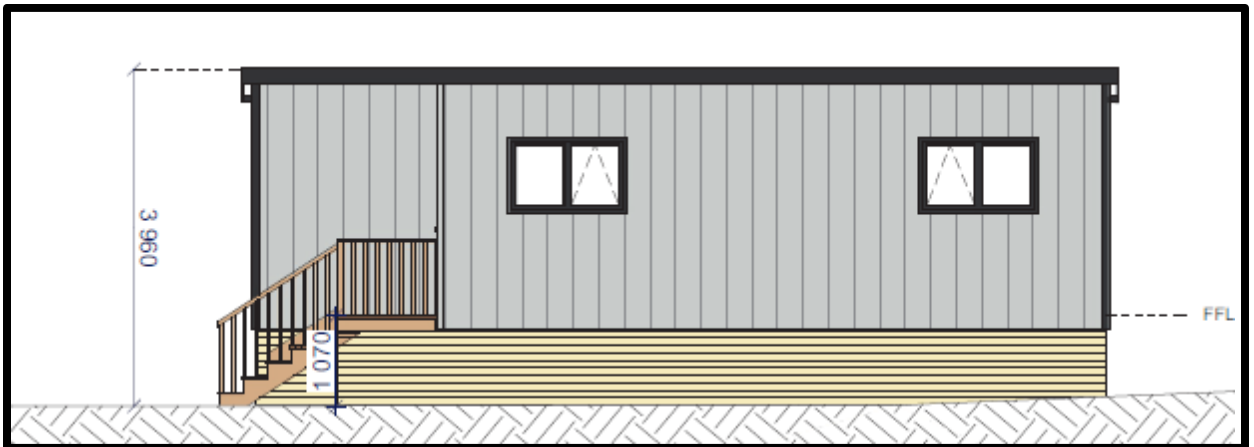


Figure 4: Elevation of House 4

- The new dwellings are to be constructed out of weather groove cladding, aluminum joinery and coloursteel roofing with a mixture of recessive colours and complimentary with one another. The papakainga housing contains two areas of communal ground.
- Houses 1 to 3 will each have two 25,000 litre water tanks for water supply. House 4 will have one 25,000 litre water tank for water supply. Provision within these water tanks will allow for firefighting supply.

- The site is being broken up into two zones for the purposes of on-site wastewater disposal. Zone 1 is to contain the existing four bedroom dwelling and Houses 1, 2 and 4. Zone 2 will contain House 3. Water Flow NZ Ltd has proposed an on-site septic system for each zone for effluent disposal and will be designed in accordance with TP 58. Details of on-site wastewater can be found in the report prepared by Water Flow NZ Ltd. Regional consent is being sought by others for wastewater.
- To provide for driveway access to the papakainga dwellings earthworks are to be undertaken over an area of 998m² and with a volume of 190.50m³. Any earthworks will be undertaken in accordance with Council's Guidance Document GD05 which provides guidance on erosion and sediment control. In particular this proposal will utilize silt fencing and a stabilized crossing with Waimanoni Road. Further earthworks are proposed to be undertaken during good weather conditions.
- The proposal involves impervious surfaces of 3871.53m², which includes the proposed dwellings, existing dwelling, driveways and concrete pad. All stormwater/water from the roof is to be collected for portable water supply with an on-site detention tank to mitigate post development flows. The proposed driveway and access are to be shaped and directed towards grass lined swale for stormwater run off.

RECORD OF TITLE AND SITE DESCRIPTION,

RECORD OF TITLE

The subject property is currently legally described as Waimanoni 1A 2C Block with an area of 2.2256 hectares and is contained with Identifier NA121A/391. Interest C993056.1 declares the land Maori Freehold Land. There is also an interest D538887.1 pertaining to State Highway 1. No access is gained to State Highway 1 from the application site.

SITE DESCRIPTION

The subject property is currently legally described as Waimanoni 1A 2C Block with an area of 2.2256 hectares. The property contains an existing dwelling with two existing water tanks, small out buildings and a bach that is to be removed. Further there are a number of container which are also to be removed. There is an existing on-site wastewater disposal system, which is to be decommissioned. The property is accessed over an existing driveway from Waimanoni Road, which is formed to a metalled standard.

A tributary of Waimanoni Creek originates from the southern boundary and runs north bisecting the property. The property is relatively flat.

To the west of the application site is the location of the Waimanoni Marae and associated activities. The property is located within the rural environment, with dotted rural and rural residential buildings with accessory buildings, pasture grass, ti tree and rural activities.



Figure 5: Aerial Photo of site and locality – Source – FNDC maps



Photo 1: View of existing buildings looking west towards Waimanoni Marae



Photo 2: View of existing buildings looking south, including a view of State Highway 1 in the background.



Photo 3: View of existing containers to be remove, looking east.

FAR NORTH DISTRICT COUNCIL – OPERATIVE DISTRICT PLAN

The subject site is zoned Rural Production as shown on the portion of planning map below:

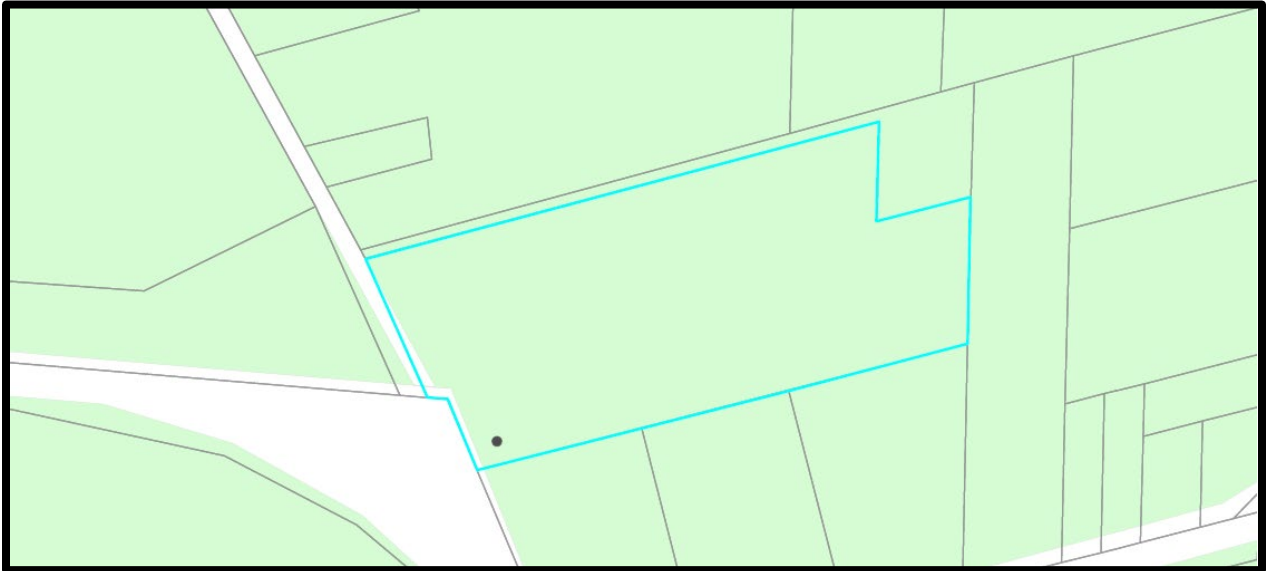


Figure 6: Zone Map – Source – Far North Operative District Plan

Chapter 8 – Rural Environment

Section 6 – Rural Production Zone

- No building shall be erected within 10 metres of any site boundary under Rule 8.6.5.1.4. House 2 is located 4.0 metres to the southern boundary therefore consent is required as a restricted discretionary activity under rule 8.6.5.3.4.
- The maximum area of impervious surfaces is 15% of the site as outlined in Rule 8.6.5.1.3. The proposal involves impervious surfaces of 17.31% (3853.53m²) and is therefore a controlled activity under Rule 8.6.5.2.1.
- Papakainga housing is a controlled activity in the Rural Production Zone under Rule 8.6.5.2.2. The papakainga housing cannot comply with the permitted standards (setback and impervious surfaces), but complies with the other provisions, therefore Rule 6.6.5.4.2 for Integrated Development applies as a Discretionary Activity.

Chapter 15 -Transportation

Section 1 – Traffic, Parking and Access

- Based on Appendix 3A Traffic Intensity Factor (TIF), each papakainga house equates to 5 one-way vehicle movements. As there will be 5 papakainga houses on-site, there will be a total TIF of 25. Rule 15.1.6A states that a Rural Production Zoned property allows for a total TIF of 60 as a permitted activity. The existing crossing and driveway does not access the State Highway directly, it access Waimanoni Road, then onto State Highway 1.
- Based on Appendix 3C Parking Spaces Required (PSR), 1 space for the first house plus one space per 2 additional house. As there will be 5 papakainga houses on-site, there will be 9 parking spaces required under Rule 15.1.6B.1.1. Each new dwelling has 2 spaces provided therefore complies as a permitted activity.
- The existing crossing and driveway does not access the State Highway directly, however the existing crossing within Waimanoni Road is located 52.5 metres to the intersection with State Highway 1 and the new crossing is 106 metres to the intersection outlined in Rule 15.1.6C.1.1(e). NZTA confirmed that this measurement is taken as per Diagram D. The proposal meets this rule, no consent requirement, permitted activity.

Compliance with Section 15 is shown on the architectural plans attached to this application.

FAR NORTH DISTRICT COUNCIL – PROPOSED DISTRICT PLAN

The Far North Proposed District Plan was notified on July 27, 2022. Only some parts of this plan have legal effects and only those rules where relevant are assessed below.

The subject site is zoned Maori Purpose – Rural as shown on the portion of planning map below:

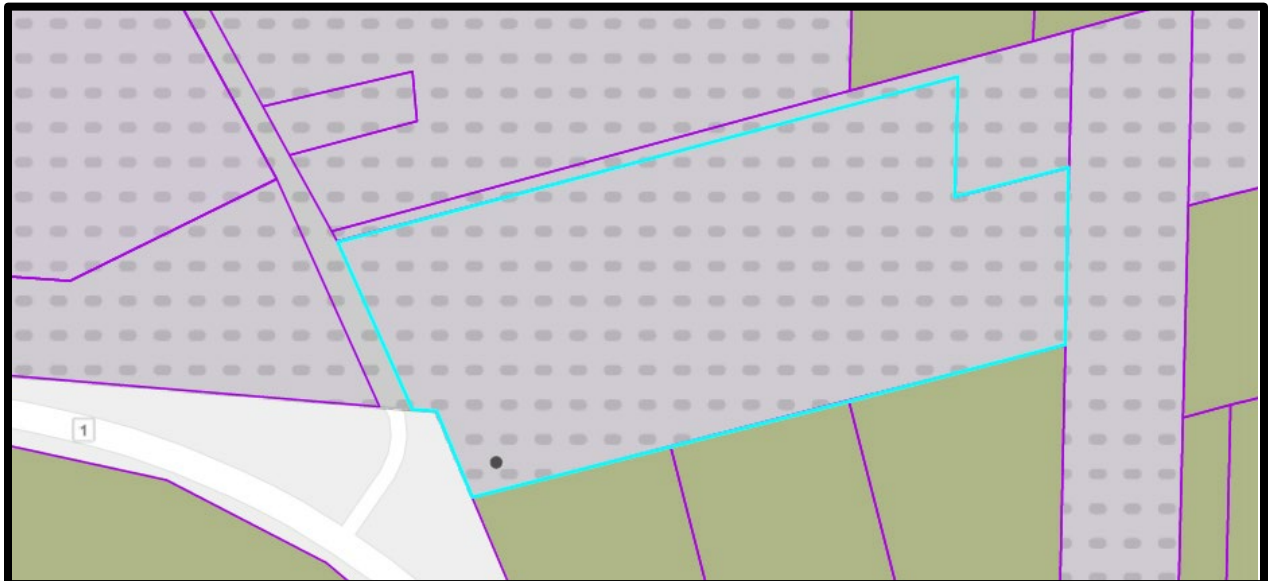


Figure 7: Zone Map Source – Far North Proposed District Plan

PART 2 – DISTRICT-WIDE MATTERS - NATURAL ENVIRONMENT VALUES - Natural character

- No parts of this chapter have legal effect.

Part 2 – District Wide – General District Wide Matter Earthworks

- Earthworks that comply with the standards in EW-S5 Erosion and Sediment Control are permitted under rule EW-R13. As demonstrated on the plans and within this application, the proposal involves the installation of a stabilized crossing and silt fencing, that is commensurate of the level of earthworks proposed. Accidental discovery protocol will be employed should discovery occur.

PART 3 – AREA-SPECIFIC MATTERS - SPECIAL PURPOSE ZONES - Māori Purpose

- No parts of this chapter have legal effect.

Note: The above only reflects those rules that have immediate legal effect. If the Council considers that more rules require assessment, I am sure you will let us know.

Overall, the proposal is considered to be a Controlled Activity.

PUBLIC NOTIFICATION ASSESSMENT

ASSESSMENT OF STEPS 1 TO 4 (SECTION 95A)

Section 95A specifies the steps the council is to follow to determine whether an application is to be publicly notified. These steps are addressed in the statutory order below.

STEP 1: MANDATORY PUBLIC NOTIFICATION IN CERTAIN CIRCUMSTANCES

Step 1 states that no mandatory notification is required as:

- the applicant has not requested that the application is publicly notified (s95A(3)(a));
- there are no outstanding or refused requests for further information (s95C and s95A(3)(b)); and
- The application does not involve any exchange of recreation reserve land under s15AA of the Reserves Act 1977 (s95A(3)(c)).

In this case the applicant does not request notification.

STEP 2: IF NOT REQUIRED BY STEP 1, PUBLIC NOTIFICATION PRECLUDED IN CERTAIN CIRCUMSTANCES

Step 2 states that the application is not precluded from public notification as:

- The activities are not subject to a rule or national environmental standard (NES) which precludes public notification (s95A(5)(a)); and

- The application does not exclusively involve one or more of the activities described in s95A(5)(b).

In this case, the proposal is not precluded from notification.

STEP 3: IF NOT PRECLUDED BY STEP 2, PUBLIC NOTIFICATION REQUIRED IN CERTAIN CIRCUMSTANCES

The application is not required to be publicly notified as the activity are not subject to any rule or a NES that requires public notification (s95A(8)(a)).

The following assessment addresses the adverse effects of the activities on the environment, as public notification is required if the activities will have or are likely to have adverse effects on the environment that are more than minor (s95A(8)(b)).

STEP 4: PUBLIC NOTIFICATION IN SPECIAL CIRCUMSTANCES

If an application has not been publicly notified as a result of any of the previous steps, then the council is required to determine whether special circumstances exist that warrant it being publicly notified (s95A (9)).

Special circumstances are those that are:

- exceptional, abnormal or unusual, but something less than extraordinary or unique.
- outside of the common run of applications of this nature; or
- circumstances which make notification desirable.

In this instance I have turned my mind specifically to the existence of any special circumstances and conclude that there is nothing exceptional or unusual about the application, and that the proposal has nothing out of the ordinary run of things to suggest that public notification should occur.

ASSESSMENT OF ENVIRONMENTAL EFFECTS

EXISTING ENVIRONMENT AND PERMITTED BASELINE

ENVIRONMENT

The 'Environment' includes the 'Existing Environment' which includes all lawfully established activities that exist – and the 'Future Environment' which includes the effects of activities enabled by an unimplemented consent where the consent is 'live' that have not lapsed and there are no reasons why the consent is not likely to be implemented.

These activities and their constituent effects form part of the existing (lawfully established) environment.

In this case the site and locality have been described in the site description above.

PERMITTED BASELINE

RMA states that for the purposes of formulating an opinion as to whether the adverse effects on the environment will be minor or more than minor a consent authority may disregard an adverse effect of an activity on the environment if the plan permits an activity with that effect. In this case the site is within Rural Production Zone and the following activities are provided for as it relates to this application:

- The traffic intensity value for each dwelling is 5 vehicle movements, the proposal results in 25 vehicle movements, with 60 movements permitted from the site.
- Earthworks up to 5000m³ and with a cut/fill less than 1.5 metres in height.

UNIMPLEMENTED CONSENTS

There are no known unimplemented consents.

ASSESSMENT OF EFFECTS

Having regard to the above and after an analysis of the application, including any proposed mitigation measures, the adverse effects of the activity on the environment are identified and discussed below.

RURAL CHARACTER AND AMENITY VALUES

The character and amenity values of an area are those special qualities, in particular natural and physical characteristics that make an area pleasant, unique or different.

In this case, the site is within the Rural Production Zone, known for a wide range of rural and rural residential activities. The property is in close proximity to the Waimanoni Marae to the west, with the property generally in grass. The property contains existing built development, with the introduction of more papakainga housing to complement the existing activities operating in this locality.

The existing dwelling has some landscape planting in the form of dotted and clustered of trees, with the remainder of the site having very little in the way of planting or screen vegetation. The property is flat, so whilst there is not any significant planting, the future development will be integrated into the site through design as well as some screen planting proposed, which will help to screen the papakainga. The scale and design of the proposed Papakainga Houses will be better suited and integrated into the site through the proposed landscape planting, design of buildings along with their colour pallet, being appropriate for this rural zone.

The development will not result in buildings that could be considered dominant or out of character, particularly when viewed in conjunction with other dwellings of this nature and are considered to be an improvement on the existing buildings within the site to be removed.

These factors when combined with the minor nature of the infringement, ensures that any effects on are considered to be no more than minor. There will be no obvious differences which differentiate the infringement from that of a complying activity, particularly when viewed from adjacent properties.

The dwelling is considered to be of a size and scale consistent with other dwellings in this immediate vicinity, therefore will maintain the existing character of the area.

Overall, it is considered that the adverse effects of the proposed dwelling on residential character and visual amenity will be no more than minor.

CULTURAL/HISTORIC HERITAGE

There are no known heritage sites or archaeological sites within the area adjacent to the application site.

In accordance with standard protocols accidental discovery, work must cease immediately, and Council and Heritage NZ notified should any archaeological or heritage site be uncovered during the earthworks. Given this standard and the relatively unlikely nature of any archaeological site being uncovered, it is considered that the effects of the proposal on cultural matters will be less than minor.

The proposal will not have effects on the cultural or heritage values of the area.

EARTHWORKS

To provide for driveway access to the papakainga dwellings earthworks are to be undertaken over an area of 998m² and with a volume of 190.50m³. Any earthworks will be undertaken in accordance with Council's Guidance Document GD05 which provides guidance on erosion and sediment control. In particular this proposal will utilize silt fencing and a stabilized crossing with Waimanoni Road. Further earthworks are proposed to be undertaken during good weather conditions.

The main adverse effects on the environment that could potentially arise from earthworks relate to the silt discharge from the earthworks site. The building platform is vacant of any vegetation apart from pasture. If silt is uncontrolled, it can create adverse effects on water quality of a waterway.

The effect of the proposed earthworks on water quality and quantity will be largely avoided by the location of the proposed earthworks being relatively distant from any waterways.

The applicant is to install measures to control and/or mitigate any silt/stormwater run-off. In particular the applicant proposes to install appropriate silt fencing until the completion of the dwelling construction. Further the earthworks will be undertaken during good weather in order to minimise sediment run-off.

The applicant intends to implement erosion and sediment control measures in accordance with the Auckland Councils GD05, which in this case includes clean water diversion and a sediment pond, as well as a stabilised crossing.

In terms of off-site effects such as noise, dust, vibration, and traffic generation, these effects on the surrounding environment will be no more than minor, given that the majority of earthworks are cut to fill on the site and because of the central location of the works within the site.

Overall, it is considered that the proposed earthworks will not compromise the use of the surrounding land for any other permitted or controlled activities and the potential off-site effects of the earthworks such as noise, dust, vibration, and traffic generation are considered to be no more than minor.

TRAFFIC AND ACCESS EFFECTS

The property has frontage to State Highway 1 and Waimanoni Road. The existing access to the existing built development is gained over an existing driveway with Waimanoni Road. The existing dwelling will continue to utilize this driveway and crossing. Access to the new (four) papakainga dwellings will be over a new driveway and crossing with Waimanoni Road. This driveway will have a minimum width of 3.0 metres and include passing bays to ensure that traffic can move adequately from each dwelling to Waimanoni Road.

The level of traffic that will frequent the site is appropriate and consistent with other rural properties, being well within the envisaged or allowable 60 vehicle movements. Each dwelling will have the provision for two car parking spaces along with appropriate on-site manoeuvring, ensuring vehicles leave the site forward facing.

Construction machinery will be delivered to the site for the earthworks and once the earthworks and associated impervious surfaces are completed the construction machinery will be removed. The traffic movements to and from the site will be minimal and not outside the level anticipated in a General Coastal zone.

It is considered that any adverse traffic or roading effects will be less than minor.

NATURAL HAZARDS AND SERVICING EFFECTS

The applicant has had TSS Consultants Ltd have prepared a Flood Risk Assessment, given the majority of the site is subject to river flooding and coastal flooding/inundation. It is noted that the site is not within the Coastal Hazard as per the Far North District Plan, therefore does not trigger consents under Part 3 Chapter 12.

As noted previously the application site is flat and located at elevation 1.5-2.0 RL. The existing dwelling is on elevated piles with a ground clearance of 400mm. The TSS Consultants Ltd report recommends a finished floor level of 3.090mRL, which takes into account a freeboard allowance for the 1% AEP extent.

The site is being broken up into two zones for the purposes of on-site wastewater disposal. Zone 1 is to contain the existing four bedroom dwelling and Houses 1, 2 and 4. Zone 2 will contain House 3. Water Flow NZ Ltd has proposed an on-site septic system for each zone for effluent disposal and will be designed in accordance with TP 58. Details of on-site wastewater can be found in the report prepared by Water Flow NZ Ltd. Regional consent is being sought by others for wastewater.

The proposal involves impervious surfaces of 3871.53m², which includes the proposed dwellings, existing dwelling, driveways and concrete pad. All stormwater/water from the roof is to be collected for portable water supply with an on-site detention tank to mitigate post development flows. The proposed driveway and access are to be shaped and directed towards grass lined swale for stormwater run off.

The stormwater design employs the use of detention tanks, grass swales and soakpit to ensure post flows are mitigated back to pre-development levels.

It is considered that the effects of the natural hazards and servicing of the site will be less than

minor.

SUMMARY

In summary, having assessed the adverse effects of the activity on the environment, it is considered that the proposed new pre-built papakainga housing with associated earthworks and servicing will have no more than minor adverse effects on the environment. In particular the proposal is considered to be consistent with the type of building anticipated within this coastal living environment.

LIMITED NOTIFICATION ASSESSMENT

ASSESSMENT OF STEPS 1 TO 4 (SECTION 95B)

If the application is not publicly notified under s95A, the council must follow the steps set out in s95B to determine whether to limited notify the application. These steps are addressed in the statutory order below.

STEP 1: CERTAIN AFFECTED PROTECTED CUSTOMARY RIGHTS GROUPS MUST BE NOTIFIED

Step 1 requires limited notification where there are any affected protected customary rights groups or customary marine title groups or affected persons under a statutory acknowledgement affecting the land (ss95B (2) and 95B (3)).

The application site is not affected by customary rights.

STEP 2: IF NOT REQUIRED BY STEP 1, LIMITED NOTIFICATION PRECLUDED IN CERTAIN CIRCUMSTANCES

Step 2 describes that limited notification is precluded where all applicable rules and NES preclude public notification; or the application is for a controlled activity (other than the subdivision of land) or a prescribed activity (ss95B (5) and 95B (6)).

The proposal is a Restricted Discretionary activity and there are no rules precluding notification.

STEP 3: IF NOT PRECLUDED BY STEP 2, CERTAIN OTHER AFFECTED PERSONS MUST BE NOTIFIED

Step 2 requires that where limited notification is not precluded under step 2 above, a determination must be made as to whether any of the following persons are affected persons:

- In the case of a boundary activity, an owner of an allotment with an infringed boundary.
- In the case of a prescribed activity under s360H(1)(b), a prescribed person; and

- In the case of any other activity, a person affected in accordance with s95E.

The application is not for a boundary or prescribed activity, and therefore an assessment in accordance with s95E is required. This assessment is set out below.

Overall, it is considered that any adverse effects in relation to adjacent properties will be less than minor, and accordingly that no persons are adversely affected.

STEP 4: FURTHER NOTIFICATION IN SPECIAL CIRCUMSTANCES

In addition to the findings of the previous steps, the council is also required to determine whether special circumstances exist in relation to the application that warrant notification of the application to any other persons not already determined as eligible for limited notification.

There are not considered to be any special circumstances that would warrant notification.

SECTION 95E STATUTORY MATTERS

As required by step 3 above, certain other affected persons must be notified, and the following assessment addresses whether there are any affected persons in accordance with s95E. A person is affected if the effects of the activity on that person are minor or more than minor (but not less than minor).

In deciding who is an affected person under section 95E:

- Adverse effects permitted by a rule in a plan or NES (the permitted baseline) may be disregarded.

It is considered that there is no useful baseline that can be applied as the land needs to be earth worked to provide building platforms and subdivision of the land would also require resource consent.

- The adverse effects on those persons who have provided their written approval must be disregarded.

Because of the minor scale of the proposal no written approvals have been sought for this proposal.

The sections below set out an assessment in accordance with section 95E, including identification of adjacent properties, and an assessment of adverse effects.

ADJACENT PROPERTIES

The adjacent properties to be considered in the limited notification assessment under section 95B and 95E are set out below:

No persons are considered to be adversely affected by the activity because:

- The design of the proposal has been designed to be sympathetic with the residential environment, through nestling into the site through earthworks and integrated as a result of the screen planting and the design, materials proposed and colours.
- The proposal retains sufficient separation distances between the neighbouring dwellings (consistent with other locations within this locality) and will not compromise the existing levels of amenity or residential character enjoyed by adjacent properties to a minor or more than minor extent.
- The proposal will be consistent in the rural character and scale to other dwellings located within the local vicinity and will comply with all the relevant development standards so will not generate adverse effects in terms of shading, overbearance and overlooking to the adjoining properties.
- There is a suitable water supply for firefighting purposes to ensure that the fire hazard (dwelling) is mitigated. Further the dwelling will contain standard fire safety.
- Any potential adverse noise, dust and sedimentation effects generated during the land disturbance and construction phase will be temporary in nature and can be suitably managed through appropriate erosion and sediment control measures. Earthworks are cut to fill on site, with no excess cut to be removed from the site.
- During the construction, there will be traffic, however these movements are considered consistent with the permitted level of traffic movements associated with a residential building. The proposal is not expected to greatly increase the amount of vehicular traffic to and from the site beyond what can generally be associated with a rural residential activity.
- Any construction related effects will be temporary and transient and less than minor.
- Suitable erosion and sediment control methods will be utilized to ensure that the effects on the adjacent sites as a result of the earthworks will be less than minor.

SECTION 104 MATTERS

The matters that require consideration in assessing this application are set out in section 104 of the Resource Management Act 1991. These matters include the actual and potential effects of the allowing the activity on the environment and the relevant rules and assessment criteria.

ASSESSMENT CRITERIA AND MATTERS FOR CONTROL/DISCRETION

FAR NORTH DISTRICT PLAN

Whilst the proposal is a discretionary activity, the following assessment criteria, matters for control and discretion are considered relevant to the application and provide a reliable basis to determine the effects of the proposal.

10.6.5.2.1	Papakainga Housing		
	Requirement	Comment	Compliance
	<i>(i) the number and location of dwellings;</i>	The proposal involves the relocation of three modest papakainga houses to provide for the needs of this iwi. Each dwelling has sufficient open space and outdoor living commensurate and necessary within the coastal environment.	Compliant
	<i>(ii) the location and standard of access;</i>	Access to the site is over an existing driveway from Waikare Road, which is fit for purpose. The driveway will have a passing bay.	Compliant
	<i>(iii) screening and planting.</i>	The papakainga housing is to be fully integrated into the site through the implementation of screening planting.	Compliant

11.3	Stormwater Management		
	Requirement	Comment	Compliance
	<i>(a) The extent to which building site coverage and impermeable surfaces result in</i>	The increased impervious surfaces have been designed by TSS Consultants Ltd.	Compliant

	<i>increased stormwater runoff and contribute to total catchment impermeability and the provisions of any catchment or drainage plan for that catchment.</i>		
	<i>(b) The extent to which Low Impact Design principles have been used to reduce site impermeability.</i>	The proposal involves low impact design principles.	Compliant
	<i>(c) Any cumulative effects on total catchment impermeability.</i>	The cumulative effects of impervious surfaces have been addressed.	Compliant
	<i>(d) The extent to which building site coverage and impermeable surfaces will alter the natural contour or drainage patterns of the site or disturb the ground and alter its ability to absorb water.</i>	The increased impermeable surfaces will not alter the natural contour or drainage patterns within the site or locality.	Compliant
	<i>(e) The physical qualities of the soil type.</i>	The soils within the site are described as Kaitaia Clay Loam (KA), belonging to the Soils of the Estuarine Flats and Former Lake Beds and categorised as imperfectly to very poorly drained soils.	Compliant
	<i>(f) Any adverse effects on the life supporting capacity of soils.</i>	The site will not affect the life supporting capacity of the soils.	Compliant
	<i>(g) The availability of land for the disposal of effluent and stormwater on the site without adverse effects on the water quantity and water quality of water bodies (including groundwater and aquifers) or on adjacent sites.</i>	Effluent has also been designed by TSS Consultants Ltd and is appropriate.	Compliant
	<i>(h) The extent to which paved, impermeable</i>	The proposal is necessary to allow for papakainga housing.	Compliant

	<i>surfaces are necessary for the proposed activity.</i>		
	<i>(i) The extent to which landscaping may reduce adverse effects of run-off.</i>	Some planting is proposed to mitigate stormwater.	Compliant
	<i>(j) Any recognised standards promulgated by industry groups.</i>	Industry accepted standards are to be employed.	Compliant
	<i>(k) The means and effectiveness of mitigating stormwater run-off to that expected by the permitted activity threshold.</i>	The stormwater management will be effective.	Compliant
	<i>(l) The extent to which the proposal has considered and provided for climate change.</i>	Climate change has been accounted for.	Compliant
	<i>(m) The extent to which stormwater detention ponds and other engineering solutions are used to mitigate any adverse effects.</i>	No stormwater ponds are proposed, just tank storage.	Compliant

11.6	Setback from Boundaries		
	Requirement	Comment	Compliance
	<i>(a) Where there is a setback, the extent to which the proposal is in keeping with the existing character and form of the street or road, in particular with the external scale, proportions and buildings on the site and on adjacent sites.</i>	<p>In this case, the site is within the Rural Production Zone and is generally rural. The property itself contains patches of landscape vegetation, with the new dwelling three having proposed screen planting to mitigate the effects of the setback infringement.</p> <p>The scale and design of the proposed Papakainga Houses, will be better suited and integrated into the site through the proposed landscape planting and colour pallet.</p>	Compliant

	<i>(b) The extent to which the building(s) intrudes into the street scene or reduces outlook and privacy of adjacent properties.</i>	The dwellings are well placed within the site and are to be visually screened.	Compliant
	<i>(c) The extent to which the buildings restrict visibility for vehicle manoeuvring.</i>	The proposal does not restrict vehicle manoeuvring.	Compliant
	<i>(d) The ability to mitigate any adverse effects on the surrounding environment, for example by way of street planting.</i>	Planting is proposed to mitigate street views.	Compliant
	<i>(e) The extent to which provision has been made to enable and facilitate all building maintenance and construction activities to be contained within the boundaries of the site.</i>	The dwellings are suitable located to ensure construction and maintenance can be achieved.	Compliant

OBJECTIVES AND POLICIES

FAR NORTH DISTRICT COUNCIL – OPERATIVE DISTRICT PLAN

The following objectives and policies are considered relevant when considering this application:

Chapter 8.6 Rural Environment – Section 6 Rural Production

- *Objectives 8.6.3.1 to 8.6.3.9*
- *Policies 8.6.4.1 to 8.6.4.9*

The above objectives and policies seek to promote the sustainable management of natural and physical resources in the Rural Production Zone, enable the efficient use and development of the Rural Production Zone in a way that enables people and communities to provide for their social, economic, and cultural well being and for their health and safety, maintenance and enhancement of the amenity values, avoid potential conflicts. The proposed Papakainga housing takes into consideration the existing features of the property and is considered to adequately avoid, remedy and mitigate any potential effects through the design of the buildings, including colours and materials and the screen planting. Overall, the proposal is in keeping with these objective and policies.

In summary it is concluded that this proposal satisfies the relevant matters requiring consideration under section 104.

FAR NORTH DISTRICT COUNCIL – PROPOSED DISTRICT PLAN

Part 3 – Area Specific Matters – Special Purpose Zones – Maori Purpose

- *Objectives MPZ-01 – MPZC03*
- *Policies MPZ-P1 – MPZ-P4*

The above objectives and policies seek to ensure the viability of the Māori Purpose zone is for future generations, to enable a range of social, cultural and economic development opportunities that support the occupation, use, development and ongoing relationship with ancestral land and the use and development in the Māori Purpose zone reflects the sustainable carrying capacity of the land and surrounding environment. The proposed Papakainga housing on the proposed site is consistent with the direction of the above objectives and policies and allows iwi to reconnect with the land in a more whanau-based living situation.

In summary it is concluded that this proposal satisfies the relevant matters requiring consideration under section 104.

NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT 2020 (NPSFM)

The NPSFM aims to maintain and enhance freshwater quality. In this case the site does not contain any wetlands.

PART II OF THE RESOURCE MANAGEMENT ACT

Part II of the Act sets out the Purpose and Principles. This proposal is in keeping with Part II as the effects of the proposal on the environment will be minor and the proposal will not compromise the ability of this site to be used by existing and future generations, also the life supporting capacity of air, water, soil and ecosystems will not be compromised.

Section 5 of the Resource Management Act 1991 (the Act) describes the Purpose and Principles of the Act and provides a definition of 'sustainable management' which includes reference to managing the use and development of natural and physical resources at a rate that allows people

and communities to provide for their wellbeing, whilst avoiding, remedying and mitigating any adverse effects of activities on the environment.

This involves sustaining resource potential (excluding minerals), safeguarding the life supporting capacity of air, water, soil and ecosystems and avoiding, remedying or mitigating adverse effects. The effects of this proposal on the environment have been described above.

The proposal is considered to be consistent with the Purposed and Principles outlined above as the effects on character and amenity will be no more than minor. Further any potential effects can be adequately avoided, remedied and mitigated.

Section 6 of the Act requires all persons exercising functions and powers under the Act to recognise and provide for matters of national importance in relation to the natural character of the coastal environment, wetlands, lakes and rivers and the protection of them from inappropriate subdivision use and development. Outstanding natural features and landscapes are also to be protected from inappropriate subdivision, use and development.

The proposal is considered to be consistent with section 6 of the Act as there are considered to be no matters of national importance on this site.

Section 7 relates to other matters that are to which regard must be had in achieving the sustainable management of natural and physical resources: The proposed shed is considered to be consistent with the provisions of the section of the Act.

Section 8 requires that account shall be taken of the principles of the Treaty of Waitangi. The proposal is considered to be consistent with the matters outlined in Section 8.

Overall, it is considered that the proposal is in keeping with Part II of the Resource Management Act 1991.

CONCLUSION

It is concluded that the proposal will have less than minor adverse effects on the surrounding environment. Further the proposed activity is in keeping with the relevant assessment criteria, objectives and policies set out in Far North District Plan.

As a result of the above granting consent to this proposal will be in keeping with the provisions set out in Part II of the Resource Management Act 1991 and sections 104 and 104B.

Appendix 1 – Record of Title

Appendix 2 – Architectural Plans

Appendix 3 – Site Suitability Reports

Appendix 4 – Wastewater Report

Appendix 5 – Flood Risk Assessment Report

Appendix 6 – Stormwater Mitigation Report

Appendix 7 – Management Plan



**RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD**

**Guaranteed Search Copy issued under Section 60 of the Land
Transfer Act 2017**




R.W. Muir
Registrar-General
of Land

Identifier NA112A/391
Land Registration District North Auckland
Date Issued 15 May 1997

Prior References
NA1904/24

Estate Fee Simple
Area 2.2256 hectares more or less
Legal Description Waimanoni 1A 2C Block

Registered Owners

Hone Pani Tamati Waka Nene Harawira and Hilda Mary Halkyard-Harawira as Responsible Trustees jointly, no survivorship


Interests

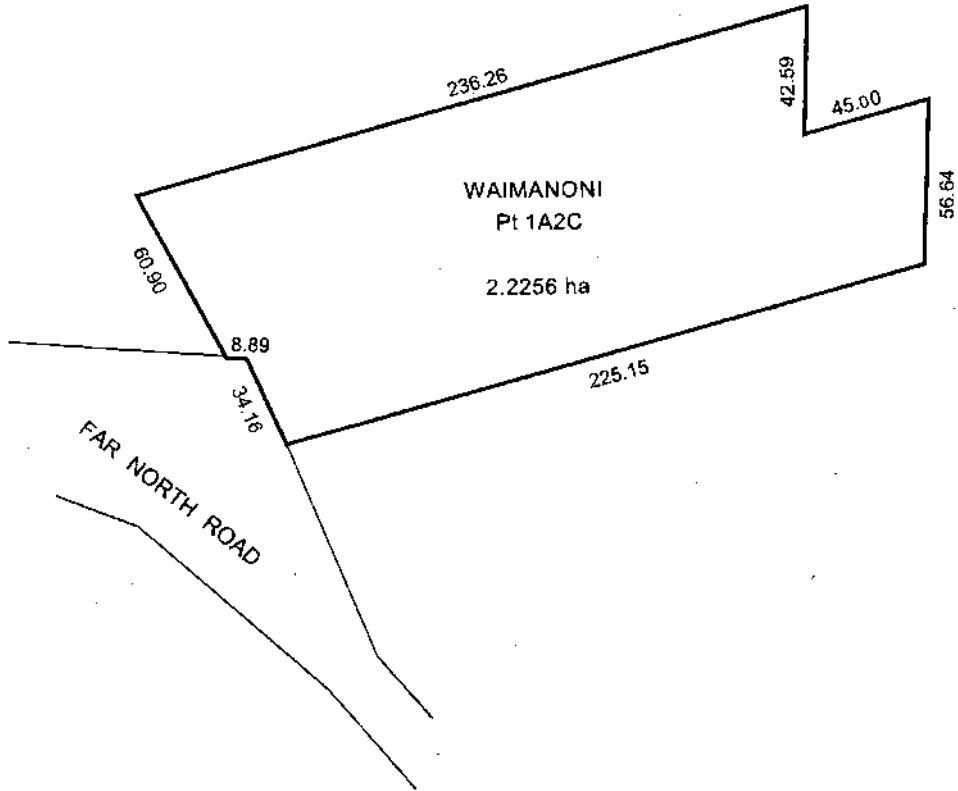
C993056.1 STATUS ORDER DECLARING THAT THE STATUS OF THE WITHIN LAND SHALL CEASE TO BE GENERAL LAND AND SHALL BECOME MAORI FREEHOLD LAND - 9.5.1996 AT 3.00 PM

D538887.1 Notice pursuant to Section 91 Transit New Zealand Act 1989 - 6.9.2000 at 3.45 pm

9906209.2 Mortgage to ANZ Bank New Zealand Limited - 18.12.2014 at 10:03 am

CT 112A/391
N6438

Title Diagram CT 112A/3
Copy - 01/01, Pgs - 001, 01/07/06, 14/01

No: 01 3120021E2





Report on Maori Land details for the following Record(s) of Title



Record(s) of Title

NA112A/391

Identified as potentially Maori Freehold Land

***** End of Report *****

Proposed New Dwelling

6A Waimanoni Road, Waimanoni

For: H5 Whanau Trust



Contents

P01	Site Location Plan
P01A	Overall Site Plan
P01B	Site Plan - No Services
P01C	Site Plan - S/W & Water
P01D	Site Plan - Sewer
P01E	Site Plan - Future Planting
P01F	Site Plan - Road Distances

Concept Plans

Concept 1

November 2023

Revision:
Project No.
Drawn By:

C01
1168
NMB



NB: Boundary Lines are Indicative Only

Revision	By:	Date:
Drawn	NMB	Jul 22 2022

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property of Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
 © 2020 Advance Manufacturing Ltd

Advance
 build
 0800 327 828
 Fax 09 401 6506
 P.O. Box 111, Kerikeri 0245
www.advancebuild.co.nz

Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

Sheet Title:
 Site Location Plan

Scale: NTS

Project No:	Page:	Revision:
1168	01	C01

Site Information

6A Waimanoni Road, Waimanoni
 Pt Waimanoni 1A2C
 High Wind Zone
 Corrosion Zone C
 Earthquake Zone 1
 Zone: Rural Production
 Site area: 22256m²



Site Subject to
 Coastal Inundation & River Flood Hazard Zone(50 - 100yr Extent)
 Refer to Engineer flood assessment

Driveway Coverage

Pre development Driveway area: 1630m²
 Post development Driveway area: 2628m²

Building Coverage:

Building Coverage Pre development: 384.4m²
 Building Coverage Post development: 920.7m²

Roof Coverage:

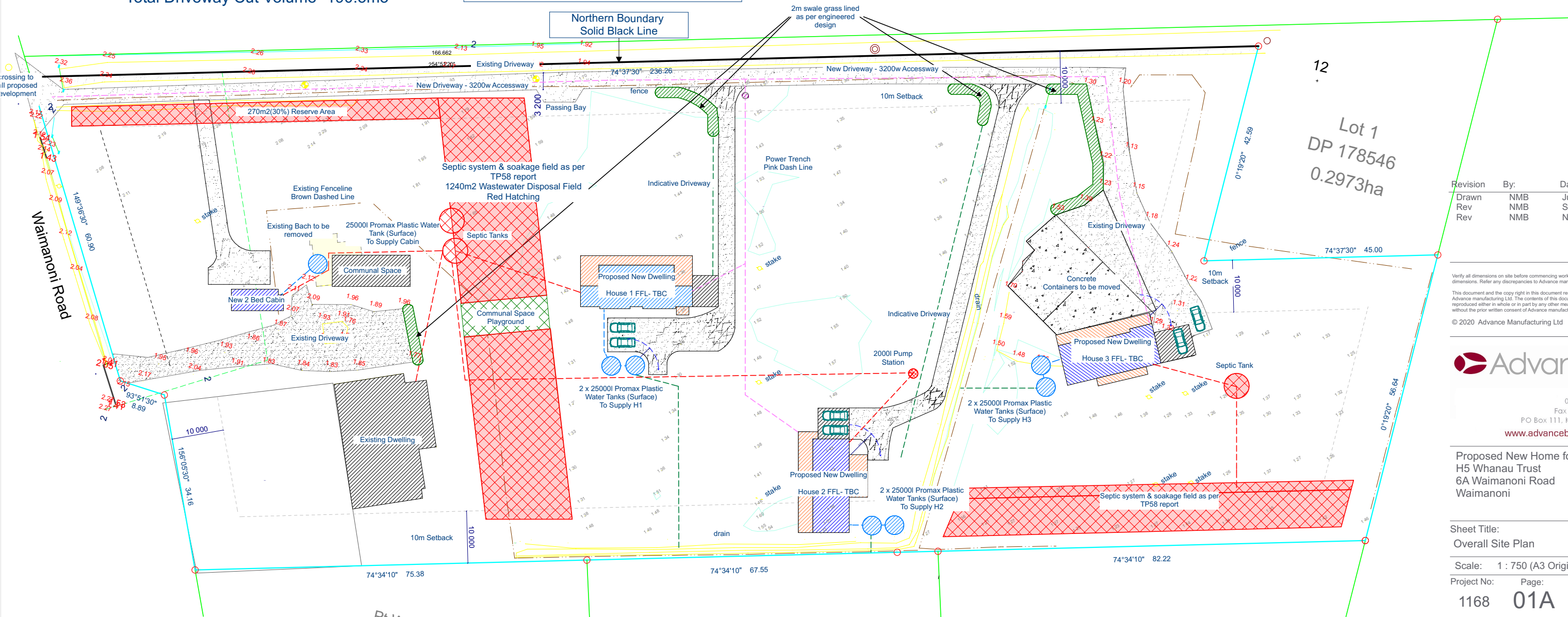
Roof Coverage Pre development: 480.5m²
 Roof Coverage Post development: 1243.53m²

Total impermeable surfaces: 3871.53m² = 17.39%

Earthworks:

Total Driveway Cut Volume- 190.5m³

NRC Permitted Discharge Compliance	
Identified Stormwater Flow Path	5m
River, Lake, Pond, Stream, Dam or Wetland	15m
Existing Water Supply Bore	20m
Groundwater	0.6m
Property Boundary	1.5m
Buildings - Field Setback	1.5m
Buildings - Tank Setback	3.0m
10m Buffer Zone	Slopes > 10°
Floodplain Exclusion	Height > 50yr Floodplain
Reserve Area	30%



Site Information

6A Waimanoni Road, Waimanoni
 Pt Waimanoni 1A2C
 High Wind Zone
 Corrosion Zone C
 Earthquake Zone 1
 Zone: Rural Production
 Site area: 22256m²



Site Subject to
Coastal Inundation & River Flood Hazard Zone(50 - 100yr Extent)
 Refer to Engineer flood assessment

Driveway Coverage

Pre development Driveway area: 1630m²
 Post development Driveway area: 2628m²

Building Coverage:

Building Coverage Pre development: 384.4m²
 Building Coverage Post development: 920.7m²

Roof Coverage:

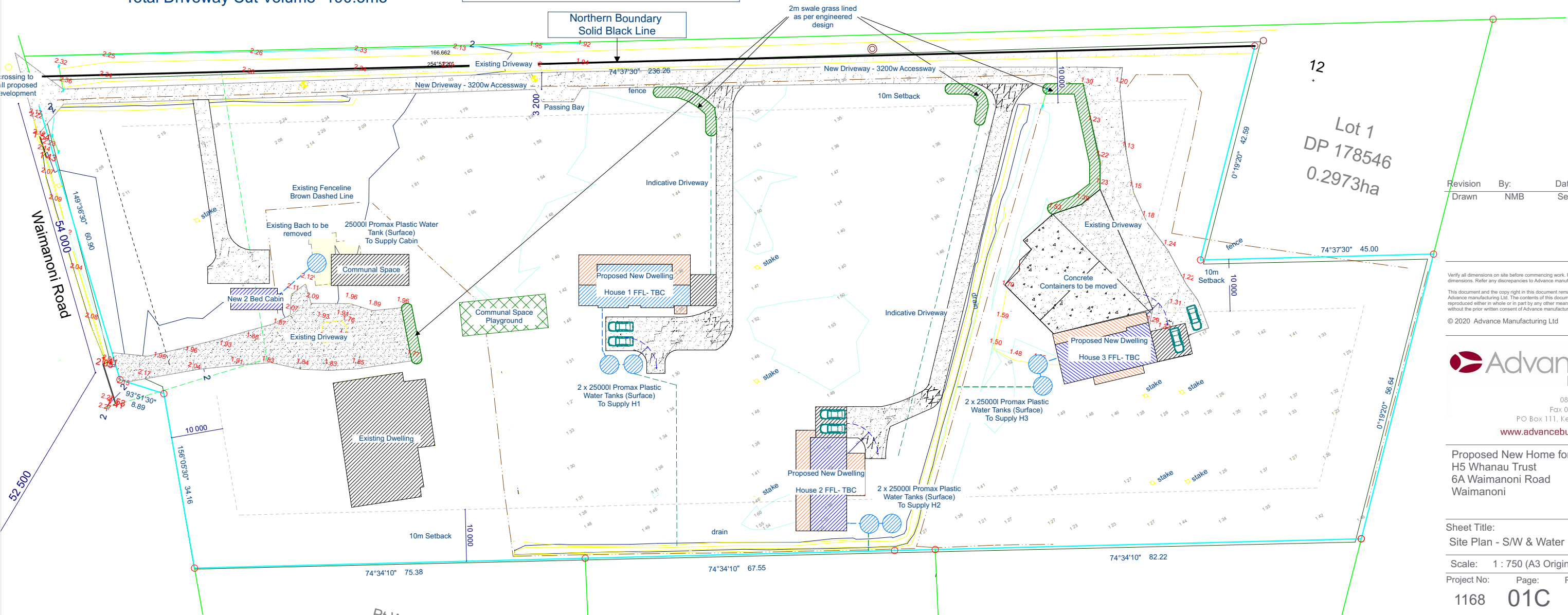
Roof Coverage Pre development: 480.5m²
 Roof Coverage Post development: 1243.53m²

Total impermeable surfaces: 3871.53m² = 17.39%

Earthworks:

Total Driveway Cut Volume- 190.5m³

NRC Permitted Discharge Compliance	
Identified Stormwater Flow Path	5m
River, Lake, Pond, Stream, Dam or Wetland	15m
Existing Water Supply Bore	20m
Groundwater	0.6m
Property Boundary	1.5m
Buildings - Field Setback	1.5m
Buildings - Tank Setback	3.0m
10m Buffer Zone	Slopes > 10°
Floodplain Exclusion	Height > 50yr Floodplain
Reserve Area	30%



Lot 1
 DP 178546
 0.2973ha

Revision By: Date:
 Drawn NMB Sep 06 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property of Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
 © 2020 Advance Manufacturing Ltd



Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

Sheet Title:
 Site Plan - S/W & Water
 Scale: 1 : 750 (A3 Original)
 Project No: 1168 Page: 01C Revision: C01

Site Information

6A Waimanoni Road, Waimanoni
 Pt Waimanoni 1A2C
 High Wind Zone
 Corrosion Zone C
 Earthquake Zone 1
 Zone: Rural Production
 Site area: 22256m²



Site Subject to
Coastal Inundation & River Flood Hazard Zone(50 - 100yr Extent)
 Refer to Engineer flood assessment

Driveway Coverage

Pre development Driveway area: 1630m²
 Post development Driveway area: 2628m²

Building Coverage:

Building Coverage Pre development: 384.4m²
 Building Coverage Post development: 920.7m²

Roof Coverage:

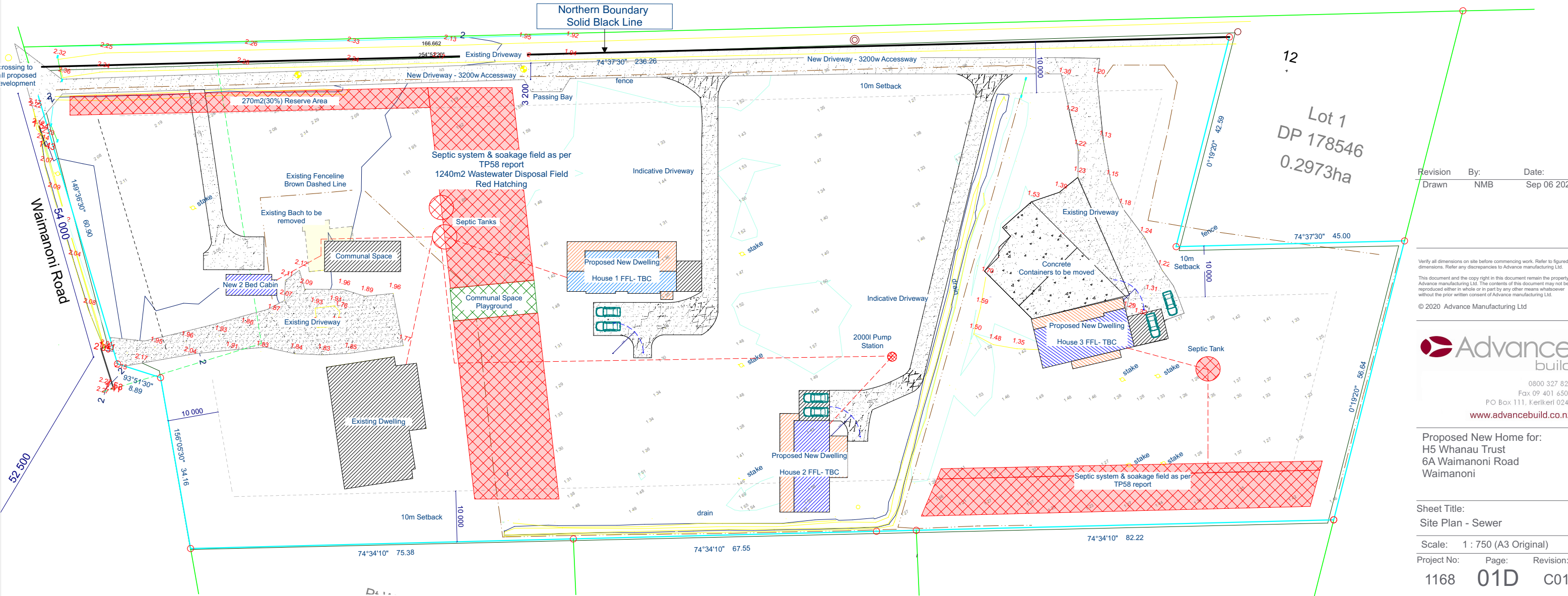
Roof Coverage Pre development: 480.5m²
 Roof Coverage Post development: 1243.53m²

Total impermeable surfaces: 3871.53m² = 17.39%

Earthworks:

Total Driveway Cut Volume- 190.5m³

NRC Permitted Discharge Compliance	
Identified Stormwater Flow Path	5m
River, Lake, Pond, Stream, Dam or Wetland	15m
Existing Water Supply Bore	20m
Groundwater	0.6m
Property Boundary	1.5m
Buildings - Field Setback	1.5m
Buildings - Tank Setback	3.0m
10m Buffer Zone	Slopes > 10°
Floodplain Exclusion	Height > 50yr Floodplain
Reserve Area	30%



Revision By: Date:
 Drawn NMB Sep 06 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property of Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
 © 2020 Advance Manufacturing Ltd

Advance build
 0800 327 828
 Fax 09 401 6506
 P.O. Box 111, Kerikeri 0245
www.advancebuild.co.nz

Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

Sheet Title:
 Site Plan - Sewer
 Scale: 1 : 750 (A3 Original)
 Project No: 1168 Page: 01D Revision: C01

Site Information

6A Waimanoni Road, Waimanoni
 Pt Waimanoni 1A2C
 High Wind Zone
 Corrosion Zone C
 Earthquake Zone 1
 Zone: Rural Production
 Site area: 22256m²



Site Subject to
Coastal Inundation & River Flood Hazard Zone(50 - 100yr Extent)
 Refer to Engineer flood assessment

Driveway Coverage

Pre development Driveway area: 1630m²
 Post development Driveway area: 2628m²

Building Coverage:

Building Coverage Pre development: 384.4m²
 Building Coverage Post development: 920.7m²

Roof Coverage:

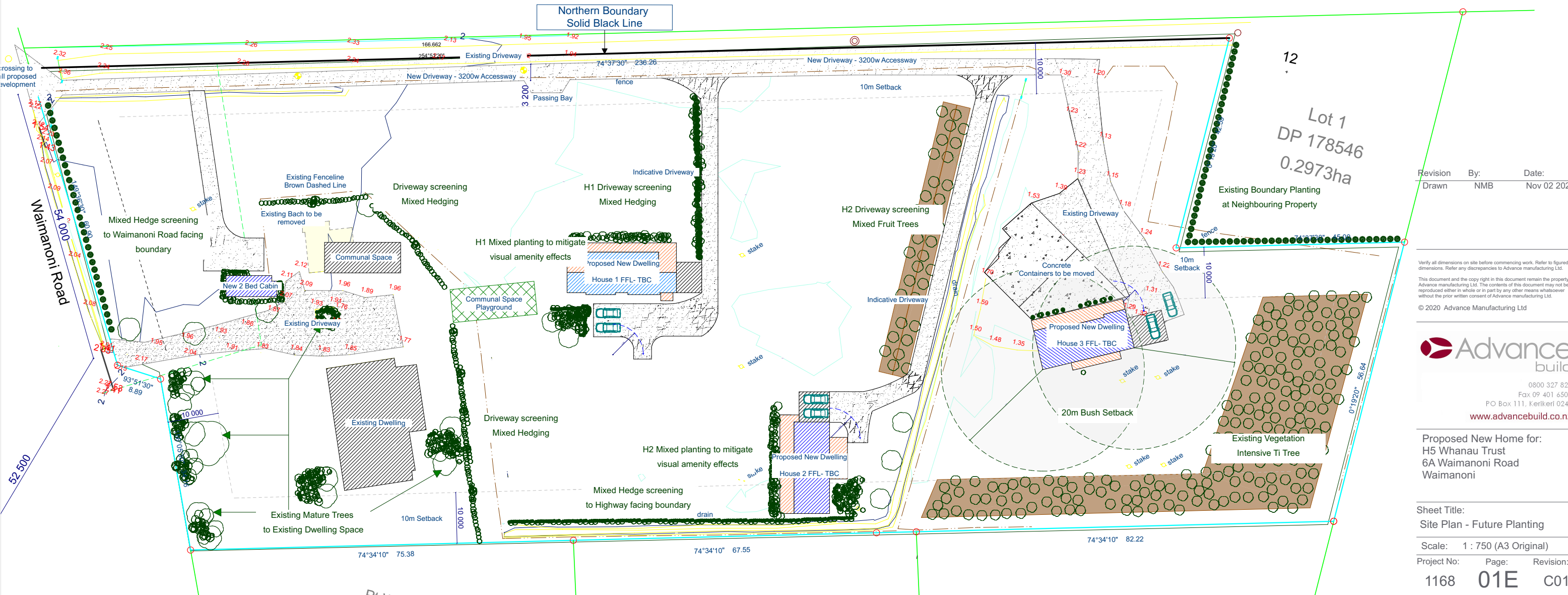
Roof Coverage Pre development: 480.5m²
 Roof Coverage Post development: 1243.53m²

Total impermeable surfaces: 3871.53m² = 17.39%

Earthworks:

Total Driveway Cut Volume- 190.5m³

NRC Permitted Discharge Compliance	
Identified Stormwater Flow Path	5m
River, Lake, Pond, Stream, Dam or Wetland	15m
Existing Water Supply Bore	20m
Groundwater	0.6m
Property Boundary	1.5m
Buildings - Field Setback	1.5m
Buildings - Tank Setback	3.0m
10m Buffer Zone	Slopes > 10°
Floodplain Exclusion	Height > 50yr Floodplain
Reserve Area	30%



Revision By: Date:
 Drawn NMB Nov 02 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property of Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
 © 2020 Advance Manufacturing Ltd



Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

Sheet Title:
 Site Plan - Future Planting
 Scale: 1 : 750 (A3 Original)
 Project No: Page: Revision:
 1168 01E C01

Site Information

6A Waimanoni Road, Waimanoni
 Pt Waimanoni 1A2C
 High Wind Zone
 Corrosion Zone C
 Earthquake Zone 1
 Zone: Rural Production
 Site area: 22256m²

Driveway Coverage

Pre development Driveway area: 1630m²
 Post development Driveway area: 2628m²

Building Coverage:

Building Coverage Pre development: 384.4m²
 Building Coverage Post development: 920.7m²

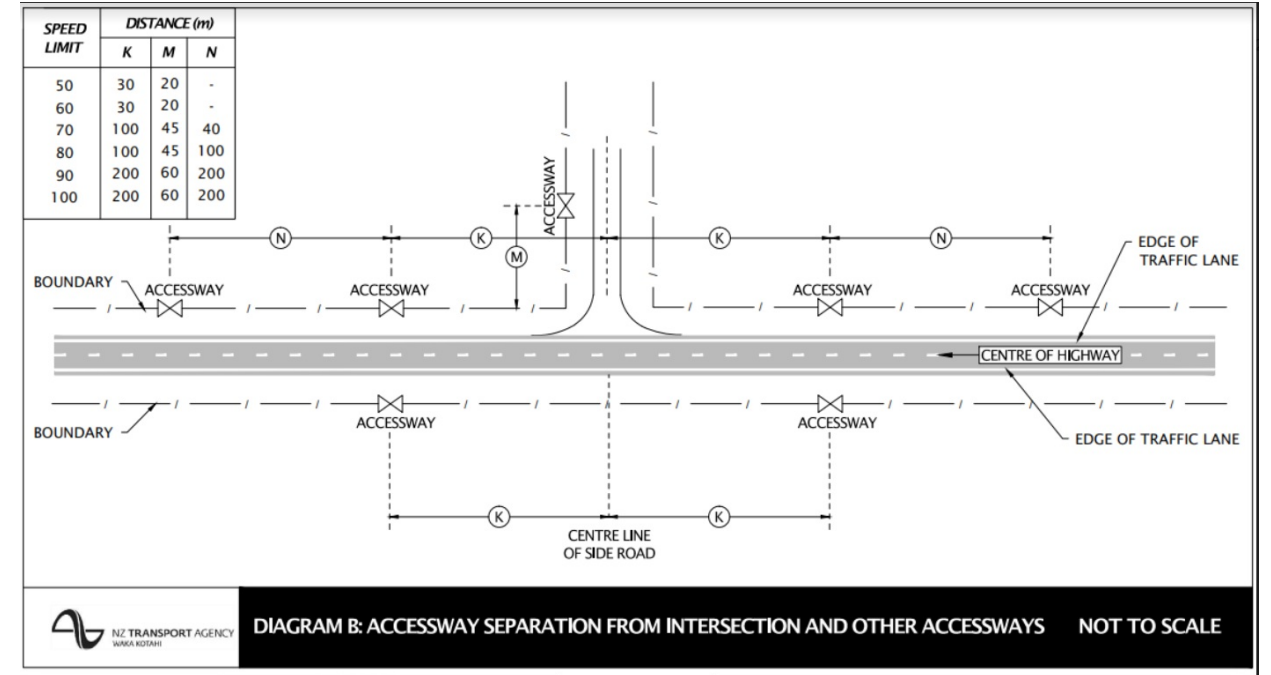
Roof Coverage:

Roof Coverage Pre development: 480.5m²
 Roof Coverage Post development: 1243.53m²

Total impermeable surfaces: 3871.53m² = 17.39%

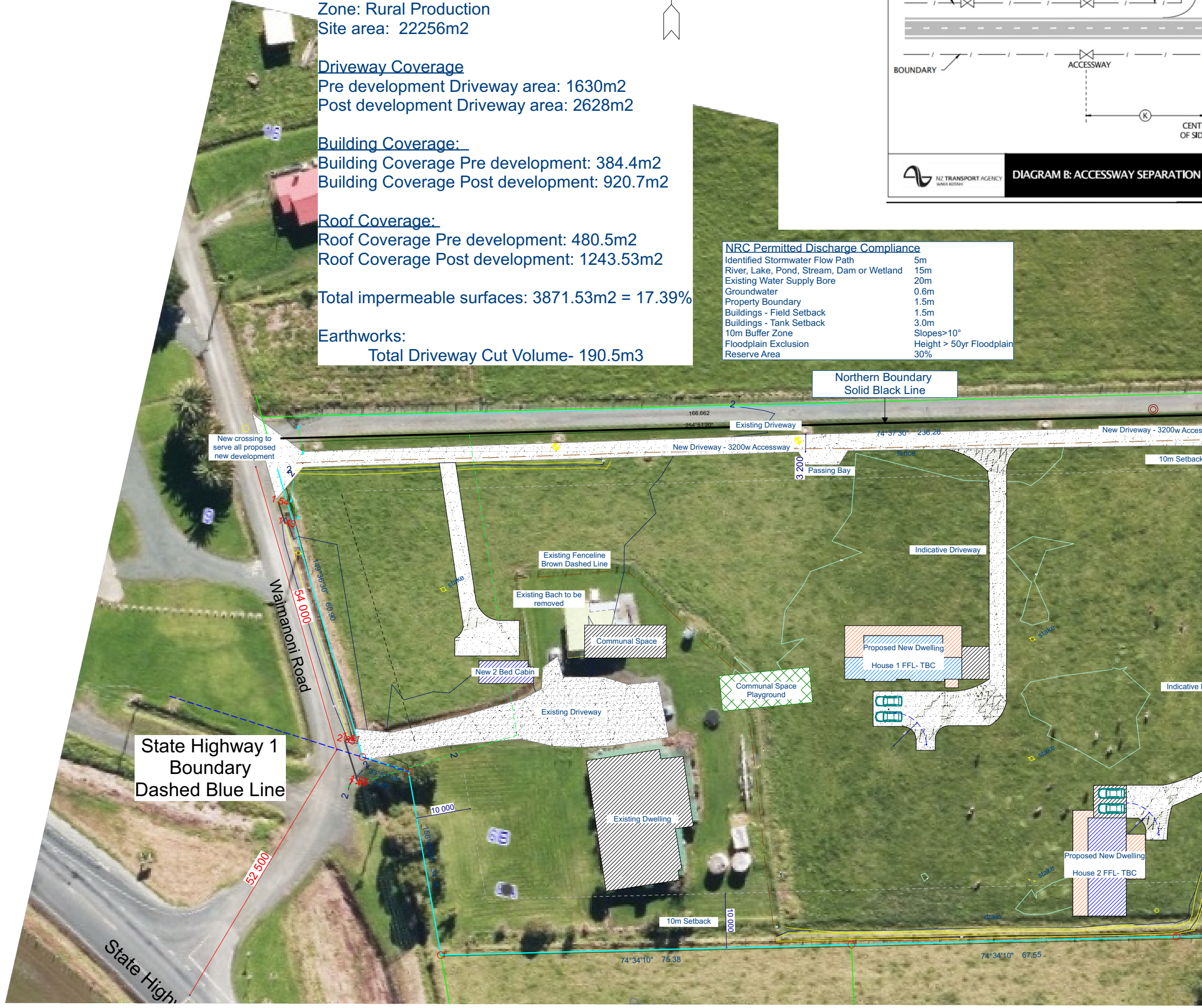
Earthworks:

Total Driveway Cut Volume- 190.5m³



NRC Permitted Discharge Compliance

Identified Stormwater Flow Path	5m
River, Lake, Pond, Stream, Dam or Wetland	15m
Existing Water Supply Bore	20m
Groundwater	0.6m
Property Boundary	1.5m
Buildings - Field Setback	1.5m
Buildings - Tank Setback	3.0m
10m Buffer Zone	Slopes > 10°
Floodplain Exclusion	Height > 50yr Floodplain
Reserve Area	30%



Revision Drawn By: NMB Date: Nov 10 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property of Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
 © 2020 Advance Manufacturing Ltd

Advance build
 0800 327 828
 Fax 09 401 6506
 P O Box 111, Kerikeri 0245
www.advancebuild.co.nz

Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

Sheet Title:
 Site Plan - Road Distances
 Scale: 1 : 750 (A3 Original)
 Project No: 1168 Page: 01F Revision: C01



0800 327 828

Fax 09 401 6506

PO Box 111, Kerikeri 0245

www.advancebuild.co.nz

Proposed New Project

6A Waimanoni Road, Waimanoni

For: H5 Whanau Trust

Concept Plans

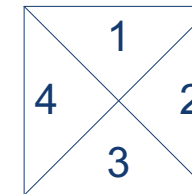
Build Concepts

September 2023

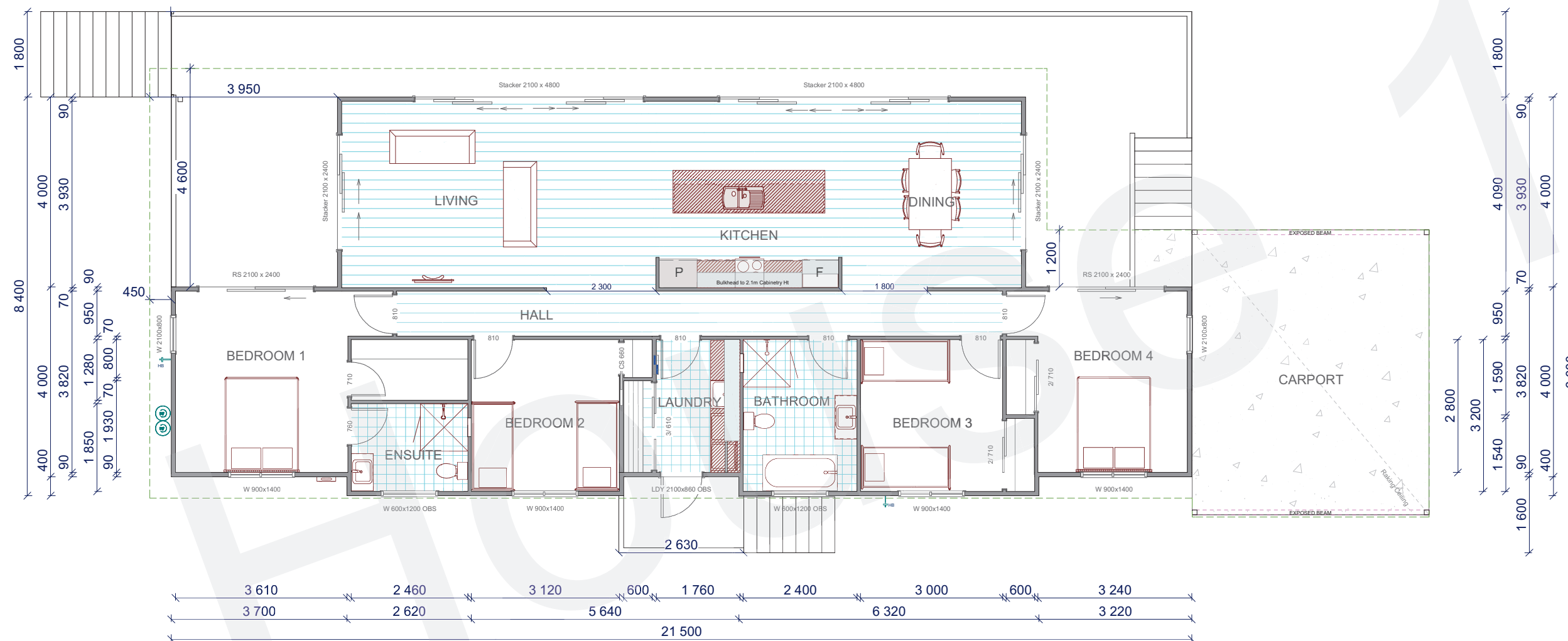
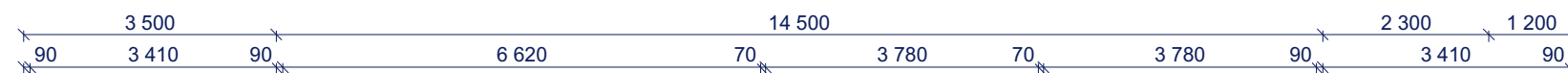
Final working drawings take precedence over concept plans

Revision:
Project No.
Drawn By:

C01
1168
NMB



Elevations



LIVING AREA
148.9 SQ M

Revision	By:	Date:
Drawn	NMB	Aug 30 2022
Rev	NMB	Jul 18 2023
Rev	NMB	Jul 21 2023
Rev	NMB	Sep 26 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
This document and the copy right in this document remain the property Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.

© 2020 Advance Manufacturing Ltd



0800 327 828
Fax 09 401 6506
P O Box 111, Kerikeri 0245
www.advancebuild.co.nz

Proposed New Home for:
H5 Whanau Trust
6A Waimanoni Road
Waimanoni

Sheet Title:
Floor Plan

Scale: 1 : 100 (A3 Original)

Project No: 1168 Page: 02 Revision: P01

Roof Pitch 3 deg
 Carport Pitch 3 deg
 Stud height 2.4m

House Height to be confirmed with Flood Report Findings

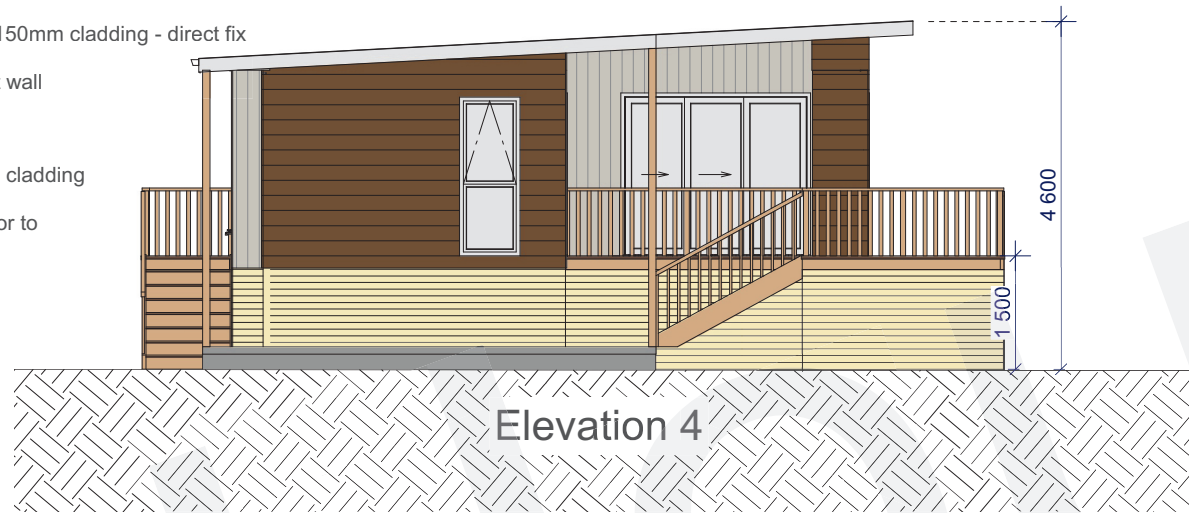
Coloursteel Endura T-Rib roofing or similar
 Double glazed windows
 140mm H3 baseboards, 25mm gap



Weathergroove Smooth 150mm cladding - direct fix
 Elevation 1- Front Wall of Kit/Liv/Din
 Above Doors Only
 Bedroom 1 & 4
 Weathertex Selflok Ecogroove 150mm cladding - Direct fix
 Elevation 1- Front Wall of Kit/Liv/Din
 between Doors to corners

Elevation 1

Weathertex Selflok Ecogroove 150mm cladding - direct fix
 Elevation 4 - Bedroom 4 wall
 Edge of Dining Door to front wall
 Weathergroove Smooth 150mm cladding - direct fix
 Elevation 4 - Edge of Dining Door to internal corner
 Pop Out short wall



Elevation 4



Weathertex Selflok Ecogroove 150mm cladding - Direct fix
 Elevation 2 - Bedroom 1 wall
 Edge of Living Door to front wall
 Weathergroove Smooth 150mm cladding - direct fix
 Elevation 2 - Edge of Living Door to internal corner
 Pop Out short wall

Elevation 2

Weathertex Selflok Ecogroove 150mm cladding - direct fix
 Elevation 3 - Bedroom 1 & 4 walls
 Weathergroove Smooth 150mm cladding - direct fix
 Elevation 3 - Recess & Pop Out



Elevation 3

Revision	By:	Date:
Drawn	NMB	Sep 07 2022
Rev	NMB	Oct 03 2022
Rev	NMB	Jul 18 2023
Rev	NMB	Jul 21 2023
Rev	NMB	Aug 31 2023
Rev	NMB	Sep 26 2023
Rev	NMB	Oct 16 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.

© 2020 Advance Manufacturing Ltd



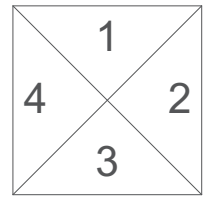
0800 327 828
 Fax 09 401 6506
 P.O. Box 111, Kerikeri 0245
www.advancebuild.co.nz

Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

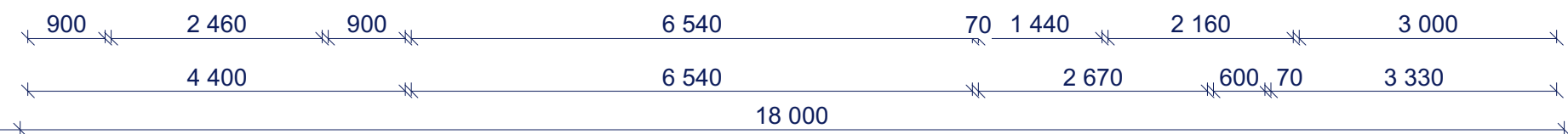
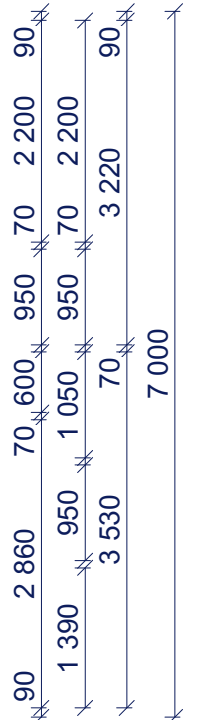
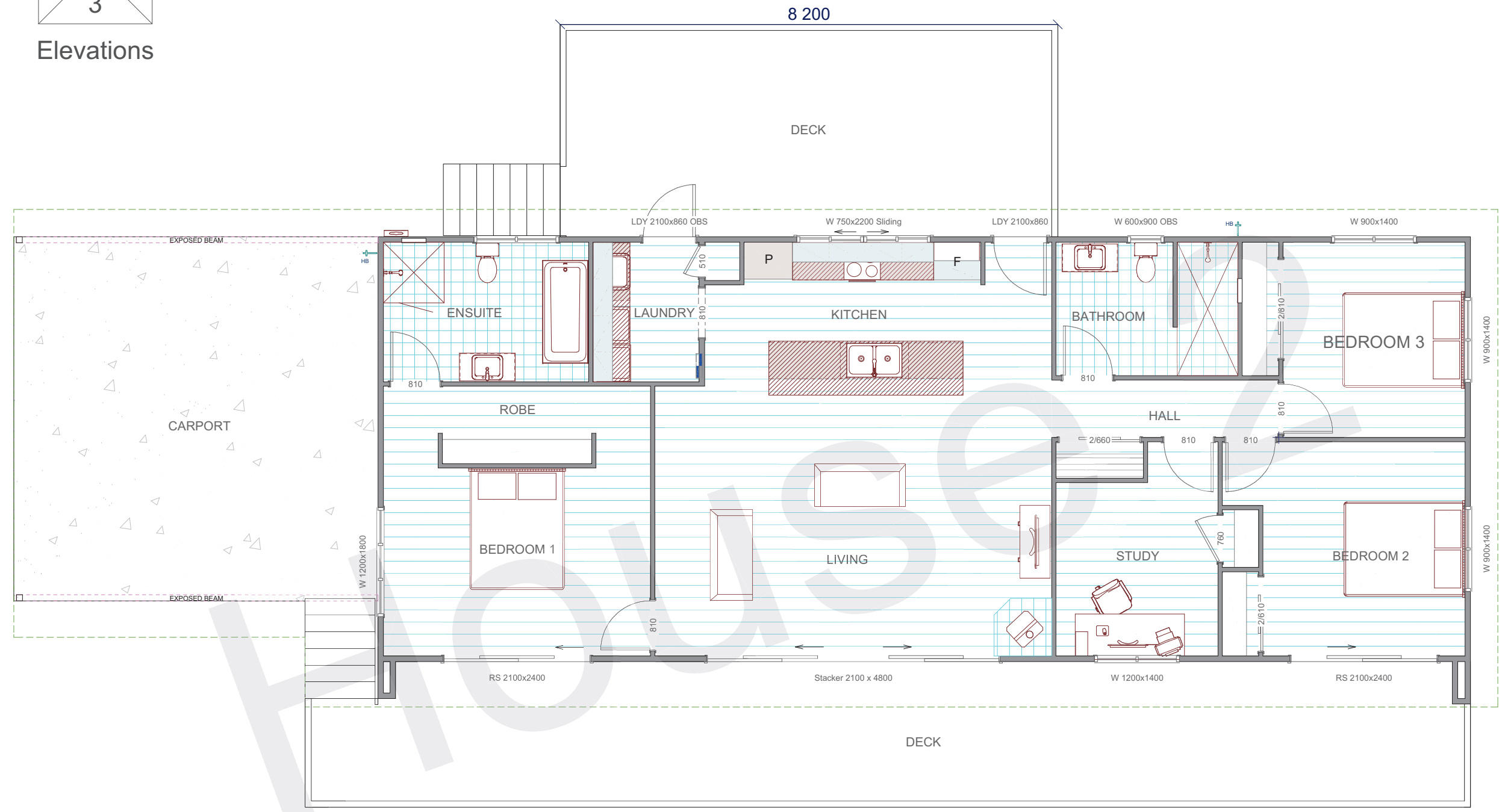
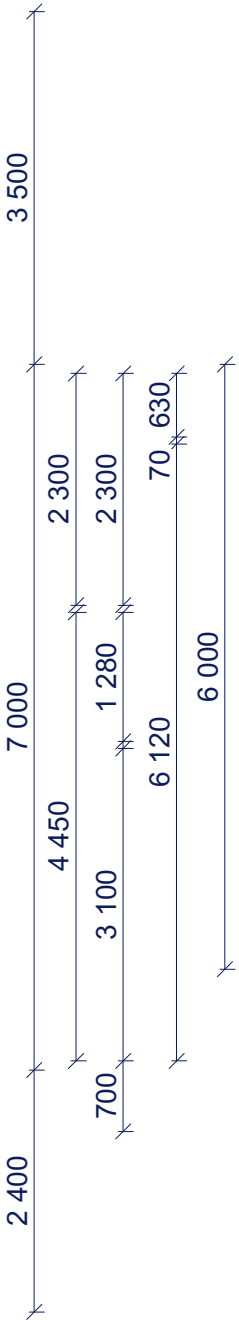
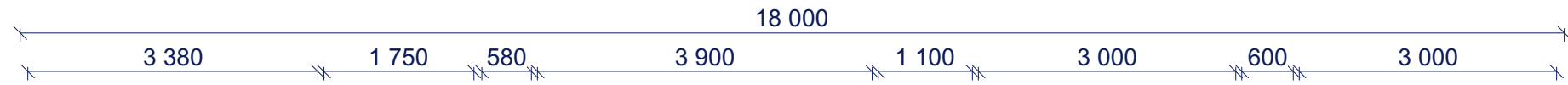
Sheet Title:
 Elevations

Scale: 1 : 100 (A3 Original)

Project No: 1168 Page: 03 Revision: C01



Elevations



LIVING AREA
126.0 SQ M



Revision	By:	Date:
Drawn	NMB	Sep 07 2022
Rev	NMB	Jul 24 2023
Rev	NMB	Oct 06 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
This document and the copy right in this document remain the property Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
© 2022 Advance Manufacturing Ltd

0800 327 828
Fax 09 401 6506
P.O. Box 111, Kerikeri 0245
www.advancebuild.co.nz

Proposed New Home for:
H5 Whanau Trust
6A Waimanoni Road
Waimanoni

Sheet Title:
Floor Plan

Scale: 1 : 75 (A3 Original)

Project No:	Page:	Revision:
1168	02	C01

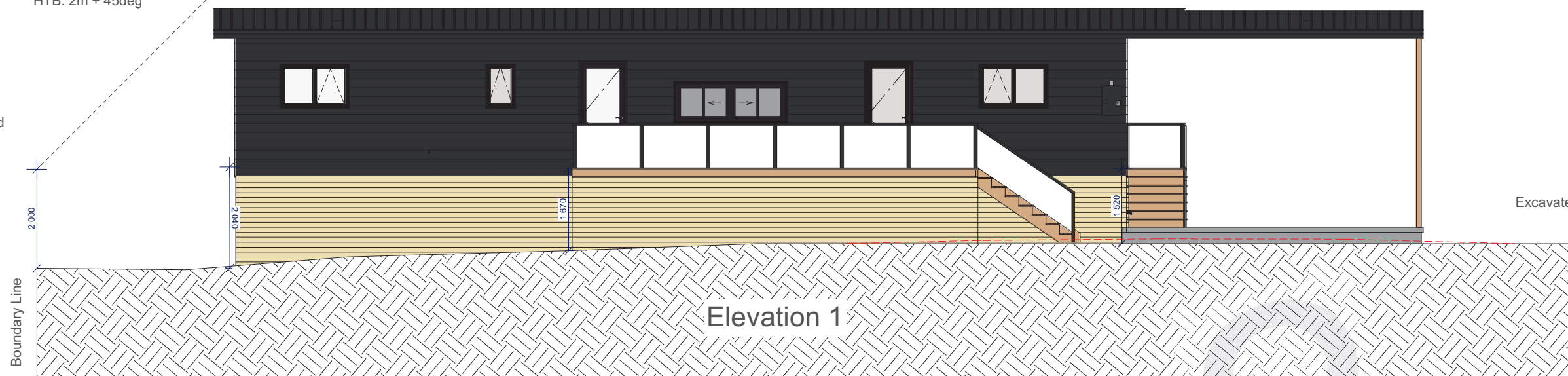
House Height to be confirmed with Flood Report Findings

Roof Pitch 3 deg
 Carport Pitch 3 deg
 Stud height - 2.4m Flat Throughout

HTB: 2m + 45deg

Coloursteel Endura T-Rib roofing or similar

Weatherex 200mm weatherboard cladding - direct fix

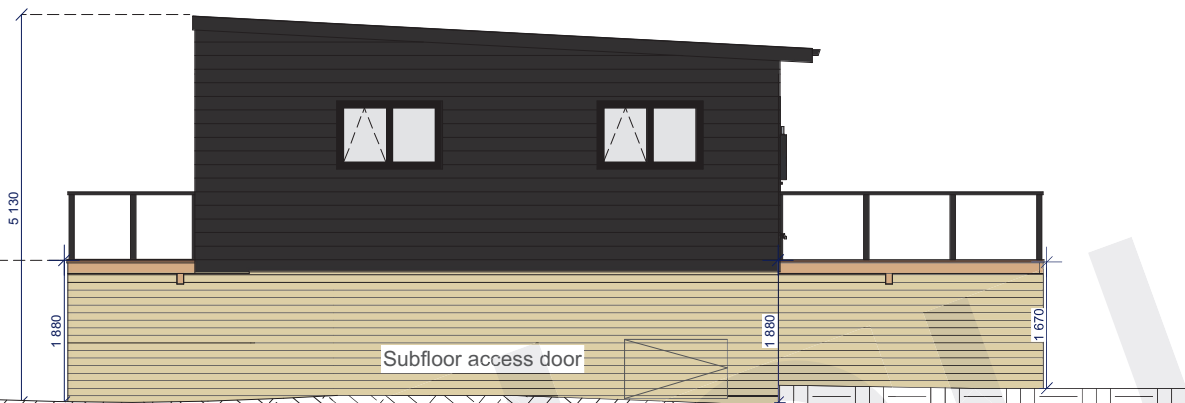


Excavate to -1500 below FFL

Elevation 1

Weatherex 200mm weatherboard cladding - direct fix

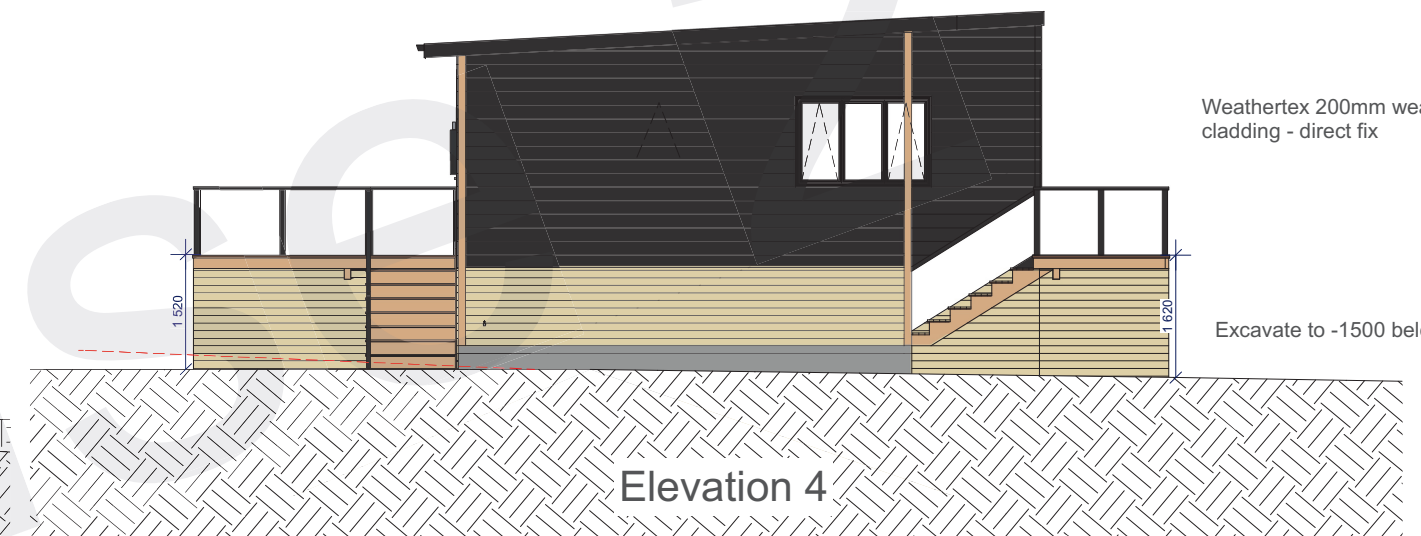
FFL: 3.10m



Elevation 2

Weatherex 200mm weatherboard cladding - direct fix

Excavate to -1500 below FFL



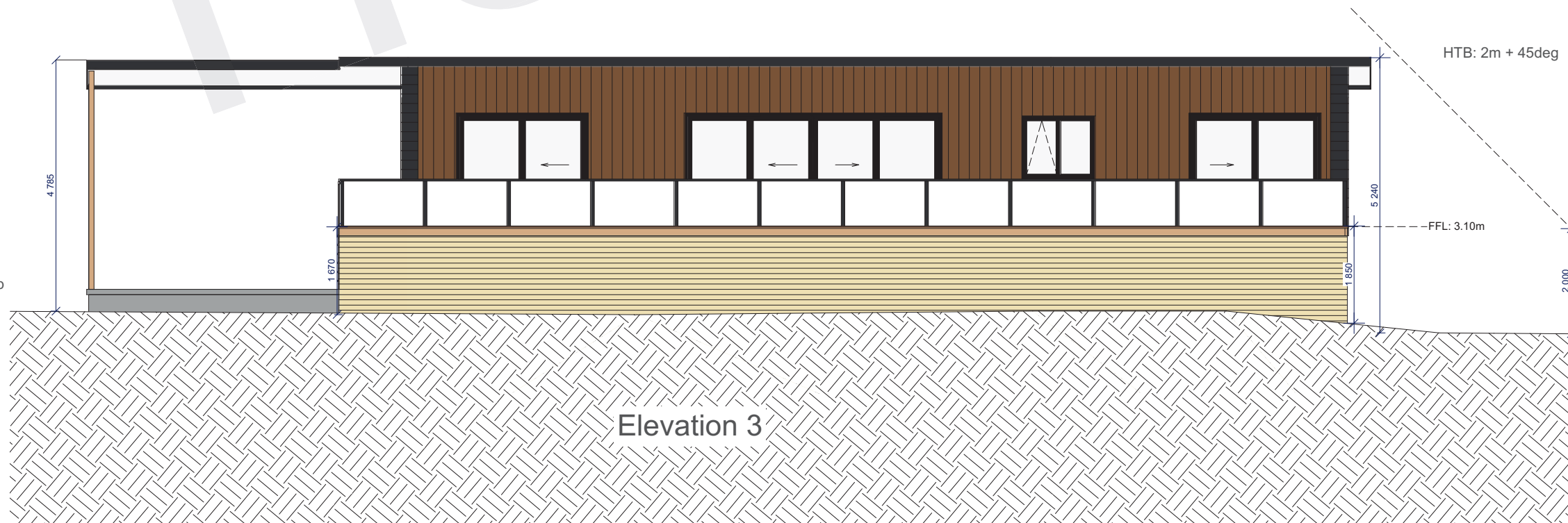
Elevation 4

Weathergroove Natural 150mm cladding - direct fix
 To Recess- Elevation 3

Rebated Sliding Doors

Low-E Light Bridge Double glazed windows

140mm H3 baseboards, 25mm gap



Elevation 3

Revision	By:	Date:
Drawn	NMB	Sep 07 2022
Rev	NMB	Oct 04 2022
Rev	NMB	Sep 01 2023
Rev	NMB	Sep 26 2023
Rev	NMB	Oct 09 2023

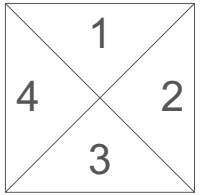
Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
 © 2022 Advance Manufacturing Ltd

Advance
 build
 0800 327 828
 Fax 09 401 6506
 P O Box 111, Kerikeri 0245
www.advancebuild.co.nz

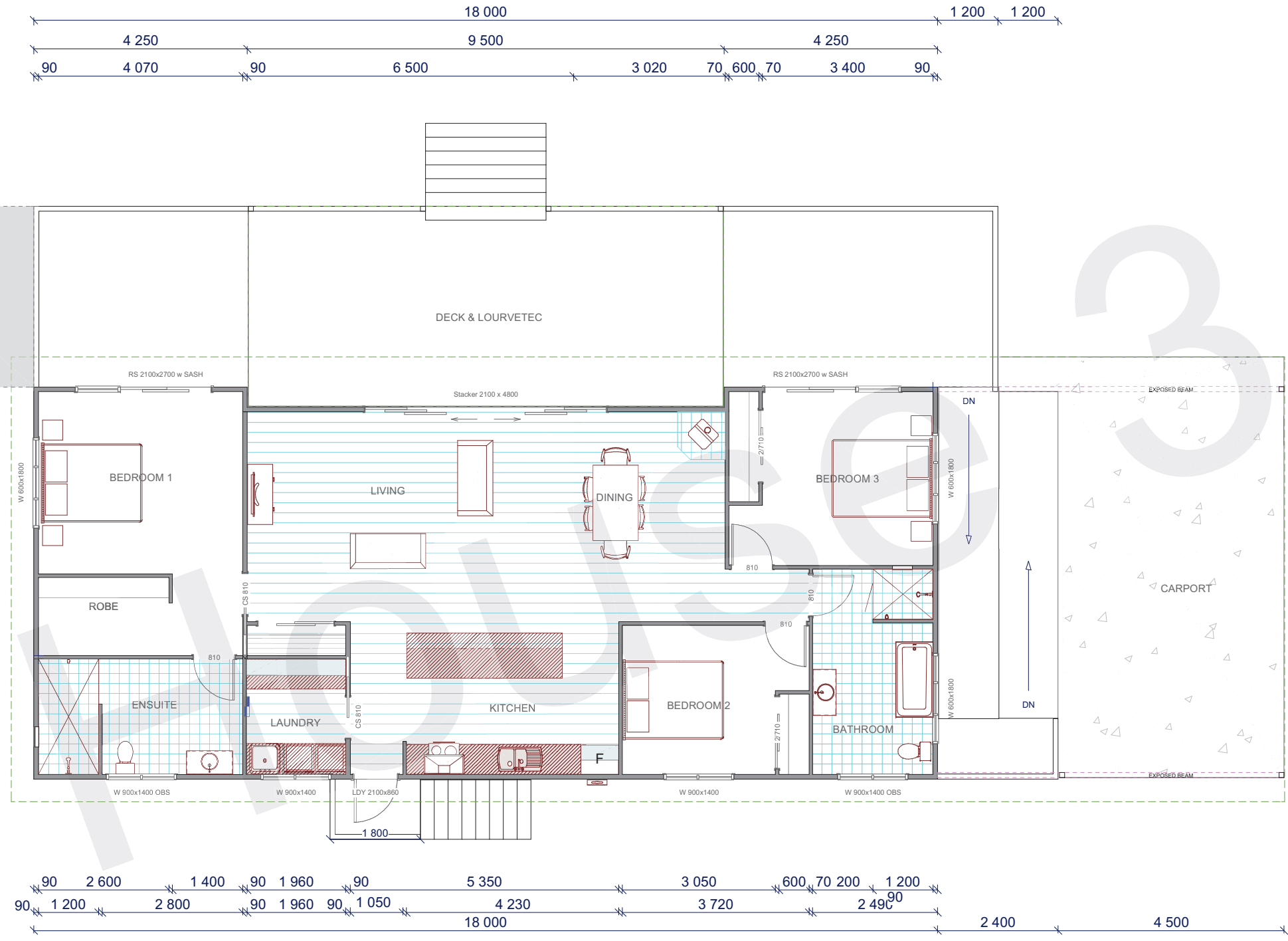
Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

Sheet Title:
 Elevations

Scale: 1 : 100 (A3 Original)
 Project No: 1168 Page: 03 Revision: C01



Elevations



Revision	By:	Date:
Drawn	NMB	Sep 07 2022
Rev	NMB	Oct 04 2022
Rev	NMB	Nov 16 2022
Rev	NMB	Jun 29 2023
Rev	NMB	Jul 24 2023
Rev	NMB	Aug 31 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.

This document and the copy right in this document remain the property Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.

© 2022 Advance Manufacturing Ltd



Proposed New Home for:
H5 Whanau Trust
6A Waimanoni Road
Waimanoni

Sheet Title:
Floor Plan

Scale: 1 : 100 (A3 Original)

Project No: 1168 Page: 02 Revision: C01

Roof Pitch 3 deg
 Carport Pitch 3 deg
 Stud height - 2.4m Flat Throughout

House Height to be confirmed with Flood Report Findings

Coloursteel Endura T-Rib roofing or similar

Weathergroove Smooth 150mm cladding - direct fix

Weatherflex Selflok Ecogroove 150mm cladding - direct fix
 Elevation 1 - To recess only



Weathergroove Smooth 150mm cladding - direct fix

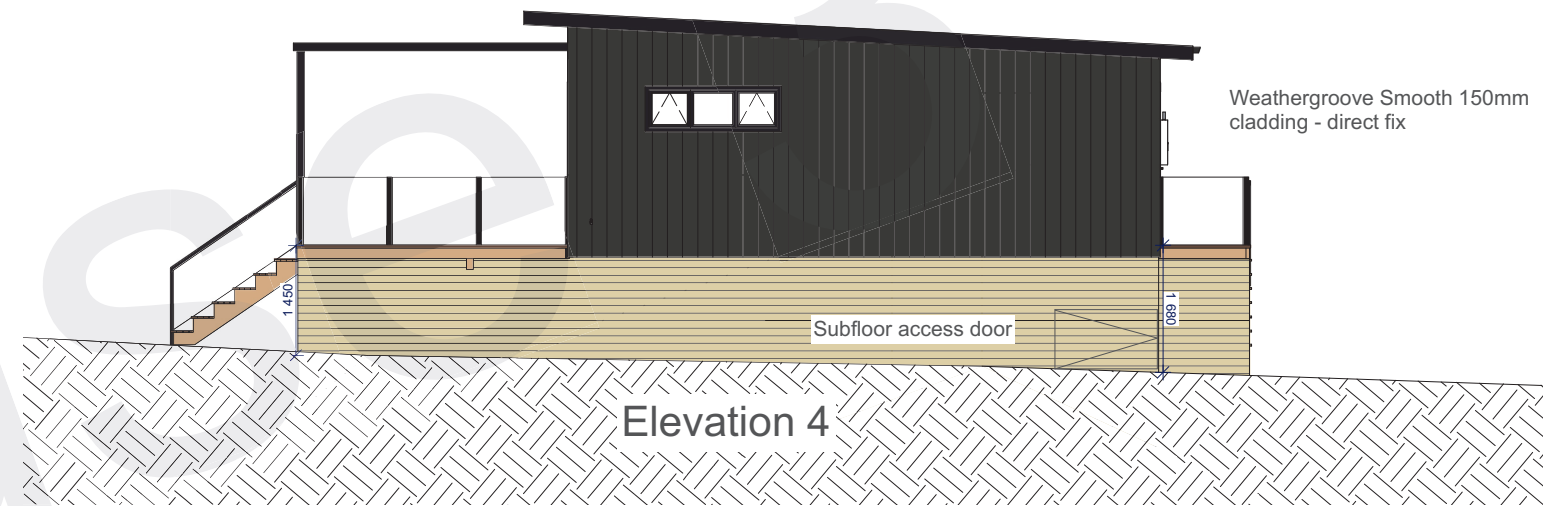
FFL: 3.10m



Elevation 2

Weathergroove Smooth 150mm cladding - direct fix

Subfloor access door



Elevation 4

Revision	By:	Date:
Drawn	NMB	Sep 07 2022
Rev	NMB	Oct 04 2022
Rev	NMB	Nov 16 2022
Rev	NMB	Sep 04 2023
Rev	NMB	Oct 16 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
 © 2022 Advance Manufacturing Ltd

Full length cover flashing

Weathergroove Smooth 150mm cladding - direct fix

Low-E Light Bridge Double glazed windows

140mm H3 baseboards, 25mm gap



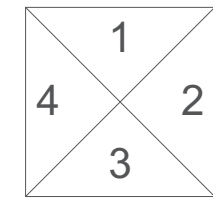
Elevation 3

Advance build
 0800 327 828
 Fax 09 401 6506
 P.O. Box 111, Kerikeri 0245
www.advancebuild.co.nz

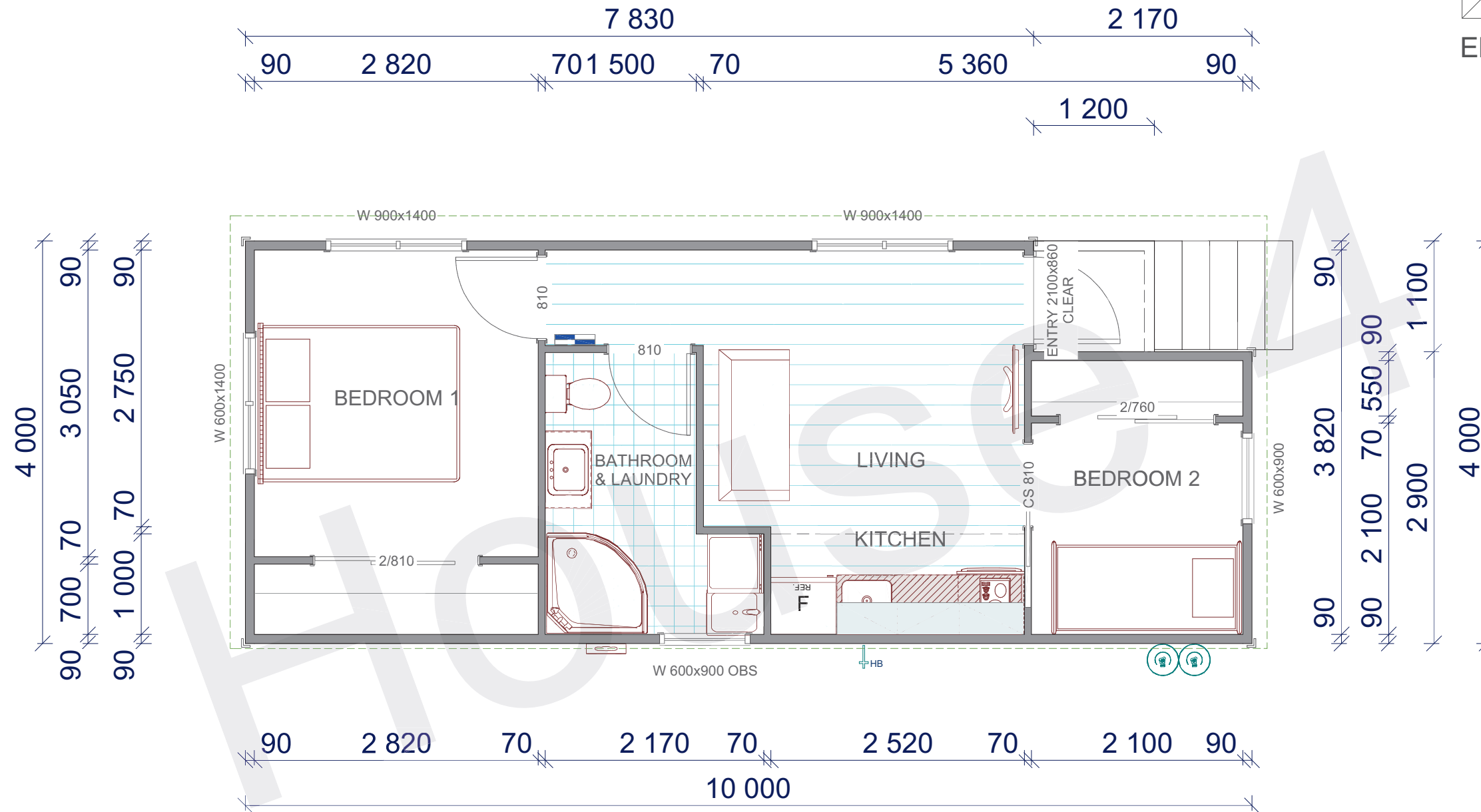
Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

Sheet Title:
 Elevations

Scale: 1 : 100 (A3 Original)
 Project No: 1168 Page: 03 Revision: C01



Elevations



LIVING AREA
37.6 SQ M

Revision Drawn By: NMB Date: Oct 16 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
This document and the copy right in this document remain the property Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
© 2022 Advance Manufacturing Ltd

Advance
build
0800 327 828
Fax 09 401 6506
P O Box 111, Kerikeri 0245
www.advancebuild.co.nz

Proposed New Home for:
H5 Whanau Trust
6A Waimanoni Road
Waimanoni

Sheet Title:
Floor Plan

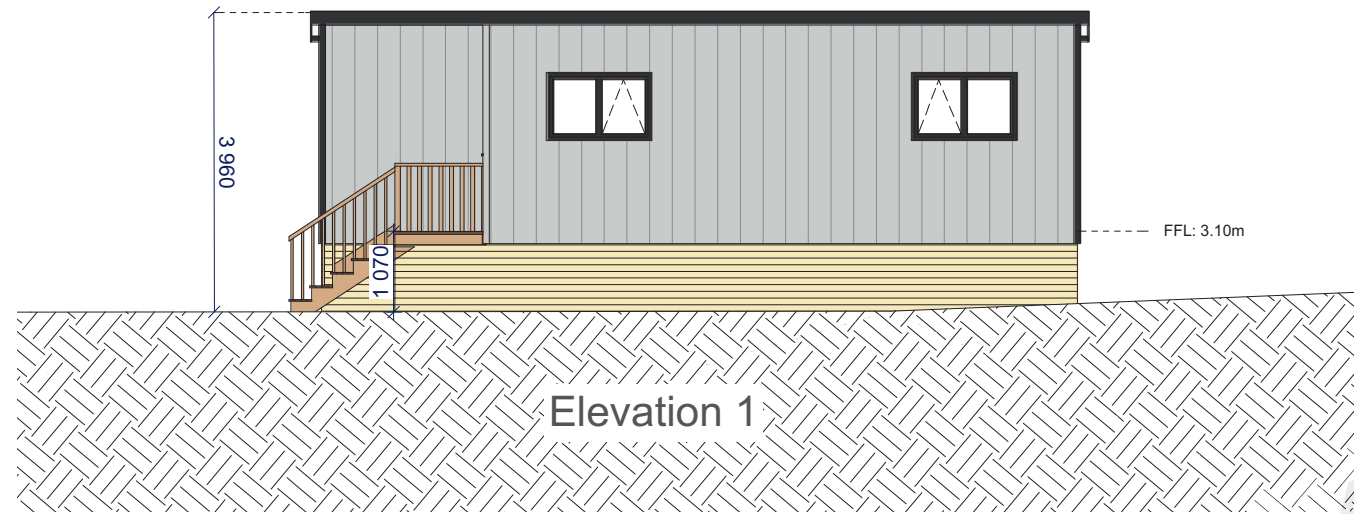
Scale: 1 : 50 (A3 Original)

Project No: 1168 Page: 02 Revision: P01

Roof Pitch 3 deg
Stud height 2.4m

Coloursteel Endura T-Rib
roofing or similar

Timber Box Corners & Scribes



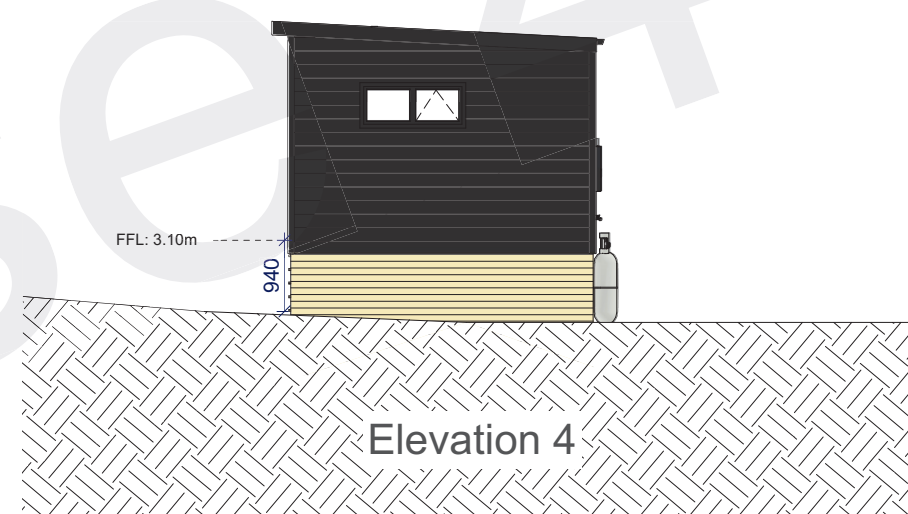
Elevation 1

Weathergroove Smooth 300mm
cladding - direct fix
To Entry Wall- Elevation 2

Rebated Door for Flush Entry



Elevation 2



Elevation 4

Weathergroove Smooth 300mm
cladding - direct fix
To Recess- Elevation 3

Low-E Light Bridge
Double glazed windows



Elevation 3

Revision	By:	Date:
Drawn	NMB	Oct 16 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.

This document and the copy right in this document remain the property of Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.

© 2022 Advance Manufacturing Ltd



0800 327 828

Fax 09 401 6506

P.O. Box 111, Kerikeri 0245

www.advancebuild.co.nz

Proposed New Home for:
H5 Whanau Trust
6A Waimanoni Road
Waimanoni

Sheet Title:
Elevations

Scale: 1 : 100 (A3 Original)

Project No:	Page:	Revision:
1168	03	C01

SITE SUITABILITY REPORT

House 1 6A Waimanoni Road, Waimanoni 0486



T&A STRUCTURES LTD.

17 September, 2023

Table of Contents

1. PROJECT	3
2. SITE DESCRIPTION	3
3. GEOTECHNICAL INVESTIGATIONS	4
4. MATERIAL PROPERTIES	6
5. STORMWATER AND SEWERAGE	6
6. NATURAL HAZARD	6
7. ASSESSMENT	7
8. OTHER RECOMMENDATIONS	8
9. LIMITATIONS	9
10. APPENDIX 1: BORE LOGS	10

1. PROJECT

1.1 Project Details

Client's Name	:	Advance Build
Site Address	:	House 1 6A Waimanoni Road, Waimanoni 0486
Appellation	:	Part Waimanoni 1A2C Block

1.2 Brief

T&A Structures Ltd was engaged by the Client to undertake a Site Suitability Report with the purpose of checking the suitability of the site for a proposed new dwelling. The site assessment was carried out on 8 September 2023.

This report addresses the suitability of the site for the proposed dwelling. As part of the assessment, the report undertakes to:

- Describe the soils at the site;
- Quantify sub-soil conditions to allow selection of foundation types;
- Note any pertinent features of the land;
- Make recommendations regarding further investigations if necessary.

It was understood that the Client proposes to construct a lightweight single level dwelling in the factory and then transport it to the site.

2. SITE DESCRIPTION

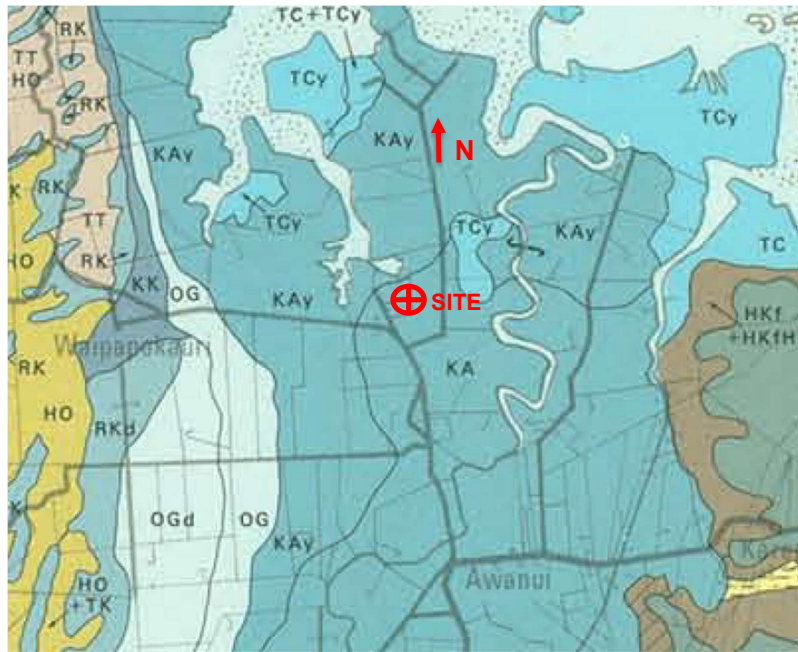
The property occupies a land area of about 2.4 hectares. There were existing buildings and other structures in the property consisting of two dwellings located at the western end of the property and a working shed and storage at the eastern end of the property. In addition to these existing structures, it was proposed to develop three more dwellings within the property. This report covers only House 1.

The property is bounded by the neighbouring properties along the northern, southern, and eastern boundaries and by Waimanoni Road along the Western boundary. The property is generally flat. The property is currently covered with tall grasses.

3. GEOTECHNICAL INVESTIGATIONS

3.1 Geology

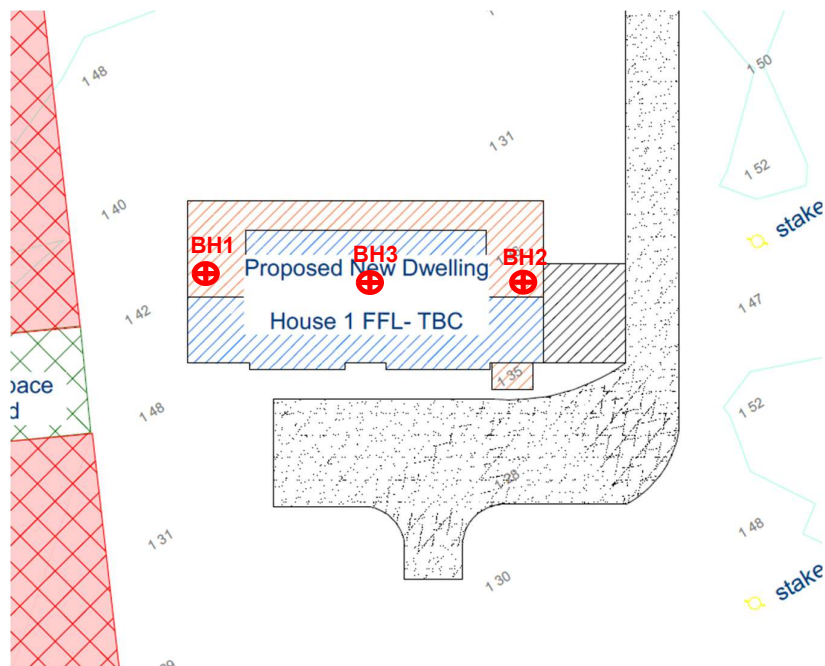
The land is described in the New Zealand Land Inventory NZMS 290 series as Kaitaia Clay Loam (KA), belonging to the Soils of the Estuarine Flats and Former Lake Beds and categorised as imperfectly to very poorly drained soils. This has been found to be consistent with the results of the site investigation.



3.2 Subsurface Investigations

The investigations undertaken included a walkover inspection, one augered borehole and two Scala Penetrometer tests. The location plan of the test holes is attached below.

The borehole logs are attached as Appendix 1 to this report. The depths of strata on the Engineer's log are measured from ground levels at each exploratory hole.



3.4 Subsurface Findings

The subsoil materials were found to have the following bearing capacities 1500mm below existing ground level:

	BEARING CAPACITY (kPa)	DESCRIPTION
Allowable bearing capacity	100	the reading the inspector obtained with any specialised equipment
Ultimate bearing capacity	300	value = 3 times the allowable bearing capacity
Ultimate dependable bearing capacity	150	value = 1.5 times the allowable bearing capacity

From the results of our preliminary investigations, we were able to establish that in the area of the proposed house site, the subsurface soils comprised of approximately 1500mm thick organic fill including 300mm topsoil underlain with soft clay. Ground water was encountered at 900mm bgl. It should be noted however, that ground water table varies according to season.

The top 1500mm of soil was soft and contains some organic matters. The soil is not suitable for foundation designed according to the NZS3604:2011 requirements. Below 1500mm bgl, the subsoils were stiffer and consistent in strength.

The subsurface conditions are detailed on the borehole logs in Appendix 1. The observations noted in the investigations have been extrapolated between the various test locations to infer probable site conditions. It is noted that these inferences in no way guarantee the validity of these findings due to the inherent variability of natural soil deposits. The actual ground conditions discovered during excavation may vary from what is reported herein.

4. MATERIAL PROPERTIES

Soil shear strengths (measured with shear vane, BH3) range from 80kpa to 138kpa, with mean shear strength of about 110kpa.

The two Scala Penetrometer tests (BH1 to BH2) carried out within the proposed house development generally reached 100 kpa (3.3 blows per 100mm) allowable soil bearing capacity at 1.50 mbgl and consistently have higher readings as the scala was driven down.

5. STORMWATER AND SEWERAGE

The FNDC 3 Waters Map indicated that both the council's wastewater and stormwater reticulated system are not available in this site for the wastewater and stormwater disposal. However, the concept plans provided for this study indicated that the requirements for the proper disposal and mitigation of wastewater and stormwater respectively, have already been sorted out.

Any site-specific stormwater management design and/or wastewater disposal system design, if required, is outside the scope of this report.

6. NATURAL HAZARD

The NRC Natural Hazards Map indicated that as of writing this report, the proposed development is within the 100-year Coastal Hazard and 100-year River Flood Hazard Zones. It is recommended that a suitably qualified professional be engaged to provide recommendations on how to mitigate the said natural hazard with respect the proposed development.

7. ASSESSMENT

7.1 Expansiveness

Based on the results of our field investigation, along with our knowledge and experience with these kinds of soils, we classify the investigated site as highly expansive in terms of AS2870:2011. Expansive soils are prone to shrinkage and swelling effects resulting from moisture changes from within the soil.

We note that no laboratory testing of the material to confirm the soil expansivity was undertaken.

7.2 Site Stability

The site did not appear to be subject to creep or instability. There appear to be no recent ground movement on the site. It is also anticipated that the proposed development will not affect or worsen the current stability of the site.

7.3 Earthworks and Retaining Structures

As mentioned earlier, the ground in the site is relatively flat. We do not anticipate that this development will require considerable earthworks or any retaining structures.

7.4 Liquefaction Potential

Liquefaction occurs when the structure of a loose, saturated sand breaks down due to some rapidly applied loading such as earthquake shaking. As mentioned above, the soil in the site is cohesive clay. In addition, the site is in Northland where earthquake occurrence is considered unlikely. Hence, it is considered that liquefaction is unlikely to occur on this site. A detailed liquefaction assessment for this site is outside the scope of this study.

7.5 Foundation System

The soils on this site are considered to be highly expansive, contains organic fill and soft. The soils appeared to have not complied with the definition of “good ground” as noted in NZS3604:2011. It is however, considered that the site is suitable for the proposed development. The following are the recommended foundation options:

- Specifically designed pile foundation. Due to the presence of organic fill and shallow water level, it is recommended that the piles be driven. The piles should be driven to maximum specifically designed pile set or to maximum pile embedment of 3500mm, whichever comes first. The maximum pile set shall be computed using the Hiley Formula and should be taken as the average of the last 10 blows. It is anticipated that the depth mentioned above is enough

to mitigate the effects of possible seasonal soil movements due soil expansivity.

- Where a shallow foundation is preferred, a specifically designed ribraft slab foundation is recommended. The top 400mm of soil, including topsoil should be taken out and be replaced compacted hardfill, preferably Gap 65 or 40. The compacted hardfill should extend 1000mm from the building footprint. The ribraft foundation should be designed supported with driven piles. The piles should be driven to maximum specifically designed pile set or to maximum pile embedment of 3500mm, whichever comes first. The maximum pile set shall be computed using the Hiley Formula and should be taken as the average of the last 10 blows.

8. OTHER RECOMMENDATIONS

- In case of shallow foundation, the exposed subsoils should be examined, and any potential soft spots are to be further examined and then removed as appropriate. Replacement fill shall be GAP 65 or GAP 40 placed in layers not exceeding 150mm thick and compacted with a suitable compactor. Any fill exceeding 600mm thick should be tested for compaction.
- All stormwater collected from roofed and paved surfaces together with discharges from retaining walls and other subsoil drains shall be controlled and piped away from the proposed building footprint. Ensure that no uncontrolled runoff or concentrated discharges are directed onto open ground, into soakage pits or into subsoil drainage systems.
- Fill materials beneath any on-ground slab shall be GAP 65 or GAP 40 placed and compacted in layers not exceeding 150mm thick. Any fill exceeding 600mm thick should be tested for compaction.
- An engineer should inspect the earthworks, building platform construction and foundation, and in the case of concrete slab construction, prior to the concrete being poured to ensure that the actual soil parameters are as mentioned in this report or better. Producer Statements PS4 – Construction Review should be required for each of these stages.

9. LIMITATIONS

- Our responsibility for this report is limited to the Client named in this report. We disclaim all responsibility and will accept no liability to any other person unless that party has obtained the written consent of T&A Structures. T&A Structures reserves the right to qualify or amend any opinion expressed in this report in dealing with any other party. It is not to be relied upon for any other purpose without reference to T&A Structures.
- Recommendations and opinions in this report are based on data obtained from the investigations and site observations as detailed in this report. The nature and continuity of subsoil conditions at locations other than the investigation bores and tests are inferred and it should be appreciated that actual conditions could vary from the assumed model.
- It is essential that this office be contacted if there is any variation in subsoil conditions from those described in this report as it may affect the design parameters recommended.
- This report was carried for the purpose of checking the ground with respect to the proposed development. This should not be taken as a full geotechnical report.
- Our professional services were performed using a degree of care and skill normally exercised, under similar circumstances, by reputable consultants practicing in this field at the time.



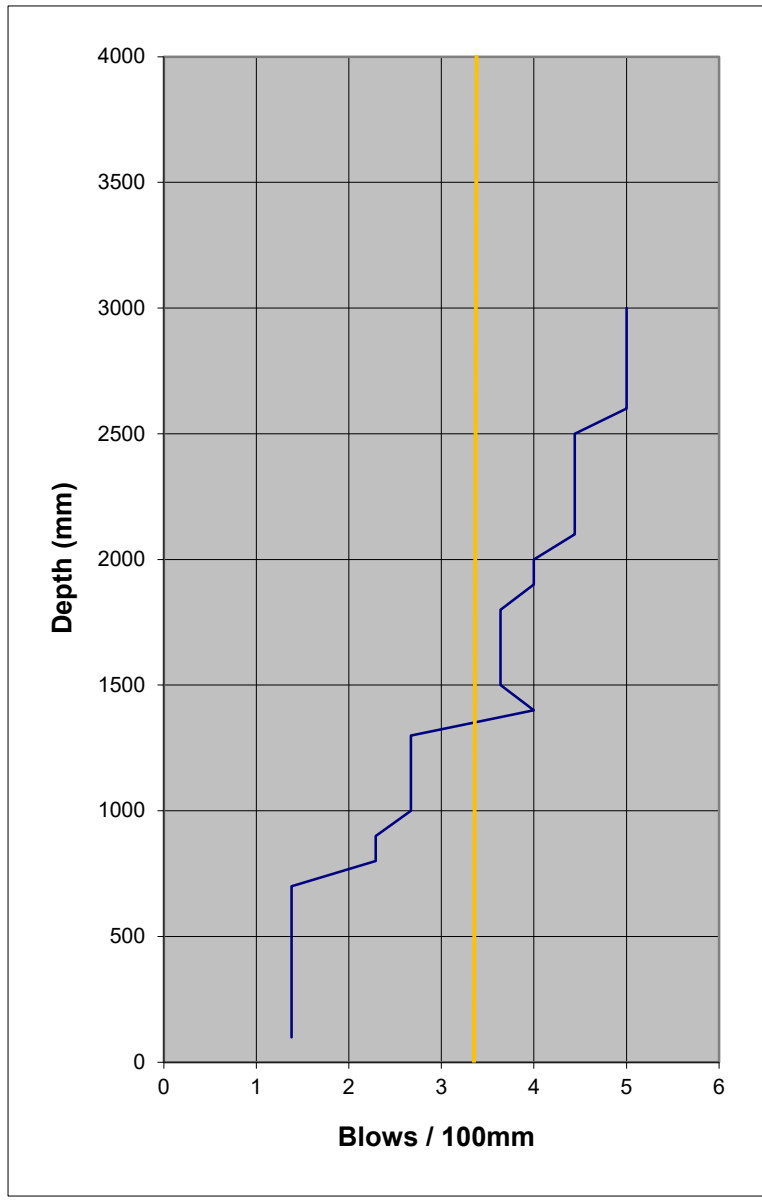
Professional Engineer
Structural Engineer, CMEngNZ CPEng
T&A STRUCTURES LTD.

10. APPENDIX 1: BORE LOGS

Scala Penetrometer results
BORE HOLE LOG BH1

Client Advance Build **Date** 8 September 2023
Project House 1 6A Waimanoni Road, A\ **Logged By** Teo

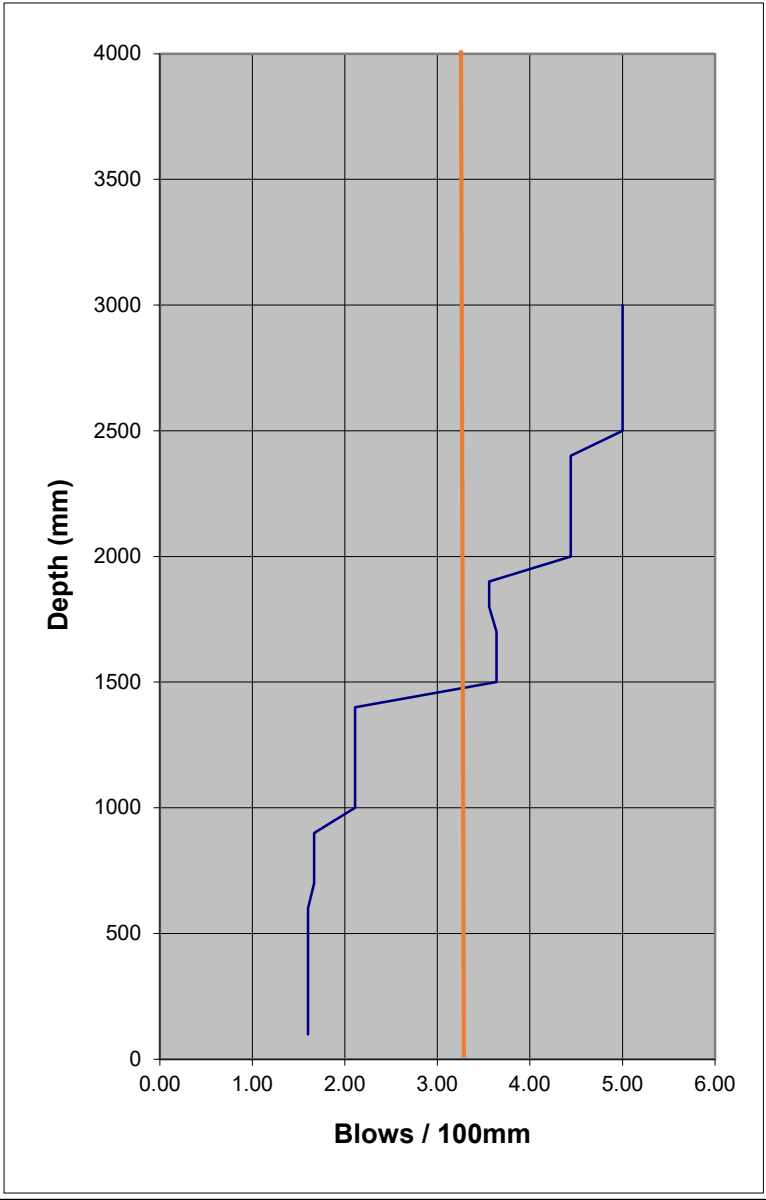
Depth of reading	Number of blows/ 100mm
100	1.38
200	1.38
300	1.38
400	1.38
500	1.38
600	1.38
700	1.38
800	2.29
900	2.29
1000	2.67
1100	2.67
1200	2.67
1300	2.67
1400	4
1500	3.64
1600	3.64
1700	3.64
1800	3.64
1900	4
2000	4
2100	4.44
2200	4.44
2300	4.44
2400	4.44
2500	4.44
2600	5
2700	5
2800	5
2900	5
3000	5
3100	
3200	
3300	
3400	
3500	
3600	
3700	
3800	
3900	
4000	



Scala Penetrometer results
BORE HOLE LOG BH2

Client Advance Build **Date** 8 September 2023
Project House 1 6A Waimanoni Road, A\ **Logged By** Teo

Depth of reading	Number of blows/ 100mm
100	1.60
200	1.60
300	1.60
400	1.60
500	1.60
600	1.60
700	1.67
800	1.67
900	1.67
1000	2.11
1100	2.11
1200	2.11
1300	2.11
1400	2.11
1500	3.64
1600	3.64
1700	3.64
1800	3.56
1900	3.56
2000	4.44
2100	4.44
2200	4.44
2300	4.44
2400	4.44
2500	5.00
2600	5.00
2700	5.00
2800	5.00
2900	5.00
3000	5.00
3100	
3200	
3300	
3400	
3500	
3600	
3700	
3800	
3900	
4000	



BORE HOLE LOG BH3

Job No. 146-FND-23SD

Address House 1 6A Waimanoni Road, Awanui
Client Advance Build

Borehole Location Refer to site plan

Surface elevation Datum Ground level

Surface Condition Grassed



Depth mm	G.W.L	Geologic Unit	Graphic Log	Field Description	Undrained Shear Strength (kPa) Corrected (Per NZGS guideline) 50 100 150 200	Scala Penetrometer (blows/ 100 mm) 3 6 9 12
0				topsoil, grey loamy clay	0	
300					0	
					0	
					0	
					0	
600				becomes yellow-brown clay	55	
					0	
					0	
					0	
900					0	
					0	
					0	
1200				buried topsoil, grey clay + roots + water	28	
					0	
					0	
					0	
1500					0	
					0	
					0	
1800				becomes whitish clay	83	
					34	
					0	
					0	
2100				EOB	138	
					96	
					0	
					0	
					0	
					0	
					0	
					0	

Drill Method 50mm hand auger

Date Drilled 8 September 2023

Drilled by Teo

Shear Vane No

NOTE : The subsurface data described above has been determined at this specific borehole location. Such data will not identify any variations away from this location

T&A STRUCTURES LTD
 CHARTERED PROFESSIONAL ENGINEERS

www.tastructures.co.nz info.tastructures@gmail.com

Tests

In situ shear vane reading

Remoulded shear vane reading

Scala Penetrometer

100 kPa reference line

SITE SUITABILITY REPORT

House 2 6A Waimanoni Road, Waimanoni 0486



T&A STRUCTURES LTD.

17 September, 2023

Table of Contents

1. PROJECT	3
2. SITE DESCRIPTION	3
3. GEOTECHNICAL INVESTIGATIONS	4
4. MATERIAL PROPERTIES	6
5. STORMWATER AND SEWERAGE	6
6. NATURAL HAZARD	6
7. ASSESSMENT	7
8. OTHER RECOMMENDATIONS	8
9. LIMITATIONS	9
10. APPENDIX 1: BORE LOGS	10

1. PROJECT

1.1 Project Details

Client's Name	:	Advance Build
Site Address	:	House 2 6A Waimanoni Road, Waimanoni 0486
Appellation	:	Part Waimanoni 1A2C Block

1.2 Brief

T&A Structures Ltd was engaged by the Client to undertake a Site Suitability Report with the purpose of checking the suitability of the site for a proposed new dwelling. The site assessment was carried out on 8 September 2023.

This report addresses the suitability of the site for the proposed dwelling. As part of the assessment, the report undertakes to:

- Describe the soils at the site;
- Quantify sub-soil conditions to allow selection of foundation types;
- Note any pertinent features of the land;
- Make recommendations regarding further investigations if necessary.

It was understood that the Client proposes to construct a lightweight single level dwelling in the factory and then transport it to the site.

2. SITE DESCRIPTION

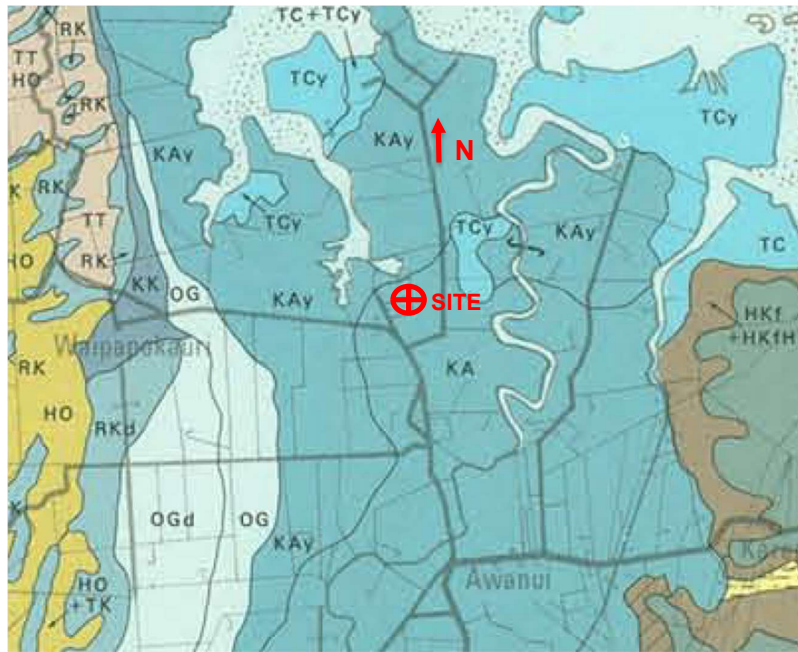
The property occupies a land area of about 2.4 hectares. There were existing buildings and other structures in the property consisting of two dwellings located at the western end of the property and a working shed and storage at the eastern end of the property. In addition to these existing structures, it was proposed to develop three more dwellings within the property. This report covers only House 2.

The property is bounded by the neighbouring properties along the northern, southern, and eastern boundaries and by Waimanoni Road along the Western boundary. The property is generally flat. The property is currently covered with tall grasses.

3. GEOTECHNICAL INVESTIGATIONS

3.1 Geology

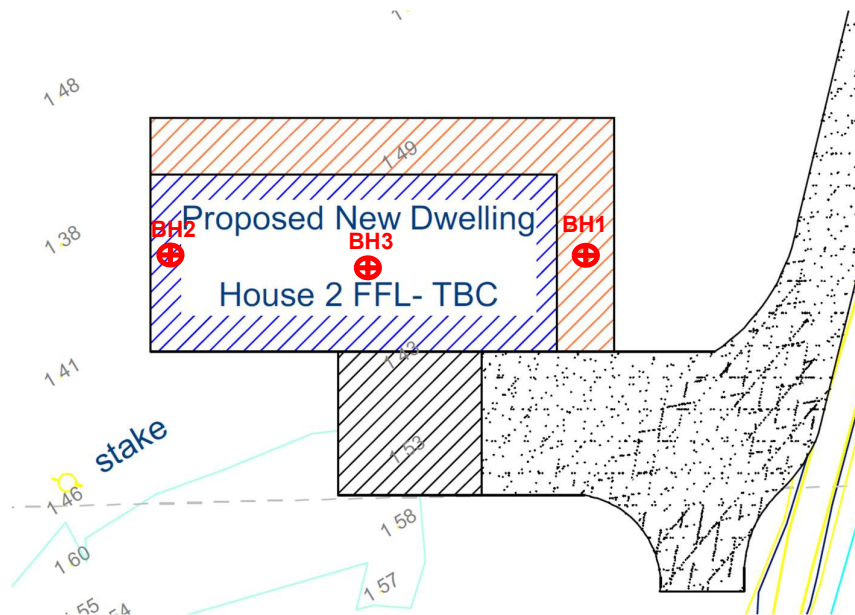
The land is described in the New Zealand Land Inventory NZMS 290 series as Kaitaia Clay Loam (KA), belonging to the Soils of the Estuarine Flats and Former Lake Beds and categorised as imperfectly to very poorly drained soils. This has been found to be consistent with the results of the site investigation.



3.2 Subsurface Investigations

The investigations undertaken included a walkover inspection, one augered borehole and two Scala Penetrometer tests. The location plan of the test holes is attached below.

The borehole logs are attached as Appendix 1 to this report. The depths of strata on the Engineer's log are measured from ground levels at each exploratory hole.



3.4 Subsurface Findings

The subsoil materials were found to have the following bearing capacities 2400mm below existing ground level:

	BEARING CAPACITY (kPa)	DESCRIPTION
Allowable bearing capacity	100	the reading the inspector obtained with any specialised equipment
Ultimate bearing capacity	300	value = 3 times the allowable bearing capacity
Ultimate dependable bearing capacity	150	value = 1.5 times the allowable bearing capacity

From the results of our preliminary investigations, we were able to establish that in the area of the proposed house site, the subsurface soils comprised of approximately 1500mm thick organic fill including 300mm topsoil underlain with soft clay. Ground water was encountered at 1200mm bgl. It should be noted however, that ground water table varies according to season.

The top 2400mm of soil was soft and contains some organic matters. The soil is not suitable for foundation designed according to the NZS3604:2011 requirements. Below 2400mm bgl, the subsoils were stiffer and consistent in strength.

The subsurface conditions are detailed on the borehole logs in Appendix 1. The observations noted in the investigations have been extrapolated between the various test locations to infer probable site conditions. It is noted that these inferences in no way guarantee the validity of these findings due to the inherent variability of natural soil deposits. The actual ground conditions discovered during excavation may vary from what is reported herein.

4. MATERIAL PROPERTIES

Soil shear strengths (measured with shear vane, BH3) range from 20kpa to 190kpa, with mean shear strength of about 110kpa.

The two Scala Penetrometer tests (BH1 to BH2) carried out within the proposed house development generally reached 100 kpa (3.3 blows per 100mm) allowable soil bearing capacity at 2.40 mbgl and consistently have higher readings as the scala was driven down.

5. STORMWATER AND SEWERAGE

The FNDC 3 Waters Map indicated that both the council's wastewater and stormwater reticulated system are not available in this site for the wastewater and stormwater disposal. However, the concept plans provided for this study indicated that the requirements for the proper disposal and mitigation of wastewater and stormwater respectively, have already been sorted out.

Any site-specific stormwater management design and/or wastewater disposal system design, if required, is outside the scope of this report.

6. NATURAL HAZARD

The NRC Natural Hazards Map indicated that as of writing this report, the proposed development is within the 100-year Coastal Hazard and 100-year River Flood Hazard Zones. It is recommended that a suitably qualified professional be engaged to provide recommendations on how to mitigate the said natural hazard with respect the proposed development.

7. ASSESSMENT

7.1 Expansiveness

Based on the results of our field investigation, along with our knowledge and experience with these kinds of soils, we classify the investigated site as highly expansive in terms of AS2870:2011. Expansive soils are prone to shrinkage and swelling effects resulting from moisture changes from within the soil.

We note that no laboratory testing of the material to confirm the soil expansivity was undertaken.

7.2 Site Stability

The site did not appear to be subject to creep or instability. There appear to be no recent ground movement on the site. It is also anticipated that the proposed development will not affect or worsen the current stability of the site.

7.3 Earthworks and Retaining Structures

As mentioned earlier, the ground in the site is relatively flat. We do not anticipate that this development will require considerable earthworks or any retaining structures.

7.4 Liquefaction Potential

Liquefaction occurs when the structure of a loose, saturated sand breaks down due to some rapidly applied loading such as earthquake shaking. As mentioned above, the soil in the site is cohesive clay. In addition, the site is in Northland where earthquake occurrence is considered unlikely. Hence, it is considered that liquefaction is unlikely to occur on this site. A detailed liquefaction assessment for this site is outside the scope of this study.

7.5 Foundation System

The soils on this site are considered to be highly expansive, contains organic fill and soft. The soils appeared to have not complied with the definition of “good ground” as noted in NZS3604:2011. It is however, considered that the site is suitable for the proposed development. The following are the recommended foundation options:

- Specifically designed pile foundation. Due to the presence of organic fill and shallow water level, it is recommended that the piles be driven. The piles should be driven to maximum specifically designed pile set or to maximum pile embedment of 3500mm, whichever comes first. The maximum pile set shall be computed using the Hiley Formula and should be taken as the average of the last 10 blows. It is anticipated that the depth mentioned above is enough

to mitigate the effects of possible seasonal soil movements due soil expansivity.

- Where a shallow foundation is preferred, a specifically designed ribraft slab foundation is recommended. The top 400mm of soil, including topsoil should be taken out and be replaced compacted hardfill, preferably Gap 65 or 40. The compacted hardfill should extend 1000mm from the building footprint. The ribraft foundation should be designed supported with driven piles. The piles should be driven to maximum specifically designed pile set or to maximum pile embedment of 3500mm, whichever comes first. The maximum pile set shall be computed using the Hiley Formula and should be taken as the average of the last 10 blows.

8. OTHER RECOMMENDATIONS

- In case of shallow foundation, the exposed subsoils should be examined, and any potential soft spots are to be further examined and then removed as appropriate. Replacement fill shall be GAP 65 or GAP 40 placed in layers not exceeding 150mm thick and compacted with a suitable compactor. Any fill exceeding 600mm thick should be tested for compaction.
- All stormwater collected from roofed and paved surfaces together with discharges from retaining walls and other subsoil drains shall be controlled and piped away from the proposed building footprint. Ensure that no uncontrolled runoff or concentrated discharges are directed onto open ground, into soakage pits or into subsoil drainage systems.
- Fill materials beneath any on-ground slab shall be GAP 65 or GAP 40 placed and compacted in layers not exceeding 150mm thick. Any fill exceeding 600mm thick should be tested for compaction.
- An engineer should inspect the earthworks, building platform construction and foundation, and in the case of concrete slab construction, prior to the concrete being poured to ensure that the actual soil parameters are as mentioned in this report or better. Producer Statements PS4 – Construction Review should be required for each of these stages.

9. LIMITATIONS

- Our responsibility for this report is limited to the Client named in this report. We disclaim all responsibility and will accept no liability to any other person unless that party has obtained the written consent of T&A Structures. T&A Structures reserves the right to qualify or amend any opinion expressed in this report in dealing with any other party. It is not to be relied upon for any other purpose without reference to T&A Structures.
- Recommendations and opinions in this report are based on data obtained from the investigations and site observations as detailed in this report. The nature and continuity of subsoil conditions at locations other than the investigation bores and tests are inferred and it should be appreciated that actual conditions could vary from the assumed model.
- It is essential that this office be contacted if there is any variation in subsoil conditions from those described in this report as it may affect the design parameters recommended.
- This report was carried for the purpose of checking the ground with respect to the proposed development. This should not be taken as a full geotechnical report.
- Our professional services were performed using a degree of care and skill normally exercised, under similar circumstances, by reputable consultants practicing in this field at the time.



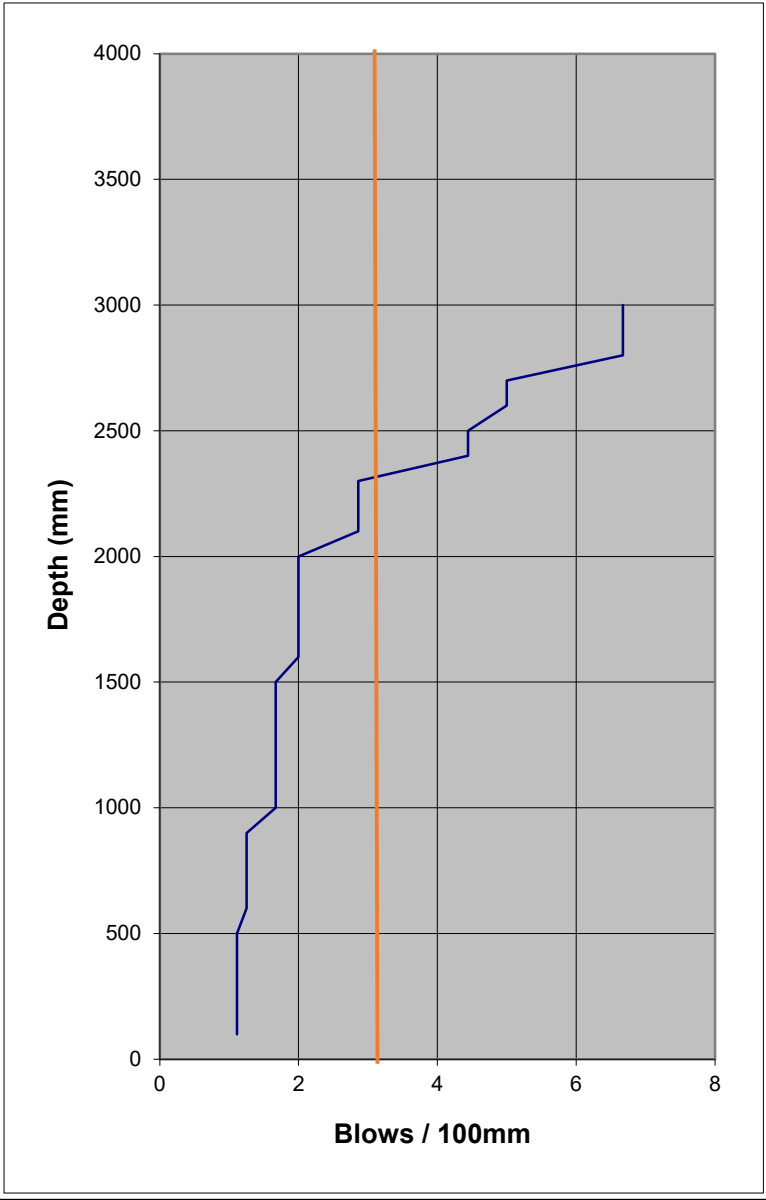
Professional Engineer
Structural Engineer, CMEngNZ CPEng
T&A STRUCTURES LTD.

10. APPENDIX 1: BORE LOGS

Scala Penetrometer results
BORE HOLE LOG BH1

Client Advance Build **Date** 8 September 2023
Project House 2 6A Waimanoni Road, A\ **Logged By** Teo

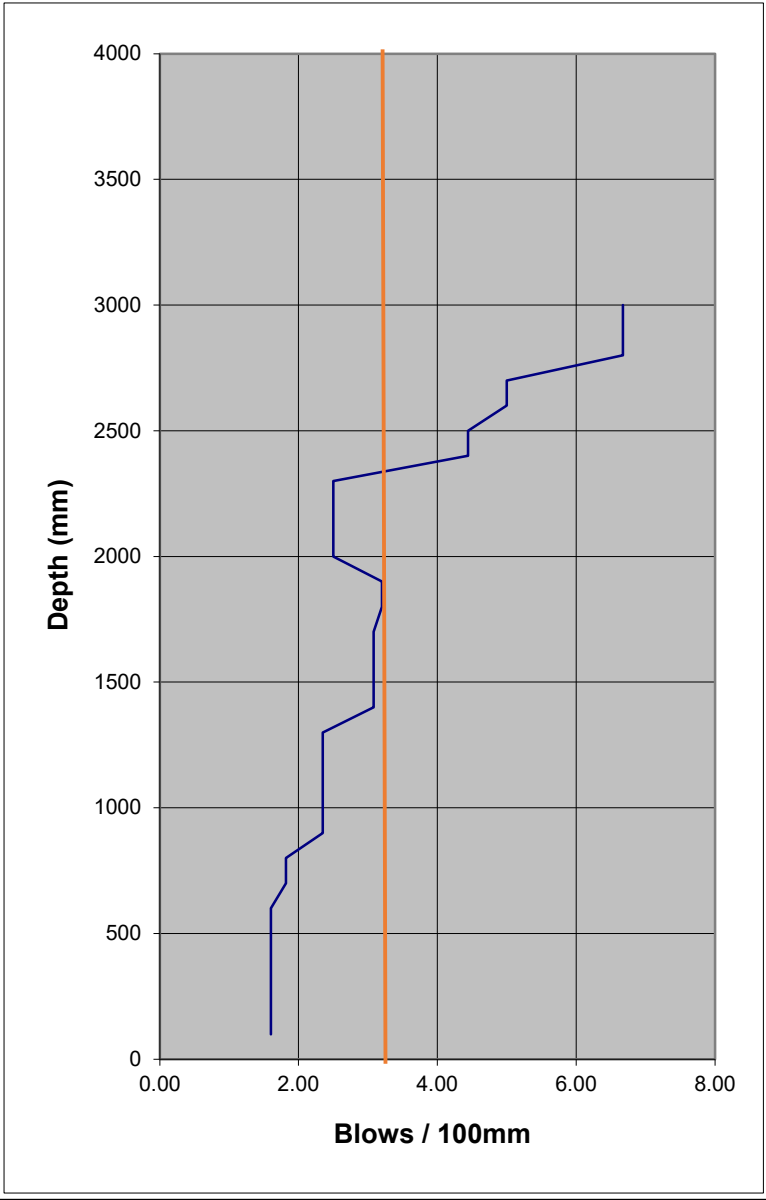
Depth of reading	Number of blows/ 100mm
100	1.11
200	1.11
300	1.11
400	1.11
500	1.11
600	1.25
700	1.25
800	1.25
900	1.25
1000	1.67
1100	1.67
1200	1.67
1300	1.67
1400	1.67
1500	1.67
1600	2.00
1700	2.00
1800	2.00
1900	2.00
2000	2.00
2100	2.86
2200	2.86
2300	2.86
2400	4.44
2500	4.44
2600	5.00
2700	5.00
2800	6.67
2900	6.67
3000	6.67
3100	
3200	
3300	
3400	
3500	
3600	
3700	
3800	
3900	
4000	



Scala Penetrometer results
BORE HOLE LOG BH2

Client Advance Build **Date** 8 September 2023
Project House 2 6A Waimanoni Road, A\ **Logged By** Teo

Depth of reading	Number of blows/ 100mm
100	1.60
200	1.60
300	1.60
400	1.60
500	1.60
600	1.60
700	1.82
800	1.82
900	2.35
1000	2.35
1100	2.35
1200	2.35
1300	2.35
1400	3.08
1500	3.08
1600	3.08
1700	3.08
1800	3.20
1900	3.20
2000	2.50
2100	2.50
2200	2.50
2300	2.50
2400	4.44
2500	4.44
2600	5.00
2700	5.00
2800	6.67
2900	6.67
3000	6.67
3100	
3200	
3300	
3400	
3500	
3600	
3700	
3800	
3900	
4000	



BORE HOLE LOG BH3

Job No. 146-FND-23SD

Address House 2 6A Waimanoni Road, Awanui
Client Advance Build

Borehole Location Refer to site plan


Surface elevation Datum ground level

Surface Condition Grassed



Depth mm	G.W.L	Geologic Unit	Graphic Log	Field Description	Undrained Shear Strength (kPa) Corrected (Per NZGS guideline) 50 100 150 200	Scala Penetrometer (blows/ 100 mm) 3 6 9 12
0				topsoil, dark grey clay	0 0 0 0 193	
300					55	
600				brown + yellow + orange silty clay	0 0 0 0 96	
900				grey clay, soft, some roots (buried topsoil)	34 0 96	
1200				the same + water	28 0 28 14 0 0 0 0 0 0 0 0	
1500					117	
1800				becomes grey clay (no roots)	41 0 103	
2100				the same EOB	69 0 138 83 0	

Drill Method 50mm hand auger
Date Drilled 8 September 2023
Drilled by Teo
Shear Vane No
NOTE : The subsurface data described above has been determined at this specific borehole location. Such data will not identify any variations away from this location



T&A STRUCTURES LTD
 CHARTERED PROFESSIONAL ENGINEERS
 www.tastructures.co.nz info.tastructures@gmail.com

Tests

In situ shear vane reading

Remoulded shear vane reading

Scala Penetrometer

100 kPa reference line

SITE SUITABILITY REPORT

House 3 6A Waimanoni Road, Waimanoni 0486



T&A STRUCTURES LTD.

17 September, 2023

Table of Contents

1. PROJECT	3
2. SITE DESCRIPTION	3
3. GEOTECHNICAL INVESTIGATIONS	4
4. MATERIAL PROPERTIES	6
5. STORMWATER AND SEWERAGE	6
6. NATURAL HAZARD	6
7. ASSESSMENT	7
8. OTHER RECOMMENDATIONS	8
9. LIMITATIONS	9
10. APPENDIX 1: BORE LOGS	10

1. PROJECT

1.1 Project Details

Client's Name	:	Advance Build
Site Address	:	House 3 6A Waimanoni Road, Waimanoni 0486
Appellation	:	Part Waimanoni 1A2C Block

1.2 Brief

T&A Structures Ltd was engaged by the Client to undertake a Site Suitability Report with the purpose of checking the suitability of the site for a proposed new dwelling. The site assessment was carried out on 8 September 2023.

This report addresses the suitability of the site for the proposed dwelling. As part of the assessment, the report undertakes to:

- Describe the soils at the site;
- Quantify sub-soil conditions to allow selection of foundation types;
- Note any pertinent features of the land;
- Make recommendations regarding further investigations if necessary.

It was understood that the Client proposes to construct a lightweight single level dwelling in the factory and then transport it to the site.

2. SITE DESCRIPTION

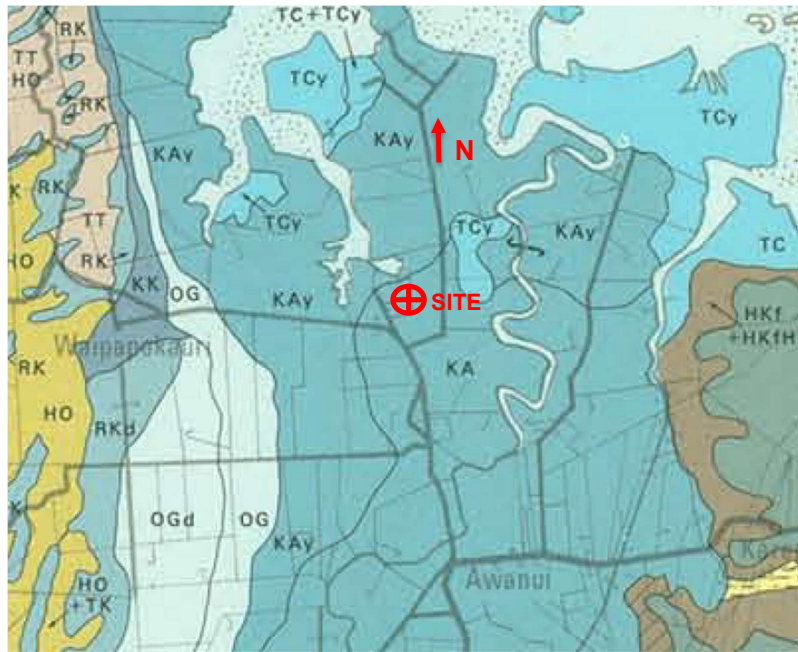
The property occupies a land area of about 2.4 hectares. There were existing buildings and other structures in the property consisting of two dwellings located at the western end of the property and a working shed and storage at the eastern end of the property. In addition to these existing structures, it was proposed to develop three more dwellings within the property. This report covers only House 3.

The property is bounded by the neighbouring properties along the northern, southern, and eastern boundaries and by Waimanoni Road along the Western boundary. The property is generally flat. The property is currently covered with tall grasses.

3. GEOTECHNICAL INVESTIGATIONS

3.1 Geology

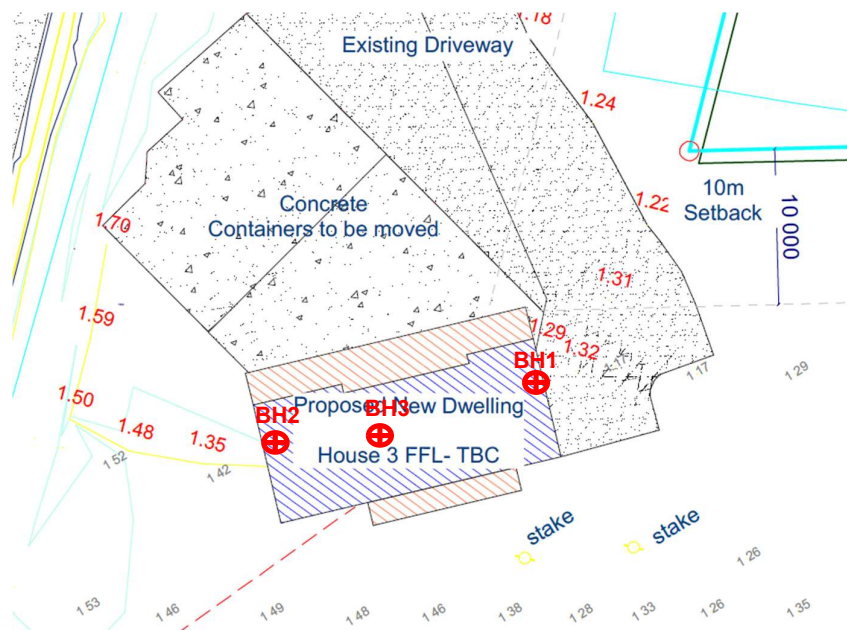
The land is described in the New Zealand Land Inventory NZMS 290 series as Kaitaia Clay Loam (KA), belonging to the Soils of the Estuarine Flats and Former Lake Beds and categorised as imperfectly to very poorly drained soils. This has been found to be consistent with the results of the site investigation.



3.2 Subsurface Investigations

The investigations undertaken included a walkover inspection, one augered borehole and two Scala Penetrometer tests. The location plan of the test holes is attached below.

The borehole logs are attached as Appendix 1 to this report. The depths of strata on the Engineer's log are measured from ground levels at each exploratory hole.



3.4 Subsurface Findings

The subsoil materials were found to have the following bearing capacities 2400mm below existing ground level:

	BEARING CAPACITY (kPa)	DESCRIPTION
Allowable bearing capacity	100	the reading the inspector obtained with any specialised equipment
Ultimate bearing capacity	300	value = 3 times the allowable bearing capacity
Ultimate dependable bearing capacity	150	value = 1.5 times the allowable bearing capacity

From the results of our preliminary investigations, we were able to establish that in the area of the proposed house site, the subsurface soils comprised of approximately 1600mm thick organic fill including 300mm topsoil underlain with soft clay. Ground water was encountered at 1000mm bgl. It should be noted however, that ground water table varies according to season.

The top 2400mm of soil was soft and contains some organic matters. The soil is not suitable for foundation designed according to the NZS3604:2011 requirements. Below 2400mm bgl, the subsoils were stiffer and consistent in strength.

The subsurface conditions are detailed on the borehole logs in Appendix 1. The observations noted in the investigations have been extrapolated between the various test locations to infer probable site conditions. It is noted that these inferences in no way guarantee the validity of these findings due to the inherent variability of natural soil deposits. The actual ground conditions discovered during excavation may vary from what is reported herein.

4. MATERIAL PROPERTIES

Soil shear strengths (measured with shear vane, BH3) range from 60kpa to 145kpa, with mean shear strength of about 100kpa.

The two Scala Penetrometer tests (BH1 to BH2) carried out within the proposed house development generally reached 100 kpa (3.3 blows per 100mm) allowable soil bearing capacity at 2.40 mbgl and consistently have higher readings as the scala was driven down.

5. STORMWATER AND SEWERAGE

The FNDC 3 Waters Map indicated that both the council's wastewater and stormwater reticulated system are not available in this site for the wastewater and stormwater disposal. However, the concept plans provided for this study indicated that the requirements for the proper disposal and mitigation of wastewater and stormwater respectively, have already been sorted out.

Any site-specific stormwater management design and/or wastewater disposal system design, if required, is outside the scope of this report.

6. NATURAL HAZARD

The NRC Natural Hazards Map indicated that as of writing this report, the proposed development is within the 100-year Coastal Hazard and 100-year River Flood Hazard Zones. It is recommended that a suitably qualified professional be engaged to provide recommendations on how to mitigate the said natural hazard with respect the proposed development.

7. ASSESSMENT

7.1 Expansiveness

Based on the results of our field investigation, along with our knowledge and experience with these kinds of soils, we classify the investigated site as highly expansive in terms of AS2870:2011. Expansive soils are prone to shrinkage and swelling effects resulting from moisture changes from within the soil.

We note that no laboratory testing of the material to confirm the soil expansivity was undertaken.

7.2 Site Stability

The site did not appear to be subject to creep or instability. There appear to be no recent ground movement on the site. It is also anticipated that the proposed development will not affect or worsen the current stability of the site.

7.3 Earthworks and Retaining Structures

As mentioned earlier, the ground in the site is relatively flat. We do not anticipate that this development will require considerable earthworks or any retaining structures.

7.4 Liquefaction Potential

Liquefaction occurs when the structure of a loose, saturated sand breaks down due to some rapidly applied loading such as earthquake shaking. As mentioned above, the soil in the site is cohesive clay. In addition, the site is in Northland where earthquake occurrence is considered unlikely. Hence, it is considered that liquefaction is unlikely to occur on this site. A detailed liquefaction assessment for this site is outside the scope of this study.

7.5 Foundation System

The soils on this site are considered to be highly expansive, contains organic fill and soft. The soils appeared to have not complied with the definition of “good ground” as noted in NZS3604:2011. It is however, considered that the site is suitable for the proposed development. The following are the recommended foundation options:

- Specifically designed pile foundation. Due to the presence of organic fill and shallow water level, it is recommended that the piles be driven. The piles should be driven to maximum specifically designed pile set or to maximum pile embedment of 3500mm, whichever comes first. The maximum pile set shall be computed using the Hiley Formula and should be taken as the average of the last 10 blows. It is anticipated that the depth mentioned above is enough

to mitigate the effects of possible seasonal soil movements due soil expansivity.

- Where a shallow foundation is preferred, a specifically designed ribraft slab foundation is recommended. The top 400mm of soil, including topsoil should be taken out and be replaced compacted hardfill, preferably Gap 65 or 40. The compacted hardfill should extend 1000mm from the building footprint. The ribraft foundation should be designed supported with driven piles. The piles should be driven to maximum specifically designed pile set or to maximum pile embedment of 3500mm, whichever comes first. The maximum pile set shall be computed using the Hiley Formula and should be taken as the average of the last 10 blows.

8. OTHER RECOMMENDATIONS

- In case of shallow foundation, the exposed subsoils should be examined, and any potential soft spots are to be further examined and then removed as appropriate. Replacement fill shall be GAP 65 or GAP 40 placed in layers not exceeding 150mm thick and compacted with a suitable compactor. Any fill exceeding 600mm thick should be tested for compaction.
- All stormwater collected from roofed and paved surfaces together with discharges from retaining walls and other subsoil drains shall be controlled and piped away from the proposed building footprint. Ensure that no uncontrolled runoff or concentrated discharges are directed onto open ground, into soakage pits or into subsoil drainage systems.
- Fill materials beneath any on-ground slab shall be GAP 65 or GAP 40 placed and compacted in layers not exceeding 150mm thick. Any fill exceeding 600mm thick should be tested for compaction.
- An engineer should inspect the earthworks, building platform construction and foundation, and in the case of concrete slab construction, prior to the concrete being poured to ensure that the actual soil parameters are as mentioned in this report or better. Producer Statements PS4 – Construction Review should be required for each of these stages.

9. LIMITATIONS

- Our responsibility for this report is limited to the Client named in this report. We disclaim all responsibility and will accept no liability to any other person unless that party has obtained the written consent of T&A Structures. T&A Structures reserves the right to qualify or amend any opinion expressed in this report in dealing with any other party. It is not to be relied upon for any other purpose without reference to T&A Structures.
- Recommendations and opinions in this report are based on data obtained from the investigations and site observations as detailed in this report. The nature and continuity of subsoil conditions at locations other than the investigation bores and tests are inferred and it should be appreciated that actual conditions could vary from the assumed model.
- It is essential that this office be contacted if there is any variation in subsoil conditions from those described in this report as it may affect the design parameters recommended.
- This report was carried for the purpose of checking the ground with respect to the proposed development. This should not be taken as a full geotechnical report.
- Our professional services were performed using a degree of care and skill normally exercised, under similar circumstances, by reputable consultants practicing in this field at the time.



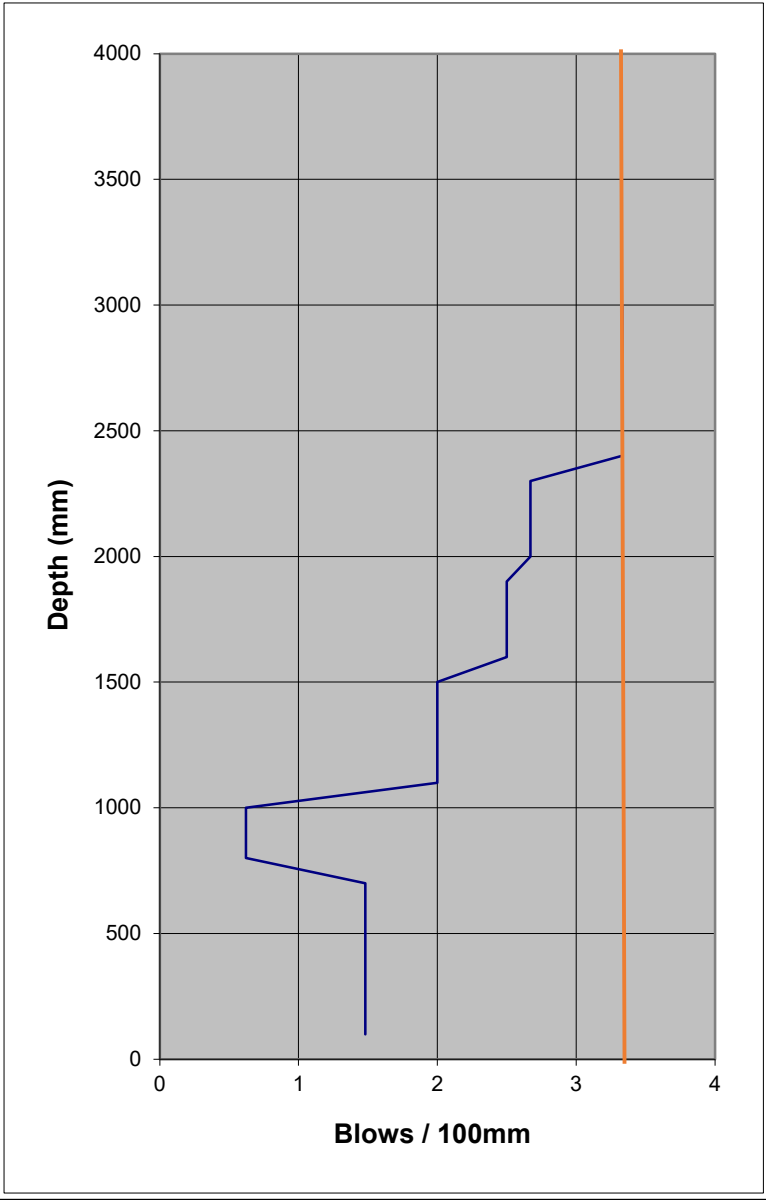
Chartered Professional Engineer
Structural Engineer, CMEngNZ CPEng
T&A STRUCTURES LTD.

10. APPENDIX 1: BORE LOGS

Scala Penetrometer results
BORE HOLE LOG BH1

Client Advance Build **Date** 8 September 2023
Project House 3 6A Waimanoni Road, A\ **Logged By** Teo

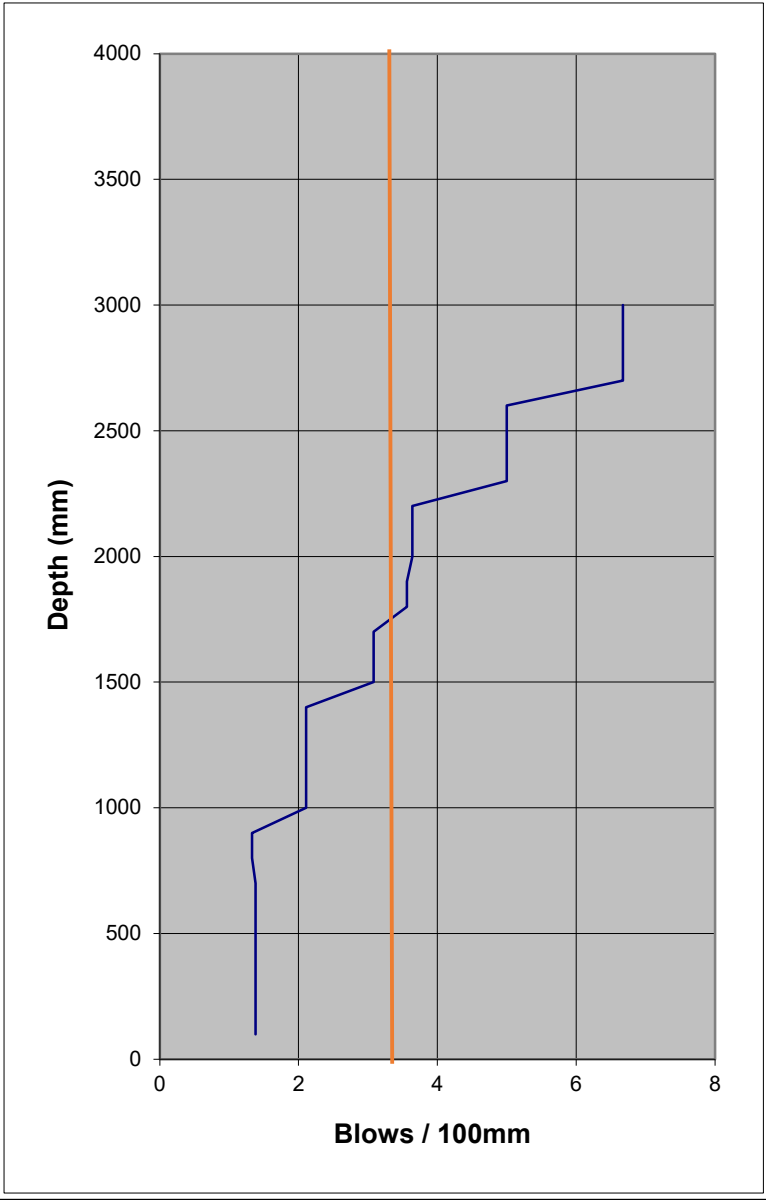
Depth of reading	Number of blows/ 100mm
100	1.48
200	1.48
300	1.48
400	1.48
500	1.48
600	1.48
700	1.48
800	0.62
900	0.62
1000	0.62
1100	2.00
1200	2.00
1300	2.00
1400	2.00
1500	2.00
1600	2.50
1700	2.50
1800	2.50
1900	2.50
2000	2.67
2100	2.67
2200	2.67
2300	2.67
2400	3.33
2500	3.33
2600	3.33
2700	3.33
2800	3.33
2900	3.33
3000	3.33
3100	
3200	
3300	
3400	
3500	
3600	
3700	
3800	
3900	
4000	



Scala Penetrometer results
BORE HOLE LOG BH2

Client Advance Build **Date** 8 September 2023
Project House 3 6A Waimanoni Road, A\ **Logged By** Teo

Depth of reading	Number of blows/ 100mm
100	1.38
200	1.38
300	1.38
400	1.38
500	1.38
600	1.38
700	1.38
800	1.33
900	1.33
1000	2.11
1100	2.11
1200	2.11
1300	2.11
1400	2.11
1500	3.08
1600	3.08
1700	3.08
1800	3.56
1900	3.56
2000	3.64
2100	3.64
2200	3.64
2300	5
2400	5
2500	5
2600	5.00
2700	6.67
2800	6.67
2900	6.67
3000	6.67
3100	
3200	
3300	
3400	
3500	
3600	
3700	
3800	
3900	
4000	



Project location

Papakainga Housing project, 6A Waimanoni Road, Awanui

Outline:

As requested by the Advanced Build (Building Company) we (Waterflow NZ Ltd), are engaged to assess the stability and the soil condition for a suitable Onsite Wastewater Treatment System and Land Application System for the Papakainga Housing project, 6A Waimanoni Road, Awanui. We understand it is proposed to service the existing dwelling and 5 new dwellings onsite, potable water is supplied by tanks for use across the site. Due to the location of the dwellings, size and contours of the site it is proposed to split the site into 2 Zones and divert the wastewater into two separate Treatment Systems and Land Application Systems.

Is the site suitable for an on-site effluent treatment and disposal system?

Yes, the site is suitable for the discharge of the wastewater production as per AC TP-58 Guidelines.

Zone 1:

EconoTreat System Series VBB-C-2200- Twin Treatment 1: Discharge calculations are based on the below

- 1 x Existing 4-bedroom accommodation units = 6 personal @ 160L per person per day;
Flow of $6 \times 160 = 960\text{L}$
- 1 x New 4-bedroom accommodation units = 6 personal @ 160L per person per day;
Flow of $6 \times 160 = 960\text{L}$
- 1 x New 3-bedroom accommodation units = 5 personal @ 160L per person per day;
Flow of $5 \times 160 = 800\text{L}$
- 1 x New 2-bedroom accommodation units = 4 personal @ 160L per person per day;
Flow of $4 \times 160 = 640\text{L}$
- Total Wastewater production is 3,360L/p/d

Zone 2:

EconoTreat System Series VBB-C-2200 Treatment System 2: Discharge calculations are based on the below

- 1 x New 3-bedroom accommodation units = 5 personal @ 160L per person per day;
Flow of $5 \times 160 = 800\text{L}$
- Total Wastewater production is 800L/p/d

Waterflow NZ Ltd

PO Box 24, 1160 State Highway 12, Maungaturoto 0547

P. 0800 628 356 F. 09 431 8845 E. sales@waterflow.co.nz www.naturalflow.co.nz

What are the disposal field requirements?

We recommend the EconoTreat System Series VBB-C-2200- Twin Treatment System for Zone 1, with the Wastewater production of 3,360L/p/d and EconoTreat System Series VBB-C-2200 Treatment System for Zone 2, and the Wastewater production of 800L/p/d, both systems are advanced secondary treatment systems with de-nitrification capabilities. We suggest discharge to be via PCDI at a recommended loading rate of 3l/m²/day for silty clay soils. And a minimum reserve field of 30% is recommended.

Is Discharge Consent required?

Yes, due to proposed activities onsite the Wastewater volume exceeds the Far North District Council PA allowance of 2000l.

Other requirements

Council will require a Producer Statement – Construction Review (PS4) to satisfy Council requirements therefore the system / disposal field will need to be inspected by the Wastewater Designer to ensure compliance with Wastewater Design

Recommendation:

A meeting on site before installation with the installer and owner to confirm exact positioning of the system and disposal field in accordance with the design.

STATEMENT OF DESIGN - PS1

Issued by: Dean Hoyle

To: Papakainga Housing - Zone 1

Copy to be supplied to: Far North District Council

In Respect of: Econotreat Domestic Onsite Wastewater and Sewage System Design

At: 6A Waimanoni Road, Awanui

Legal Description: Waimanoni 1A 2C Block

Waterflow NZ Ltd has been engaged by Papakainga Housing - Zone 1 to provide the technical design services and details in respect of the requirements of G13/VM4 and B2 Durability of the Building Code 2004, for an Onsite Wastewater and Sewage System for their building at the above location.

The Design has been carried out in accordance with Auckland Council TP-58 Guidelines and Clause B2, G13 and G14 of the Building Regulations 2004.

The proposed building work covered by this producer statement is described on the drawings titled: Papakainga Housing - Zone 1 Onsite Wastewater Design Report, and numbered 1-42 together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions: correct installation of the system and drainage fields
- (ii) All proprietary products meeting their performance specification requirements;

As an independent design professional covered by a current policy for Professional Indemnity Insurance, no less than \$200,000*, I **believe on reasonable grounds** the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code.

Signed by: Dean Hoyle – PS Author '3037' Auckland Council, NZQA Onsite Wastewater Training/Opus, BOINZ OWM, HBRC & FNDC Approved Designer

Date: 27/09/2023

Signature: 

Waterflow NZ Ltd
1160 State Highway 12
Maungaturoto 0520

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000.*

2023

Waterflow NZ Ltd
Certified Designer

Papakainga Housing - Zone 1
6A Waimanoni Road
Awanui
Waimanoni 1A 2C Block

Reference Number: WF10672

Issued 27/09/2023

[ONSITE WASTEWATER DESIGN REPORT]

Onsite Wastewater Design Report by Waterflow NZ Ltd – Copyright 2014



TABLE OF CONTENTS

PART A: CONTACT AND PROPERTY DETAILS 3

PART B: SITE ASSESSMENT - SURFACE EVALUATION 5

PART C: SITE ASSESSMENT - SOIL INVESTIGATION 7

PART D: DISCHARGE DETAILS - SEE HYDRAULIC LOADING TABLES 9

PART E: LAND DISPOSAL METHOD 10

PART F: PROPOSED WASTEWATER TREATMENT SYSTEM 11

PART G: OPERATION AND MAINTENANCE OF SYSTEM 11

PART H: SOIL LOG PROFILE 12

PART I: SITE IMAGES 13

DECLARATION 14

SITE LAYOUT PLAN: 15

Attachments

- PS1
- Land Application System Schematics
- Pump Specification
- Electrical Diagram
- Assessment of Environmental Effects
- System & Installation Specifications
- System & Installation Specifications
- Home Owners Care Guide

PART A: CONTACT AND PROPERTY DETAILS

A 1. Consultant / Evaluator

Name:	Dean Hoyle
Company/Agency:	Waterflow New Zealand Ltd
Address:	1160 SH 12 Maungaturoto
Phone:	09 431 0042
Fax:	09 431 8845
Email Address:	dean@waterflow.co.nz

A 2: Applicant Details

Applicant Name:	Papakainga Housing - Zone 1
Company Name:	
Property Owner:	Papakainga Housing - Zone 1
Owner Address:	6A Waimanoni Road, Awanui
Phone:	
Mobile:	
Email Address:	angela@advancebuild.co.nz

A 3: Site Information

Sited Visited by:	Caleb Pirini	Date:	Tuesday, 19 September 2023
Physical Address:	6A Waimanoni Road, Awanui		
Territorial Authority:	Far North District Council		
Regional Council:	Northland Regional Council		
Regional Rule	Resource Consent		
Legal Status of Activity:	Permitted:	<input checked="" type="checkbox"/>	Controlled: <input type="checkbox"/> Discretionary: <input type="checkbox"/>
Total Property Area (m²):	22256m ²		
Map Grid Reference:			
Legal Description of Land (as on Certificate of Title):			
Lot No:	Waimanoni 1A 2C Block		
DP No:			
CT No:			

A 4: Are there any previous existing discharge consents relating to this proposal or other waste discharge/disposal on the site?

Yes:	<input type="checkbox"/>	No:	<input checked="" type="checkbox"/>
------	--------------------------	-----	-------------------------------------

If yes, give reference No's and description:

--

A 5: Dwelling(s) for which on-site wastewater service is to be provided

Status of dwelling(s) to be serviced:	New	<input type="checkbox"/>	Existing	<input type="checkbox"/>	Multiple	<input type="checkbox"/>
How many dwellings on the property?	4					
Capacity of dwellings:	Dwelling 1	1x 4 (Existing Dwelling)				
(or number of bedrooms)	Dwelling 2	1x 4 (New Dwelling)				
	Dwelling 3	1x 3 (New Dwelling)				
	Dwelling 4	1x 2 (New Dwelling)				
Notes:						

PART B: SITE ASSESSMENT - SURFACE EVALUATION

B 1: Site Characteristics

Performance of adjacent systems:	(Unknown)		
Estimated annual rainfall (mm):	1000 - 1250 (as per NIWA statistics)		
Seasonal variation (mm):	300-400mm		
Vegetation cover:	Pasture Grass		
Slope shape:	Flat		
Slope angle:	<3 °		
Surface water drainage characteristics:	Broad overland flow across site		
Flooding potential?	Yes:	No:	x
If Yes, specify relevant flood levels relative to disposal area:			
Site characteristics:	a communal rural property. It is a fairly flat section with gentle fall to the North. Property is generally covered with pasture grass. Property boundaries are on Waimanoni Road to the West and residential site and farmland on all other boundaries.		

B 2: Slope Stability

Has a slope stability assessment been carried out on the site?

Yes:		No:	x
------	--	-----	---

If no, why not?

Low slope:	x	No signs of instability:	x	Other:
------------	---	--------------------------	---	--------

If yes, give brief details of report:

Details:	
Author:	
Company/Agency:	
Date of report:	

B 3: Site Geology

--

B 4: Slope Direction

What aspect does the proposed disposal system face?

North	x	West	
North-West		South-West	
North-East		South-East	
East		South	

B 5: Site Clearances if applicable (also on site plan)

	Treatment Separation Distance (m)	Disposal Field Separation Distance (m)
Boundaries:	>1.5	>1.5
Surface Water:	>15	>15
Ground Water:	>1.2	>1.2
Stands of Trees / Shrubs:	n/a	n/a
Wells/Water Bores:	>20	>20
Embankments / Retaining Walls:	>3	>3
Buildings:	>3	>3
Other:		

B 6: Please identify any site constraints applicable for this property, and indicate how the design process is to deal with these.

Constraints	Explain how constraints are being dealt with
1 Site constraints: (a) (b)	n/a

PART C: SITE ASSESSMENT - SOIL INVESTIGATION

C 1: Soil Profile Determination Method

Test pit:		Depth (mm):		No. of Test pits:	
Bore hole:	x	Depth (mm):	1200	No. of Bore holes	2
Other:					

C 2: Fill Material

Was fill material intercepted during the subsoil investigation?

Yes: No:

If yes, please specify the effect of the fill on wastewater disposal:

C 3: Permeability Testing

Has constant head Permeability Testing (Ksat) been carried out?

Yes: No:

If yes, please indicate the details (test procedure, number of tests):

Test report attached?

Yes: No:

C 4: SURFACE WATER CUT OFF DRAINS

Are surface water interception/diversion drains required?

Yes: No:

C 5: DEPTH OF SEASONAL WATER TABLE:

Winter (m):	>1.2
Summer (m):	>1.2

Was this:

Measured:	✓ no sign of ground water or mottling in bore holes
Estimated:	

C 6: SHORT CIRCUITS

Are there any potential short circuit paths?

Yes: No:

If yes, how have these been addressed?

C 7: SOIL CATEGORY

Is topsoil present?

Yes:	<input checked="" type="checkbox"/>	No:	<input type="checkbox"/>
------	-------------------------------------	-----	--------------------------

If yes, what is the topsoil depth & soil description?

300mm topsoil over silty clay-loam

Indicate the disposal field soil category (as per AC TP-58, Table 5.1)

Category	Description	Drainage	(x)
1	Gravel, coarse sand	Rapid draining	
2	Coarse to medium sand	Free draining	
3	Medium-fine & loamy sand	Good draining	
4	Sandy loam, loam & silt loam	Moderate draining	
5	Sandy clay-loam, clay loam & silty clay-loam	Moderate to slow draining	x
6	Sandy clay, non-swelling clay & silty clay	Slow draining	
7	Swelling clay, grey clay & hardpan	Poorly or non-draining	

Reason for placing in stated category:

Result of bore hole/test pit sample	<input checked="" type="checkbox"/>
Profile from excavation	<input type="checkbox"/>
Geotech report	<input type="checkbox"/>
Other:	<input type="checkbox"/>

C 8: SOIL STRUCTURE

Based on results of the in-situ soil profile investigation above (C7) please indicate the disposal (land application) field soil structure:

Massive	<input type="checkbox"/>
Single grained	<input type="checkbox"/>
Weak	<input type="checkbox"/>
Moderate	<input checked="" type="checkbox"/>
Strong	<input type="checkbox"/>

C 9: As necessary, provide qualifying notes on the relationship of Soil Category (C7) to Soil Structure (C8) and the effect this relationship will have on design loading rate selection:

--

PART D: DISCHARGE DETAILS - SEE HYDRAULIC LOADING TABLES

D 1: Water supply source for the property:

Rain water (roof collection)	x
Bore/well	
Public supply	

D 2: Are water reduction fixtures being used?

Yes:	<input type="checkbox"/>	No:	x
------	--------------------------	-----	---

If 'yes' Please state:

Standard Fixtures include dual flush 11/5.5 or 6.3 litre toilet cisterns, and includes standard automatic washing machine, but a low water use dishwasher, no garbage grinder.
--

D 3: Daily volume of wastewater to be discharged:

No. of bedrooms/people:	1	1x 4Bedroom (Existing Dwelling)
	2	1x 4 Bedroom (New Dwelling)
	3	1x 3 Bedroom (New Dwelling)
	4	1x 2 Bedroom (New Dwelling)
Design occupance (people): (as per AC TP-58, Table 6.1)	1	6
	2	6
	3	5
	4	4
	Black / Grey water	
Per capita wastewater production (litres/person/day): (as per ARC TP-58, Table 6.2)	1	160 L/day
	2	160 L/day
	3	160 L/day
	4	160 L/day
Total daily wastewater production (litres per day):	3360 L/day	

D 4: Is daily wastewater discharge volume more than 2000 litres?

Yes:	x	No:	<input type="checkbox"/>
------	---	-----	--------------------------

D 5: Gross lot area to discharge ratio:

Gross lot area:	22256 m ²
Total daily wastewater production (litres/day):	3360 L
Lot area to discharge ratio:	6.62

D 6: Net Lot Area

Area of lot available for installation of the disposal (land application) field and reserve area:

Net lot area (m²):	21256 m ²
Reserve area (m²):	30%

PART E: LAND DISPOSAL METHOD

E 1: Indicate the proposed loading method:

	Black / Grey Water
Gravity Dose:	
Dosing Siphon:	
Pump:	D53A/B

E 2: If a pump is being used please provide following information:

Total Design Head (m):	32
Pump Chamber Volume (litres):	1600
Emergency Storage Volume (litres):	6000

Is a high water level alarm being installed in pump chambers?

Yes:	<input checked="" type="checkbox"/>	No:	<input type="checkbox"/>
------	-------------------------------------	-----	--------------------------

E 3: Identify the type(s) of Land Disposal method proposed for this site:

	Black / Grey Water
P.C.D.I. Dripper Irrigation:	PCDI surface laid and mulched
L.P.E.D. System:	
Evapo-Transpiration Beds:	
Other:	
(as per Schematics attached)	

E 4: Identify the Loading Rate proposed for option selected in E3:

as per ARC TP-58, Table 9.2 & Table 10.3	Black / Grey Water
Loading Rate (litres/m ² /day):	3
Disposal Area Basal (m ²):	
Areal (m ²):	1120

E 6: Details and dimensions of the disposal (land application) field:

Length (m):	70.0	No. Lines:	16	Hole Size:	N/A
Width (m):	16.0	Spacing (m):	1.0	Hole Spacing:	N/A
Notes:	1120sqm of Surface laid PCDI dripline pinned at 1m centers and covered with a minimum covering of 100mm mulch. See schematic drawing attached.				

PART F: PROPOSED WASTEWATER TREATMENT SYSTEM

A Econotreat EconoTreat VBB-C-2200- Twin System, fed through surface laid PCDI dripline is suitable for this site. The EconoTreat VBB-C-2200- Twin System has enough capacity to accommodate 4000ltr per day, so will be well within its capacity. The land application system is designed to discharge a maximum volume of 3360ltrs per day and if this is exceeded it could cause failure resulting in environmental and public harm.

PART G: OPERATION AND MAINTENANCE OF SYSTEM

The operation of this complete system will be explained verbally to the owner by the Installer or Agent on Completion of Installation; also provided with Waterflow's Home Owner's Manual.

Waterflow NZ Ltd encourages the Home Owner to monitor and care for your Econotreat system yourself, with our backing and support, and by doing so you will learn how your system works and operates and how to keep it in top working order.

It is also recommended that a Maintenance Program contract is in place at all times to ensure this system is maintained at top performance at all times.

All on site wastewater systems require regular maintenance; in this case once annually is suffice and may be specified within the consent process by the Building Department of Far North District Council. This Maintenance will be recorded on hard copy and supplied to both the Owner and Far North District Council Compliance Officer if requested.

NOTE TO OWNER: All written records pertaining to the wastewater system should be retained in a safe place. When a change of ownership occurs, a full and complete history is able to be passed to the new owners.

Animals are to be physically excluded from the installed effluent field to avoid damage, and to reduce the risk of soil compaction in the vicinity of the bed.

Planting within this area is encouraged to assist with evapotranspiration by plants.

PART H: SOIL LOG PROFILE



300mm topsoil over silty clay-loam
Class 5, (as per AC TP-58, Table 5.1)





PART I: SITE IMAGES



DECLARATION

I, hereby certify that, to the best of my knowledge and belief, the information given in this application is true and complete.

Prepared By:	
Name:	Alexandra Sabath - Wastewater Design Technician
Signature:	
Date:	27/09/2023

Reviewed By:	
Name:	Dean Hoyle – PS Author ‘3037’ Auckland Council, NZQA Onsite Wastewater Training/Opus, BOINZ OWM, HBRC Approved Designer
Signature:	
Date:	27/09/2023

NOTE: The Waterflow Systems are to be installed by a registered drainlayer to the designs supplied by Waterflow NZ Ltd. All work to comply with Regional Council Water and Soil Plans.

Comments/Summary:

The disposal field will need to be protected from traffic and animal grazing. Planting this area is recommended to increase Evapotranspiration.

Suitable plants for the disposal field can be found on our website www.naturalflow.co.nz

Waterflow Treatment systems to be installed by accredited installer unless other arrangements have been made by Waterflow NZ Ltd

For more information do not hesitate to contact the team at Waterflow NZ Ltd on 0800 628 356



Legal Description: Pt Waimanoni 1A2C

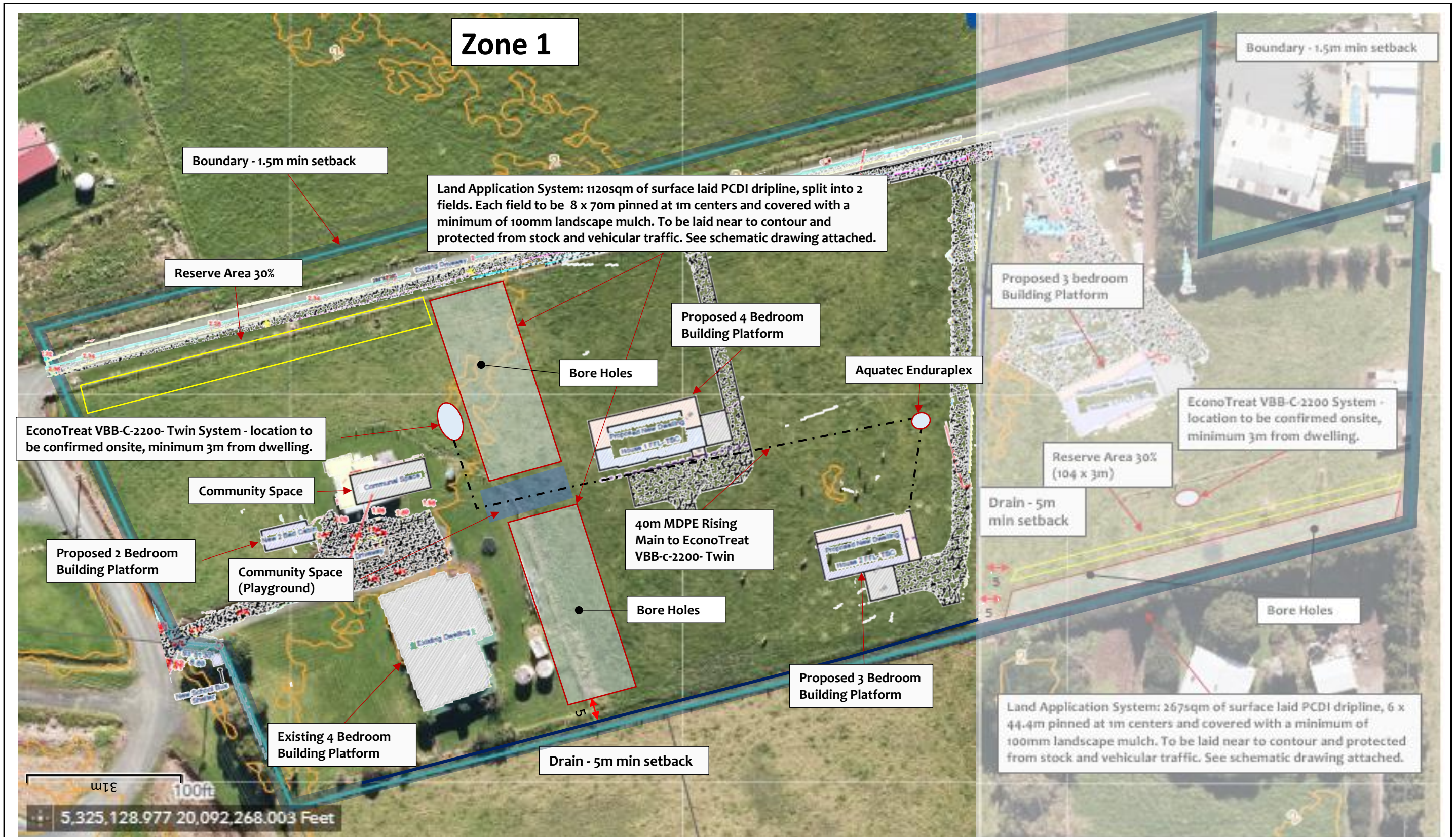
← Zoom to Enlargement on next page

ω0ε 200ft
 5,324,684.891 20,091,929.061 Feet

Eagle Technology, Land Information



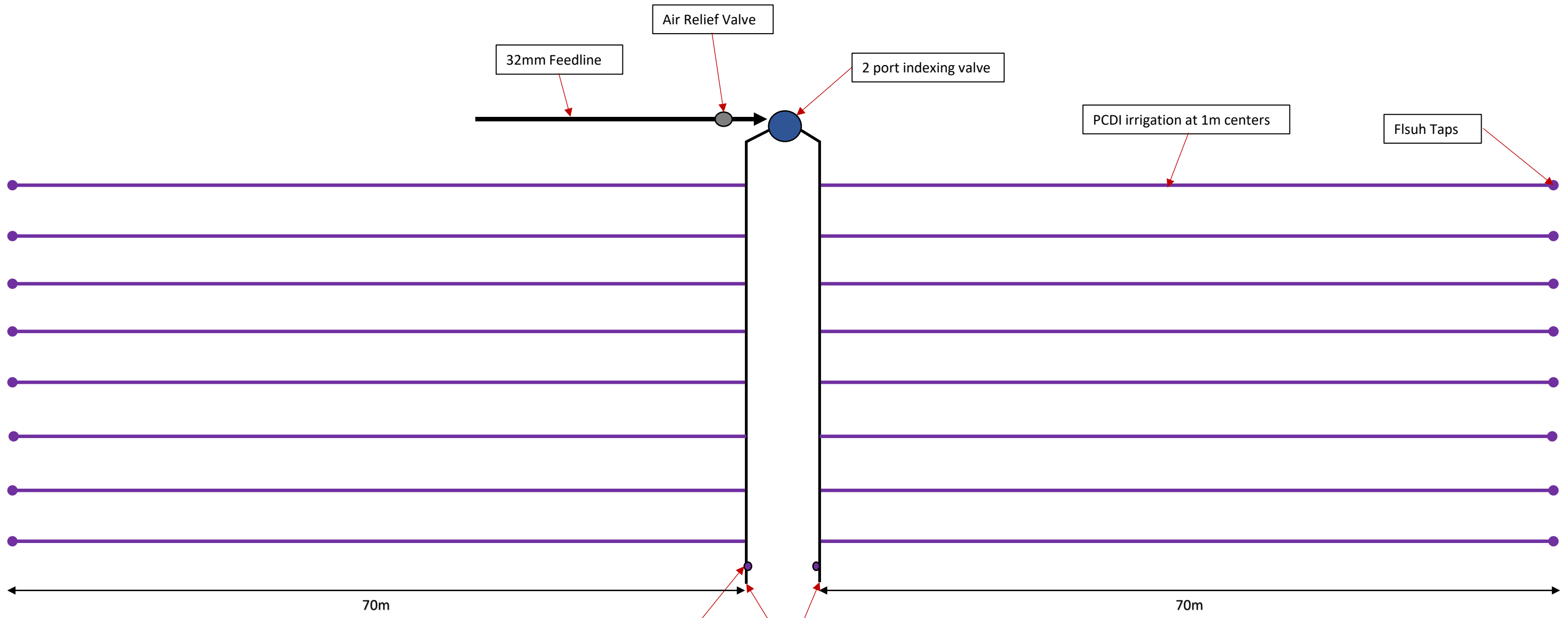
SITE LOCATION PLAN:	SCALE:
Papakainga Housing - Zone 1	1 : 184
6A Waimanoni Road	
Awanui	
Waimanoni 1A 2C Block 2.2256HA	
	@ A3




DATE DRAW: 27/09/2023
 PREPARED BY: Alexandra Sabath
 REVISED: Dean Hoyle

SITE LAYOUT PLAN:
 Papakainga Housing - Zone 1
 6A Waimanoni Road
 Awanui
 Waimanoni 1A 2C Block
 2.2256HA

SCALE:
 1:73
 @ A3



 <p>Water Flow NZ LTD Knowledge • Innovation • Care</p>	<p>DATE DRAW: 29/09/2023</p> <p>PREPARED BY: Gerald Hoyle</p>	<p>PCDI LAYOUT PLAN: Papakainga Housing project 6A Waimanoni Road Awanui Lot ##, DP #### oHA</p>	<p>SCALE: 1 : 263 @ A3</p>
--	---	---	---

Assessment of Environmental Effects

Papakainga Housing - Zone 1 of 6A Waimanoni Road, Awanui Waimanoni 1A 2C Block

1.1 Description of Proposal

The owners of this site propose the servicing of an existing 4 bedroom dwelling and a new 4 bedroom dwelling & 3 bedroom dwelling & 2 bedroom dwelling.

1.2 Site Description

This site, located at 6A Waimanoni Road, is a communal rural property. It is a fairly flat section with gentle fall to the North. Property is generally covered with pasture grass. Property boundaries are on Waimanoni Road to the West and residential site and farmland on all other boundaries.

1.3 Wastewater Volume

In calculating the wastewater flows we have allowed for a maximum occupancy of 21 persons, based on the proposed (as per AC TP-58, Table 6.1). Total wastewater production is based on an allowance of 160 litres per person per day (as per ARC TP-58, Table 6.2), which is conservative given that water supply is roof collected rain water and standard water fixtures will be used throughout the house.

1.4 Wastewater Volume

The EconoTreat VBB-C-2200- Twin system that is proposed will treat the wastewater to a high standard prior to dispersal using a PCDI drip line, into a purpose-designed disposal field, where the removal of nutrient will continue, both in the receiving soils and by plant uptake.

The system will be capable of producing reductions in Biochemical Oxygen Demand, Total Suspended Solids, Nitrogen, and Coliforms to a standard that meets the requirements (see details below). The system will cater for the wastewater requirements of the private dwellings (domestic wastewater) and will not service any commercial or trade waste sources. Risk Minor to Nil.

1.5 Proposed Treatment System

The objective of the treatment system is to reduce and remove much of the contaminants from the wastewater prior to discharge into the receiving soil. This will improve the long-term performance of the disposal field as well as reducing the risk to the receiving environment. The system will consist of:

- Septic Tank Module
- EconoTreat VBB-C-2200- Twin
- Land Application System
 - Aquatec Enduraplex

The system is constructed using concrete tanks. The system produces treated effluent with BOD <20mg/l, Suspended solids <20mg/l.

1.6 Land Application System

The proposed irrigation system uses pressure-compensating dripper lines ensuring an even delivery of moisture over the entire irrigation field and a conservative DLR of 3mm. We propose the use of Metzerplas unibioline AD16/2.2 @ 0.6m/c with the Dripline laid out at 1m centres. This Dripline will then be covered by 100mm landscape mulch. Densely planting this area will greatly enhance evapo-transpiration and be very beneficial especially in the wetter months of the year. This irrigation can be installed in conjunction with existing or proposed landscaping.

1.7 Surface & Ground Water

It is proposed to treat the water to a high standard prior to discharge and the proposed irrigation system will introduce the water into the topsoil horizon using PCDI irrigation. A low application rate of treated effluent into the topsoil will significantly reduce the likelihood of, any breakout or runoff or any risk of surface water contamination. With the ground water levels being >1.2m this conservative DLR also means the risk of ground water contamination is virtually nil. A majority of the undeveloped areas of this site are suitable for a PCDI disposal field when the necessary setbacks are observed. Risk Minor to Nil.

1.8 Air Quality

The proposed EconoTreat VBB-C-2200- Twin system will produce no noticeable odour when functioning correctly. Any odour will be contained within the tanks. The PCDI irrigation system will load the soil at a rate that should not cause ponding, spraying or aerosol of the effluent that could potentially cause odours. Risk Minor to Nil.

1.9 Visual Impact

The tanks are installed wholly below ground level with only the lids being visible. The lids will protrude approximately 100mm to prevent egress of storm water into the system. The disposal field will be located in a purpose designed mulched and intensively planted disposal area. Warning signs may be installed to indicate the presence of the disposal area, although probably not necessary in a domestic situation, also the area may be fenced to restrict access.

1.10 Environmental Risks

Risks associated with this proposal are minor. The treatment system will be automated, and the Home Owner will be given a 'Home Owners Care Guide' which explains the necessary visual checks to ensure no issues arise with the system, specifically – solids build-up - high water level – discharge failure – filter blockage.

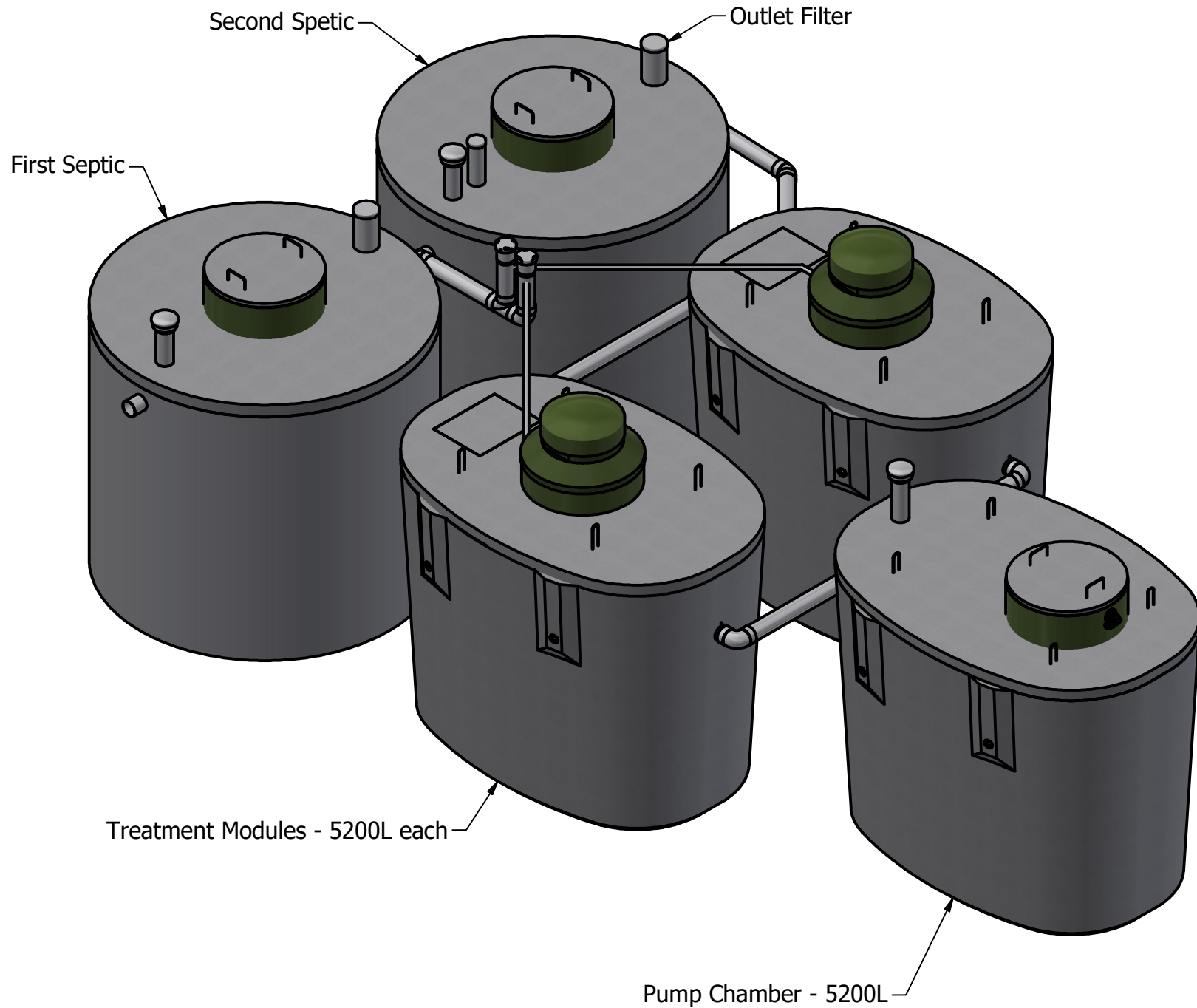
Peak flow into the system are not expected to be significant and the system includes a large emergency storage volume.

1.11 Maintenance Requirements

The maintenance requirement of this system is minimal, with the system fully automated. The system requires little input from the operator apart from the regular cleaning of the outlet filter between the treatment system and the Dripline field. All other maintenance interventions must be carried out by service persons familiar with the operation of the system and approved by the manufacturer. Maintenance may include checking of the dissolved oxygen levels, cleaning of effluent outlet filter, removal of excess sludge volume, checking of control panel function, etc....

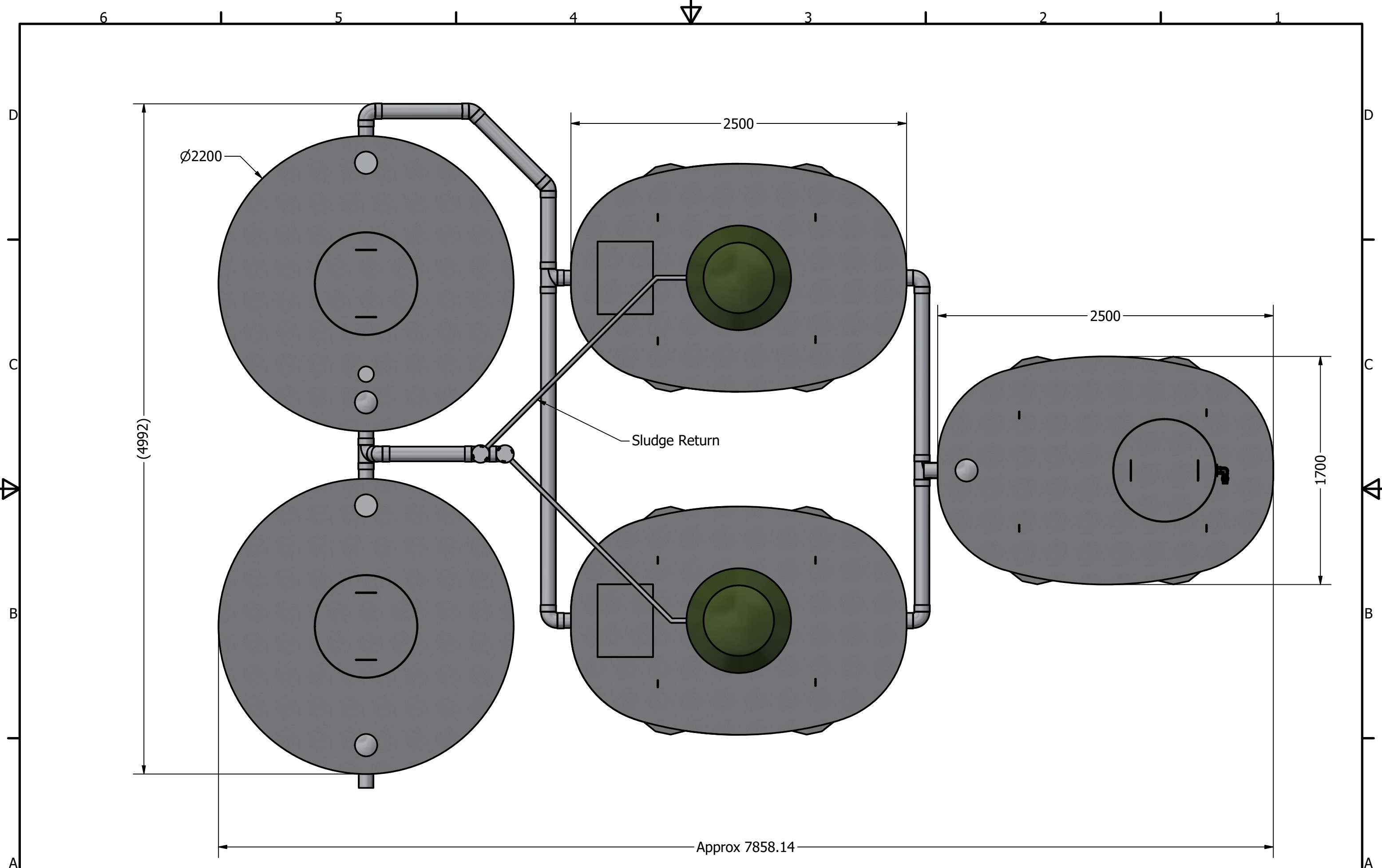
The disposal field is quite possibly the most important and sensitive part of the treatment system and requires a reasonable amount of maintenance to keep it functioning well. Any leaking or damaged Dripline must be fixed quickly using the appropriate materials, the planting must be maintained, weeds removed and grass kept cut. The Dripline should be kept covered with a suitable bark, mulch, or topsoil.

Warning signs such as ponding, odours, and signs of excessive growth act as an indicator to possible problems. A disk filter is fitted to help prevent blockage of the drippers and to protect the Dripline. This filter will require cleaning during servicing of the system. The owners will be verbally informed at the commissioning of this system of all maintenance requirements and strongly advised to have a service contract in place prior to final sign off of the system installation.



VBB-C-2200 Twin - 6000L Septics

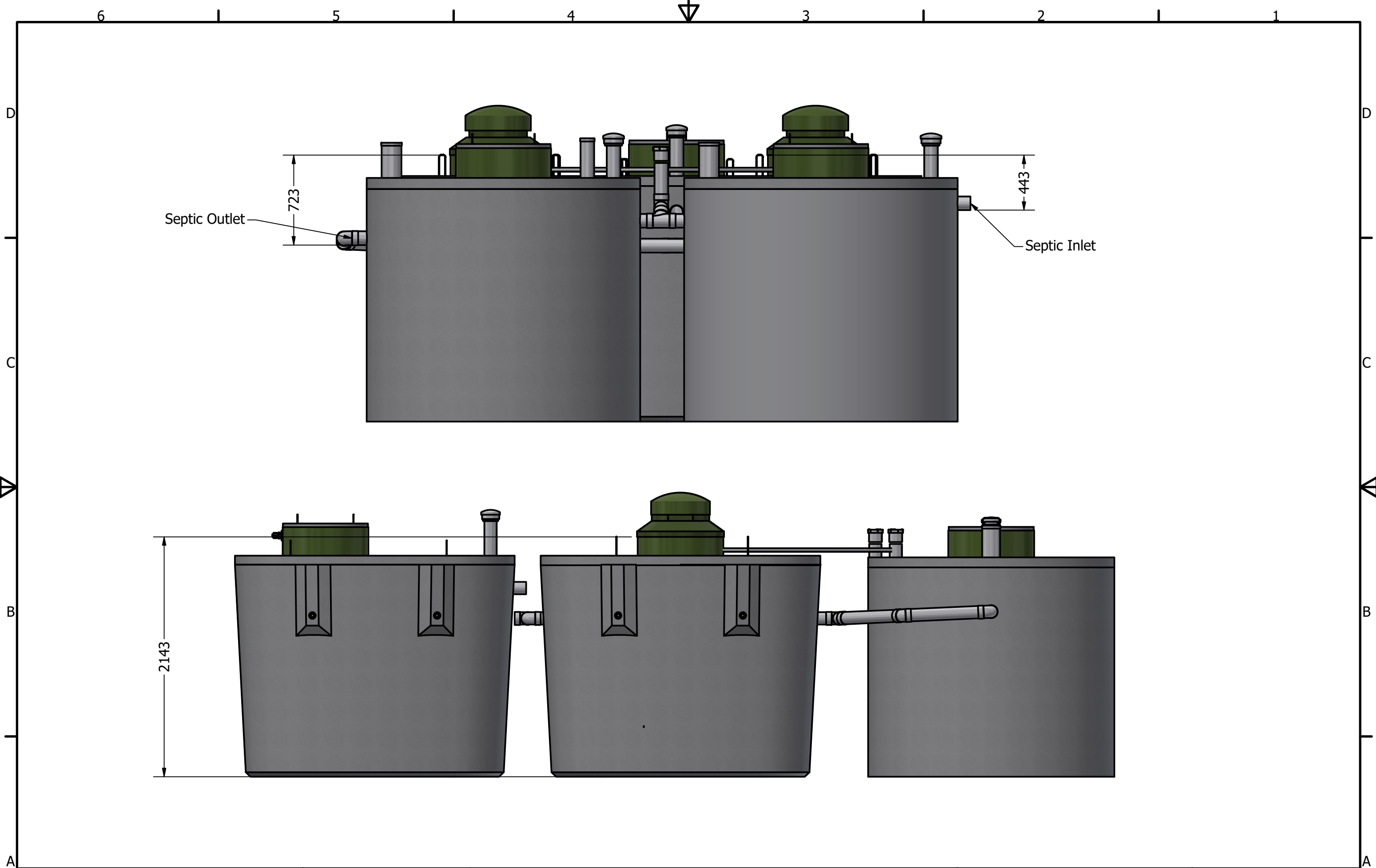
Manufacturer rated flow per day	4,400LPD
Description of system process	Aerated submerged fixed film media (open and closed type). Intermittent operation (fine and very large bubble combo)
Volumes (Litres)	
Number of chambers/tanks (volume)	5 x Tanks (27,000L)
Pump Chamber Size	5,200L
Primary chamber/septic tank	6,000L x 2
Aeration chamber	3,230L x 2
Clarification/Re-circulation chamber	300L x 2
Total emergency volume	>6,000L
Air Blower	Nitto LA120 x 2 (130 W)
Irrigation Pump	Project specific, seprate spec to be included
Treatment Performance	
BOD	<15mg/L
TSS	<15mg/L
TN	<20mg/L
Electrical Controls & Alarms	Air & High Water alarms (Audible & visual) 10A circuit breaker Aeration controlled by time clock



1160 SH12
 MAUNGATUROTO 0548
 PH: 0800 628 356
 E: sales@waterflow.co.nz

Econotreat VBB C 2200 Twin

PREPARED FOR:		Sheet 2 of 3	
DRAWN: Geraldine	DATE: 17/04/2019	SCALE: 1 / 25	REF:
REVISION			





econo-treat

Econotreat Treatment Systems

System Specifications & Installation Instructions



ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

Power Supply (see Pg 4 also for plastic systems)

Use a 2.5mm² T&E cable for the mains feeder cable. This cable should be protected at the feed end by an MCB rated at 16 Amps and should be installed on its own dedicated circuit.

Mains power supply is terminated in a waterproof outdoor socket, this provides power to the controller. It is found in the control box as pictured below. The power in comes through the side of the tank through a 25mm conduit coupling and will need to be run up through the bottom of the control box, where there is another conduit coupling; ensure these couplings are sealed off well when connecting the system up.



Power Socket

Controller Plugged in

25mm Conduit Coupling #2

Power Socket

25mm Conduit Coupling #1

25mm Conduit Coupling #2

Use Solid Conduit

Use flexible conduit provided

Power in

econo-treat

See our website: www.waterflow.co.nz

ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

Alarm Wiring

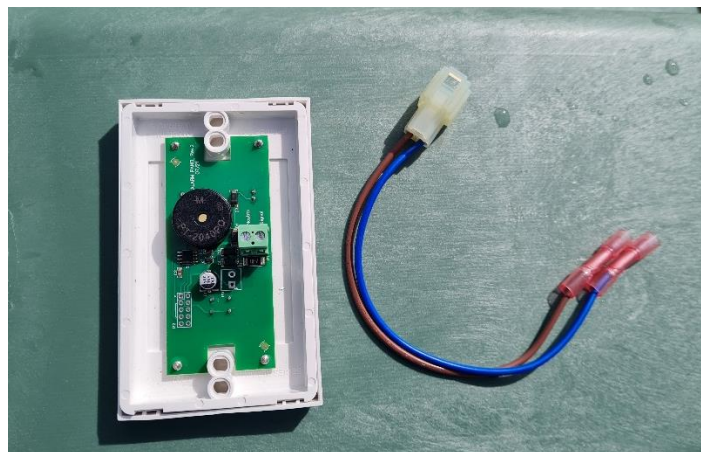
Use a 1.0mm² Twin or T&E cable to carry the two-wire alarm signal from the Treatment unit controller to the Alarm panel which is to be installed inside the building.

Note that this Alarm panel circuit is an ELV circuit. (24V AC)

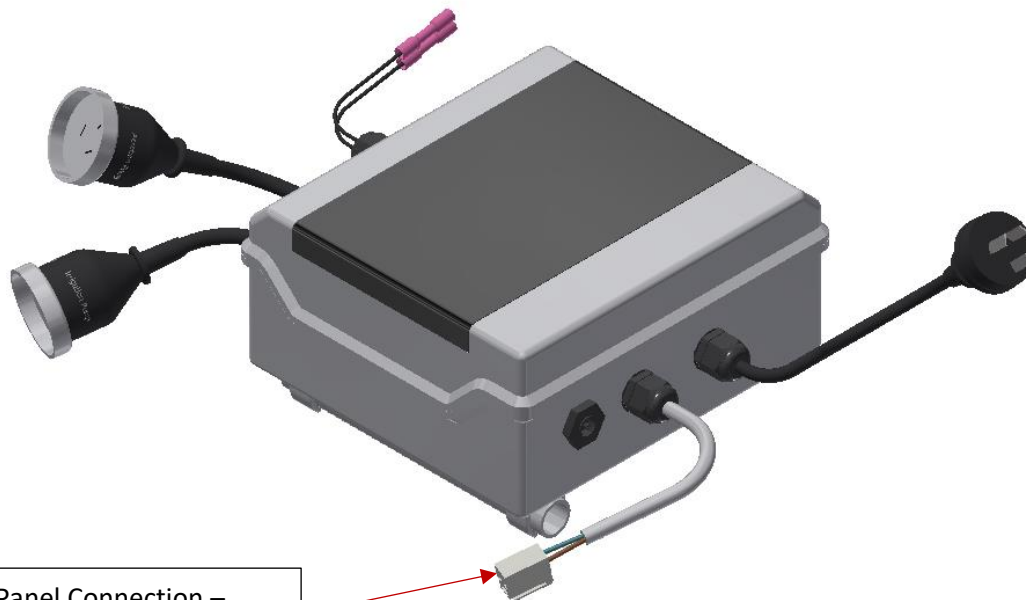
There is a connection on the side of the controller that the alarm panel connects to. The signal is the brown wire, and the neutral is the blue wire.



The Alarm Panel can be found in a bag in the controller box.



In the bag is also a connector that plugs into a plug on the controller. This panel should be installed in the house, typically the garage or laundry.



Alarm Panel Connection –
signal is brown, neutral is blue

If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz

ECONOTREAT TREATMENT SYSTEMS

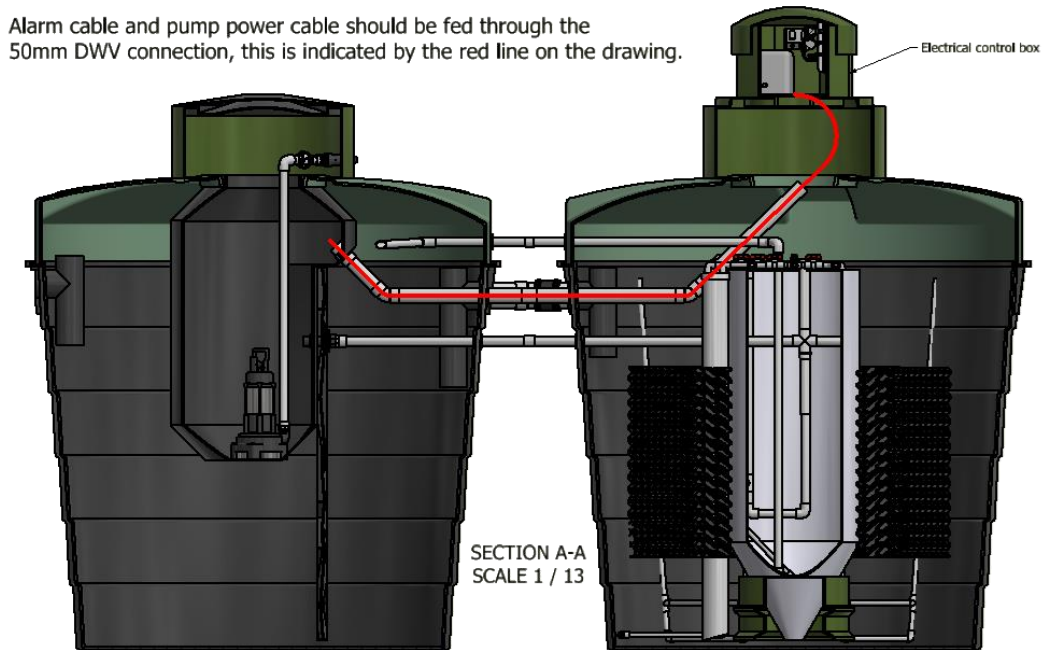
Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

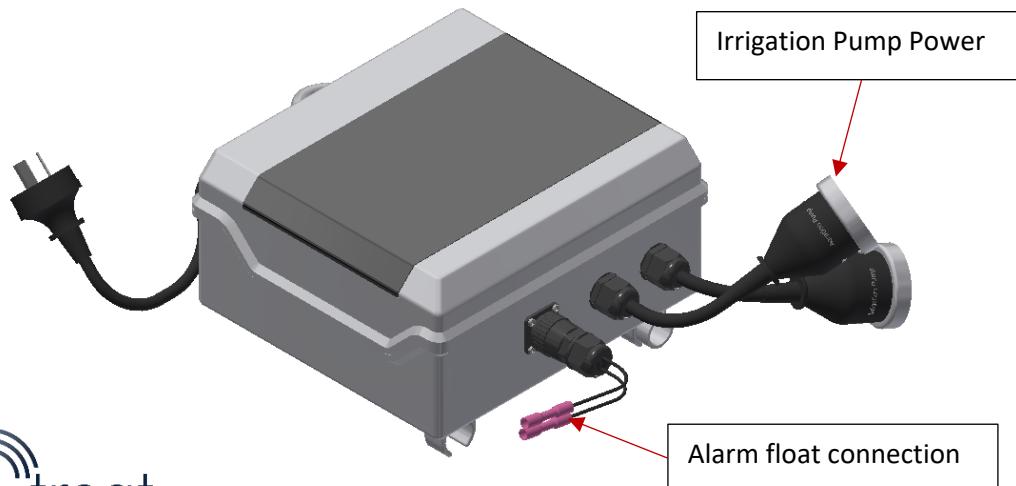
Plastic Systems

Plastic Econotreat systems have the pump and high-level float in a separate tank to the one holding the power box. Therefore, the pump and float cords need to be connected to the controller, they should have been fed through to the treatment tank by the installer at the time of install.

Note: There is a draw wire provided to pull the pump plug & alarm wire through to the Control Box; please do not cut any wires, the plug will fit through the conduit.



The high-level float plug on the controller is setup with crimps, so you will only need to crimp the float cable to the wires on the controller. The pump is simply plugged in the socket labelled "Irrigation Pump".



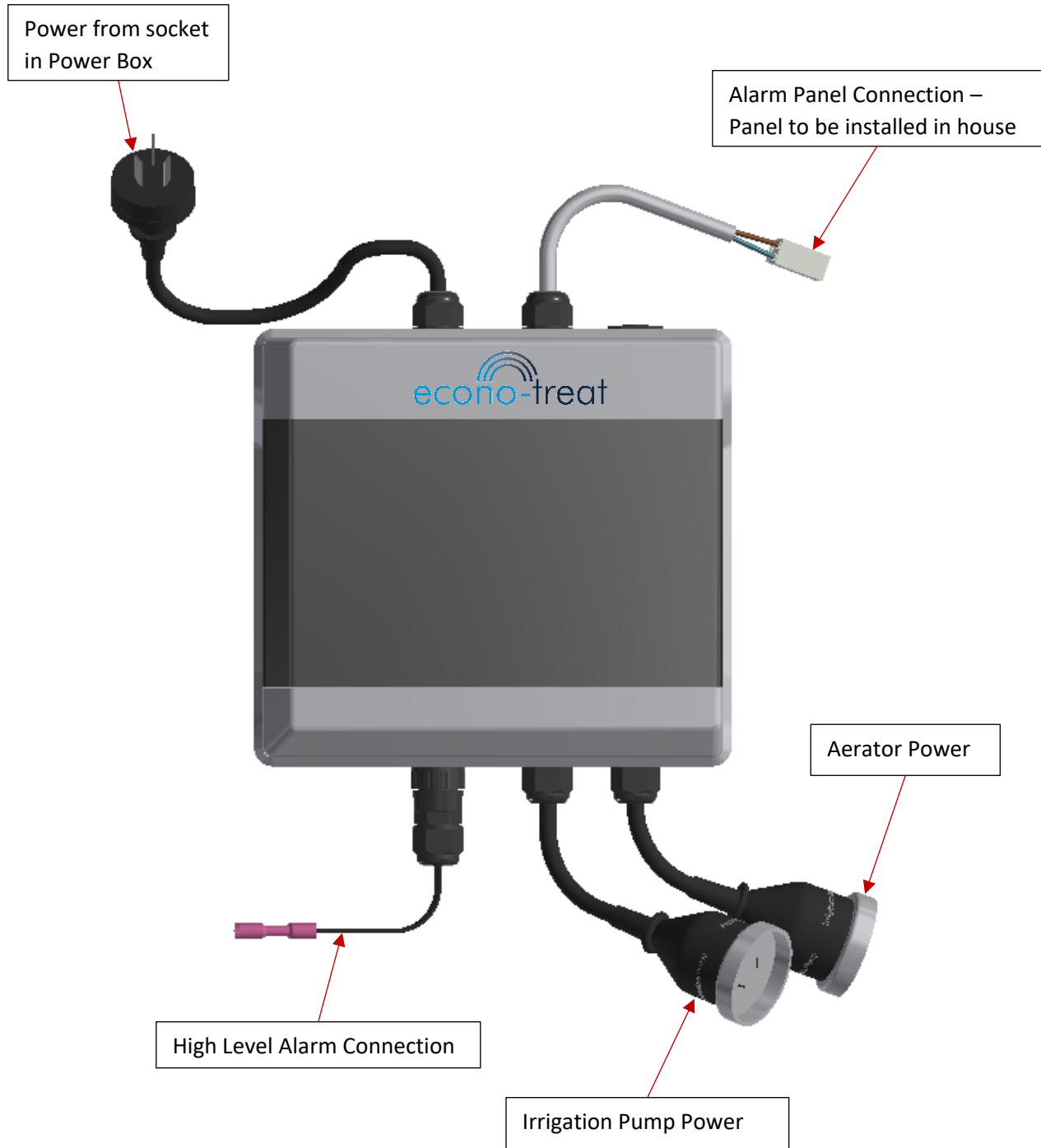
See our website: www.waterflow.co.nz

ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

Controller Schematic



If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz

ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

UV Controller

Systems with further UV disinfection have a different controller, with extra plugs for the UV control.

In a system with UV, the pump is run off a separate control float rather than the inbuilt float on the pump; the inbuilt float will be tied up in a permanently on position. So, there will be two extra plugs on the controller: a small one to take the pump control float and a 3-pin socket to power the UV.

When the pump control float turns on, the control provides power to the UV unit; after a delay of 5min the pump will start, this gives the UV lamp time to heat up before water passes through it.

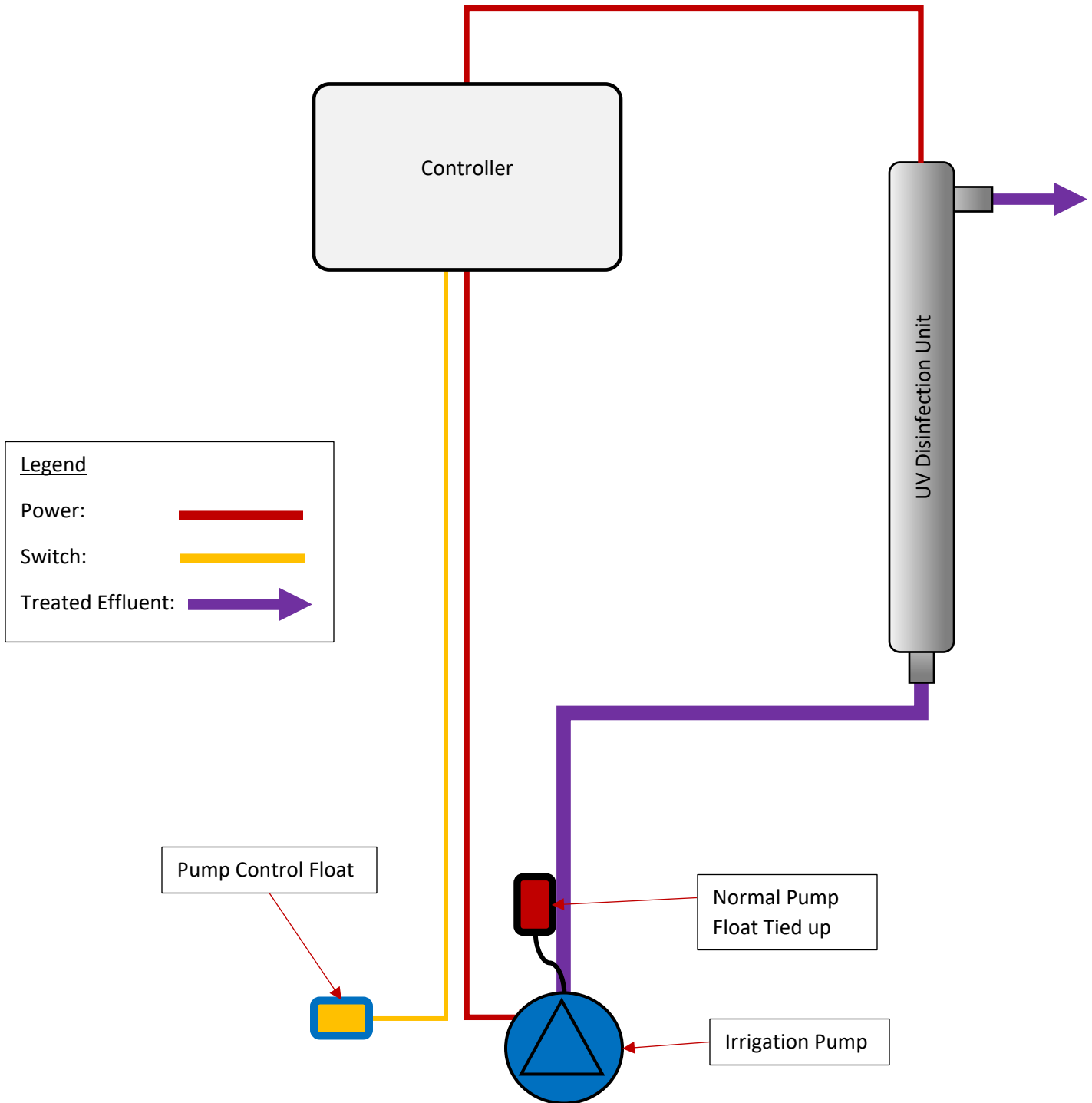


ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

UV Controller Schematic



If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz



"Making it Easy"

Call us today to discuss your needs

0800 SEWAGE

Or for more information www.waterflow.co.nz



Head Office Waterflow NZ Ltd 1160 State Highway 12, Maungaturoto P. 09 431 0042	Waipapa Branch Waterflow NZ Ltd 166 Waipapa Road, Kerikeri P. 09 407 8323
---	---

FF. 0800 SEWAGE
E. sales@waterflow.co.nz
www.waterflow.co.nz



econo-treat

Advanced Secondary Treatment

Econotreat Aerated Wastewater Systems

Home Owners Guide



ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Contents

To the Home Owner	...3
Waterflow NZ Warranty	...3
How it Works	...4
Servicing	...5
Problem Solving	...6
Caring for Your Wastewater System	...7
Household Cleaning Chemicals	...9
Cleaning Substitutes	...10
In a Nutshell	...11
Plants Suitable for Onsite Wastewater Disposal Systems	...12

See our website: www.waterflow.co.nz

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

To the Home Owner

Thank you for choosing an Econotreat System to treat and care for your on-site sewage and wastewater.

Your Econotreat System is fully automatic in operation and requires little owner intervention to ensure years of service. It is useful that the owner/operator of the system understand some of the broad concepts of the system operation. This manual has been written to provide this simple explanation and to serve as a future reference so that you can ensure that the system is operating effectively at all times.

We would encourage you to monitor and care for your Econotreat system with our backing and support and by doing so you will learn how your system works and operates and how to keep it in top working order. Waterflow promises consistent results year after year.

Kind regards,
The Waterflow Team

Warranty

WATERFLOW NZ LTD warrants that the Econotreat 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. Concrete Tank 15yrs
2. Roto-Molded Tanks 15yrs
3. Nitto Blower 2yrs
4. Irrigation Pumps 2yrs
5. Warranty of Operation covers the performance of the NaturalFlow System as connected to the effluent inflow for which they are designed, and has been installed to the criteria as set out in the relative installation instructions and procedures, and has an assigned Service/Maintenance contract in place with Waterflow NZ Ltd or it's appointed agent/s.

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 contour 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 disposal field.

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

How it Works

Primary Chamber / Tank

Influent enters the chamber via the source whereby scum and solids capable of settling are separated from the raw influent. Primary treated effluent flows through a transfer port to the aeration tank. This tank will also act as a storage chamber for sludge returned via the Clarification Chamber.

Aeration Chamber

Water enters via the Primary Chamber. Air is introduced into this chamber via an air blower to create an environment for aerobic bacteria and other helpful organisms to consume the organic matter present. The aeration tank is designed in a manner to help prevent short circuiting of the wastewater to ensure extended aeration. Media is also present in the tank to support the growth of bacteria.

Clarification Chamber

The Clarification chamber is essentially a quiescent zone where suspended particles/solids are settled out of the water. These particles are returned to the Primary chambers via a sludge return which aids in further biological reduction, denitrification and providing a constant food supply rich in microbes supporting the system through periods of limited flows.



See our website: www.waterflow.co.nz

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Servicing

Your Econotreat System requires annual service and maintenance inspections (this can vary depending on local council regulations). This will need to be done by our trained technicians. We will phone to arrange a suitable time to attend to your servicing needs.

A record sheet (in triplicate) will be completed by our technician at the time of service. One copy is for you the customer and available upon payment, another is sent off to Council and the third copy will be retained for our records.

Please call our office on the number listed at the back of this manual for the cost of servicing after the initial 12-month period.

1. A general inspection of tank area, irrigation and drainage.
2. Inspection of electrical equipment including timer, Low powered Blower, irrigation pump, warning lights and connections.
3. Inspection of Pump-out Chamber and septic tank, checking air lines, adjusting air supply (if necessary), operating de-sludging unit, resetting air control, operating submersible switch, checking bio-mass growth, checking sludge level.
4. Inspection of irrigation including lines, jets and outlets. Between 4 - 9 years the tank will need to be de-sludged (pumped out) as with any septic tank. We will notify you of this requirement, as the service technicians will be monitoring sludge depth annually.

Holiday Precautions

There are no precautions to take. Your Econotreat can be left to function automatically for 6 to 12 months. However, if you are likely to be away from home for more than six months you may like to contact our office, so we can make a routine check.

Responsibility

As the owner of the system, you are responsible for the correct operation and maintenance and to conform to Council's requirements.

Slowly remove irrigation cap (unscrew anti- clockwise). It is important to unscrew slowly to allow any built-up pressure to be relieved. Watch out for the O-ring inside the cap, be careful not to drop this in the tank.

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Problem Solving

To ensure the most effective operation of your Econotreat System you should familiarize yourself with the contents of this manual. The Econotreat has been designed to include additional safety margins and minor mishaps and normal household usage will not usually affect the operation of the system.

However, if the alarm sounds or strong odors persist Please call your service agent.

Area of Concern	Potential Cause	Remedial Action
Alarm sounds	Irrigation pump not working	Check water levels
	Air supply not working	Listen for the air compressor
	No power at the tank	Check power supply source
Water around tank	Irrigation pump not working	Check water levels
	Irrigation lines blocked or kinked	Check irrigation lines and clear sprinklers
Excessive foaming	Too much laundry detergent	Use recommended quantities
	Too many washes	Spread wash loads over different days
Persistent odors	Too much water usage	Add biologic starter pack
	Excessive chemicals in use	Install water saving devices
		System will recover
Irrigation system not working	Pump failure	Check water level
	Irrigation lines blocked	Clear irrigation lines
Water ponding on irrigation field	Irrigation line blocked	Installation should comply with original approval
	Excessive water use	Install water saving devices
	Broken irrigation pipe	Repair irrigation pipe

Do not flush baby wipes down toilets

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Caring for Your Wastewater System

Components of Your Complete Wastewater Septic System

A typical wastewater septic system has two main components: a Wastewater Treatment System and a Land Application System (or disposal field). This is simply treatment then discharge.

Efficient Water Use – ‘it does make a difference’

Average indoor water use in the typical single-family home is approximately 180ltrs per person per day. The more water a household conserves, the less water enters the septic system. Efficient water use can improve the operation of the wastewater system and reduce any risk of disposal field overload.

High-efficiency toilets

Toilet use accounts for 25 to 30 percent of household water use.

Do you know how many liters of water your toilet uses to flush? Most older homes have toilets with 11+ liter reservoirs, while newer high-efficiency dual flush toilets use 6.3/5.5ltrs or down to 4.5/3ltrs of water per flush. N.B. Did you know leaky toilets can waste as much as 700ltrs each day.

Consider reducing the volume of water in the toilet tank with a volume displacer (fancy name for a brick, stone etc!) if you don't have a high-efficiency model or replacing your existing toilets with high efficiency models.

Check to make sure your toilet's reservoir isn't leaking into the bowl. Add five drops of liquid food coloring to the reservoir before bed. If the dye is in the bowl the next morning, the reservoir is leaking, and repairs are needed.

Water fixtures

A small drip from a faucet may add many liters of unnecessary water to your system every day. To see how much a leak adds to your water usage, place a cup under the drip for 10 minutes. Multiply the amount of water in the cup by 144 (the number of minutes in 24 hours, divided by 10). This is the total amount of clean water travelling to your septic system each day from that little leak.

Faucet aerators and high efficiency showerheads

Faucet aerators help reduce water use and the volume of water entering your septic system. High-efficiency showerheads also reduce water use.

Washing machines

By selecting the proper load size, you'll reduce wastewater. Washing small loads of laundry on the large-load cycle wastes precious water and energy. If you can't select load size, run only full loads of laundry. N.B. A new Energy Star washing machine uses 35 percent less energy and 50 percent less water than a standard model.

If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Watch your drains!

What goes down the drain can have a major impact on how well your wastewater system works.

What shouldn't you flush down your toilet?

Dental floss, feminine hygiene products, diapers, cotton swabs, cigarette butts, cat litter, and other kitchen and bathroom items that can clog and potentially damage septic system components if they become trapped. Flushing household chemicals, gasoline, oil, pesticides, antifreeze, and paint can also stress or destroy the biological treatment taking place in the system or might contaminate surface or ground waters.

Care for your Land Application System

Your land application system is an important part of your wastewater system. Here are a few things you should do to maintain it:

- Flush driplines regularly – every 3 months recommended
- Plant only recommended wetland plants over and near your wastewater system. Roots from nearby trees or shrubs might clog and damage the drain field
- Don't drive or park vehicles on any part of your wastewater system. Doing so can compact the soil in your drain field or damage the pipes, tank, or other septic system components
- Do not build any structures over it or seal it with concrete, asphalt etc.
- Keep roof drains, basement sump pump drains, and other rainwater or surface water drainage systems away from the drain field. Flooding the drain field with excessive water slows down or stops treatment processes and can cause plumbing fixtures to back up
- Trees with very aggressive roots, such as willows, should be kept well away from the disposal system, see page 11 for list of recommended planting
- A soggy drain field won't absorb and neutralize liquid waste. Plan landscaping, roof gutters and foundation drains so that excess water is diverted away from the Land Application System

Household Cleaning Chemicals

Effects on Wastewater and Disposal System Receiving Environments

Use of many cleaning chemicals in facilities served by on-site disposal systems, can result in high concentrations of the constituents in those cleaning agents being discharged into the receiving soils. These chemicals and constituents can have a massive impact on the quality and condition of the receiving soils over time.

Many of the chemicals can disrupt soil structure and decrease hydraulic conductivity while others can act as bactericides, destroying the essential micro-organisms required to achieve the high level of biodegradation in the treatment and disposal systems.

The following matters need to be considered when using cleaning agents in a domestic situation:

- Laundry powders are often extremely high in sodium which will destroy the salt balance in the soils. Check the labels for low sodium and phosphorous contents.
- Wastewater flow from dishwashing machines can have an impact on wastewater treatment systems, in terms of the strong cleaning chemicals used, so check labels for low sodium products
- Highly corrosive cleaners (such as toilet and drain cleaners) that have precautionary labels warning users to minimize direct contact, are an indication that they can adversely affect the wastewater treatment system. Up to 1 cup of bactericides such as bleach can be sufficient to impact on all the microorganisms/bugs in a septic system.

Recommended Cleaning Brands:



earthwise
caring for your world

Cleaning Substitutes

Substitutes for Household Cleaning Chemicals (Ref TP58)

Use of the following readily biodegradable substitutes for common potentially harmful household cleaning chemicals will reduce the stress on any wastewater system, significantly enhance the performance of the whole system and increase the life of the land application system, while reducing the potential effects of the receiving soils.

General Cleaners

Use soft soap cleaners and bio-degradable cleaners and those low in chlorine levels.

Ammonia-Based Cleaners

Instead sprinkle baking soda on a damp sponge.

Disinfectants

In preference use Borax (sold in most Bin Inn stores): ½ cup in 4-litres of water.

Drain De-Cloggers

Avoid using de-clogging chemicals. Instead use a plunger or metal snake or remove and clean trap.

Scouring Cleaners and Powders

Instead sprinkle baking soda on a damp sponge or add 4-Tbs baking soda to 1-Litre warm water. It's cheaper and won't scratch.

Toilet Cleaners

Sprinkle on baking soda, then scrub with toilet brush.

Laundry Detergent

Choose one with a zero-phosphate content and low in alkaline salts (in particular, a low sodium level) and no chlorine.

Oven Cleaners

Sprinkle salt on drips, then scrub. Use baking soda and scouring pads on older spills.

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

In a Nutshell

Because your system is fully automatic there is no need for the owner to be concerned. However, there are some simple precautions to observe:

DO

- Avoid using strong acids, alkalis, oils and chemicals in your toilet, bathroom, laundry and kitchen (too much can kill off the working “bugs”).
- Limit the use of water in the dwelling.
- Try to spread wash loads over different days.
- Try to avoid using the washing machine and shower at the same time.
- Front loader washing machines reduce water usage.
- If your system requires power supply make sure this remains on continuously, unless system is being serviced.
- Check faucets and toilets for leaks; make repairs if necessary.
- Use low flush toilets where possible.
- Use a ‘displacer’ to reduce the amount of water needed to flush older toilets.
- Use aerators on faucets and flow reducer nozzles on showers to help lower water consumption.
- Reduce water levels for small loads of laundry.
- Wait until the dishwasher is full to run it.
- Densely plant your field to maximize transpiration.
- Perform regular monthly visual checks of your system and field.
- Grass should be mowed or trimmed regularly to optimize growth and prevent the grass from becoming rank.
- Use signs, fences and/or plantings to prevent any vehicle or stock access.
- Keep records of all maintenance undertaken on the wastewater systems.
- Monitor and care for your Wastewater System as per instructions in the home owner’s manual.

DON'T

- Switch off power unless servicing
- Use chlorine-based disinfectant & cleaning products in the toilets or kitchen sink (Cleaners high in chlorine, phosphorous or ammonia must not be used)
- Over use heavy cleaners that kill beneficial bacteria in the septic system
- Pour any toxic/strong chemicals (paint, oil, grease, paint thinners or pesticides) down any drains
- Flush down your toilet – Dental floss, feminine hygiene products, diapers, cotton swabs, cigarette butts, cat litter, and other kitchen and bathroom items
- Discard any drugs down the sink or toilet
- Alter or add any part of your system without Waterflow NZ LTD’s approval
- Never turn the system off, even when away on holidays.

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Plants Suitable for Onsite Wastewater Disposal Systems

Plantings that will soon have your field looking magnificent!

Below are some of the most common of native and other plant species that are tolerant or fond of moist conditions, such as those associated with wastewater disposal fields.



Cordyline australis



Apodasia similis



Alocasia nigrescens



Carex secta

- Alocasia nigrescens (Black Taro)
- Apodasmia similis (Oioi)
- Arthropodium Matapouri Bay (Rengarenga Lily)
- Carex dispacea
- Carex dissita
- Carex maorica
- Carex secta
- Carex tenuiculmis
- Carex virgata
- Cordyline australis (Cabbage Tree)
- Cordyline Midnight Star
- Leptospermum Burgundy Queen (Flowering Ti Tree)
- Lomandra Tanika
- Phomium Surfer

See our website: www.waterflow.co.nz



"Making it Easy"

Call us today to discuss your needs

0800 SEWAGE

Or for more information www.waterflow.co.nz



Head Office
PO Box 24, 1160 State Highway 12,
Maungaturoto 0547
P. 09 431 0042
E. sales@waterflow.co.nz

Waipapa Branch
166 Waipapa Road,
Kerikeri
P. 09 407 8323
E. kerry@waterflow.co.nz

www.waterflow.co.nz

STATEMENT OF DESIGN - PS1

Issued by: Dean Hoyle

To: Papakainga Housing - Zone 2

Copy to be supplied to: Far North District Council

In Respect of: Econotreat Domestic Onsite Wastewater and Sewage System Design

At: 6A Waimanoni Road, Awanui

Legal Description: Waimanoni 1A 2C Block

Waterflow NZ Ltd has been engaged by Papakainga Housing - Zone 2 to provide the technical design services and details in respect of the requirements of G13/VM4 and B2 Durability of the Building Code 2004, for an Onsite Wastewater and Sewage System for their building at the above location.

The Design has been carried out in accordance with Auckland Council TP-58 Guidelines and Clause B2, G13 and G14 of the Building Regulations 2004.

The proposed building work covered by this producer statement is described on the drawings titled: Papakainga Housing - Zone 2 Onsite Wastewater Design Report, and numbered 1-42 together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions: correct installation of the system and drainage fields
- (ii) All proprietary products meeting their performance specification requirements;

As an independent design professional covered by a current policy for Professional Indemnity Insurance, no less than \$200,000*, I **believe on reasonable grounds** the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code.

Signed by: Dean Hoyle – PS Author '3037' Auckland Council, NZQA Onsite Wastewater Training/Opus, BOINZ OWM, HBRC & FNDC Approved Designer

Date: 27/09/2023

Signature: 

Waterflow NZ Ltd
1160 State Highway 12
Maungaturoto 0520

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000.*

2023

Waterflow NZ Ltd
Certified Designer

Papakainga Housing - Zone 2
6A Waimanoni Road
Awanui
Waimanoni 1A 2C Block

Reference Number: WF10672

Issued 27/09/2023

[ONSITE WASTEWATER DESIGN REPORT]

Onsite Wastewater Design Report by Waterflow NZ Ltd – Copyright 2014

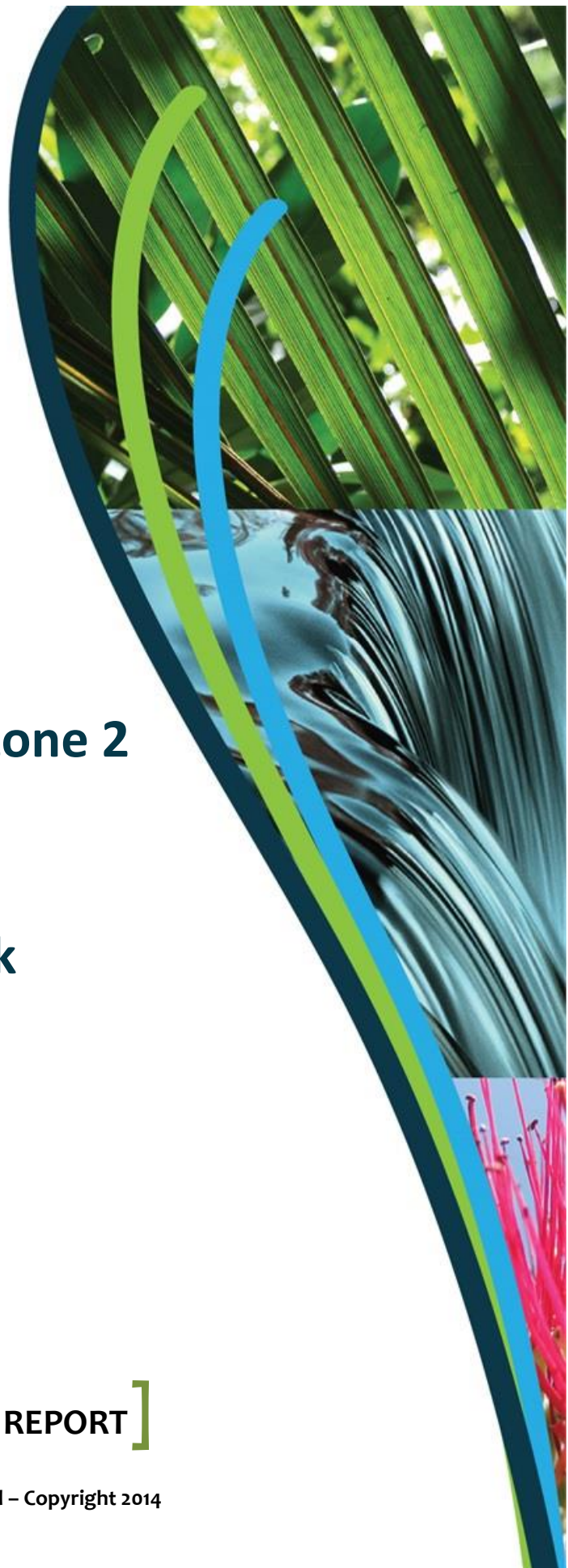


TABLE OF CONTENTS

PART A: CONTACT AND PROPERTY DETAILS 3

PART B: SITE ASSESSMENT - SURFACE EVALUATION 5

PART C: SITE ASSESSMENT - SOIL INVESTIGATION 7

PART D: DISCHARGE DETAILS - SEE HYDRAULIC LOADING TABLES 9

PART E: LAND DISPOSAL METHOD 10

PART F: PROPOSED WASTEWATER TREATMENT SYSTEM 11

PART G: OPERATION AND MAINTENANCE OF SYSTEM 11

PART H: SOIL LOG PROFILE 12

PART I: SITE IMAGES 13

DECLARATION 14

SITE LAYOUT PLAN: 15

Attachments

- PS1
- Land Application System Schematics
- Pump Specification
- Electrical Diagram
- Assessment of Environmental Effects
- System & Installation Specifications
- System & Installation Specifications
- Home Owners Care Guide

PART A: CONTACT AND PROPERTY DETAILS

A 1. Consultant / Evaluator

Name:	Dean Hoyle
Company/Agency:	Waterflow New Zealand Ltd
Address:	1160 SH 12 Maungaturoto
Phone:	09 431 0042
Fax:	09 431 8845
Email Address:	dean@waterflow.co.nz

A 2: Applicant Details

Applicant Name:	Papakainga Housing - Zone 2
Company Name:	
Property Owner:	Papakainga Housing - Zone 2
Owner Address:	6A Waimanoni Road, Awanui
Phone:	
Mobile:	
Email Address:	angela@advancebuild.co.nz

A 3: Site Information

Sited Visited by:	Caleb Pirini	Date:	Tuesday, 19 September 2023
Physical Address:	6A Waimanoni Road, Awanui		
Territorial Authority:	Far North District Council		
Regional Council:	Northland Regional Council		
Regional Rule	C.6.1.3		
Legal Status of Activity:	Permitted:	<input checked="" type="checkbox"/> x	Controlled: <input type="checkbox"/> Discretionary: <input type="checkbox"/>
Total Property Area (m²):	22256m ²		
Map Grid Reference:			
Legal Description of Land (as on Certificate of Title):			
Lot No:	Waimanoni 1A 2C Block		
DP No:	0		
CT No:			

A 4: Are there any previous existing discharge consents relating to this proposal or other waste discharge/disposal on the site?

Yes:	<input type="checkbox"/>	No:	<input checked="" type="checkbox"/>
------	--------------------------	-----	-------------------------------------

If yes, give reference No's and description:

--

A 5: Dwelling(s) for which on-site wastewater service is to be provided

Status of dwelling(s) to be serviced:	New	<input checked="" type="checkbox"/>	Existing	<input type="checkbox"/>	Multiple	<input type="checkbox"/>
How many dwellings on the property?	2					
Capacity of dwellings:	Dwelling 1	3 (New Dwelling)				
(or number of bedrooms)	Dwelling 2					
	Dwelling 3					
	Other:					
Notes:						

PART B: SITE ASSESSMENT - SURFACE EVALUATION

B 1: Site Characteristics

Performance of adjacent systems:	(Unknown)		
Estimated annual rainfall (mm):	1000 - 1250 (as per NIWA statistics)		
Seasonal variation (mm):	300-400mm		
Vegetation cover:	Pasture Grass		
Slope shape:	Flat		
Slope angle:	<3 °		
Surface water drainage characteristics:	Broad overland flow across site		
Flooding potential?	Yes:		No: x
If Yes, specify relevant flood levels relative to disposal area:			
Site characteristics:	a communal rural property. It is a fairly flat section with gentle fall to the North. Property is generally covered with pasture grass. Property boundaries are on Waimanoni Road to the West and residential site and farmland on all other boundaries.		

B 2: Slope Stability

Has a slope stability assessment been carried out on the site?

Yes:		No:	x
------	--	-----	---

If no, why not?

Low slope:	x	No signs of instability:	x	Other:	
------------	---	--------------------------	---	--------	--

If yes, give brief details of report:

Details:	
Author:	
Company/Agency:	
Date of report:	

B 3: Site Geology

--

B 4: Slope Direction

What aspect does the proposed disposal system face?

North	x	West	
North-West		South-West	
North-East		South-East	
East		South	

B 5: Site Clearances if applicable (also on site plan)

	Treatment Separation Distance (m)	Disposal Field Separation Distance (m)
Boundaries:	>1.5	>1.5
Surface Water:	>15	>15
Ground Water:	>1.2	>1.2
Stands of Trees / Shrubs:	n/a	n/a
Wells/Water Bores:	>20	>20
Embankments / Retaining Walls:	>3	>3
Buildings:	>3	>3
Other:		

B 6: Please identify any site constraints applicable for this property, and indicate how the design process is to deal with these.

Constraints	Explain how constraints are being dealt with
1 Site constraints: (a) (b)	n/a

PART C: SITE ASSESSMENT - SOIL INVESTIGATION

C 1: Soil Profile Determination Method

Test pit:		Depth (mm):		No. of Test pits:	
Bore hole:	x	Depth (mm):	1200	No. of Bore holes	2
Other:					

C 2: Fill Material

Was fill material intercepted during the subsoil investigation?

Yes:	<input type="checkbox"/>	No:	<input checked="" type="checkbox"/>
------	--------------------------	-----	-------------------------------------

If yes, please specify the effect of the fill on wastewater disposal:

--

C 3: Permeability Testing

Has constant head Permeability Testing (Ksat) been carried out?

Yes:	<input type="checkbox"/>	No:	<input checked="" type="checkbox"/>
------	--------------------------	-----	-------------------------------------

If yes, please indicate the details (test procedure, number of tests):

--

Test report attached?

Yes:	<input type="checkbox"/>	No:	<input checked="" type="checkbox"/>
------	--------------------------	-----	-------------------------------------

C 4: SURFACE WATER CUT OFF DRAINS

Are surface water interception/diversion drains required?

Yes:	<input type="checkbox"/>	No:	<input checked="" type="checkbox"/>
------	--------------------------	-----	-------------------------------------

C 5: DEPTH OF SEASONAL WATER TABLE:

Winter (m):	>1.2
Summer (m):	>1.2

Was this:

Measured:	<input checked="" type="checkbox"/> no sign of ground water or mottling in bore holes
Estimated:	

C 6: SHORT CIRCUITS

Are there any potential short circuit paths?

Yes:	<input type="checkbox"/>	No:	<input checked="" type="checkbox"/>
------	--------------------------	-----	-------------------------------------

If yes, how have these been addressed?

--

C 7: SOIL CATEGORY

Is topsoil present?

Yes:	<input checked="" type="checkbox"/>	No:	<input type="checkbox"/>
------	-------------------------------------	-----	--------------------------

If yes, what is the topsoil depth & soil description?

300mm topsoil over silty clay-loam

Indicate the disposal field soil category (as per AC TP-58, Table 5.1)

Category	Description	Drainage	(x)
1	Gravel, coarse sand	Rapid draining	
2	Coarse to medium sand	Free draining	
3	Medium-fine & loamy sand	Good draining	
4	Sandy loam, loam & silt loam	Moderate draining	
5	Sandy clay-loam, clay loam & silty clay-loam	Moderate to slow draining	x
6	Sandy clay, non-swelling clay & silty clay	Slow draining	
7	Swelling clay, grey clay & hardpan	Poorly or non-draining	

Reason for placing in stated category:

Result of bore hole/test pit sample	<input checked="" type="checkbox"/>
Profile from excavation	<input type="checkbox"/>
Geotech report	<input type="checkbox"/>
Other:	<input type="checkbox"/>

C 8: SOIL STRUCTURE

Based on results of the in-situ soil profile investigation above (C7) please indicate the disposal (land application) field soil structure:

Massive	<input type="checkbox"/>
Single grained	<input type="checkbox"/>
Weak	<input type="checkbox"/>
Moderate	<input checked="" type="checkbox"/>
Strong	<input type="checkbox"/>

C 9: As necessary, provide qualifying notes on the relationship of Soil Category (C7) to Soil Structure (C8) and the effect this relationship will have on design loading rate selection:

--

PART D: DISCHARGE DETAILS - SEE HYDRAULIC LOADING TABLES

D 1: Water supply source for the property:

Rain water (roof collection)	x
Bore/well	
Public supply	

D 2: Are water reduction fixtures being used?

Yes:		No:	x
------	--	-----	---

If 'yes' Please state:

Standard Fixtures include dual flush 11/5.5 or 6.3 litre toilet cisterns, and includes standard automatic washing machine, but a low water use dishwasher, no garbage grinder.
--

D 3: Daily volume of wastewater to be discharged:

No. of bedrooms/people:	1: 3 Bedroom (New Dwelling) 2: 3:
Design occupancy (people): (as per AC TP-58, Table 6.1)	1: 5 People 2: 3:
	Black / Grey water
Per capita wastewater production (litres/person/day): (as per ARC TP-58, Table 6.2)	1: 160 L/day 2: 3:
Total daily wastewater production (litres per day):	800 L/day

D 4: Is daily wastewater discharge volume more than 2000 litres?

Yes:		No:	x
------	--	-----	---

D 5: Gross lot area to discharge ratio:

Gross lot area:	22256 m ²
Total daily wastewater production (litres/day):	800 L
Lot area to discharge ratio:	27.82

D 6: Net Lot Area

Area of lot available for installation of the disposal (land application) field and reserve area:

Net lot area (m ²):	21256 m ²
Reserve area (m ²):	30%

PART E: LAND DISPOSAL METHOD

E 1: Indicate the proposed loading method:

	Black / Grey Water
Gravity Dose:	
Dosing Siphon:	
Pump:	D53A/B

E 2: If a pump is being used please provide following information:

Total Design Head (m):	32
Pump Chamber Volume (litres):	1600
Emergency Storage Volume (litres):	2120

Is a high water level alarm being installed in pump chambers?

Yes:	<input checked="" type="checkbox"/>	No:	<input type="checkbox"/>
------	-------------------------------------	-----	--------------------------

E 3: Identify the type(s) of Land Disposal method proposed for this site:

	Black / Grey Water
P.C.D.I. Dripper Irrigation:	PCDI surface laid and mulched
L.P.E.D. System:	
Evapo-Transpiration Beds:	
Other:	
(as per Schematics attached)	

E 4: Identify the Loading Rate proposed for option selected in E3:

as per ARC TP-58, Table 9.2 & Table 10.3	Black / Grey Water
Loading Rate (litres/m ² /day):	3
Disposal Area Basal (m ²):	
Areal (m ²):	267

E 6: Details and dimensions of the disposal (land application) field:

Length (m):	44.4	No. Lines:	6	Hole Size:	N/A
Width (m):	6.0	Spacing (m):	1.0	Hole Spacing:	N/A
Notes:	267sqm of Surface laid PCDI dripline pinned at 1m centers and covered with a minimum covering of 100mm mulch. See schematic drawing attached.				

PART F: PROPOSED WASTEWATER TREATMENT SYSTEM

A Econotreat EconoTreat VBB-C-2200 System, fed through surface laid PCDI dripline is suitable for this site. The EconoTreat VBB-C-2200 System has enough capacity to accommodate 2200ltr per day, so will be well within its capacity. The land application system is designed to discharge a maximum volume of 800ltrs per day and if this is exceeded it could cause failure resulting in environmental and public harm.

PART G: OPERATION AND MAINTENANCE OF SYSTEM

The operation of this complete system will be explained verbally to the owner by the Installer or Agent on Completion of Installation; also provided with Waterflow's Home Owner's Manual.

Waterflow NZ Ltd encourages the Home Owner to monitor and care for your Econotreat system yourself, with our backing and support, and by doing so you will learn how your system works and operates and how to keep it in top working order.

It is also recommended that a Maintenance Program contract is in place at all times to ensure this system is maintained at top performance at all times.

All on site wastewater systems require regular maintenance; in this case once annually is suffice and may be specified within the consent process by the Building Department of Far North District Council. This Maintenance will be recorded on hard copy and supplied to both the Owner and Far North District Council Compliance Officer if requested.

NOTE TO OWNER: All written records pertaining to the wastewater system should be retained in a safe place. When a change of ownership occurs, a full and complete history is able to be passed to the new owners.

Animals are to be physically excluded from the installed effluent field to avoid damage, and to reduce the risk of soil compaction in the vicinity of the bed.

Planting within this area is encouraged to assist with evapotranspiration by plants.

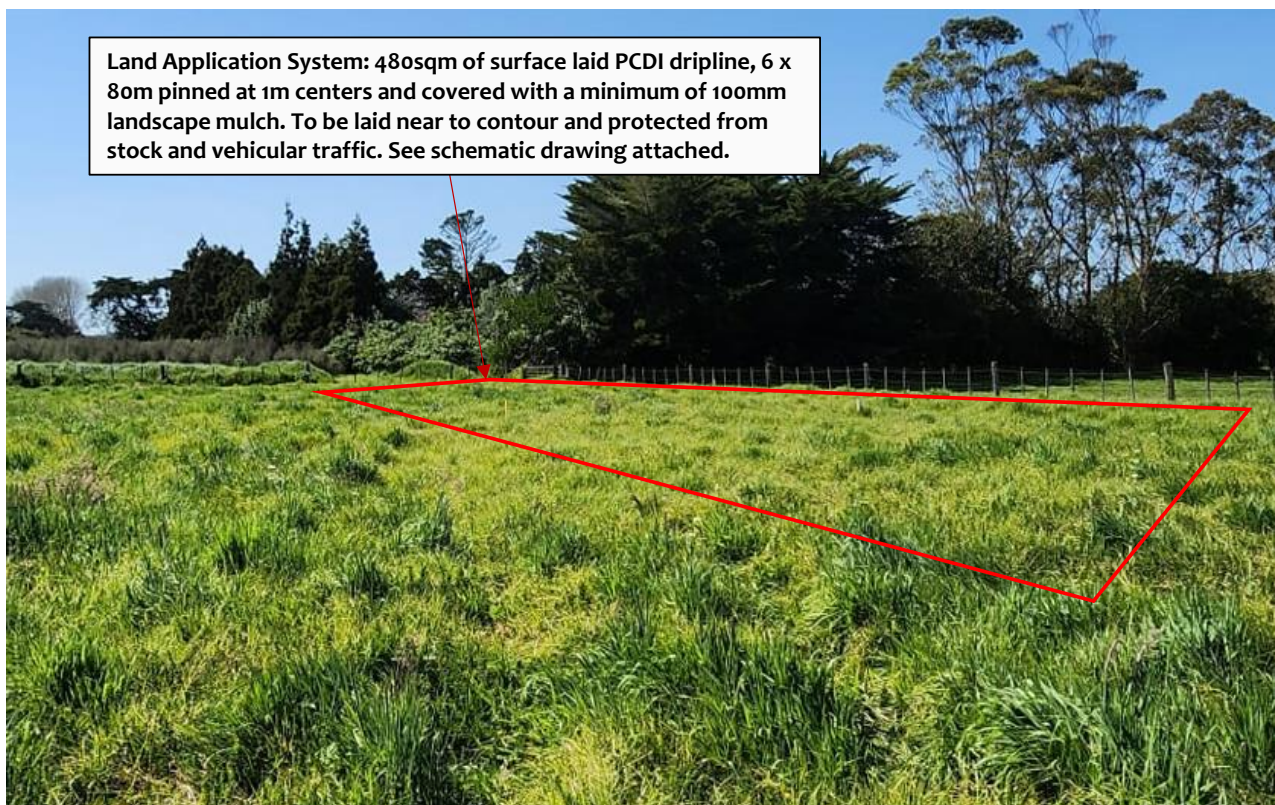
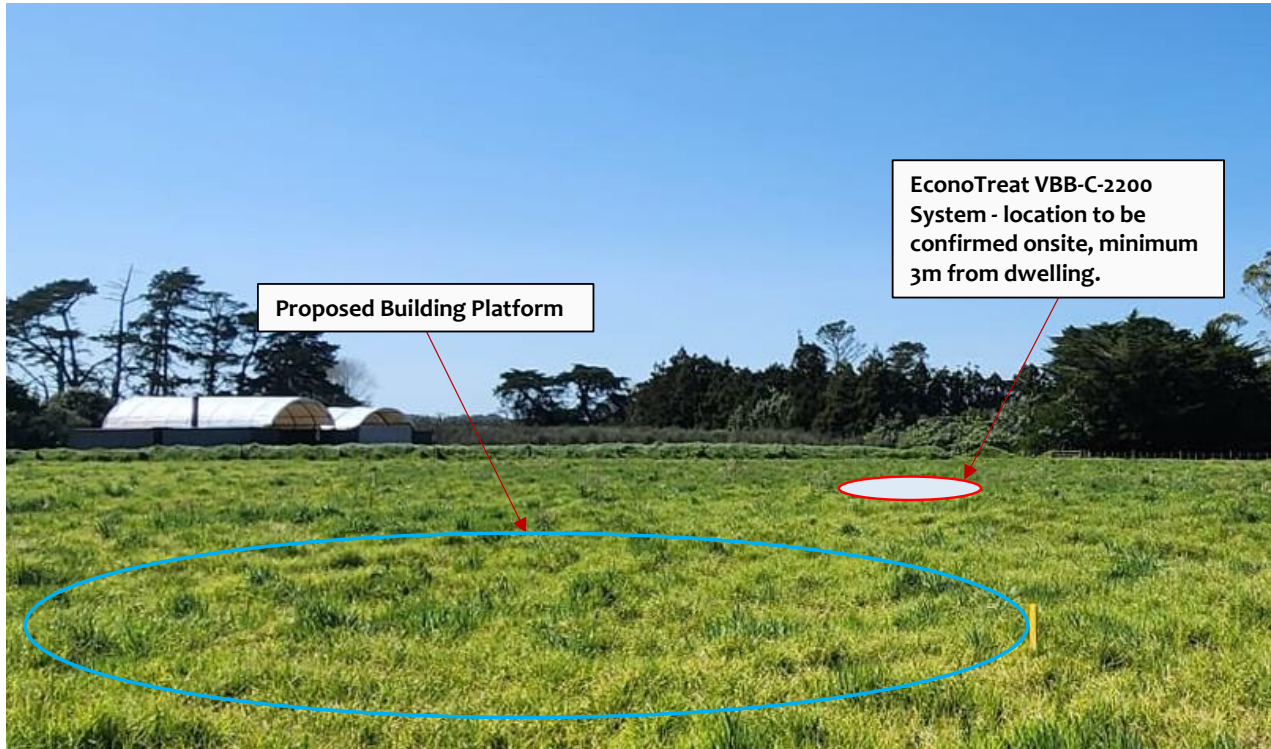
PART H: SOIL LOG PROFILE



300mm topsoil over silty clay-loam
Class 5, (as per AC TP-58, Table 5.1)





PART I: SITE IMAGES



DECLARATION

I, hereby certify that, to the best of my knowledge and belief, the information given in this application is true and complete.

Prepared By:	
Name:	Alexandra Sabath - Wastewater Design Technician
Signature:	
Date:	27/09/2023

Reviewed By:	
Name:	Dean Hoyle – PS Author ‘3037’ Auckland Council, NZQA Onsite Wastewater Training/Opus, BOINZ OWM, HBRC Approved Designer
Signature:	
Date:	27/09/2023

NOTE: The Waterflow Systems are to be installed by a registered drainlayer to the designs supplied by Waterflow NZ Ltd. All work to comply with Regional Council Water and Soil Plans.

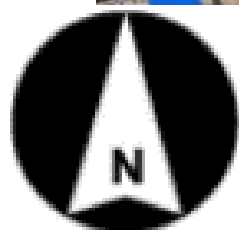
Comments/Summary:

The disposal field will need to be protected from traffic and animal grazing. Planting this area is recommended to increase Evapotranspiration.

Suitable plants for the disposal field can be found on our website www.naturalflow.co.nz

Waterflow Treatment systems to be installed by accredited installer unless other arrangements have been made by Waterflow NZ Ltd

For more information do not hesitate to contact the team at Waterflow NZ Ltd on 0800 628 356



SITE LOCATION PLAN: Papakainga Housing - Zone 2 6A Waimanoni Road Awanui Waimanoni 1A 2C Block 2.2256HA	SCALE: 1 : 226 @ A3
---	--

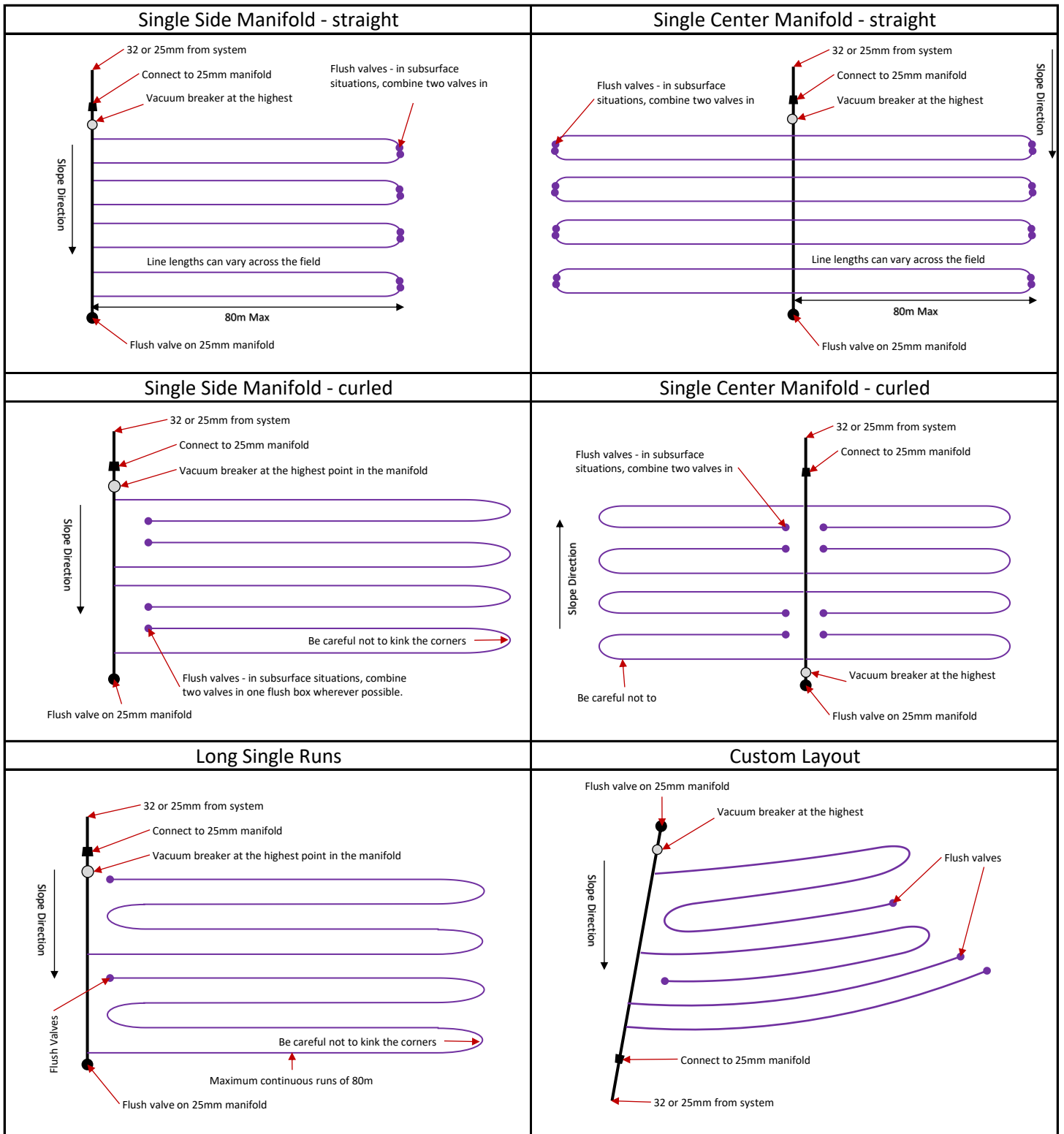


DATE DRAW: 27/09/2023
 PREPARED BY: Alexandra Sabath
 REVISED: Dean Hoyle

SITE LAYOUT PLAN:
 Papakainga Housing - Zone 2
 6A Waimanoni Road
 Awanui
 Waimanoni 1A 2C Block
 2.2256HA

SCALE:
 1:73
 @ A3

Common PCDI Layouts

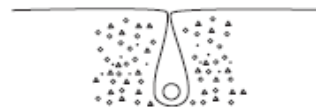


Cross Sections of PCDI installation

150mm Mulch or Leaf Litter



Subsoil Buried @ 100-150mm





METZERPLAS

ADI

Cylindrical PC
(Pressure
Compensated)
dripper.

- Cylindrical PC dripper, with unique regulating labyrinth with self-flushing operation at the beginning and the end of each irrigation cycle.
- Triple inlet filter with filtering area 10 times larger than any other dripper.
- High clog resistance.
- Suitable for poor quality and effluent water.
- Large pressure compensation range up to 4.3 bars.
- Dripline diameter: 16, 18 and 20 mm.
- Dripper flow rate: 1.6, 2.2 and 3.5 l/h.
- *Rootguard*® configuration available for extra root protection in SDI (Subsurface Drip Irrigation).



ADI Dripline Technical Data:

Model	Inside Diameter (mm)	Wall Thickness (mm)	Min. Working Pressure (bars)	Max. Working Pressure (bars)	KD
ADI 16	13.8	0.9	0.8	3.5	1.12
		1.15	0.8	4.3	0.95
ADI 18	15.8	1.2	0.8	4.3	0.95
ADI 20	17.4	1.0	0.8	3.5	0.85
		1.25	0.8	4.3	0.6



METZERPLAS

ADI

Cylindrical PC (Pressure Compensated) dripper.

ADI 16 mm. Maximum lateral length (I.D. 13.8 mm, W.T 0.9 mm, Inlet pressure 2.5 bars):

Nom. Flow Rate (l/h)	Spacing Between Drippers (m)						
	0.20	0.30	0.40	0.50	0.60	0.75	1.00
1.6	86	122	156	188	218	260	324
2.2	72	103	131	157	182	216	269
3.5	51	73	94	113	131	156	195

ADI 18 mm. Maximum lateral length (I.D. 15.8 mm, W.T 1.2 mm, Inlet pressure 2.5 bars):

Nom. Flow Rate (l/h)	Spacing Between Drippers (m)						
	0.20	0.30	0.40	0.50	0.60	0.75	1.00
2.0	93	134	171	205	238	284	355
3.5	65	92	118	142	166	198	247

ADI 20 mm. Maximum Lateral length (I.D. 17.4 mm, W.T 1.0 mm, Inlet pressure 2.5 bars):

Nom. Flow Rate (l/h)	Spacing Between Drippers (m)						
	0.20	0.30	0.40	0.50	0.60	0.75	1.00
1.6	128	182	234	281	325	388	484
2.2	113	159	202	242	279	331	409
3.5	76	109	140	168	196	233	291

For additional tables and data please contact Metzerplas Technical Department or visit our website: www.metzerplas.com

Packaging Data

Model	Roll Length (m)	Quantity Per Container (Rolls)		
		20	40	40 h
ADI 16	400	150	300	350
ADI 18	300	150	300	333
ADI 20	300	133	266	300

Assessment of Environmental Effects

Papakainga Housing - Zone 2 of 6A Waimanoni Road, Awanui Waimanoni 1A 2C Block

1.1 Description of Proposal

The owners of this site propose the construction of a new 3 bedroom dwelling.

1.2 Site Description

This site, located at 6A Waimanoni Road, is a communal rural property. It is a fairly flat section with gentle fall to the North. Property is generally covered with pasture grass. Property boundaries are on Waimanoni Road to the West and residential site and farmland on all other boundaries.

1.3 Wastewater Volume

In calculating the wastewater flows we have allowed for a maximum occupancy of 5 persons, based on the proposed 3 bedroom dwelling (as per AC TP-58, Table 6.1). Total wastewater production is based on an allowance of 160 litres per person per day (as per ARC TP-58, Table 6.2), which is conservative given that water supply is roof collected rain water and standard water fixtures will be used throughout the house.

1.4 Wastewater Volume

The EconoTreat VBB-C-2200 system that is proposed will treat the wastewater to a high standard prior to dispersal using a PCDI drip line, into a purpose-designed disposal field, where the removal of nutrient will continue, both in the receiving soils and by plant uptake.

The system will be capable of producing reductions in Biochemical Oxygen Demand, Total Suspended Solids, Nitrogen, and Coliforms to a standard that meets the requirements (see details below). The system will cater for the wastewater requirements of the private dwellings (domestic wastewater) and will not service any commercial or trade waste sources. Risk Minor to Nil.

1.5 Proposed Treatment System

The objective of the treatment system is to reduce and remove much of the contaminants from the wastewater prior to discharge into the receiving soil. This will improve the long-term performance of the disposal field as well as reducing the risk to the receiving environment. The system will consist of:

- Septic Tank Module

- EconoTreat VBB-C-2200
- Land Application System

The system is constructed using concrete tanks. The system produces treated effluent with BOD <20mg/l, Suspended solids <20mg/l.

1.6 Land Application System

The proposed irrigation system uses pressure-compensating dripper lines ensuring an even delivery of moisture over the entire irrigation field and a conservative DLR of 3mm. We propose the use of Metzerplas unibioline ADI16/2.2 @ 0.6m/c with the Dripline laid out at 1m centres. This Dripline will then be covered by 100mm landscape mulch. Densely planting this area will greatly enhance evapo-transpiration and be very beneficial especially in the wetter months of the year. This irrigation can be installed in conjunction with existing or proposed landscaping.

1.7 Surface & Ground Water

It is proposed to treat the water to a high standard prior to discharge and the proposed irrigation system will introduce the water into the topsoil horizon using PCDI irrigation. A low application rate of treated effluent into the topsoil will significantly reduce the likelihood of, any breakout or runoff or any risk of surface water contamination. With the ground water levels being >1.2m this conservative DLR also means the risk of ground water contamination is virtually nil. A majority of the undeveloped areas of this site are suitable for a PCDI disposal field when the necessary setbacks are observed. Risk Minor to Nil.

1.8 Air Quality

The proposed EconoTreat VBB-C-2200 system will produce no noticeable odour when functioning correctly. Any odour will be contained within the tanks. The PCDI irrigation system will load the soil at a rate that should not cause ponding, spraying or aerosol of the effluent that could potentially cause odours. Risk Minor to Nil.

1.9 Visual Impact

The tanks are installed wholly below ground level with only the lids being visible. The lids will protrude approximately 100mm to prevent egress of storm water into the system. The disposal field will be located in a purpose designed mulched and intensively planted disposal area. Warning signs may be installed to indicate the presence of the disposal area, although probably not necessary in a domestic situation, also the area may be fenced to restrict access.

1.10 Environmental Risks

Risks associated with this proposal are minor. The treatment system will be automated, and the Home Owner will be given a 'Home Owners Care Guide' which explains the necessary visual checks to ensure no issues arise with the system, specifically – solids build-up - high water level – discharge failure – filter blockage.

Peak flow into the system are not expected to be significant and the system includes a large emergency storage volume.

1.11 Maintenance Requirements

The maintenance requirement of this system is minimal, with the system fully automated. The system requires little input from the operator apart from the regular cleaning of the outlet filter between the treatment system and the Dripline field. All other maintenance interventions must be carried out by service persons familiar with the operation of the system and approved by the manufacturer. Maintenance may include checking of the dissolved oxygen levels, cleaning of effluent outlet filter, removal of excess sludge volume, checking of control panel function, etc... .

The disposal field is quite possibly the most important and sensitive part of the treatment system and requires a reasonable amount of maintenance to keep it functioning well. Any leaking or damaged Dripline must be fixed quickly using the appropriate materials, the planting must be maintained, weeds removed and grass kept cut. The Dripline should be kept covered with a suitable bark, mulch, or topsoil.

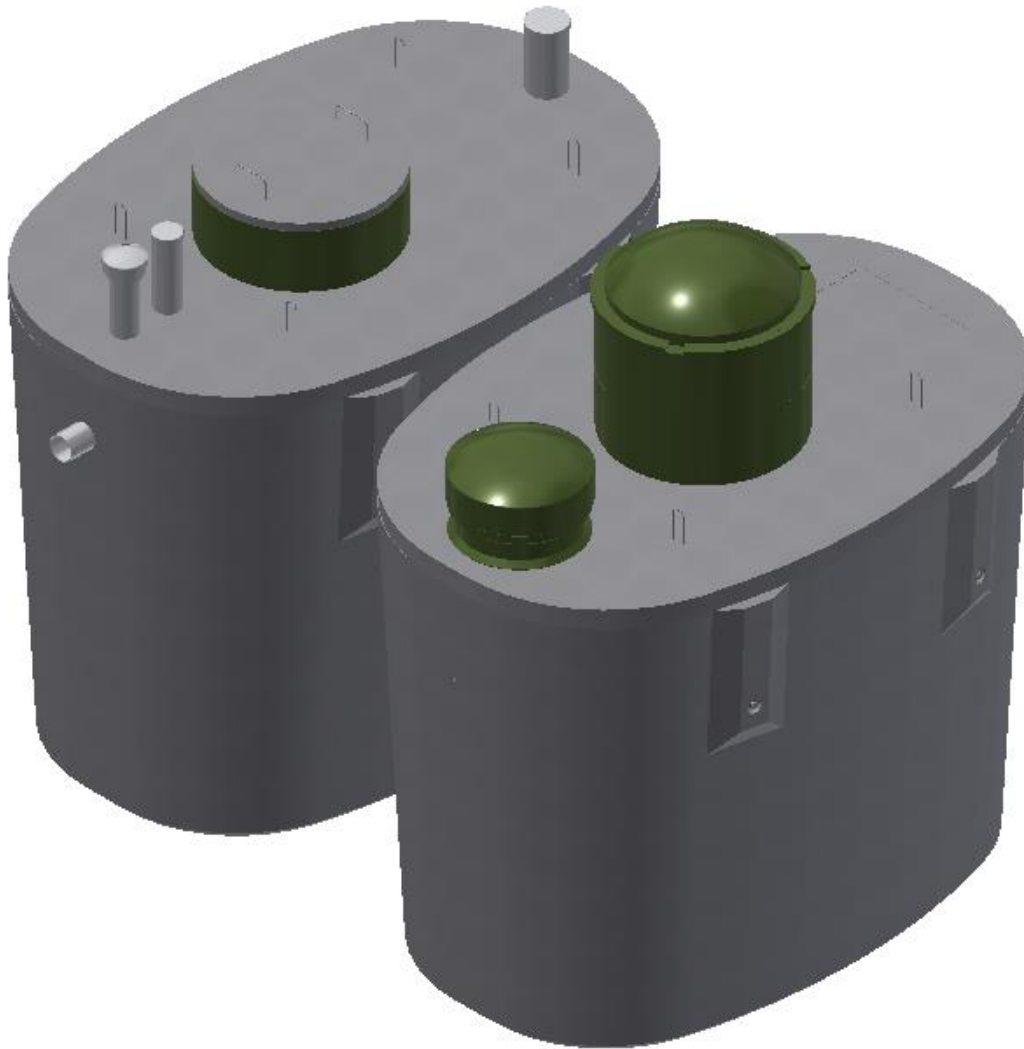
Warning signs such as ponding, odours, and signs of excessive growth act as an indicator to possible problems. A disk filter is fitted to help prevent blockage of the drippers and to protect the Dripline. This filter will require cleaning during servicing of the system. The owners will be verbally informed at the commissioning of this system of all maintenance requirements and strongly advised to have a service contract in place prior to final sign off of the system installation.



econo-treat

Econotreat VBB-C-2200 Treatment System

System Specifications & Installation Instructions



ECONOTREAT VBB-C-2200

System Specification & Installation Instructions

New Zealand's Leaders in Advanced Secondary Treatment Systems

The Treatment Process

Primary Chamber / Tank

Influent enters the chamber via the source whereby scum and solids capable of settling are separated from the raw influent. Primary treated effluent flows through a transfer port to the aeration tank. This primary tank will also act as a storage chamber for sludge returned from the Clarification Chamber.

After primary settling, the sewage passes through a ReIn outlet filter.

Aeration Chamber

Water enters from the Primary Chamber. Air is introduced into this chamber via an air blower to create an environment for aerobic bacteria and other helpful organisms to consume the organic matter present. The aeration tank is designed in a manner to help prevent short circuiting of the wastewater to ensure extended aeration. Media is present in the tank to support the growth of bacteria.

Clarification Chamber

The Clarification chamber is essentially a quiescent zone where suspended particles/solids are settled out of the water. These particles are returned to the Primary chambers via a sludge return which aids in further biological reduction, denitrification and providing a constant food supply rich in microbes supporting the system through periods of limited flows.

System Performance

The Econotreat VBB-C-2200 system is capable of treating up to 2200L per day peak flow to an advanced secondary standard. The effluent is suitable for UV disinfection where required.

Benchmark Ratings

The **Waipapa Tanks Econo-Treat® VBB C-2200-2** system achieved the following effluent quality ratings:

Indicator Parameters	Median	Std Dev.	Rating	Rating System				
				A+	A	B	C	D
BOD (g/m ³)	3.4	1.5	A+	<5	<10	<20	<30	≥30
TSS (g/m ³)	4.98	3.49	A+	<5	<10	<20	<30	≥30
Total nitrogen TN (g/m ³)	13.6	1.3	A	<5	<15	<25	<30	≥30
Ammonia Nitrogen NH ₄ -N (g/m ³)	1.1	1.8	A	<1	<5	<10	<20	≥20
Total phosphorus TP (g/m ³)	4.2	0.5	B	<1	<2	<5	<7	≥7
Faecal Coliforms FC (cfu/100mL)	11,200	50,196	B-	<10	<200	<10,000	<100,000	≥100,000
Energy (kWh/d) (mean)	1.8	-	B	0	<1	<2	<5	≥5

See our website: www.waterflow.co.nz

ECONOTREAT VBB-C-2200

System Specification & Installation Instructions

New Zealand's Leaders in Advanced Secondary Treatment Systems

Compliance Requirements

All Econotreat 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.

Tank Specifications

Tanks are made of 50mpa Fiber Reinforced Concrete, which is suitable material for wastewater treatment containment meeting all the requirements of Section 4.3.3 of AS/NZS 1547:2012. These tanks have an expected lifespan of 50 years.

Dual Chamber Septic Tank

5200L Nominal Capacity
2500mm Long
1700mm Wide
1975mm High
- 3100kg

Aeration Tank

5200L Nominal Capacity
2500mm Long
1700mm Wide
1975mm High
- 2900kg

System Information

500L Pump Chamber
2120L Emergency Storage

Installation Location and Certification

These tanks are not designed for vehicle loads and shall be located no closer than 2m 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 2m, 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 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.

In high water table installations, it is important to fill the tanks with water. This removes the hydraulic uplift and simplifies the installation. In extremely high-water tables, a concrete foot can be added to the tank during manufacture. Waterflow must be made aware of this early on in view of supplying a tank that is fit for purpose.

If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz

ECONOTREAT VBB-C-2200

System Specification & Installation Instructions

New Zealand's Leaders in Advanced Secondary Treatment Systems

Plumbing Pipes and Fittings

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

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.

Warranty

WATERFLOW NZ LTD warrants that the Econotreat 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. Concrete Tank 15yrs
2. Roto-Molded Tanks 15yrs
3. Nitto Blower 3yrs
4. Irrigation Pumps 2yrs
5. Warranty of Operation covers the performance of the Econotreat System as connected to the effluent inflow for which they are designed, and has been installed to the criteria as set out in the relative installation instructions and procedures, and has an assigned Service/Maintenance contract in place with Waterflow NZ Ltd or it's appointed agent/s.

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 contour 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 disposal field.

1st June 2014
Dean Hoyle
Managing Director



ECONOTREAT VBB-C-2200

System Specification & Installation Instructions

Econotreat VBB-C-2200 Installation Instructions

The Econotreat 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 two 3m x 2m level platforms at an appropriate depth to ensure adequate fall for inlet pipe from the source. This has to be installed on virgin ground. The two platforms are ideally on the same level and next to each other, either side-by-side or end-on-end.
2. Lay 100mm of bedding metal on platform and place the Septic and Aeration tanks next to each other. As close as practically possible to minimize the connection distance between the tanks.
3. Connect the two tanks with 100mm PVC. If the tanks are side-by-side the connection will need supporting. This is done by tying it back to the wire on the lids with a length of rope supplied. The rope can be found in the top of the treatment tank.



Sludge return 25mm



Supported with rope

4. Next connect the sludge return. This is a 25mm PVC pipe that come out of the central riser on the treatment tank. This must be plumbed back to the second 100mm PVC at the start of the septic tank. It is important that this pipe is falling slightly or at minimum flat.
5. Trench from Dose Chamber outlet to disposal field and lay the 25mm alkathene feed line.
6. Take a minimum of 3 photos at this point to showing connections and back fill, to ensure correct installation for sign off.
7. Back fill around tanks. Using spoil from the excavation is fine, be aware that this will settle over time though.

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.

If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz

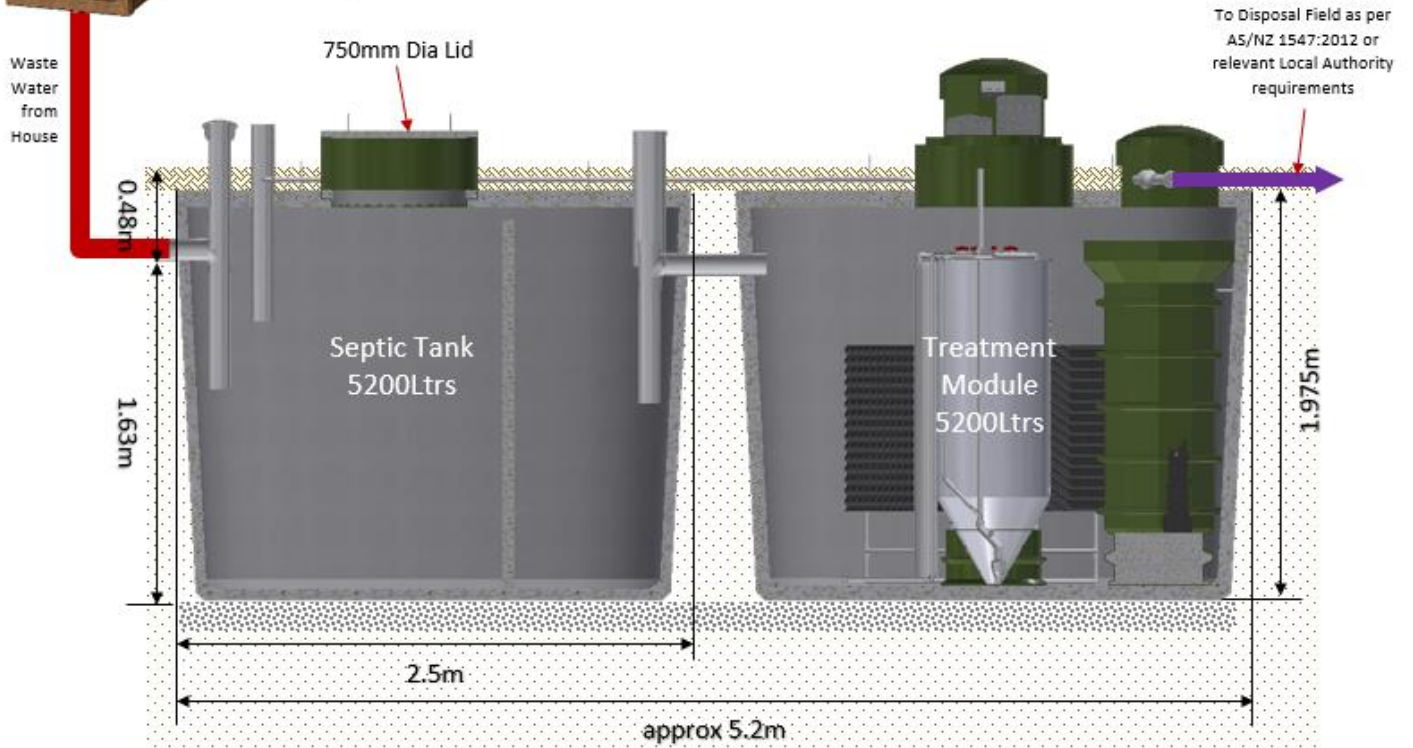
ECONOTREAT VBB-C-2200

System Specification & Installation Instructions

Econotreat VBB-C-2200 Schematic Drawings



Econotreat VBB-C-2200



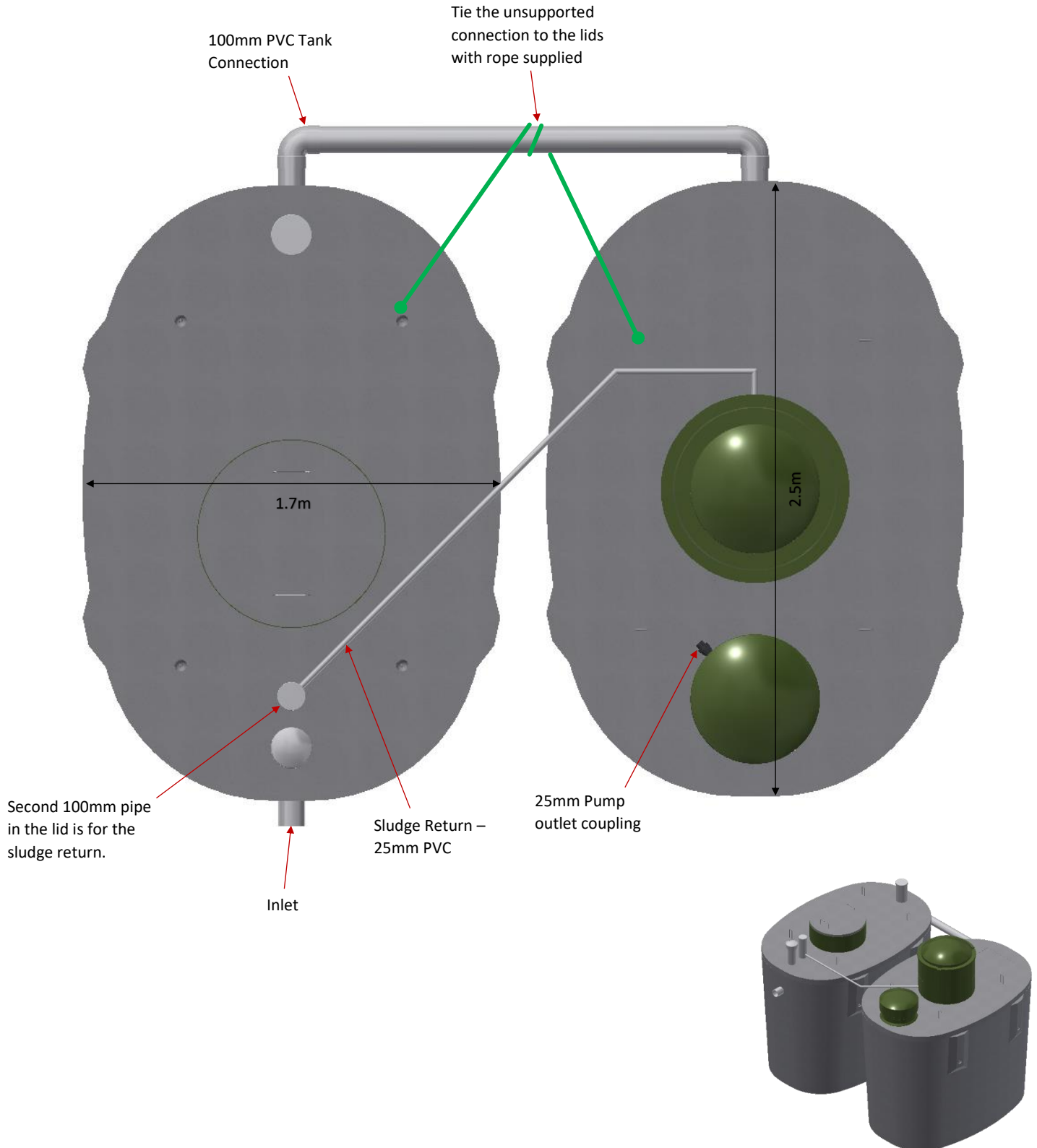
Copyright Waterflow New Zealand Limited 2021©

ECONOTREAT VBB-C-2200

System Specification & Installation Instructions

Econotreat VBB-C-2200 Schematic Drawings

Side by Side Installation



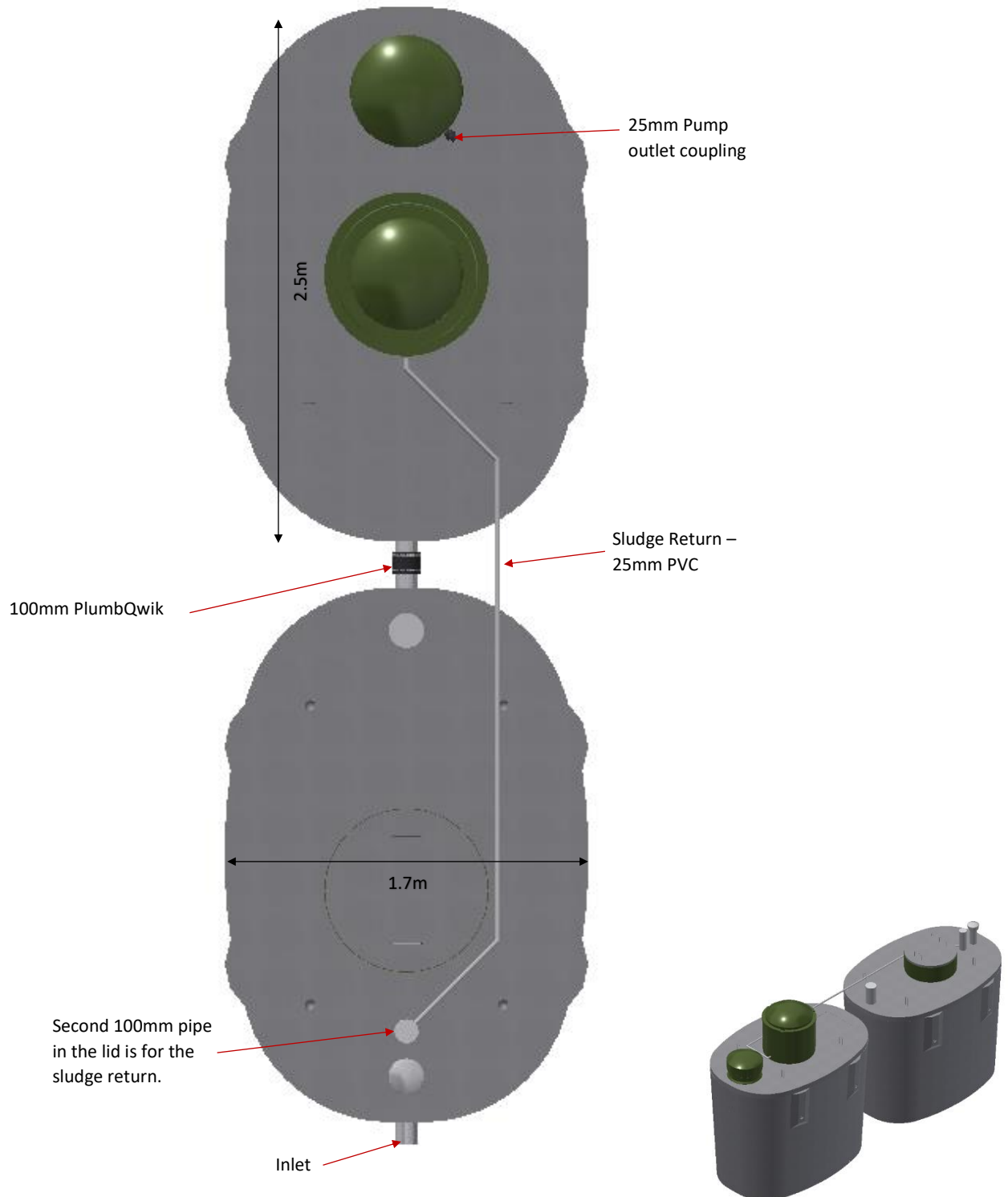
If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz

ECONOTREAT VBB-C-2200

System Specification & Installation Instructions

Econotreat VBB-C-2200 Schematic Drawings

End on End Installation



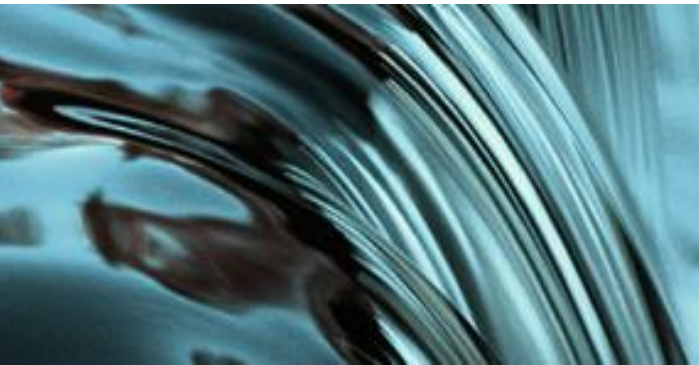


“Making it Easy”

Call us today to discuss your needs

0800 SEWAGE

Or for more information www.waterflow.co.nz



Head Office Waterflow NZ Ltd 1160 State Highway 12, Maungaturoto P. 09 431 0042	Waipapa Branch Waterflow NZ Ltd 166 Waipapa Road, Kerikeri P. 09 407 8323
---	---

FF. 0800 SEWAGE
E. sales@waterflow.co.nz
www.waterflow.co.nz



econo-treat
Advanced Secondary Treatment

Econotreat Aerated Wastewater Systems

Home Owners Guide



ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Contents

To the Home Owner	...3
Waterflow NZ Warranty	...3
How it Works	...4
Servicing	...5
Problem Solving	...6
Caring for Your Wastewater System	...7
Household Cleaning Chemicals	...9
Cleaning Substitutes	...10
In a Nutshell	...11
Plants Suitable for Onsite Wastewater Disposal Systems	...12

See our website: www.waterflow.co.nz

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

To the Home Owner

Thank you for choosing an Econotreat System to treat and care for your on-site sewage and wastewater.

Your Econotreat System is fully automatic in operation and requires little owner intervention to ensure years of service. It is useful that the owner/operator of the system understand some of the broad concepts of the system operation. This manual has been written to provide this simple explanation and to serve as a future reference so that you can ensure that the system is operating effectively at all times.

We would encourage you to monitor and care for your Econotreat system with our backing and support and by doing so you will learn how your system works and operates and how to keep it in top working order. Waterflow promises consistent results year after year.

Kind regards,
The Waterflow Team

Warranty

WATERFLOW NZ LTD warrants that the Econotreat 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. Concrete Tank 15yrs
2. Roto-Molded Tanks 15yrs
3. Nitto Blower 2yrs
4. Irrigation Pumps 2yrs
5. Warranty of Operation covers the performance of the NaturalFlow System as connected to the effluent inflow for which they are designed, and has been installed to the criteria as set out in the relative installation instructions and procedures, and has an assigned Service/Maintenance contract in place with Waterflow NZ Ltd or it's appointed agent/s.

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 contour 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 disposal field.

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

How it Works

Primary Chamber / Tank

Influent enters the chamber via the source whereby scum and solids capable of settling are separated from the raw influent. Primary treated effluent flows through a transfer port to the aeration tank. This tank will also act as a storage chamber for sludge returned via the Clarification Chamber.

Aeration Chamber

Water enters via the Primary Chamber. Air is introduced into this chamber via an air blower to create an environment for aerobic bacteria and other helpful organisms to consume the organic matter present. The aeration tank is designed in a manner to help prevent short circuiting of the wastewater to ensure extended aeration. Media is also present in the tank to support the growth of bacteria.

Clarification Chamber

The Clarification chamber is essentially a quiescent zone where suspended particles/solids are settled out of the water. These particles are returned to the Primary chambers via a sludge return which aids in further biological reduction, denitrification and providing a constant food supply rich in microbes supporting the system through periods of limited flows.



See our website: www.waterflow.co.nz

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Servicing

Your Econotreat System requires annual service and maintenance inspections (this can vary depending on local council regulations). This will need to be done by our trained technicians. We will phone to arrange a suitable time to attend to your servicing needs.

A record sheet (in triplicate) will be completed by our technician at the time of service. One copy is for you the customer and available upon payment, another is sent off to Council and the third copy will be retained for our records.

Please call our office on the number listed at the back of this manual for the cost of servicing after the initial 12-month period.

1. A general inspection of tank area, irrigation and drainage.
2. Inspection of electrical equipment including timer, Low powered Blower, irrigation pump, warning lights and connections.
3. Inspection of Pump-out Chamber and septic tank, checking air lines, adjusting air supply (if necessary), operating de-sludging unit, resetting air control, operating submersible switch, checking bio-mass growth, checking sludge level.
4. Inspection of irrigation including lines, jets and outlets. Between 4 - 9 years the tank will need to be de-sludged (pumped out) as with any septic tank. We will notify you of this requirement, as the service technicians will be monitoring sludge depth annually.

Holiday Precautions

There are no precautions to take. Your Econotreat can be left to function automatically for 6 to 12 months. However, if you are likely to be away from home for more than six months you may like to contact our office, so we can make a routine check.

Responsibility

As the owner of the system, you are responsible for the correct operation and maintenance and to conform to Council's requirements.

Slowly remove irrigation cap (unscrew anti- clockwise). It is important to unscrew slowly to allow any built-up pressure to be relieved. Watch out for the O-ring inside the cap, be careful not to drop this in the tank.

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Problem Solving

To ensure the most effective operation of your Econotreat System you should familiarize yourself with the contents of this manual. The Econotreat has been designed to include additional safety margins and minor mishaps and normal household usage will not usually affect the operation of the system.

However, if the alarm sounds or strong odors persist Please call your service agent.

Area of Concern	Potential Cause	Remedial Action
Alarm sounds	Irrigation pump not working	Check water levels
	Air supply not working	Listen for the air compressor
	No power at the tank	Check power supply source
Water around tank	Irrigation pump not working	Check water levels
	Irrigation lines blocked or kinked	Check irrigation lines and clear sprinklers
Excessive foaming	Too much laundry detergent	Use recommended quantities
	Too many washes	Spread wash loads over different days
Persistent odors	Too much water usage	Add biologic starter pack
	Excessive chemicals in use	Install water saving devices
		System will recover
Irrigation system not working	Pump failure	Check water level
	Irrigation lines blocked	Clear irrigation lines
Water ponding on irrigation field	Irrigation line blocked	Installation should comply with original approval
	Excessive water use	Install water saving devices
	Broken irrigation pipe	Repair irrigation pipe

Do not flush baby wipes down toilets

See our website: www.waterflow.co.nz

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Caring for Your Wastewater System

Components of Your Complete Wastewater Septic System

A typical wastewater septic system has two main components: a Wastewater Treatment System and a Land Application System (or disposal field). This is simply treatment then discharge.

Efficient Water Use – ‘it does make a difference’

Average indoor water use in the typical single-family home is approximately 180ltrs per person per day. The more water a household conserves, the less water enters the septic system. Efficient water use can improve the operation of the wastewater system and reduce any risk of disposal field overload.

High-efficiency toilets

Toilet use accounts for 25 to 30 percent of household water use.

Do you know how many liters of water your toilet uses to flush? Most older homes have toilets with 11+ liter reservoirs, while newer high-efficiency dual flush toilets use 6.3/5.5ltrs or down to 4.5/3ltrs of water per flush. N.B. Did you know leaky toilets can waste as much as 700ltrs each day.

Consider reducing the volume of water in the toilet tank with a volume displacer (fancy name for a brick, stone etc!) if you don't have a high-efficiency model or replacing your existing toilets with high efficiency models.

Check to make sure your toilet's reservoir isn't leaking into the bowl. Add five drops of liquid food coloring to the reservoir before bed. If the dye is in the bowl the next morning, the reservoir is leaking, and repairs are needed.

Water fixtures

A small drip from a faucet may add many liters of unnecessary water to your system every day. To see how much a leak adds to your water usage, place a cup under the drip for 10 minutes. Multiply the amount of water in the cup by 144 (the number of minutes in 24 hours, divided by 10). This is the total amount of clean water travelling to your septic system each day from that little leak.

Faucet aerators and high efficiency showerheads

Faucet aerators help reduce water use and the volume of water entering your septic system. High-efficiency showerheads also reduce water use.

Washing machines

By selecting the proper load size, you'll reduce wastewater. Washing small loads of laundry on the large-load cycle wastes precious water and energy. If you can't select load size, run only full loads of laundry. N.B. A new Energy Star washing machine uses 35 percent less energy and 50 percent less water than a standard model.

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Watch your drains!

What goes down the drain can have a major impact on how well your wastewater system works.

What shouldn't you flush down your toilet?

Dental floss, feminine hygiene products, diapers, cotton swabs, cigarette butts, cat litter, and other kitchen and bathroom items that can clog and potentially damage septic system components if they become trapped. Flushing household chemicals, gasoline, oil, pesticides, antifreeze, and paint can also stress or destroy the biological treatment taking place in the system or might contaminate surface or ground waters.

Care for your Land Application System

Your land application system is an important part of your wastewater system. Here are a few things you should do to maintain it:

- Flush driplines regularly – every 3 months recommended
- Plant only recommended wetland plants over and near your wastewater system. Roots from nearby trees or shrubs might clog and damage the drain field
- Don't drive or park vehicles on any part of your wastewater system. Doing so can compact the soil in your drain field or damage the pipes, tank, or other septic system components
- Do not build any structures over it or seal it with concrete, asphalt etc.
- Keep roof drains, basement sump pump drains, and other rainwater or surface water drainage systems away from the drain field. Flooding the drain field with excessive water slows down or stops treatment processes and can cause plumbing fixtures to back up
- Trees with very aggressive roots, such as willows, should be kept well away from the disposal system, see page 11 for list of recommended planting
- A soggy drain field won't absorb and neutralize liquid waste. Plan landscaping, roof gutters and foundation drains so that excess water is diverted away from the Land Application System

Household Cleaning Chemicals

Effects on Wastewater and Disposal System Receiving Environments

Use of many cleaning chemicals in facilities served by on-site disposal systems, can result in high concentrations of the constituents in those cleaning agents being discharged into the receiving soils. These chemicals and constituents can have a massive impact on the quality and condition of the receiving soils over time.

Many of the chemicals can disrupt soil structure and decrease hydraulic conductivity while others can act as bactericides, destroying the essential micro-organisms required to achieve the high level of biodegradation in the treatment and disposal systems.

The following matters need to be considered when using cleaning agents in a domestic situation:

- Laundry powders are often extremely high in sodium which will destroy the salt balance in the soils. Check the labels for low sodium and phosphorous contents.
- Wastewater flow from dishwashing machines can have an impact on wastewater treatment systems, in terms of the strong cleaning chemicals used, so check labels for low sodium products
- Highly corrosive cleaners (such as toilet and drain cleaners) that have precautionary labels warning users to minimize direct contact, are an indication that they can adversely affect the wastewater treatment system. Up to 1 cup of bactericides such as bleach can be sufficient to impact on all the microorganisms/bugs in a septic system.

Recommended Cleaning Brands:



earthwise
caring for your world

Cleaning Substitutes

Substitutes for Household Cleaning Chemicals (Ref TP58)

Use of the following readily biodegradable substitutes for common potentially harmful household cleaning chemicals will reduce the stress on any wastewater system, significantly enhance the performance of the whole system and increase the life of the land application system, while reducing the potential effects of the receiving soils.

General Cleaners

Use soft soap cleaners and bio-degradable cleaners and those low in chlorine levels.

Ammonia-Based Cleaners

Instead sprinkle baking soda on a damp sponge.

Disinfectants

In preference use Borax (sold in most Bin Inn stores): ½ cup in 4-litres of water.

Drain De-Cloggers

Avoid using de-clogging chemicals. Instead use a plunger or metal snake or remove and clean trap.

Scouring Cleaners and Powders

Instead sprinkle baking soda on a damp sponge or add 4-Tbs baking soda to 1-Litre warm water. It's cheaper and won't scratch.

Toilet Cleaners

Sprinkle on baking soda, then scrub with toilet brush.

Laundry Detergent

Choose one with a zero-phosphate content and low in alkaline salts (in particular, a low sodium level) and no chlorine.

Oven Cleaners

Sprinkle salt on drips, then scrub. Use baking soda and scouring pads on older spills.

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

In a Nutshell

Because your system is fully automatic there is no need for the owner to be concerned. However, there are some simple precautions to observe:

DO

- Avoid using strong acids, alkalis, oils and chemicals in your toilet, bathroom, laundry and kitchen (too much can kill off the working “bugs”).
- Limit the use of water in the dwelling.
- Try to spread wash loads over different days.
- Try to avoid using the washing machine and shower at the same time.
- Front loader washing machines reduce water usage.
- If your system requires power supply make sure this remains on continuously, unless system is being serviced.
- Check faucets and toilets for leaks; make repairs if necessary.
- Use low flush toilets where possible.
- Use a ‘displacer’ to reduce the amount of water needed to flush older toilets.
- Use aerators on faucets and flow reducer nozzles on showers to help lower water consumption.
- Reduce water levels for small loads of laundry.
- Wait until the dishwasher is full to run it.
- Densely plant your field to maximize transpiration.
- Perform regular monthly visual checks of your system and field.
- Grass should be mowed or trimmed regularly to optimize growth and prevent the grass from becoming rank.
- Use signs, fences and/or plantings to prevent any vehicle or stock access.
- Keep records of all maintenance undertaken on the wastewater systems.
- Monitor and care for your Wastewater System as per instructions in the home owner’s manual.

DON'T

- Switch off power unless servicing
- Use chlorine-based disinfectant & cleaning products in the toilets or kitchen sink (Cleaners high in chlorine, phosphorous or ammonia must not be used)
- Over use heavy cleaners that kill beneficial bacteria in the septic system
- Pour any toxic/strong chemicals (paint, oil, grease, paint thinners or pesticides) down any drains
- Flush down your toilet – Dental floss, feminine hygiene products, diapers, cotton swabs, cigarette butts, cat litter, and other kitchen and bathroom items
- Discard any drugs down the sink or toilet
- Alter or add any part of your system without Waterflow NZ LTD’s approval
- Never turn the system off, even when away on holidays.

ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

Trusted Wastewater Management Solutions

Plants Suitable for Onsite Wastewater Disposal Systems

Plantings that will soon have your field looking magnificent!

Below are some of the most common of native and other plant species that are tolerant or fond of moist conditions, such as those associated with wastewater disposal fields.



Cordyline australis



Apodasia similis



Alocasia nigrescens



Carex secta

- Alocasia nigrescens (Black Taro)
- Apodasmia similis (Oioi)
- Arthropodium Matapouri Bay
(Rengarenga Lily)
- Carex dispacea
- Carex dissita
- Carex maorica
- Carex secta
- Carex tenuiculmis
- Carex virgata
- Cordyline australis (Cabbage Tree)
- Cordyline Midnight Star
- Leptospermum Burgundy Queen
(Flowering Ti Tree)
- Lomandra Tanika
- Phomium Surfer

See our website: www.waterflow.co.nz



"Making it Easy"

Call us today to discuss your needs

0800 SEWAGE

Or for more information www.waterflow.co.nz



Head Office
PO Box 24, 1160 State Highway 12,
Maungaturoto 0547
P. 09 431 0042
E. sales@waterflow.co.nz

Waipapa Branch
166 Waipapa Road,
Kerikeri
P. 09 407 8323
E. kerry@waterflow.co.nz

www.waterflow.co.nz



econo-treat

Econotreat Treatment Systems

System Specifications & Installation Instructions



ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

Power Supply (see Pg 4 also for plastic systems)

Use a 2.5mm² T&E cable for the mains feeder cable. This cable should be protected at the feed end by an MCB rated at 16 Amps and should be installed on its own dedicated circuit.

Mains power supply is terminated in a waterproof outdoor socket, this provides power to the controller. It is found in the control box as pictured below. The power in comes through the side of the tank through a 25mm conduit coupling and will need to be run up through the bottom of the control box, where there is another conduit coupling; ensure these couplings are sealed off well when connecting the system up.



Power Socket

Controller Plugged in

25mm Conduit Coupling #2

Power Socket

25mm Conduit Coupling #1

25mm Conduit Coupling #2

Use Solid Conduit

Use flexible conduit provided

Power in

econo-treat

See our website: www.waterflow.co.nz

ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

Alarm Wiring

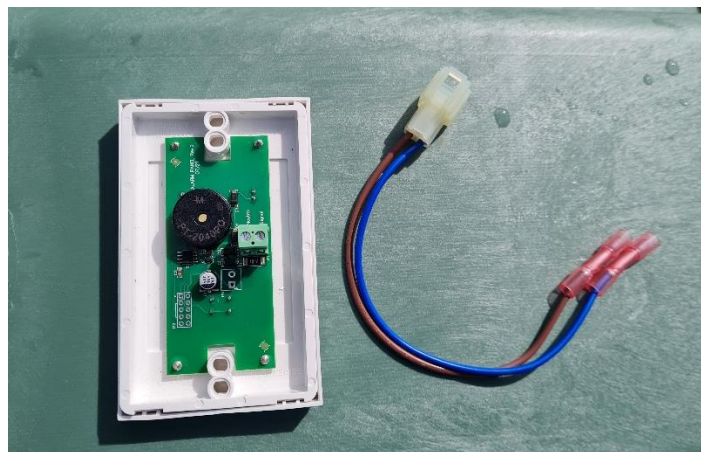
Use a 1.0mm² Twin or T&E cable to carry the two-wire alarm signal from the Treatment unit controller to the Alarm panel which is to be installed inside the building.

Note that this Alarm panel circuit is an ELV circuit. (24V AC)

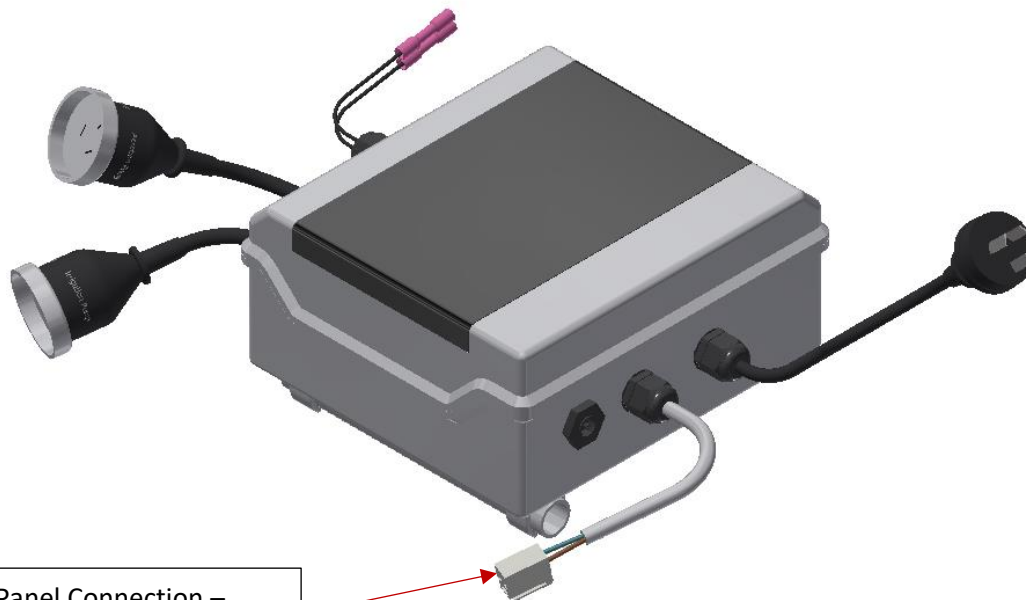
There is a connection on the side of the controller that the alarm panel connects to. The signal is the brown wire, and the neutral is the blue wire.



The Alarm Panel can be found in a bag in the controller box.



In the bag is also a connector that plugs into a plug on the controller. This panel should be installed in the house, typically the garage or laundry.



Alarm Panel Connection –
signal is brown, neutral is blue

If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz

ECONOTREAT TREATMENT SYSTEMS

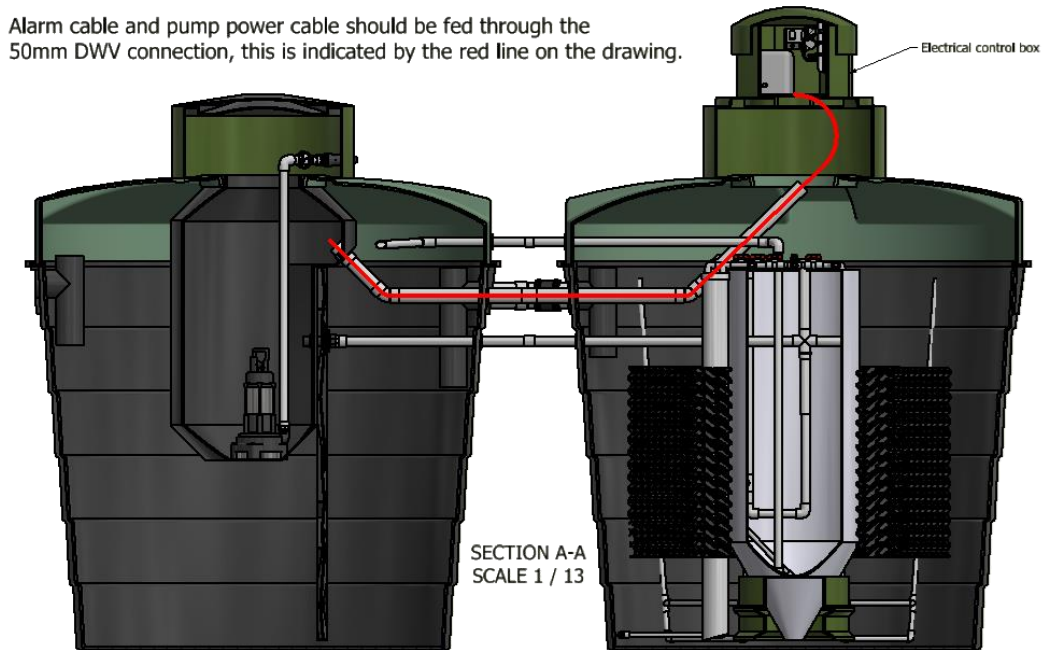
Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

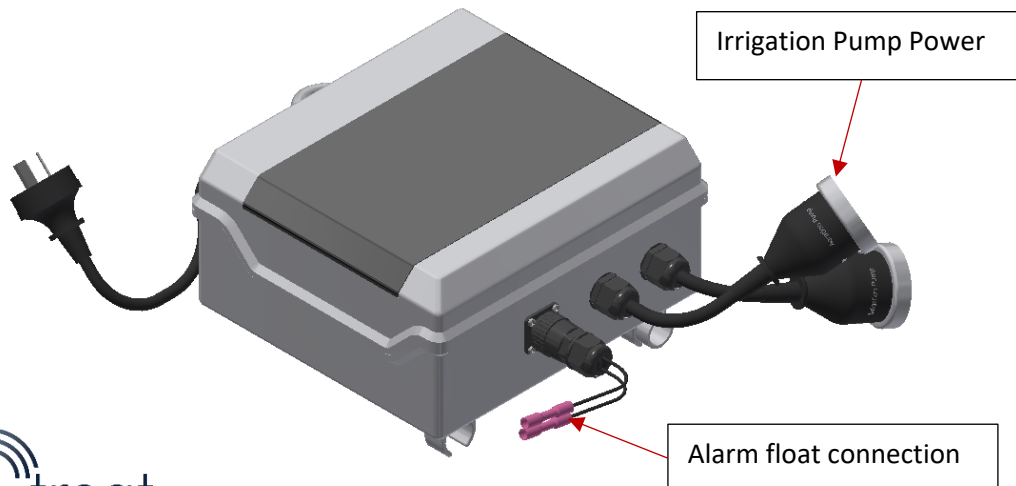
Plastic Systems

Plastic Econotreat systems have the pump and high-level float in a separate tank to the one holding the power box. Therefore, the pump and float cords need to be connected to the controller, they should have been fed through to the treatment tank by the installer at the time of install.

Note: There is a draw wire provided to pull the pump plug & alarm wire through to the Control Box; please do not cut any wires, the plug will fit through the conduit.



The high-level float plug on the controller is setup with crimps, so you will only need to crimp the float cable to the wires on the controller. The pump is simply plugged in the socket labelled "Irrigation Pump".



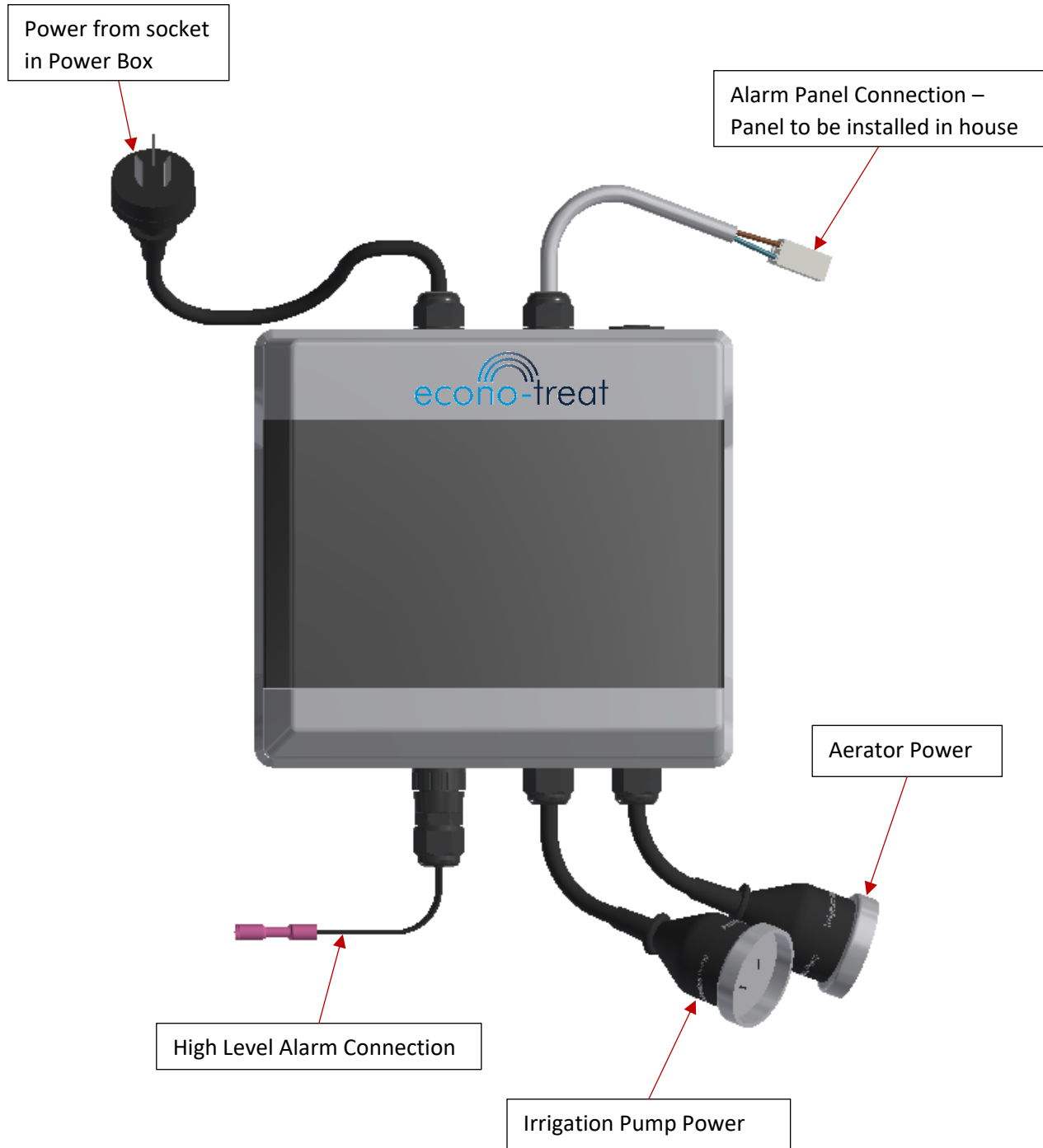
See our website: www.waterflow.co.nz

ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

Controller Schematic



If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz

ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

UV Controller

Systems with further UV disinfection have a different controller, with extra plugs for the UV control.

In a system with UV, the pump is run off a separate control float rather than the inbuilt float on the pump; the inbuilt float will be tied up in a permanently on position. So, there will be two extra plugs on the controller: a small one to take the pump control float and a 3-pin socket to power the UV.

When the pump control float turns on, the control provides power to the UV unit; after a delay of 5min the pump will start, this gives the UV lamp time to heat up before water passes through it.

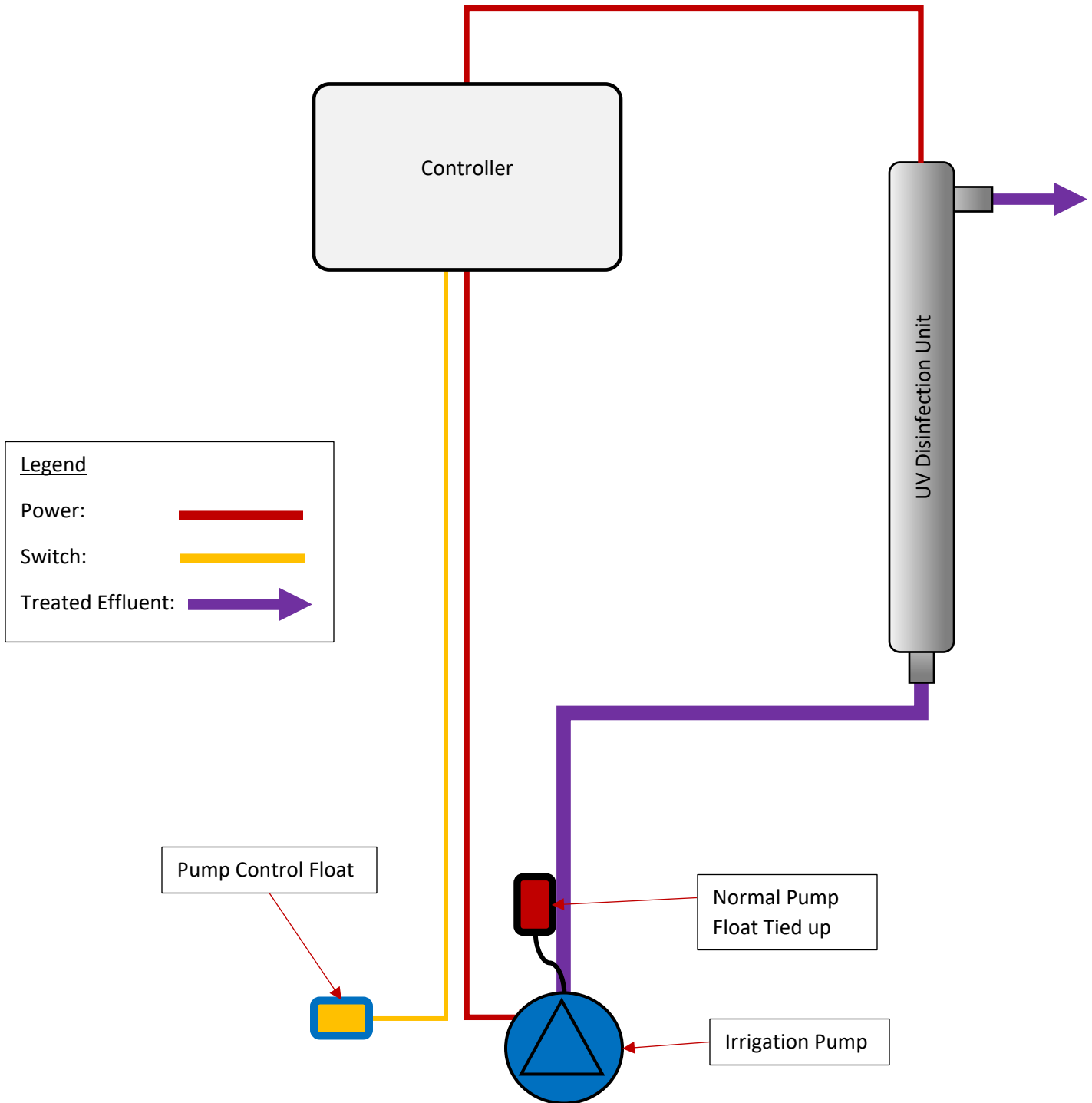


ECONOTREAT TREATMENT SYSTEMS

Electrical Connection

New Zealand's Leaders in Advanced Secondary Treatment Systems

UV Controller Schematic



If in doubt contact the experts on 0800 SEWAGE or sales@waterflow.co.nz



"Making it Easy"

Call us today to discuss your needs

0800 SEWAGE

Or for more information www.waterflow.co.nz



Head Office	Waipapa Branch
Waterflow NZ Ltd	Waterflow NZ Ltd
1160 State Highway 12,	166 Waipapa Road,
Maungaturoto	Kerikeri
P. 09 431 0042	P. 09 407 8323

FF. 0800 SEWAGE
E. sales@waterflow.co.nz
www.waterflow.co.nz



TSS Consultants Ltd

Civil & Environmental Engineers
Email: info@tssconsultantsltd.com

FLOOD RISK ASSESSMENT REPORT

Site:

6A Waimanoni Road, Waimanoni

Client:

Advance Build

Job No:

J1171

Date:

28.09.2023

TABLE OF CONTENTS

TABLE OF CONTENTS	1
1. INTRODUCTION	2
2. FLOOD RISK ANALYSIS	2
2.1 Northland Regional Council held flood data	2
2.2 Site Walkover Assessment	4
3. DEVELOPMENT CONTROLS	5
3.1 Min Finished Floor	5
3.2 Foundation	5
3.3 Earthworks	5
3.4 Fences	5
3.5 Egress	6
4. CONCLUSION / RECOMMENDATIONS	6
DISCLAIMER	7
LIST OF APPENDICES	7

- Proposed site plan with min FFL
- Site Investigation pictures

1. INTRODUCTION

TSS Consultants Ltd have been engaged by Advanced Build on behalf of H5 Whanau Trust to undertake a flood risk assessment for the redevelopment of the site.

It is proposed to construct 3 new dwellings and a new 2 bed cabin on the site. This project also involves relocation of the existing batch and construction of associated accessways as shown in the proposed site plan prepared by Advance Built, appended to the report.

The site lies within a flood plain, as such, TSS Consultants Ltd has been requested by the client to undertake a flood risk assessment of the site to determine the severity of the flood hazard with respect to the proposed development.

The report recommends a minimum finished floor level (FFL) if applicable, as well as appropriate development controls to support any future developments.

2. FLOOD RISK ANALYSIS

2.1 Northland Regional Council held flood data.

We have reviewed the Natural Hazard Maps and have consulted with NRC with respect to flooding. NRC confirms that the site is subject to 1% AEP Extent as well as coastal inundation. Below is the data derived from NRC.

River Flooding:

The property at 6A Waimanoni Road does not intersect the 10- and 50-year priority river extents, it only intersects the 100-year CC extent. The maximum level and range of velocities for the 100-year CC extent, on that property are below:

- Level – 2.345m OTP
- Velocity – ranges from approximately 0.040m/s to 0.315m/s

Coastal Flooding:

The property has coastal flood hazard zones 1, 2 and 3 intersecting it. Below are the maximum coastal flood levels for each CFHZ, on the property:

- CFHZ1 (50 years) – 1.872m NZVD
- CFHZ2 (100 years) – 2.747m NZVD
- CFHZ3 (100 years + Rapid SLR) – 3.090m NZVD

The velocity for the coastal flooding CFHZ3 extent, being the 100 years + Rapid SLR, and much of the property has velocities in the range of 0.3m/s to 0.6m/s.



FIGURE 1 1%AEP EXTENT - SOURCE NRC 25.7.23



FIGURE 2 COASTAL HAZARD + SLR - SOURCE NRC 25.7.23

A review of the topographic plan shows the site to be relatively flat around the 1.5mRL.

Thus, based on the river modelling data, up to 1.0m of ponding is expected in a 1% AEP event. The ponding situation will be worse during coastal inundation as that water level is expected to exceed 1.5m depth within the site.

Thus, we classify the site to be subject to a significant flood hazard.

To validate the flood information above, we have undertaken a catchment walkover assessment.

2.2 Site Walkover Assessment

A catchment walkover assessment was undertaken on the 29th of June 2023.

The following site observations were noted:

- The property is relatively flat at approximately 1.5-2.0mRL elevation.
- The existing structure on site is elevated on piles with 400mm ground clearance.
- A tributary of Waimanoni Creek originates from the southern boundary and runs north bisecting the property. The creek is approximately, 1.0m wide and 1.0m deep with 3:1 embankment. Refer Fig 3.
- The property is approximately 0.5m lower than Far North Road (SH1) creating a hydraulic barrier during a 1% AEP extent. Thus, we would expect the entire property to be inundated during a 1% AEP extent as the creek is unlikely to have capacity to drain a flood event.
- However, the creek is likely to convey the more frequent storm events such as 2, 5, 10 & 20 year as confirmed by the tenants residing onsite experience sheet flow during extreme weather events including Cyclone Gabrielle. The water levels did not enter the house and drained away within 48 hours.
- The property is also subject to coastal inundation.
- This based on our catchment walkover assessment and discussion with the occupants' experiences within an extreme event we would recommend the FFL to be at least 0.5m above SH1 (approx. 2.93mRL) which is similar to the council model data.

Refer to the following figures below for visual assistance in regards the site walkover assessment.

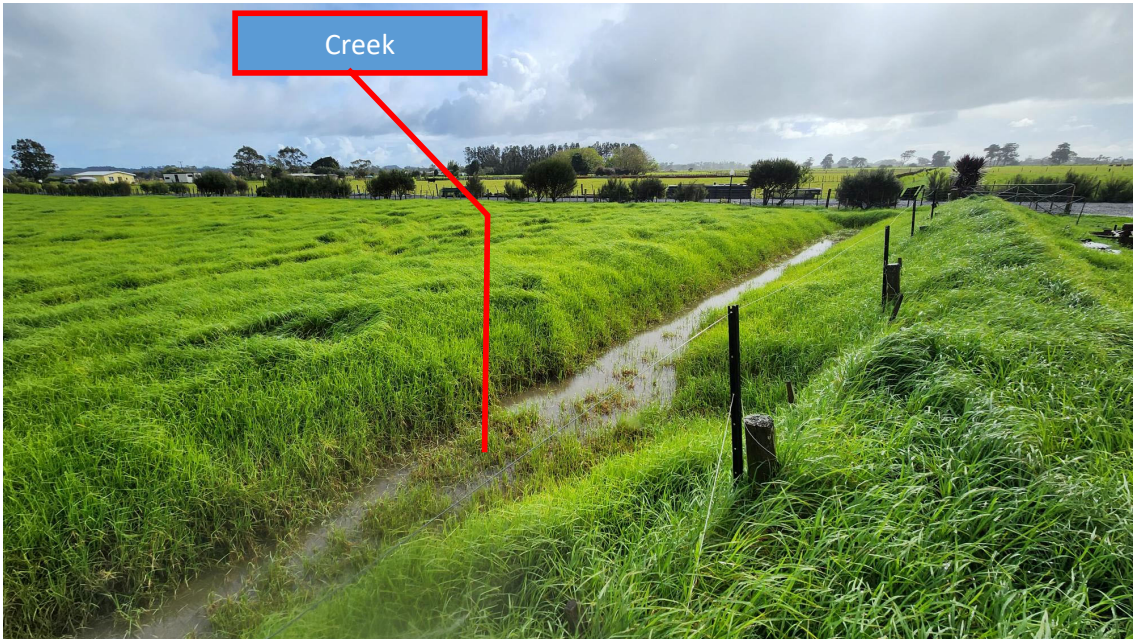


FIGURE 3 CREEK BISECTING THE PROPERTY

To support the redevelopment for the site and to protect people and property from a Natural Hazard, we recommend the building controls below.

3. DEVELOPMENT CONTROLS

3.1 *Min Finished Floor*

The minimum FFL for the proposed dwellings on site shall be 0.5m above the projected flood elevation within the site. Also, it shall be at or above 100yr SLR.

- ✚ 2.345m + 0.50m (freeboard allowance for 1% AEP extent) = RL 2.845m
- ✚ CFHZ3 (100 years + Rapid SLR) – 3.090m NZVD
- ✚ **We specify the min FFL to be 3.090mRL**

3.2 *Foundation*

- ✚ The new dwellings are to be suspended on timber piles to ensure sheet flow remains unobstructed.

3.3 *Earthworks*

- ✚ All existing ground levels shall be maintained as much as possible to maintain the hydraulic regime. Driveway and accessway shall be on grade.

3.4 *Fences*

- ✚ New fence within the 1% AEP extent to be permeable to allow free flowing water.

3.5 Egress

- 🚪 Residence are advice is to stay indoors within the elevated structures until the water levels subsides as the entire catchment is subject to inundation is an extreme weather event.

4. CONCLUSION / RECOMMENDATIONS

Overall, we can classify this flood to be a **Significant Flood Hazard** during a 1% AEP event and coastal inundation scenario.

However, the existing creek is likely to accommodate the more frequent storms i.e. (2, 5 & 10year events) as per River Modelling data and confirmation from occupants onsite.

To protect people and property from a 1% AEP event, we recommend the following.

1. Minimum Finish Floor level to be **3.090m RL**.
2. Development controls shall be as detailed in section 3 above

In our opinion, redevelopment of the site is suitable provided the mitigation measures above are implemented.

Report written by:



Shiva Singh
BE (Mech), CPEng. IntPE MIPENZ

DISCLAIMER

This report has been prepared solely for the benefit of client with respect to particular brief given to us, and data or opinions in it may not be used in other contexts, by any other party or for any other purposes. This report can be used by District & Regional Council for consent processing purposes.

To the maximum extent permitted by law, TSS Consultants Ltd disclaims all liability and responsibility (in contract or tort, including negligence, or otherwise) for any loss or damage whatsoever which may be suffered as a result of any reliance by any third party on this report, whether that loss is caused by any fault or negligence on the part of TSS Consultants Ltd or otherwise.

Should you be in any doubt as to the applicability of this report and/or its recommendations for the proposed development as described herein, and/or encounter materials on site that differ from those described herein, it is essential that you discuss these issues with the authors before proceeding with any work based on this document.

LIST OF APPENDICES

- Proposed site plan with min FFL
- Site Investigation pictures

Site Information

6A Waimanoni Road, Waimanoni
 Pt Waimanoni 1A2C
 High Wind Zone
 Corrosion Zone C
 Earthquake Zone 1
 Zone: Rural Production
 Site area: 22256m²



Site Subject to
 Coastal Inundation & River Flood Hazard Zone(50 - 100yr Extent)
 Refer to Engineer flood assessment

Driveway Coverage

Pre development Driveway area: 1630m²
 Post development Driveway area: 2628m²

Building Coverage:

Building Coverage Pre development: 384.4m²
 Building Coverage Post development: 920.7m²

Roof Coverage:

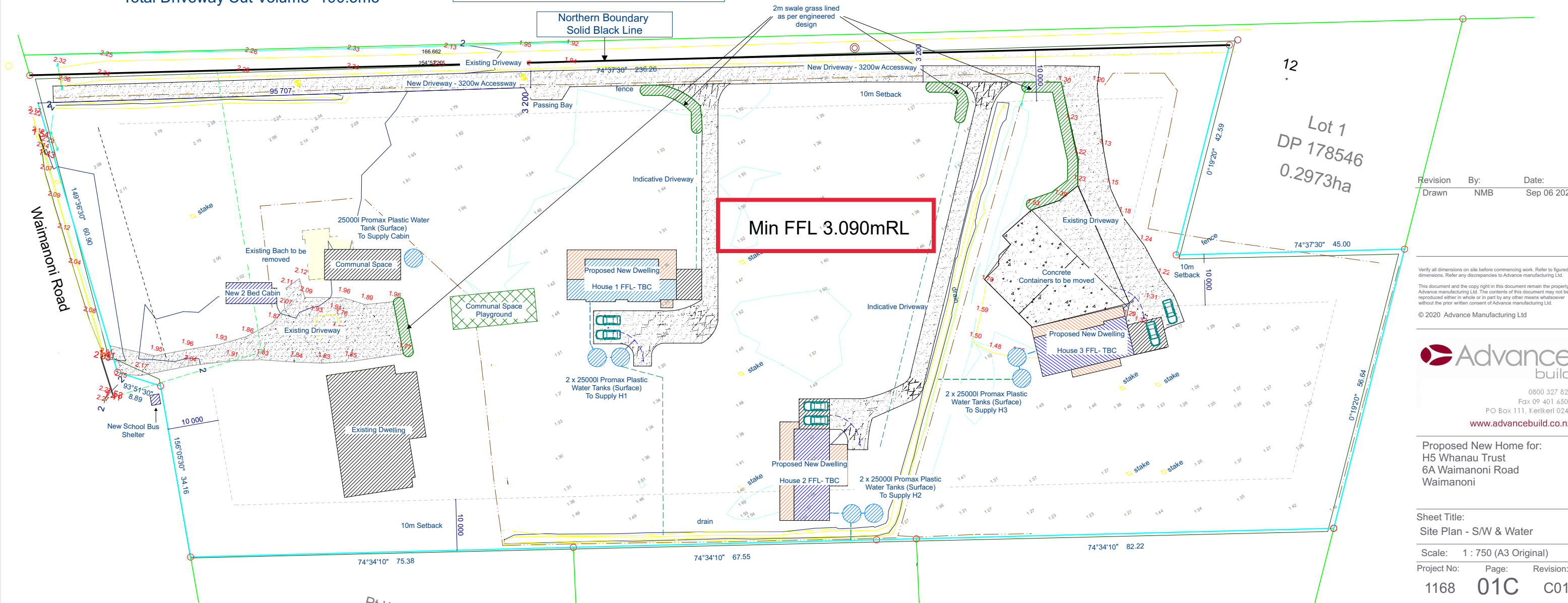
Roof Coverage Pre development: 480.5m²
 Roof Coverage Post development: 1243.53m²

Total impermeable surfaces: 3871.53m² = 17.39%

Earthworks:

Total Driveway Cut Volume- 190.5m³

NRC Permitted Discharge Compliance	
Identified Stormwater Flow Path	5m
River, Lake, Pond, Stream, Dam or Wetland	15m
Existing Water Supply Bore	20m
Groundwater	0.6m
Property Boundary	1.5m
Buildings - Field Setback	1.5m
Buildings - Tank Setback	3.0m
10m Buffer Zone	Slopes > 10°
Floodplain Exclusion	Height > 50yr Floodplain
Reserve Area	30%



Revision By: Date:
 Drawn NMB Sep 06 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property of Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
 © 2020 Advance Manufacturing Ltd



Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

Sheet Title:
 Site Plan - S/W & Water
 Scale: 1 : 750 (A3 Original)
 Project No: Page: Revision:
 1168 01C C01

By SS
Date June 23
Job 1171

Project 6A Waimanoni Road Waimanoni.

Description Redevelopment of Site – Housing Development





TSS Consultants Ltd

Civil & Environmental Engineers
Email: info@tssconsultantsltd.com

STORMWATER MITIGATION DESIGN

Site:
6A Waimanoni Road, Waimanoni

Client:
Advance Build

Job No:
1171

Date:
06/ 11 / 2023

TABLE OF CONTENTS

TABLE OF CONTENTS	1
1. INTRODUCTION	2
2. STORMWATER MITIGATION DESIGN	2
2.1 Existing and post coverage	2
2.2 Predevelopment Discharge	2
2.4 Onsite Stormwater Management.....	2
3. STATUTORY ASSESSMENT	6
4. CONCLUSION/RECOMMENDATIONS	8
4.1 Recommendation.....	8
5. DISCLAIMER	9
6. LIST OF APPENDICES	9

- Proposed Site plan by Advance build
- TSS Consultants Ltd, Onsite Stormwater Layout Plan + Typical Tank detail & SW Outlet Sheet 100 & 102, Rev 0
- Detention tank design
- SW Swale Design using TP10
- Rainfall Data from NIWA
- Swale Construction Guide
- Tank O & M

1. INTRODUCTION

The client wishes to erect new homes and associated accessways as shown in the proposed site plan prepared by Advance Build, appended to the report.

The existing house stormwater discharges ground. The proposed coverage exceeds the FNDC permitted 15% threshold.

As such, TSS consultants Ltd has been engaged to design a suitable stormwater mitigation for this site to suit the receiving environments.

Statutory assessment of the proposed stormwater under the FNDC's Operative District Plan, District Wide provisions, chapter 11 is also addressed within this report.

2. STORMWATER MITIGATION DESIGN

2.1 Existing and post coverage

The below table summaries the coverage for the site obtained from Advance Build, appended to the report.

	Ex. Roof	New Roof	Ex. Paving	New Driveway
Area (m ²)	480.5	1243.5	1630	2628

2.2 Predevelopment Discharge

The predevelopment discharges.

- Ex roof 480.5m², Q10yr = 24.69 L/s – to be mitigated via tanks
- Ex paved 1630m², Q10yr – 50.1L/s - to be mitigated via grass swale with underdrain.

2.3 Permitted Baseline

- 15% of 22256m² = 3338.4 m², Q10yr = 164.74.0 L/s

2.4 Onsite Stormwater Management

Stormwater management for the proposed development is based on the following principles and in accordance with the regulatory requirements:

- ✓ Use of grass swales (low impact device) for pre-treatment
- ✓ Use of swale underdrain (soakhole) for attenuation, and conveyance of runoff from the impervious areas other than roof such as concrete, metal, and seal areas.
- ✓ Attenuation tank for roof to limit post development back to permitted base line.

2.4.1 Pre-treatment of impervious areas other than the roof via Grass swale

Stormwater swale is proposed to capture and treat the runoff from concrete, metal, and seal surfaces.

The grassed swale is designed to convey and treat stormwater runoff. Their linear nature allows the filtering of sheet flows down the channel side slopes and then conveyance and further treatment of contaminants along the base of the swale.

Treatment is achieved by the reduction in flow velocities across a vegetated surface, providing for the filtering of contaminants and increased contact time at the plant-soil-water interface where treatment processes occur. The slowing of stormwater flows in grassed swales increases the time of concentration for stormwater in the catchment and reduces peak flow. It also provides opportunities for infiltration to groundwater.

Swale design summary

Peak flow

- o Catchment Area = 0.261 ha
- o Percentage impervious = 95%
- o 2-year, 24-hour rainfall = 120mm (RCP 6.0 for the period 2081-2100)
- o Water quality = 1/3 (2year) = 40mm
- o Ia = 0
- o CN = 98
- o Q = 0.049 m³/s

Swale parameters – 50mm grass length

- o Slope = 1.0%
- o Depth of flow = 100mm
- o Side slope = 3
- o Base width = 0.8m
- o Top width = 1.4m
- o Velocity = 0.13m/s
- o Minimum swale length = 68.4m

Swale Design

- o Top Width = 2m
- o Depth = 0.5m
- o Slope = 3:1
- o Total Length = 70m
- o Swale Slope = 1%

A detailed swale calculation sheet in accordance with TP10 + site plan showing the grass swale location appended to the report.

2.4.2 Attenuation of impervious area via swale underdrain (soakhole)

A scoria under-drain (soakhole) is proposed stormwater mitigation from concrete and seal areas, designed for a 1 in 10-year storm event and climate change.

A minimum percolation rate of 0.25mm/day is adopted for the site.

A 0.5m deep by 0.5m wide by 70m long underdrain with Ø100mm perforated nova-coil is required. The swale overflow shall be piped to the existing open drain.

Refer to appendix for underdrain attenuation calculations.

The swale is trapezoidal shaped with 2.0m top width, 0.5m base width and 0.3m deep. The swales profile is matched to existing ground profile as much as practical to integrate into the existing landscape thus aligning it with the natural flow paths.

The swale will be grassed with a scoria under-drain. The operation & maintenance shall be as per swales & filter strips O & M guide appended to the report.

Underdrain design summary

Peak flow

- o Catchment Area = 0.26 ha
- o 10-year, 24-hour rainfall = 187mm (RCP 6.0 for the period 2081-2100)
- o Q post - predevelopment = 81.0L/s

Onsite attenuation required.

- o Storage Volume x10mx60s = 24.40 m³
- o Percolation rate – assume minimum = 0.25L/m²/min

Minimum surface area required for underdrain.

- o SA – Volume/percolation/24*60 = 67.8 m²

Actual surface available in 70m long underdrain

- o Calculate surface area for soakage = 70m²

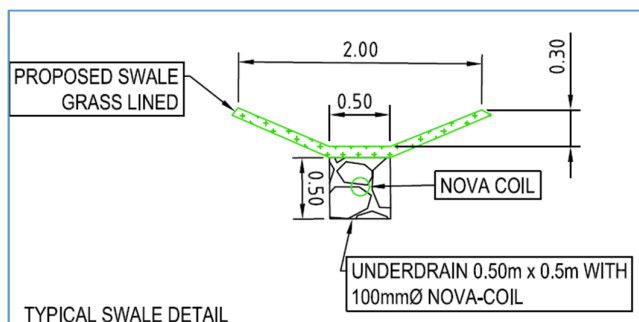


FIGURE 1 TYPICAL SWALE DETAIL, 2.0M WIDTH, 0.3 DEEP WITH A 0.5M X 0.5M UNDERDRAIN

2.4.3 SW Attenuation tank Design for ex & proposed buildings

An onsite detention tank is proposed to mitigate post-development flow and slowly discharge existing drains for 10% AEP rainfall event.

The total roof area is estimated to be 1243.53m²

The attenuation tank design shall accommodate 10% AEP storm event (i.e., 187 mm/hr.) for climate change RPC6.0 (2081-2100). This accounts for warming for 16.8 °C and an associated increase in rainfall of approximate 20%.

Please refer to the calculation appended to the report whereby a total of 23.24m³ attenuation is required.

For simplicity, we have split this volume by number of dwellings i.e., 5.0 m³ per dwelling attenuation with controlled discharged via 40mm orifice set @ 1.8m above I.L. of tank to mitigate post flows to less than permitted baseline i.e., Q < 4.0L/s per dwelling.

Tank overflow shall be piped and released in the creek. Rock lined energy dissipation aprons, planting and spreader bars are recommended to avoid erosion at the discharge points.

Please refer to the site plan appended to the report showing the 5.0m³ SW attenuation per dwelling and typical tank arrangement for house supply using 2 x 25 m³ tank connected in series with orifice & outlet detail, appended to the report.

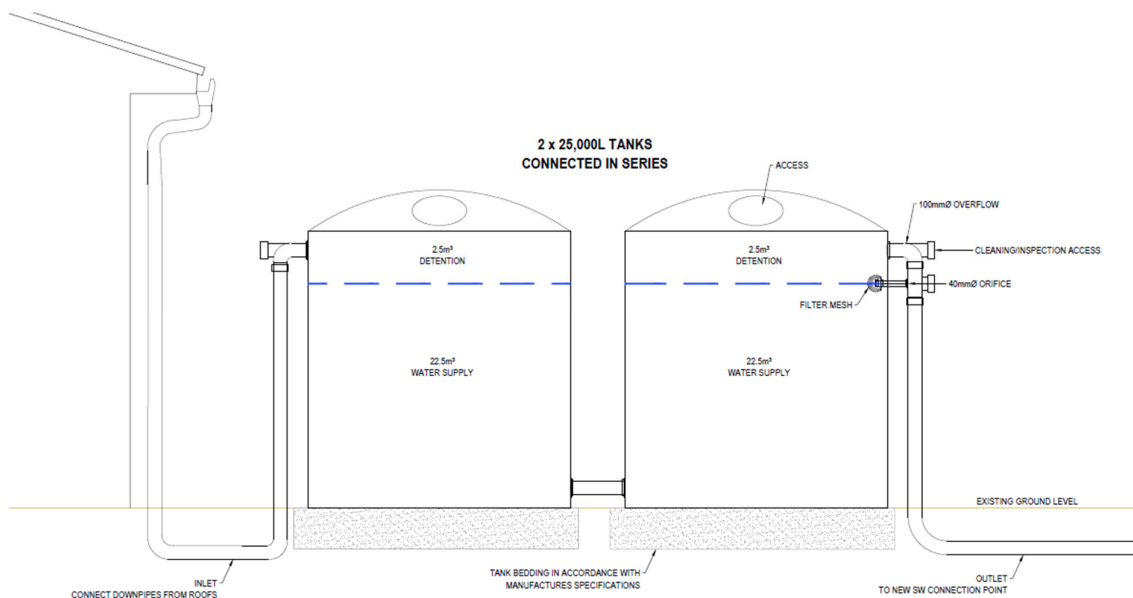


FIGURE 2 TYPICAL SW TANK DETAIL

3. STATUTORY ASSESSMENT

We have reviewed the relevant rules under Chapter 11 of the Far North District Plan and have made the following assessment relevant to onsite SW servicing.

a) The extent to which building site coverage and impermeable surfaces result in increased stormwater runoff and contribute to total catchment impermeability and the provisions of any catchment or drainage plan for that catchment.

The design employs detention tank, grass swale and soakpit to ensure post flows are mitigated back to pre-development levels.

(b) The extent to which Low Impact Design principles have been used to reduce site impermeability.

The proposal utilises low impact design – vegetated swale with underdrain.

(c) Any cumulative effects on total catchment impermeability.

NA. The flows are throttled back to less than pre-development conditions.

(d) The extent to which building site coverage and impermeable surfaces will alter the natural contour or drainage patterns of the site or disturb the ground and alter its ability to absorb water.

NA. existing site levels are maintained. Dwellings are to be suspended on piles to comply with flood level.

(e) The physical qualities of the soil type.

NA.

(f) Any adverse effects on the life supporting capacity of soils.

Unlikely as a minimum percolation rate is adopted which is reflective of the moderate draining soils.

(g) The availability of land for the disposal of effluent and stormwater on the site without adverse effects on the water quantity and water quality of water bodies (including groundwater and aquifers) or on adjacent sites.

A separate TP58 report has been completed.

(h) The extent to which paved, impermeable surfaces are necessary for the proposed activity.

The paved areas are limited to vehicle access and turning. The surface will be metal to limit impermeable surface.

(i) The extent to which landscaping may reduce adverse effects of run-off.

Noted. Planting is proposed to limit erosion at discharge point.

(j) Any recognised standards promulgated by industry groups.

NA

(k) The means and effectiveness of mitigating stormwater run-off to that expected by the permitted activity threshold.

Noted. Post flows are throttled back to pre-development levels.

(l) The extent to which the proposal has considered and provided for climate change.

Noted. Allowed in the design.

(m) The extent to which stormwater detention ponds and other engineering solutions are used to mitigate any adverse effects.

NA

Summary

The receiving environment is a creek within the site. The imperious areas are to be directed into grass swale with underdrain to ensure pre-treatment. The impervious area is limited to metal surfaces which further limits runoff as bulk of the runoff is likely to be absorbed by the ground.

Roof runoff is to be direct into water tanks for reuse. SW attenuation is proposed to ensure post discharge is less than predevelopment conditions. Additionally, tank overflow shall be piped and released into the creek. Rock lined energy dissipation aprons, planting and spreader bars are recommended to avoid erosion at the discharge points.

4. CONCLUSION/RECOMMENDATIONS

In our opinion, sufficient mitigation is achieved for the proposed roof areas by installing an onsite SW tank with a controlled orifice discharge to the existing creek.

A grass swale for metal driveway with underdrain for treatment & conveyance is considered appropriate.

4.1 Recommendation

- Stormwater from the proposed dwellings is to flow into a 2 x 25m³ aboveground tank connected in series.
- Install Ø40mm orifice set at 1.8m above IL of tank.
- Pipe the tank overflow to a riprap outlet for energy dissipation.
- The proposed driveway and access are to be shaped and directed towards grass lined swale totaling 70m with underdrain.
- Underdrain to be 0.5m x 0.5m x 70m long.

Refer to drawings TSS Consultants Ltd Civil Design, J1171, 6A Waimanoni Road, Onsite SW Layout Plan, Typical Tank Detail & SW Outlet: Sheets 100 -102, Rev 0.

The operation and maintenance of the above-ground detention tank + grass swale shall be the owner's responsibility as detailed in the Operational & Maintenance Manual attached to the appendix.

Report written by:



Shiva Singh
BE (Mech), CPEng. IntPE MIPENZ

Reviewed by:

Baljinder

5. DISCLAIMER

This report has been prepared solely for the benefit of our client with respect to particular brief given to us, and data or opinions in it may not be used in other contexts, by any other party or for any other purposes. To the maximum extent permitted by law, TSS Consultants Ltd disclaims all liability and responsibility (in contract or tort, including negligence, or otherwise) for any loss or damage whatsoever which may be suffered as a result of any reliance by any third party on this report, whether that loss is caused by any fault or negligence on the part of TSS Consultants Ltd or otherwise.

Should you be in any doubt as to the applicability of this report and/or its recommendations for the proposed development as described herein, and/or encounter materials on site that differ from those described herein, it is essential that you discuss these issues with the authors before proceeding with any work based on this document.

6. LIST OF APPENDICES

- Proposed Site plan by Advance build
- TSS Consultants Ltd, Onsite Stormwater Layout Plan + Typical Tank detail & SW Outlet Sheet 100 & 102, Rev 0
- Detention tank design
- SW Swale Design using TP10
- Rainfall Data from NIWA
- Swale Construction Guide
- Tank O & M

Site Information

6A Waimanoni Road, Waimanoni
 Pt Waimanoni 1A2C
 High Wind Zone
 Corrosion Zone C
 Earthquake Zone 1
 Zone: Rural Production
 Site area: 22256m²



Site Subject to
Coastal Inundation & River Flood Hazard Zone(50 - 100yr Extent)
 Refer to Engineer flood assessment

Driveway Coverage

Pre development Driveway area: 1630m²
 Post development Driveway area: 2628m²

Building Coverage:

Building Coverage Pre development: 384.4m²
 Building Coverage Post development: 920.7m²

Roof Coverage:

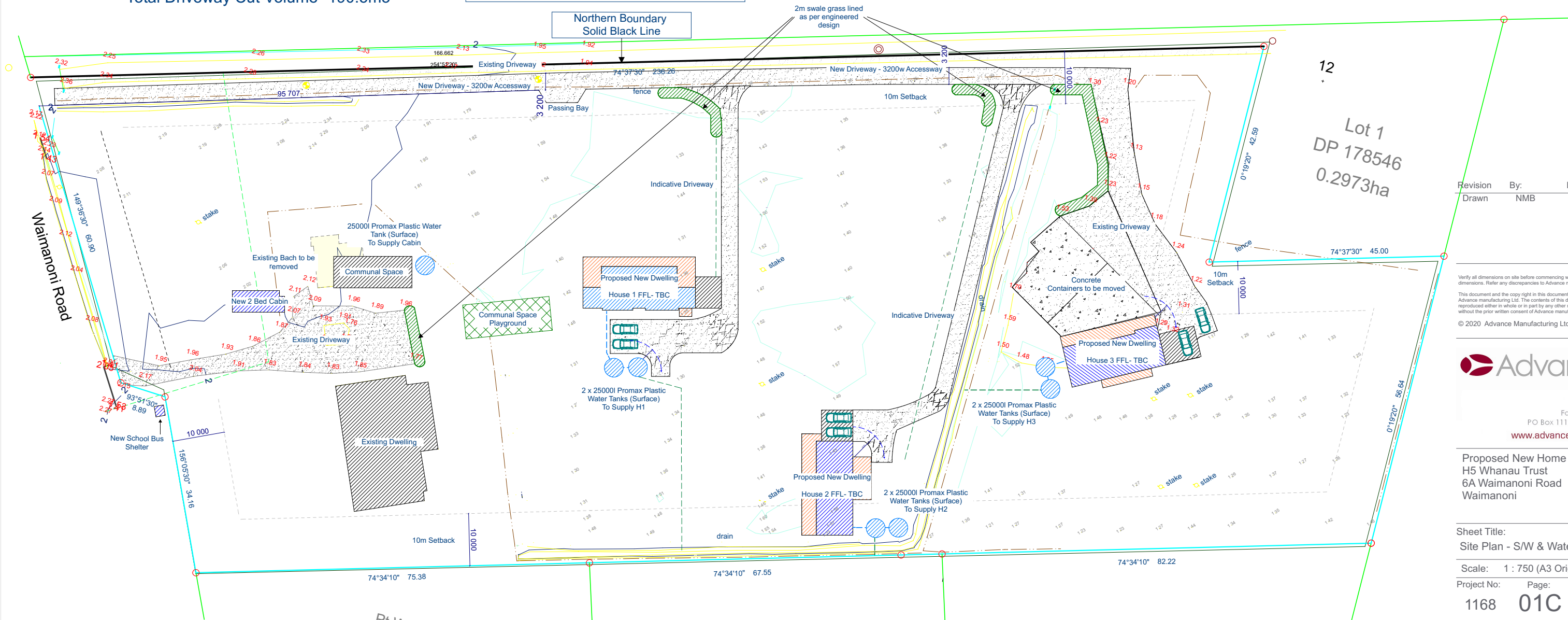
Roof Coverage Pre development: 480.5m²
 Roof Coverage Post development: 1243.53m²

Total impermeable surfaces: 3871.53m² = 17.39%

Earthworks:

Total Driveway Cut Volume- 190.5m³

NRC Permitted Discharge Compliance	
Identified Stormwater Flow Path	5m
River, Lake, Pond, Stream, Dam or Wetland	15m
Existing Water Supply Bore	20m
Groundwater	0.6m
Property Boundary	1.5m
Buildings - Field Setback	1.5m
Buildings - Tank Setback	3.0m
10m Buffer Zone	Slopes > 10°
Floodplain Exclusion	Height > 50yr Floodplain
Reserve Area	30%



12
 Lot 1
 DP 178546
 0.2973ha

Revision By: Date:
 Drawn NMB Sep 06 2023

Verify all dimensions on site before commencing work. Refer to figured dimensions. Refer any discrepancies to Advance manufacturing Ltd.
 This document and the copy right in this document remain the property of Advance manufacturing Ltd. The contents of this document may not be reproduced either in whole or in part by any other means whatsoever without the prior written consent of Advance manufacturing Ltd.
 © 2020 Advance Manufacturing Ltd



Proposed New Home for:
 H5 Whanau Trust
 6A Waimanoni Road
 Waimanoni

Sheet Title:
 Site Plan - S/W & Water
 Scale: 1 : 750 (A3 Original)
 Project No: 1168 Page: 01C Revision: C01

Site area: 22256m²

Driveway Coverage

Pre development Driveway area: 1630m²

Post development Driveway area: 2610m²

Building Coverage:

Building Coverage Pre development: 384.4m²

Building Coverage Post development: 920.7m²

Roof Coverage:

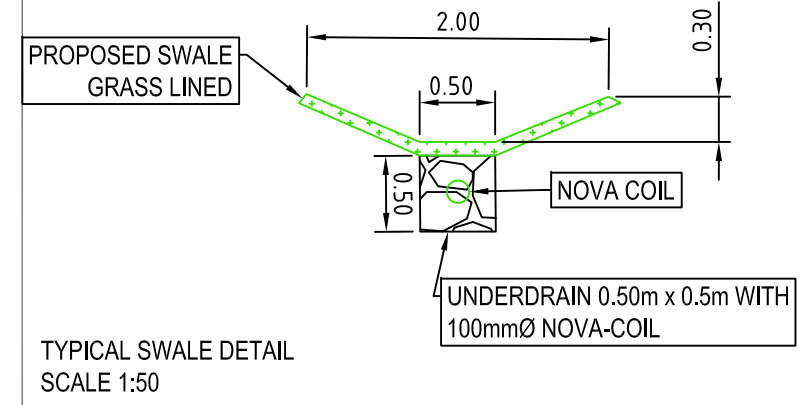
Roof Coverage Pre development: 480.5m²

Roof Coverage Post development: 1243.53m²

Total impermeable surfaces: 3853.53m² = 17.31%

Earthworks:

Total Driveway Cur Volume: 188.7m³



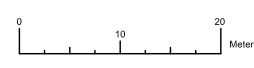
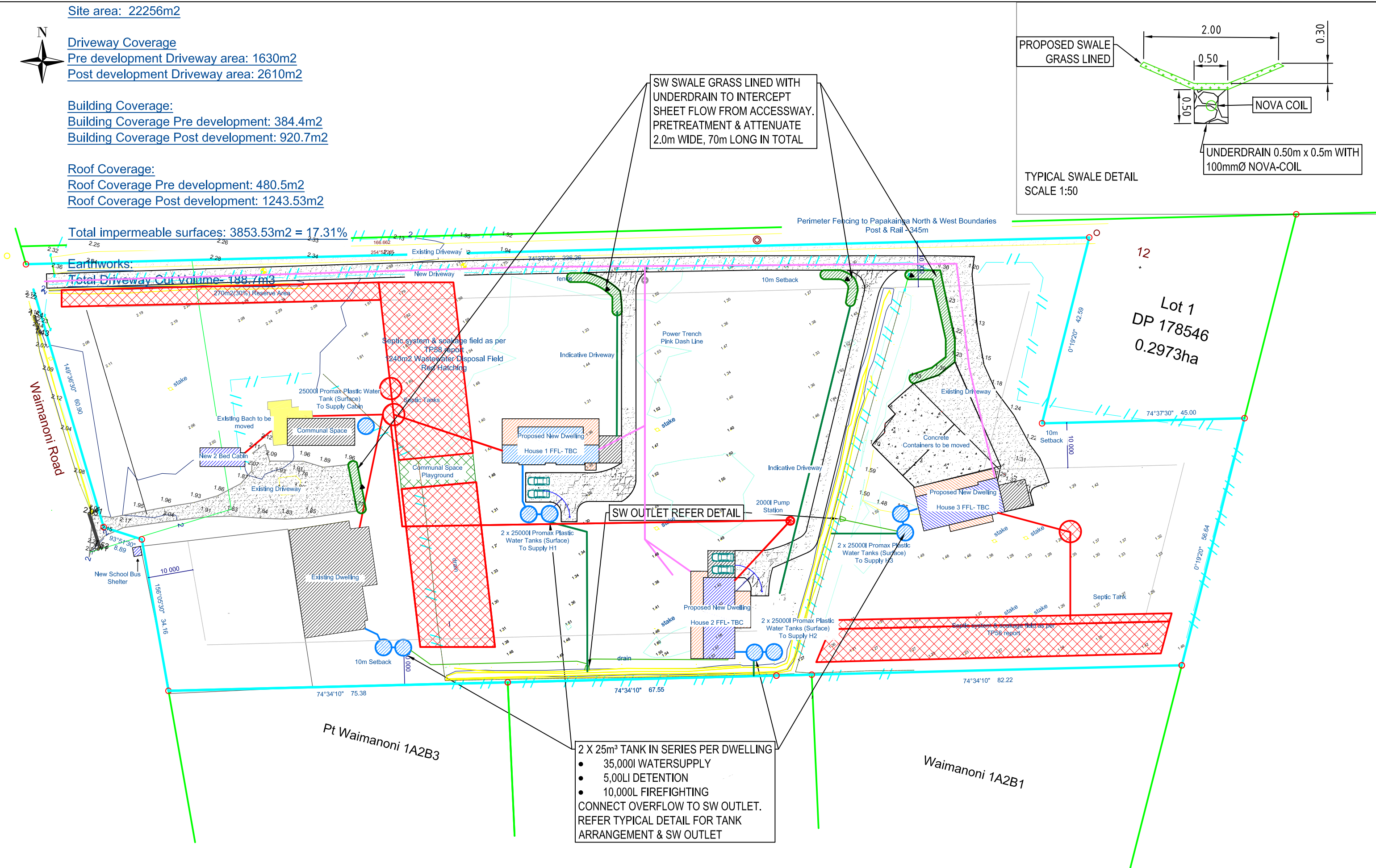
SW SWALE GRASS LINED WITH UNDERDRAIN TO INTERCEPT SHEET FLOW FROM ACCESSWAY. PRETREATMENT & ATTENUATE 2.0m WIDE, 70m LONG IN TOTAL

SW OUTLET REFER DETAIL

2 X 25m³ TANK IN SERIES PER DWELLING

- 35,000L WATERSUPPLY
- 5,000L DETENTION
- 10,000L FIREFIGHTING

CONNECT OVERFLOW TO SW OUTLET. REFER TYPICAL DETAIL FOR TANK ARRANGEMENT & SW OUTLET



Revision	Amendments	Approved	Date

TSS CONSULTANTS LTD
 CIVIL & ENVIRONMENTAL

ADDRESS: UNIT 9, 42 ORMISTON ROAD
 EAST TAMAKI, AUCKLAND

EMAIL: info@tssconsultantsltd.com

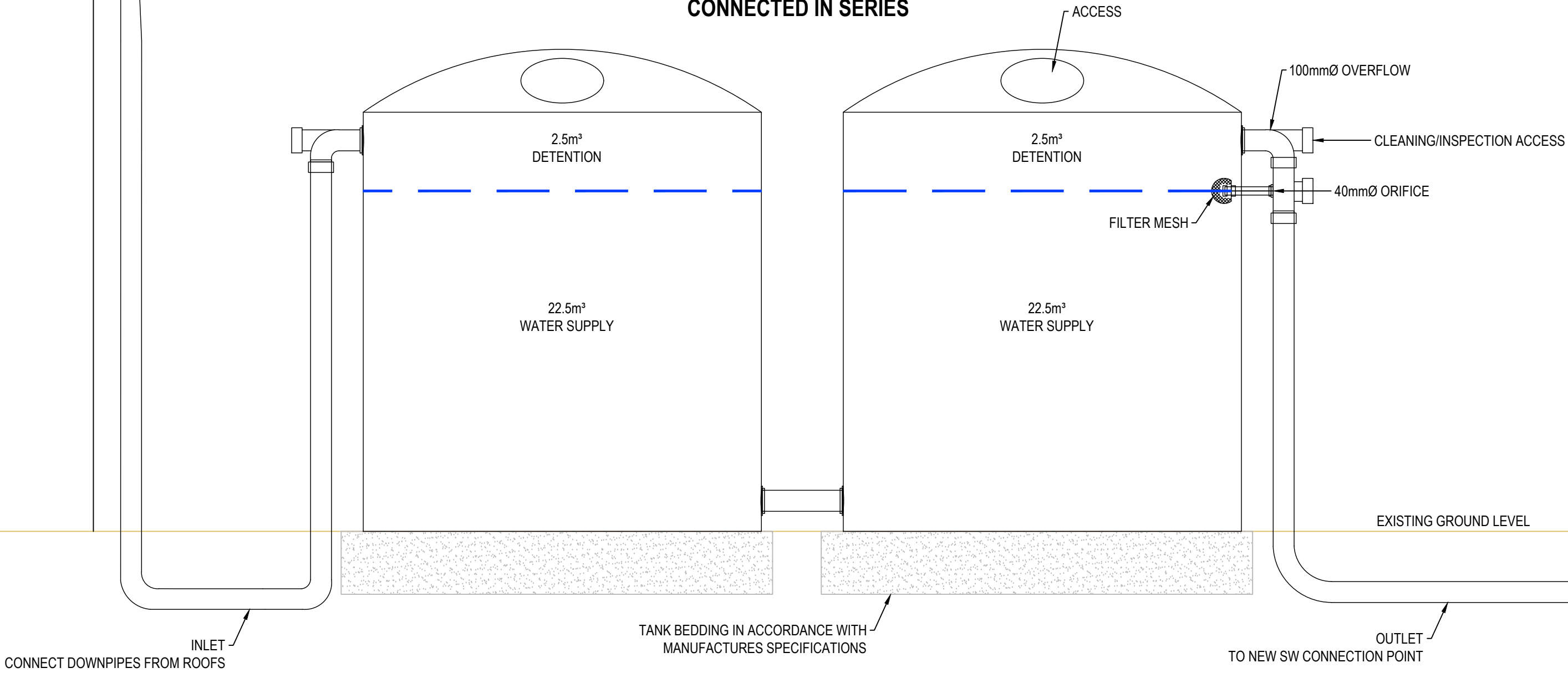
TELEPHONE: (09) 869 5014

WEB: www.tssconsultantsltd.com


Designed	Approved	Approved Date
SS	S SINGH	10.10.23
Drawn	Scale	
SS	1:750 AT A3	

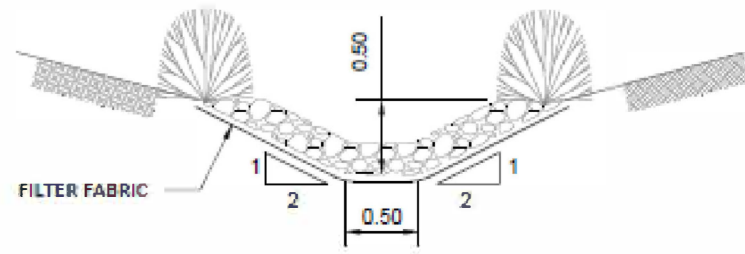
Project Details			
6A WAIMANONI ROAD WAIMANONI H5 WHANAU TRUST			
Project Title			
ONSITE SW LAYOUT PLAN			
Project Number			
J1171			
Sheet No.	Revision		
100	0		

**2 x 25,000L TANKS
CONNECTED IN SERIES**

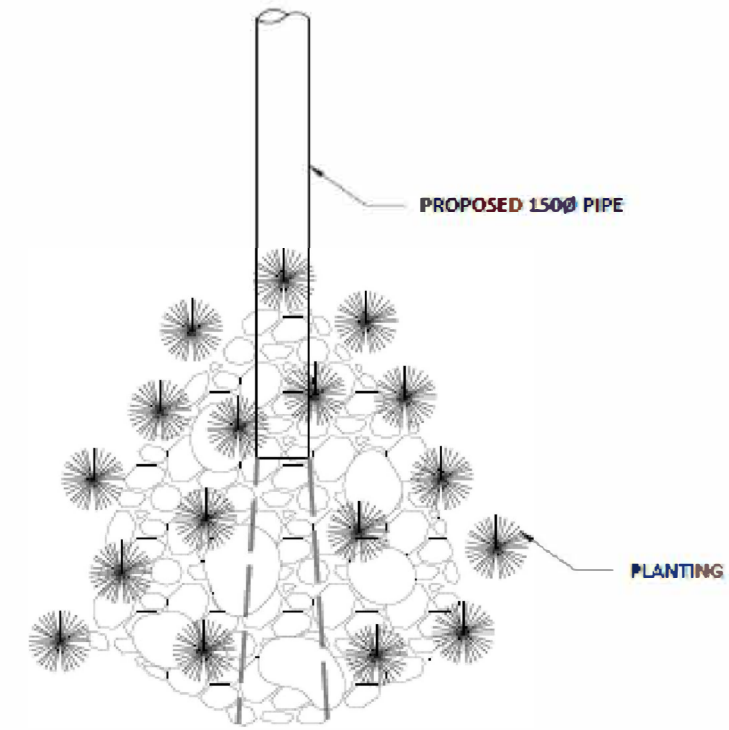


Revision	Amendments	Approved	Date

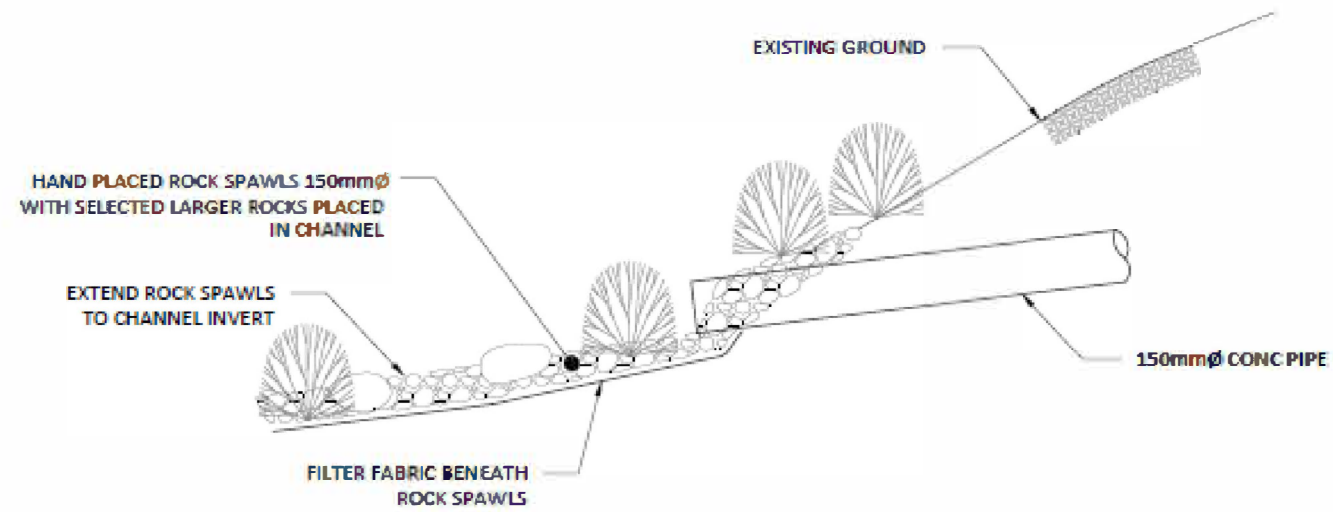
			Project Details	
			6A WAIMANONI ROAD	
Designed			Project Title	
AJ			TYPICAL TANK DETAIL - BC	
Approved			ABOVEGROUND TANK IN SERIES	
S SINGH			16/10/23	
Drawn			Project Number	
AJ			1171	
Scale			Sheet No.	
NTS			101	
			Revision	
			0	



SECTION A-A



PLAN



ELEVATION

STORMWATER OUTLET TYPICAL DETAIL - NTS -

Revision	Amendments	Approved	Date

TSS CONSULTANTS LTD
 CIVIL & ENVIRONMENTAL
 ADDRESS: UNIT 9, 42 ORMISTON ROAD
 EAST TAMAKI, AUCKLAND
 EMAIL: info@tssconsultantsltd.com
 TELEPHONE: (09) 869 5014
 WEB: www.tssconsultantsltd.com



Designed	Approved	Approved Date
SS	S SINGH	10.10.23
Drawn	Scale	
SS	NTS	

Project Details			
6A WAIMANONI RD ADVANCE Built			
Project Title			
CIVIL DESIGN SW OUTLET - TYPICAL DETAIL			
Project Number	Sheet No.	Revision	
1171	102	0	

Address 6A Waimanoni Road, Waimanoni
 Advance Build
 Date 25.09.23



DETENTION TANK DESIGN - Roof

Undeveloped Grass Area	1243.53	m ²
Modified (C=0.3)	373.06	m ²

Developed Roof Area	1243.53	m ²
Modified (C=0.95)	1119.18	m ²

Design Storm

1 in 10 year (2% AEP), 10min storm

cc. Adjusted for climate change	187.0 mm/hr
---------------------------------	-------------

Flow (Q) - Undeveloped

Undeveloped Grass Area	19.38 L/s
------------------------	-----------

Flow (Q) - Developed

Developed Roof Area	58.14 L/s
---------------------	-----------

Minimum Storage Volume Required

(developed- undeveloped) flow	23,254 L
	23.25 m ³

Split catchment area into 5 dwellings	4.65 m³
--	---------------------------

Tank height	2.36 m
Tank Base Dia	3.66 m
Storage depth = $2 / ((\text{Pi} \cdot 3.5 \cdot 3.5) / 4)$	0.44 m

Orifice Size

Q = VA	
Qmax	3.88 l/sec
V = sqrt(2gh)	2.95 m/s
Area = Q/V	0.00131601 m ²
Area = PI()/4*d*d	0.04 m
min Diameter	41 mm

Address 6A Waimanoni Road, Waimanoni
Advance Build
Date 25.09.23



SWALE DESIGN FOR ACCESSWAY & PARKING

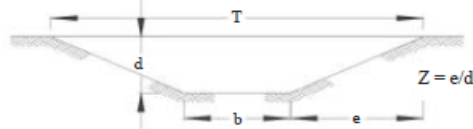
2.4.1 Pre-treatment of impervious areas other than the roof via Grass swale

Catchment Area = Driveway	0.26 ha
Percentage impervious	95 %
percentage pervious	5 %
P24 rainfall - 2 Yr, RCP 6.0 for the period 2081-2100	120 mm
Water quality - 1/3 2 year storm	40.0 mm
Peak rainfall rate = 16.2 x P24	648.0 mm/hr
Peak runoff rate from TP108 (10min)	81.0 mm/hr

Impervious Area

Ia	0
CN	98 mm
S = 25.4(1000/CN-10)mm	5.18
Runoff/Rainfall @ peak of rainfall	0.99
Runoff rate	55.4 l/s
Lag	49.3 l/s
	0.049 m3/s

Figure 9-3
Channel geometry



Cross sectional area (A) = $bd + Zd^2$
 Top width (W) = $b + 2dZ$
 Hydraulic radius (R) = $\frac{bd + Zd^2}{b + 2d(Z + 1)^{1/2}}$



Cross sectional area (A) = $\frac{2}{3}Td$
 Top width (W) = $1.5A/d$
 Hydraulic radius (R) = $\frac{Td}{1.5T^2 + 4d^2}$

TYPICAL SWALE GEOMETRY

Address

6A Waimanoni Road, Waimanoni
Advance Build

Date

25.09.23



SWALE DESIGN FOR ACCESSWAY

Swale with trapezoidal cross-section Grass length 50mm	Water Quality Flow
Flow rate Q m³/s	0.049
Channel slope S	1.0%
Depth d m	0.1
Z=1/sideslope	3
Manning's n for 50mm grass (eq. 5)	0.143
Hydraulic radius R m	0.077
Base width $b=Qn/d.R^{0.67}.S^{0.5}-Zd$ m	0.803
Is b < 2m ? (required for grassed swales)	OK
Width at water level $T=b+2dZ$ m	1.403
Cross-sectional area $A=bd+Zd^2$ m²	0.110
Velocity $V=Q/A$ m/s	0.127
Hydraulic radius $R=A/(b+2*d*\sqrt{Z^2+1})$ m	0.077
Is velocity V < 0.8m/s ?	OK
To meet TP10 stormwater treatment specification:	
Minimum allowable travel time t s	540
Minimum swale length L m	68.4

MINIMUM SWALE REQUIREMENTS AS PER TP10

LENGTH	68.4 m	DEPTH	0.1 m
BASE WIDTH	0.80 m	TOP WIDTH	1.40 m
		VELOCITY	0.13 m/S

ACTUAL SWALE PARAMATER

LENGTH (L)	70 m
DEPTH - V SHAPED SW SWALE	0.5 m
TOP WIDTH	2 m
SWALE SLOPE	0.5-1.0 %
WATER DEPTH	0.1 m

Address 6A Waimanoni Road, Waimanoni
Advance Build
Date 25.09.23



2.4.2 Attenuation of impervious area via swale underdrain (soakhole)

impervious area

Total	2610 m ²
grass (C=0.3)	783 m ²

Developed Area

Metal(C=0.6)	2610 m ²
	1566 m ²

Design Storm

1 in 10 year (1% AEP), 10min storm Adjusted for climate change - RCP6.0 2081-2100	187.0 mm
---	----------

Quantity of Flow - Undeveloped

Undeveloped Grass Area	40.67 l/sec
------------------------	-------------

Quantity of Flow - Developed

Developed impervious Area	81 l/sec
---------------------------	----------

Storage Volume Required

(min-max)flow*10*60	24,404 Litres
Surface area to soak away in 24 hours	24.4 m ³

Percolation rate - assume minimum as per NZ building code	0.25 l/m ² /min
--	----------------------------

Surface Area Required

SA = Volume/percolation/24*60	67.8 m ²
-------------------------------	----------------------------

Choose dimensions of soakage system	width	0.5 m
	length	70.0 m
	depth	0.5 m

Calculate surface area for soakage	70 m ²
------------------------------------	--------------------------

Recommendation

Impervious areas other than roof

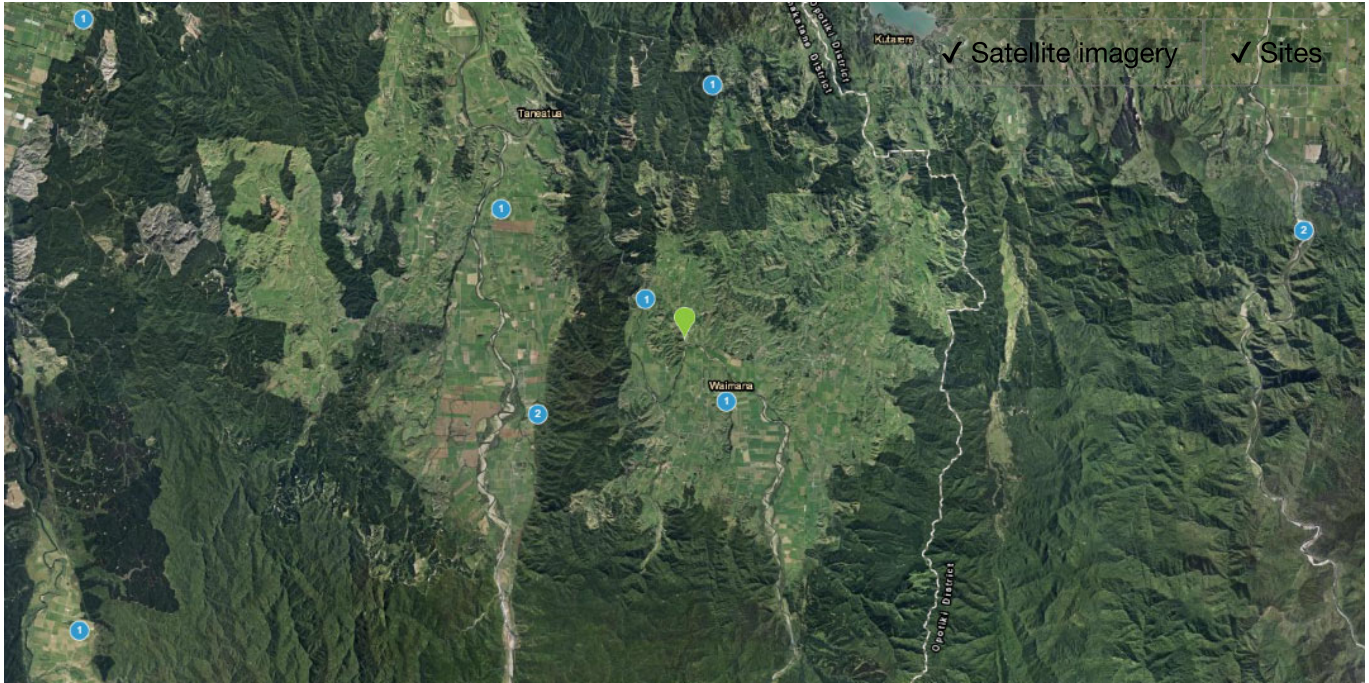
Pretreatment to be via swale

SW mitigation/Attenuation to be via scoria trench under swale.

High Intensity Rainfall Design System V4 (/)

Location

Address search	6A Waimanoni Road, Waimanoni
----------------	------------------------------



Site Information

To generate a set of results, either click on an existing data point, or a new location and enter a site name, then press the Generate Report button.

Latitude	-38.1291349
----------	-------------

Longitude	177.0640714
-----------	-------------

Site Name	6A Waimanoni Road, Waimanoni
-----------	------------------------------

Site Id	
---------	--

Output Table Format

- Depth - Duration - Frequency

Intensity - Duration - Frequency

Generate Report

Results

Spreadsheet Download 

Site Details	Historical Data	RCP2.6 Scenario	RCP4.5 Scenario	RCP6.0 Scenario
RCP8.5 Scenario				

Rainfall depths (mm) :: RCP6.0 for the period 2031-2050

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	9.63	14.5	18.2	26.5	37.6	61.5	80.6	102	124	137	145	152
2	0.500	10.6	16.0	20.1	29.2	41.5	67.8	88.8	112	137	151	160	166
5	0.200	14.2	21.2	26.7	38.8	54.9	89.5	117	147	179	197	209	218
10	0.100	16.9	25.2	31.7	46.0	65.1	106	138	174	211	232	246	256
20	0.050	19.7	29.5	37.0	53.6	75.7	123	160	202	245	269	285	296
30	0.033	21.5	32.1	40.2	58.3	82.2	134	174	218	265	291	308	320
40	0.025	22.7	33.9	42.5	61.6	86.9	141	184	231	279	307	325	338
50	0.020	23.8	35.4	44.4	64.3	90.7	147	191	240	291	319	338	351
60	0.017	24.6	36.7	45.9	66.5	93.7	152	198	248	300	330	349	362
80	0.013	25.9	38.6	48.4	70.0	98.7	160	208	261	315	346	366	380
100	0.010	27.0	40.2	50.3	72.8	103	166	216	270	327	359	380	394
250	0.004	31.4	46.7	58.4	84.3	119	192	249	311	376	412	435	452

Rainfall depths (mm) :: RCP6.0 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	10.6	16.0	20.1	29.3	41.3	66.7	86.4	109	131	143	152	158
2	0.500	11.8	17.7	22.2	32.4	45.8	73.7	95.6	120	144	158	167	174
5	0.200	15.8	23.6	29.6	43.1	60.8	97.9	127	158	190	209	220	229
10	0.100	18.8	28.1	35.3	51.3	72.2	116	150	187	225	246	260	270

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
20	0.050	22.0	32.9	41.3	59.8	84.2	135	174	216	261	285	301	312
30	0.033	24.0	35.8	44.9	65.0	91.5	147	189	235	282	308	326	337
40	0.025	25.4	37.9	47.5	68.8	96.7	155	200	248	298	326	343	356
50	0.020	26.6	39.6	49.6	71.8	101	162	208	258	310	339	358	370
60	0.017	27.5	41.0	51.3	74.3	104	167	215	267	320	350	369	382
80	0.013	29.0	43.2	54.1	78.3	110	176	226	280	337	368	387	402
100	0.010	30.2	44.9	56.3	81.4	114	183	235	291	349	381	402	416
250	0.004	35.1	52.2	65.3	94.3	132	211	271	335	401	437	461	477

2.2.3 ©2017 NIWA and New Zealand Regional Councils
Terms and Conditions (<https://www.niwa.co.nz/privacy-policy>)

Creative Commons (CC-BY-NC) 4.0 License (<http://creativecommons.org/licenses/by-nc/4.0/legalcode>)



SWALES & FILTER STRIPS

Construction Guide

STORMWATER DEVICE INFORMATION SERIES

What are swales and filter strips?

Swales, also known as bioretention, filter or infiltration strips, are broad, grass channels used to treat stormwater runoff. They direct and slow stormwater across grass or similar ground cover and through the soil. Swales also help filter sediments, nutrients and contaminants from incoming stormwater before discharging to downstream stormwater system or waterways. Some swales have liners to direct filtered runoff, or rocky linings to slow fast flows. Swales are simple to maintain and can fit well in urban design.

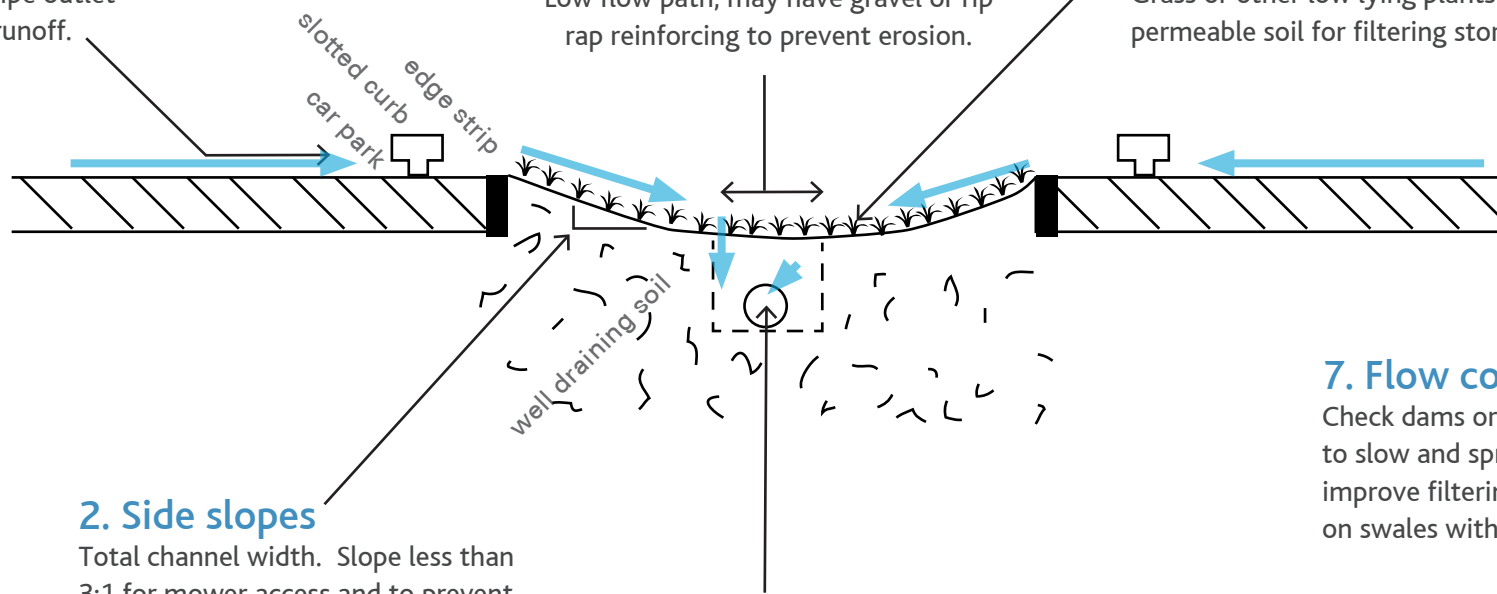


Fig.1 Swale in Waitakere City

Seven key components of swales and filter strips

1. Inflow points

Stormwater flow entry, via pipe outlet or surface runoff.



2. Side slopes

Total channel width. Slope less than 3:1 for mower access and to prevent scour.

3. Channel base

Low flow path, may have gravel or rip rap reinforcing to prevent erosion.

5. Plants and soil

Grass or other low lying plants in permeable soil for filtering stormwater.

7. Flow controls

Check dams or spreaders, used to slow and spread flows to improve filtering. Often used on swales with slopes over 5%.

4. Underdrain (if present)

Usually perforated pipe, buried under channel to capture filtered flow and connected to stormwater system.

6. Outlet

Discharge point for filtered stormwater.



Fig.2 Waitakere City Hospital car park swale

- Slotted kerbs not too close to edge of swale.
- Sign post in centre of swale are compromising underdrain.



Fig.3 Henderson Valley Road – newly constructed road side swales

- Geotextile used to protect catchpit (swale outlet) during construction.
- Dish channels for each driveway controls flows and allow high flows to pass above.



Fig.4 Manawa Wetland vegetated swale

- Native vegetated swale following contours and overland flow paths.
- Check dams used to slow flow and allow for filtration.

Construction Sequence

Swale design will usually be specifically detailed in construction plans. The following outlines the general swales construction sequence.

1. Excavate

- Remove material to form channel.
- Form to levels on construction plans with excavator and blade. Side slopes not to exceed 3:1 horizontal to vertical slope. Base of channel usually minimum 600mm to allow mower access, or maximum 2m wide.
- Do not compact ground at base of channel, as it acts as filter for flows.



Fig.5 Excavation, preparation of side slopes to form channel



Fig.6 Construction of inlets with erosion protection

2. Check fall

Use laser, survey or spirit level to check slope of swale length is not greater than 3:1, or as detailed in construction plans.

3. Connect

- Construct flow collection inlets (may be catchpits, manholes) and connect to stormwater system.
- Construct outlets (may be concrete or rock sill, catchpit or vertical riser pipe with grate or scruffy dome) and connect to specified stormwater system. (see Figure 6)
- Set sills at elevation specified on plans to prevent flooding.
- Cover all collection points until swale construction is complete.

4. Install underdrain (if present)

- Excavate trench for underdrain in base of channel.
- If specified, lay liner or geotextile around trench and pin in place.
- Lay gravel bed (minimum 50mm).
- Lay underdrain pipe, (usually perforated such as Novaflow) covered with geotextile barrier or filter sock.
- Connect underdrain to outlets as detailed on construction plans, making a water tight seal.
- Fill underdrain trench with gravel bedding to bottom of channel, place geotextile overtop of metal and then cover with topsoil.

OPERATION AND MAINTENANCE GUIDES

O&M For:	EN1025000
Date:	July 2022
Code:	EN1025000
Description:	ENDURO Water Tank 25,000 Ltr
Product Warranty:	20 years

SPECIFICATIONS

	Capacity (L)	Diameter (mm)	Height (mm)	Weight (kg)	Manhole Dia (mm)
	25,000	3660	2731	380	600
Standard	Includes 2x 50mm Outlets. Complies with: <ul style="list-style-type: none">• AS/NZS 4020: Products in contact with drinking water• AS/NZS 2070 (INT): Plastics material for food contact use• Certified to AS/NZS 4766:2006 Water & Chemical Tank Standard				
Uses	<ul style="list-style-type: none">• Potable Water Storage• Retention/Detention Stormwater Management				
Statement	In line with today's focus on Ecologically Sustained Development, Green Building Initiatives and 5 Star Ratings, Promax is committed to supplying quality Liquid Storage and Handling Solutions. Promax Plastics confirms that if these tanks are installed according to Good Management practices set out in the Promax Installation Guides, they will perform as stated throughout their intended life.				

MAINTENANCE

Description	Action	Frequency
Tank Stability	Tank must remain level, foundation must not become eroded	Monthly
Tank Lid	Remains securely fitted	Bi-Monthly
Inlet/Outlet Fitting	Remains securely fitted with no leakage	Bi-Monthly
Pump	Check Pump, if fitted, for inlet screen blockages	Bi-Monthly
Sediment Build Up	Remains lower than base outlet - if outlet flow becomes restricted remove sediment with vacuum truck. Re-attach tank lid securely.	Half yearly or as necessary

Please note: Entry into this tank is at owners risk.

OPERATION AND MAINTENANCE GUIDES



Responsibility: The owner/s are responsible for maintenance of the tank.

Post Storm Inspection: Following a storm event it is recommended that a full tank inspection is carried out, please refer the maintenance section for guidelines on this.

Debris removal programme: If debris is identified in either a regular maintenance check or post storm inspection it is recommended that this is removed by a professional stormwater maintenance provider.

MAINTENANCE RECORDS

Date	Comments	Completed

Authorised By:
Promax Engineered Plastics Limited
PO Box 749, Kerikeri 0245, New Zealand
T: 0800 77 66 29
E: sales@promaxplastics.co.nz



MANAGEMENT PLAN

H5 WHANAU TRUST
6A WAIMANONI ROAD, WAIMANONI

CPPC PLANNING
PLANNING DEVELOPMENT CONSULTANT

EXECUTIVE BRIEF

This Management Plan is prepared on behalf of H5 Whanau Trust for the relocation of for the relocation four new prebuilt papakainga dwellings and servicing.

The objective of the proposal is to provide for Papakainga Housing on Maori Land on a 2.2256 hectares property in the way of a low-impact and appropriate development on the subject property at 6A Waimanoni Road, Waimanoni, adjacent to the Waimanoni Marae.

The Management Plan describes the sites of cultural and historical significance on the property and provides protocols for ensuring these are respected and protected.

The Management Plan facilitates the sustainable management of natural and physical resources in an integrated way.

The responsibility for the implementation of the Management Plan shall fall on the current and the future owners of the property.

The Management Plan should be read in conjunction with the Assessment of Environmental Effects (AEE) dated 10-11-23 prepared by CPPC Planning.

CONTEXT

H5 Whanau Trust property is a 2.2256 hectare site located at 6A Waimanoni Road, Waimanoni adjacent to the Waimanoni Marae.

The property contains an existing dwelling with two existing water tanks, small out buildings and a bach that is to be removed. Further there are a number of container which are also to be removed. There is an existing on-site wastewater disposal system, which is to be decommissioned.

The property is accessed over an existing driveway from Waimanoni Road, which is formed to a metaled standard.

A tributary of Waimanoni Creek originates from the southern boundary and runs north bisecting the property. The property is relatively flat.

To the west of the application site is the location of the Waimanoni Marae and associated activities. The property is located within the rural environment, with dotted rural and rural residential buildings with accessory buildings, pasture grass, ti tree and rural activities.

The Management Plan enables the land to be developed in a holistic manner, encompassing all natural and physical features.

The Management Plan outlines the use of the land within the H5 Whanau Trust property.

The effective implementation of the management plan will ensure that the rural character of the site will be preserved for current and future generations.

The Management Plan provisions are an ideal way to manage the resources on the site in a holistic manner and with significant landscape planting, recessive colours and materials and earthworks to ensure the development is integrated into this landscape.

The architectural plans are included with this Management Plan.

1.0 PURPOSES OF THE MANAGEMENT PLAN

The purposes of this Management Plan are as follows:

- To allow Māori to return to their ancestral home as a communal group and provide for their customary connection, power and authority from the land.
- To effectively manage the site to ensure that the rural character of the site will be preserved for current and future generations.
- To manage the resources on the site in a holistic manner and with significant landscape planting, recessive colours and materials and earthworks to ensure the development is integrated into this landscape.
- To ensure that the site and associated development does not result in instability.
- That the site can be suitably services with on-site wastewater, stormwater, access and maneuvering.

1.1 General Objective

The overall objective of the Management Plan is to provide a mechanism to control, manage and maintain the subject property. The property is to be viewed as a whole and in a holistic manner. This includes the utilization of the existing natural features and the preservation of these features for the use of current and future generations, the design and location of buildings on the property and on-going maintenance.

2.0 SITE DESIGN

2.1 Objective

Indigenous Māori have an intricate, holistic and interconnected relationship with the natural world and its resources, with a rich knowledge base – Mātauranga Māori. The body of knowledge

originating from Māori ancestors, including the Māori world view and perspectives, Māori creativity and cultural practices. It is critical to ensure that the values that are and were placed do not devalue with any development that may occur. What is taken from the environment must be put back.

Papakainga Housing to allow whanau to utilize the land in a manner that is customary, whilst taking into consideration the character and amenity values of the site. The design controls seek to ensure that the development of the site is undertaken in such a manner that the integrity of the landscape is enhanced and that buildings, and structures are sympathetic to the landscape and character of the property as a whole. The weed and pest control plans and monitoring programs seek to ensure that the proposed landscape planting is established satisfactorily and can be maintained in a healthy state.

2.2 Design Controls

The Papakainga houses have been designed to be integrated into the site and will be:

- Constructed and finished with appropriate rural colours and materials.



2.3 Landscape Planting

The proposal involves extensive landscape mitigation planting to help screen the Papakainga houses and integrate them and complement the existing vegetation within the site.

2.4 Weed Control

The owners of the site agree to undertake weed and pest control of the areas to be planted within the site.

2.5 Implementation

Implementation of the weed control plan will be the responsibility of the owners.

3.0 LANDSCAPE MITIGATION

3.1 Objectives

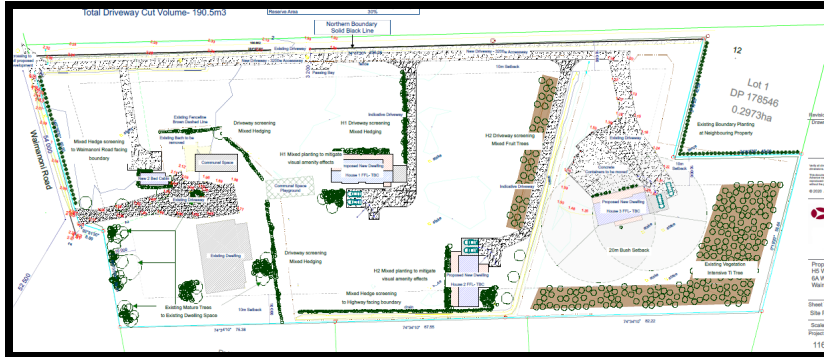
To mitigate the Papakainga housing by ensuring the development is well screened from public vantage points and integrated into the site by utilizing the indigenous values and features within the site.

To ensure that the natural and landscape character of the site and surrounding area is maintained.

3.2 Mitigation Plan

The mitigation plan for landscape planting is to assist with the visual and landscape integration of the proposed Papakainga Housing project.

The mitigation planting plan utilizes a mixture of exotic and indigenous species.



4.0 MAORI CULTURE AND HERITAGE

5.1 Objective

To protect, preserve and maintain areas of cultural or archaeological value.

5.2 Introduction and Overview

The Far North and west coast have a rich historical legacy. Evidence exists of European occupation as well as Maori occupation on the subject site. There are no known/identified items/features of cultural heritage within the site or adjacent.

This section of the Management Plan sets out the procedures and protocols for ensuring that these areas are properly protected and respected.

Because the area has a rich historic legacy archaeological features may be discovered either during earthworks for the establishment or simply be uncovered over time naturally. This section of the management plan includes protocols and procedures to ensure minimal disturbance of any sites and ensure that proper processes are followed, including the legal requirements of the Heritage New Zealand (HNZ).

5.3 Maori Principles and Key Values

Fundamental principles for protecting and preserving cultural values as follows.

5.3.1 Principles

- Avoid Contact and Impacts. - Ultimately, best practice planning is required to avoid contact or intrusion in areas significant to Maori that may threaten or impact upon heritage and cultural values. Maori input into this plan provided appropriate information to assist the owners with the future management and development of their property.
- Remedy Proposals - In the event that a proposed activity or development suggests impact on heritage and cultural values, revision of the proposal to avoid such contact or impact must then be attempted. The owners of the lots are encouraged to discuss their proposal with local Maori prior to initiating any developments.
- Mitigate Negative Effects - In the event that principles 1 & 2 above cannot be achieved, negative impact to heritage and cultural value is most certain. This is the least desired outcome as it contradicts the objectives of this management plan. In most cases, mitigating negative effects results in loss of values. It must be clearly understood that Maori do not favorably support mitigating negative effects therefore extensive discussions with Maori must be engaged for all proposals.

5.3.2 Koiwi (Human Remains)

Koiwi were often buried in areas through out the Far North and west coast that have no identification as to their whereabouts. However, they are largely discovered along beach-front areas, at times in great numbers. It is however unlikely that koiwi are buried on the property, as it does not contain a pa in the location of the building areas. It is however noted that precautions must be taken on the property.

5.4 Maori Taonga and Wahi Tapu

5.4.1 Archaeology

The ongoing protection, maintenance and integrity of heritage sites and matters of cultural importance are the responsibility of owners of the site in the development and maintenance of their properties. No known archaeological sites are within the application site.

5.4.2 Implementation

The implementation section is broken down into protocols and controls for the following:

- Identification of archaeological sites;
- Discovery of potential sites of archaeological or cultural value.

The section concludes with the protocols for consultation with iwi representatives if changes are proposed to the Management Plan, and the contact details of relevant parties in relation to this section.

5.4.3 Discovery of potential sites of archaeological or cultural value

In some instances, such as natural erosion, archaeological material or koiwi may become unearthed. If subsurface evidence (e.g. pipi shell or other shellfish material, signs of charred wood or rock and any other material which may indicate possible historic activities or bones of any kind) should be unearthed during earthworks or construction, earthworks, other activities or natural events the following protocol shall be followed:

- 1) Work shall cease in the vicinity of the remains immediately. Maori remains shall not be removed from their resting place and no other archaeological items shall be removed.
- 2) The person undertaking or monitoring the works shall contact the Heritage New Zealand. If the archaeological remains relate to Maori occupation of the land, then the iwi contacts shall be advised. If the remains are koiwi then the

New Zealand Police, Heritage New Zealand and local iwi shall be advised; in that order.

- 3) No work shall resume around the area of the remains until the following procedure has been undertaken and the approval of the New Zealand Police, Heritage New Zealand and iwi has been obtained as required.

Local iwi have identified sites on the property for the placement of archaeological remains and re-interment of koiwi (urupa). Any koiwi uncovered on the property shall be interred in these locations by iwi and in accordance with their cultural requirements. Property owners shall allow access to the urupa for the re-interment of koiwi and shall respect and not disturb these places.

- 4) Unless otherwise approved by local iwi, archaeological remains shall stay on the property in depositories approved by local iwi. Property owners shall allow access to these for placement of archaeological remains and shall respect and not disturb these places.
- 5) Individual allotment owners, in conjunction with local iwi, shall keep a record of koiwi and archaeological remains interred on the property, including their location.

Individual allotment owners shall advise all visitors to their property of areas that should not be disturbed.

5.5 Contacts

This section of the Management Plan details procedures and protocols which involve local Maori and the New Zealand Historic Places Trust. At present the key contact people in this regard are as follows:

Heritage New Zealand
Regional Archaeologist Northland
PO Box 836, Kerikeri
Telephone: (09) 401-7947
Facsimile: (09) 407-3454
Mobile: (027) 249 0864

The applicants are part of the local marae located across the road at Waimanoni.

5.0 EARTHWORKS

5.1 Objective

To control and manage earthworks during the installation of the access way and driveways.

5.2 Implementation

5.2.1 Surface materials

All surface soil material along the access way and driveway alignment is to be removed and stockpiled on the site for reuse on battered slopes.

The finished slope on any batter shall be no less than 1: 3 horizontal or greater as per the design guidelines.

The extent of the finished slope shall be such that it shall be able to be married into the existing slope.

5.2.2 Subgrade

The subgrade surface of any batters shall be prepared to level and shape to produce a smooth hard tightly bound surface, free from depressions capable of holding water. It shall then be lightly scarified.

5.2.3 Topsoiling

A minimum of 100mm of topsoil shall be placed over the subgrade-sloping up to a depth of 50mm within 100mm of the access way surface. It shall be leveled but not compacted, except for the verge areas, which shall be compacted. Topsoil on batters shall be placed so as to avoid filling.

5.2.4 Surface treatment

Planting shall be undertaken in the next planting season following construction.

Excavation undertaken outside this period shall be grassed within 1 week of final gradients being established provided the establishment period is between 1st April and the 31st November.

If surfaces are completed between the 1st December and the 31st March, they shall be mulched with hay or straw, or bark, wood residue/wood pulp spread over the surface of the disturbed ground in an even layer a minimum of 25mm thick within one week of final gradients being established. Grass seed shall be installed later as above.

6.0 EROSION AND SILT CONTROL

6.1 Objective

To control and manage erosion and silt run off.

6.2 Implementation

Silt control measures such as the provision of silt fences and regrassing, or other appropriate devices shall be installed down hill of any works to control any silt runoff and erosion from the site during the construction process.

7.0 STORMWATER AND EFFLUENT DISPOSAL

7.1 Objective

To control and maintain storm water produced as a result of the proposal and on-site effluent disposal.

7.2 Implementation

The following methods are to be implemented to control storm water.

The proposal involves impervious surfaces of 3871.53m², which includes the existing dwelling, proposed dwellings and driveways.

All stormwater/water from the roof is to be collected for portable water supply with an on-site detention tank to mitigate post development flows. The proposed driveway and access are to be shaped and directed towards grass lined swale for stormwater run off.

For the collection and distribution of effluent each new household unit is shown on the development plan and shall utilize two secondary treatment systems with discharge to be via PCDI at a recommended loading rate of 3L/m²/day for silty clay soils. The on-site effluent is addressed in the report prepared by Water Flow Nz Ltd.

8.0 WATER SUPPLY

8.1 Objective

To provide sufficient water supply to meet the residential needs of the occupants of the property.

8.2 Implementation

Houses 1 to 3 will each have two 25,000 litre water tanks for water supply. House 4 will have one 25,000 litre water tank for water supply. Provision within these water tanks will allow for firefighting supply

9.0 GEOTEHCINAL CONSIDERATIONS

9.1 Objective

To ensure that the land is geotechnically stable for the Papakainga housing development.

9.2 Implementation

T & A Structures Ltd have prepared site suitability reports for each Papakainga houses and confirm that the land is stable for development.

NTA Comment on Awanui Project

Elizabeth Stacey | NTA <Elizabeth.Stacey@nta.govt.nz>
 To: Angela Vujcich <angela@advancebuild.co.nz>
 Cc: Murtaza Ahmadi | NTA <Murtaza.Ahmadi@nta.govt.nz>

Thu, Oct 13, 2022 at 1:11 PM

Angela;

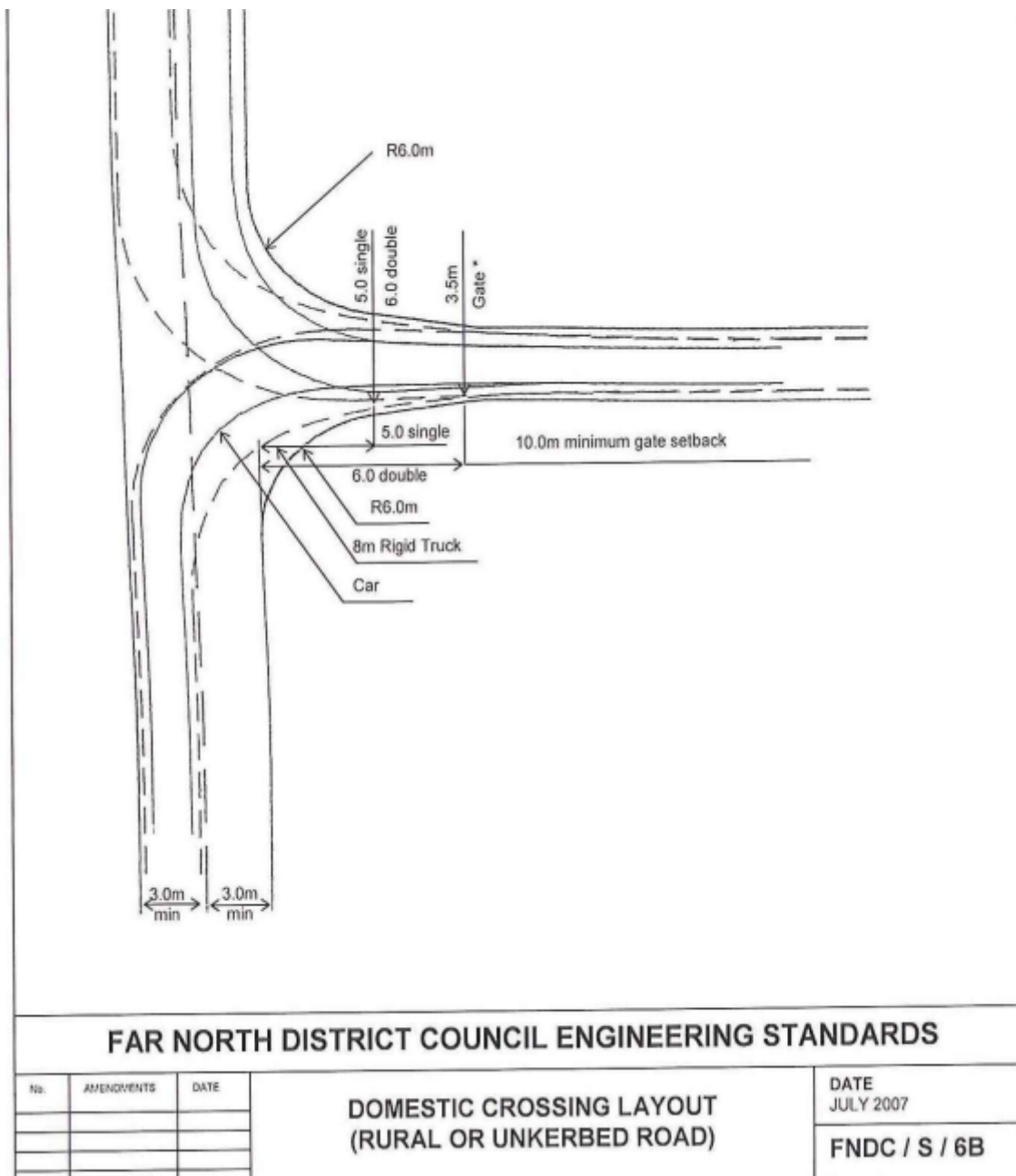
Just a quick look indicates you are proposing five new dwellings off an existing private access road correct? From the drawing it looks like that access currently serves two houses so would need to upgrade to the 5-8 HE access up to your entrance. Ensure existing access has a double width crossing off of Waimanoni Road and will require a double width for your VC as well. I wouldn't anticipate any other consent conditions but will need to review your full application to determine. I made some notes on the drawing.

APPENDIX 3B-1: STANDARDS FOR PRIVATE ACCESS

(Reference: *Part 3 District Wide Provisions, Section 15.1 Traffic, Parking and Access and Zone Maps*)

Zone	No. of H.E.s	Legal Width	Carriageway Width	Maximum Gradient		Kerb	Foot-path	Storm-water Drain ¹
				Unsealed	Sealed			
Residential	1	-	3.0	1:6	1:4	-	-	Yes
Coastal Residential	2	5.0	3.0	-	1:4	-	-	Yes
Russell Township	3 - 4	7.5	3.0 with passing bays	-	1:4	-	-	Yes
Point Veronica	5 - 8	7.5	5.0	-	1:4	Yes	-	Yes
Commercial	1	-	3.0	1:8	1:5	-	-	Yes
Industrial	2 - 4	8.0	6.0	-	1:5	-	-	Yes
Orongo Bay Special Purpose	>5	8.0	6.0	-	1:5	-	-	Yes
Rural Production	1	-	3.0	1:5	1:4	-	-	Yes
Rural Living								
Waimate North Horticultural Processing	2	5	3.0	1:5	1:4	-	-	Yes
Carrington Estate								
General Coastal Coastal Living	3 - 4	7.5	3.0 with passing bays	1:5	1:4	-	-	Yes
South Kerikeri Inlet								
Recreational Activities	5 - 8	7.5	5.0	1:5	1:4	-	-	Yes

¹ All private access must have stormwater drainage measures such that adverse effects are not created on



Elizabeth Stacey

Road Safety & Traffic Engineer | Northland Transportation Alliance

From: Angela Vujcich <angela@advancebuild.co.nz>
Sent: Thursday, 13 October 2022 12:07 pm
To: Elizabeth Stacey | NTA <Elizabeth.Stacey@nta.govt.nz>
Subject: Re: NTA Comment on Awanui Project

Hi Elizabeth

Basically we do need to get the consent underway but at this point I just want to know from an NTA perspective is there anything we need to consider in our design or costings that we can pre-empt before we submit the RC and also to try and get the bigger picture for the costings to our clients for funding

Thanks

Ange

On Thu, Oct 13, 2022 at 11:33 AM Elizabeth Stacey | NTA <Elizabeth.Stacey@nta.govt.nz> wrote:

Angela;

I received your email from our CAR team. Do you have a pending consent application that you are waiting NTA approval for? If so can you give me the consent number? I found your drawings attached from Erin Eldhose but unsure what information you are needing. Thank you.

Kind Regards,

Elizabeth Stacey

Road Safety & Traffic Engineer | Northland Transportation Alliance

Level 1, Walton Plaza, 4 Albert Street | Private Bag 9023, Whangarei 0148 |

DDI 09 470 3020 | M 021 786 237 | E _elizabeth.stacey@nta.govt.nz



The Northland Transportation Alliance is a partnership between all four councils within Northland and Waka Kotahi (NZTA). The information contained within this email may be confidential. Therefore, if you have received this in error, you should delete it immediately and advise the sender noting that information contained within this communication should not be used or transmitted in any format.

--

Regards,

Angela Vujcich | Project Administration

Mob: 021 351 467 Free-Call 0800 327 828 Web www.advancebuild.co.nz

[Quoted text hidden]

 **H5 Housing House 1 Concepts 2022.10.04 nta comments.pdf**
3743K



Concepts Plan Agreement

Authorisation for Council

As the legal owner of property at: **6A Waimanoni Rd, Awanui**
I give authority and permission for the builder (Advance Manufacturing Ltd) or nominated
designer to apply for a PIM Report, Resource Consent and Building Consents on my
behalf.

Date: 25/8/22

Client/s Name/s: Hilda Halcyard-Harawira and
Hone Harawira Home Consultant: Duncan Murray

Client/s Signature:.....

