

# 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 Schedule 4). 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
- Consent under National Environmental Standard  
(e.g. Assessing and Managing Contaminants in Soil)
- Other (please specify) \_\_\_\_\_
- Discharge
- Change of Consent Notice (s.221(3))
- Extension of time (s.125)

\* *The fast track is for simple land use consents and is restricted to consents with a controlled activity status.*

## 3. Would you like to opt out of the Fast Track Process?

Yes  No

## 4. Consultation

Have you consulted with Iwi/Hapū?  Yes  No

If yes, which groups have you consulted with?

Who else have you consulted with?

For any questions or information regarding iwi/hapū consultation, please contact Te Hono at Far North District Council [tehonosupport@fndc.govt.nz](mailto:tehonosupport@fndc.govt.nz)

## 5. Applicant Details

**Name/s:**

Parihaka Marae Trustees

**Email:**

**Phone number:**

**Postal address:**

(or alternative method of service under section 352 of the act)

## 6. Address for Correspondence

*Name and address for service and correspondence (if using an Agent write their details here)*

**Name/s:**

Bay of Islands Planning

**Email:**

**Phone number:**

**Postal address:**

(or alternative method of service under section 352 of the act)

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

## 7. 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:**

refer Title

**Property Address/  
Location:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
**Postcode** \_\_\_\_\_

## 8. Application Site Details

*Location and/or property street address of the proposed activity:*

**Name/s:**

**Site Address/  
Location:**

**Postcode**

**Legal Description:**

**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.

## 9. Description of the Proposal:

Please enter a brief description of the proposal here. Please refer to Chapter 4 of the District Plan, and Guidance Notes, for further details of information requirements.

If this is an application for a 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), with reasons for requesting them.

## 10. Would you like to request Public Notification?

Yes  No

## 11. Other Consent required/being applied for under different legislation

(more than one circle can be ticked):

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

## 12. 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:

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? Please tick if any of the following apply to your proposal, as the NESCS may apply as a result.  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

## 13. 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.*

Your AEE is attached to this application  Yes

## 13. Draft Conditions:

Do you wish to see the draft conditions prior to the release of the resource consent decision?  Yes  No

If yes, do you agree to extend the processing timeframe pursuant to Section 37 of the Resource Management Act by 5 working days?  Yes  No

## 14. 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 in full)

Rene Rakete

**Email:**

**Phone number:**

**Postal address:**

(or alternative method of service under section 352 of the act)

### 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 write in full)

Rene Rakete

**Signature:**

(signature of bill payer)



**Date** 18/09/2024

**MANDATORY**

## 15. 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](http://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.

## 15. Important information continued...

### Declaration

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

**Name:** (please write in full)

Steven Sanson

**Signature:**

[Redacted Signature]

**Date** 23-Sep-2024

*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)
- Details of your consultation with Iwi and hapū
- 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.

# Application for a Resource Consent – Resource Management Act 1991

This application form must be provided with applications to the council for new and replacement resource consents, and changes to the conditions on an existing resource consent.

If you would like to talk or meet with a consents officer to discuss your application prior to lodging with the council, please phone **0800 002 004** or email request to [info@nrc.govt.nz](mailto:info@nrc.govt.nz).

## PART 1: Administration Matters

### 1 Full Name of Applicant(s) *(the name(s) that will be on the resource consent document)*

Surname: \_\_\_\_\_

First Names: \_\_\_\_\_

**OR**

If the application is being made on behalf of a trust, the Trustee(s) who has/have signing authority for the trust must be named.

Trust Name: Parihaka Marae Trustees \_\_\_\_\_

Trustee's Name: \_\_\_\_\_

**OR**

Company Name: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Email address: \_\_\_\_\_

**Please Note:** *If an email address is provided, then all correspondence for this application will be via email.*

Postal address: \_\_\_\_\_

Telephone: *(please tick preferred contact number)*

Residential \_\_\_\_\_

Business \_\_\_\_\_

Mobile \_\_\_\_\_

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**2 Details of the Address for Service of documents if different from the Applicant (e.g. Consultant). This address will be used for all documents if completed.**

**Company Name:** Bay of Islands Planning Limited \_\_\_\_\_

**Contact Person:** Andrew McPhee \_\_\_\_\_

**Email address:** a \_\_\_\_\_

*Please Note: If all correspondence for this application will be via email.*

**Postal address:** \_\_\_\_\_

**Telephone:** (please \_\_\_\_\_

Residential \_\_\_\_\_ Business \_\_\_\_\_

Mobile \_\_\_\_\_

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**3 Invoices**

**Charges relating to the processing of this resource consent application should be sent to:**

Applicant

Address for service

**Charges relating to the ongoing monitoring of a resource consent should be sent to:**

Applicant

Address for service

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**4 Name and Address of all Owners/Occupiers of the Site relating to Application if different from the Applicant**

**Owner(s):** Refer to title \_\_\_\_\_

**Postal Address:** \_\_\_\_\_

**Telephone:** (please tick preferred contact number)

Residential \_\_\_\_\_

Business \_\_\_\_\_

Mobile \_\_\_\_\_

**Occupier(s):** \_\_\_\_\_

**Postal Address:** \_\_\_\_\_

**Telephone:** (please tick preferred contact number)

Residential \_\_\_\_\_

Business \_\_\_\_\_

Mobile \_\_\_\_\_

*Please Note: If the applicant is not the owner of the land to which the activity relates, then it is good practice to submit the application with written approval from the landowner.*



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## 5 Extending Timeframes

The Resource Management Act 1991 (RMA) specifies timeframes for processing resource consent applications (e.g. 20 working days for a non-notified application); however, these timeframes can be extended, if necessary, with the Applicant's agreement. If the council does not meet these timeframes, then it is required to refund 1% of the total processing cost of the application for each day it exceeds the timeframe up to a maximum of 50%.

Do you agree to the council extending RMA resource consent processing timeframes?

- Yes**, provided that I can continue to exercise my existing resource consent until processing of this application is completed.  
*(Replacement application only. No refund is required to be paid until after the existing resource consent expires.)*
- Yes**, provided that the extension is for the specific purpose of discussing and trying to agree on resource consent conditions.
- Yes**, provided that the application process is completed before this date (dd/mm/yyyy):
- No**.

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## 6 Deposit Fee

An initial minimum fee is payable with this application. These fees can be found on the council's website [www.nrc.govt.nz](http://www.nrc.govt.nz) – [Schedule of Minimum Estimated Initial Fees](#) information. Please contact council consents staff if you need assistance with determining the correct minimum initial fee.

Unless agreed to prior to lodging your application, the council will not commence processing your resource consent application until payment of the minimum initial fee is received (i.e. the statutory processing time for the application will not start).

This minimum initial fee may be paid online, or by EFTPOS at one of the council's offices.

Instructions for paying online can be found on the council's website at "[Pay online](#)". Please use either the first six numbers of your resource consent (e.g. CONXXXXXX or AUT.XXXXXX), if known, or the Applicant's name as the Reference/Customer number when paying online.

If you do pay online, then please enclose evidence of payment so that the council is aware that the payment has been made.

If the costs of processing the resource consent application are greater than the minimum estimated initial fee, then the applicant will be required to pay the additional actual and reasonable costs of processing the application.

### **Note: Annual User Charges for Resource Consent Holders**

Holders of resource consents will in most cases be required to pay a "Minimum Annual Charge" for administration of the resource consent once issued. There is also likely to be additional annual charges for the monitoring of the resource consent, which will be dependent on the type of activity the resource consent is for. These charges are detailed on the council's website [www.nrc.govt.nz](http://www.nrc.govt.nz) in the Annual Charges section of the council's [Charging Policy](#).

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## 7 Applications for Activities within the Coastal Marine Area (CMA)

Prior to lodging an application with the council to undertake any activity in the coastal marine area (CMA), the applicant is required under the Marine and Coastal Area (Takutai Moana) Act 2011 to notify the application to all groups who have applied for customary marine title in that location, and seek their view on the application. This notification should, as a minimum, include a summary of the application that provides sufficient detail for a group to understand what is being proposed.

The council cannot accept an application to undertake an activity in the CMA unless the applicant for the resource consent provides evidence of this notification occurring. A response from customary marine title groups is not required by the council.

To ensure you meet the above requirement, you are advised to contact council consents staff to obtain a list of all of the current customary marine title applicant groups within the area where you are proposing to apply for a resource consent.

Information on customary marine titles is available on the [Ministry of Justice/Marine and Coastal Area Applications](#) website.

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## 8 Consultation

The RMA does not require any person, including the applicant or council, to consult with anyone. It is, however, best practice to do so and will allow the council to make a more informed decision.

It is important to remember that consultation does not require reaching an agreement – it is to allow you and the council to be informed about a person’s views. If you do consult, and there are concerns raised that cannot be resolved and you still want to go ahead with your application, then you should have made a genuine attempt to consult with that person(s) in an open and honest manner. Their views should be recorded so they can be taken into account by the council when considering your resource consent application.

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# PART 2: Application Details

## 1 Description of Activity

Please describe in detail the activity for which resource consent is being sought.

Discharge consent [wastewater] for the Parihaka Marae

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## 2 Location Description of Activity

**Site Address:** 101 Iringa Road, Kaikohe

**Legal Description:** Punakitere 4K1A1A Block

*(Legal description can be obtained from your Certificate of Title, valuation notice, or rates demand)*

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## 3 Site Plan

On a separate page (*minimum A4 size*), please provide a site plan showing the location of the activity, site layout, and surrounding environment in relation to property boundaries. Please include any buildings or developments on the site.

These plans should be provided electronically and be of good quality, to enable use in resource consent documentation.

If you do not have access to mapping software, we recommend you use the council's "[Property and Boundaries](https://localmaps.nrc.govt.nz/LocalMapsGallery/)" map available on our website <https://localmaps.nrc.govt.nz/LocalMapsGallery/>.

This council map contains aerial photography and shows property boundaries and details. You can carry out a property search and print maps of aerial photography.

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## 4 Resource Consent(s) being Applied for

### Coastal Permit

Mooring

Marine Farm

Structure

Pipeline/Cable

Other (*specify*) \_\_\_\_\_

### Land Use Consent

Quarry

Earthworks

Dam Structure

Vegetation Clearance

Construct/Alter a Bore

Structure in/over Watercourse

Other (*specify*) \_\_\_\_\_

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**Water Permit**

- Stream/Surface Take       Damming       Groundwater Take  
 Diverting Water       Other (specify) \_\_\_\_\_

**Discharge Permit**

- Domestic Effluent to Land       General Discharge to Land       Farm Dairy Effluent to Land/Water  
 Air       Water       Other (specify) \_\_\_\_\_

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**5 Is this application to replace an existing or expired resource consent(s)?**       Yes       No

If Yes:

(a) Please state the resource consent number(s):

\_\_\_\_\_  
\_\_\_\_\_

(b) Do you agree to surrender the existing resource consent once a new one has been issued:

Yes       No

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**6 Is this application to change a condition of an existing resource consent?**       Yes       No

If Yes, please state the resource consent number(s):

\_\_\_\_\_  
\_\_\_\_\_

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**7 Please specify the duration sought for your resource consent(s) –**

*Only for new or replacement applications.*

max years      \_\_\_\_\_ months

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**8 Do you also require consent(s) from a district council?**       Yes       No

If Yes, please complete the following:

Type of consent required land use consent

Has it been applied for?       Yes       No

Has it been granted? (If Yes, please attach)       Yes       No

## PART 3: Assessment of Environmental Effects (AEE)

### 1 An AEE must be provided with your application that has been completed in accordance with the requirements of [Schedule 4 of the RMA](#).

As a minimum, your AEE must include the following:

- Description of the environmental effects of the activity.
- Description of ways in which adverse environmental effects can be avoided, remedied or mitigated.
- Names of people affected by the proposal.
- Record of any consultation you have undertaken, including with affected persons (if any).
- Discussion of any monitoring of environmental effects that might be required.
- An assessment of the activity against any relevant objectives, policies, or rules in the Regional Plans.
- For a coastal permit, an assessment of your activity against any relevant objectives and policies of the New Zealand Coastal Policy Statement.
- An assessment of effects on tangata whenua and their taonga.

This AEE needs to be provided in a separate document attached to this application form.

Any activity needing a resource consent will have some environmental effects. The council will not accept an AEE that says there are no environmental effects from the activity.

You will need to complete the AEE at a level that corresponds with the scale and significance of the effects that the activity may have on the environment. Depending on the scale of the activity, you may need to get help from an expert(s) to prepare your AEE.

The council has a set of standard AEE forms for a selection of common activities. These AEE forms do not cover the relevant objectives, policies, or rules in the Regional Plans nor effects on tangata whenua. If you use one of these forms, then you will need to provide a separate assessment of these matters. These AEE forms can be found on the council's website [www.nrc.govt.nz](http://www.nrc.govt.nz) – “Forms and Fees”.

It is important that you provide the council with a complete and well-prepared AEE, otherwise the council may not accept your application.

If your application is for a change to a condition of resource consent under Section 127 of the RMA, then your AEE only needs to cover the effects of the change being requested.

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### 2 Assessment of Effects on tangata whenua and their taonga

The Regional Plan for Northland requires that an AEE must also include an assessment of the effects on tangata whenua and their taonga if one or more of the following is likely:

- Adverse effects on [mahinga kai](#) or access to [mahinga kai](#); or
- Any damage, destruction or loss of access to [wāhi tapu](#), sites of customary value and other ancestral sites and [taonga](#) with which Māori have a special relationship; or

- Adverse effects on indigenous biodiversity in the beds of waterbodies or the coastal marine area where it impacts on the ability of tangata whenua to carry out cultural and traditional activities; or
- Adverse effects on [taiāpure](#), [mātaītai](#) or Māori non-commercial fisheries; or
- Adverse effects on protected customary rights; or
- Adverse effects on sites and areas of significance to tangata whenua mapped in the Regional Plan for Northland (refer [Maps | Ngā mahere matawhenua](#)).

Your AEE must include an assessment of whether any of the above affects are likely to occur.

If they are likely to occur, then you will need to complete a Cultural Impact Assessment (CIA) and provide this with your resource consent application. The Regional Plan for Northland provides details of what must be included in this CIA, and should be referred to.

The best way to find out what the effects of your proposal may be on tangata whenua is to contact local iwi/hapū groups (who represent tangata whenua) and discuss your proposal with them. Council consents staff can provide a list of contact details for local iwi/hapū groups in the area of your proposal. You can then send a copy of your proposal to these groups and seek feedback from them prior to lodging your application. Some iwi/hapū have also developed iwi/hapū Environmental Management Plans that are useful documents that can assist to identify issues of concern to those iwi/hapū for activities occurring in their rohe. The iwi/hapū Environmental Management Plans can be obtained directly from the iwi/hapū or from the council upon request.

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### 3 Assessment of Affected Persons

If the adverse effects of your activity on a person are likely to be minor, or more than minor, then that person is deemed to be an “affected person” for your resource consent application.

An affected person may include neighbouring landowners and occupiers, and/or organisations such as the Department of Conservation, Land Information New Zealand (LINZ), Fish and Game Council, Iwi and Hapū, and community groups.

If you do not think there will be any affected persons for your resource consent application, then you do not need to provide any details on this matter in your AEE. However, the council will still undertake an assessment of whether there are any affected persons as part of processing the resource consent application.

If there are persons you have identified who may be affected, and you have discussed your proposal with these persons, please record any comments made by them and your response, and include this information with your application. If you have written approvals from these parties, then these should be provided as well. The council has a written approval form that can be used for this purpose.

#### **Iwi Settlement Acts**

If there is an **Iwi Settlement Act** that covers the area of your application, then there may be “Statutory Acknowledgement” areas which could be adversely affected by your activity. If the location of your activity is within, adjacent to, or may have an adverse effect on, a Statutory Acknowledgement area, then you will need to assess whether the trustees of the Statutory Acknowledgement are affected persons. Information about Statutory Acknowledgements in Northland can be found on the council’s webpage at [“Statutory Acknowledgements in Northland”](#).

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## Checklist

The following information **must** be included in your application to ensure that is not returned as incomplete under Section 88 of the RMA.

- All applicable application form details have been completed.
  - Assessment of Environmental Effects in accordance with Schedule 4 of the RMA.
  - Assessment of effects on tangata whenua and their taonga.
  - Site plan(s). These are required to be of good quality, and preferably electronically, to enable use in resource consent documentation.
  - Evidence of payment of the required minimum estimated initial fee.
  - If you are applying for a coastal permit, evidence that you have provided notice of your application to all groups who have applied for customary marine title in the location of your application and that you have sought their view on the application. The council cannot legally accept an application without evidence of this.
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## Information Privacy Issues

The information you provide in this application is regarded as official information. It is required under the provisions of the Resource Management Act 1991 to process this application. The information will be held by the council and is subject to the provisions of the Local Government Official Information and Meetings Act 1987, and the Privacy Act 2020. The information you provide in this application will generally be available to the public.

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**Under Section 88 and/or 127 of the Resource Management Act 1991 (RMA), the undersigned makes this application for resource consent(s).**

- 1 I/We confirm that I have authority to sign on behalf of the person(s) named as the applicant(s) for this application for resource consent.**
- 2 I/We have read, and understand, all of the information contained within this application form, including the requirement to pay any additional actual and reasonable costs for the processing of the application.**
- 3 I/We confirm that all of the information provided is true and correct and I understand that any inaccurate information provided could result in my resource consent (if granted) being cancelled.**

Signature(s): .....

Date: .....

Signature(s): .....

Date: .....

Signature(s): .....

Date: .....

*Please note that a signature is not required if submitting application electronically.*



**BAY OF ISLANDS PLANNING (2022) LIMITED**

**Kerikeri House  
Suite 3, 88 Kerikeri Road  
Kerikeri**

Email – [office@bayplan.co.nz](mailto:office@bayplan.co.nz) Website - [www.bayplan.co.nz](http://www.bayplan.co.nz)

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11 October 2024

Far North District Council  
John Butler Centre  
Kerikeri

Re: Proposed additions to the Parihaka Marae – 101 Te Iringa Road, Kaikohe

Our client, Parihaka Marae Trustees seeks a resource consent for additions to the Marae, at 101 Te Iringa Road, Kaikohe. The site is zoned ‘**Rural Production**’ within the Far North District Council Operative District Plan (ODP), and ‘**Māori Purpose – Rural**’ under the Proposed District Plan (PDP). Resource Consent is required for the proposed sunlight breach, stormwater management breach, setback from boundaries breach and existing technical breaches for the number of traffic movements and access. No consents are required under the PDP.

Overall, the application is a **Discretionary Activity**.

Regional consent is required as the maximum wastewater production per day is buffered to a daily discharge of 2,400l/per day or 2.4m<sup>3</sup> per day. Rule C.6.1.3 (2) of the Proposed Regional Plan for Northland allows a discharge volume not exceeding 2m<sup>3</sup> per day.

Please do not hesitate to contact me should you require any further information.



Yours sincerely,  
Andrew McPhee  
Consultant Planner



*Reviewed*  
Steven Sanson  
Consultant Planner

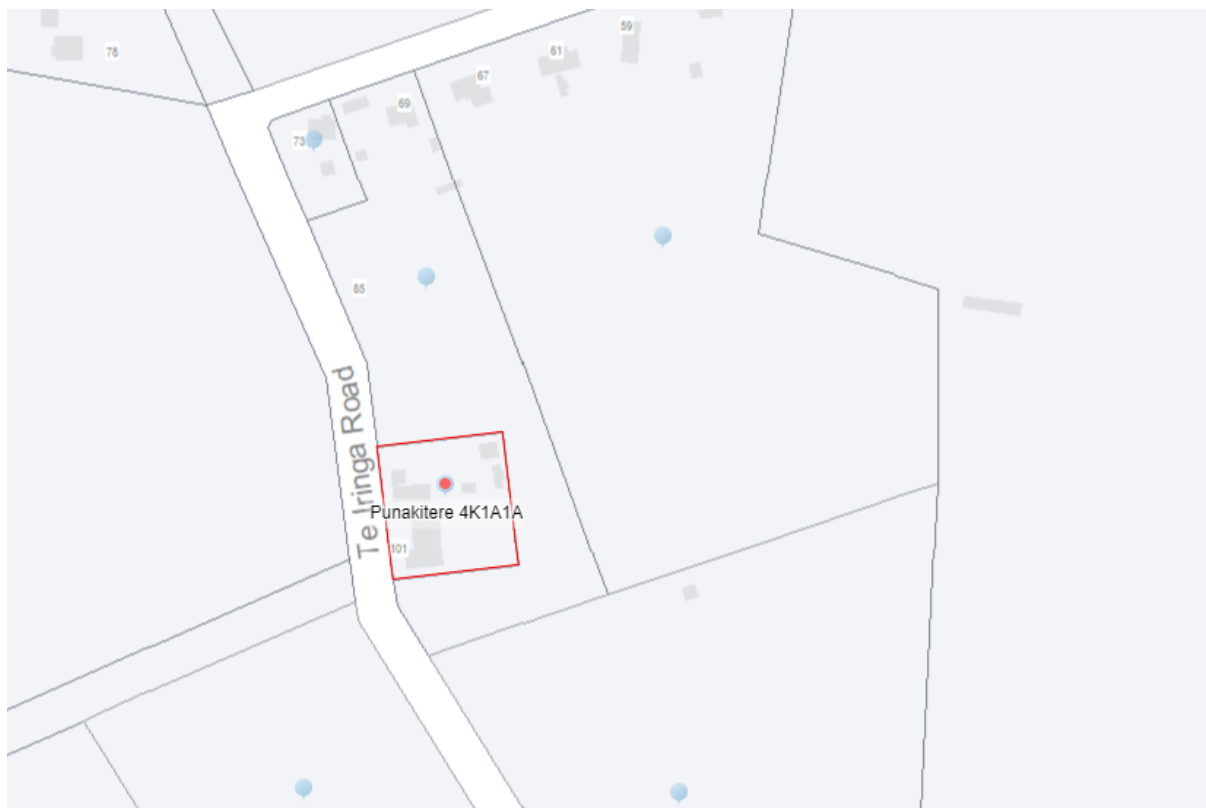
## 1. INTRODUCTION

The applicant, Parihaka Marae Trustees seeks resource consent to undertake additions to their Marae, including establishing a new ablution block (replacing the existing ablution facilities) and an extension to the wharekai. Works on the site also include the disestablishment and demolition of certain buildings.

The site is legally described as Punakitere 4K1A1A Block with an area of 4,046m<sup>2</sup>. A copy of the Certificate of Title is attached within **Appendix A**.

The application is supported by plans and development drawings produced by Arcline Architecture, attached at **Appendix B**. A Wastewater Treatment System Report has been undertaken by Water Flow NZ Ltd and is attached at **Appendix C**. A Stormwater Management Report is also provided in **Appendix D**. The application to NRC can be supplied on request, otherwise the decision will be provided or can be provided for as a condition of consent.

## 2. SITE DESCRIPTION



**Figure 1 – Site (Source: Prover)**



**Figure 2 – Site Aerial (Source: Prover)**

The application site is located on the eastern side of Te Iringa Road, approximately 900 metres west of the intersection with Mataraua Road and approximately 5.5km southeast of Kaikohe Township. Te Iringa Road terminates approximately two kilometres past the subject site.

There are currently two existing points of access on to the site on the northern and southern boundaries off Te Iringa Road. Te Iringa Road is unsealed, as is access onto the site.

The site comprises a total land area of 4,046m<sup>2</sup>, which can be described as generally level. The site is bordered by rural production land, which is currently being used in an agricultural capacity. There is a concentration of five dwellings approximately 140m north of the site.

The site currently contains a wharekai, a wharenuī and three small sheds. The shed located north of the wharenuī is currently used as an ablution block. The site contains three concrete water tanks providing potable water supply for the site.

The site is not considered to be subject to HAIL. The site has not been used for HAIL activities and is identified in Far North Maps as ‘High Producing Exotic Grassland’.

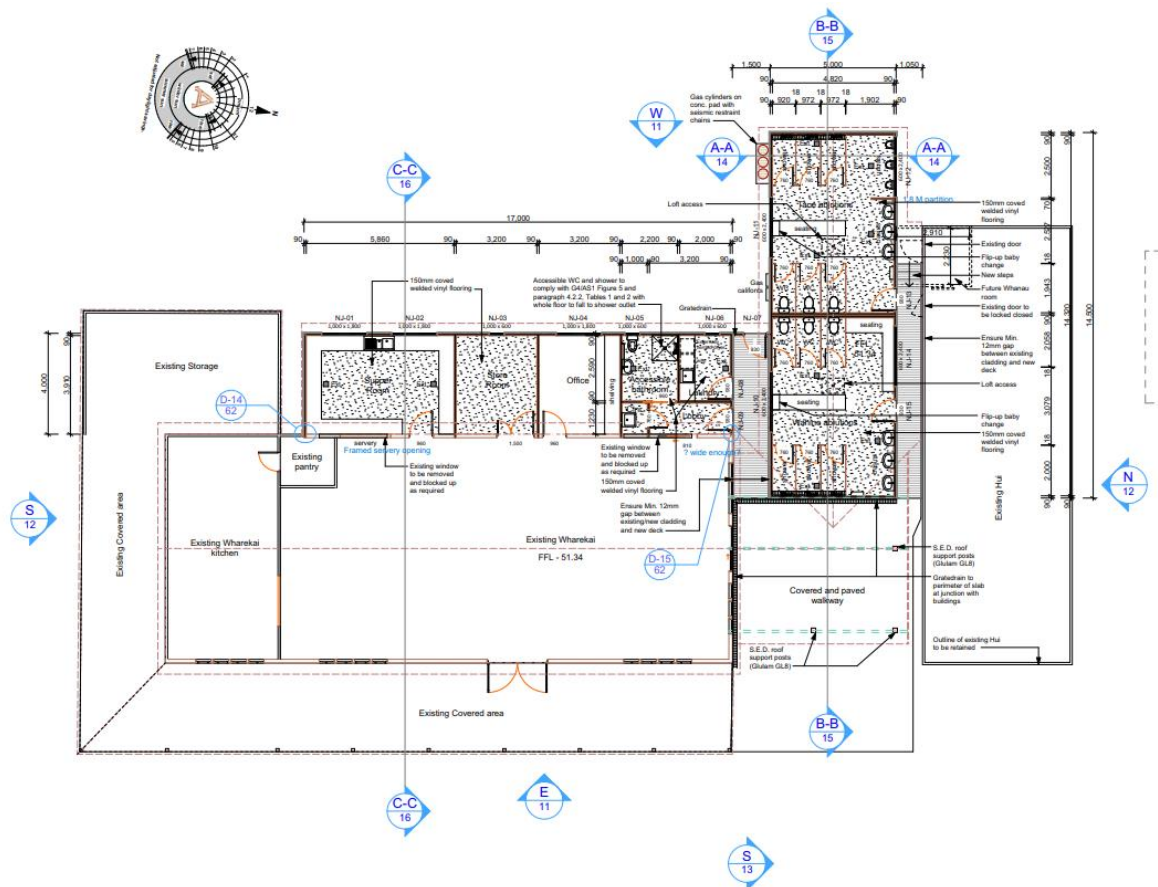
### 3. RECORD OF TITLE, CONSENT NOTICES AND LAND COVENANTS

The site Record of Title is attached at **Appendix A**. There are no consent notices registered on the title. Status order 8285151.5 determines the land to be Māori Freehold Land.

### 4. DESCRIPTION OF THE PROPOSAL

The applicant proposes to extend the existing wharekai to the west and construct a new ablution block between the wharekai and the wharenuī. As part of the works the applicant proposes to demolish existing sheds on the property. The proposed additions will be in accordance with the plans and elevations prepared by Arcline Architecture attached at **Appendix B**.

The proposed extension to the wharekai to the west will include a supper room, storeroom, office, lobby, laundry and an accessible bathroom. The proposed ablution block is a new building that will cater for people and activities on the Marae, including Tangi and regular hui. The existing ablution facilities will be decommissioned and removed.



**Figure 3 - Proposed alterations and additions to the Parihaka Marae (Source: Arcline Architecture)**

The total impermeable areas on the property would be 2,124.9m<sup>2</sup> or 52.5% of the site area. Total building coverage area would comprise 476.5m<sup>2</sup> or 11.78% of the site area. The existing accessways that bookend the site provide ingress and egress.

There are existing connections for electricity and telecommunications on the site. Stormwater from the buildings will be directed to the existing three concrete water tanks, which will also be used for water supply.

The wastewater produced from the site has been assessed by Water Flow NZ Ltd and concludes that the site is suitable for the discharge of wastewater production, and has recommended an advanced secondary treatment system with a 200m<sup>2</sup> primary irrigation field (see **Appendix C**).

Regional consent is required as the maximum wastewater production per day is buffered to a daily discharge of 2,400l/per day or 2.4m<sup>3</sup> per day. Rule C.6.1.3 (2) of the Proposed Regional Plan for Northland allows a discharge volume not exceeding 2m<sup>3</sup> per day.

Minor earthworks are required for the new ablution block and the extension to the wharekai as they will be on piles. Cut/fill volume is well within the permitted limits for this zone.

## 5. REASONS FOR CONSENT

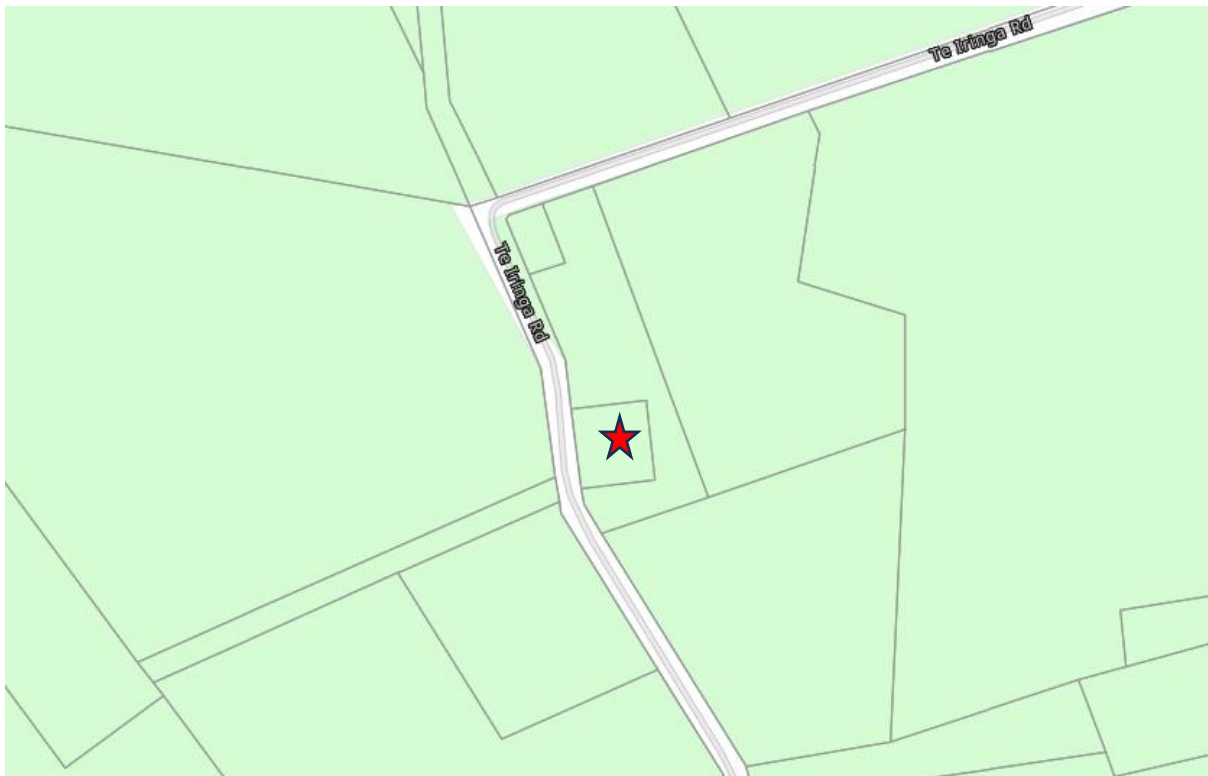
This application seeks consent for:

The extension to the wharekai and introduction of a new ablution block, consent is required for:

- a breach to the sunlight rule on the western boundary;
- a breach to the stormwater management rule;
- a breach to the setback from boundaries rule;
- a breach in the number of permitted traffic movements; and
- a breach in the permitted access standards.

No resource layers apply to the subject property.

Consent is also required under the Proposed Regional Plan for Northland as the daily wastewater production exceeds 2m<sup>3</sup> per day.



**Figure 4 - ODP Map – Rural Production Zone (Source: Far North Maps)**



**Figure 5 – PDP Map – Māori Purpose - Rural Zone (Source: PDP Map)**

Tables below provide an assessment against the applicable ODP and PDP performance standards and identifies the reasons for resource consent. For the ODP these comprise the rules of the Part 2- Environment Provisions and the Part 3 - District Wide Rules. For the PDP these comprise of the rules with immediate legal effect.

**Table 1 – Rural Production Zone - Performance Standards**

Rural Production Zone standards		
Rule	Standards	Performance/Comments
Residential Intensity	<b>Permitted</b> – One unit per 12ha of land.	N/A
Sunlight	<b>Permitted</b> - No part of any building shall project beyond a 45 degree recession plane as measured inwards from any point 2m vertically above ground level on any site boundary.	The proposed ablution block infringes on the western road boundary.  <b>Restricted Discretionary</b>
Stormwater Management	<b>Permitted</b> - The maximum proportion of the gross site area covered by buildings and other impermeable surfaces shall be 15%. <b>Controlled</b> – 20%	Total impermeable surfaces of 2,124.9m <sup>2</sup> or 52.5% is proposed.  <b>Discretionary</b>
Setback from Boundaries	<b>Permitted</b> - No building shall be erected within 10m of any site boundary; with the following exceptions - no accessory building shall be erected within 3m of boundaries other than road boundaries, on sites less than 5000m <sup>2</sup>	The site is less than 5,000m <sup>2</sup> , however the proposed ablution block and wharekai infringe on the western road boundary.  <b>Restricted Discretionary</b>
Keeping of Animals		N/A.
Noise		Marae activities  <b>Complies</b>
Building Height	<b>Permitted</b> - The maximum height of any building shall be 12m. <b>Restricted Discretionary</b> - The maximum height of any building shall be 15m.	The proposed additions and extension are well under 12m in height (4.4m at the highest point).  <b>Complies</b>
Helicopter Landing Area		N/A.
Building Coverage	<b>Permitted</b> - Any new building or alteration/addition to an existing building is a permitted activity if the total Building Coverage of a site does not exceed 12.5% of the gross site area.	Total building coverage of 476.5m <sup>2</sup> or 11.78% is proposed.  <b>Complies</b>
Scale of Activities	<b>Permitted</b> - For activities other than those provided for in the exemptions below, the total number of people engaged at any one period of time in activities on a site, including employees and persons making use of any facilities, but excluding people who normally reside on the site or are members of the household shall not	The site is a marae.  <b>Complies</b>

	exceed 4 persons per site or 1 person per 1 hectare of net site area, whichever is the greater. Provided that: (c) this number may be exceeded where persons are visiting marae.	
Temporary Events		N/A.

**Table 2 – District Wide Performance Standards**

District Wide Standards		
Rule	Standard	Performance/Comments
<b>Natural and Physical Resources</b>		
12.1 Landscape & Natural Features	<b>12.1.6.1.1 Protection of Outstanding Landscape Features</b> <b>12.1.6.1.2 Indigenous Vegetation Clearance in Outstanding landscapes</b> <b>12.1.6.1.3 Tree Planting in Outstanding Landscapes</b> <b>12.1.6.1.4 Excavation and/or filling within an outstanding landscape</b> <b>12.1.6.1.5 Buildings within outstanding landscapes</b> <b>12.1.6.1.6 Utility Services in Outstanding Landscapes</b>	N/A
12.2 Indigenous Flora and Fauna	<b>12.2.6.1.1</b> Indigenous Vegetation Clearance Permitted Throughout the District <b>12.2.6.1.2</b> Indigenous Vegetation Clearance in the rural Production and Minerals Zones <b>12.2.6.1.3</b> Indigenous Vegetation Clearance in the General Coastal Zone <b>12.2.6.1.4</b> Indigenous Vegetation Clearance in Other Zones	N/A
12.3 Earthworks	<b>12.3.6.1.1 Excavation and/or filling, excluding mining and quarrying, in the Rural Production Zone or Kauri Cliffs Zone</b>  <b>Permitted</b> – Maximum of 5,000m <sup>3</sup> within a 12-month period and cannot be higher than 1.5m cut or fill.	Minimal earthworks are required, the proposed addition and extension will be on piles.  <b>Complies</b>



District Wide Standards		
Rule	Standard	Performance/Comments
12.4 Natural Hazards	<b>12.4.6.1.1</b> Coastal Hazard 2 Area <b>12.4.6.1.2</b> Fire Risk to Residential Units	No hazards are located in close proximity of the site.  <b>Complies</b>
12.5 Heritage	<b>12.5.6.1.1</b> Notable Trees <b>12.5.6.1.2</b> Alterations to/and maintenance of historic sites, buildings and objects <b>12.5.6.1.3</b> Registered Archaeological Sites	N/A
12.5A Heritage Precincts	There are no Heritage Precincts that apply to the site.	N/A
12.6 Air	Not applicable	N/A
12.7 Lakes, Rivers, Wetlands and the Coastline	<b>12.7.6.1.1</b> Setback from lakes, rivers and the coastal marine area <b>12.7.6.1.2</b> Setback from smaller lakes, rivers and wetlands <b>Permitted</b> = for rivers minimum setback of 10 x the average width of the river where it passes through or past the site provided that the minimum setback is 10m and the maximum is no more than minimum required by <b>Rule 12.7.6.1.1</b>  <b>12.7.6.1.4</b> Land Use Activities involving the Discharges of Human Sewage Effluent  <b>12.7.6.1.5</b> Motorised Craft <b>12.7.6.1.6</b> Noise	The proposal is outside the necessary setbacks from lakes and rivers.  <b>Complies</b>  Proposed wastewater complies with the permitted setbacks.  <b>Complies</b>  N/A N/A
12.8 Hazardous Substances		N/A
12.9 Renewable Energy and Energy Efficiency		N/A
Chapter 15 - Transportation standards		
Maximum daily one-way traffic movements - Rural Production	<b>Permitted</b> – 60  <b>Controlled</b> – 61 – 200	The site can accommodate 40 people for a tangi or hui. While shared transport will likely be used to access the marae and will be under 60 one way

	<b>Appendix 3A</b> – cultural purposes	<p>movements per day, the closest TIF activity in Appendix 3A is ‘cultural purposes, which produces a TIF of 80.</p> <p><b>Controlled</b></p>
Parking	<b>Appendix 3C</b> – 1 per every 4 persons the facility is designed for.	<p>The existing marae is designed for 40 persons, which does not change through this application</p> <p>While informal parking arrangements will be maintained, the plans in <b>Appendix B</b> demonstrate that 43 carparks can be provided on site.</p> <p><b>Complies</b></p>
Access	<b>Permitted</b> – 80 vehicle movements requires a legal width of 7.5 metres and carriageway width of 5m.	<p>The northern and southern marae entrances are approximately 3 metres wide at the road frontage.</p> <p><b>Discretionary</b></p>

In terms of the ODP the application falls to be considered as a Discretionary Activity in accordance with Section 104A of the Resource Management Act 1991 (RMA).

## PDP

These comprise relevant rules that have immediate effect under the PDP.

Proposed District Plan					
Matter	Rule/Std Ref	Relevance	Compliance	Evidence	
Hazardous Substances Majority of rules relates to development within a site that has heritage or cultural items scheduled and mapped however Rule HS-R6 applies to any development within an SNA – which is not mapped	Rule HS-R2 has immediate legal effect but only for a new significant hazardous facility located within a scheduled site and area of significance to Māori, significant natural area or a scheduled heritage resource  HS-R5, HS-R6, HS-R9	N/A	Yes	Not relevant as no such substances proposed.	
Heritage Area Overlays (Property specific) This chapter applies only to properties within identified	All rules have immediate legal effect (HA-R1 to HA-R14)	N/A		Not indicated on Far North Proposed District Plan	

heritage area overlays (e.g. in the operative plan they are called precincts for example)	All standards have immediate legal effect (HA-S1 to HA-S3)			
Historic Heritage (Property specific and applies to adjoining sites (if the boundary is within 20m of an identified heritage item)). Rule HH-R5 Earthworks within 20m of a scheduled heritage resource. Heritage resources are shown as a historic item on the maps) This chapter applies to scheduled heritage resources – which are called heritage items in the map legend	All rules have immediate legal effect (HH-R1 to HH-R10) Schedule 2 has immediate legal effect	N/A		Not indicated on Far North Proposed District Plan
Notable Trees (Property specific) Applied when a property is showing a scheduled notable tree in the map	All rules have immediate legal effect (NT-R1 to NT-R9) All standards have legal effect (NT-S1 to NT-S2) Schedule 1 has immediate legal effect	N/A		Not indicated on Far North Proposed District Plan
Sites and Areas of Significance to Māori (Property specific) Applied when a property is showing a site / area of significance to Maori in the map or within the Te Oneroa-a Tohe Beach Management Area (in the operative plan they are called site of cultural significance to Maori)	All rules have immediate legal effect (SASM-R1 to SASM-R7) Schedule 3 has immediate legal effect	N/A		Not indicated on Far North Proposed District Plan

Ecosystems and Indigenous Biodiversity SNA are not mapped – will need to determine if indigenous vegetation on the site for example	All rules have immediate legal effect (IB-R1 to IB-R5)	N/A		Not indicated on Far North Proposed District Plan. No vegetation clearance proposed.
Activities on the Surface of Water	All rules have immediate legal effect (ASW-R1 to ASW-R4)	N/A		Not indicated on Far North Proposed District Plan
Earthworks all earthworks (refer to new definition) need to comply with this	The following rules have immediate legal effect: EW-R12, EW-R13 The following standards have immediate legal effect: EW-S3, EW-S5	Yes	Complies	Proposed earthworks will be in accordance with the relevant standards including GD-05 and will have an ADP applied.
Signs (Property specific) as rules only relate to situations where a sign is on a scheduled heritage resource (heritage item), or within the Kororareka Russell or Kerikeri Heritage Areas	The following rules have immediate legal effect: SIGN-R9, SIGN-R10 All standards have immediate legal effect but only for signs on or attached to a scheduled heritage resource or heritage area	N/A		Not indicated on Far North Proposed District Plan
Orongo Bay Zone (Property specific as rule relates to a zone only)	Rule OBZ-R14 has partial immediate legal effect because RD-1(5) relates to water	N/A		Not indicated on Far North Proposed District Plan
<b>Comments:</b>				
No consents are required under the PDP.				

Overall, the application will be considered as a **Discretionary Activity** due to the sunlight breach, stormwater management breach, setback from boundaries breach. Breaches also apply for the number of traffic movements and the access arrangement which are part of the existing environment.

## 6. NOTIFICATION ASSESSMENT

### Public Notification

Section 95A of the RMA specifies the steps to be taken to determine whether to publicly notify an application.

#### *Step 1: Mandatory public notification in certain circumstances*

- The applicant has requested public notification
- Public notification is required under section 95C
- The application is made jointly with an application to exchange recreation reserve land.

The applicant does not request public notification and it is assumed that the latter two points will not apply.

#### *Step 2: If not required by step 1, public notification precluded in certain circumstances:*

- A national environmental standard precludes public notification.
- The application is for a resource consent for 1 or more of the following, but no other, activities:
  - (i) a controlled activity:
  - (ii) a restricted discretionary or discretionary activity, but only if the activity is a subdivision of land or a residential activity:
  - (iii) a restricted discretionary, discretionary, or non-complying activity, but only if the activity is a boundary activity:
  - (iv) a prescribed activity (section 360H(1)(a)(i)).

None of the above apply to the activity.

#### *Step 3: If not precluded by step 2, public notification required in certain circumstances*

The criteria for step 3 are as follows:

- the application is for a resource consent for 1 or more activities, and any of those activities is subject to a rule or national environmental standard that requires public notification:
- the consent authority decides, in accordance with section 95D, that the activity will have or is likely to have adverse effects on the environment that are more than minor.

As demonstrated in Section 7 of this assessment, the adverse effects are regarded as no more than minor.

#### *Step 4: Public notification in special circumstances*

- Determine whether special circumstances exist in relation to the application that warrant the application being publicly notified

No special circumstances have been identified to warrant public notification.

### **Limited Notification**

Section 95B of the RMA specifies the steps to be taken to determine whether to limited notify an application.

#### *Step 1: Certain affected groups and affected persons must be notified*

- Determine whether there are any affected protected customary rights groups or affected customary marine title groups (in the case of an application for a resource consent for an accommodated activity).
- Determine whether the proposed activity is on or adjacent to, or may affect, land that is the subject of a statutory acknowledgement made in accordance with an RMA specified in Schedule 11; and whether the person to whom the statutory acknowledgement is made is an affected person under section 95E.

There are no affected protected customary rights groups or affected customary marine title groups other than those applying for resource consent, and the proposal will not affect any land subject to a statutory acknowledgement.

#### *Step 2: If not required by step 1, limited notification precluded in certain circumstances*

The criteria for step 2 are as follows:

- the application is for a resource consent for 1 or more activities, and each activity is subject to a rule or national environmental standard that precludes limited notification;
- the application is for a resource consent for either or both of the following, but no other, activities:
  - (i) a controlled activity that requires consent under a District Plan /other than a subdivision of land);
  - (ii) a prescribed activity /see section 360H(1)(a)(ii)).

None of the above apply to the activity

#### *Step 3: If not precluded by step 2, certain other affected persons must be notified*

Determine whether, in accordance with section 95E the following persons are affected persons:

- in the case of a boundary activity, an owner of an allotment with an infringed boundary; and
- in the case of any activity prescribed under section 360H(1)(b) a prescribed person in respect of the proposed activity.
- In the case of any other activity, determine whether a person is an affected person in accordance with section 95E.
- Notify each affected person identified above of the application.

Council must decide if a person is an affected person if the activity's adverse effects on them are minor or more than minor (but are not less than minor).

#### *Step 4: Further notification in special circumstances*

- Determine whether special circumstances exist in relation to the application that warrant notification of the application to any other persons not already determined to be eligible for limited notification under this section (excluding persons assessed under section 95E as not being affected persons).

No special circumstances have been identified to warrant limited notification.

Based upon the above it is considered that there is no requirement for Council to publicly notify the application.

## **7. ASSESSMENT OF EFFECTS ON THE ENVIRONMENT (AEE)**

Section 104B of the RMA governs the determination of applications for Discretionary activities:

### **104B Determination of applications for discretionary or non-complying activities**

After considering an application for a resource consent for a discretionary activity or non-complying activity, a consent authority—

- may grant or refuse the application; and
- if it grants the application, may impose conditions under [section 108](#).

With respect to discretionary activities, a consent authority may grant or refuse the application and may impose conditions under section 108 of the RMA.

Section 104 of the RMA sets out matters to be considered when assessing an application for a resource consent,

### **104 Consideration of applications**

- (1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to [Part 2](#) and [section 77M](#), have regard to—
  - any actual and potential effects on the environment of allowing the activity; and
  - any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and
  - any relevant provisions of—
    - a national environmental standard;
    - other regulations;
    - a national policy statement;
    - a New Zealand coastal policy statement;
    - a regional policy statement or proposed regional policy statement;
    - a plan or proposed plan; and
  - any other matter the consent authority considers relevant and reasonably necessary to determine the application.

For this application, the following relevant RMA plans, policy statements and national environmental standard have been considered:

- National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, 2011 (NES)
- National Policy Statement for Highly Productive Land
- Northland Regional Policy Statement
- Operative Far North District Plan 2009
- Proposed Far North District Plan 2022

As part of this application and Assessment of Effects, the relevant regional and district level objectives and policies, performance standards and assessment criteria have been considered.

The RMA (section 3) meaning of effect includes:

### 3 Meaning of effect

In this Act, unless the context otherwise requires, the term **effect** includes—

- (a) any positive or adverse effect; and
- (b) any temporary or permanent effect; and
- (c) any past, present, or future effect; and
- (d) any cumulative effect which arises over time or in combination with other effects—  
regardless of the scale, intensity, duration, or frequency of the effect, and also includes—
- (e) any potential effect of high probability; and
- (f) any potential effect of low probability which has a high potential impact.

Section 104(2) of the RMA states that:

*“when forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect.”*

This is referred to as the “permitted baseline”, which is based on the permitted performance standards and development controls that form part of a district plan. For an effects-based plan such as the Far North District Plan where specified activities are not regulated, determining the permitted baseline is a useful tool for determining a threshold of effects that are enabled by the zone. In this instance, the proposal is a discretionary activity, with multiple breaches of the permitted standards. It is noted however that the building coverage rule is not breached so the quantum of buildings proposed on the site is within the permitted baseline in the Rural Production zone.

Of relevance in this application is the ‘existing environment’ consisting of previously formed metalled parking, turning area and access, which when established was not considered



impermeable under the definitions within the ODP. The extent of the access, metal parking and turning areas is not changing through this application. It is the interpretation of 'impermeable surface' that has now changed.

The NES for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS). A review of Council records has revealed no evidence to suggest that a HAIL activity has previously been undertaken on site. The land use is not changing from current activities, the proposal extends the wharekai and proposes to add a new ablution block. Therefore, it is considered that the NESCS is not applicable to this application.

While the National Policy Statement for Highly Productive Land applies to the subject site, as it is class 3s 2, the application is on specified Māori land and is for a purpose associated with section 6(e) of the RMA in providing for the relationship of Māori and their culture and traditions with their ancestral lands (Section 3.9 (c) and (d) of the National Policy Statement for Highly Productive Land).

The focus of this AEE is on addressing the relevant assessment criteria in the ODP associated with the additional breaches in this application. Also, an assessment against the degree to which this achieves the objectives and policies of the ODP, the PDP and the Northland Regional Policy Statement.

### **Positive Effects**

The applicant will benefit from the positive effects of being able to provide appropriate sanitary facilities for their hapu/whanau when meeting for Tangi and when conducting hui. The applicant can also develop their ancestral lands in a way to benefit the wider community.

### **Sunlight**

*a) the extent to which adjacent properties will be adversely affected in terms of visual domination, overshadowing, loss of privacy and loss of access to sunlight and daylight;*

The sunlight breach is on the western boundary of the site abutting Te Iringa road. The site is located approximately 5.5km southeast of Kaikohe Township and can best be described as reasonably isolated within a rural environment. Te Iringa Road terminates approximately two kilometres past the subject site.

Te Iringa Road itself is unsealed and has a formed carriageway of approximately six metres where it abuts the site. The edge of the formed carriageway of Te Iringa Road is estimated to be approximately nine metres from the closest point to the proposed ablution block.

The ablution block itself is below 4.425m in height, which is the highest point of the roof structure for existing and proposed buildings on the site. Further, the proposed ablution block is the only 'new' building on the road frontage and is only being five metres in width.

As such, in the context of the existing built form and what is proposed, any effects associated with visual domination, overshadowing are considered to be less than minor and there is not considered to be any loss of privacy. The loss of access to sunlight and daylight are considered negligible as the effect is on Te Iringa Road.

*b) the location and proximity of adjacent residential units, and the outdoor space used by those units;*

The closest residential units adjacent to the site are approximately 140m to the north. The outdoor space used by the dwellings is generally defined by the manicured areas around the dwellings. Omaunu Stream is located approximately 50m north of the subject site and provides a natural boundary in terms of usable outdoor space for the dwellings to the north.

*c) the ability to mitigate any adverse effects of loss of sunlight.*

Te Iringa Road services approximately one dozen properties south of the subject site before it terminates after approximately two kilometres. As previously identified above, the only effects of loss of sunlight are on the road itself which is in a relatively isolated rural environment. The buildings themselves are approximately nine metres from the formed carriageway. The effects of any loss of sunlight are considered to be negligible.

### **Stormwater Management**

A Stormwater Management Report is provided in **Appendix D**, which concludes that the effects on the environment will be less than minor if the recommendations are followed. An assessment of the criteria in 11.3 Stormwater Management are provided in that Report and are not repeated here except that in summary, the effects generated will be no more than minor.

### **Setback from Boundaries**

*a) the extent to which the building(s) reduces outlook and privacy of adjacent properties;*

The setback requirement abutting Te Iringa Road is 10m despite the site being under 5,000m<sup>2</sup>. The proposed ablution block is modest in scale and is a little over four metres in height and five metres wide. The setback breach is on the western boundary of the site abutting Te Iringa Road and applies to both the proposed ablution block and the extension to the wharekai.

The site is located approximately 5.5km southeast of Kaikohe Township and can best be described as reasonably isolated within a rural environment. Te Iringa Road terminates approximately two kilometres past the subject site.

Te Iringa Road itself is unsealed and has a formed carriageway of approximately six metres where it abuts the site. The edge of the formed carriageway of Te Iringa Road is estimated to be approximately nine metres from the closest point to the proposed ablution block.

Any effects associated with outlook and privacy of adjacent properties is considered negligible as effects are associated with Te Iringa Road.

*b) the extent to which the buildings restrict visibility for access and egress of vehicles;*

The location of the proposed ablution block does not restrict visibility for access and egress of vehicles as development is located centrally within the site. Furthermore, the formed carriageway of Te Iringa Road is approximately nine metres from the closest point to the proposed ablution block. Effects are considered negligible.

*c) the ability to mitigate any adverse effects on the surrounding environment, for example by way of planting;*

The addition of the ablution block and the extension to the exiting wharekai do little to change the amenity of the site which already contains a number of buildings highly visible from Te Iringa Road. Mitigation is not considered necessary, particularly given its remote location in the rural environment.

*d) for sites having a frontage with Kerikeri Road (between its intersection with SH10 and Cannon Drive:*

- i. the scale of the buildings;*
- ii. the extent of set back from Kerikeri Road;*
- iii. the visual appearance of the site from the Kerikeri Road frontage;*
- iv. the extent to which the building(s) are in harmony with landscape plantings and shelter belts*

Not applicable.

*e) for residential buildings located within 100m of Minerals Zone:*

- i. the position of the building platform(s) in relation to the mine or quarry;*
- ii. the likelihood of the mine or quarry causing environmental effects, especially noise and loss of amenity values, that will impact adversely on the occupiers of the proposed residential building;*
- iii. the effectiveness of any mitigation measures proposed;*

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*Where an application is required under this rule, the owner and/or operator of any mine or*

*quarry within the adjacent Minerals Zone shall be considered an affected party. Where the written approval of the owner and the mine or quarry operator has been obtained, the application will be non-notified.*

The property is not located within 100m of the Minerals zone.

*f) the extent to which the buildings and their use will impact on the public use and enjoyment of adjoining esplanade reserves and strips and adjacent coastal marine areas.*

The site does not border an esplanade reserve, strip or the coastal environment. It is not considered that the proposed development will impact on the public use and enjoyment of these spaces.

### **Traffic Movements**

There are no changes to the activities or the frequency of those activities on site. This application does not change the quantum of people arriving and departing site, it introduces a new ablution block, replacing the existing one, and extends the existing wharekai. This is a technical breach for activities that currently exist. As such it is considered that the effects of the proposal are negligible.

### **Access**

There is no change to the access arrangement for the site. This application introduces a new ablution block and extends the existing wharekai. This is a technical breach for the access arrangement that currently exists. As such it is considered that the effects of the proposal are negligible.

### **Summary of Effects**

In all respects, the effects generated are considered to be less than minor, in some cases negligible.

## **8. STATUORY PLAN CONSIDERATIONS**

### **New Zealand Coastal Policy Statement 2010**

The New Zealand Coastal Policy Statement 2010 (NZCPS 2010) contains objectives and policies designed to achieve the sustainable management purpose of the RMA in respect of New Zealand's coastal environment. The site is not within the coastal environment.

### **Northland Regional Policy Statement**

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The subject site is within the Northland region and is subject to the governing objectives and policies of the operative Northland Regional Policy Statement (operative May 2016). With respect to any identified features, the site is not within any area of 'High' or 'Outstanding' Natural Character Area and is outside the Coastal Environment boundary. There are no other relevant matters that pertain to the application that requires consideration over and above what is already considered by way of the Far North District Plan.

Overall, it is considered that the proposal would not be inconsistent with the Northland Regional Policy Statement.

## **ODP**

The District Plan provisions of relevance to this application are the objectives and policies for the Rural Production zone, and environmental and transport assessment matters that apply district wide.

The District Plan Rural Environment is comprised of three rural sub-zones that includes the Rural Production Zone, the Rural Living Zone, and the Minerals Zone. These zones provide for distinctively different rural environments, the Rural Production Zone provides for the least intensive residential development except for the Mineral Zone within the rural environment. The Rural Production Zone does generally provide for development of this nature. The marae and associated facilities already exist on the site. This application upgrades the ablution facilities and adds additional space to the wharekai. No other changes are proposed.

## **ODP Objectives and Policies**

The relevant objectives and policies of the Plan are those related to the Rural Environment in general, and the Rural Production Zone. The general intent of the Rural Production Zone is revolved around land use compatibility and reverse sensitivity. It has been proven with reference to the relevant matters in the assessment above that the replacement of the ablution block and the extension to the wharekai will not give rise to any undue reverse sensitivity or land use compatibility matters. No other changes are proposed, nor are the existing activities undertaken on the site changing.

In terms of district wide matters such as those that affect biophysical elements and physical elements such as infrastructure and transport, the proposal is not impacted by biophysical characteristics that require any consideration and from an infrastructure perspective the proposal can be serviced within its boundary with no resulting effects. The technical breaches associated with traffic movements and access already exist and do not change as a result of the proposal. The proposal is therefore consistent with the aims and intents of the ODP.

## **PDP Objectives and Policies**

## Part 3 – Area Specific Matters / ZONES / Special Purpose zones / Māori Purpose

Objectives	Assessment
MPZ-O1 - The viability of the Māori Purpose zone is ensured for future generations	The activities on the site are not changing. The proposal will support the ongoing operation of the marae to cater for tangi and hui.
MPZ-O2 - The Māori Purpose zone enables a range of social, cultural and economic development opportunities that support the occupation, use, development and ongoing relationship with ancestral land.	The proposed extension to the wharekai and the replacement of the ablution block enable the marae to function effectively and enhances the relationship with their ancestral land.
MPZ-O3 - Use and development in the Māori Purpose zone reflects the sustainable carrying capacity of the land and surrounding environment.	The proposal is supported by reports ensuring that the activities proposed can be undertaken in respect of the carrying capacity of the land.
Policy	Assessment
MPZ-P1 - Provide for the use and development of ancestral Māori land administered under Te Ture Whenua Māori Act 1993.	The site contains a marae and facilities typical of land use on ancestral land.
MPZ-P2 - Enable a range of activities on Māori land in the Māori Purpose zone including marae, papakāinga, customary use, cultural and small-scale commercial activities where the adverse effects can be avoided, remedied or mitigated	The site contains a marae and facilities typically found on Māori land. The proposal is supported by reports ensuring that the activities proposed can be undertaken in respect of the carrying capacity of the land.
MPZ-P3 - Provide for development on Māori land where it is demonstrated: <ol style="list-style-type: none"> <li>it is compatible with surrounding activities;</li> <li>it will not compromise occupation, development and use of Māori land;</li> <li>it will not compromise use of adjacent land or other zones to be efficiently and effectively used for their intended purpose;</li> <li>it maintains character and amenity of surrounding area;</li> <li>it provides for community wellbeing, health and safety;</li> <li>it can be serviced by onsite infrastructure or reticulated infrastructure where this is available; and</li> <li>that any adverse effects can be avoided, remedied or mitigated.</li> </ol>	The addition of the ablution block, which replaces antiquated facilities, compliments the existing use of the land for a marae.
MPZ-P4 - Manage land use and subdivision to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application: <ol style="list-style-type: none"> <li>consistency with the scale, density, design and character of the environment and purpose of the zone;</li> </ol>	The activities on the site are not changing. The extension to the wharekai makes provision for a supper room, storeroom, office, lobby, laundry and an accessible toilet. The replacement of the ablution block ensures appropriate facilities are enabled on the marae to cater for tangi and hui.

<ul style="list-style-type: none"> <li>b. the location, scale and design of buildings and structures;</li> <li>c. the positive effects resulting from the economic, social and cultural wellbeing provided by the proposed activity.</li> <li>d. at zone interfaces:             <ul style="list-style-type: none"> <li>i. any setbacks, fencing, screening or landscaping required to address potential conflicts;</li> <li>ii. managing reverse sensitivity effects on adjacent land uses, including the ability of surrounding properties to undertake primary production activities in a rural environment;</li> </ul> </li> <li>e. the adequacy and capacity of available or programmed development infrastructure to accommodate the proposed activity; or the capacity of the site to cater for on-site infrastructure associated with the proposed activity;</li> <li>f. the adequacy of roading infrastructure to service the proposed activity;</li> <li>g. managing natural hazards;</li> <li>h. any loss of highly productive land;</li> <li>i. adverse effects on areas with historic heritage and cultural values, natural features and landscapes, natural character or indigenous biodiversity values; and</li> <li>j. any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6</li> </ul>	<p>The proposal is supported by reports ensuring that the activities proposed can be undertaken in respect of the carrying capacity of the land.</p>
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### **Proposed Far North District Plan Objectives & Policies & Weighting**

Section 88A(2) provides that “any plan or proposed plan which exists when the application is considered must be had regard to in accordance with section 104(1)(b).” This requires applications to be assessed under both the operative and proposed objective and policy frameworks from the date of notification of the proposed district plan.

In the event of differing directives between objective and policy frameworks, it is well established by case law that the weight to be given to a proposed district plan depends on what stage the relevant provisions have reached, the weight generally being greater as a proposed plan move through the notification and hearing process. In *Keystone Ridge Ltd v Auckland City Council*, the High Court held that the extent to which the provisions of a proposed plan are relevant should be considered on a case by case basis and might include:

- The extent (if any) to which the proposed measure might have been exposed to

testing and independent decision making;

- Circumstances of injustice; and
- The extent to which a new measure, or the absence of one, might implement a coherent pattern of objectives and policies in a plan.

In my view the PDP has not gone through the sufficient process to allow a considered view of the objectives and policies for the Māori Purpose zone – Rural, however this has still been provided. The activity is discretionary overall, therefore both the ODP and PDP have been assessed accordingly and the proposal is deemed to meet the relevant objectives and policies.

## **PART II – RMA**

### **Purpose**

The proposal can promote the sustainable management of natural and physical resources on site, as owners and users of the land are able to provide for their social and cultural wellbeing and their health and safety.

The proposal will provide upgraded sanitary facilities in the form of a new ablution block to support the existing activities being undertaken on the marae, along with an extension to the existing wharekai. Any effects on the environment from these additions are anticipated to be less than minor.

### **Matters of National Importance**

Māori are considered to be positively affected by this proposal. The upgrades to the marae will enhance the relationship of Māori and their culture and traditions with their ancestral lands. There isn't any historic heritage likely to be impacted, however in the event anything is discovered the accidental discovery protocol will be adhered to.

### **Other Matters**

These matters have been considered in the application where relevant. There will be no adverse impact on local ecosystems or overall.

### **Conclusion**

This application seeks a Discretionary activity resource consent to upgrade, by way of replacing, an ablution block on the Parihaka Marae as well as an addition to the wharekai within the Rural Production zone.



The assessment of effects on the environment concludes that for the reasons outlined in the application, the effects of undertaking this proposal will be no more than minor on the surrounding environment.

The proposal is provided for within the National policy Statement for Highly Productive land. There are no National Environmental Standards that are relevant.

The Regional Policy Statement for Northland was also reviewed as part of this application. The proposal was considered to be consistent with the aims of this document.

In terms of the ODP, the proposal was broadly assessed against the district wide objectives and policies along with the Rural Environment in general and the Rural Production Zone, with the conclusion that it is generally compatible with the aims of the District Plan.

The PDP has also been assessed against the objectives and policies for the Maori Purpose – Rural zone. The application is considered to be compatible with the intentions of the zone.

In terms of the potential adverse effects being minor or more than minor, it is considered that there are no directly affected parties to this proposal. All other effects associated with the proposed additions can be adequately mitigated.

An assessment of Part II of the RMA has also been completed with the proposal generally able to satisfy this higher order document also.

We look forward to receiving acknowledgment of the application and please advise if any additional information is required.



Andrew McPhee  
Consultant Planner



Reviewed  
Steven Sanson  
Consultant Planner

**BAY OF ISLANDS PLANNING (2022) LIMITED**

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11 October 2024

Northland Regional Council  
RMA Consents

Re: Proposed additions to the Parihaka Marae – 101 Te Iringa Road, Kaikohe

Our client, Parihaka Marae Trustees seeks a resource consent [discharge] associated with the upgraded ablution facilities at their marae at 101 Te Iringa Road, Kaikohe.

The site is zoned ‘**Rural Production**’ within the Far North District Council Operative District Plan [ODP], and ‘**Māori Purpose – Rural**’ under the Proposed District Plan [PDP].

Resource Consent is required to establish the proposed development. Resource consent is currently being sought under the ODP. No consents are required under the PDP.

Overall, the application is a **Discretionary Activity**.

Please do not hesitate to contact me should you require any further information.



Yours sincerely,  
Andrew McPhee  
*Consultant Planner*

## 1. INTRODUCTION

This report has been prepared for Parihaka Marae Trustees in support of a resource consent [discharge] application at 101 Te Iringa Road, Kaikohe.

The application has been prepared in accordance with the provisions of Section 88 and the Fourth Schedule of the Resource Management Act 1991 (RMA). This report serves as the Assessment of Environmental Effects required under both provisions.

The report also includes an analysis of the relevant provisions of the Proposed Regional Plan (PRP) Regional Policy Statement for Northland, National Policy Statements and Environmental Standards, as well as Part 2 of the RMA.

The applicant, Parihaka Marae Trustees, seek a resource consent [discharge] associated with the upgraded ablution facilities at their marae at 101 Te Iringa Road, Kaikohe.

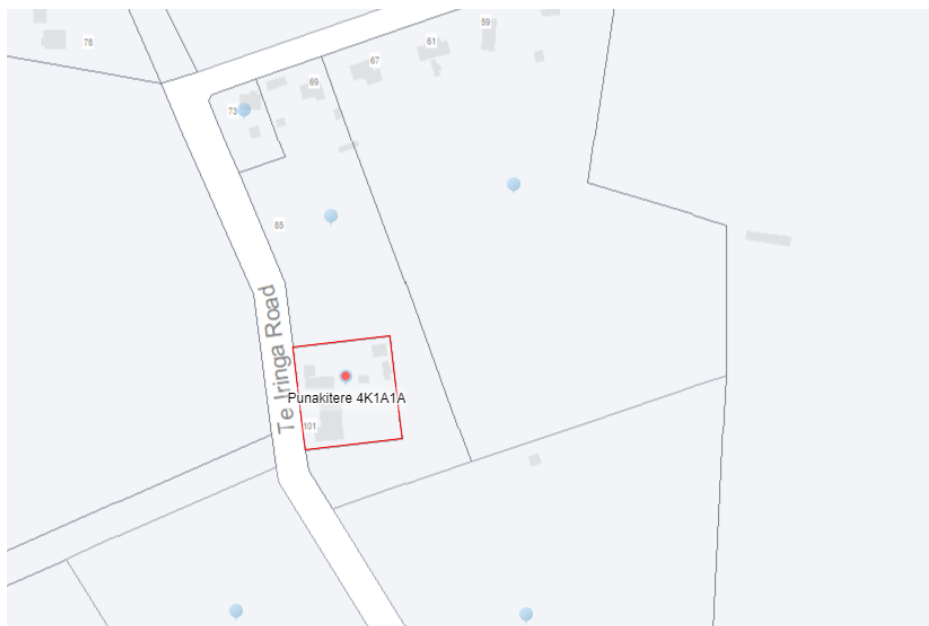
The site is legally described as Punakitere 4K1A1A Block, with an area of 4,046m<sup>2</sup>.

A copy of the Records of Title are attached within **Appendix A**.

From a Site Suitability perspective, the proposal is supported by a Wastewater Report prepared by Water Flow NZ Ltd in **Appendix B**.

The proposal also requires FNDC consent which is currently been sought.

## 2. SITE DESCRIPTION



**Figure 1 – Site (Source: Prover)**



**Figure 2 – Site Aerial (Source: Prover)**

The application site is located on the eastern side of Te Iringa Road, approximately 900 metres west of the intersection with Mataraua Road and approximately 5.5km southeast of Kaikohe Township. Te Iringa Road terminates approximately two kilometres past the subject site.

There are currently two existing points of access on to the site on the northern and southern boundaries off Te Iringa Road. Te Iringa Road is unsealed, as is access onto the site.

The site comprises a total land area of 4,046m<sup>2</sup>, which can be described as generally level. The site is bordered by rural production land, which is currently being used in an agricultural capacity. There is a concentration of five dwellings approximately 140m north of the site.

The site currently contains a wharekai, a wharenuī and three small sheds. The shed located north of the wharenuī is currently used as an ablution block. The site contains three concrete water tanks providing potable water supply for the site.

The site is not considered to be subject to HAIL. The site has not been used for HAIL activities and is identified in Far North Maps as ‘High Producing Exotic Grassland’.

### **3. RECORD OF TITLE, CONSENT NOTICES AND LAND COVENANTS**

The site Record of Title is attached at **Appendix A**. There are no consent notices registered on the title. Status order 8285151.5 determines the land to be Māori Freehold Land.

#### 4. DESCRIPTION OF THE PROPOSAL

The applicant proposes to replace the existing ablution facilities at the marae with a purpose-built ablution block along with an extension to the wharekai at 101 Te Iringa Road, Kaikohe.

The site and the wastewater facilities area designed to treat effluent for the following activities:

- Tangi day visitor 3 days every fortnight of 40 ppl at 40l per person per day;
- Tangi overnight visitor 3 days every fortnight of 40 ppl, at 150L wastewater production per person per day;
- Hui attendee twice a month of 20 ppl, at 40L per person per day.

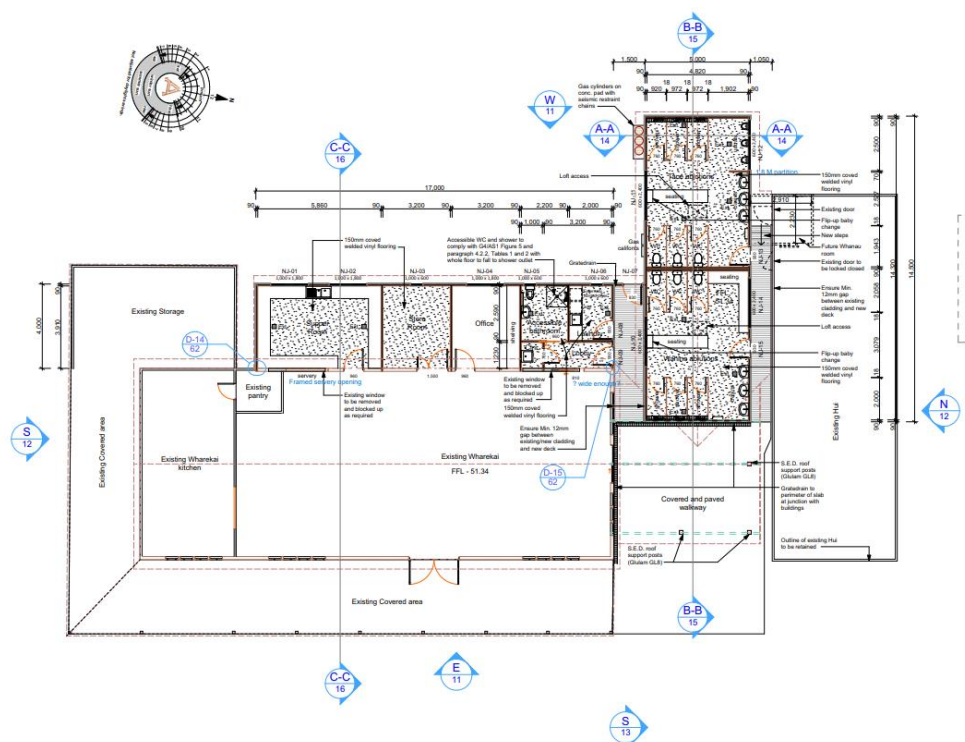


Figure 3 - Proposed alterations and additions to the Parihaka Marae (Source: Arcline Architecture)

The total impermeable areas on the property would be 2,124.9m<sup>2</sup> or 52.5% of the site area. Total building coverage area would comprise 476.5m<sup>2</sup> or 11.78% of the site area.

The existing accessways that bookend the site provide ingress and egress off the site.

There are existing connections for electricity and telecommunications on the site.

Stormwater from the buildings will be directed to the existing three concrete water tanks, which will also be used for water supply.

The wastewater produced from the site has been assessed by Water Flow NZ Ltd and concludes that the site is suitable for the discharge of wastewater production, and has recommended an advanced secondary treatment system with a 200m<sup>2</sup> primary irrigation field (see **Appendix B**).

A discharge consent is required as the proposal exceeds the 2m<sup>3</sup> day threshold within the PRP. The proposed discharge is buffered to 2.4m<sup>3</sup> per day.

## 5. ASSESSMENT OF RELEVANT RULES

The Water Flow NZ Ltd Report in **Appendix B** identifies the discharge details for the site, which is buffered to 2,400l per day. The quantum of discharge is more than 2m<sup>3</sup>, which is the permitted standard under *Rule C.6.1.3 Other on-site treated domestic wastewater*.

As outlined in the Proposed Regional Plan, as a standard cannot be met within C.6.1.3, the proposal must be assessed as a discretionary activity under *Rule C.6.1.5 Other domestical wastewater discharges – discretionary activity*. This consent therefore seeks discharge to land and discharge to air under the PRP.

Overall, the proposal is a **Discretionary Activity**.

## 6. NOTIFICATION ASSESSMENT

The Council will need to determine the basis on which the application will be processed. These include public notification, limited notification, or non-notification. Sections 95A and 95B provide a step-by-step process that Council must follow when determining whether to publicly or limited notify an application.

### **Public Notification**

Section 95A of the RMA specifies the steps to be taken to determine whether to publicly notify an application.

#### *Step 1: Mandatory public notification in certain circumstances*

- The applicant has requested public notification
- Public notification is required under section 95C
- The application is made jointly with an application to exchange recreation reserve land.

The applicant does not request public notification and it is assumed that the latter two points will not apply.

#### *Step 2: If not required by step 1, public notification precluded in certain circumstances:*

- A national environmental standard precludes public notification.

- The application is for a resource consent for 1 or more of the following, but no other, activities:
  - (i) a controlled activity;
  - (ii) a restricted discretionary or discretionary activity, but only if the activity is a subdivision of land or a residential activity;
  - (iii) a restricted discretionary, discretionary, or non-complying activity, but only if the activity is a boundary activity;
  - (iv) a prescribed activity (section 360H(1)(a)(i)).

None of the above apply to the activity.

*Step 3: If not precluded by step 2, public notification required in certain circumstances*

The criteria for step 3 are as follows:

- the application is for a resource consent for 1 or more activities, and any of those activities is subject to a rule or national environmental standard that requires public notification;
- the consent authority decides, in accordance with section 95D, that the activity will have or is likely to have adverse effects on the environment that are more than minor.

As demonstrated in Section 7 of this assessment, the adverse effects are regarded as no more than minor.

*Step 4: Public notification in special circumstances*

- Determine whether special circumstances exist in relation to the application that warrant the application being publicly notified

No special circumstances have been identified to warrant public notification.

### **Limited Notification**

Section 95B of the RMA specifies the steps to be taken to determine whether to limited notify an application.

*Step 1: Certain affected groups and affected persons must be notified*

- Determine whether there are any affected protected customary rights groups or affected customary marine title groups (in the case of an application for a resource consent for an accommodated activity).
- Determine whether the proposed activity is on or adjacent to, or may affect, land that is the subject of a statutory acknowledgement made in accordance with an RMA specified in Schedule 11; and whether the person to whom the statutory acknowledgement is made is an affected person under section 9SE.

There are no affected protected customary rights groups or affected customary marine title groups other than those applying for resource consent, and the proposal will not affect any land subject to a statutory acknowledgment.

*Step 2: If not required by step 1, limited notification precluded in certain circumstances*

The criteria for step 2 are as follows:

- the application is for a resource consent for 1 or more activities, and each activity is subject to a rule or national environmental standard that precludes limited notification:
- the application is for a resource consent for either or both of the following, but no other, activities:
  - (i) a controlled activity that requires consent under a District Plan /other than a subdivision of land):
  - (ii) a prescribed activity /see section 360H(1)(a)(ii)).

None of the above apply to the activity

*Step 3: If not precluded by step 2, certain other affected persons must be notified*

Determine whether, in accordance with section 95E the following persons are affected persons:

- in the case of a boundary activity, an owner of an allotment with an infringed boundary; and
- in the case of any activity prescribed under section 360H(1)(b) a prescribed person in respect of the proposed activity.
- In the case of any other activity, determine whether a person is an affected person in accordance with section 95E.
- Notify each affected person identified above of the application.

Council must decide if a person is an affected person if the activity's adverse effects on them are minor or more than minor (but are not less than minor).

*Step 4: Further notification in special circumstances*

- Determine whether special circumstances exist in relation to the application that warrant notification of the application to any other persons not already determined to be eligible for limited notification under this section (excluding persons assessed under section 95E as not being affected persons).

No special circumstances have been identified to warrant limited notification.

Based upon the above it is considered that there is no requirement for Council to publicly notify the application.



## 7. EFFECTS ON THE ENVIRONMENT

### Effects That May Be Disregarded

Sections 95D(b) and 95E(2)(a) provide that when determining the extent of the adverse effects of an activity or the effects on a person respectively, a council 'may disregard an adverse effect if a rule or national environmental standard permits an activity with that effect'. This is known as the permitted activity baseline test.

The purpose of the permitted baseline test is to isolate and make effects of activities on the environment that are permitted by a plan or NES, irrelevant.

When applying the permitted baseline such effects cannot then be taken into account when assessing the effects of a particular resource consent application.

The baseline has been defined by case law as comprising non-fanciful (credible) activities that would be permitted as of right by the plan in question.

In terms of the development site and proposal at hand, the following is considered relevant:

- Discharge from the Marae up to 2m<sup>3</sup>. Therefore, the remaining 0.4m<sup>3</sup> of discharge should only be the aspect considered in this application.

It is contended that the above effects should be isolated from consideration of the overall effects of the development in terms of s95D, s95E and 104(1)(a) of the RMA.

### Existing Environment

The receiving environment is the environment upon which a proposed activity might have effects. It is permissible (and often desirable or necessary) to consider the future state of the environment upon which effects will occur, including:

- the future state of the environment as it might be modified by the utilization of rights to carry out permitted activities (refer above).
- the environment as it might be modified by implementing resource consents that have been granted at the time a particular application is considered, where it appears likely that those resource consents will be implemented.

There are no known unimplemented consents in the environment.

### Effects Assessment

The following assessment has been prepared in accordance with Section 88 and Schedule 4 of the Act which specifies that the assessment of effects provided should correspond with the scale and significance of the proposal.

The effects assessment is largely linked to the rules breached as well as any other matter that is considered relevant to the scope and context of the overall development.

### ***Positive effects***

The applicant will benefit from the positive effects of being able to provide appropriate sanitary facilities for their hapu/whanau when meeting for Tangi and when conducting hui. The applicant can also develop their ancestral lands in a way to benefit the wider community.

### ***Effect from the Discharge***

The Onsite Wastewater Design Report in **Appendix B** detailing the wastewater treatment system for Parihaka Marae sets out the relevant ground conditions for the site and serves as an assessment of effects. The report concludes that:

- the site is suitable for the discharge of the wastewater production as per AS/NZS 1547:2012 Table H4 of:
  - Tangi day visitor 3days every fortnight of 40ppl at 40l per person per day
  - Tangi overnight visitor 3 days every fortnight of 40ppl, at 150L wastewater production per person per day
  - Hui attendee twice a month of 20ppl, at 40L per person per day
  - Max Wastewater production per day is 7600L buffered to a daily discharge of 2400L/per Day
  - Disposal system to be ETS beds in Class 5 Soils, (as per AC TP-58, Table 5.1) with a DLR of 12mm taking in consideration the advanced secondary treatment level of the effluent

The report recommends an EconoTreat VBB-C-2200-Twin including a 22500l Buffer tanks, an advanced secondary Treatment System with de-nitrification to ETS (evapotranspiration & seepage) Beds at a recommended loading rate of 12l/m<sup>2</sup>/day for silty clay-loamy soils. The primary irrigation field requires 200m<sup>2</sup> to be laid on level contours. A minimum reserve field of 100% is provided.

If the recommendations are followed it is considered that the any adverse effects will be no more than minor.

## **8. EFFECTS TO PEOPLE**

Section 6 of this report addresses the requirements for notification and concludes that there is no requirement for Council to publicly notify the application. The assessment of effects on the environment in section 7 of this report and the supporting report submitted as an appendix in this application are relevant in respect to the RMA provisions relating to full notification. T

his assessment and report demonstrates that any associated effects will no more than minor with no off-site effects anticipated. As such, consultation has not been undertaken with neighbouring

properties and written approvals have not been sought as it is considered that they are not adversely affected by the proposal.

No special circumstances have been identified to warrant limited notification to any other parties.

It is concluded that the effects on the adjacent properties to 101 Iringa Road will be no more than minor.

## 9. STATUTORY CONTEXT

### Relevant Statutory Provision

As the proposed activity contravenes section 15 of the RMA, the matters within s105 also need to be considered. Those matters within s105 are addressed in this report and within the relevant appendices. The proposed method of wastewater discharge is considered appropriate and there are no other feasible options available.

In terms of s107, the proposal is not considered to give rise to the effects listed after reasonable mixing.

### National Policy Statements & Plans

In terms of NPS' and NES' the following is provided:

- With respect to the National Environmental Standard – Soil Contamination, there is no record or evidence of activities occurring on the site that are on the HAIL. There are no consents required under this NES.
- The site is not coastal as per the Regional Policy Statement and therefore the New Zealand Coastal Policy Statement is not relevant.
- The site is not within an urban area and NPS – Urban Development is not relevant.
- The site does not have wetlands attributed to it as defined in various planning documents so the NPS for Freshwater Management is not considered relevant.
- The site contains Class 3 soils therefore the NPS-HPL applies.

### *National Policy Statement for Highly Productive Soils (NPS-HPL)*

The NPS-HPL contains an objective and policies designed to protect land based primary production on land zoned either General Rural or Rural Production. While the National Policy Statement for Highly Productive Land applies to the subject site, as it is class 3s 2, the application is on specified Māori land and is for a purpose associated with section 6(e) of the RMA in providing for the relationship of Māori and their culture and traditions with their ancestral lands (Section 3.9 (c) and (d) of the National Policy Statement for Highly Productive Land).

### Regional Policy Statement Assessment

The subject site is within the Northland region and is subject to the governing objectives and policies of the operative Northland Regional Policy Statement (operative May 2016). With respect to any identified features, the site is not within any area of 'High' or 'Outstanding' Natural Character Area and is outside the Coastal Environment boundary. There are no other relevant matters that pertain to the application that requires consideration over and above what is already considered by way of the Far North District Plan.

Overall, it is considered that the proposal would not be inconsistent with the Northland Regional Policy Statement.

### **Proposed Regional Plan Assessment**

The objectives and policies of relevance revolve around freshwater quality and enabling economic wellbeing. In the context of the application, the site is sufficiently separated from the waterbodies and groundwater bore sources were not identified within the property or anticipated to exist within proximity to the property's boundaries, given a review of NRC bore location maps. The site promotes cultural activities and use, therefore there are no negative cultural impacts. For that reason, the proposal is considered to meet the objective.

In terms of wellbeing, the proposal enables the marae to provide appropriate sanitary facilities for their hapu/whanau when meeting for Tangi and when conducting hui. The applicant can also develop their ancestral lands in a way to benefit the wider community. This is not at the expense of water quality in this instance as those matters referred to above can be adequately mitigated and managed through modern infrastructure.

Having considered the relevant components of the Proposed Regional Plan, it is concluded that the proposal is not inconsistent with the relevant objectives and policies.

## **10. PART 2 ASSESSMENT**

### **Section 5 - Purpose**

The proposal can promote the sustainable management of natural and physical resources on site, as owners and users of the land are able to provide for their social and cultural wellbeing and their health and safety.

The proposal will provide upgraded sanitary facilities in the form of a new ablution block to support the existing activities being undertaken on the marae, along with an extension to the existing wharekai. Any effects on the environment from these additions are anticipated to be less than minor.

### **Section 6 - Matters of National Importance**

Māori are considered to be positively affected by this proposal. The upgrades to the marae will enhance the relationship of Māori and their culture and traditions with their ancestral lands. There

isn't any historic heritage likely to be impacted, however in the event anything is discovered the accidental discovery protocol will be adhered to.

### **Section 7 Other Matters**

These matters have been considered in the application where relevant. There will be no adverse impact on local ecosystems or overall.

### **Section 8 – Treaty of Waitangi**

The NRC is required to take into account the principles of the Treaty of Waitangi when processing this consent. This consent application may be sent to local iwi and hapu who may have an interest in this application.

### **Part 2 Conclusion**

Given the above, it is considered that the proposal meets the purpose of the RMA.

## **11. CONCLUSION**

This application seeks a Discretionary activity resource consent for the replacement for an ablution block and addition to the wharekai that requires a discharge consent under the PRP.

The assessment of effects on the environment concludes that for the reasons outlined in the application, the effects of undertaking this proposal will be no more than minor on the surrounding environment. Effects on persons are also less than minor.

The Proposed Regional Plan and Regional Policy Statement for Northland was also reviewed as part of this application. The proposal was considered to be consistent with the aims of these documents.

The activity is provided for within the NPS-HPL despite the soils being Class 3.

An assessment of Part II of the RMA has also been completed with the proposal generally able to satisfy this higher order document also. We look forward to receiving acknowledgment of the application and please advise if any additional information is required.



Andrew McPhee  
Consultant Planner



**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** **497275**  
**Land Registration District** **North Auckland**  
**Date Issued** 14 September 2009

**Prior References**  
497274

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**Estate** Fee Simple  
**Area** 4046 square metres more or less  
**Legal Description** Punakitere 4K1A1A Block  
**Purpose** Marae to be known as "Parihaka" for the  
common use of the Ngatihinemutu Subtribe

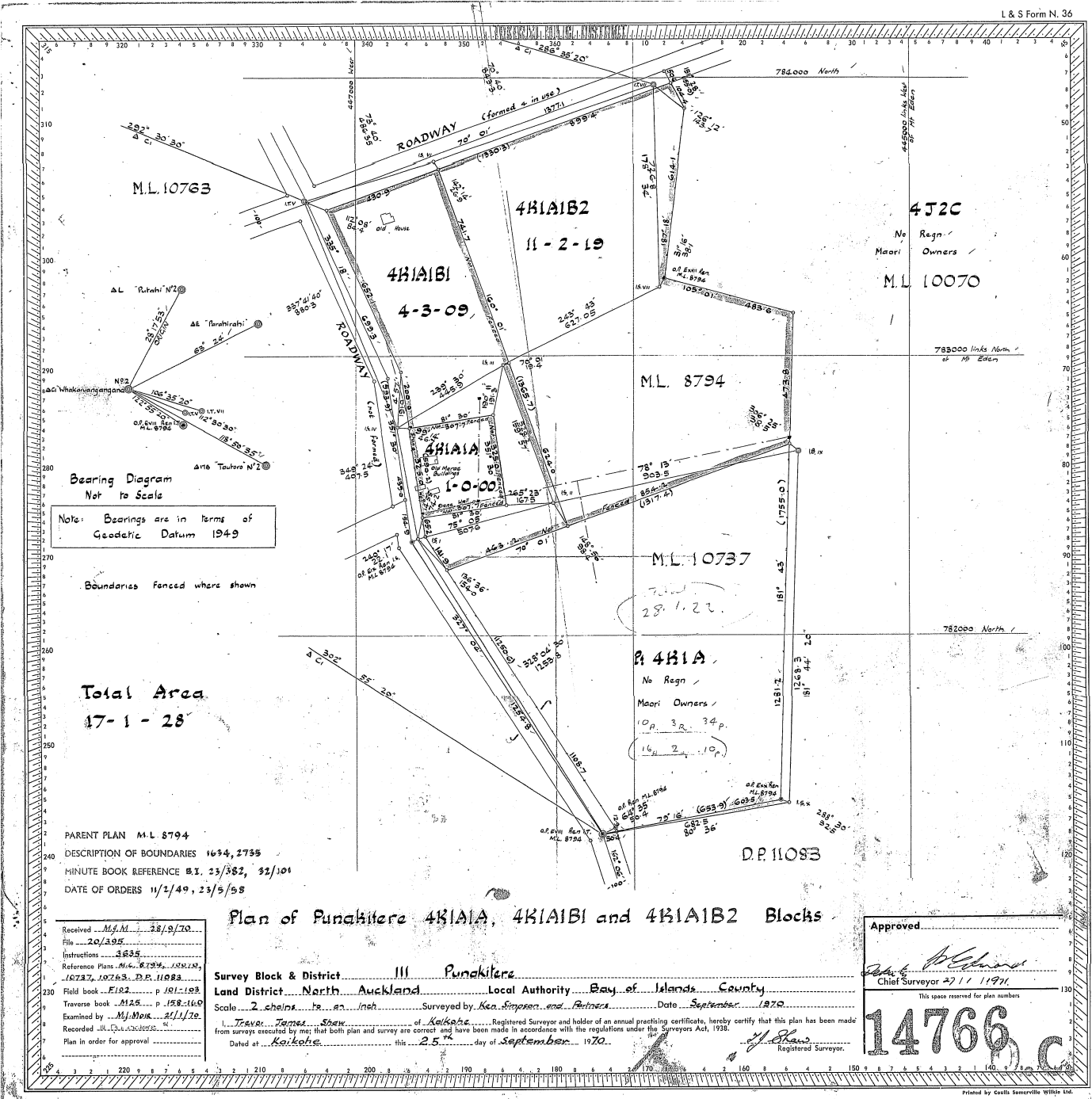
**Registered Owners**

Atareria Repia, Diana McGregor, Koro Reihana, Tui Mathews, Valda Tahere, Barney Preston, Jazmine Rakete, Susan Preston and Willie Henry Reihana as responsible trustees jointly, no survivorship

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**Interests**

8285151.5 Status Order determining the status of the within land to be Maori Freehold Land - 14.9.2009 at 9:00 am





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



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**Record(s) of Title**

497275

Identified as potentially Maori Freehold Land

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



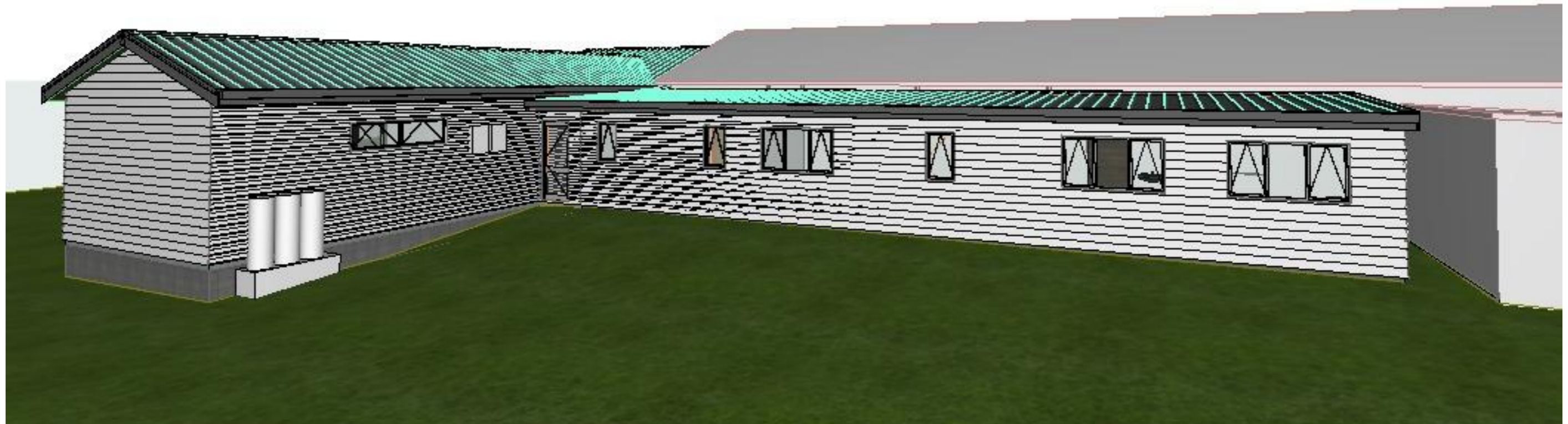
## PROPOSED NEW ABLUTION BLOCK



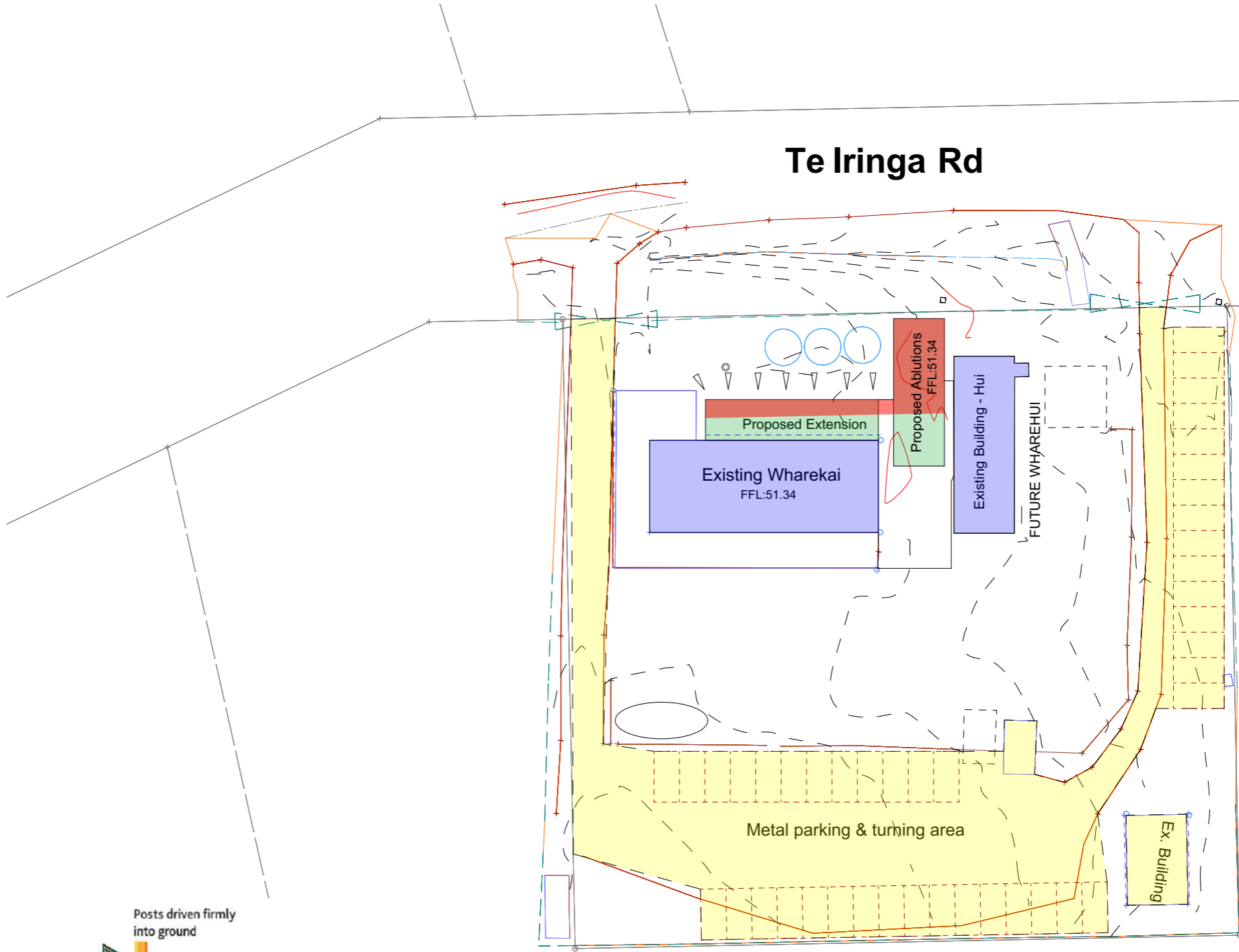
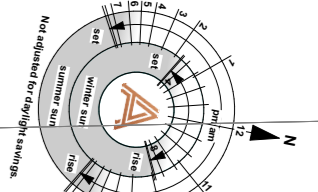
PARIHAKA MARAE  
101 TE IRINGA ROAD  
KAIKOHE

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**Note:**  
 All dimensions to be checked on site prior to commencement of work.  
 Work only to figured dimensions, in the event of a discrepancy contact the Designer  
 Do not change any details without prior consent from the Designer  
 Building Contractor to check all levels, dimensions, connections & Manufacturers Specifications before beginning or manufacturing any work to ensure that all materials & labour necessary to complete the project has been allowed for, whether inferred, drawn on plans or not.  
 Liability will not be accepted by Designer for any materials or labour not shown on drawings or required by council or during construction.



**SITE PLAN NOTES:**

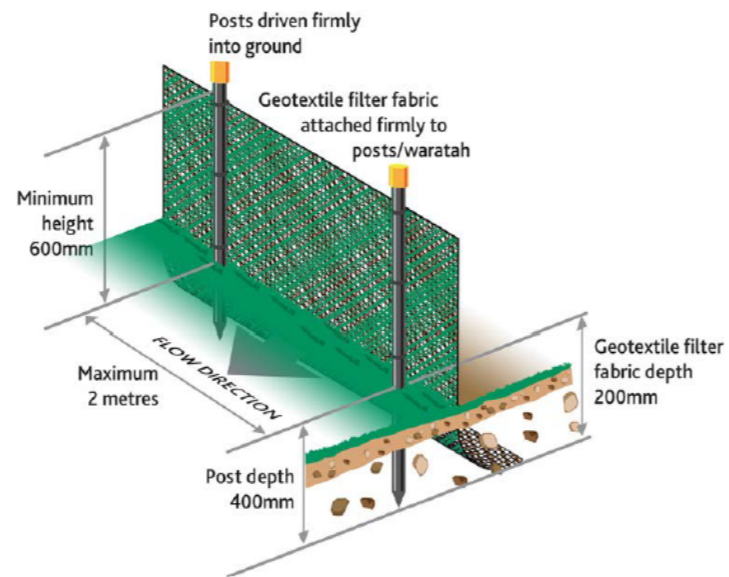
Site Description	Punakitere 4K1A1A Block
Legal Description	RT: 497275 (4,046m <sup>2</sup> )
Zoning	Rural Production
Wind Zone	High
Earthquake Zone	1
Topographic	Moderate
Exposure & Durability	C
Snow Zone	N1
Building Coverage	
Site Area	4,046.00m <sup>2</sup>
Buildings (Existing to be retained)	204.00m <sup>2</sup>
Buildings (Existing to be demolished)	140.00m <sup>2</sup>
Buildings(Proposed extension to Wharekai)	68.00m <sup>2</sup>
Buildings (Proposed Ablutions)	72.50m <sup>2</sup>
Buildings (Proposed Wharenui)	200.00m <sup>2</sup>
Total Permitted	505.75m <sup>2</sup> or 12.50%
Total Proposed	476.50m <sup>2</sup> - 11.78%
District Plan Compliance	
Height in Relation to Boundary (HIRB)	2.0m @ 45° to all boundaries
Maximum Building Height	12.0m
Stormwater Management	
Site Area	4,046.00m <sup>2</sup>
Stormwater retention/detention Permitted	606.90m <sup>2</sup> or 15%
Impervious Area (Buildings - Exis./New- Roofs)	691.90m <sup>2</sup>
Existing paved areas (incl. drives/parking)	1,433.00m <sup>2</sup>
% Impervious Area	52.50%

REFER TO SHEET 04 FOR SILT FENCE LOCATION

Proper silt fence installation is critical to its performance.

It needs to:

- be installed in a trench 200mm deep by 100mm wide
- have waratahs or posts hammer-staked at least 400mm deep on the downhill side of the fabric, no more than 2m apart
- be 600mm high above ground, with an additional 200mm of cloth below ground in the trench
- have each end of the fence return up the slope roughly 2m to prevent water going around the edges
- be anchored by backfilling the trench and placing soil on top of the fabric.

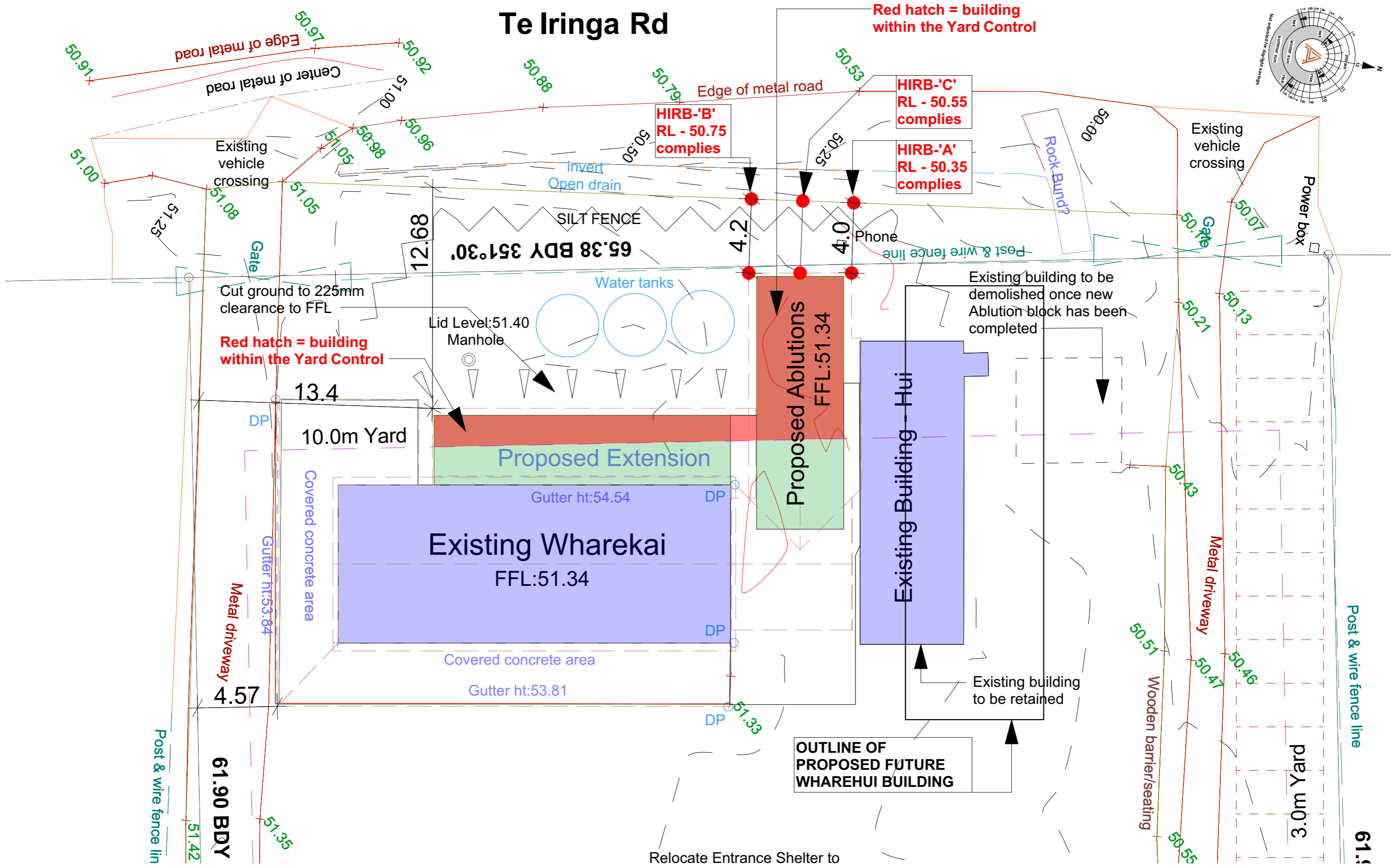
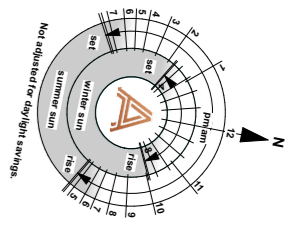


1,350.86 m<sup>2</sup>  
 52.64 m<sup>2</sup>

**Earthworks**

Earthworks to comply with Auckland Council Guidance Document GD005 for Erosion and Accidental Discovery Protocol

# Te Iringa Rd



**PLUMBING NOTES**

All plumbing and drainage to comply with AS/NZS 3500 'The National Plumbing and Drainage Code'.

Install plumbing 100mm below concrete floor.

Check position of sewer and stormwater laterals entering the site before start of work.

All inspection points / inspection bends under paving or driveways to have removable airtight lids at ground level

**LEGEND**

AAV Air Admittance Valve  
 ORGT Overflow Relief Gullt Trap located Min. 1500 below the lowest fixture and 25mm above paved surfaces

TV Terminal Vent

IB Inspection Bend

Stormwater line --- SW ---  
 Sewer line --- SS ---

All drainage pipes under slab to be min. 65mm Ø

**DRANAGE GUIDE**

Drainage pipes to be provided to correct diameter and falls as shown below

Fixture	Dia.	MIn Fall
WC	100mm	1:60
Shower	65mm	1:40
Bath	65mm	1:40
Vanity	65mm	1:40
Sink	65mm	1:40
Tub	65mm	1:40
Terminal vent	50mm	

**HWC DRAINAGE (TO MAIN S/S LINE)**

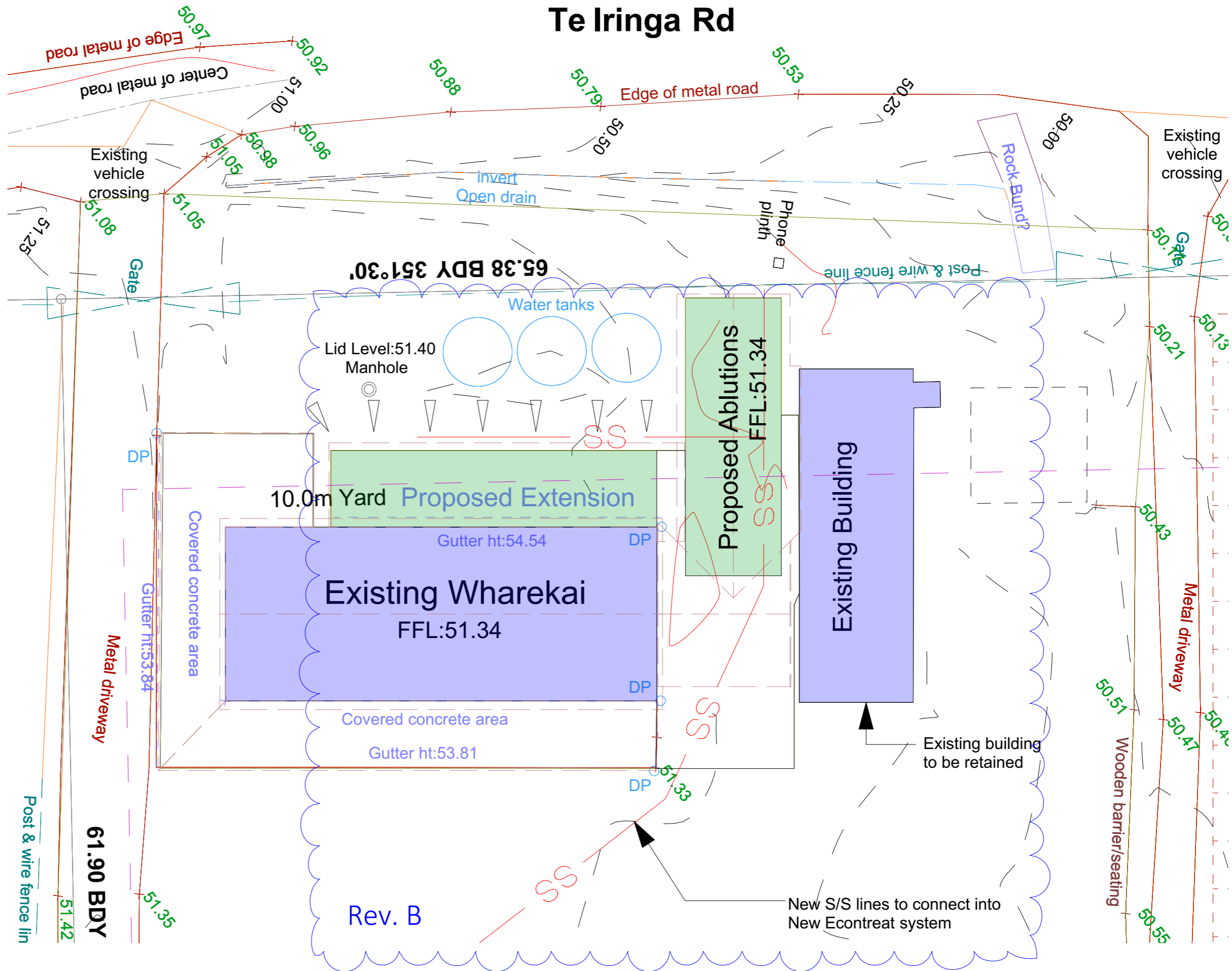
Cylinder to discharge to HWC tray via tundish. Tray to discharge to main S/S line via 40mm diameter pipe through 'S' trap

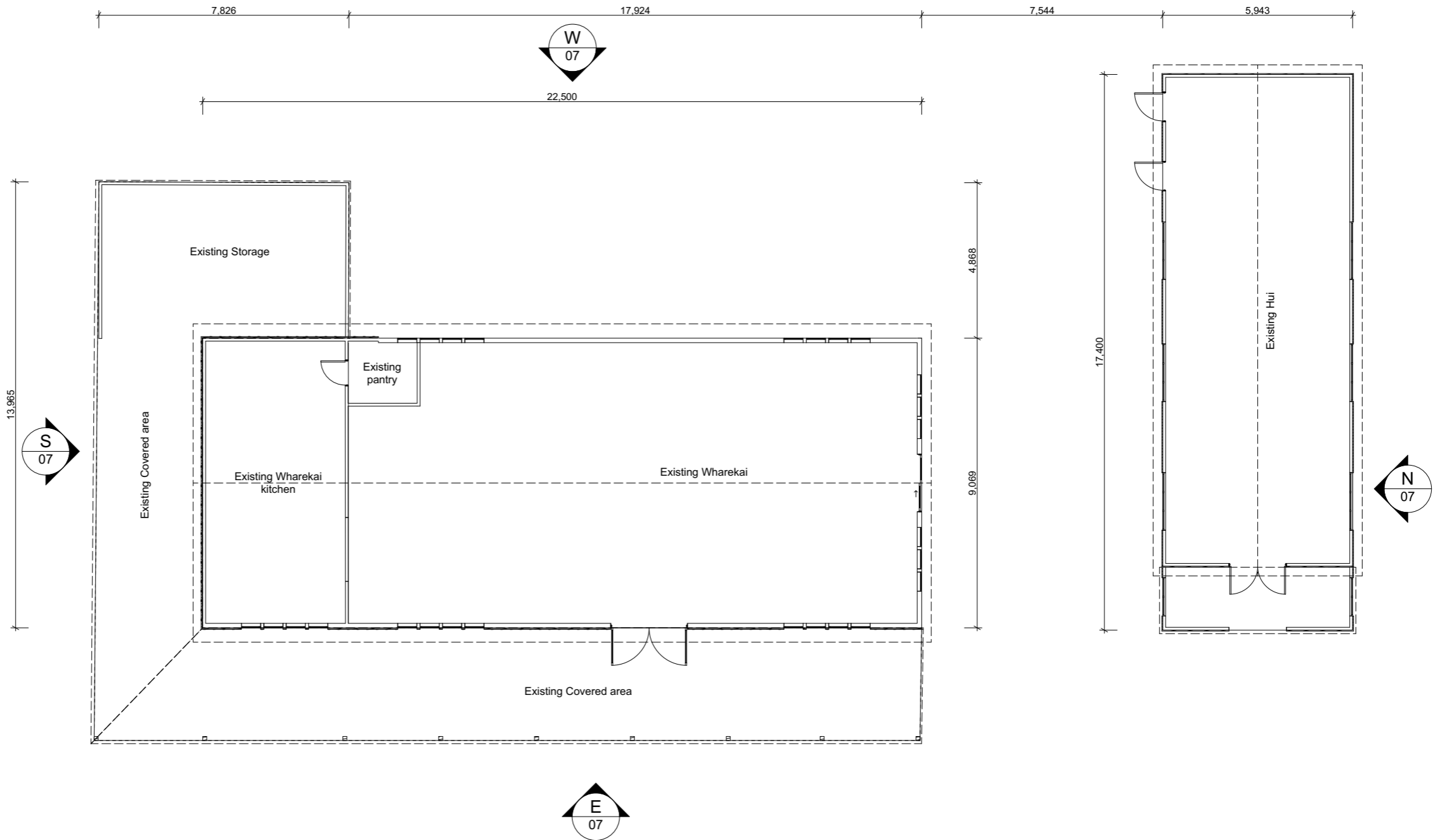
**HWC DRAINAGE (TO GROUND)**

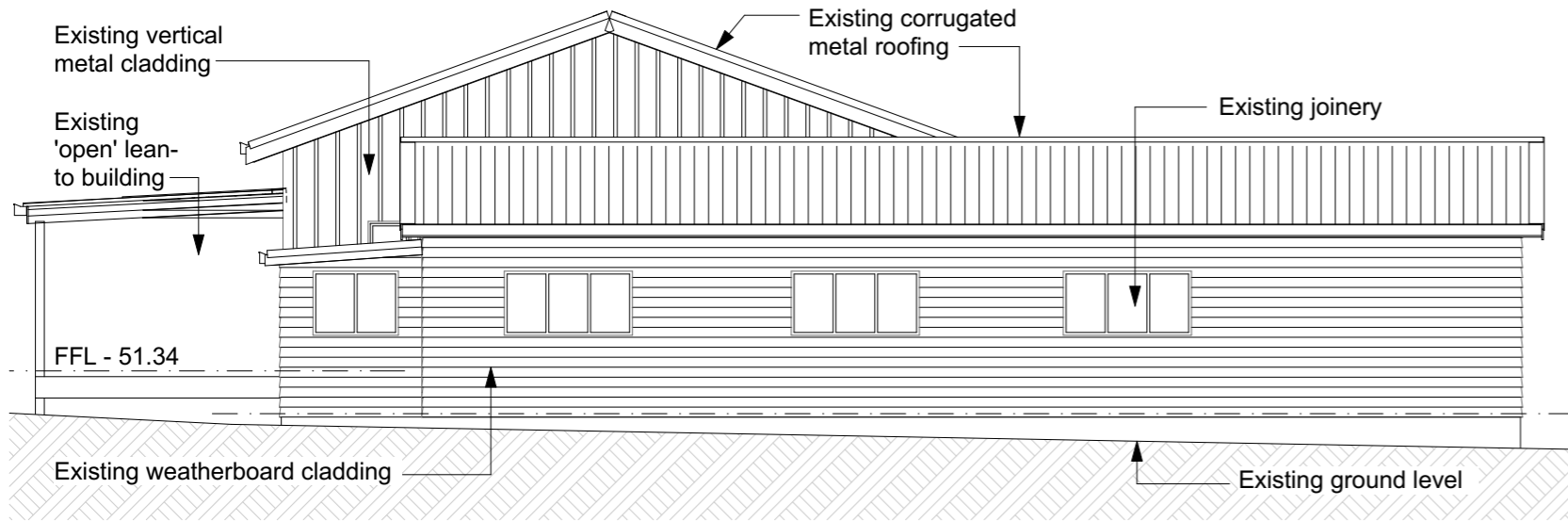
Cylinder discharge to ground via 20mm diameter copper pipe.  
 Tray discharge to ground via 40mm diameter uPVC pipe with vermin trap

**REFER TO SHEET 20 FOR DETAILED LAYOUT OF STORMWATER AND SEWER SYSTEM**

# Te Iringa Rd

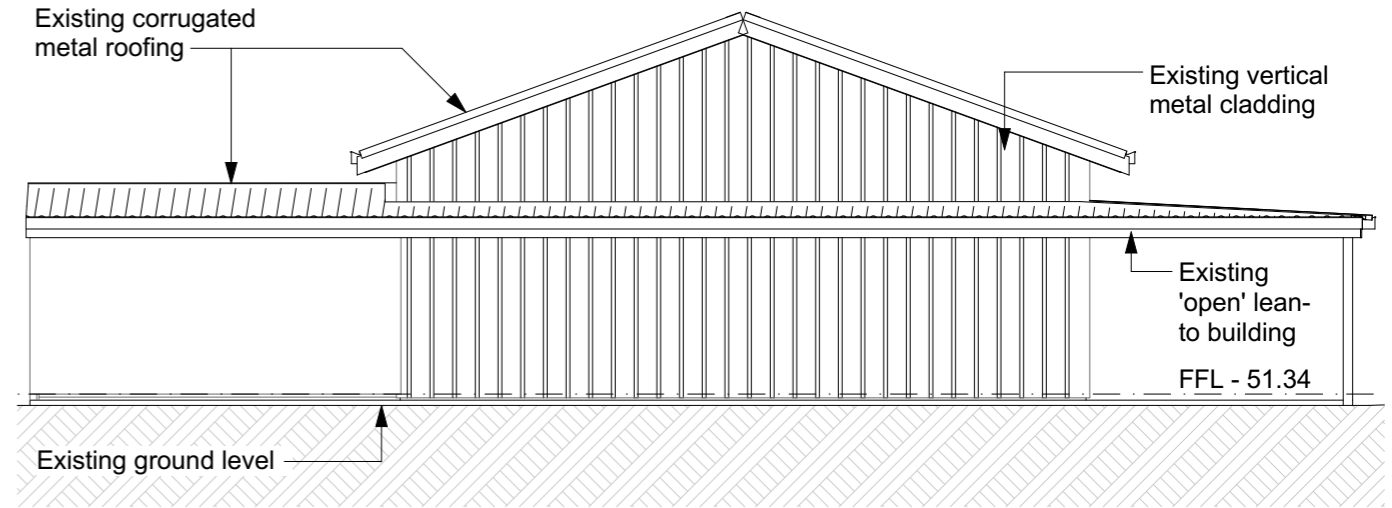






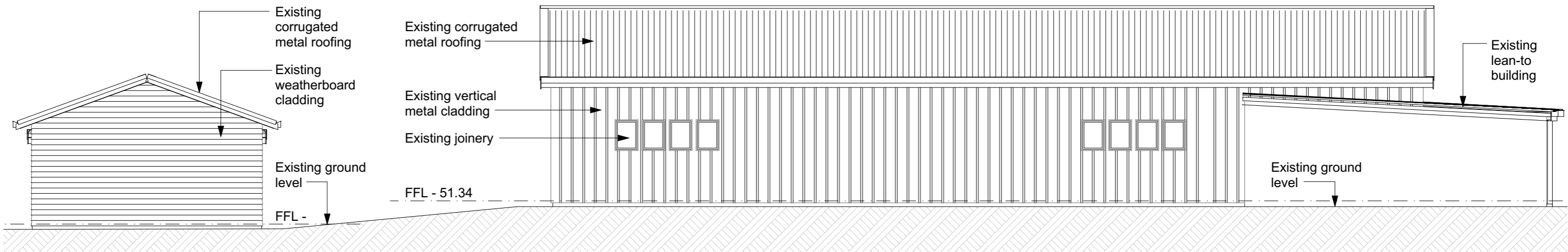
06 NORTH ELEVATION - AS EXISTING

1:100



06 SOUTH ELEVATION - A EXISTING

1:100



06 WEST ELEVATION - AS EXISTING

1:100



06 EAST ELEVATION - AS EXISTING

1:100

**FLOOR PLAN NOTES:**

INTERNAL WALLS TO LEAN TO EXTENSION (SUPER ROOM, STORE ROOM, OFFICE AND LOBBY) - TO BE LINED WITH 13mm GIB TOUGHLINE

FLOORING TO EXTENSION (SHOWER, LAUNDRY, CLEANER AND LOBBY) - TO BE VINYL FLOORING TO DETAILS

FLOORING TO EXTENSION STORE ROOM AND OFFICE - CLIENT CHOSEN CARPET

FLOORING TO WAHINE AND TANE ABLUTIONS - TO BE VINYL FLOORING TO DETAILS

INTERNAL WALL LININGS TO WAHINE AND TANE ABLUTIONS - 9mm PLYWOOD WITH 6mm HARDOGLAZE OVER TO DETAILS

**FLOOR PLAN NOTES:**

**General**  
 All joinery sizes are finished sizes - add 7.5mm each side for box (unit) size.  
 Confirm kitchen layout with owner & kitchen manufacturer before commencing pipeout.  
 All dimensions to timber framing, not finished room sizes.  
 All framing & bottom plates are to be H1.2 treated unless specified otherwise.  
 Internal door heights 2,100mm

Joints between fixtures and wall linings; where baths, basins, tubs or sinks about impervious linings shall be sealed to prevent water penetration to concealed spaces or behind linings

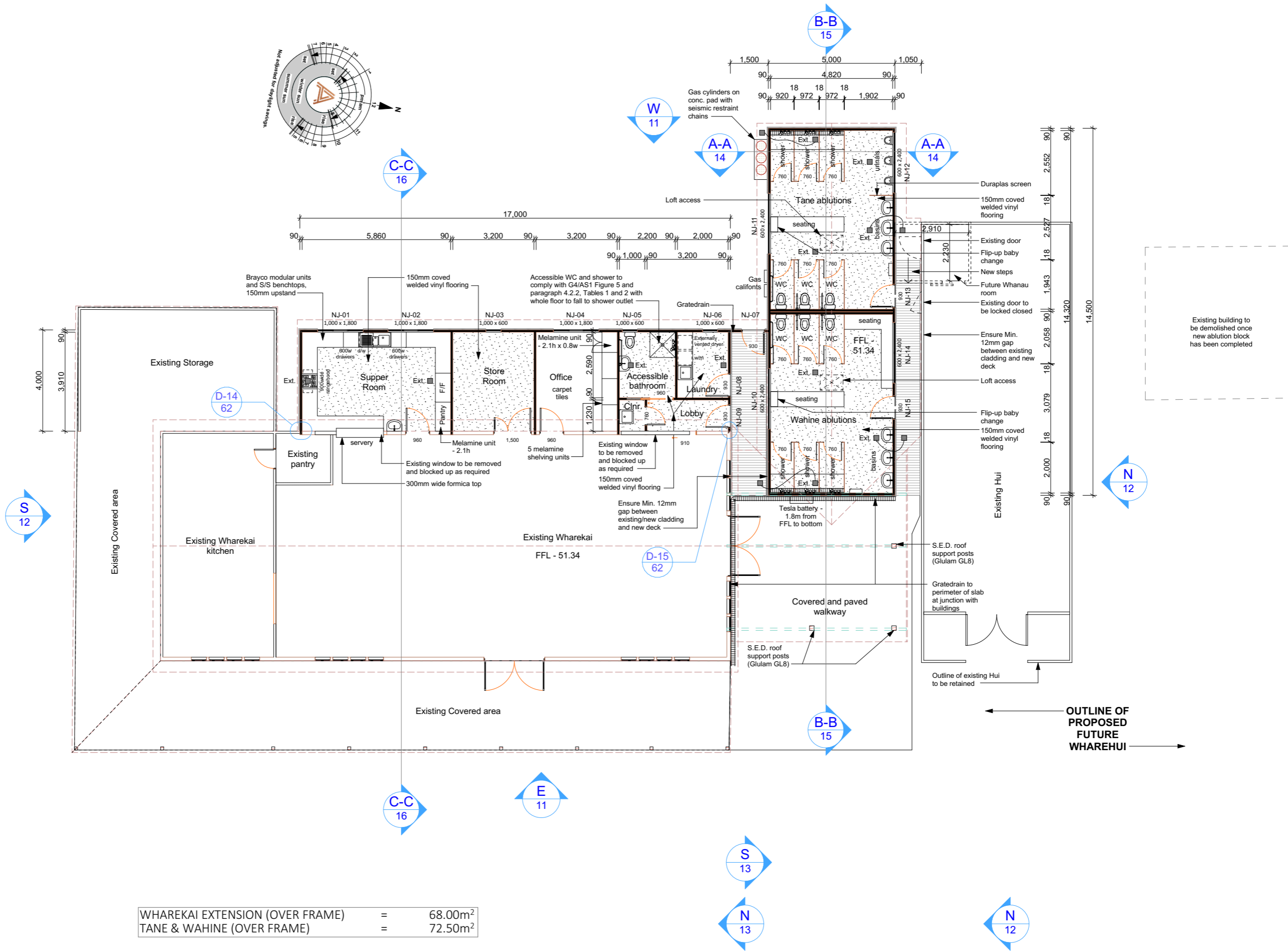
**SHOWERS**  
 All glazing to wet areas to be Grade 'A' toughened safety glass.  
 All access routes, both external and internal, shall have anti-slip surfaces complying with NZBC clause D1/AS1 (2.1 Slip resistance)

**WET AREAS**  
 Flooring in wet areas must comply with E3/AS1 - Section 3.1.1(a):  
 Intergally waterproof sheet material (e.g. Polyvinylchloride) with sealed joints or sealed or coved at edges where watersplash may occur

**SMOKE ALARMS - SA**  
 Smoke alarms to be installed to AS 1670.6 requirements.  
 Equipment tgo comply with AS3786

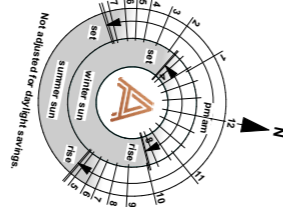
**PROLAM PRODUCTS:**  
 ALL exposed Prolam Products are to be 'sanded, sealed and wrapped'.

■ ext.  
 Extractor fans located in ceilings Kitchen rangehood, Laundry, Bath and Ensuite to terminate at soffit



WHAREKAI EXTENSION (OVER FRAME)	=	68.00m <sup>2</sup>
TANE & WAHINE (OVER FRAME)	=	72.50m <sup>2</sup>

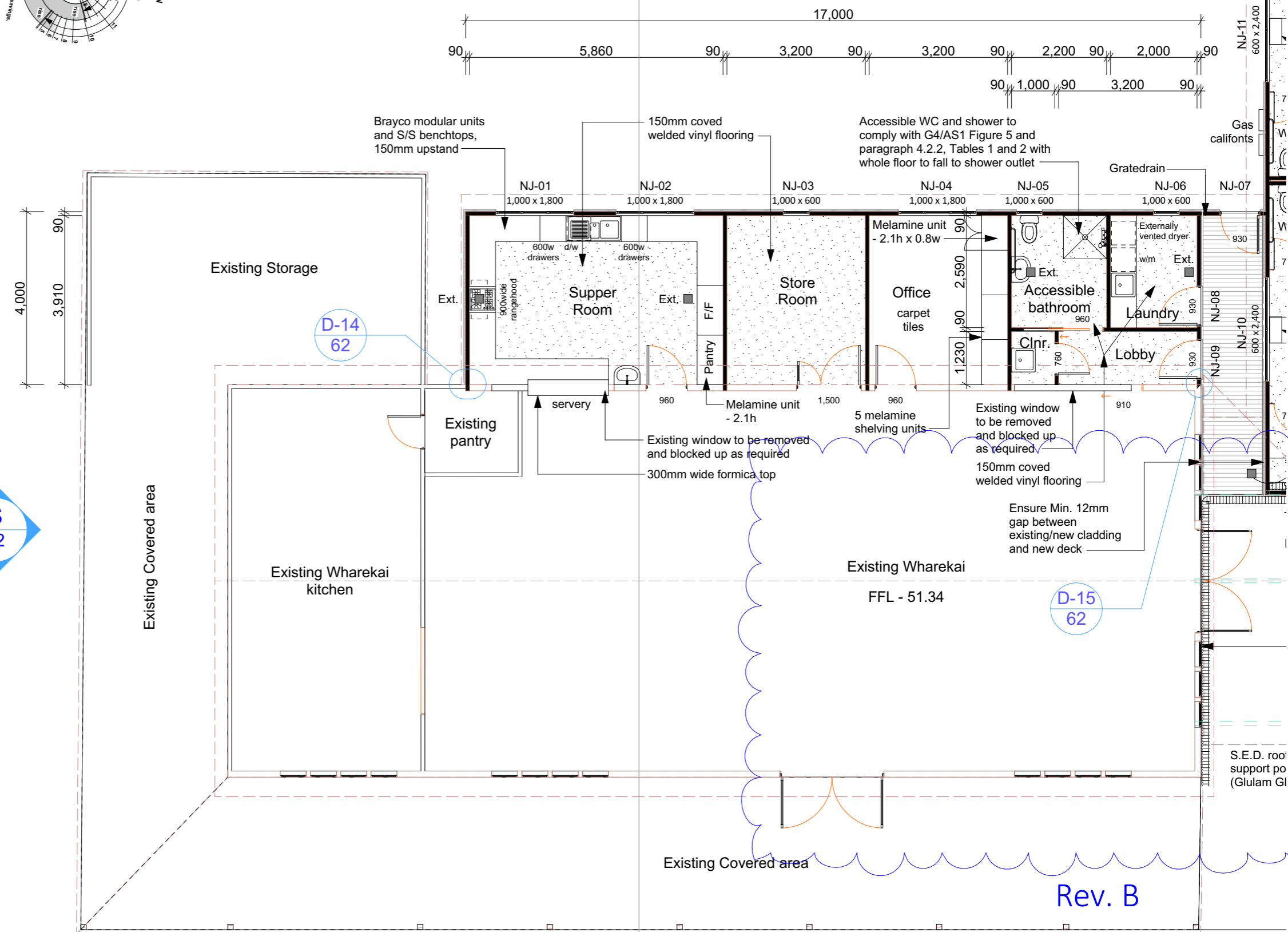


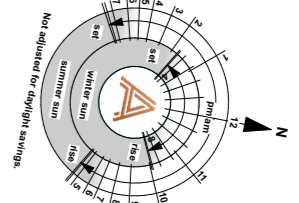
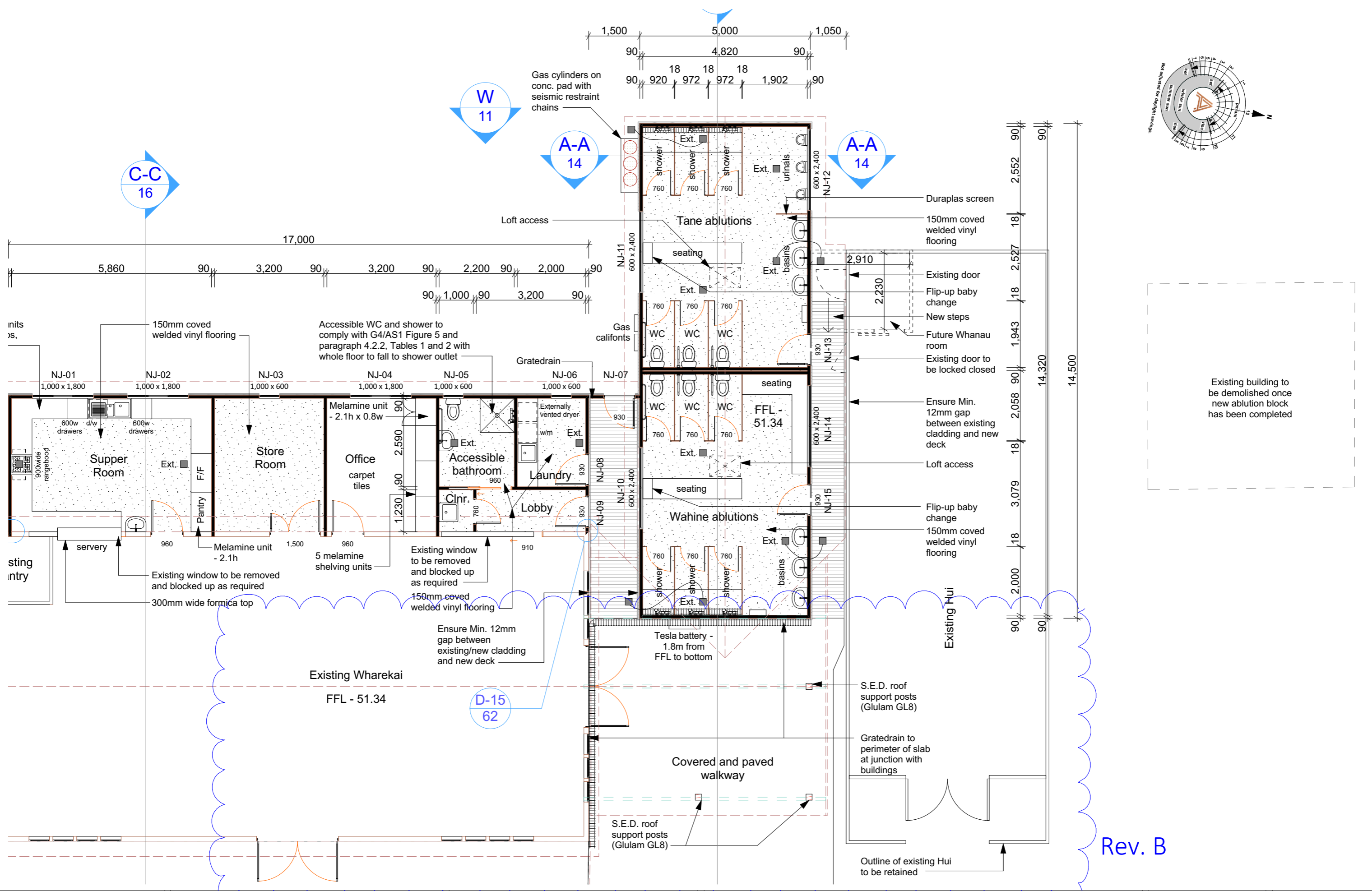


C-C  
16

A-A  
14

S  
12





Existing building to be demolished once new ablution block has been completed

Rev. B

BUILDING ENVELOPE RISK MATRIX		
East Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (NZS3604)	High Risk	2
Number of storeys	Low risk	1
Roof/wall intersection	Very High Risk	5
Eaves width	Medium Risk	1
Envelope complexity	Medium risk	1
Deck design	Low risk	0
TOTAL SCORE		10

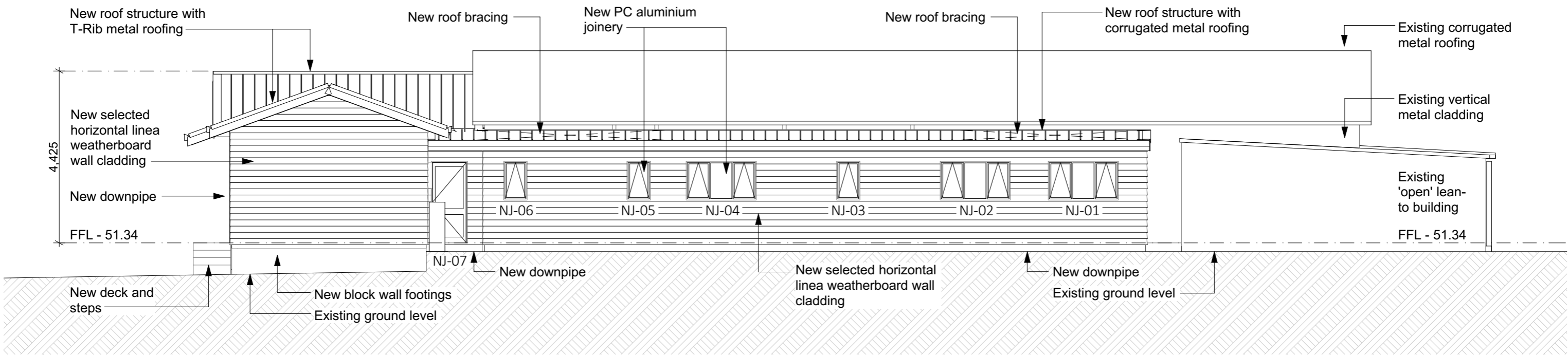
BUILDING ENVELOPE RISK MATRIX		
West Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (NZS3604)	High Risk	2
Number of storeys	Low risk	1
Roof/wall intersection	Very High Risk	5
Eaves width	Medium Risk	1
Envelope complexity	Medium risk	1
Deck design	Low risk	0
TOTAL SCORE		10



11

EAST ELEVATION - AS PROPOSED

1:100

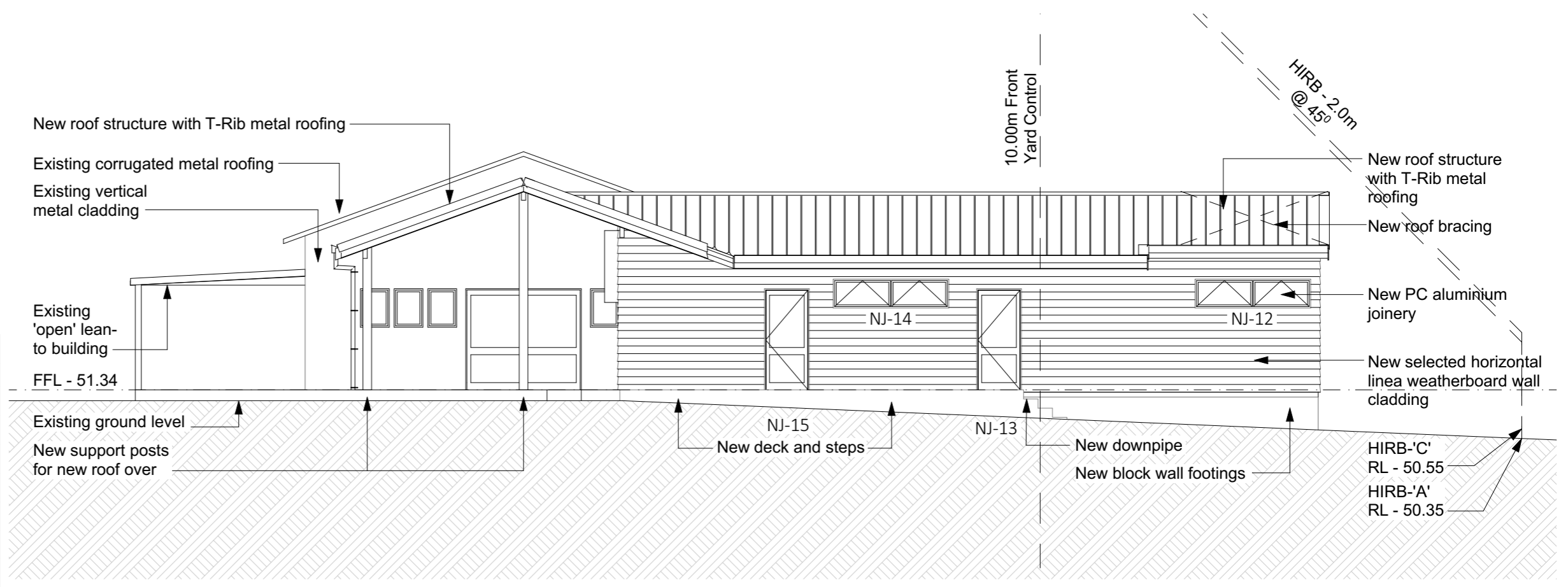


11

WEST ELEVATION - AS PROPOSED

1:100

BUILDING ENVELOPE RISK MATRIX		
North Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (NZS3604)	High Risk	2
Number of storeys	Low risk	1
Roof/wall intersection	Very High Risk	5
Eaves width	Medium Risk	1
Envelope complexity	Medium risk	1
Deck design	Low risk	0
<b>TOTAL SCORE</b>		<b>10</b>

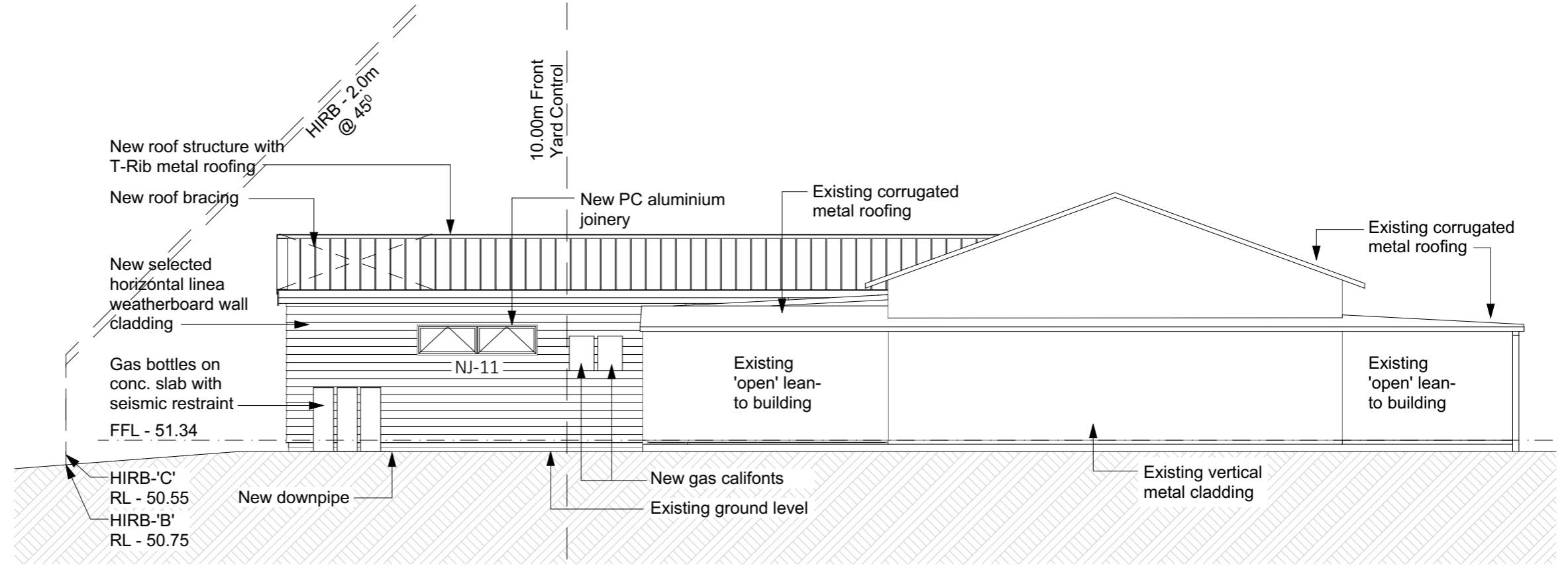


12

NORTH ELEVATION - AS PROPOSED

1:100

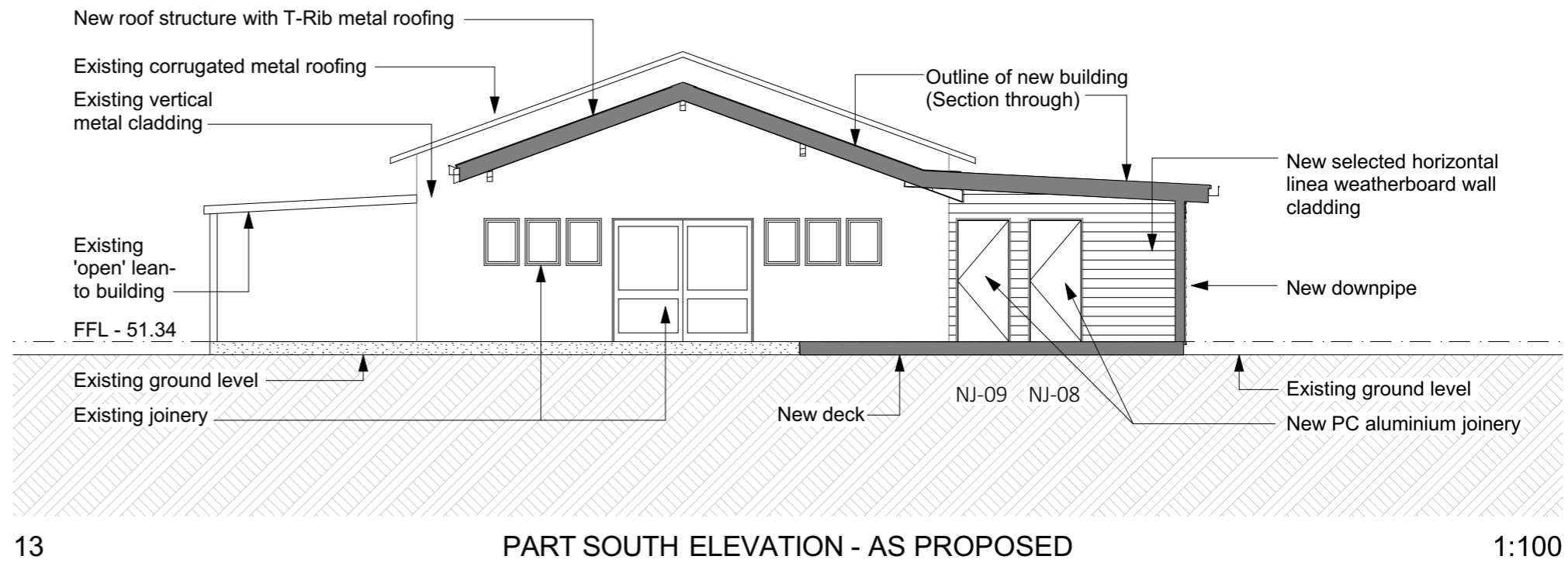
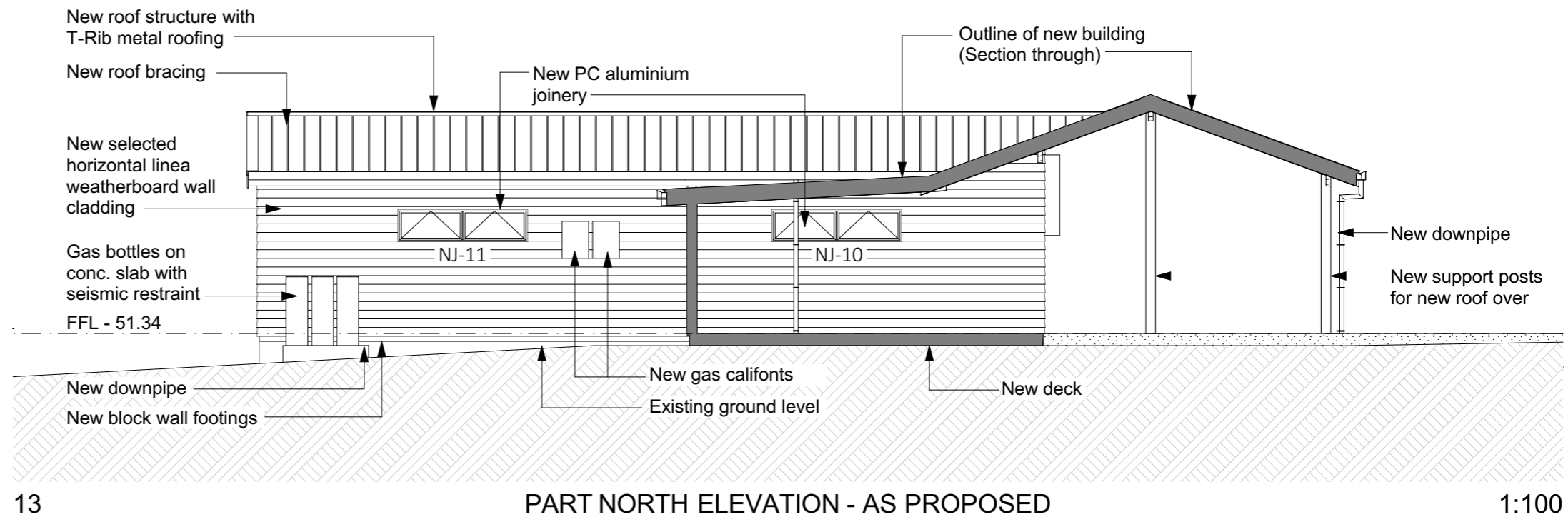
BUILDING ENVELOPE RISK MATRIX		
South Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (NZS3604)	High Risk	2
Number of storeys	Low risk	1
Roof/wall intersection	Very High Risk	5
Eaves width	Medium Risk	1
Envelope complexity	Medium risk	1
Deck design	Low risk	0
<b>TOTAL SCORE</b>		<b>10</b>



12

SOUTH ELEVATION - AS PROPOSED

1:100



**INTERIOR WALL FRAMING**  
 FOR INTERIOR WALLS UP TO 2,700mm H1.2 SG8 STUDS @ 600mm MAX. CRS. NOGS @ 800mm MAX. CRS.

10mm GIB STANDARD TO EACH SIDE (AQUALINE TO WET AREA)  
 10mm GIB STANDARD TO GARAGE  
 VILLABOARD TO TILED SHOWERS

**TOP PLATE**  
 (WIDTH TO SUIT WALL THICKNESS) x 45mm H1.2 SG8 SINGLE STUD-LOK PLUS 2/90mm X 3.5mm DIA. NAILS

**BOTTOM PLATE**  
 (WIDTH TO SUIT FRAMING) x 45mm H1.2 SG8 BOTTOM PLATE ON DPC. M12 x 40mm TRUBOLTS @ 900mm MAX. CRS. (CONCRETE)

**CEILING**  
 13mm GIB STANDARD CEILING LINING SCREW FIXED TO UNDERSIDE OF RONDO CEILING BATTEN, CLIP FIXED @ 600mm CRS. (AQUALINE TO WET AREAS)

**HORIZONTAL CAVITY BATTENS**  
 CAVIBAT CAVITY BATTENS, MANUFACTURED FROM EXTRUDED POLYPROPYLENE. THE BATTENS ARE CUT AFTER EXTRUDING TO A FINISHED SIZE OF APPROXIMATELY 45mm WIDE BY 18mm THICK. THE BATTENS ARE COLOURED GREEN AND SUPPLIED IN 1200mm LONG LENGTH. CAVIBAT CAVITY BATTENS ARE COVERED BY BRANZ APPRAISAL N. 524 (2012)

**ROOFING**  
 0.40G T-RIB ROOFING ON FLAMESPEC SS BAYOWRAP ROOF BUILDING PAPER, LAID HORIZONTALLY OVER GALV. MESH

**PURLINS**  
 70 x 45mm H1.2 SG8 PURLINS ON FLAT @ 900mm CRS. MAX. FIXED WITH 14G BLUE SCREWS  
 TOP PURLINS 600mm FROM RIDGE  
 BOTTOM PURLINS 600MM FROM FASCIA

**FASCIA & SPOUTING**  
 125mm SPOUTING WITH EXTERNAL BRACKETS @ 400mm CRS.

**DOWNPIPES**  
 80mmØ PVC DOWNPIPES PAINTED TO MATCH WALL INSTALL TO MANUFACTURERS RECOMMENDATIONS

**CLADDING**  
 JAMES HARDIE HORIZONTAL LINEA WEATHERBOARD WALL CLADDING OVER 20mm VENTED CAVITY SYSTEM AND BUILDING WRAP

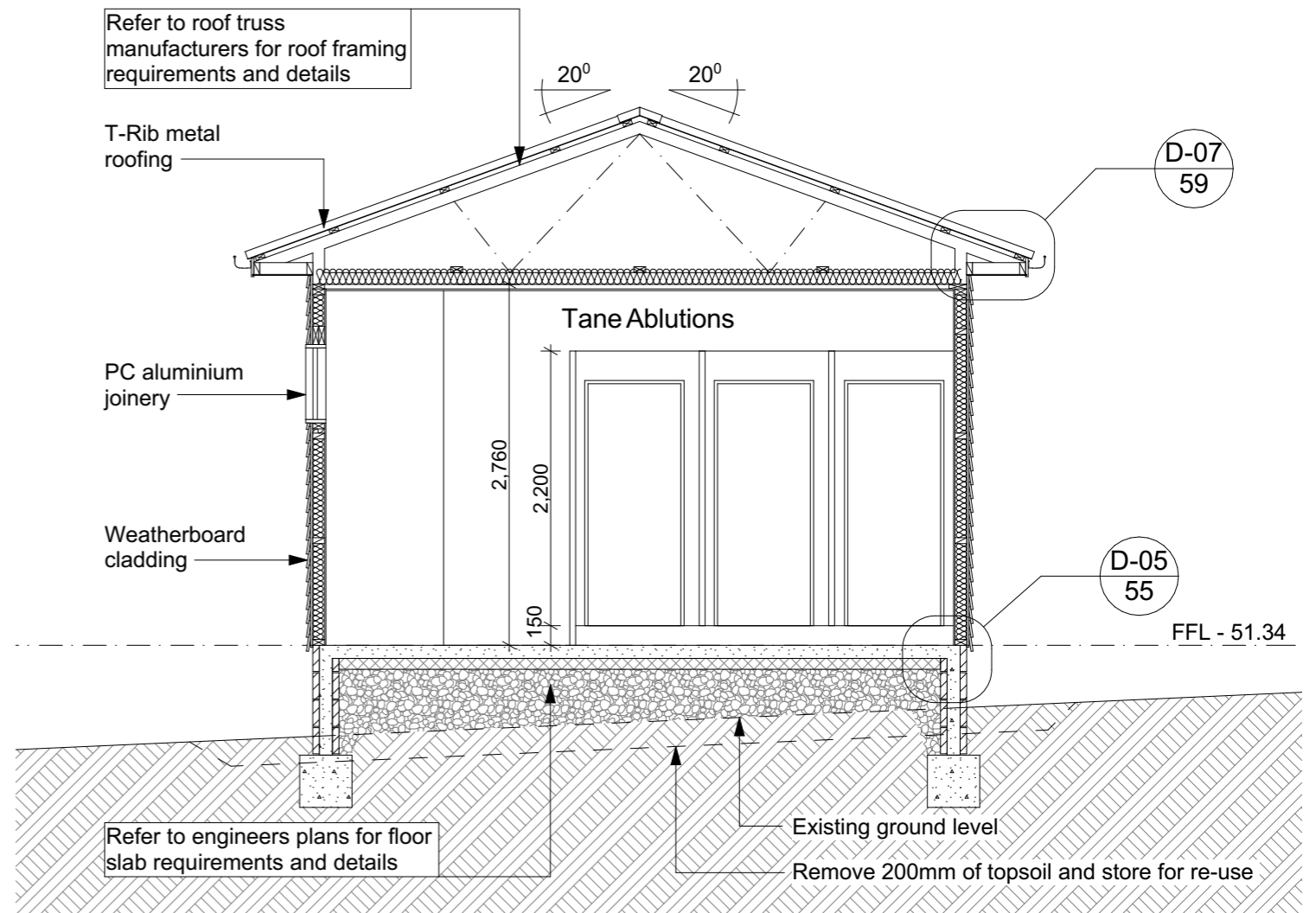
**EXTERIOR WALL FRAMING**  
 FOR EXTERIOR WALL UP TO 2,700mm - 2/90 x 45mm H1.2 SG8 STUDS @ 600mm MAX. CRS.

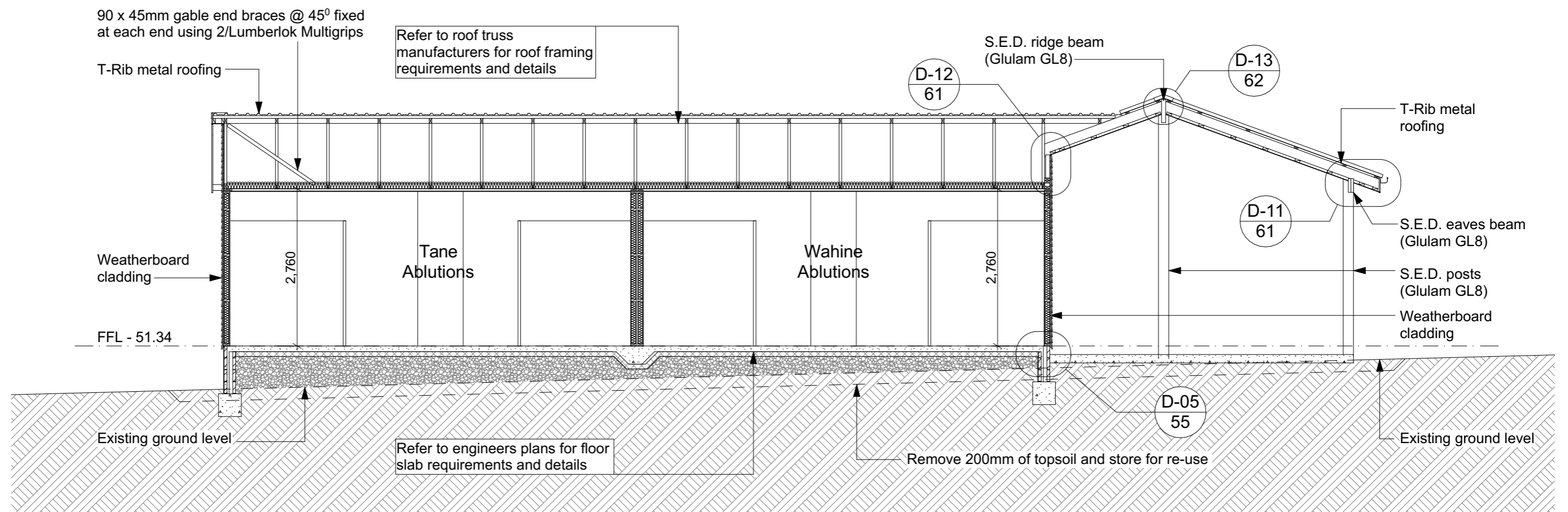
FOR EXTERIOR WALLS UP TO 3,000mm - 2/90 x 45mm H1.2 SG8 STUDS @ 600mm MAX. CRS.

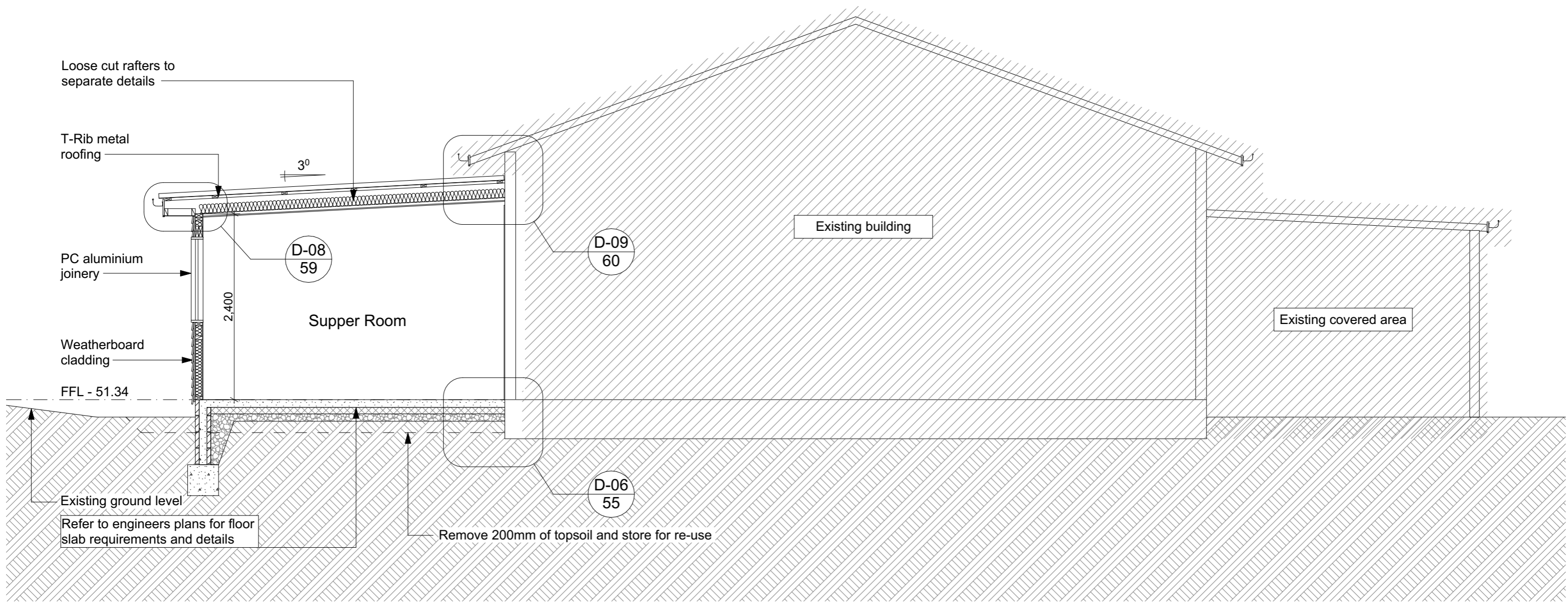
EXTRA NOG AT SOFFIT HEIGHT  
 NOTE: PRE-CUTTER NOT TO INCREASE STUD CRS. OR NOG SPACINGS

**SOFFITS**  
 EAVES/SOFFIT FRAMING CRS. REFER TO JAMES HARDIE EAVES & SOFFITS MANUAL - TABLE 11

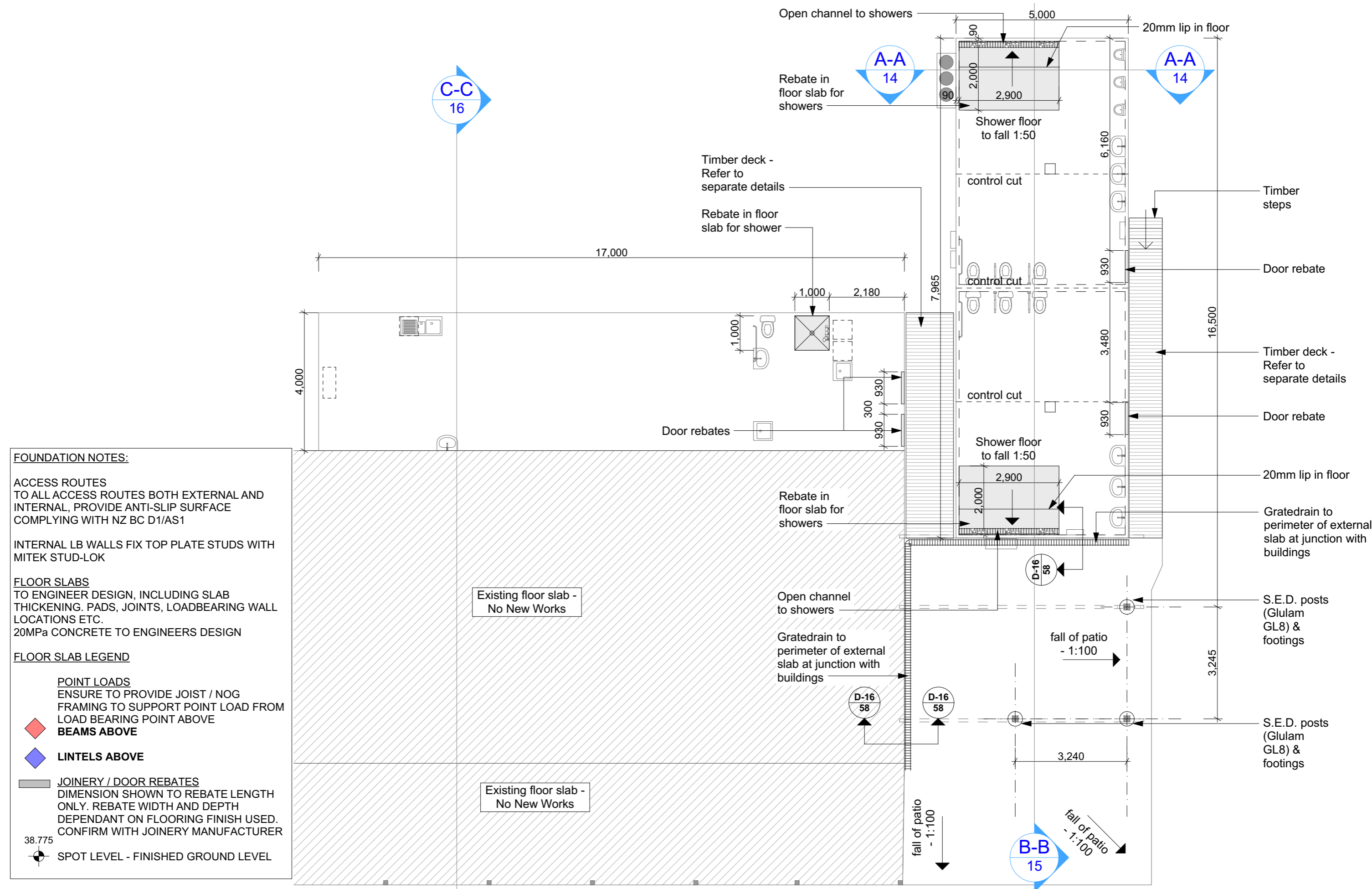
**SECTION DETAILS:**  
 1:5 DETAILS TAKE PRECEDENCE OVER THESE CROSS SECTIONS

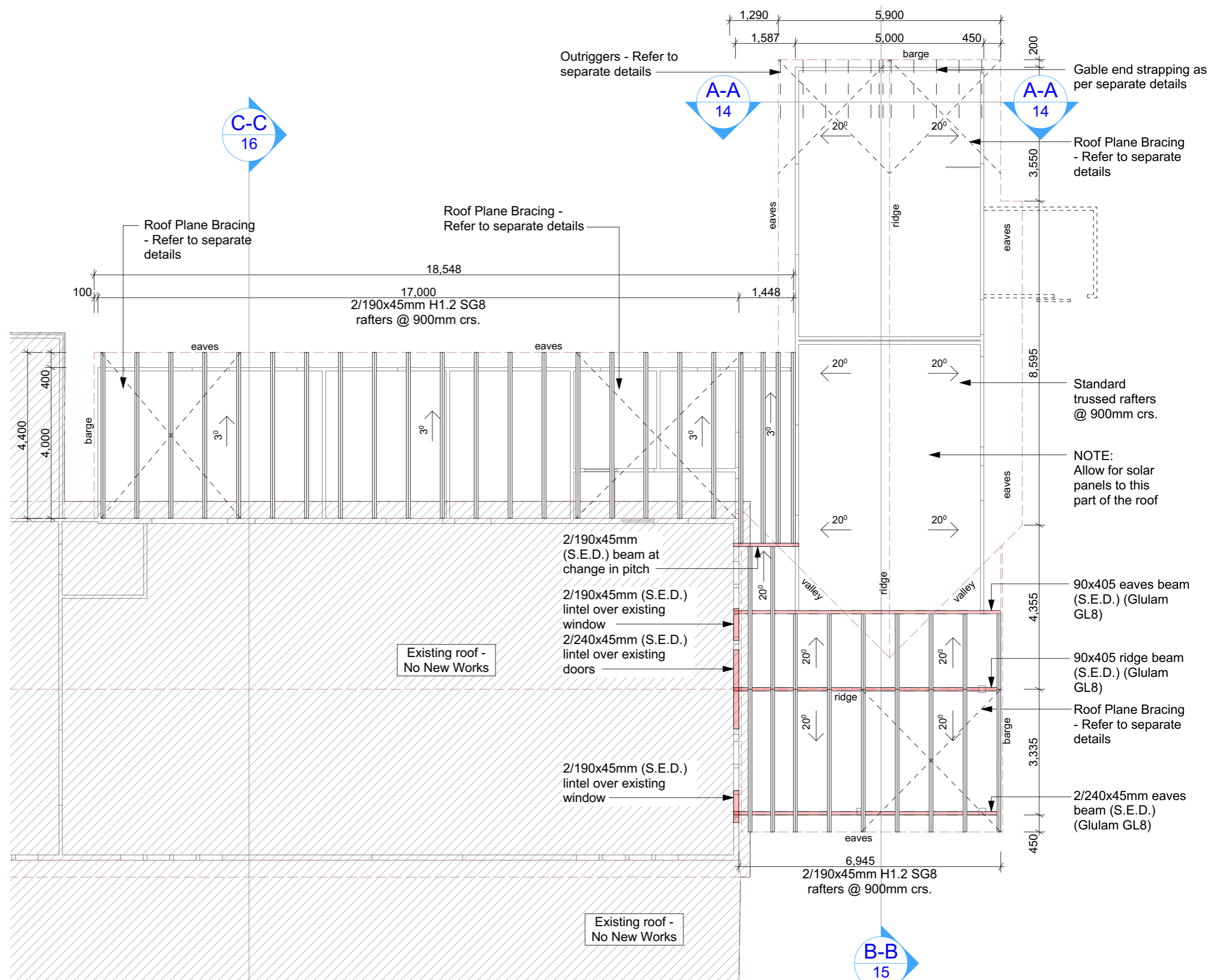












**ROOFING**  
 TRIMRIB ROOFING ON FLAMESPEC SS  
 BAYOWRAP ROOF BUILDING PAPER,  
 LAID HORIZONTALLY OVER GALV. MESH

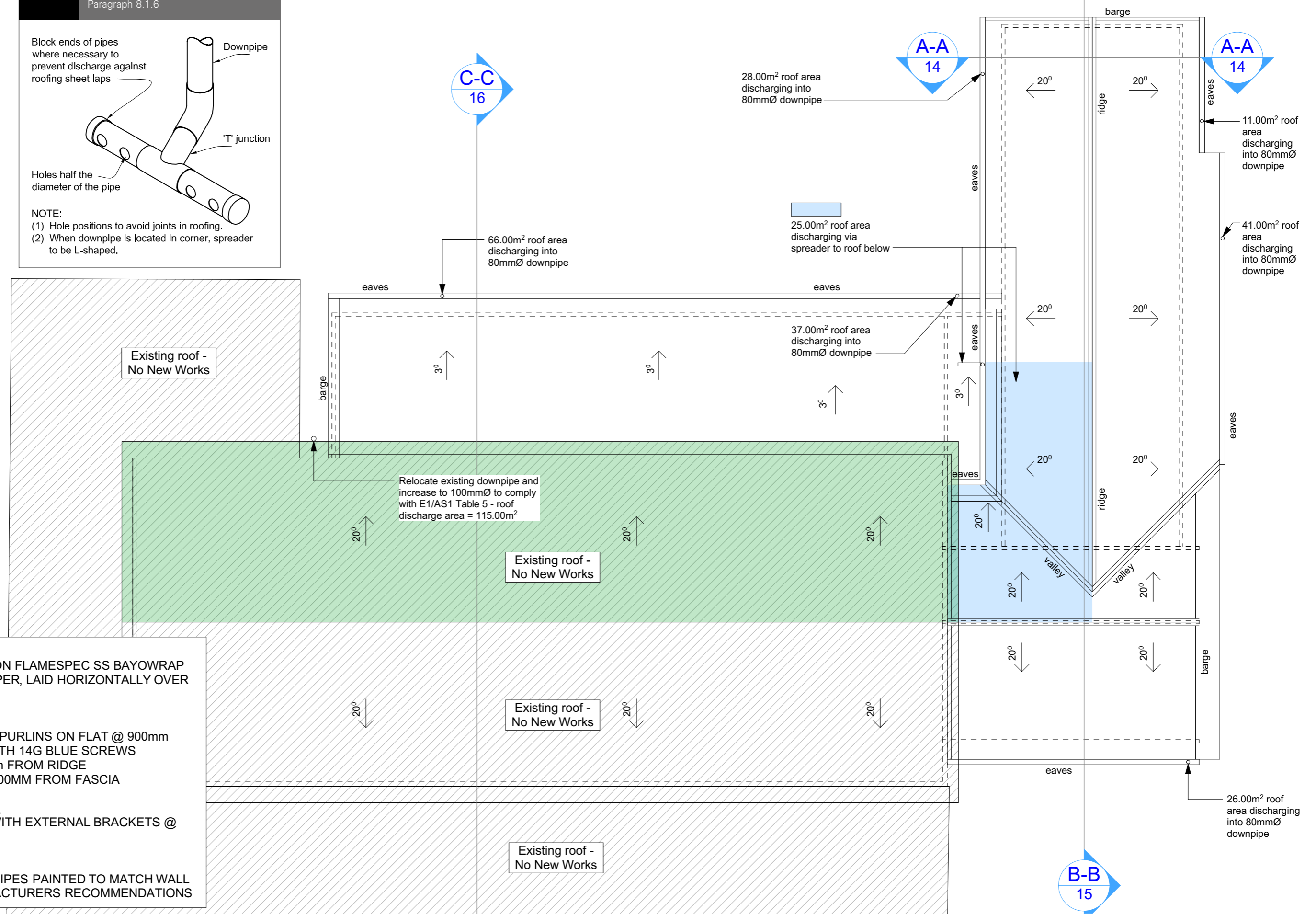
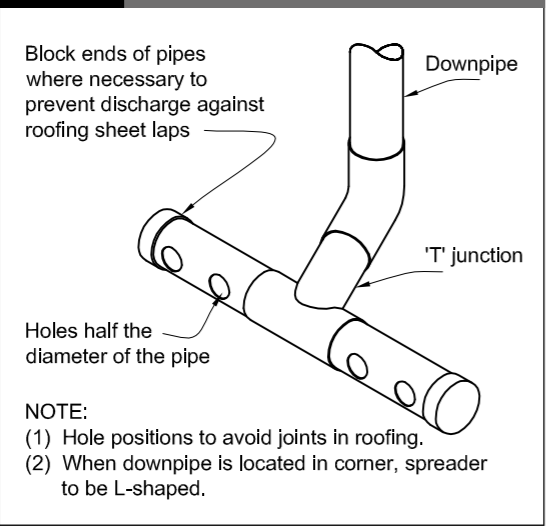
**PURLINS**  
 70 x 45mm H1.2 SG8 PURLINS ON FLAT @  
 900mm CRS. MAX. FIXED WITH 14G BLUE  
 SCREWS  
 TOP PURLINS 600mm FROM RIDGE  
 BOTTOM PURLINS 600MM FROM FASCIA

**NOTES:**

**ROOF PLANE BRACING**  
 Diagonally opposing pair tensioned  
 Lumberlok strip brace roof plane  
 bracing running from ridge to top plane  
 installed as per manufacturers  
 specifications 5/30x3.15 nails each end  
 & 1/30x3.15 nail at crossing (after  
 tensioning)

**OUTRIGGERS**  
 90 x 45mm outriggers on edge @ max.  
 1.2m crs.  
 Fixing: fix to drop truss/end truss using  
 2/90x3.15mm skew nails + 2 wire dogs  
 (4.7 kn) with 90 x 45mm H1.2 SG8 fly  
 rafter on edge

**Figure 20: Spreader for roof discharge**  
Paragraph 8.1.6



**ROOFING**  
TRIMRIB ROOFING ON FLAMESPEC SS BAYOWRAP  
ROOF BUILDING PAPER, LAID HORIZONTALLY OVER GALV. MESH

**PURLINS**  
70 x 45mm H1.2 SG8 PURLINS ON FLAT @ 900mm CRS. MAX. FIXED WITH 14G BLUE SCREWS  
TOP PURLINS 600mm FROM RIDGE  
BOTTOM PURLINS 600MM FROM FASCIA

**FASCIA & SPOUTING**  
125mm SPOUTING WITH EXTERNAL BRACKETS @ 400mm CRS.

**DOWNPIPES**  
80mmØ PVC DOWNPIPES PAINTED TO MATCH WALL  
INSTALL TO MANUFACTURERS RECOMMENDATIONS

Roof Plan

PARIHAKA MARAE  
101 TE IRINGA ROAD  
KAIKOHE

Rev No.    Date    Revision

Scale @ A3:    1:100  
Drawn By    M.K.B.  
Issued:    13/11/2023  
4:11 PM

Sheet No:  
**19**

**PLUMBING NOTES**

All plumbing and drainage to comply with AS/NZS 3500 'The National Plumbing and Drainage Code'.

Install plumbing 100mm below concrete floor.

Check position of sewer and stormwater laterals entering the site before start of work.

All inspection points / inspection bends under paving or driveways to have removable airtight lids at ground level



Locate gully traps 150mm below the lowest fixture and 25mm above paved areas

**LEGEND**

AAV Air Admittance Valve  
 ORGT Overflow Relief Gull Trap located Min. 1500 below the lowest fixture and 25mm above paved surfaces

TV Terminal Vent

IB Inspection Bend

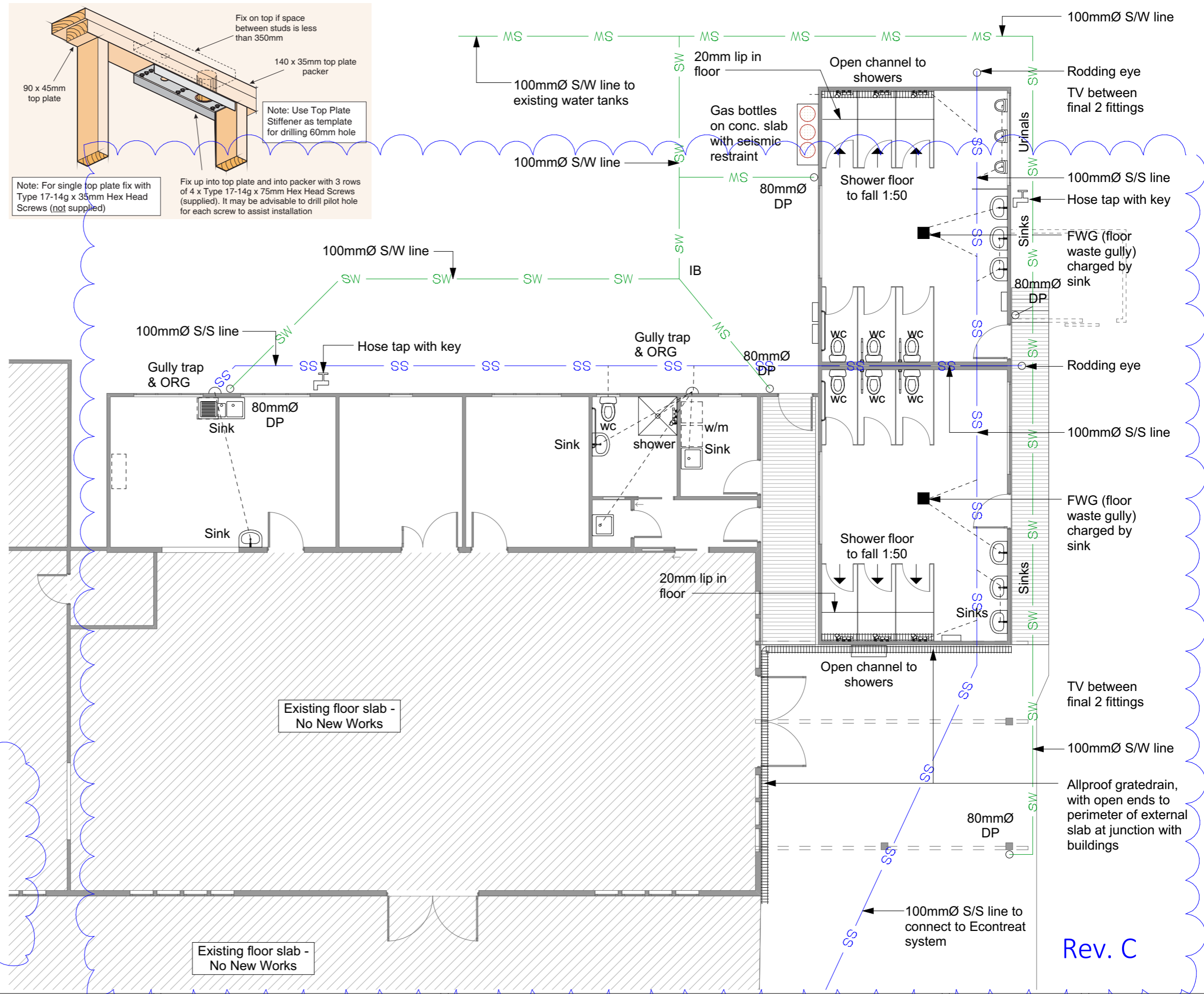
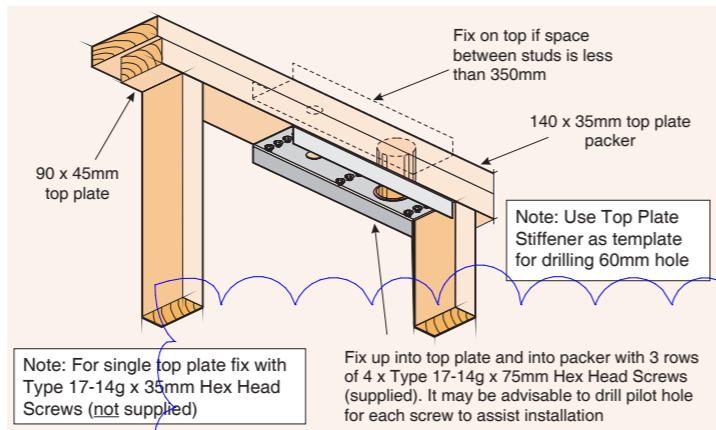
Stormwater line  SW  
 Sewer line  SS

All drainage pipes under slab to be min. 65mm Ø

**DRANAGE GUIDE**

Drainage pipes to be provided to correct diameter and falls as shown below

Fixture	Dia.	Min Fall
WC	100mm	1:60
Shower	65mm	1:40
Bath	65mm	1:40
Vanity	65mm	1:40
Sink	65mm	1:40
Tub	65mm	1:40
Terminal vent	50mm	



140 x 35 extra top plate when used (see 8.7.4.2)  
Connection rated as per table below

450 long blocking fixed to each plate with connection capacity in tables below. Fix blocking to top plate and to ceiling joist

Top plate  
Studs  
Top plate

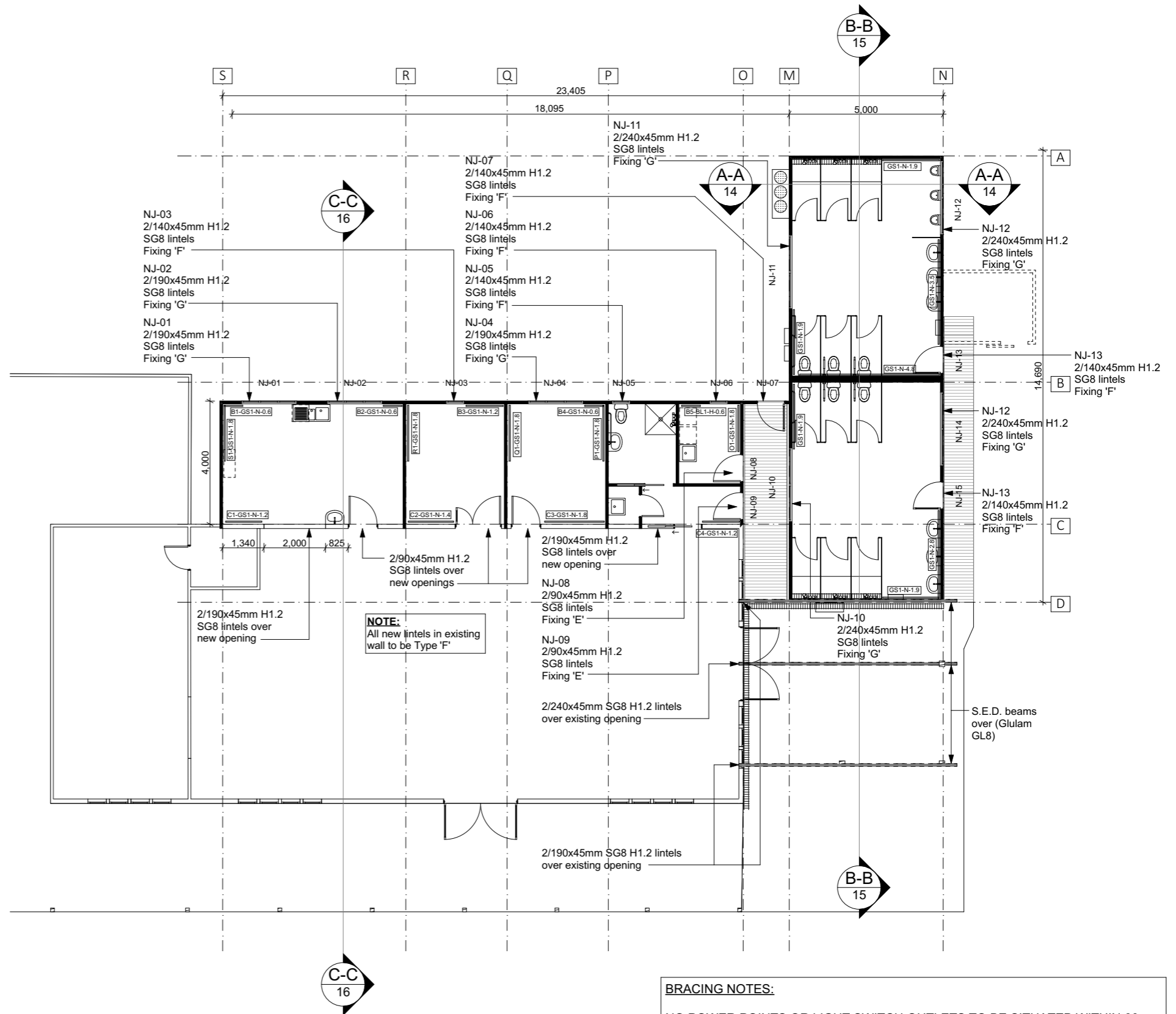
Top plate  
Studs  
Top plate

(A) BUTT JOINT (B) BUTT JOINT (WITH CEILING JOIST)

Capacities of metal plate joints		Capacities of nailed joints	
Up to 3 kN	3 / 30 x 3.15 mm nails per side	Up to 3 kN	3 / 100 x 3.75 mm nails per side
Up to 6 kN	6 / 30 x 3.15 mm nails per side	Up to 6 kN	6 / 100 x 3.75 mm nails per side

NOTE - See section 4 for durability requirements.

Unless otherwise stated, all dimensions are in mm.



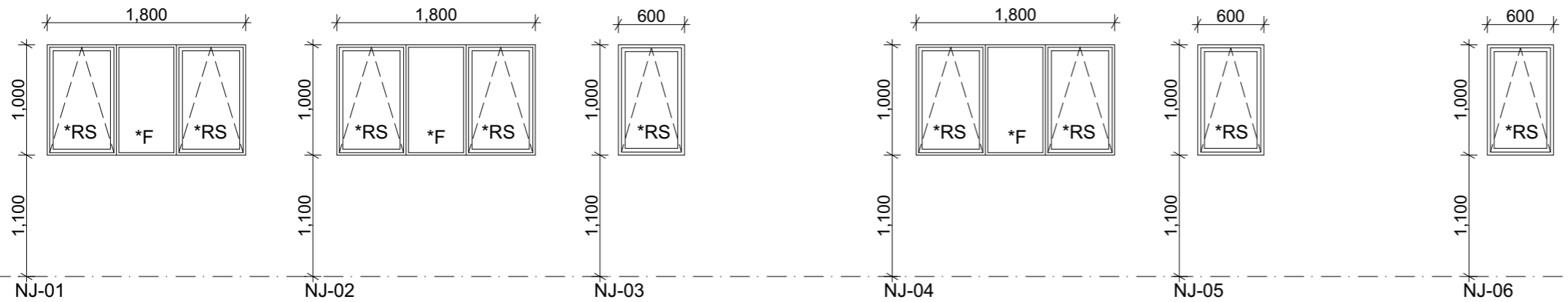
**BRACING NOTES:**

NO POWER POINTS OR LIGHT SWITCH OUTLETS TO BE SITUATED WITHIN 90mm OF THE EDGE OF A BRACING ELEMENT  
9mm VILLABOARD LINING TO TILED SHOWERS  
BATHROOM LININGS - VILLABOARD FOR TILES OR GIB AQUALINE

**LEGEND:**

GS1-N = ANY 10mm OR 13mm GIB STANDARD TO ONE SIDE ONLY  
BL1-H = 10mm OR 13mm GIB BRACELINE TO ONE SIDE ONLY

Figure 8.16 - Connecting top plates to external walls at right angles - Walls containing bracing (see 8.7.3.4)



**NJ-01**  
**SUPER ROOM**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Clear  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**NJ-02**  
**SUPER ROOM**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Clear  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

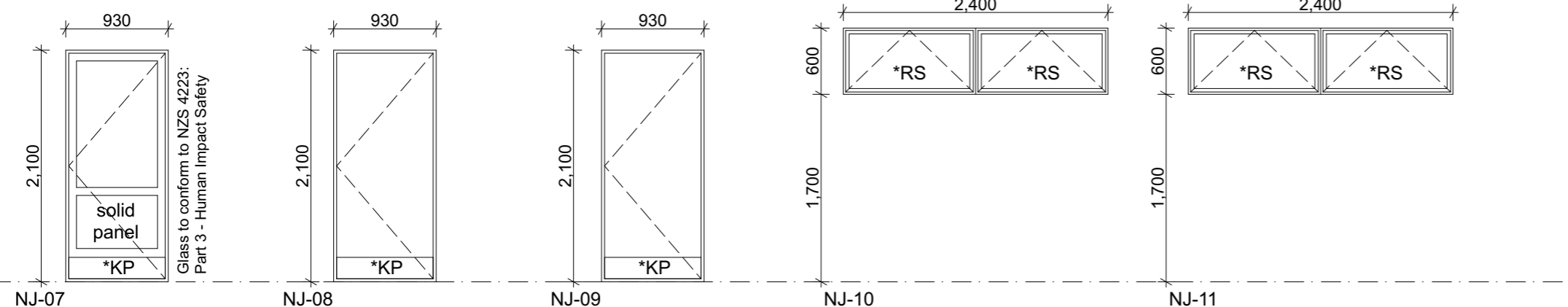
**NJ-03**  
**STORE ROOM**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Opalescent  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**NJ-04**  
**OFFICE**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Clear  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**NJ-05**  
**ACCESSIBLE BATHROOM**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Opalescent  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**NJ-06**  
**LAUNDRY**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Opalescent  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**DOORS AND SIDELIGHTS**  
 For doors, annealed glass can be used up to 0.5m2 single glazed, or 0.75m2 double glazed. Over these sizes safety glass is required.  
 For side panels, annealed glass can be used up to 0.5m2 single glazed, or 0.75m2 double glazed. Over these sizes safety glass is required



**NJ-07**  
**EXTERNAL DOOR**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Clear  
 - Guardsman door stop  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

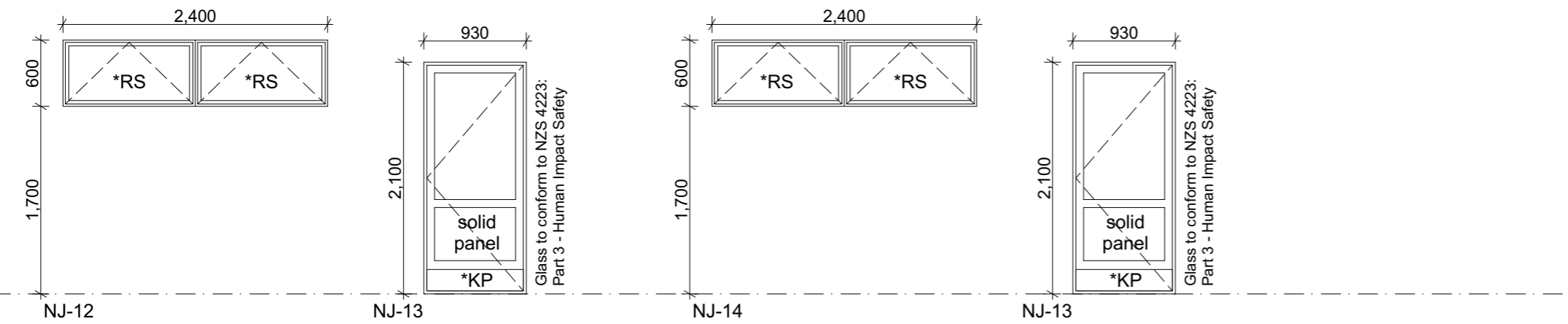
**NJ-08**  
**LAUNDRY**  
 - Powder Coated Aluminium Joinery  
 - Solid  
 - Guardsman door stop  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**NJ-09**  
**LOBBY**  
 - Powder Coated Aluminium Joinery  
 - Solid  
 - Guardsman door stop  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**NJ-10**  
**WAHINE ABLUTIONS**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Opalescent  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**NJ-11**  
**TANE ABLUTIONS**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Opalescent  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**NOTES**  
 All units viewed from outside  
 Trim height as shown  
 All joinery sizes are to finish sizes, add 7.5mm each side for box (unit) size  
 All dimensions are frame opening sizes - allow 7.5mm each side of box size, i.e. 15mm overall  
 Rebates into floor, check with manufacturer prior to casting floor slab  
 All dimensions are to be checked on site by the joinery manufacturer prior to commencing manufacture of all joinery  
 19mm H3.1 paint quality liners to suit architraves  
 All joinery to be powdercoated aluminium  
 All fixings and fastenings to comply with NZS3604:2011 Part 4 'Durability' and NZBC B2/AS1 - windows installation, in accordance with WANZ recommended practice  
 Return building wrap and provide air seals and flashings as per WANZ  
 All windows to have restrictor stays and double snibs where fall is greater than 1.0m and window is lower than 1.0m to FFL  
 Sill support bars to be provided to all external windows and doors to comply with E2/AS1 and WANZ evaluation method EM6  
 All safety glass to comply with NZ standards 4223 Part 3 and amendments  
 All glazing to be toughened glass  
 Protetco wrap to all windows and doors  
 Sill tape to be Bayowrap  
 All doors to have holdback stops  
 Floor Plans and Elevations take precedence over Joinery Schedules  
 Owner to confirm all units on Manufacturers Quotation and sign-off before Manufacturing



**NJ-12**  
**TANE ABLUTIONS**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Opalescent  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave
















**NJ-13**  
**TANE ABLUTIONS**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Opalescent  
 - Guardsman door stop  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**NJ-14**  
**WAHINE ABLUTIONS**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Opalescent  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

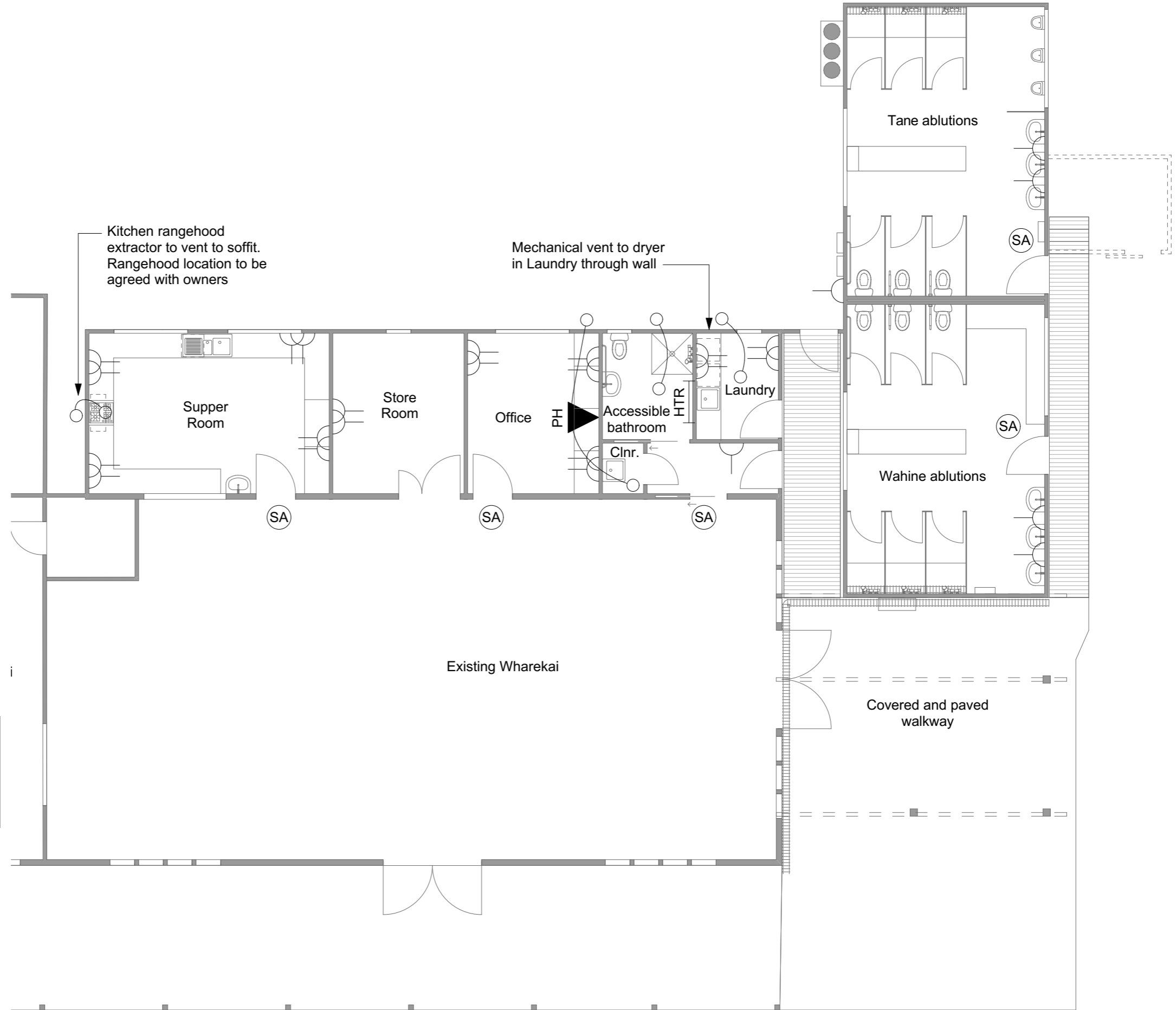
**NJ-13**  
**WAHINE ABLUTIONS**  
 - Powder Coated Aluminium Joinery  
 - Double Glazed Opalescent  
 - Guardsman door stop  
 - Aluminium Head Flashing  
 - 19mm H3.1 paint quality liners to suit architrave

**LEGEND**  
 \*SG = SAFETY GLASS  
 \*F = FIXED  
 \*RS = RESTRICTOR STAY  
 \*KP = KICK PLATE TO BOTH SIDES OF DOOR

Electrical Legend:

-  Meter Board
-  Movement sensor
-  Heated Towel Rail
-  Single power outlet
-  Double power outlet
-  Smoke alarm (fitted with hush & test facilities conforming with NZBC F7/AS1)
-  Extract fan - through roof unless noted otherwise
-  Television
-  Shower switch
-  Garage door point
-  Phone & DATA
-  PIR
-  N/W connection to CAT 5
-  A/C in roof, fully ducted with 2 splitters for zoning off bedrooms
-  Allow wiring for speakers in ceiling for music

**ELECTRICAL NOTES:**  
 DOWNLIGHTS MAX. 1.5m FROM WALLS AND MAX. 3.0m APART  
 NO POWER POINT OR LIGHT SWITCHE OUTLETS SITUATED WITHIN 90mm OF EDGE OF BRACING UNITS  
 NO POWER POINTS OR LIGHT SWITCHE OUTLETS SITUATED WITHIN CAVITY SLIDER VOIDS



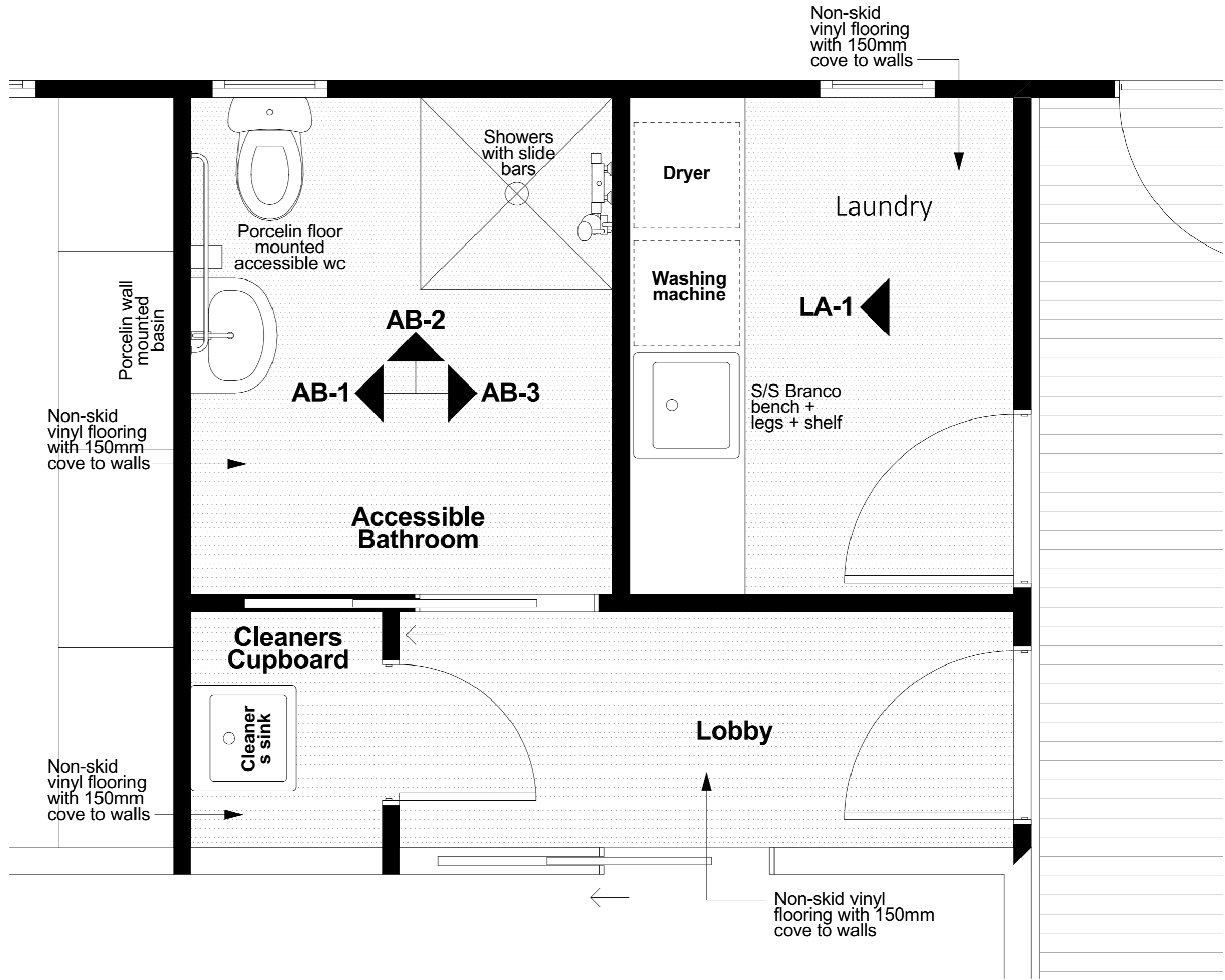
Electrical Legend:

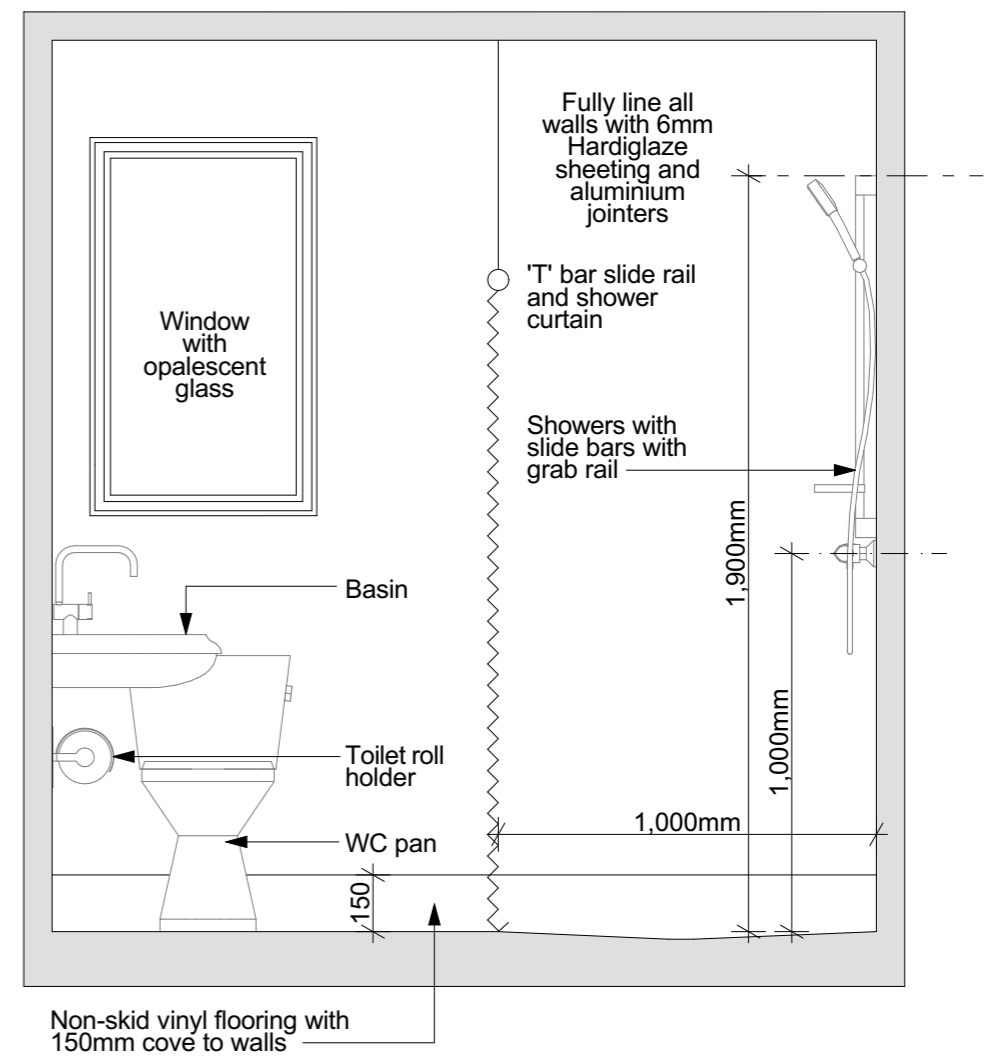
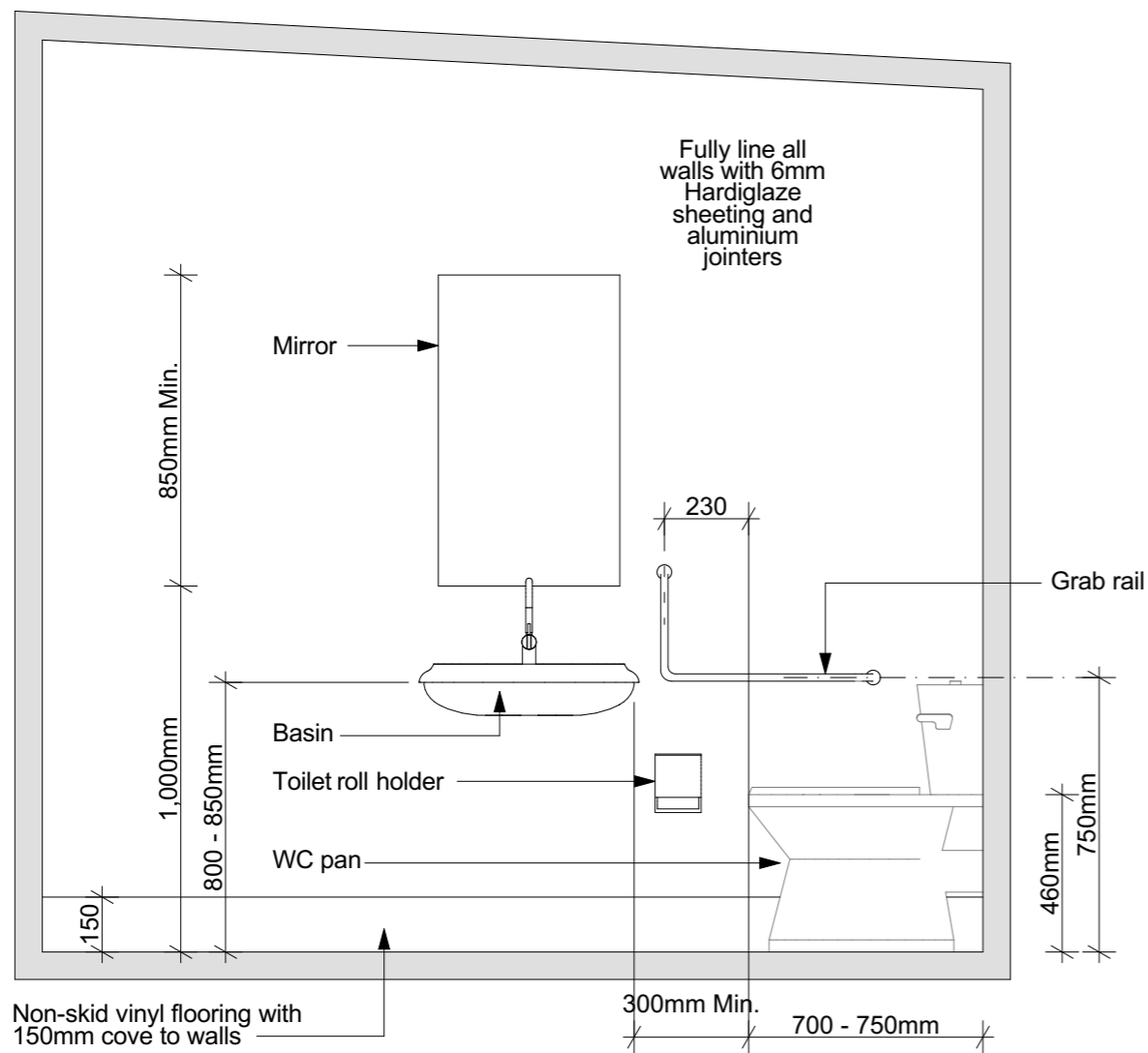
- Light switch
- ▬ 1.2m long LED
- Recessed downlight
- ⊕ Pendant light
- ◐ External sealed LED bulkhead light fitting
- ⊓ Exterior Wall Light
- ⊓ Exterior Down Light
- ⊓ Wall Strip Light
- ⊖ HL109LED-EXT soffit downlight (over decks)
- ⊗ HL109LED-ICF downlight
- ⊕ Incandescent 240v downlight

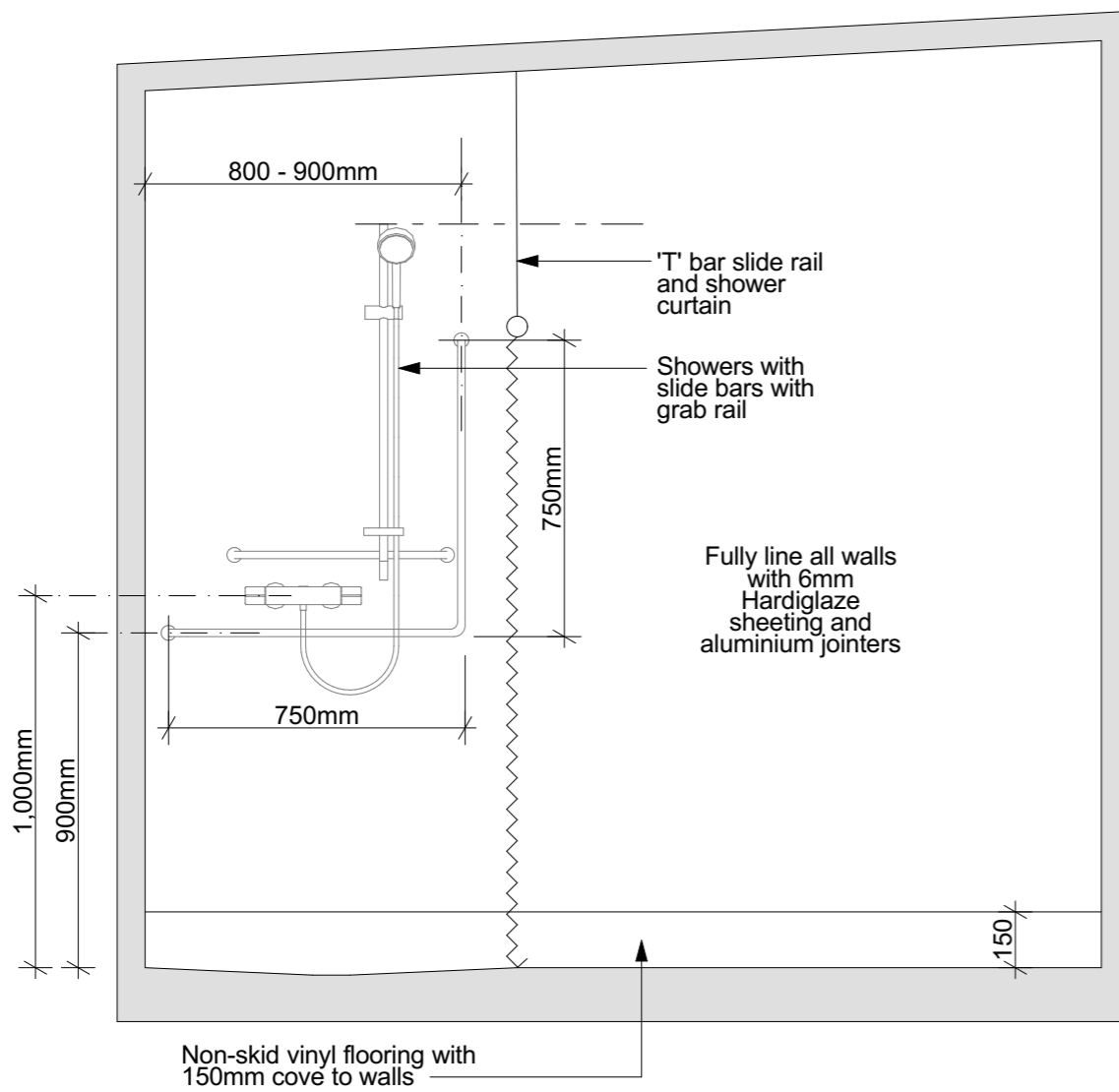
**ELECTRICAL NOTES:**  
 DOWNLIGHTS MAX. 1.5m FROM WALLS AND MAX. 3.0m APART  
 NO POWER POINT OR LIGHT SWITCHE OUTLETS SITUATED WITHIN 90mm OF EDGE OF BRACING UNITS  
 NO POWER POINTS OR LIGHT SWITCHE OUTLETS SITUATED WITHIN CAVITY SLIDER VOIDS









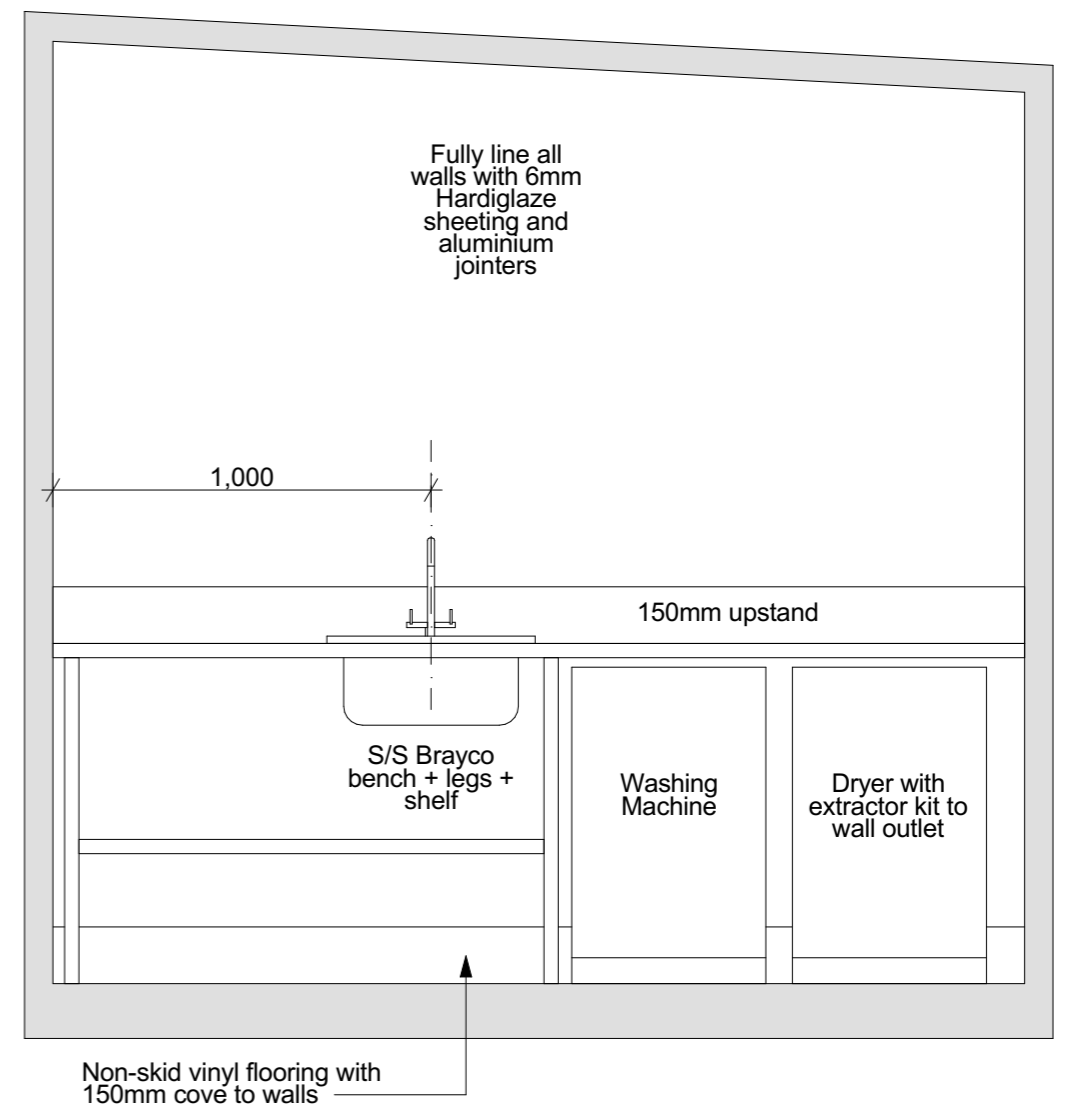


26

ACCESSIBLE BATHROOM ELEVATION - AB-3

1:20

26



LAUNDRY ELEVATION - LA-1

1:20

## Floor Plan - Tane Ablutions

THE CLIENT

00 STREET SUBURB  
CITY

Rev No.	Revision	Date

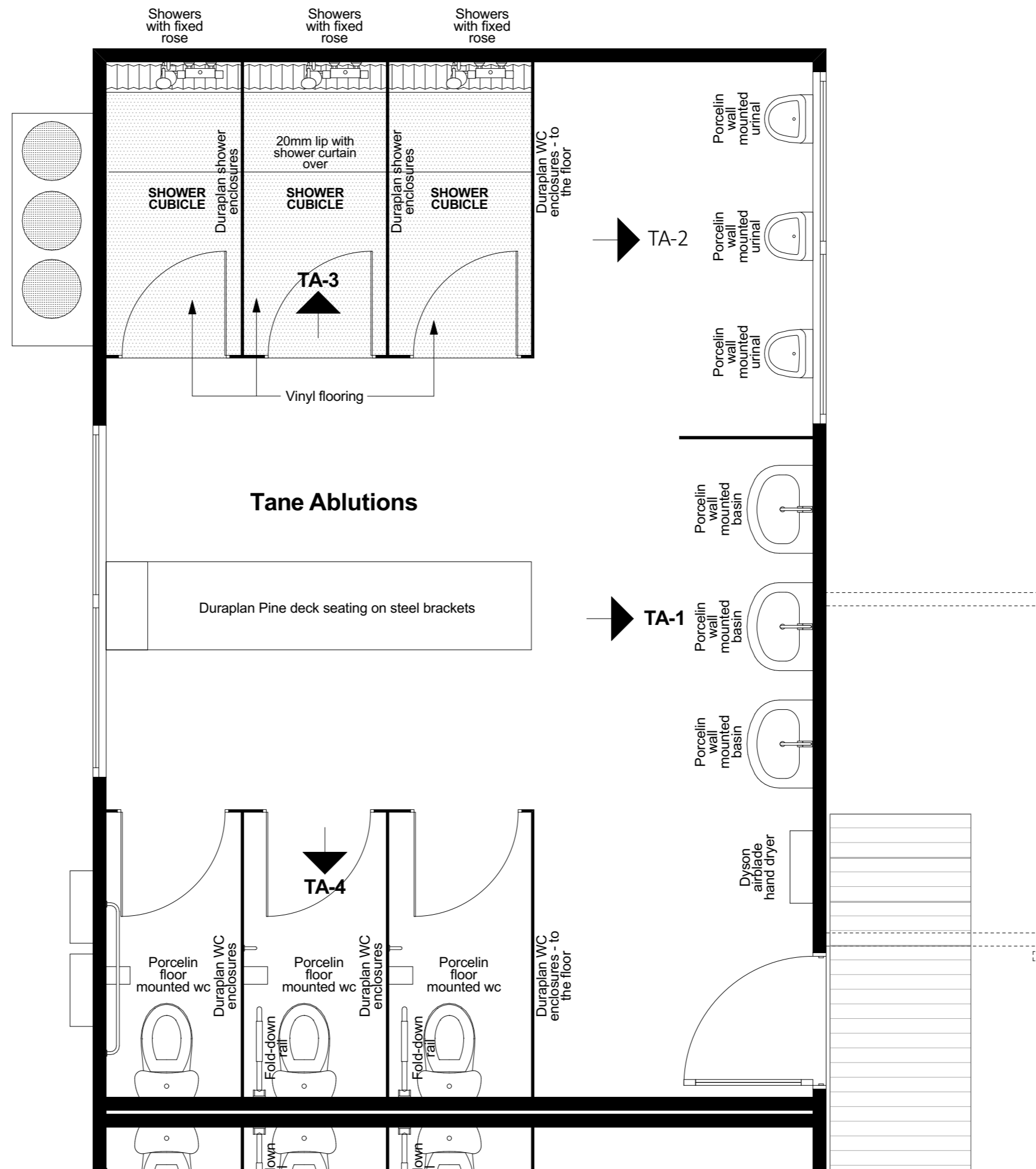
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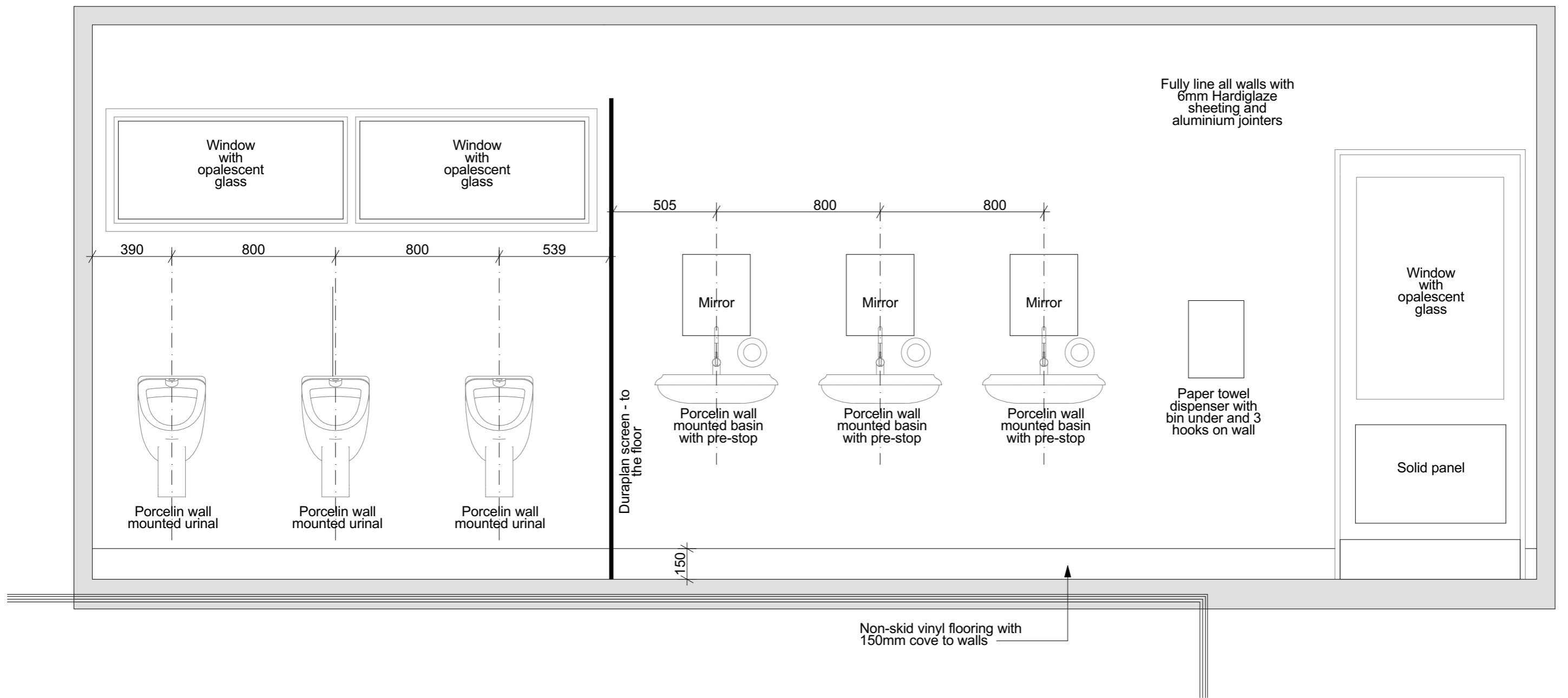
Drawn By DESIGNER

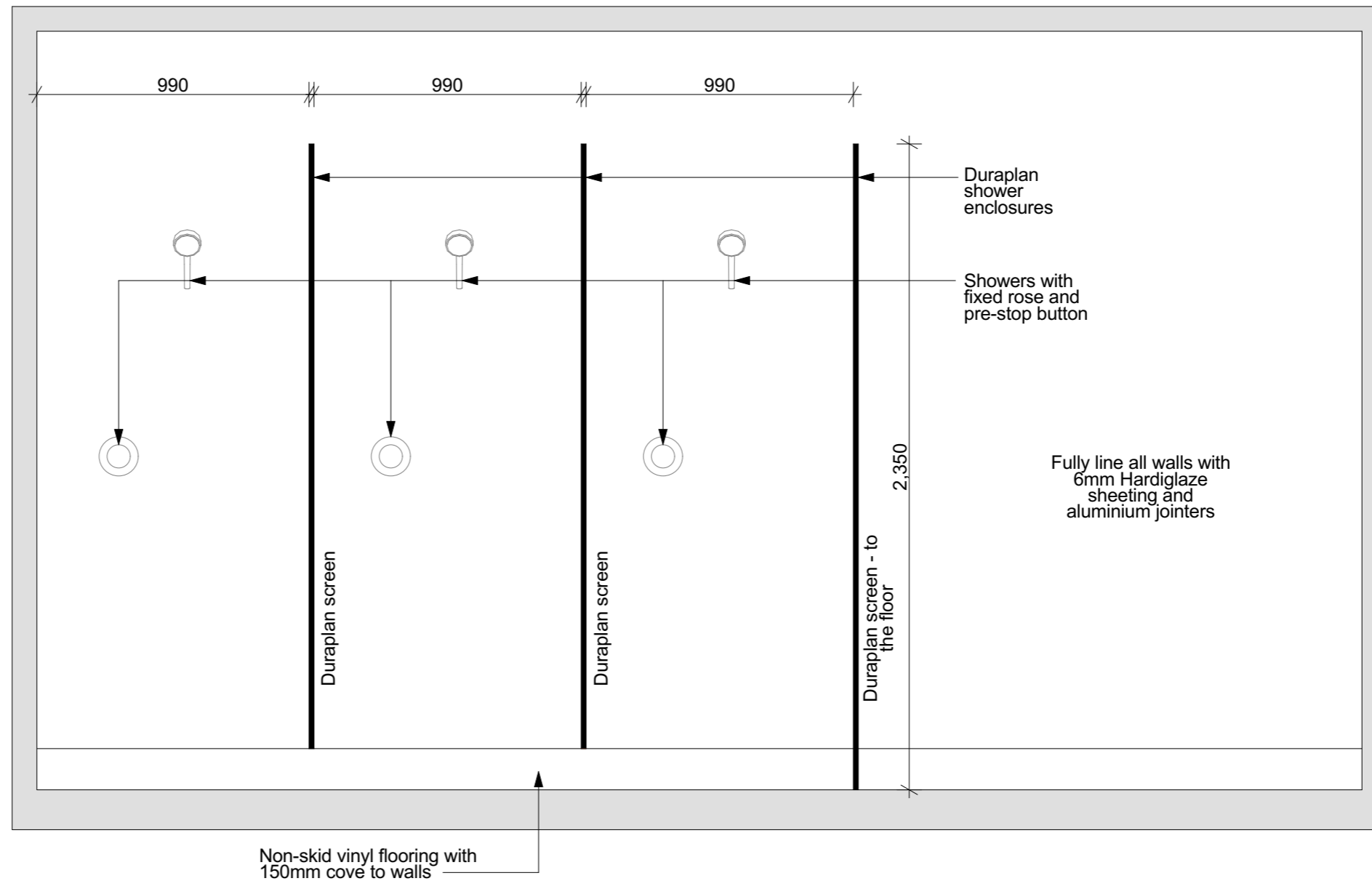
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Sheet No:

28







## Floor Plan - Wahine Ablutions

THE CLIENT

00 STREET SUBURB  
CITY

Rev No.	Revision	Date

Scale @ A3: 1:30

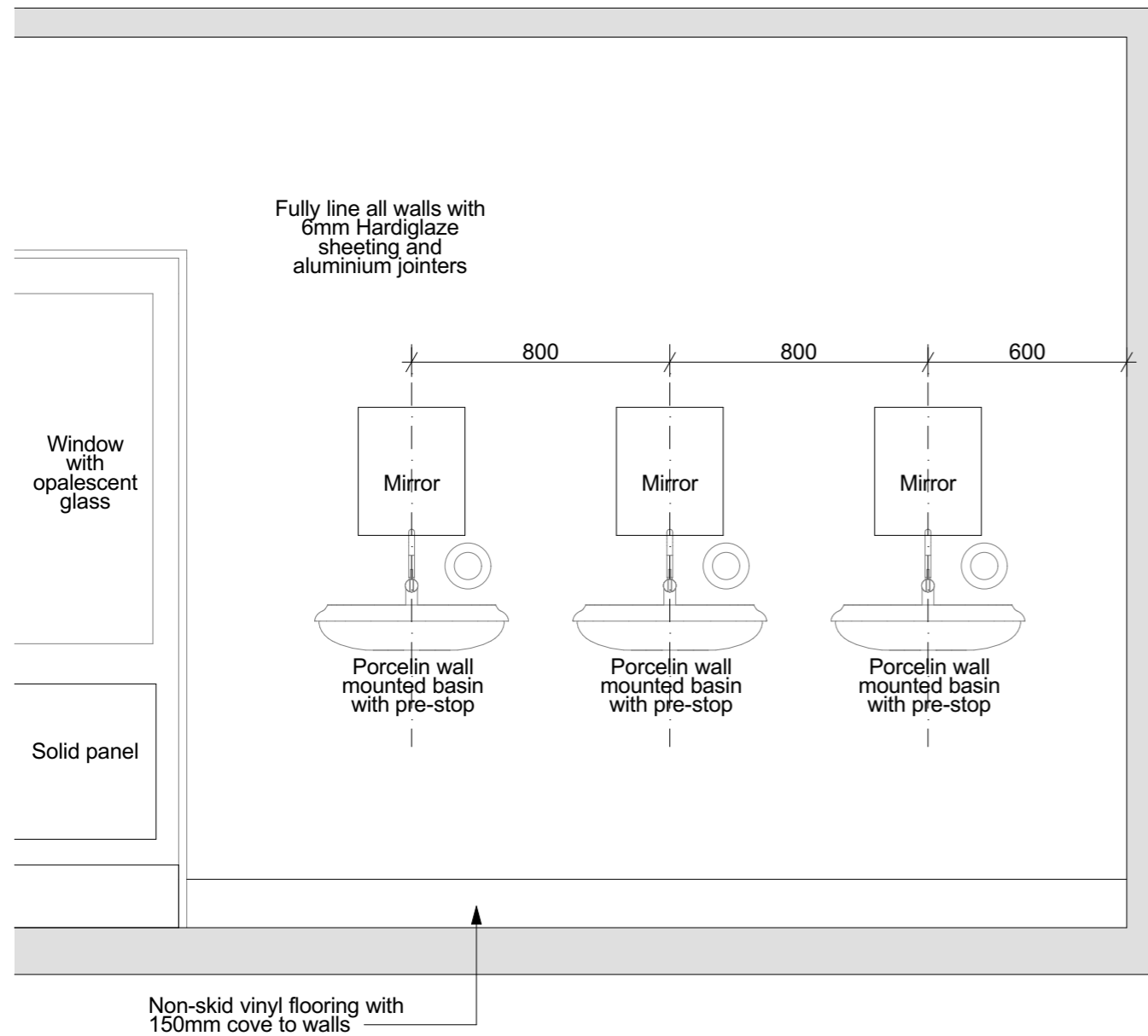
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Issued: 13/11/2023  
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**31**

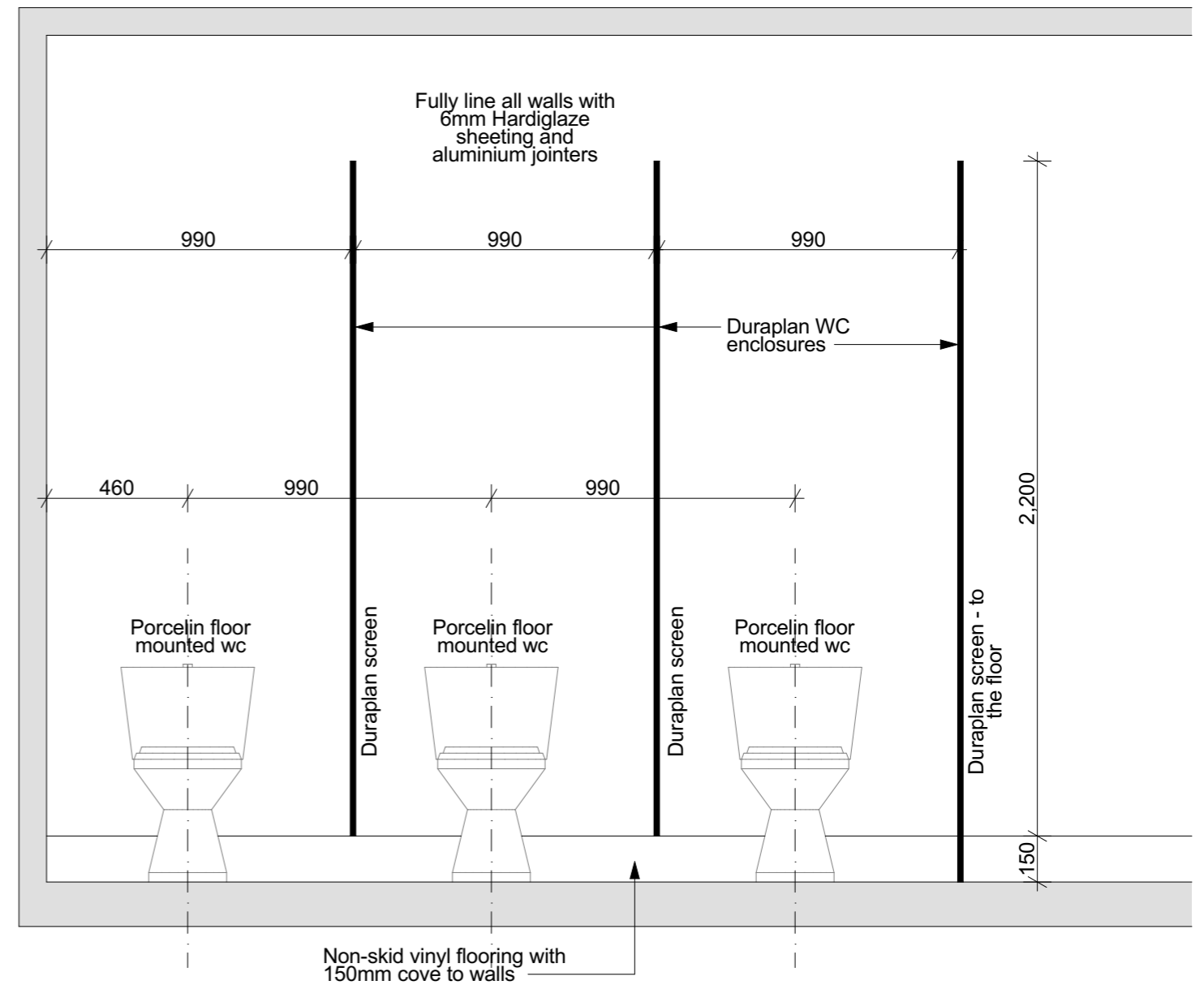




31

WAHINE ELEVATION - WA-1

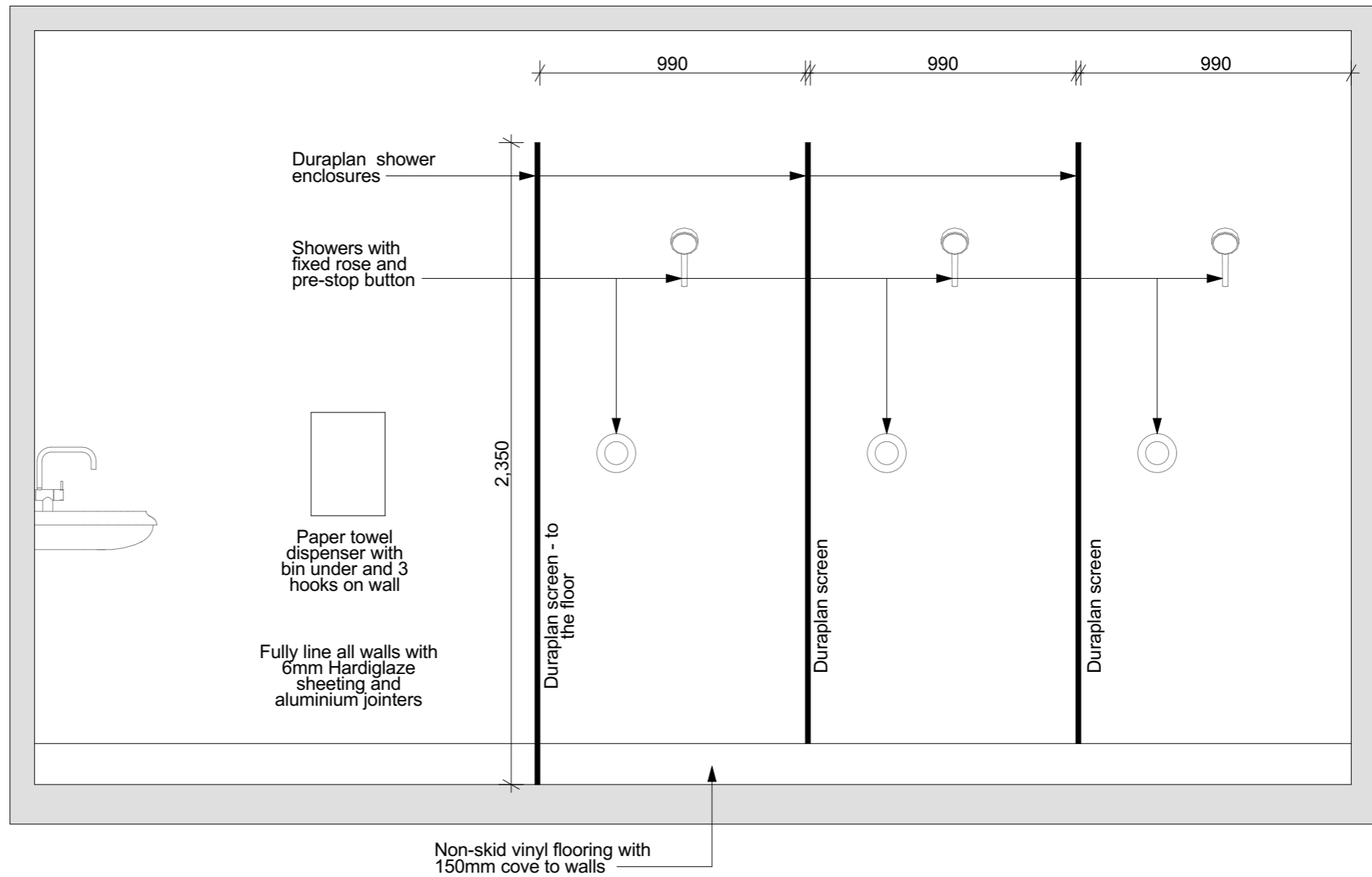
1:20 31



WAHINE ELEVATION - WA-3

1:20

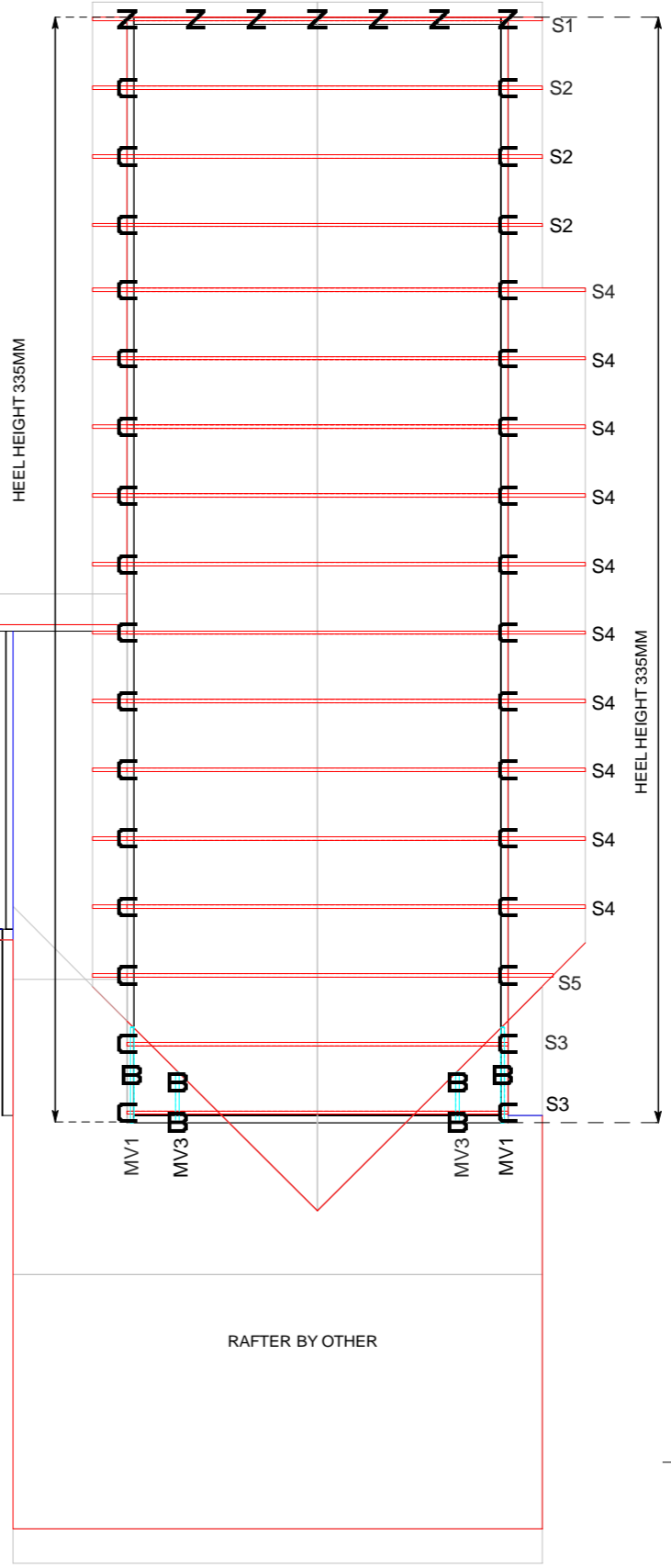
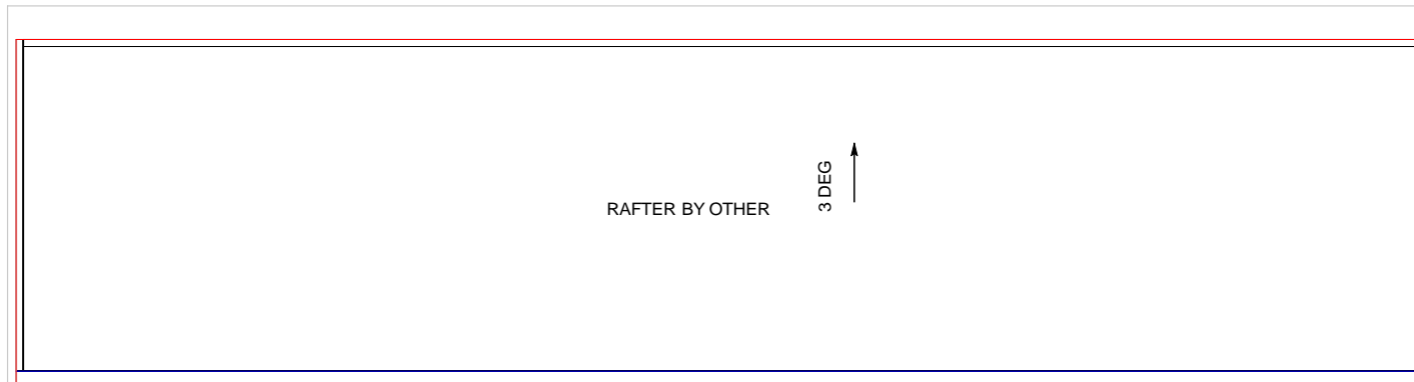




**Truss Connections**

- Trusses need to be fixed at each timber support with 2/90x3.15 dia Skew Nails unless otherwise noted.

- Z** 7 x 2/Z Z nail
- C** 32 x 2/MGL Multigrip (long)
- B** 6 x 1/MGL Multigrip (long)



**BUILDABLE LAYOUTS**  
 TRUSS DESIGN + FRAME DESIGN + FLOOR DESIGN  
 PO Box 99456 NEWMARKET, AUCKLAND 1149  
 0800 LAYOUTS

**BUILDABLE TRUSS LAYOUT**

Job Reference: **J020973**  
 Tuesday, 09 August 2022



Client: **Arcline Architecture**  
 Address: **Parihaka Marae - 101 Te Iringa Road Kaikohe**

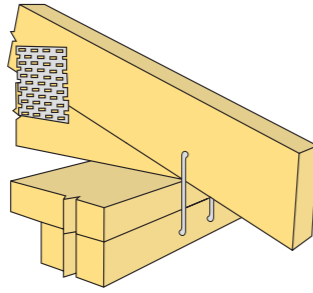
Roof Pitch: **20.00 Deg.**  
 Truss Spacing: **900**  
 Roofing Material: **Longrun**  
 Design Wind Velocity: **44.00 m/s (Ult.)**  
 Ceiling Material: **13mm Gib-board (8.5 kg/sq.m.)**



Note:  
 For Consent purposes.  
 Truss Manufacturer to provide as-built documents upon completion of job.  
 Auckland Council PS1  
 Reg. No: 1901



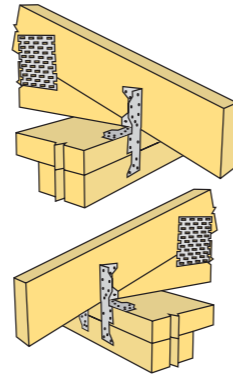
# Z



**Z-Nail Tie Down X2**  
Consent Doc. Ref: Z

**Product Code:** ZR & ZL (right & left hand), ZU (U-nail)  
**Durability:** Also sold as MPZR, MPZL & MPZU  
Suitable for all roof spaces that are closed. Stainless required in open soffits. Compliant with Table 4.1 of NZS3604:2011.  
**Application:** Used in pairs when employed as a truss tie down.  
**Note:** The Z-nails should extend to the lower wall plate and may not terminate in the ceiling plate. \*This is a reduced value from code values recently published but takes into account the serviceability of connection.

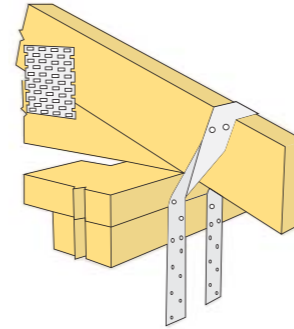
# B C



**Multigrip (Long) Tie Down X, X2**  
Consent Doc. Ref: X

**Product Code:** MGL  
**Durability:** Suitable for all roof spaces that are closed. Stainless required in open soffits with MG/S with single top plate. Compliant with Table 4.1 of NZS3604:2011.  
**Application:** All holes filled with 30 x 3.15mm Pryda product nails.  
**Note:** MG (short) shall not be used in a double top plate scenario.

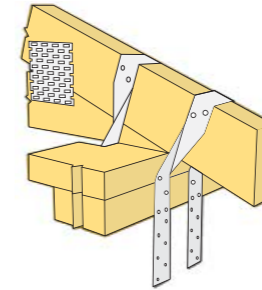
# D F J



**Cyclone Strap Tie Down**  
Consent Doc. Ref: Q4, Q6, Q9, Q6\*, Q9\*

**Product Code:** MPQHS4, MPQHS6, QHS9  
**Durability:** Suitable for all closed roof spaces. Stainless not available.  
Compliant with Table 4.1 of NZS3604:2011.  
**Application:** All holes filled with 30 x 3.15mm Pryda product nails.  
**Note:** Values based on 5 nails per leg, except for MPQHS4 which can only hold 4 nails per leg  
\*With strap wrapped under support member. Single windstrap to be placed on the outside face of wall. The ceiling plate requires notching on the inside when used in double strap scenario.

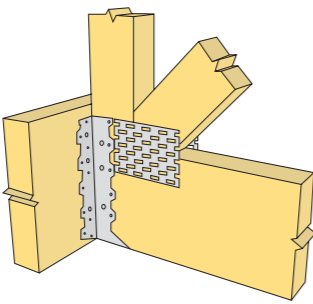
# H



**Cyclone Strap Tie Down X2**  
Consent Doc. Ref: Q4, Q6, Q9, Q6\*, Q9\*

**Product Code:** MPQHS4, MPQHS6, QHS9  
**Durability:** Suitable for all closed roof spaces. Stainless not available.  
Compliant with Table 4.1 of NZS3604:2011.  
**Application:** All holes filled with 30 x 3.15mm Pryda product nails.  
**Note:** Values based on 5 nails per leg, except for MPQHS4 which can only hold 4 nails per leg  
\*With strap wrapped under support member. Single windstrap to be placed on the outside face of wall. The ceiling plate requires notching on the inside when used in double strap scenario.

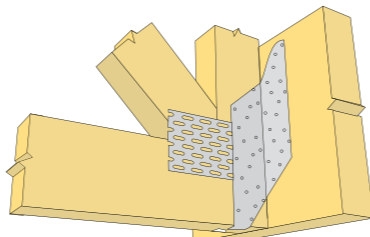
# 1 2 3



**Framing Bracket**  
Consent Doc. Ref: A, B, C

**Product Code:** MPFB4590, MPFB45120, MPFB45180, FB94/152  
**Durability:** Suitable for all closed roof spaces. Stainless steel required in open roofs in Zone D in order to be compliant with Table 4.1 of NZS3604:2011.  
**Application:** All holes filled with 30 x 3.15mm Pryda product nails or Type 17 12g x 35mm hex head screws unless otherwise noted. Reduced nailing requirements are possible but should be checked with Pryda engineers.  
**Note:** Greater downward capacity than uplift due to fewer nails in joist flanges

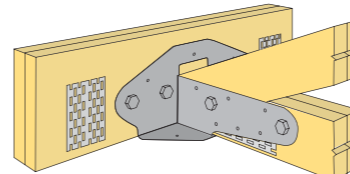
# 5



**Heavy Duty Nail-on Hanger Truss Support**  
Consent Doc. Ref: E, F, K

**Product Code:** JHH75, JHH100, JHHS  
**Durability:** Suitable for all closed roof spaces. Compliant with Table 4.1 of NZS3604:2011.  
**Application:** Heavy Duty connection option. All holes filled with 30 x 3.15mm Pryda product nails unless otherwise noted. reduced nailing requirements are possible but should be checked with Pryda engineers. Call Pryda on 0800 88 22 44  
**Note:** High capacity hanger with good uplift resistance.

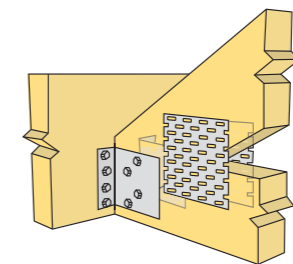
# 6



**Truss Boot**  
Consent Doc. Ref: TB

**Product Code:** TB45/16, TBHD75  
**Durability:** Suitable for all closed roof spaces. Compliant with Table 4.1 of NZS3604:2011.  
**Application:** Heavy duty uplift and downward loading. TBHD75 - All bolt holes filled  
**Note:** High capacity bracket with good uplift resistance.

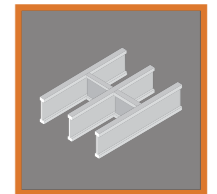
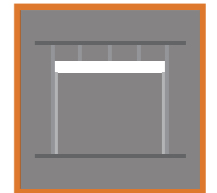
# 7



**Concealed Purlin Cleat Truss Support**  
Consent Doc. Ref: NC8

**Product Code:** NPPC8  
**Durability:** Suitable for all closed roof spaces. Compliant with Table 4.1 of NZS3604:2011.  
**Application:** Variable width connection utilising screws. All screw holes filled.

## TRUSS FIXING DETAILS



# TRUSS DETAILS (DESIGN)

Ver 4.5.5.11

Job Ref: J020973

Truss Reference : S4 (Single Truss)

Date created: 09 Aug 2022

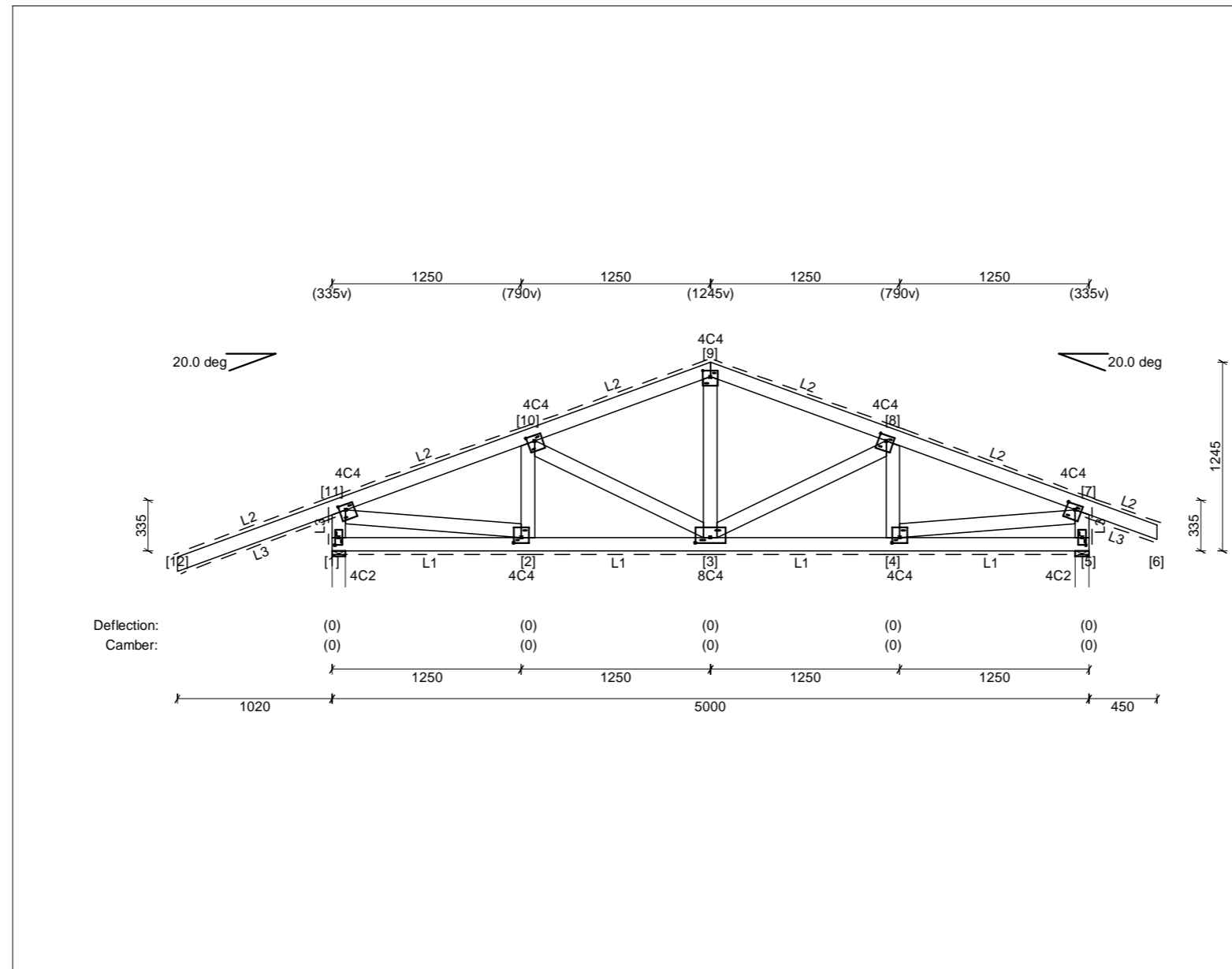
Truss type: Standard

No. plies : 1x45mm

Design spacing : 900mm

No. of : 10

Building type: Residential



### Linings

L1: 13mm Gib-board (8.5 kg/sq.m).

Battens @ 600mm.

L2: Longrun (6.0 kg/sq.m).

Battens @ 900mm.

L3: Fibrecement (6mm) (9.5 kg/sq.m).

Battens @ 600mm.

### Timber

Top Chords 1 / 90x45 MSG10 H1\_2 uno

Bottom Chords 1 / 90x45 MSG8 H1\_2 uno

Webs 1 / 90x45 MSG8 H1\_2 uno

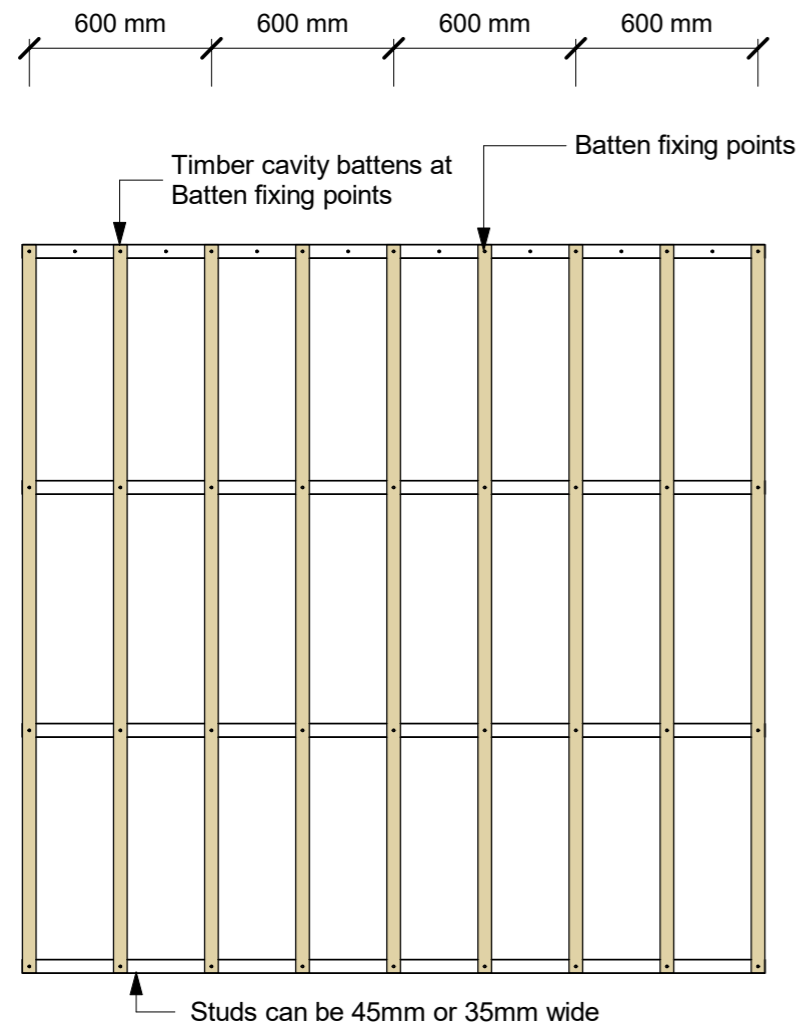
TC1 (6-9) 1 / 90x45 MSG8 H1\_2

### Notes

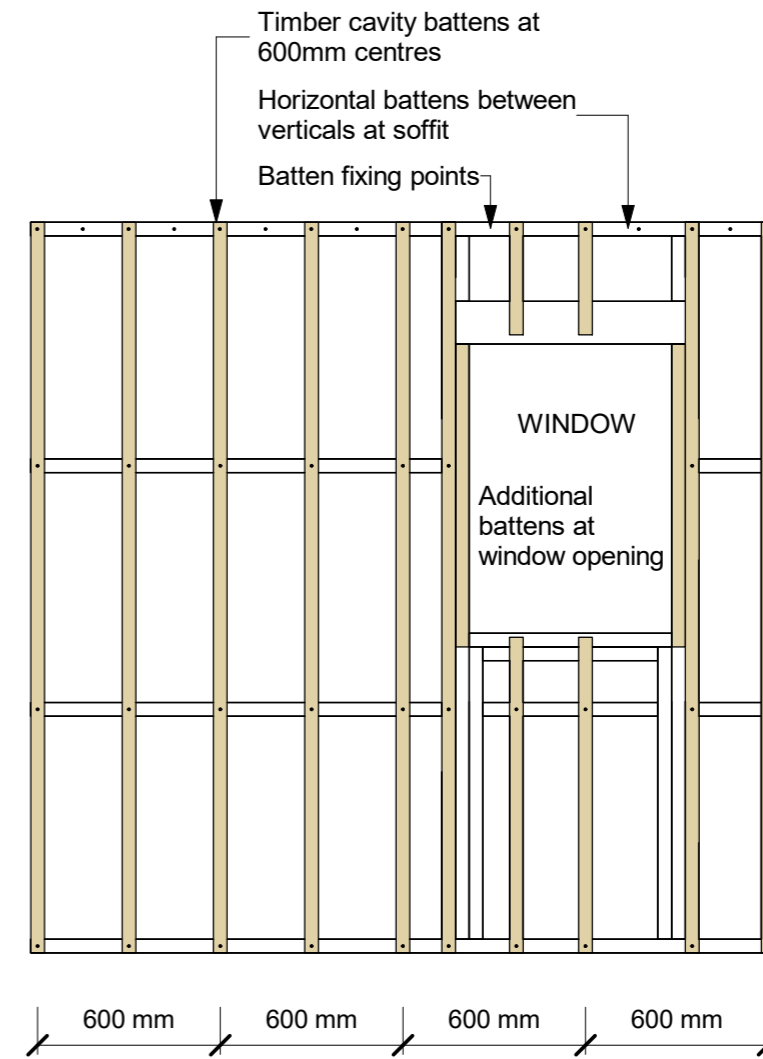
1. Deflection = permanent load deflection including creep (negative = downward movement).
2. Overhang condition: Full structural fascia.
3. Safety plank on BC : Required if head height exceeds 1.2m.
4. Refer to Pryda Installation Guide for full bracing details.

### Major supports and factored reactions

Joint	Type	Width	Perm.	Max. down (LC)	Uplift	Tie-down	Connector
1	Wall Ext	90	1.2 kN	3.1 kN (Gc+Wd3)	-2.7 kN	2/MGL	-
5	Wall Ext	90	1.0 kN	2.5 kN (Gc+Qj)	-2.3 kN	2/MGL	-



The intermediate support for insulation between the studs could be a timber cavity batten, polypropylene tape or 75 mm galvanised wire mesh. Refer to E2/AS1 Paragraph 9.1.8.5 Polypropylene tape must be fixed horizontally and drawn taut at 300 mm centres.



- Studs can be 45mm or 35mm wide

-The intermediate support for insulation between the studs could be a timber cavity batten, polypropylene tape or 75 mm galvanised wire mesh. Refer to E2/AS1 Paragraph 9.1.8.5 Polypropylene tape must be fixed horizontally and drawn taut at 300 mm centres.

jhl\_inea\_u\_002



**Linea™ Weatherboard**  
On Timber Cavity Batten with Flexible Underlay  
FRAMING SETOUT

jhl\_inea\_billy9JEJT.rvt

May 2020  
Scale: 1 : 25

Figure 2

jhl\_inea\_u\_003

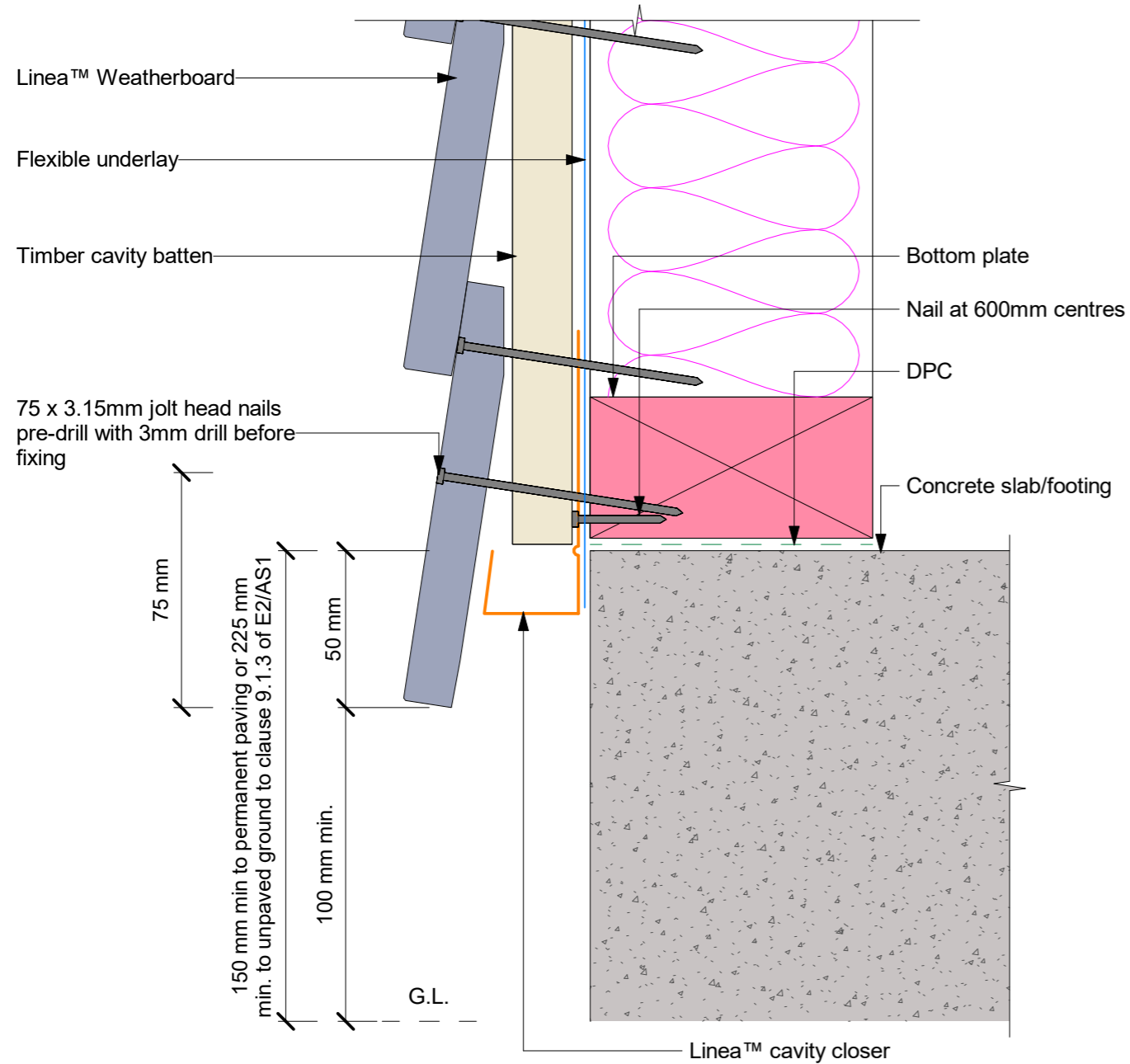


**Linea™ Weatherboard**  
On Timber Cavity Batten with Flexible Underlay  
BATTEN SETOUT

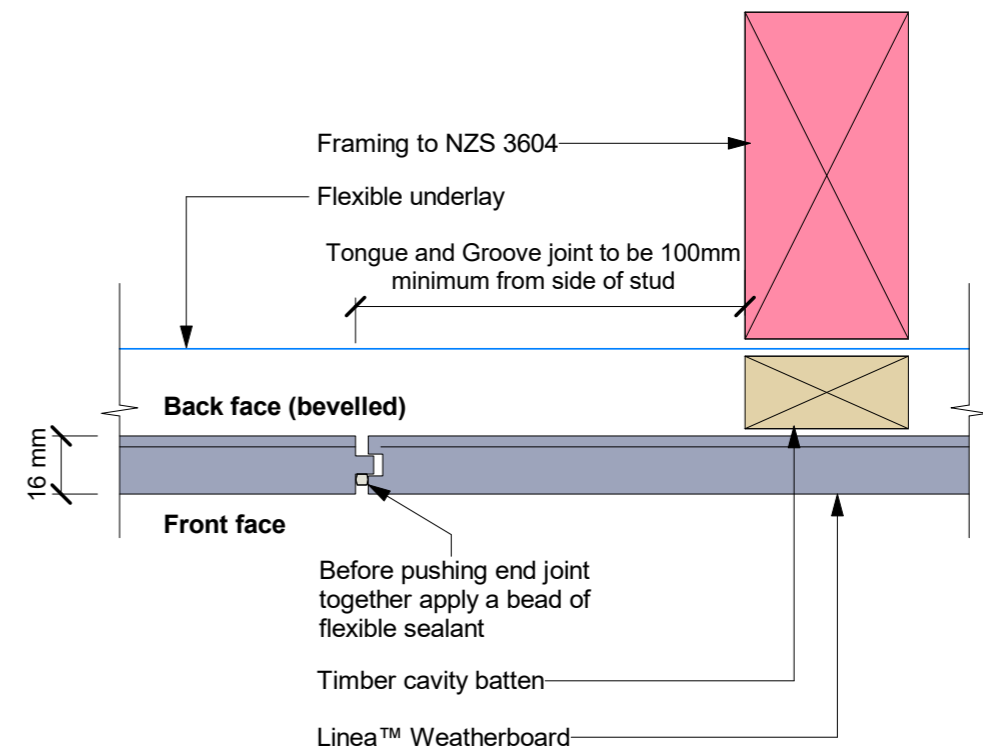
jhl\_inea\_billy9JEJT.rvt

May 2020  
Scale: 1 : 25

Figure 3



Note:  
 Drain holes in James Hardie uPVC vent strip are sufficient to achieve ventilation openings of 1000mm<sup>2</sup> per lineal metre



jhl\_inea\_u\_004



**Linea™ Weatherboard**  
 On Timber Cavity Batten with Flexible Underlay  
 FOUNDATION DETAIL

jhl\_inea\_billy9JEJT.rvt

May 2020  
 Scale: 1 : 2

Figure 4

jhl\_inea\_u\_006

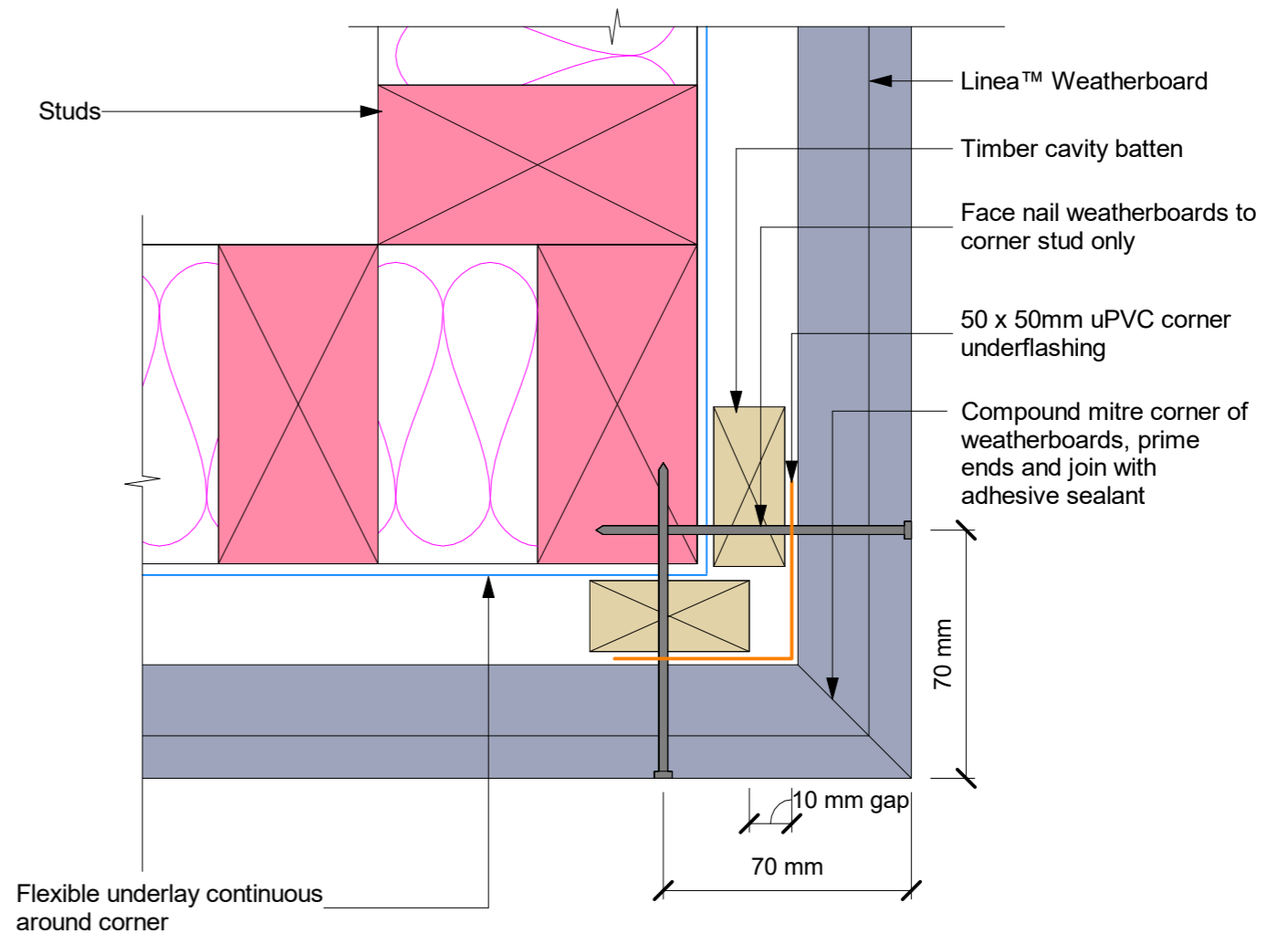
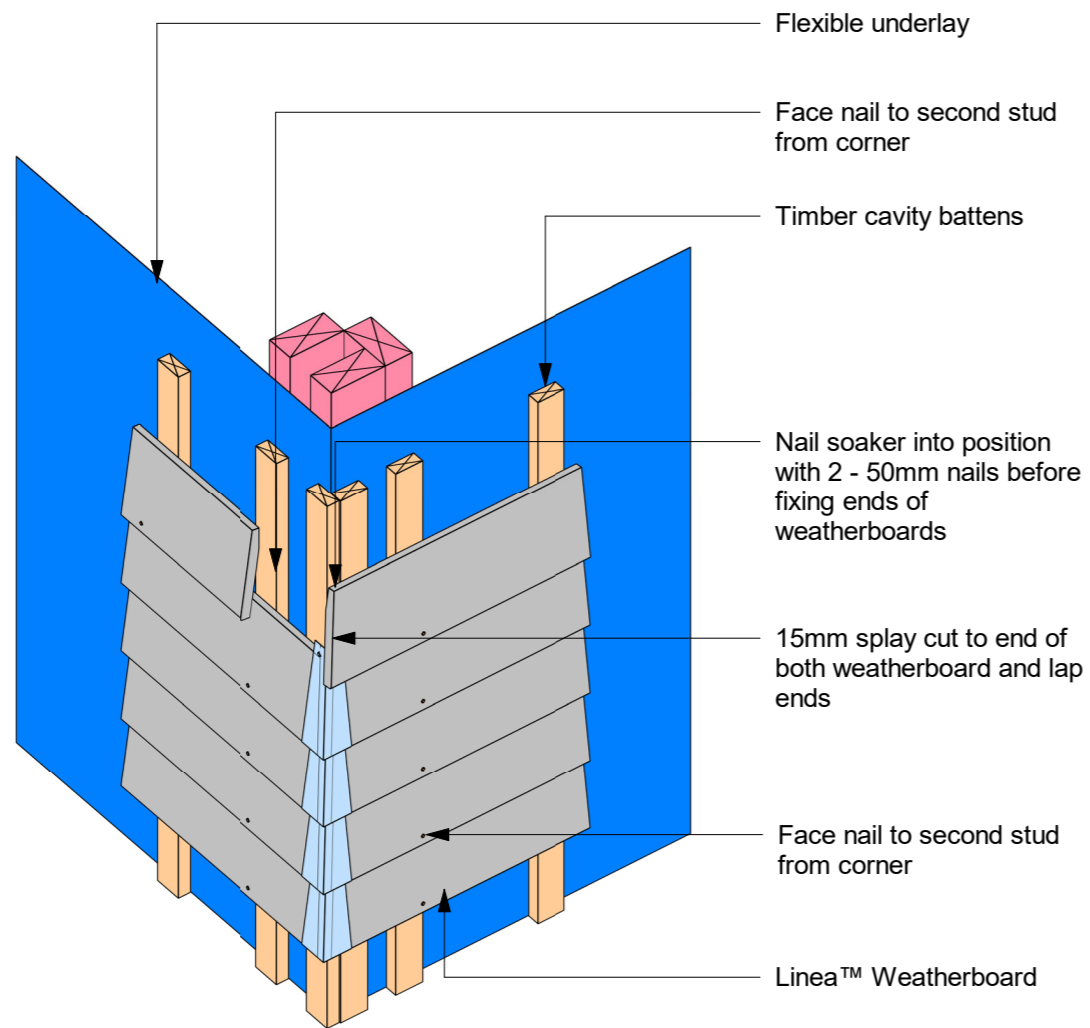


**Linea™ Weatherboard**  
 On Timber Cavity Batten with Flexible Underlay  
 JOINTING OFF STUD

jhl\_inea\_billy9JEJT.rvt

May 2020  
 Scale: 1 : 2

Figure 6



Note: Adhesive sealant must be used on the full end face of both weatherboards. Push lightly together

Soaker material	Nail material
Copper	Copper or phosphor bronze
Aluminium	Hot dip galvanised
Stainless steel	Stainless steel

jhl\_inea\_u\_007

jhl\_inea\_billy9JEJT.rvt



**Linea™ Weatherboard**  
On Timber Cavity Batten with Flexible Underlay  
TIMBER CAVITY EXTERNAL CORNER SOAKER

May 2020  
Scale: 1 : 10

Figure 7

jhl\_inea\_u\_010

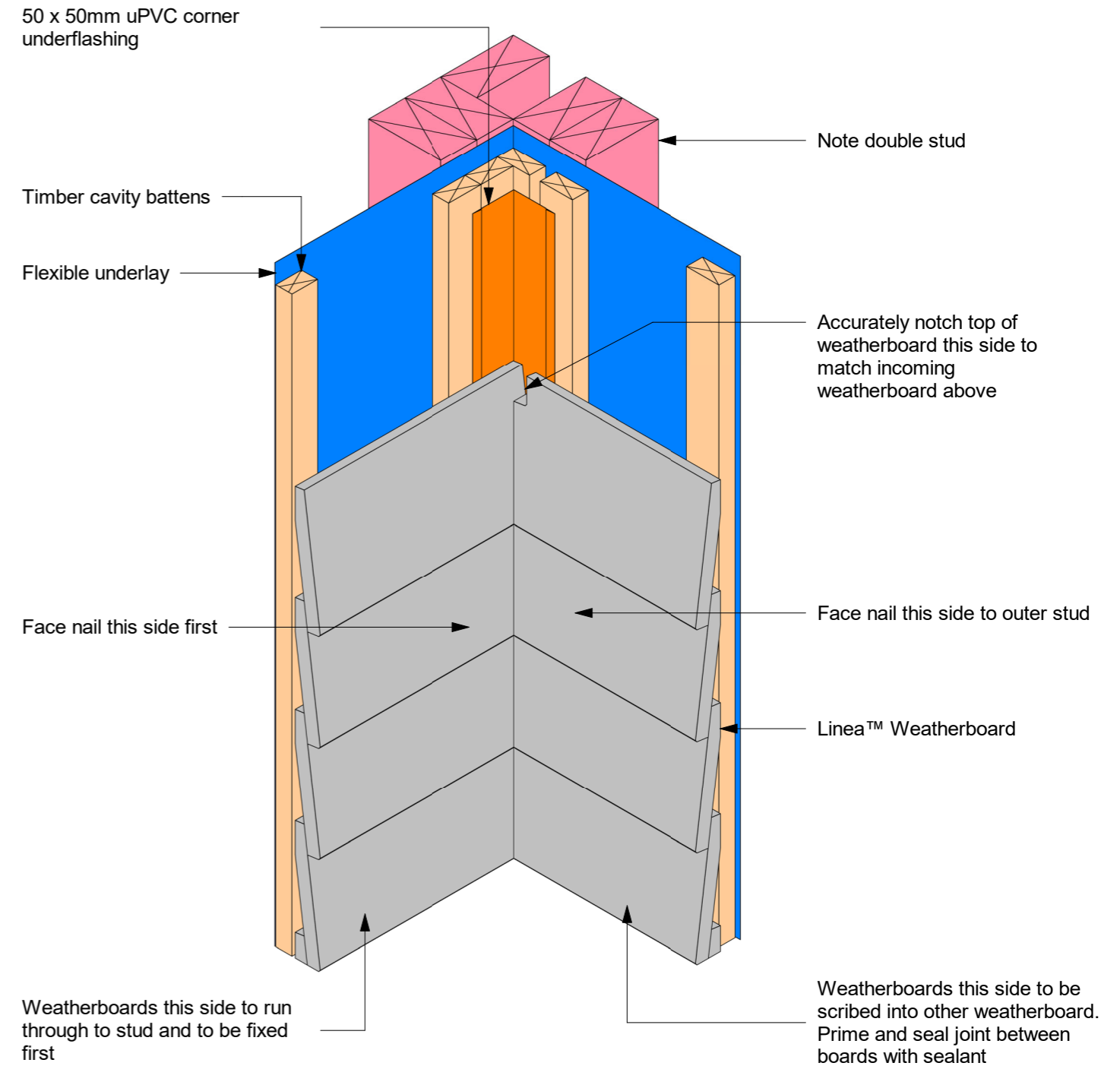
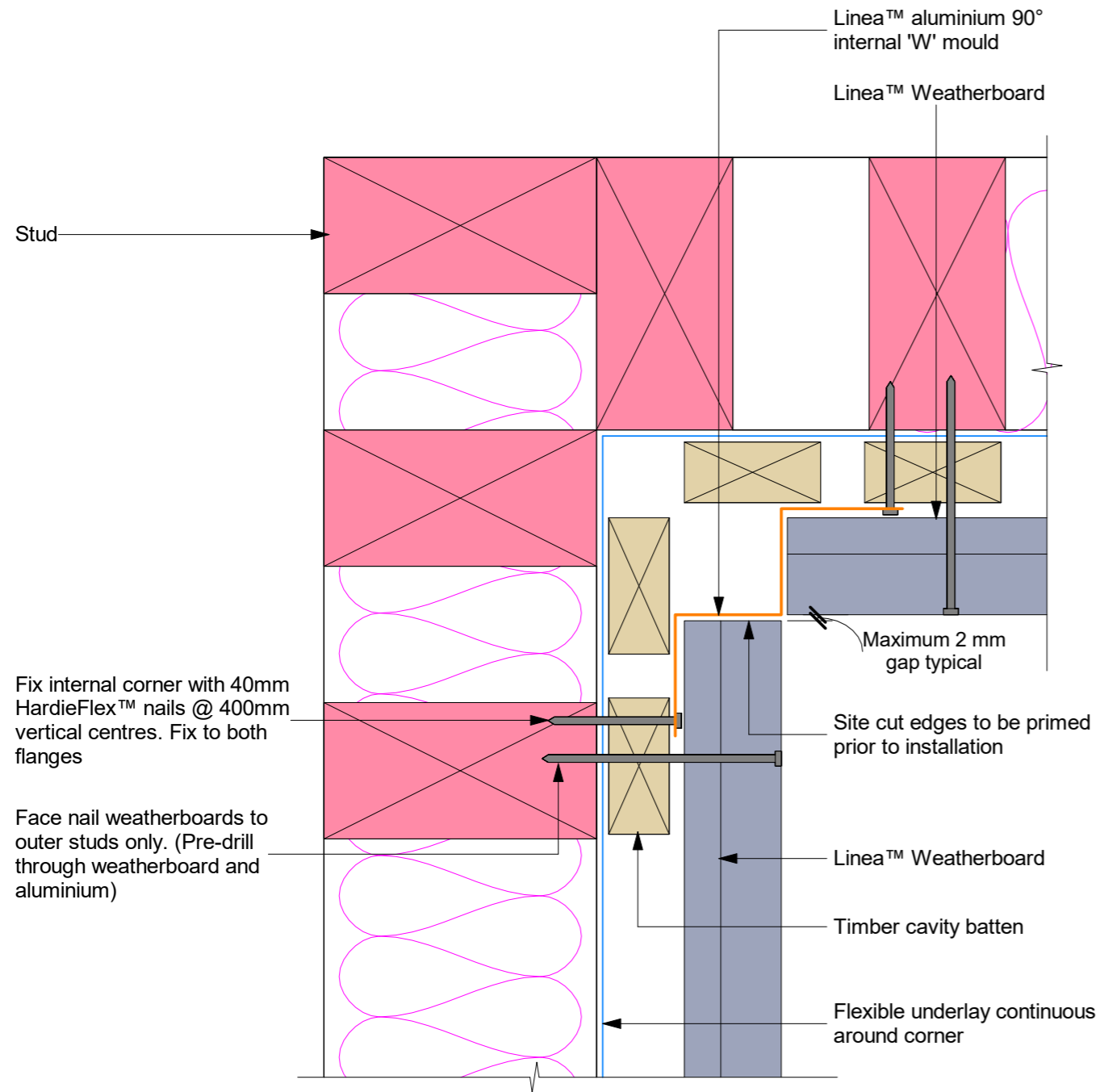
jhl\_inea\_billy9JEJT.rvt



**Linea™ Weatherboard**  
On Timber Cavity Batten with Flexible Underlay  
EXTERNAL MITRE CORNER

May 2020  
Scale: 1 : 2

Figure 10



jhl\_linea\_u\_011

jhl\_linea\_billy9JEJT.rvt



**Linea™ Weatherboard**  
On Timber Cavity Batten with Flexible Underlay  
INTERNAL ALUMINIUM CORNER

May 2020  
Scale: 1 : 2

Figure 11

jhl\_linea\_u\_013

jhl\_linea\_billy9JEJT.rvt

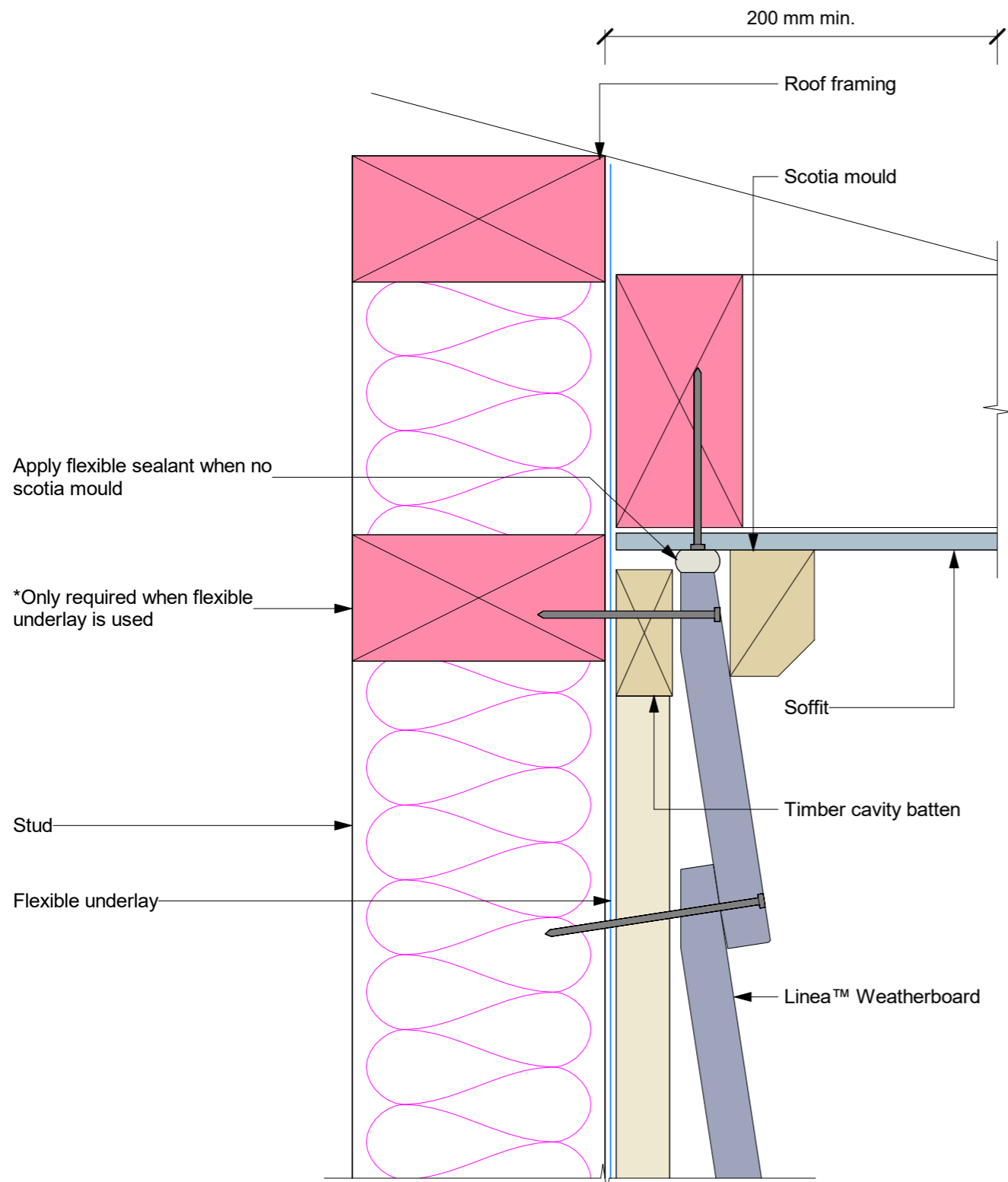


**Linea™ Weatherboard**  
On Timber Cavity Batten with Flexible Underlay  
SCRIBED INTERNAL CORNER

May 2020  
Scale:

Figure 13





Note:  
Alternatively the scotia can be scribed and sealed to Linea™ Weatherboard and the soffit lining

For soffits more than 200mm the Linea™ Weatherboard can be neat cut and silicone sealed to angle of soffit

jhl\_inea\_u\_014

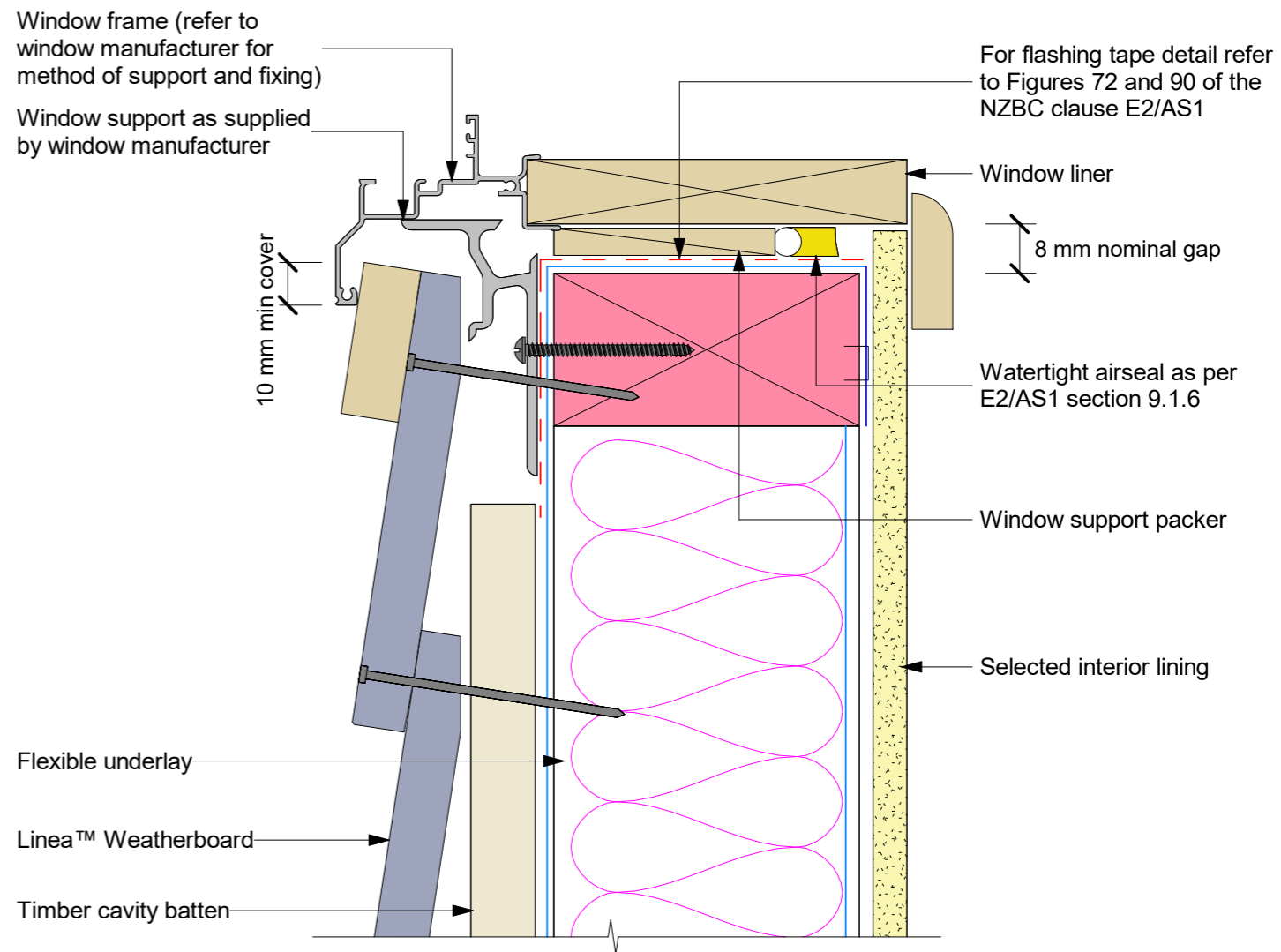
jhl\_inea\_billy9JEJT.rvt



**Linea™ Weatherboard**  
On Timber Cavity Batten with Flexible Underlay  
JUNCTION (SECTION 'X') CAVITY TO CABLE

May 2020  
Scale: 1 : 2

Figure 14



General notes for materials selection

1. Flashing materials must be selected based on environmental exposure, refer to NZS 3604 and Table 20 of NZBC E2/AS1
2. Flexible underlay must comply with acceptable solution E2/AS1
3. Flashing tape must have proven compatibility with the selected flexible underlay and other materials with which it comes into contact

Refer to the manufacturer or supplier for technical information for these materials

jhl\_inea\_u\_017

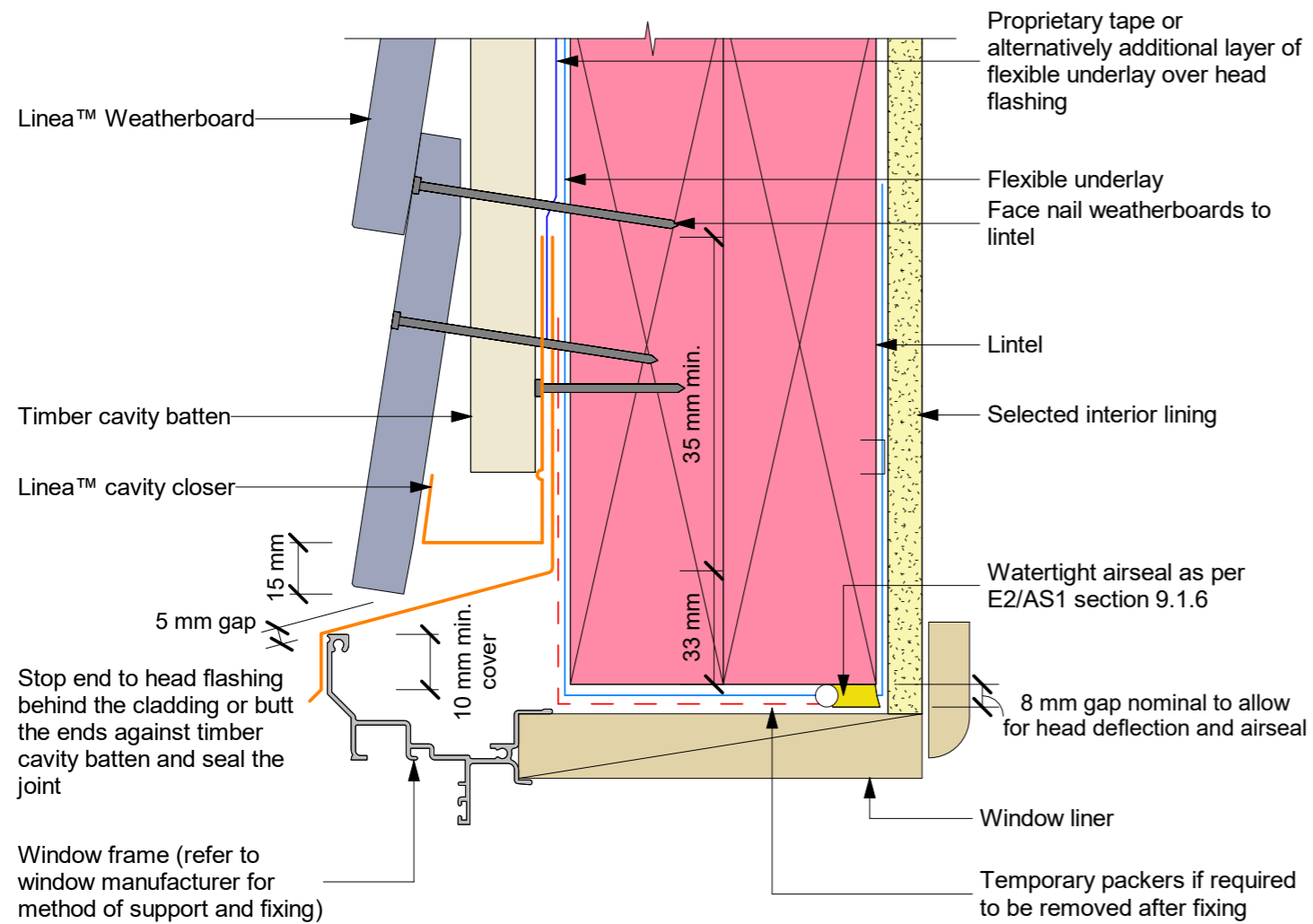
jhl\_inea\_billy9JEJT.rvt



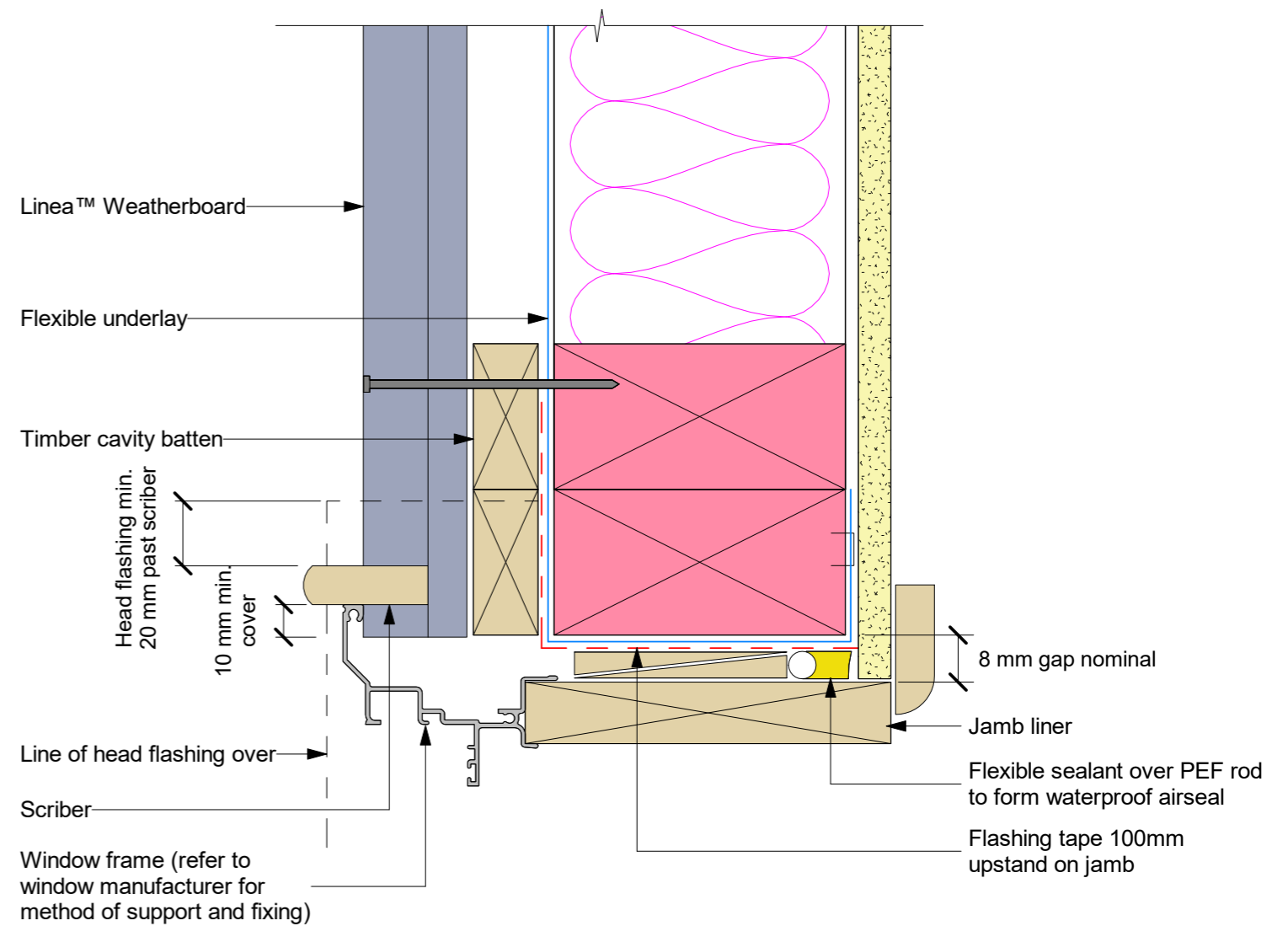
**Linea™ Weatherboard**  
On Timber Cavity Batten with Flexible Underlay  
WINDOW SILL

May 2020  
Scale: 1 : 2

Figure 17



- Note:
- Sealant must be installed between head flashing and window flange in VH and EH wind zones and SED pressures
  - Alternatively, the head flashings can be formed with stop ends as per E2/AS1
  - Refer to Figure 22 for sealing end battens to head flashing
  - Site cut edges to be primed



jhl\_linea\_u\_018

jhl\_linea\_billy9JEJT.rvt



**Linea™ Weatherboard**  
 On Timber Cavity Batten with Flexible Underlay  
 WINDOW HEAD WITH CLADDING CUT AROUND HEAD FLASHING Figure 18

May 2020  
 Scale: 1 : 2

jhl\_linea\_u\_019

jhl\_linea\_billy9JEJT.rvt



**Linea™ Weatherboard**  
 On Timber Cavity Batten with Flexible Underlay  
 WINDOW JAMB Figure 19

May 2020  
 Scale: 1 : 2



Wall Cladding Details

PARIHAKA MARAE  
 101 TE IRINGA ROAD  
 KAIKOHE

Rev No. Date Revision

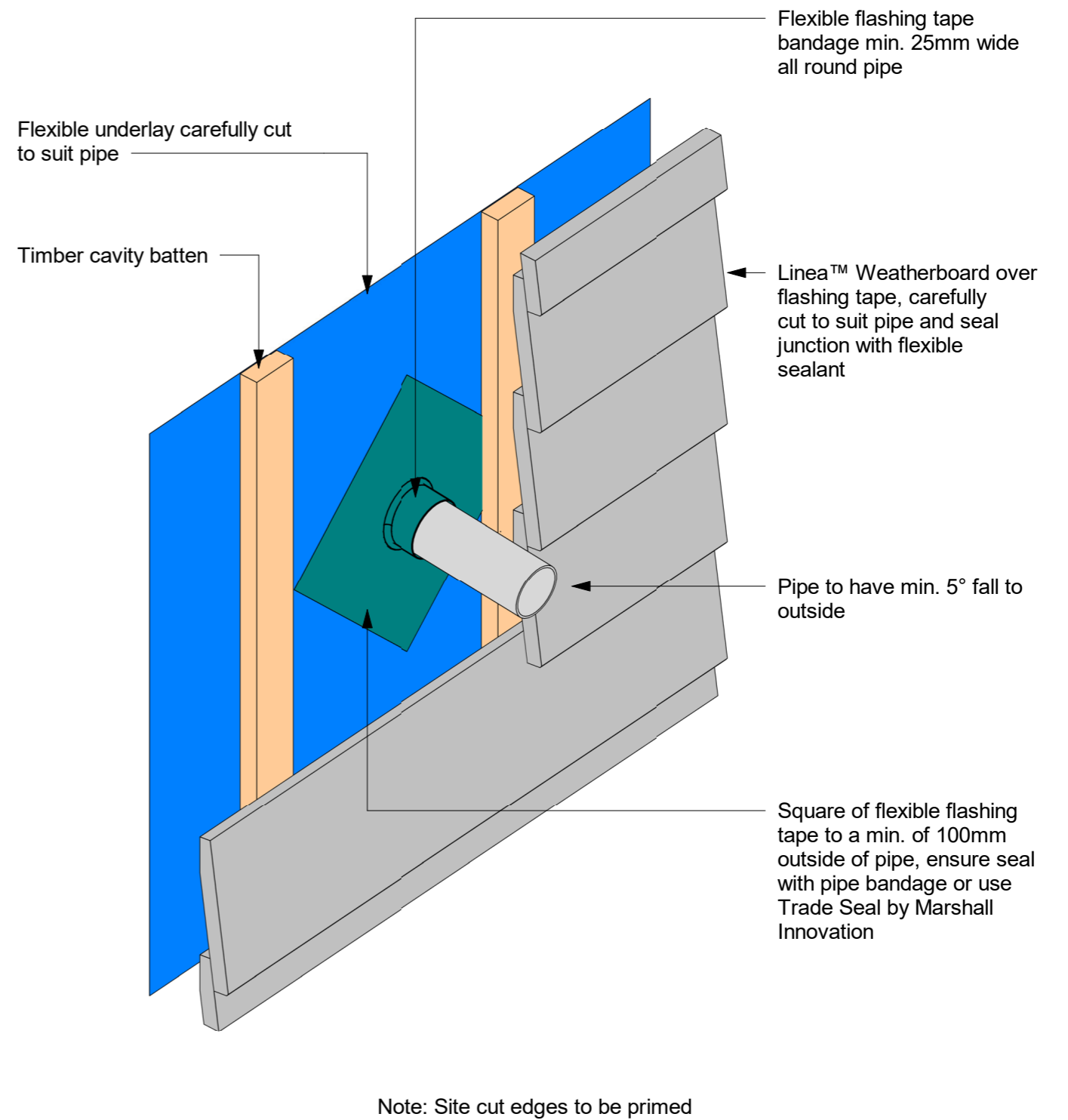
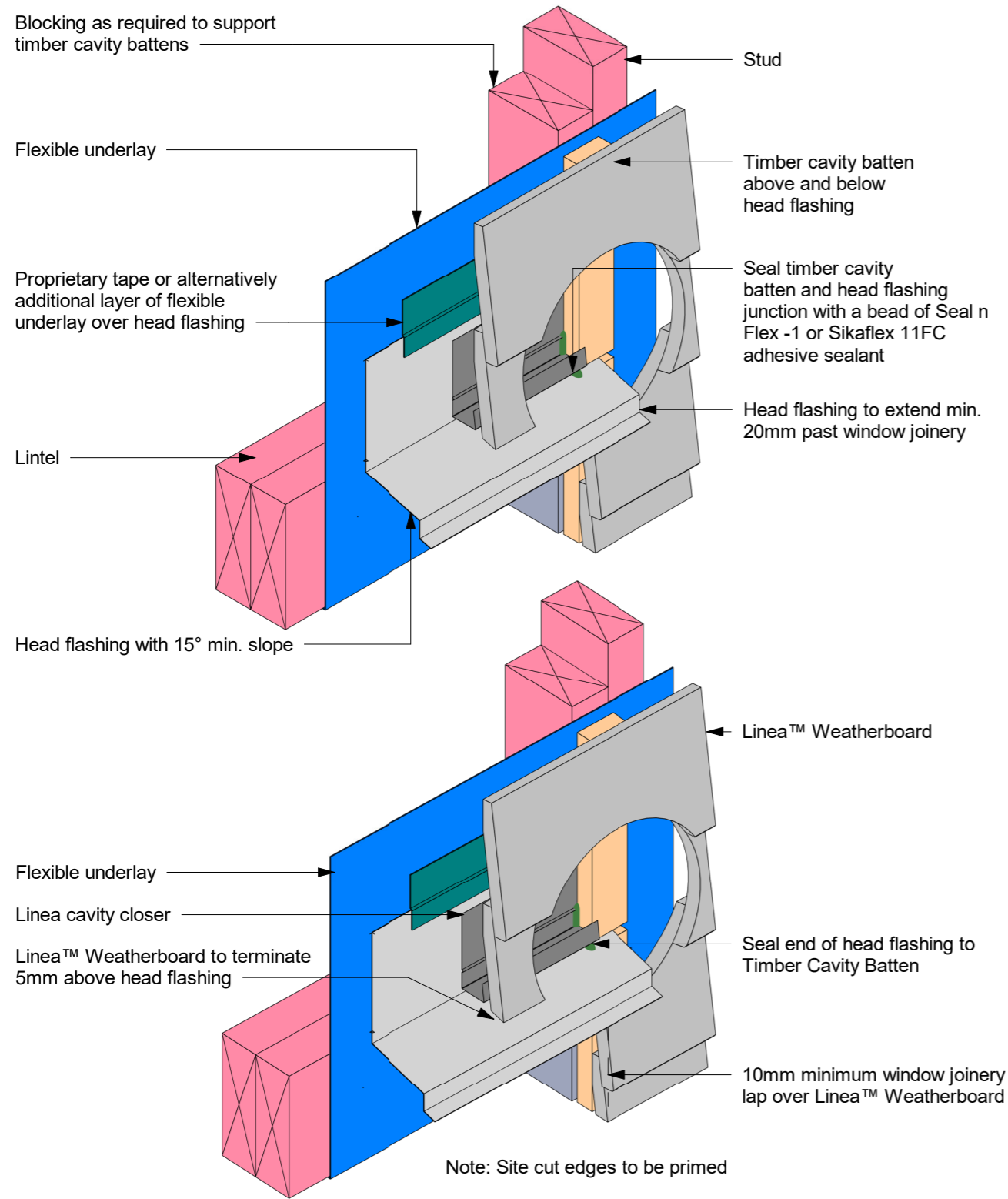
Scale @ A3: N.T.S.

Sheet No:

Drawn By M.K.B.

42

Issued: 13/11/2023  
 4:11 PM



jhl\_inea\_u\_020



### Linea™ Weatherboard

On Timber Cavity Batten with Flexible Underlay  
WINDOW HEAD STOP END

jhl\_inea\_billy9JEJT.rvt

May 2020  
Scale:

Figure 20

jhl\_inea\_u\_025



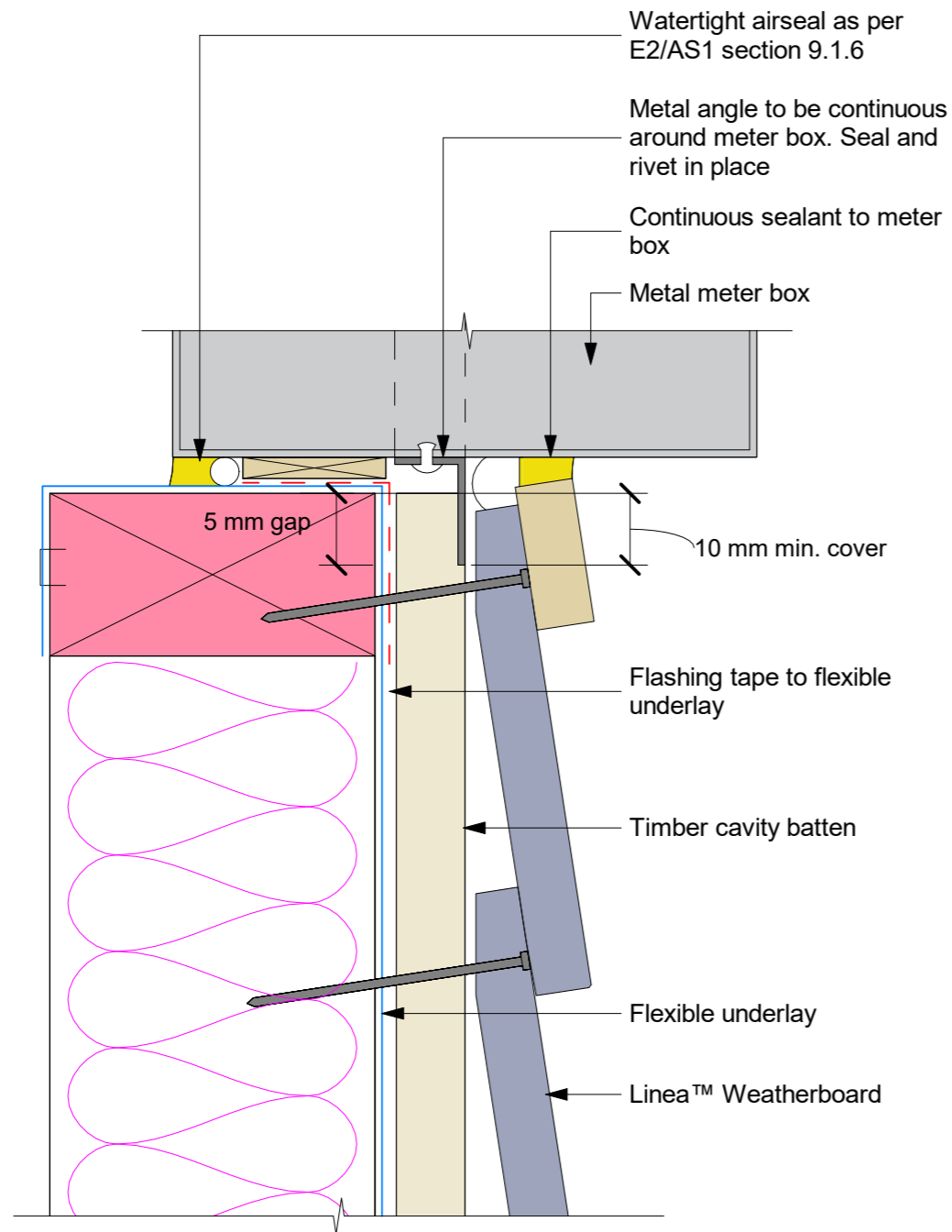
### Linea™ Weatherboard

On Timber Cavity Batten with Flexible Underlay  
PIPE PENETRATION

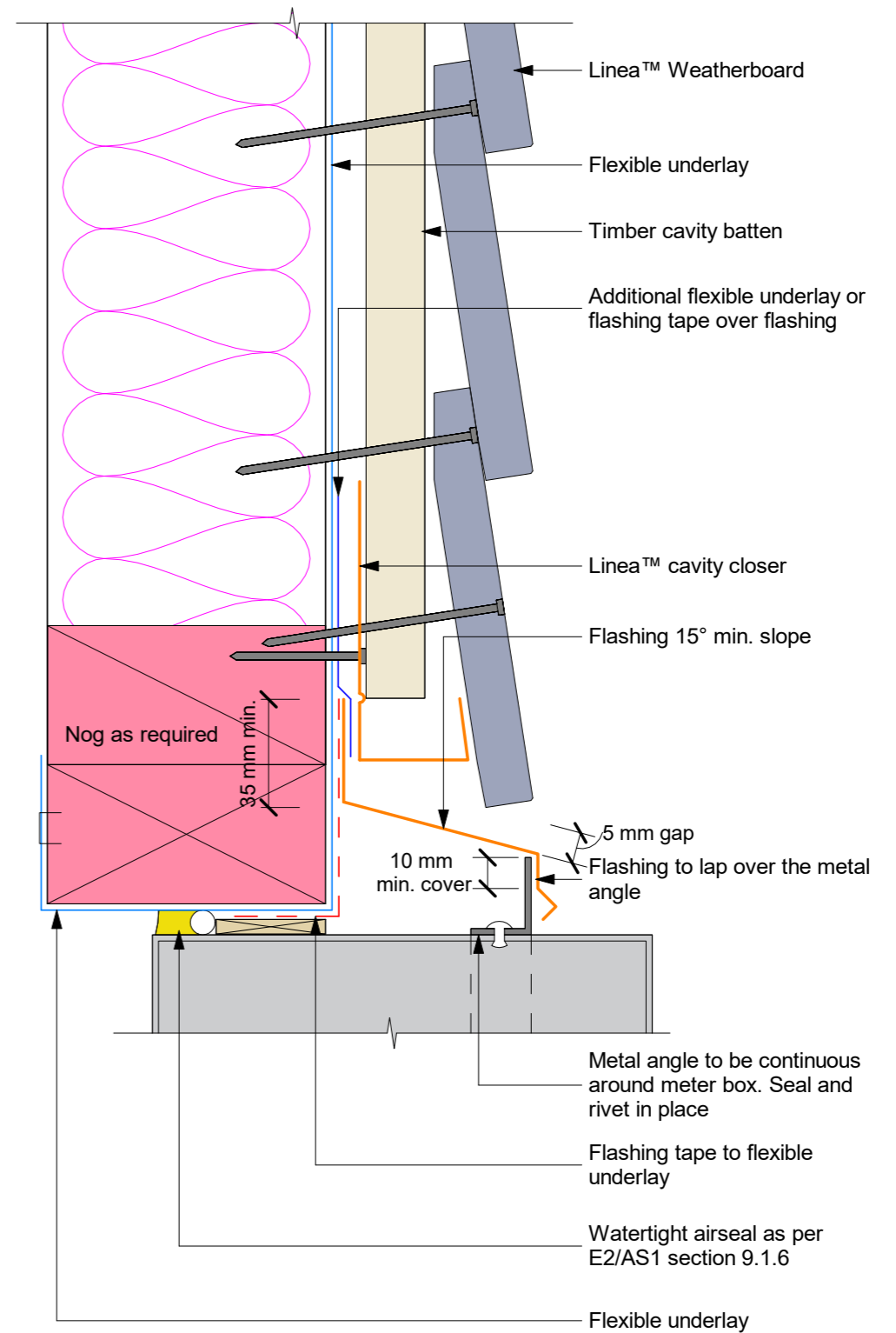
jhl\_inea\_billy9JEJT.rvt

May 2020  
Scale:

Figure 25



Note: Site cut edges to be primed



Note:  
When James Hardie rigid air barrier is used  
flashing tape to be applied to the entire opening

jhl\_inea\_u\_040



**Linea™ Weatherboard**  
 On Timber Cavity Batten with Flexible Underlay  
**METER BOX AT SILL**

jhl\_inea\_billy9JEJT.rvt

May 2020  
 Scale: 1 : 2

Figure 40

jhl\_inea\_u\_041



**Linea™ Weatherboard**  
 On Timber Cavity Batten with Flexible Underlay  
**METER BOX AT HEAD**

jhl\_inea\_billy9JEJT.rvt

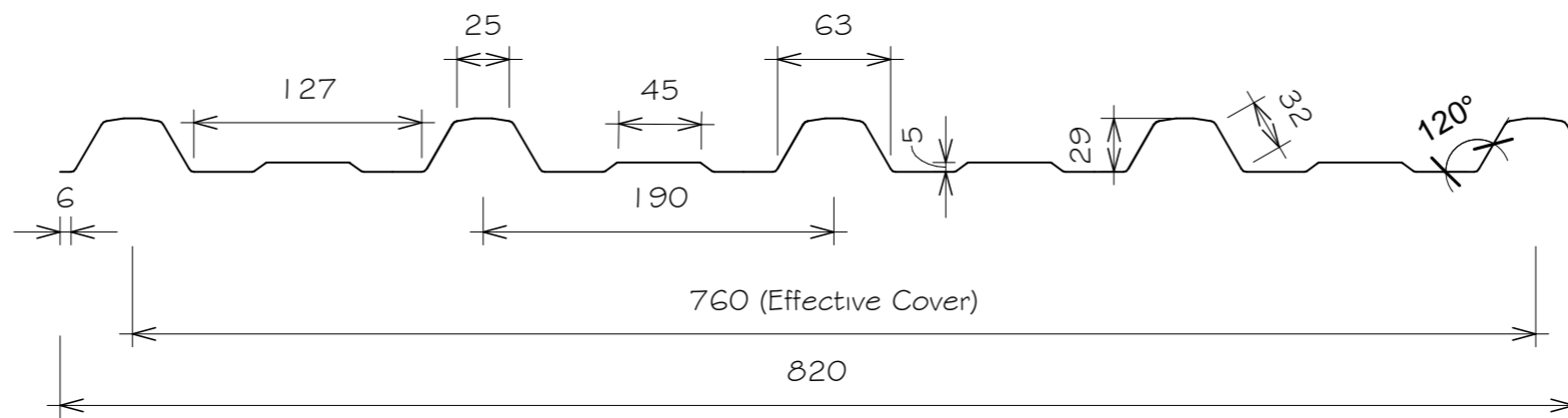
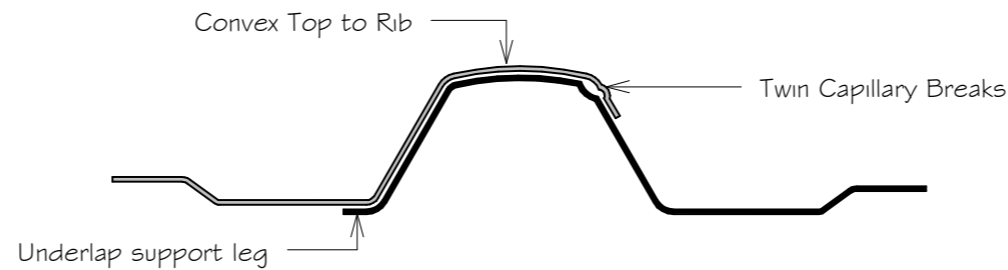
May 2020  
 Scale: 1 : 2

Figure 41

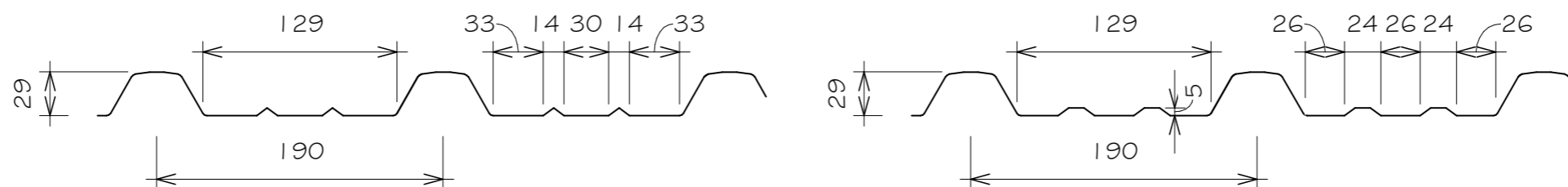
# RESIDENTIAL TRIMRIB PROFILE SUMMARY - TRIMRIB

Detail Number: RI-RT00C  
Date drawn: 03/03/2019

'TRIMRIB' Lap



'TRIMRIB' S



**Minimum Pitch**

The minimum roof pitch for 'TRIMRIB' is 3 degrees.  
When a combination of sheets provide a run of in excess of 40 metres and up to 60 metres the roof pitch should be increased by 1 degree. Longer lengths require specific design.  
When rainfall intensity exceeds 100mm/hour the minimum pitches need to be increased by a further 1 degree for every 10 metres of run over 40 metres  
The building design pitch may need to be higher to take into account any cumulative deflections of the frame, purlin and roof sheeting or penetrations.  
For curved roofing the roof cladding must not terminate at a pitch lower than permitted above.  
Side laps of curved sheets must be sealed to any areas below the minimum pitches permitted above.

'TRIMRIB' V

'TRIMRIB' TS

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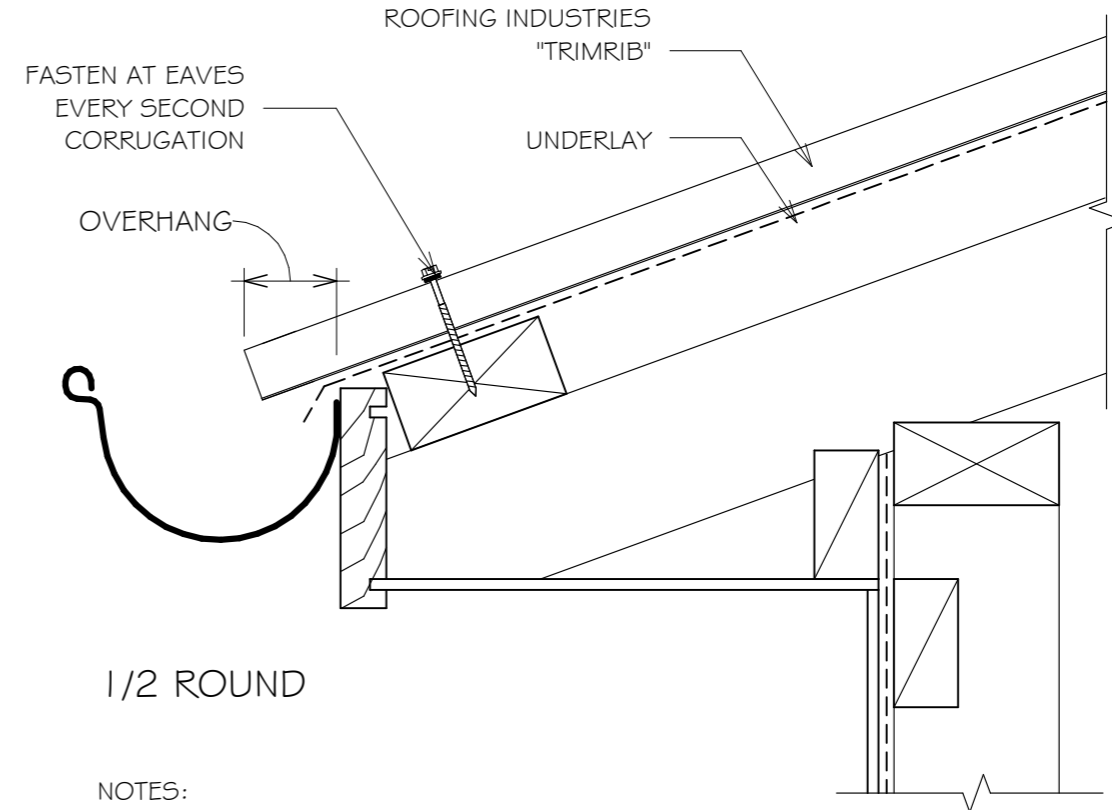
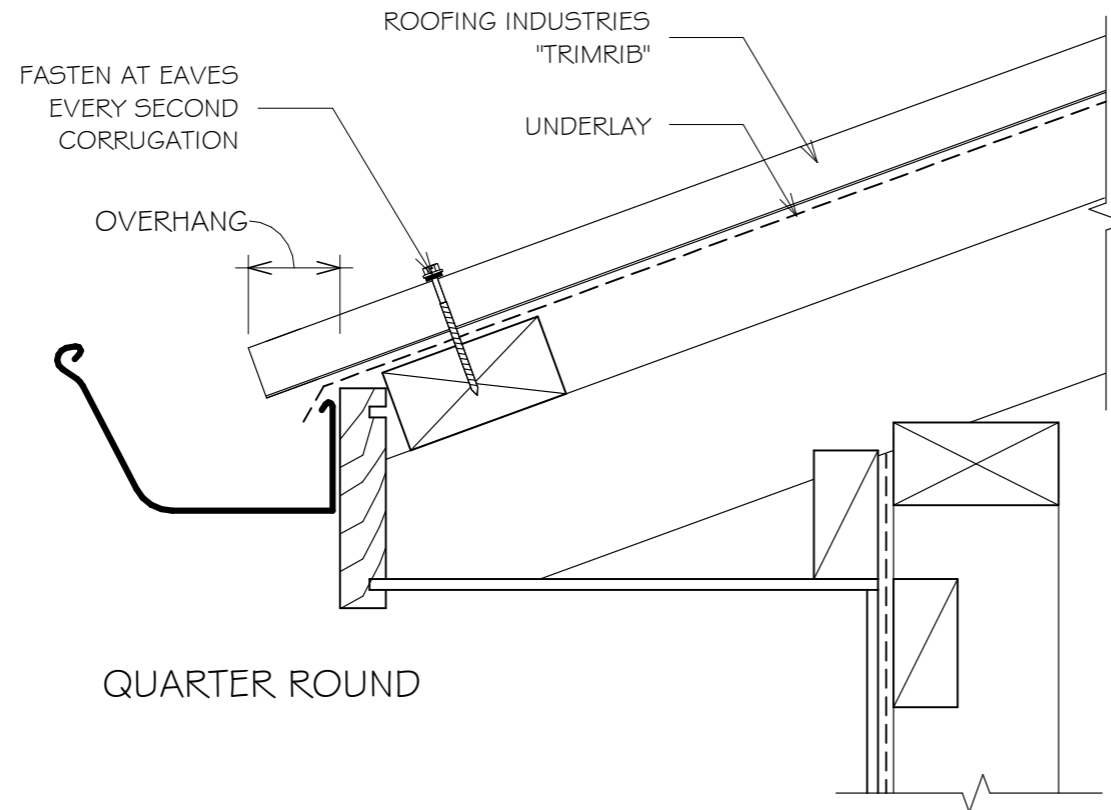
# RESIDENTIAL TRIMRIB® ROOFING

## ROOFING INDUSTRIES GUTTER OPTIONS QUARTER & 1/2 ROUND FOR TIMBER FASCIA

Detail Number: RI-RTR030A

Date drawn: 07/07/2017

Scale: 1 : 5 @ A4



NOTES:

1. GUTTER APRON FLASHINGS MAY BE REQUIRED AS PER DRAWING RTR004A
2. OVERHANG AS PER DRAWING RTR004A / MRM COP

NOTES:

- These details are generally in compliance with E2/AS1 and/or the NZ Metal Roof & Wall Cladding Code of Practice and in some cases specific details by 'Roofing Industries'.
- The building designer is ultimately responsible to ensure that details used meet the requirements of the NZ Building Code for the specific project.
- Details of the supporting structure including cavity battens are indicative only and are the responsibility of the building designer. For steel framed buildings thermal break cavity battens may be required.
- Underlay selection and building wrap types are the responsibility of the designer, Netting or other support is generally required at roof pitches less than 8 degrees combined with a self supporting paper. At roof pitches of 8° and above where non self supporting paper is used or purlin spacing is in excess of self supporting criteria, netting or other support should be used. Alternative support to netting should be used in severe coastal environments including when aluminium is used.
- These details are for Roofing Industries profile/s as nominated and may not be applicable to other profiles.
- This drawing is the copyright of 'Roofing Industries' and can only be copied or reproduced with their permission.
- These details to be read with Roofing Industries profile technical summary regarding wind loads and fixings.
- Further information can be obtained from the NZ Metal Roof & Wall Cladding Code of Practice: [www.metalroofing.org.nz](http://www.metalroofing.org.nz) OR NZBC clause E2/AS1.

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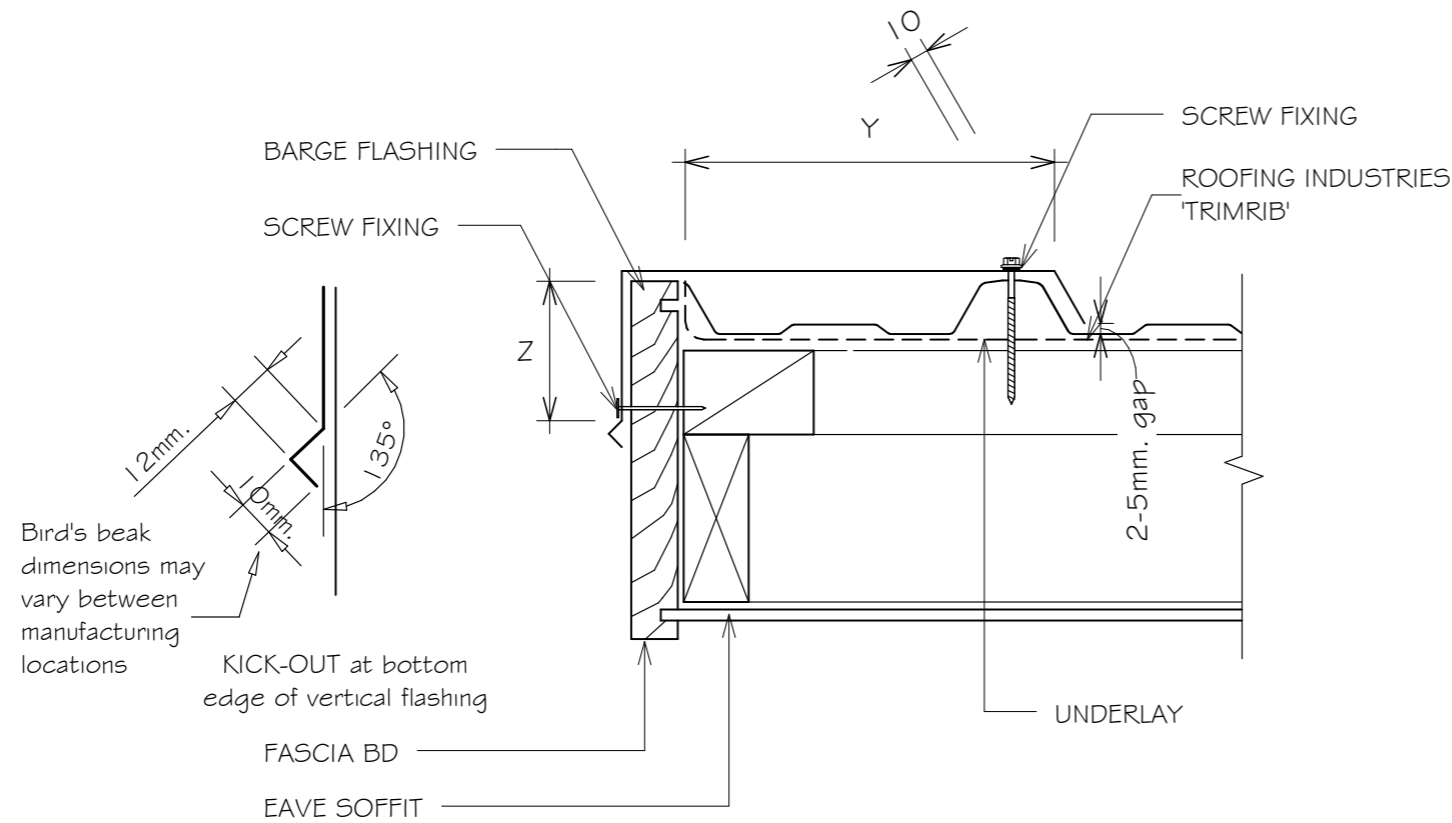


# RESIDENTIAL TRIMRIB® ROOFING BARGE DETAIL (BIRDS BEAK)

Detail Number: RI-RTROO1B

Date drawn: 07/07/2017

Scale: 1 : 5@ A4



SITE WIND ZONE (As per NZS3604)	MINIMUM	
	Z <sup>(5)</sup>	Y
SITUATION 1 (1)	50mm (4)	2 crests
SITUATION 2 (2)	75mm (4)	2 "
SITUATION 3 (3)	90mm (4)	2 "

NOTES:

- SITUATION 1: IN LOW, MEDIUM OR HIGH WIND ZONES, WHERE ROOF PITCH IS 10° OR GREATER.
- SITUATION 2: FOR ALL ROOF PITCHES IN VERY HIGH WIND ZONES, FOR ALL LESSER WIND ZONES WHERE ROOF PITCH IS LESS THAN 10°.
- SITUATION 3: FOR ALL ROOF PITCHES IN EXTRA HIGH WIND ZONES.
- EXCLUDING DRIP EDGE.
- INCREASE DISTANCE 'Z' BY 25mm WHEN AGAINST A PROFILED SURFACE OR TO 100mm WHICHEVER IS THE LESSER.

NOTES:

- These details are generally in compliance with E2/AS1 and/or the NZ Metal Roof & Wall Cladding Code of Practice and in some cases specific details by 'Roofing Industries'.
- The building designer is ultimately responsible to ensure that details used meet the requirements of the NZ Building Code for the specific project.
- Details of the supporting structure including cavity battens are indicative only and are the responsibility of the building designer. For steel framed buildings thermal break cavity battens may be required.
- Underlay selection and building wrap types are the responsibility of the designer, Netting or other support is generally required at roof pitches less than 8 degrees combined with a self supporting paper. At roof pitches of 8° and above where non self supporting paper is used or purlin spacing is in excess of self supporting criteria, netting or other support should be used. Alternative support to netting should be used in severe coastal environments including when aluminium is used.
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- This drawing is the copyright of 'Roofing Industries' and can only be copied or reproduced with their permission.
- These details to be read with Roofing Industries profile technical summary regarding wind loads and fixings.
- Further information can be obtained from the NZ Metal Roof & Wall Cladding Code of Practice: [www.metalroofing.org.nz](http://www.metalroofing.org.nz) OR NZBC clause E2/AS1.

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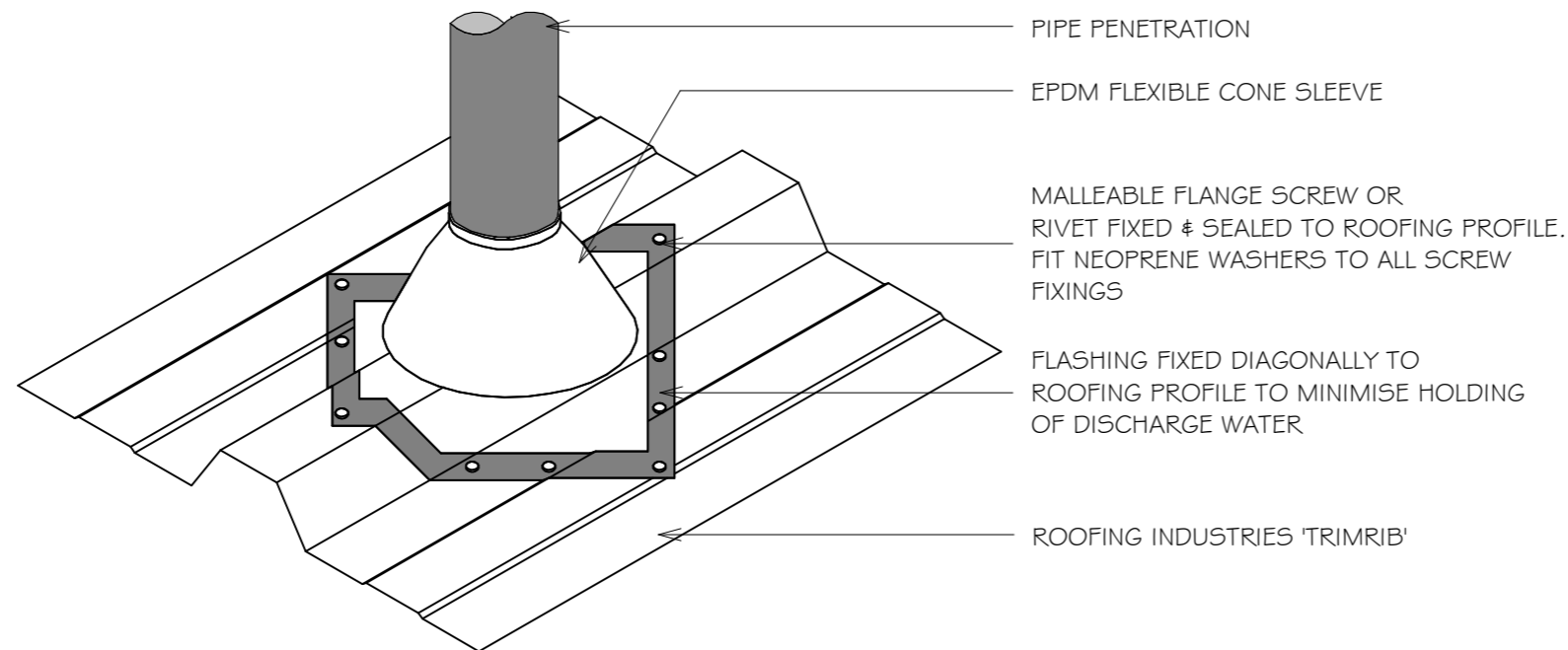


# RESIDENTIAL TRIMRIB® ROOFING

## EPDM FLASHING FOR UP TO 85mm DIA PIPE

Detail Number: RI-RTRO14A

Date drawn: 07/07/2017



### NOTES:

1. FOR PIPES UP TO 85mm DIAMETER.
2. MAX ROOF PITCH FOR THIS FLASHING 45°.
3. MAXIMUM ROOF LENGTH ABOVE PENETRATION NOT TO EXCEED 12.0 METRES.
4. ALSO REFER TO NZ METAL ROOF & WALL CLADDING CODE OF PRACTICE.

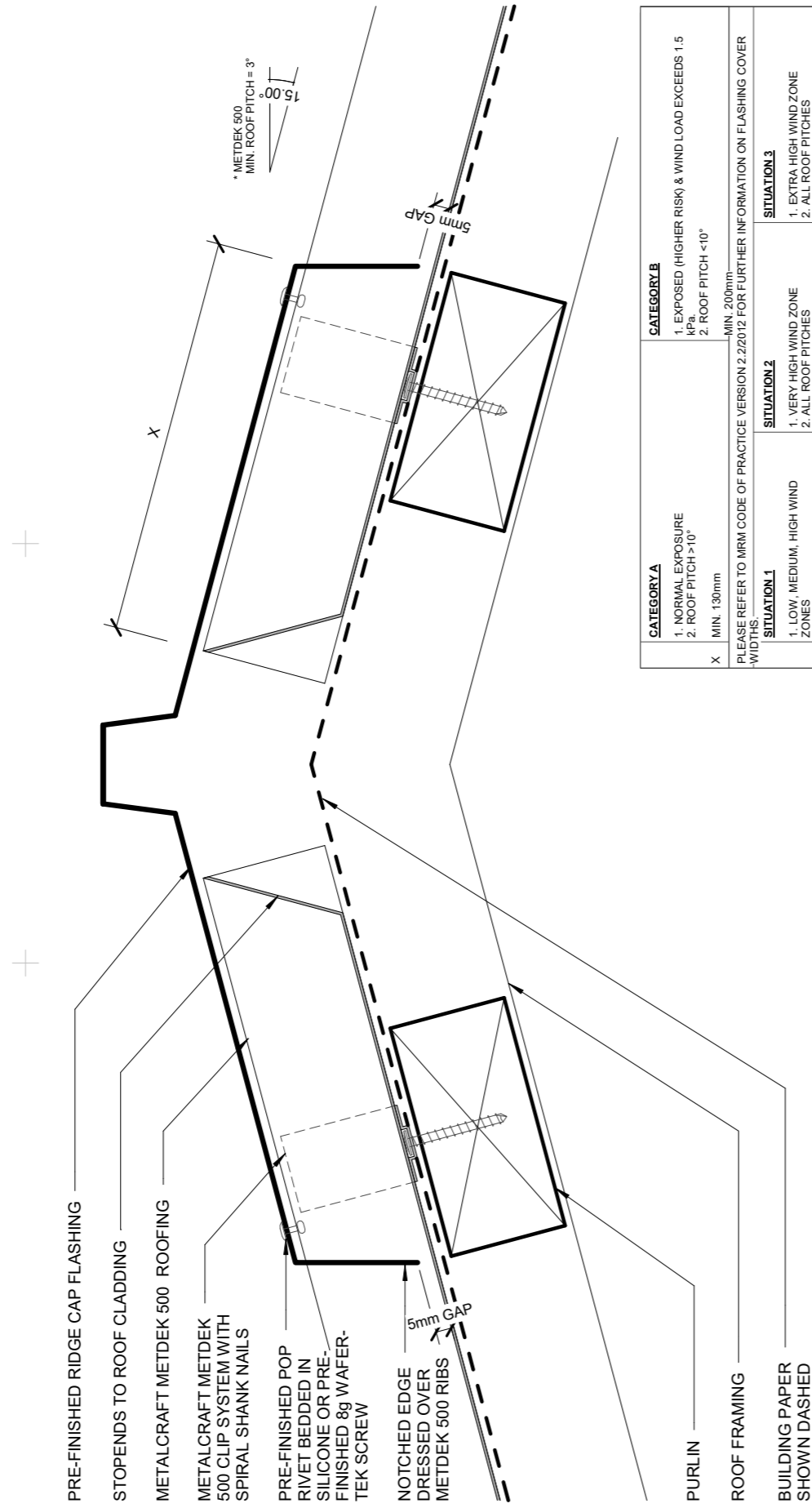
### NOTES:

- These details are generally in compliance with E2/AS1 and/or the NZ Metal Roof & Wall Cladding Code of Practice and in some cases specific details by 'Roofing Industries'.
- The building designer is ultimately responsible to ensure that details used meet the requirements of the NZ Building Code for the specific project.
- Details of the supporting structure including cavity battens are indicative only and are the responsibility of the building designer. For steel framed buildings thermal break cavity battens may be required.
- Underlay selection and building wrap types are the responsibility of the designer. Netting or other support is generally required at roof pitches less than 8 degrees combined with a self supporting paper. At roof pitches of 8° and above where non self supporting paper is used or purlin spacing is in excess of self supporting criteria, netting or other support should be used. Alternative support to netting should be used in severe coastal environments including when aluminium is used.
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- These details to be read with Roofing Industries profile technical summary regarding wind loads and fixings.
- Further information can be obtained from the NZ Metal Roof & Wall Cladding Code of Practice: [www.metalroofing.org.nz](http://www.metalroofing.org.nz) OR NZBC clause E2/AS1.

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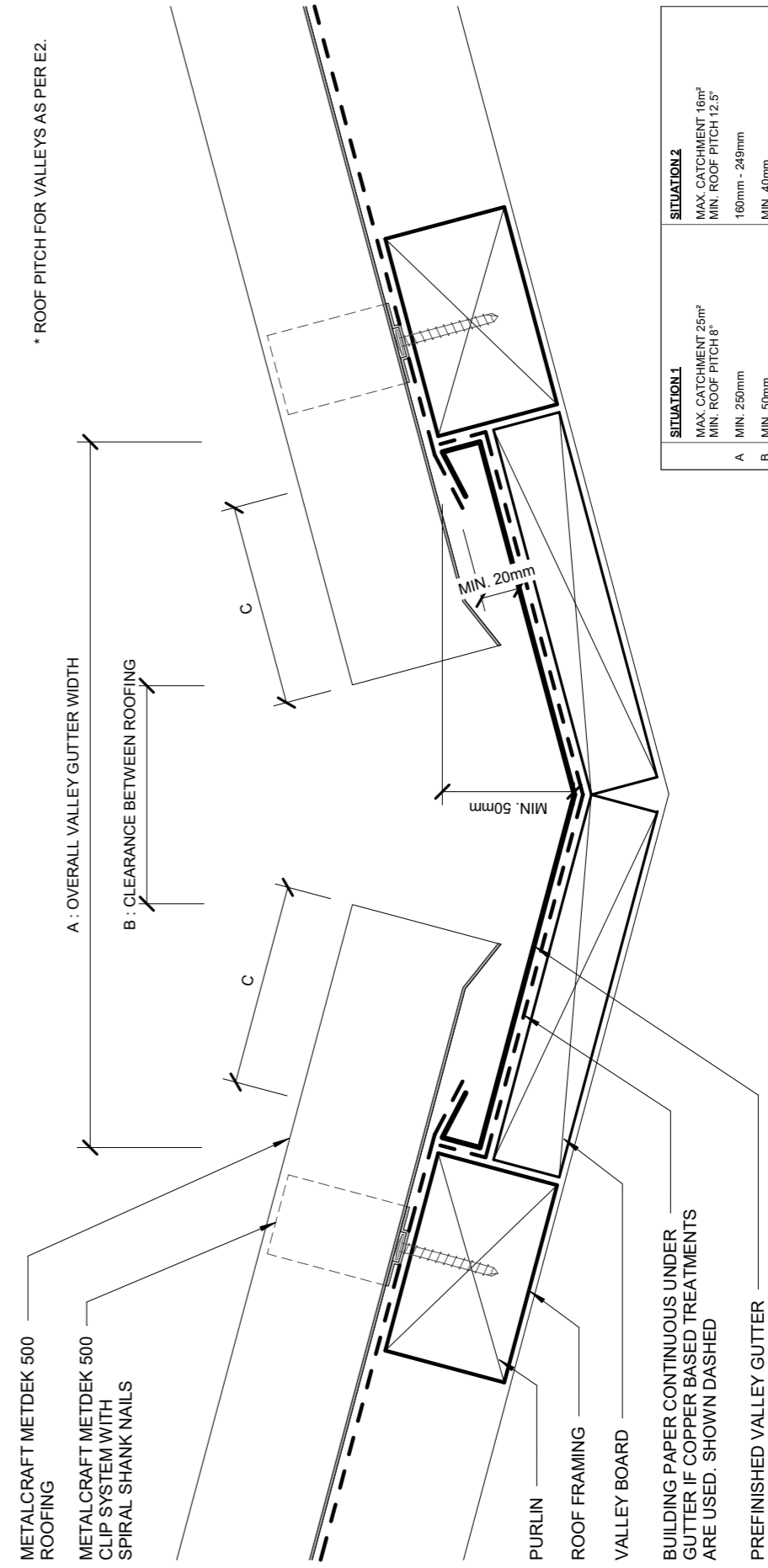






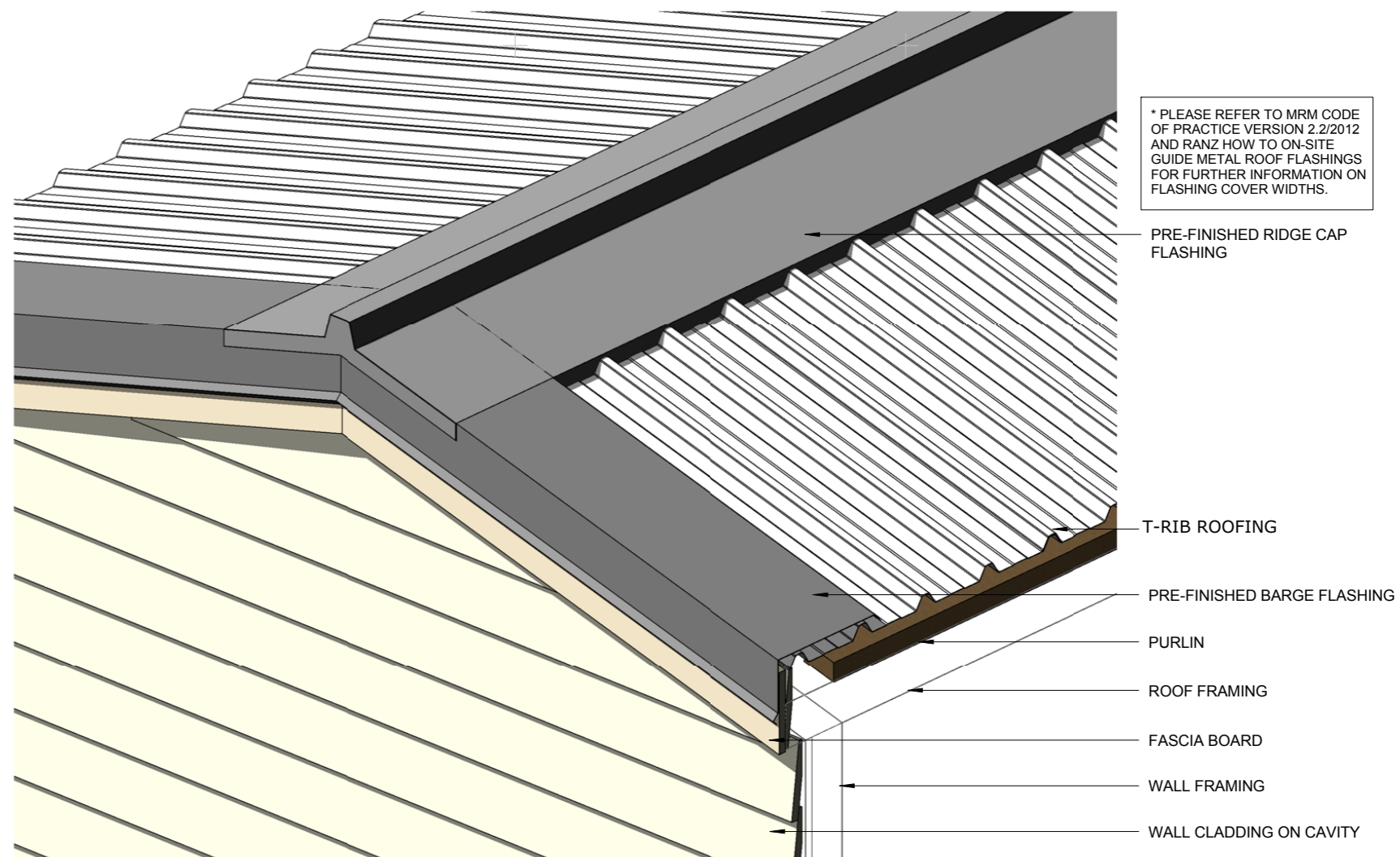
CATEGORY A	CATEGORY B
1. NORMAL EXPOSURE 2. ROOF PITCH > 10°	1. EXPOSED (HIGHER RISK) & WIND LOAD EXCEEDS 1.5 kPa. 2. ROOF PITCH < 10°
X MIN. 130mm	MIN. 200mm
PLEASE REFER TO MRM CODE OF PRACTICE VERSION 2.2/2012 FOR FURTHER INFORMATION ON FLASHING COVER WIDTHS.	
SITUATION 1	SITUATION 2
1. LOW, MEDIUM, HIGH WIND ZONES 2. ROOF PITCH ≥ 10°	1. VERY HIGH WIND ZONE 2. ALL ROOF PITCHES
X MIN. 130mm EXCLUDING ANY NOTCHED EDGE OR TURN-DOWN TO ROOFING	MIN. 200mm EXCLUDING ANY NOTCHED EDGE OR TURN-DOWN TO ROOFING
PLEASE REFER TO E2 FOR FURTHER INFORMATION ON FLASHING COVER WIDTHS.	

**ROOF RIDGE**  
RESIDENTIAL ROOFING



SITUATION 1	SITUATION 2
MAX. CATCHMENT 25m² MIN. ROOF PITCH 8°	MAX. CATCHMENT 16m² MIN. ROOF PITCH 12.5°
A MIN. 250mm	160mm - 249mm
B MIN. 50mm	MIN. 40mm
C MIN. 80mm	MIN. 60mm
PLEASE REFER TO MRM CODE OF PRACTICE VERSION 2.2/2012 AND E2 FOR FURTHER INFORMATION.	

**ROOF VALLEY**  
RESIDENTIAL ROOFING



\* PLEASE REFER TO MRM CODE OF PRACTICE VERSION 2.2/2012 AND RANZ HOW TO ON-SITE GUIDE METAL ROOF FLASHINGS FOR FURTHER INFORMATION ON FLASHING COVER WIDTHS.

PRE-FINISHED RIDGE CAP FLASHING

T-RIB ROOFING

PRE-FINISHED BARGE FLASHING

PURLIN

ROOF FRAMING

FASCIA BOARD

WALL FRAMING

WALL CLADDING ON CAVITY

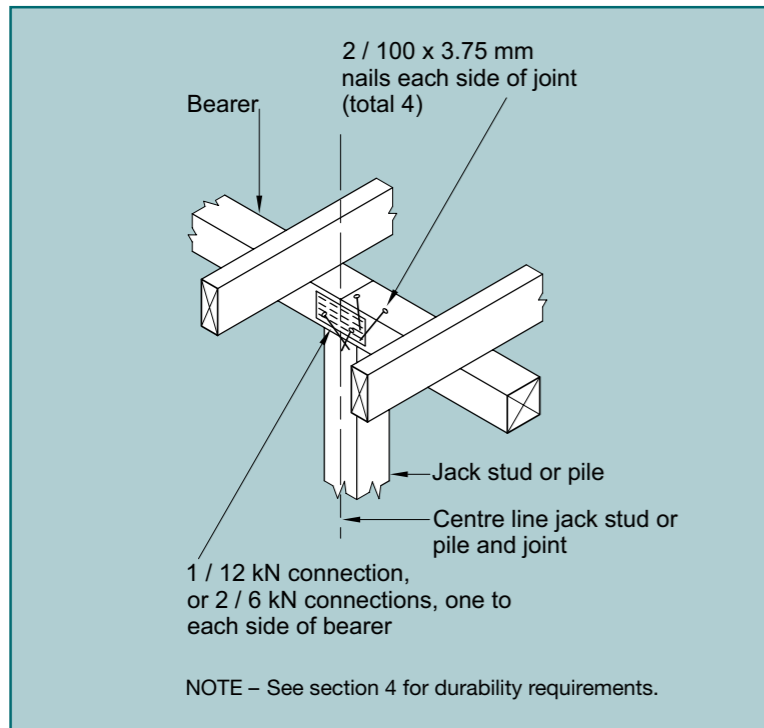
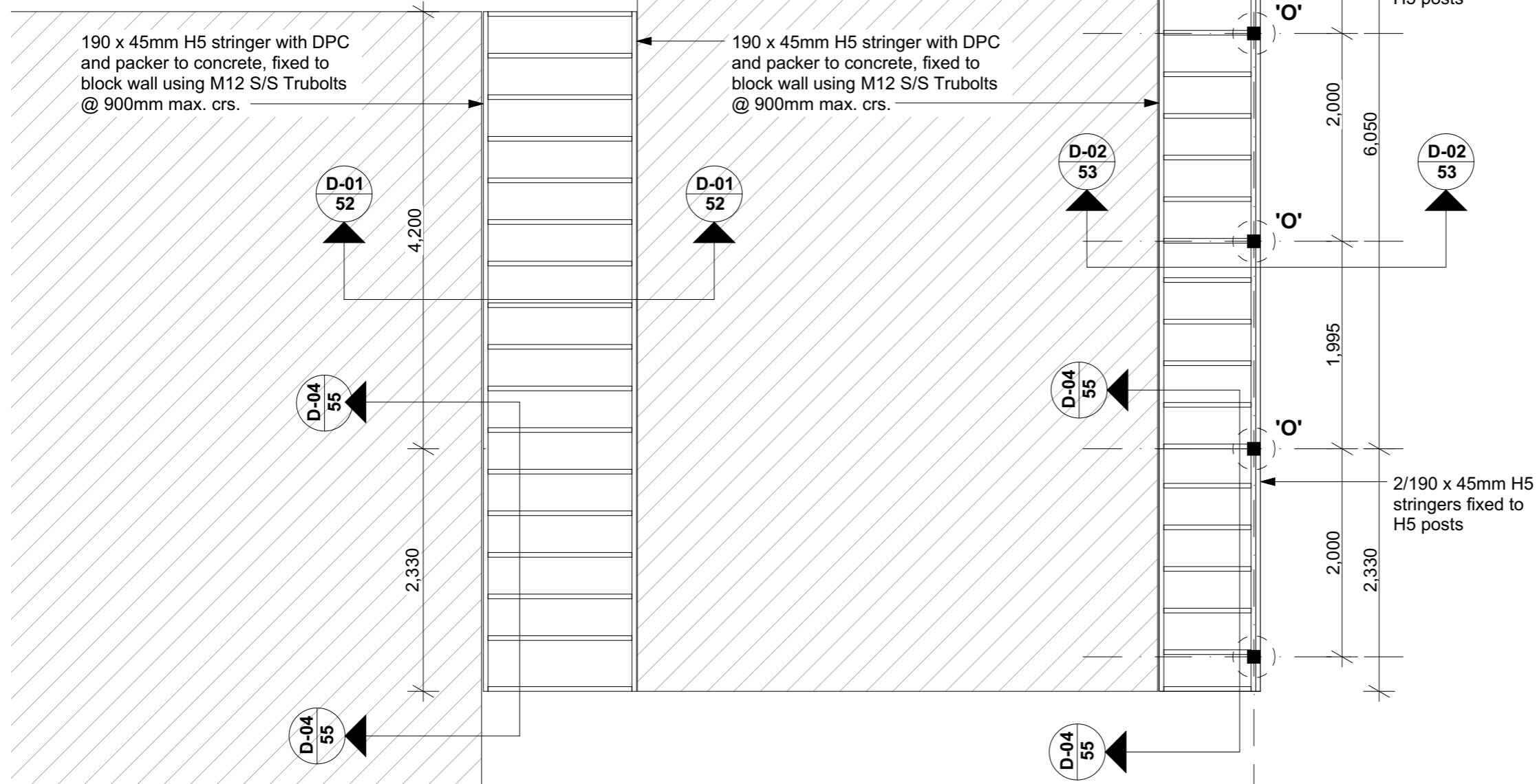


Figure 6.19 – Joints in bearers (see 6.12.7.1 and 6.12.7.2)



**DURABILITY OF ALL FIXINGS:**  
 FIXINGS ARE TO COMPLY WITH NZBC B2/AS1 DURABILITY AND NZS3604:2011 SECTION 4 - DURABILITY

**ALL ZONES**  
 NAIL PLATES IN CLOSED AND ROOF SPACES TO BE CONTINUOUSLY COATED GALV. STEEL  
 WIRE DOGS AND BOLTS IN CLOSED AND ROOF SPACES TO BE HOT-DIPPED GALV. STEEL  
 ALL OTHER STRUCTURAL FIXINGS IN CLOSED ENVIRONMENTS TO BE MOLD STEEL (UNCOATED NON-GALV. STEEL)

**ZONE A:**  
 ALL FIXINGS ARE TO BE TYPE 304 OR 316 STAINLESS STEEL IN EXPOSED AND SHELTERED ENVIRONMENT

**ZONE B & C:**  
 ALL FIXINGS WITHIN 600mm OF THE GROUND SHELTERED AND EXPOSED ARE TO BE TYPE 304 OR 316 STAINLESS STEEL  
 ALL SHELTERED FIXINGS MORE THAN 600mm FROM GROUND ARE TO BE HOT-DIPPED GALV. STEEL  
 ALL EXPOSED FIXINGS ARE TO BE TYPE 304 OR 316 STAINLESS STEEL

**NOTES:**  
 Access Routes  
 TO ALL ACCESS ROUTES BOTH EXTERNAL AND INTERNAL, PROVIDE ANTI-SLIP SURFACE COMPLYING WITH NZ BC D1/AS1  
 FOOTING DEPTH INTO GOOD GROUND CONCRETE STRENGTH TO BE 20MPa  
 PILE LAYOUT IS INDICATIVE ONLY & SUBJECT TO ON-SITE CONFIRMATION  
 ALL SUN-FLOOR FIXINGS TO BE STAINLESS STEEL  
 4 x SS 'U' NAILS TO CONNECT BEARERS TO PILES (12kn)

**SUB-FLOOR FIXINGS**  
 ALL SHELTERED FIXINGS MORE THAN 600mm FROM GROUND ARE TO BE HOT-DIPPED GALV. STEEL  
 ALL EXPOSED FIXINGS ARE TO BE TYPE 304 OR 316 STAINLESS STEEL

**LEGEND:**  
 ■ 'O' ORDINARY PILE - 125mm<sup>2</sup> H5 PILE SET IN 450mm DIAMETER x 400mm DEEP 20MPa FOOTING

**Existing Wharekai**

Existing external wall framing, linings and external weatherboard cladding to be retained

Finished Floor Level

Existing concrete floor slab - Check On Site

90 x 20mm Kwila decking - grip-tread up

Cut out deck joists to allow for cladding base to comply

140 x 45mm H3.2 deck joists @ 400mm max. crs. - joist hang from stringers

Existing ground level - varies in finished level

New horizontal weatherboard cladding over battens over building wrap

Cut out deck joists to allow for cladding base to comply

1,500 - check on site

190 x 45mm H5 stringer with DPC and packer to concrete, fixed to block wall using M12 S/S Trubolts @ 900mm max. crs.

Pointing flush finished and as per NZS3604:2011 4.5.3 25MPa grout

Masonry walls to be read in conjunction with Engineers design and specifications

Geo-Textile membrane over 110mm diameter Novacoil drainage pipe to avoid silting

**Wahine ablutions**

New 90 x 45mm H1.2 framing with R2.4 insulation and GIB linings

New 90 x 45mm H1.2 base plate over DPC with M10 x 140mm and 50 x 50 x 3mm washer

Finished Floor Level

S.E.D. concrete floor slab

S.E.D. masonry wall

S.E.D. concrete footing

D-01

**DECK SECTION DETAIL**

1:5

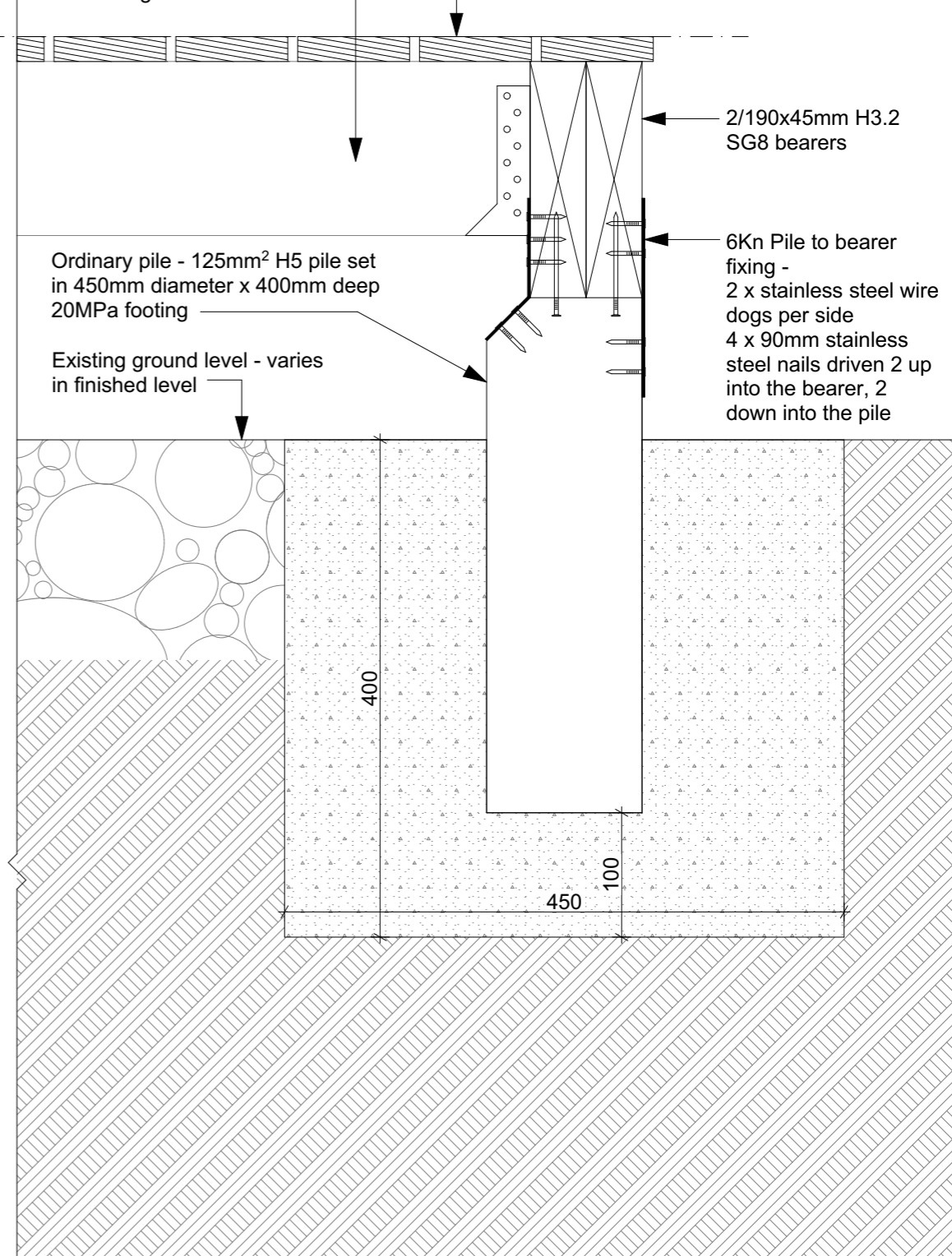
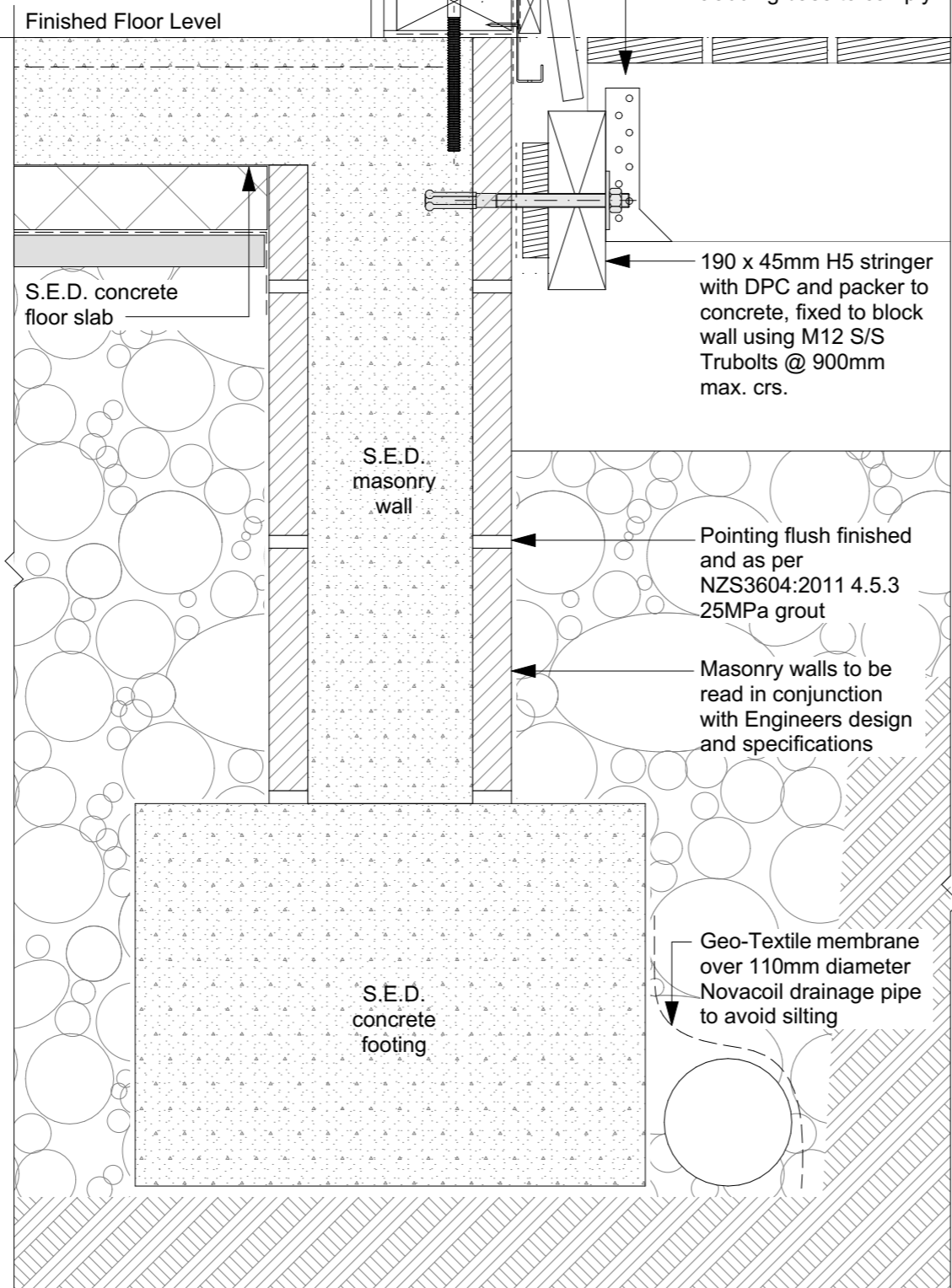
**Wahine/Tane ablutions**

New 90 x 45mm H1.2 framing with R2.4 insulation and GIB linings  
 New 90 x 45mm H1.2 base plate over DPC with M10 x 140mm and 50 x 50 x 3mm washer

New horizontal weatherboard cladding over battens over building wrap

90 x 20mm Kwila decking - grip-tread up

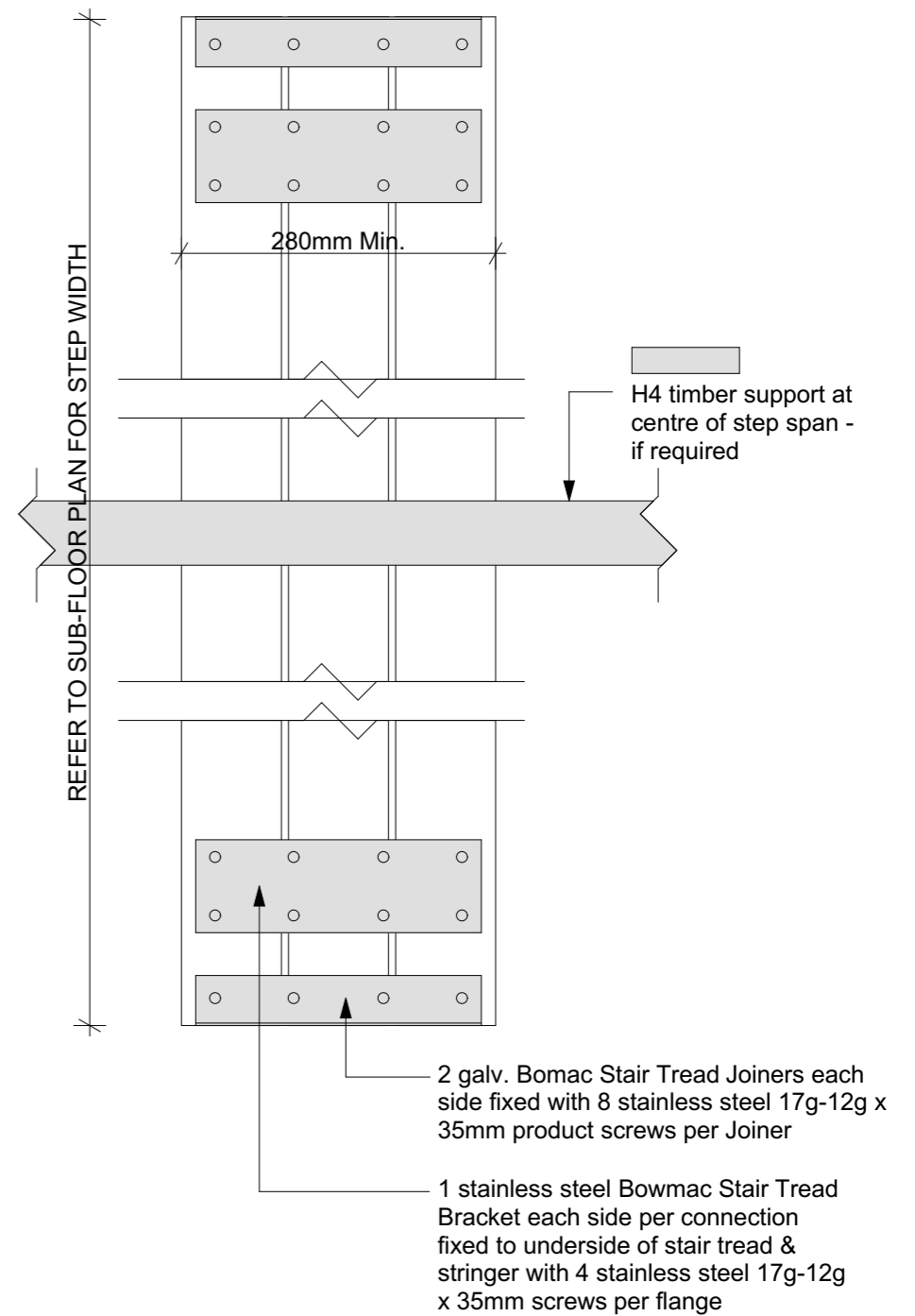
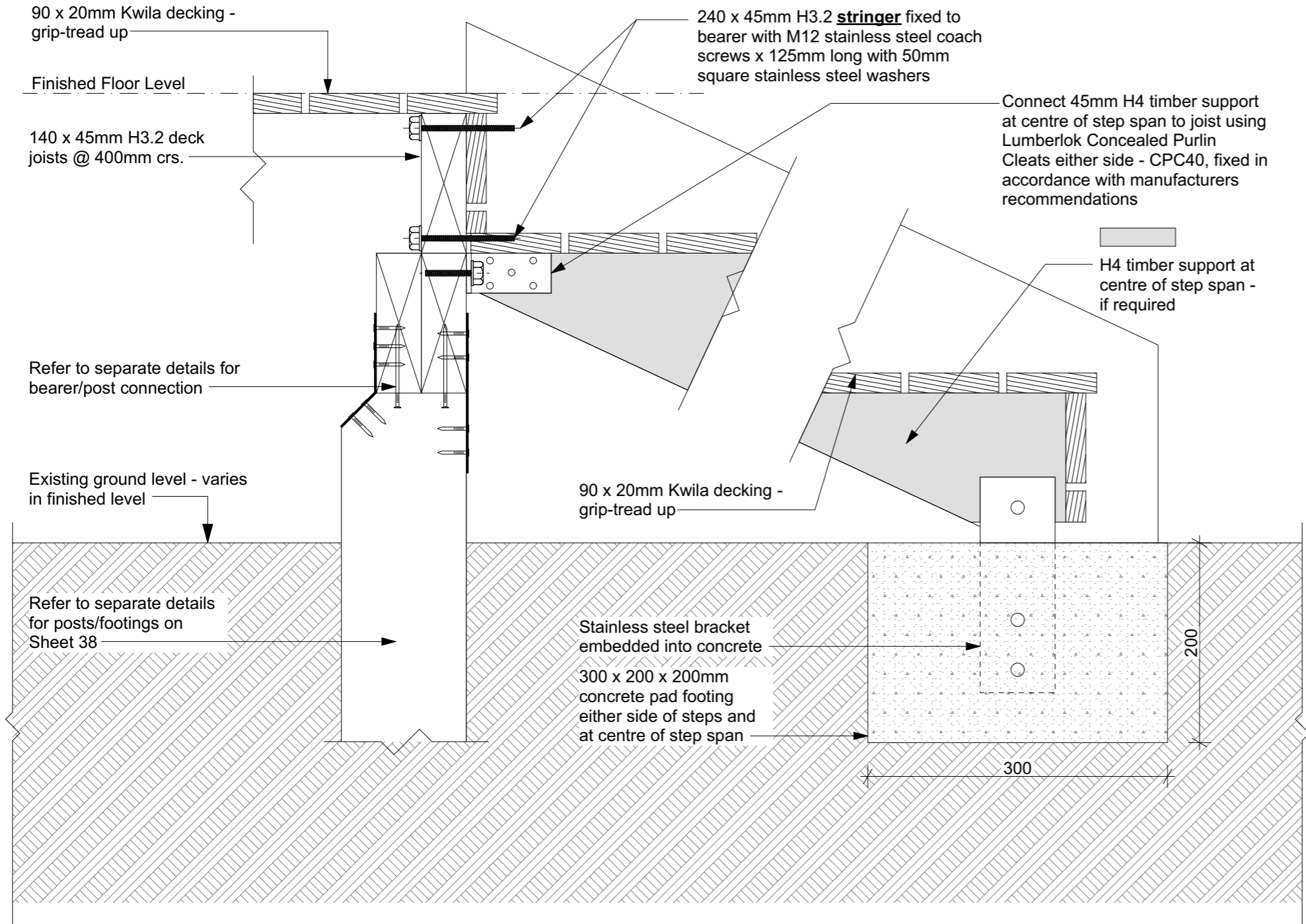
140 x 45mm H3.2 deck joists @ 400mm max. crs. - joist hang from stringer and bearers



D-02

DECK SECTION DETAIL

1:5

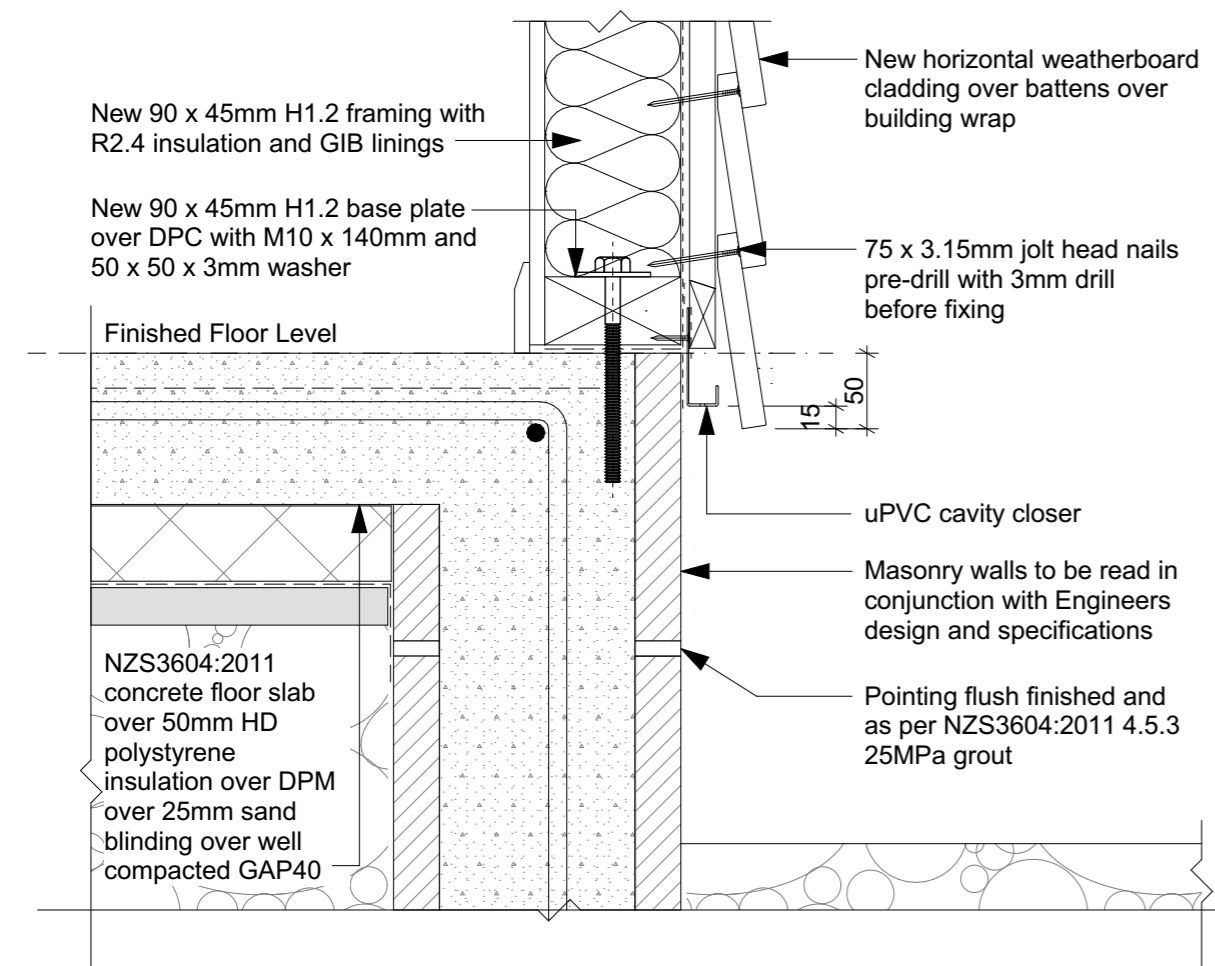


**UNDERSIDE OF TREAD**

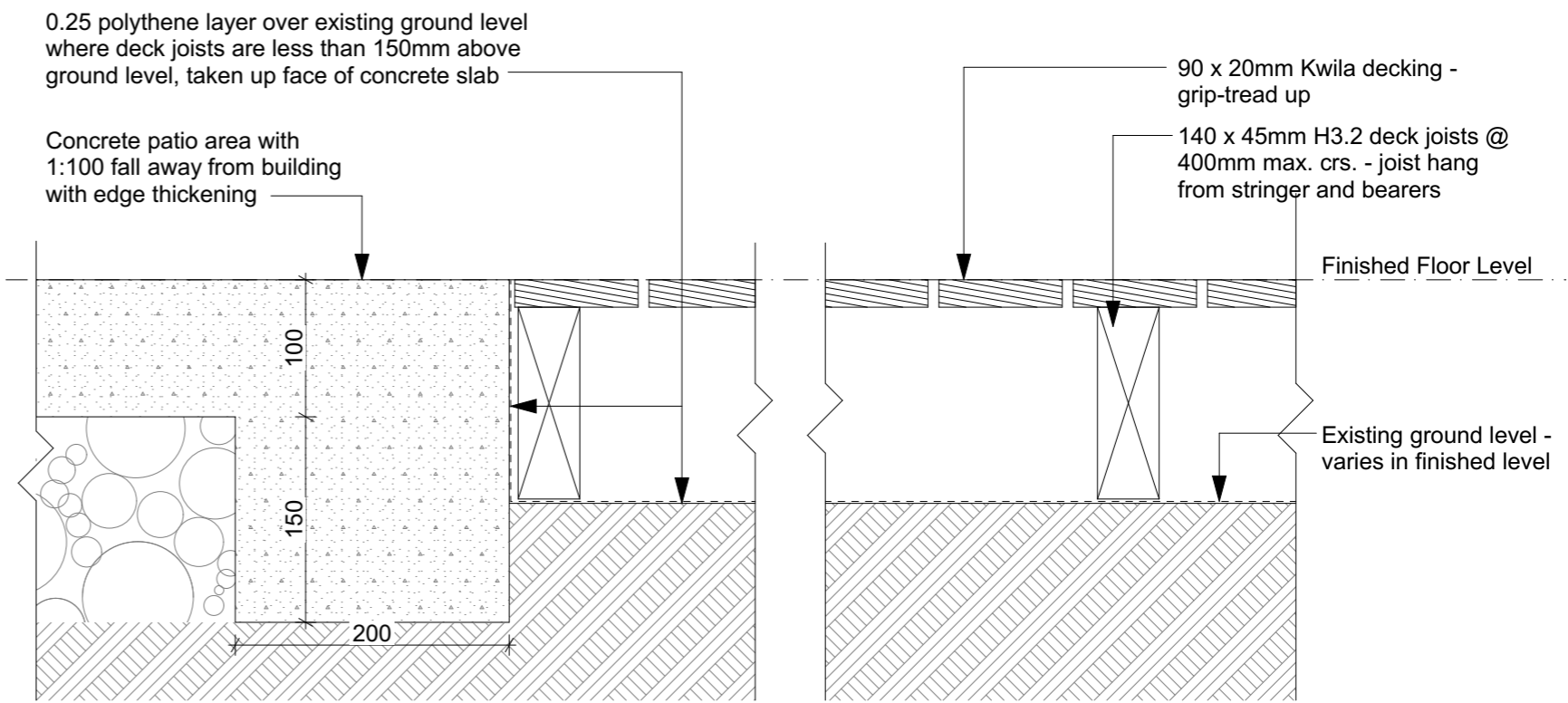
D-03

DECK STEPS DETAIL

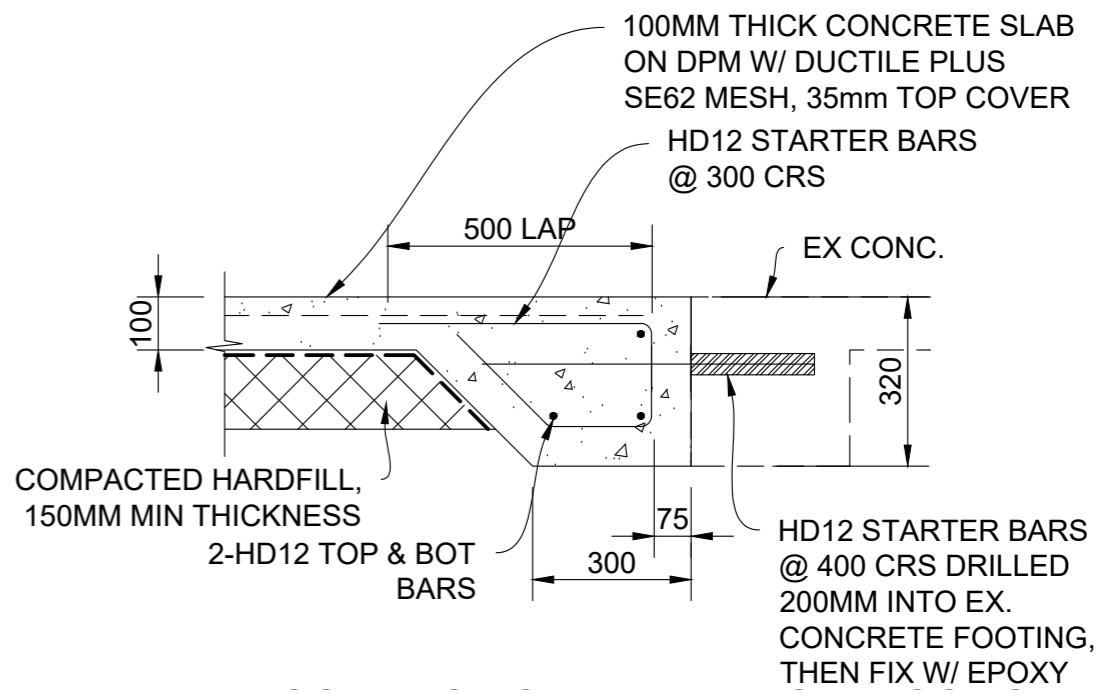
1:5



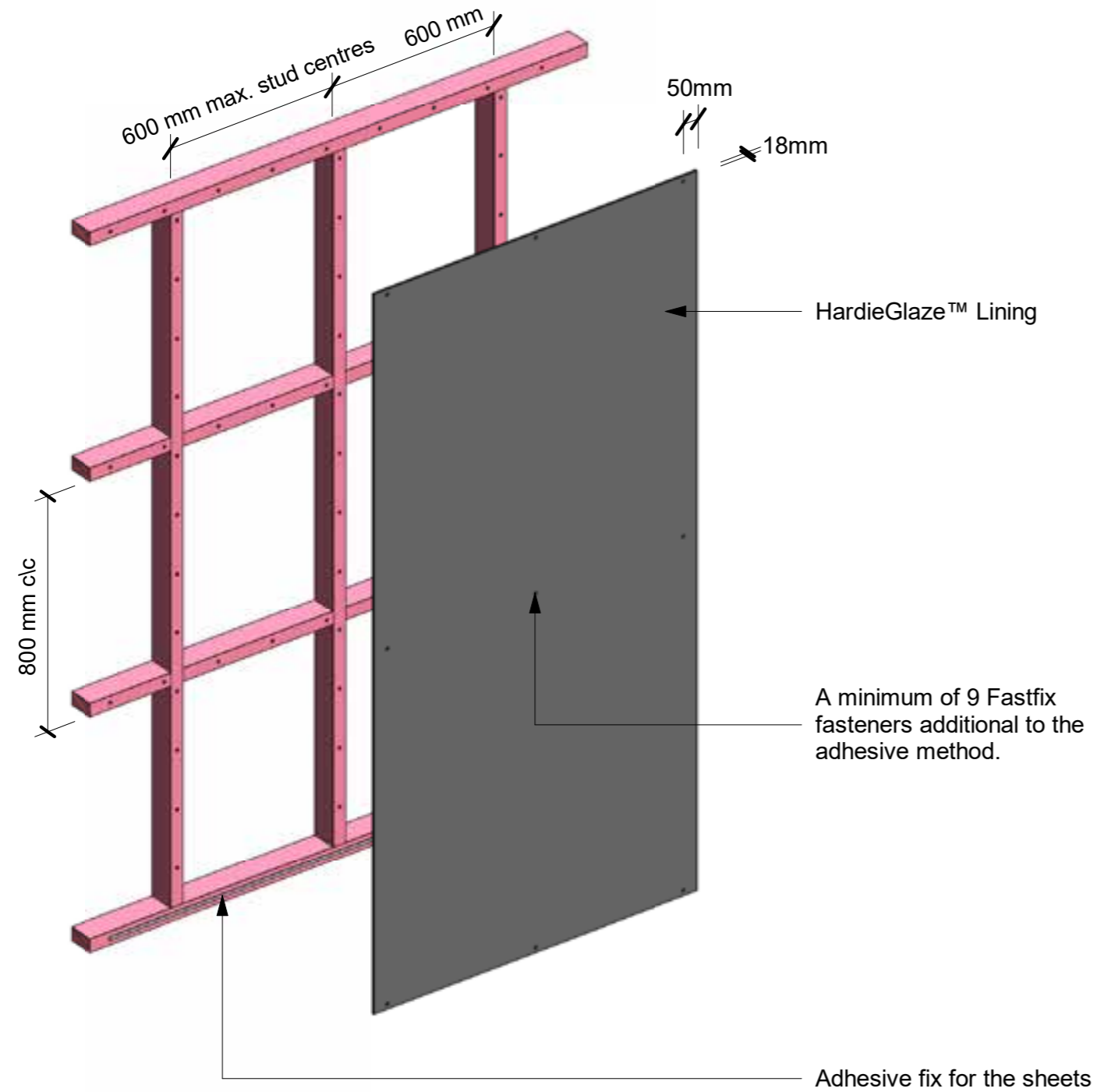
D-05 WALL BASE DETAIL 1:5



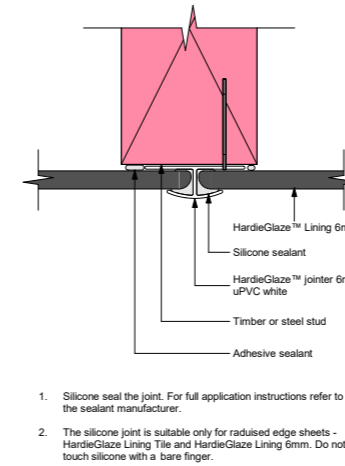
D-04 DECK/PATON JUNCTION DETAIL 1:5



**Figure 8: Hardie™ Glaze Lining fixing to walls - fastfix and adhesive**

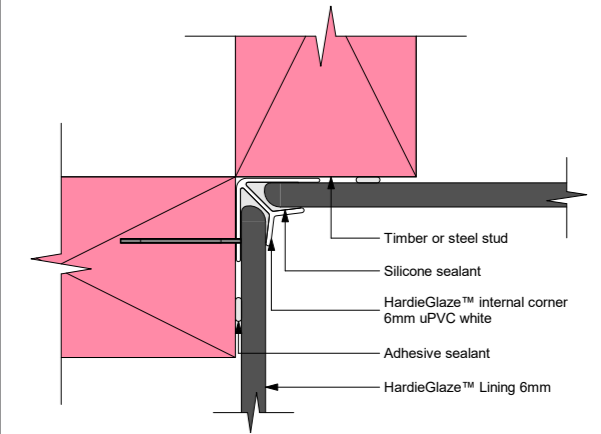


**Figure 32: Hardie™ Glaze jointer 6mm uPVC**

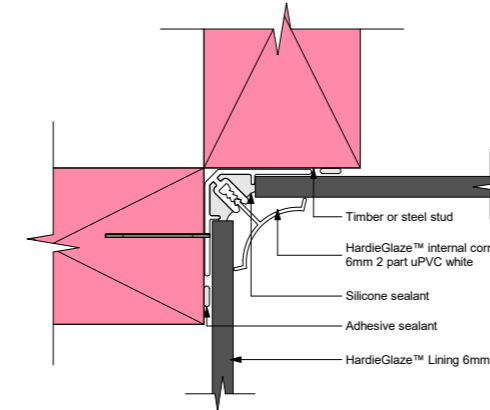


1. Silicone seal the joint. For full application instructions refer to the sealant manufacturer.
2. The silicone joint is suitable only for radius edge sheets - HardieGlaze Lining Tile and HardieGlaze Lining 6mm. Do not touch silicone with a bare finger.

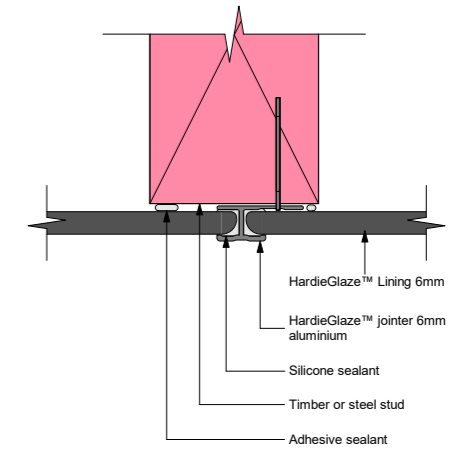
**Figure 33: Hardie™ Glaze internal corner 6mm uPVC**



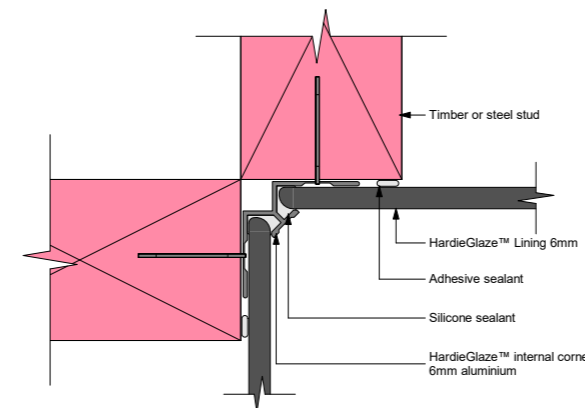
**Figure 34: Hardie™ Glaze internal corner 6mm 2part uPVC**



**Figure 35: Hardie™ Glaze jointer 6mm aluminium**



**Figure 36: Hardie™ Glaze internal corner 6mm aluminium**



**Figure 37: Hardie™ Glaze negative jointer 6mm aluminium**

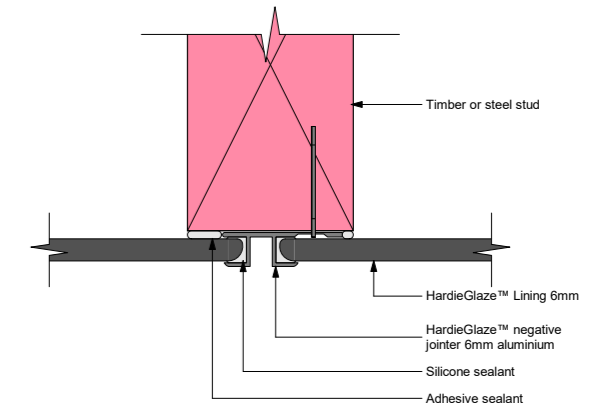




Figure 44: Hardie™ Glaze Lining to coved vinyl floor

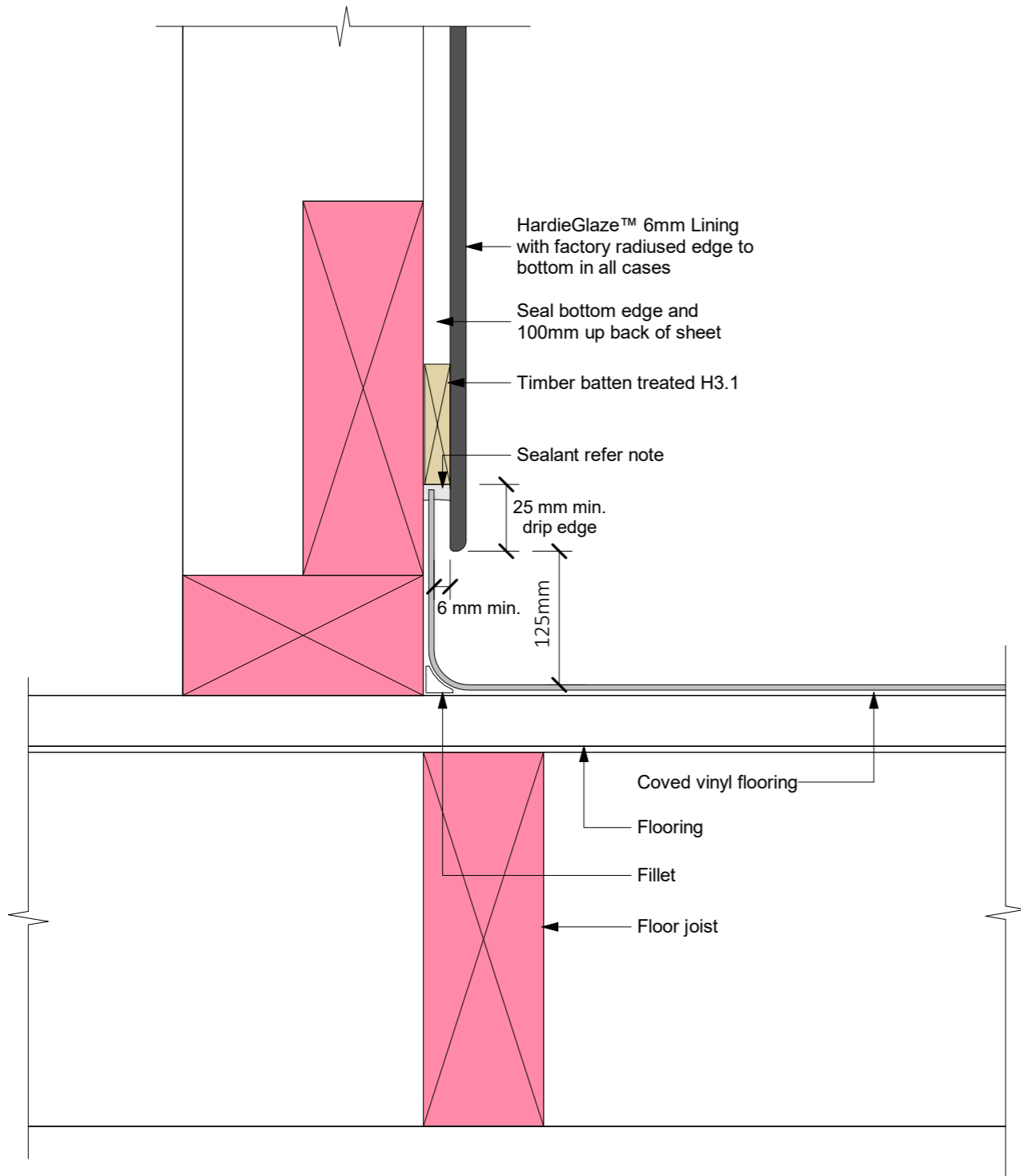
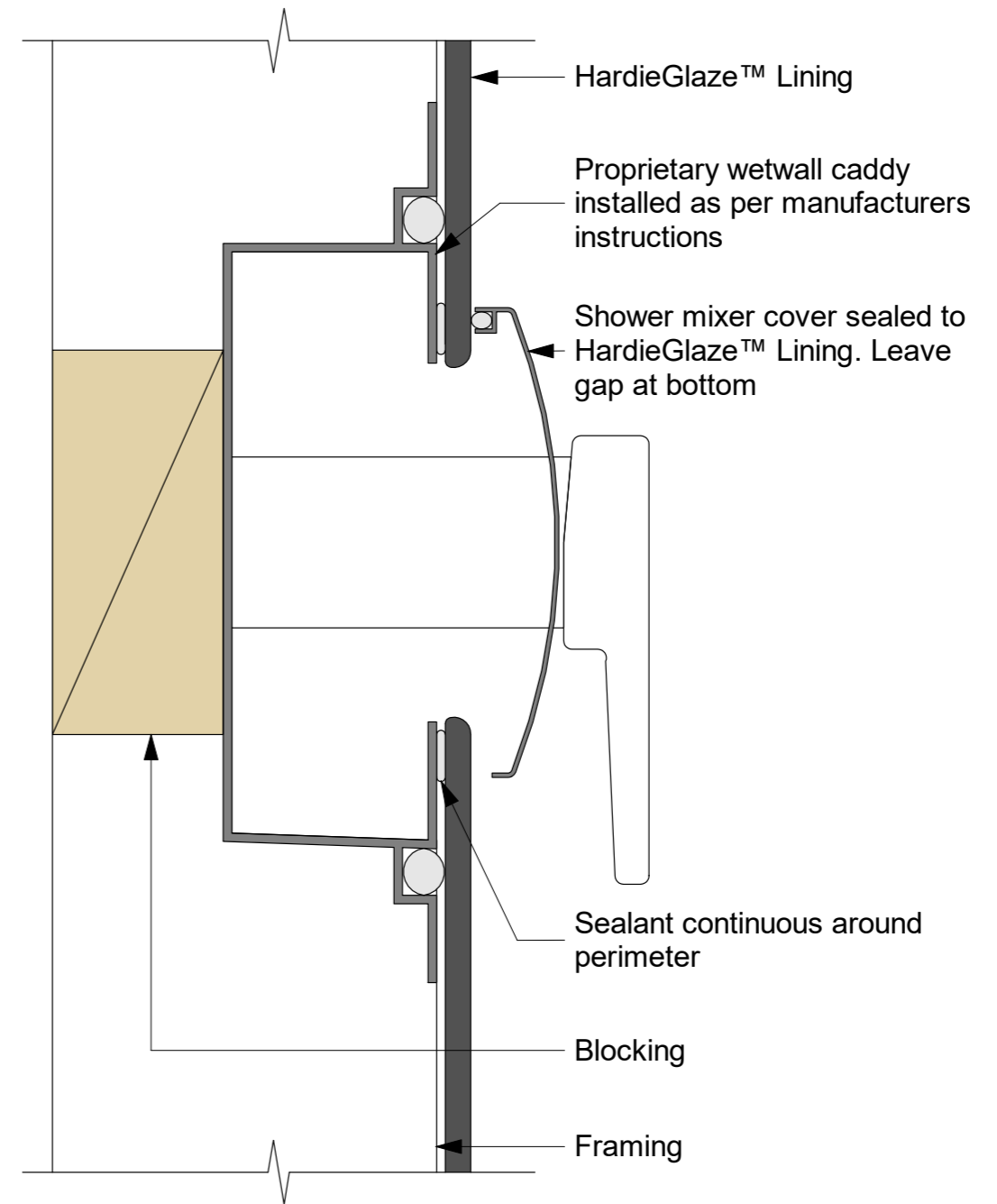


Figure 46: Optional wet wall caddy



Note: Seal cut edges of HardieGlaze™ Lining

**Existing Wharekai**

Existing external wall framing, linings and external weatherboard cladding to be retained

Allproof cast-in cantilevered gratedrain with open ends

150mm thick concrete patio area to fall away from the building

Finished Floor Level

Existing concrete floor slab - Check On Site

Apply 2 coats of Mulseal to concrete channel

175 Min.

75

75

New horizontal weatherboard cladding over battens over building wrap

Allproof cast-in cantilevered gratedrain with open ends

**Wahine ablutions**

New 90 x 45mm H1.2 framing with R2.4 insulation and GIB linings

New 90 x 45mm H1.2 base plate over DPC with M10 x 140mm and 50 x 50 x 3mm washer

Finished Floor Level

S.E.D. concrete floor slab

Apply 2 coats of Mulseal to concrete channel

150mm thick concrete patio area to fall away from the building

Pointing flush finished and as per NZS3604:2011 4.5.3 25MPa grout

Masonry walls to be read in conjunction with Engineers design and specifications

S.E.D. masonry wall

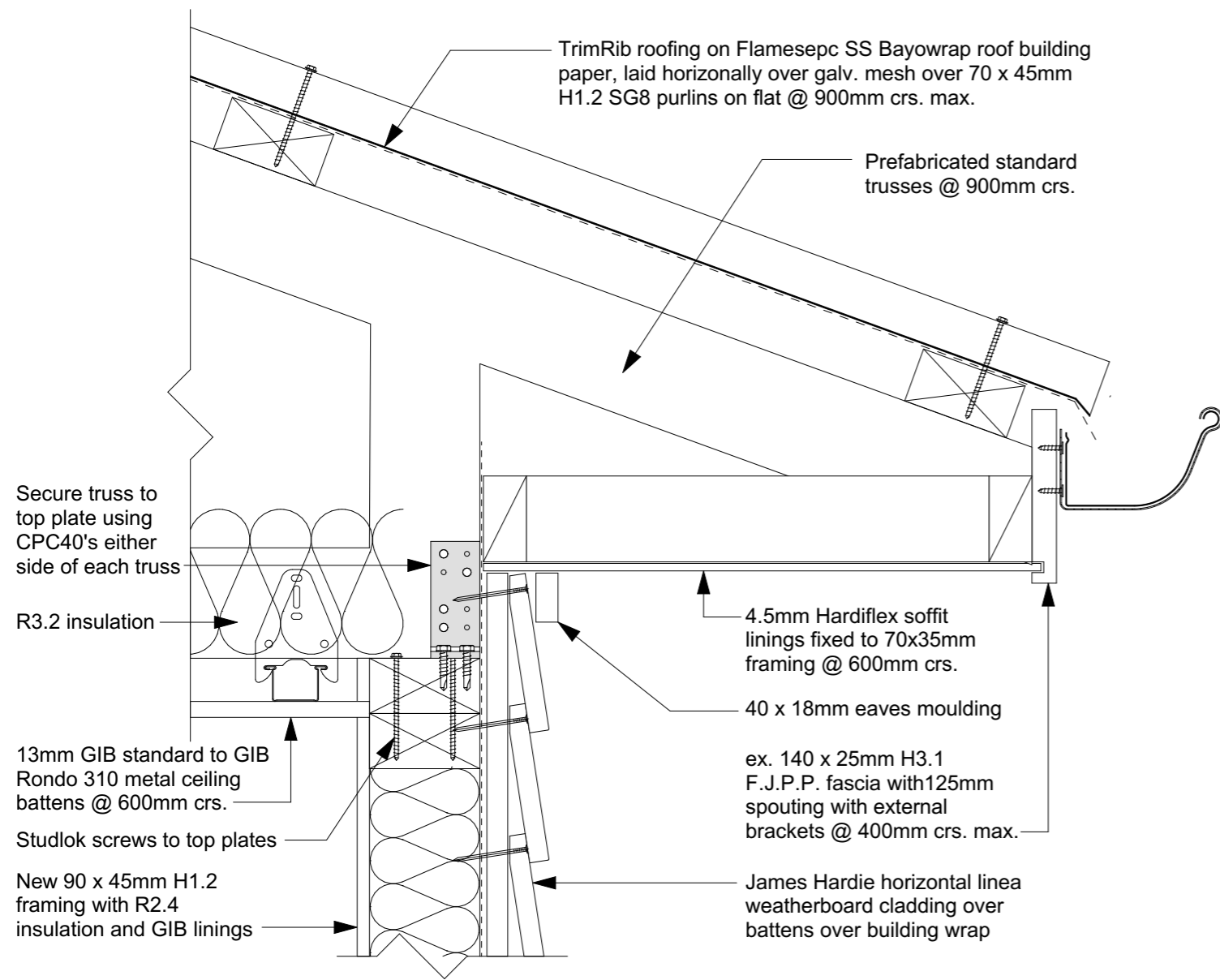
Geo-Textile membrane over 110mm diameter Novacoil drainage pipe to avoid silting

S.E.D. concrete footing

D-16

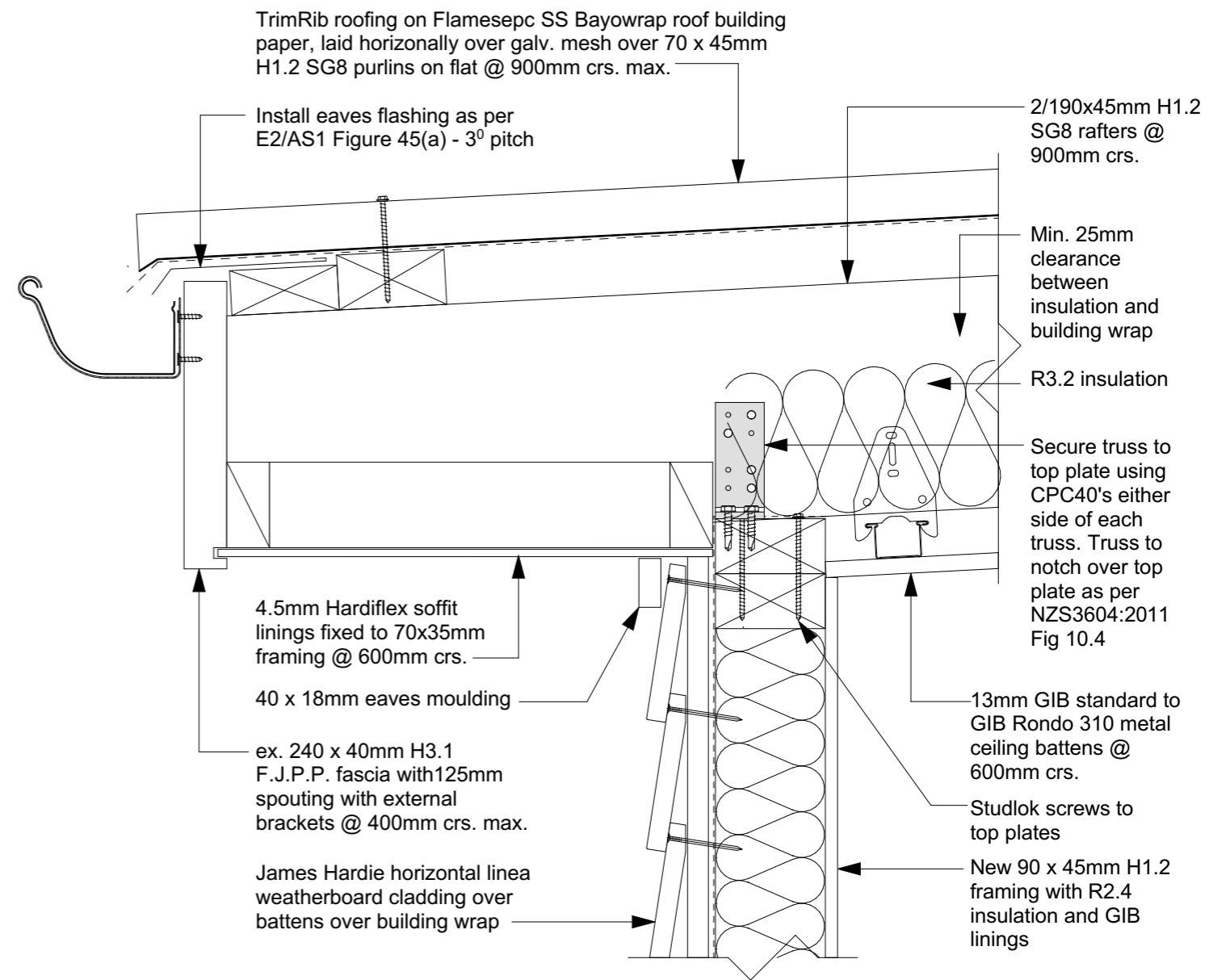
**GRATE DRAIN SECTION DETAIL**

1:5



D-07

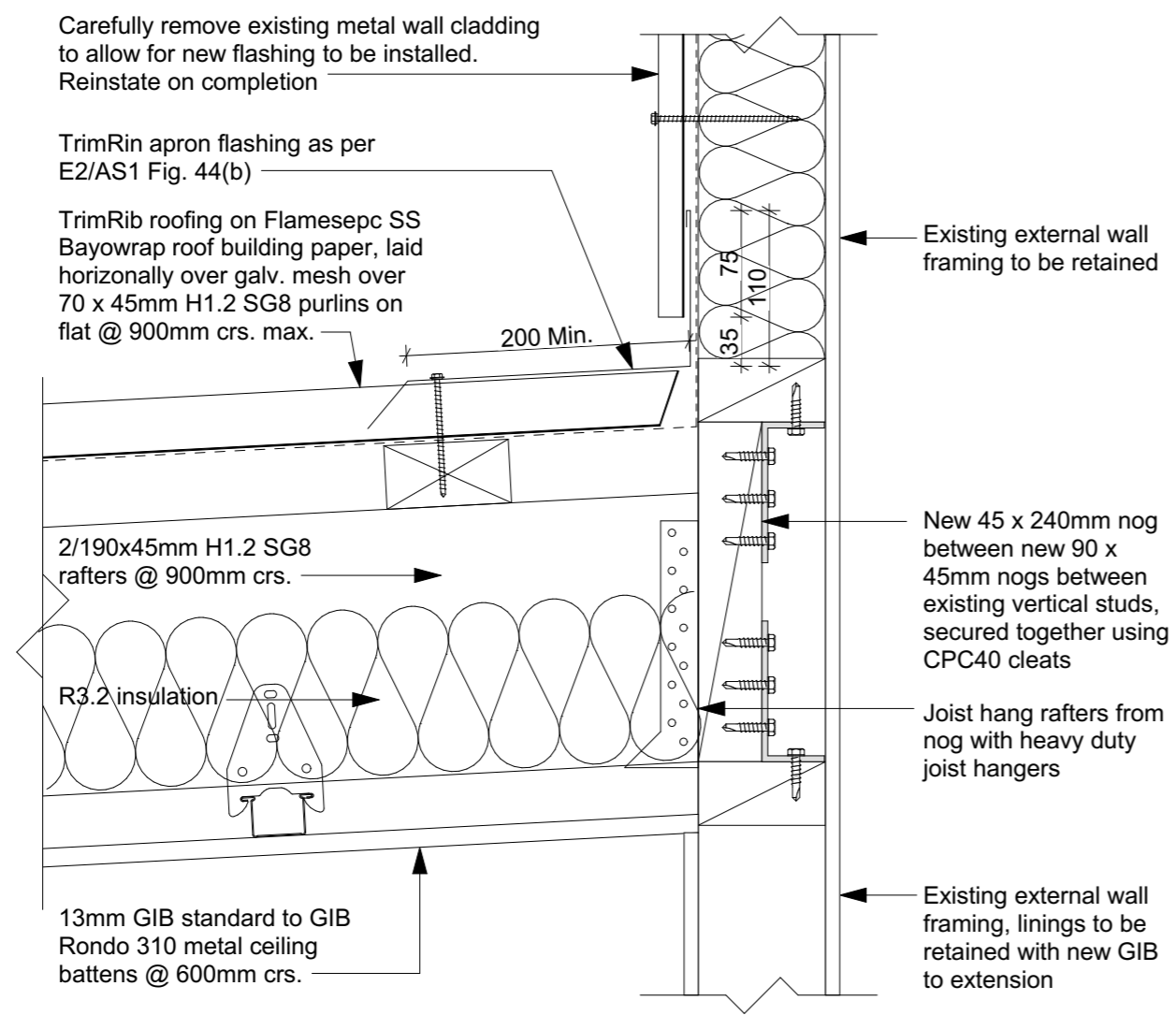
EAVES DETAIL



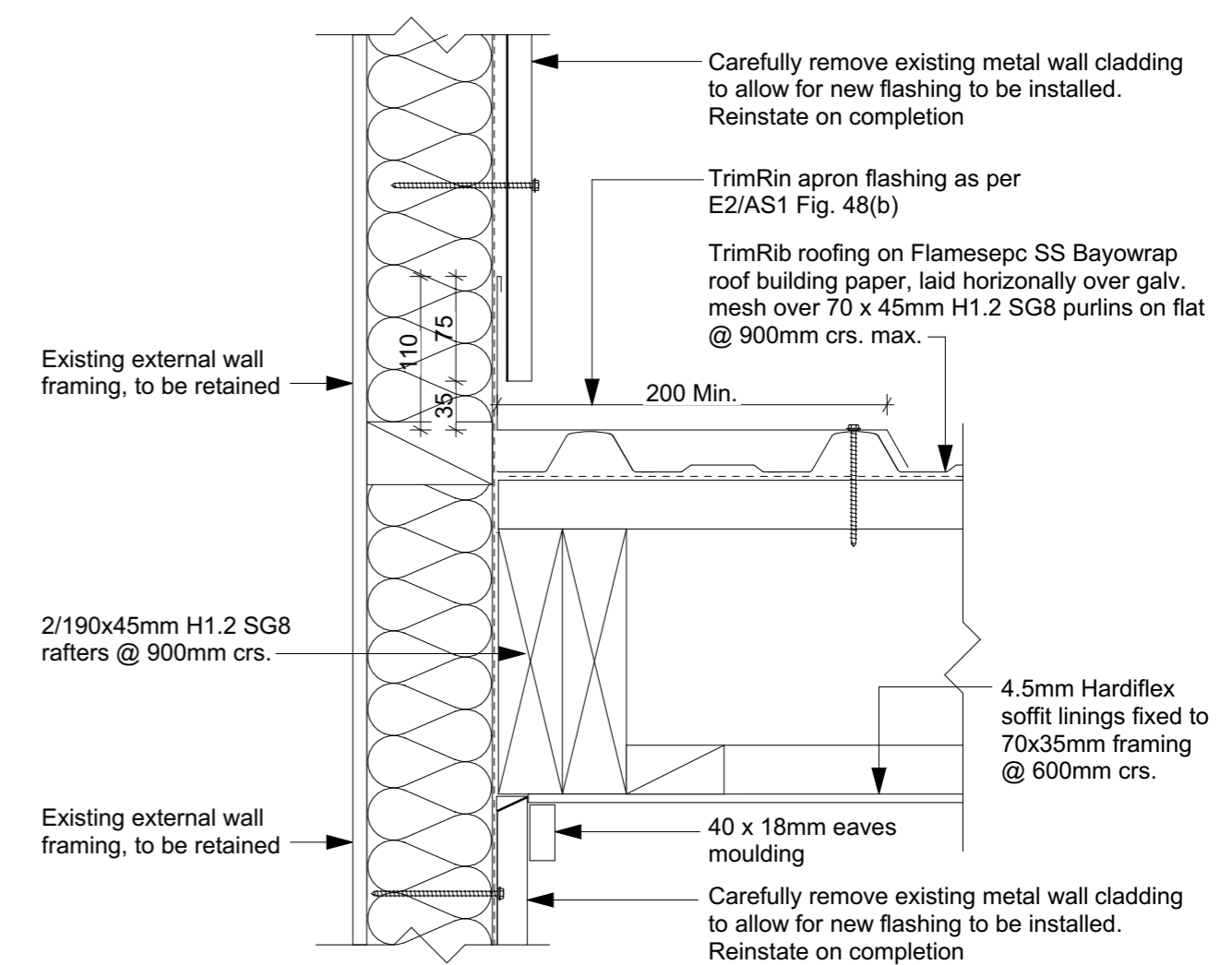
1:5 D-08

EAVES DETAIL

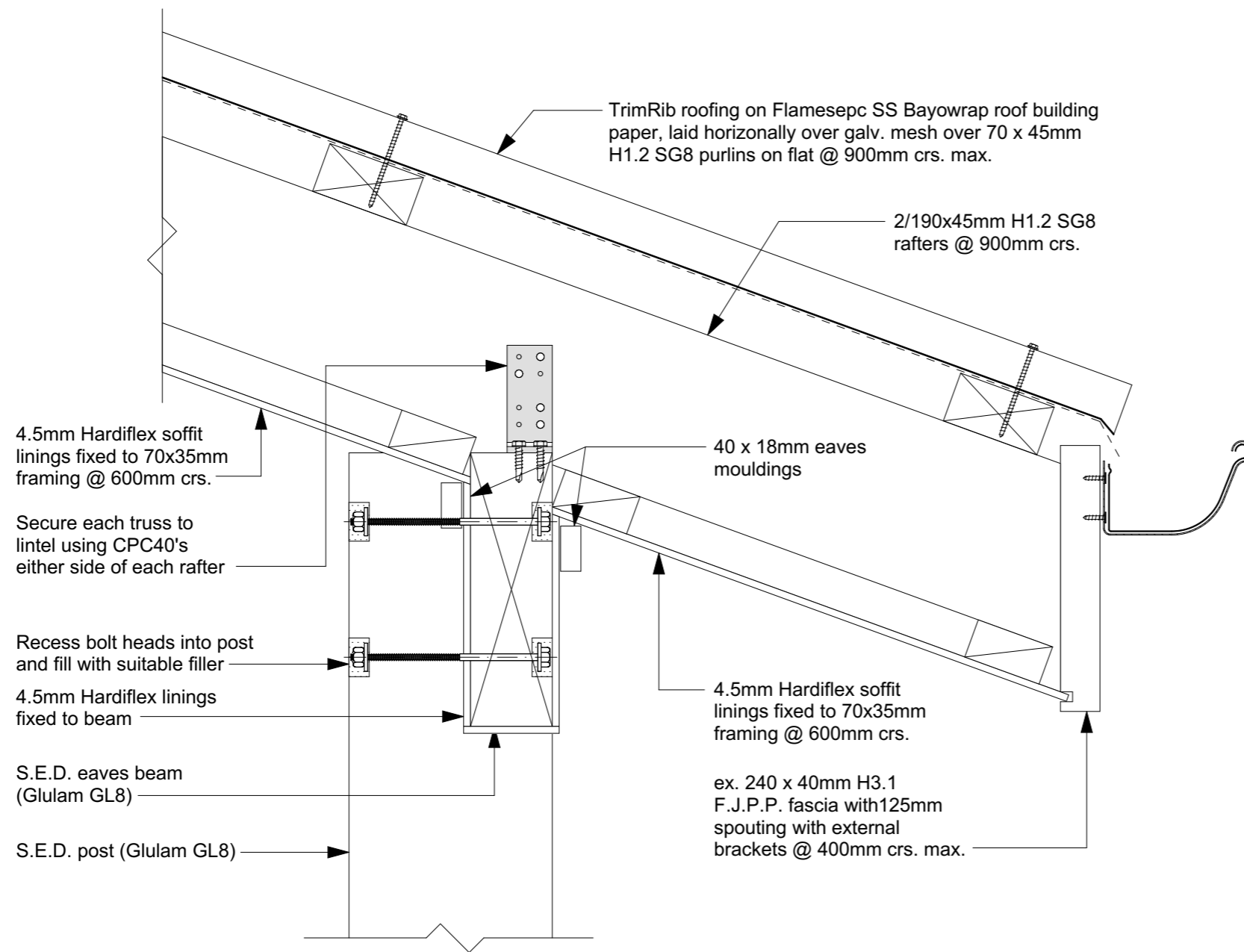
1:5



D-09 APRON DETAIL 1:5



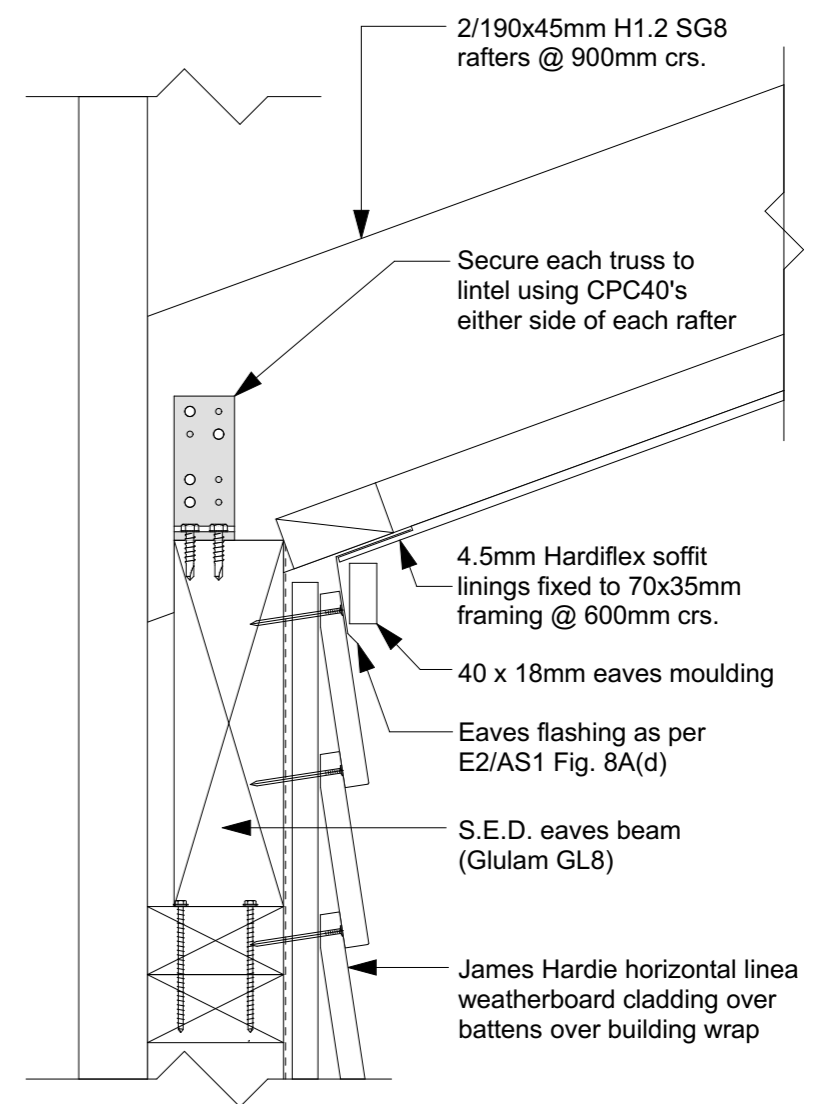
D-10 APRON DETAIL 1:5



D-11

EAVES BEAM/POST DETAIL

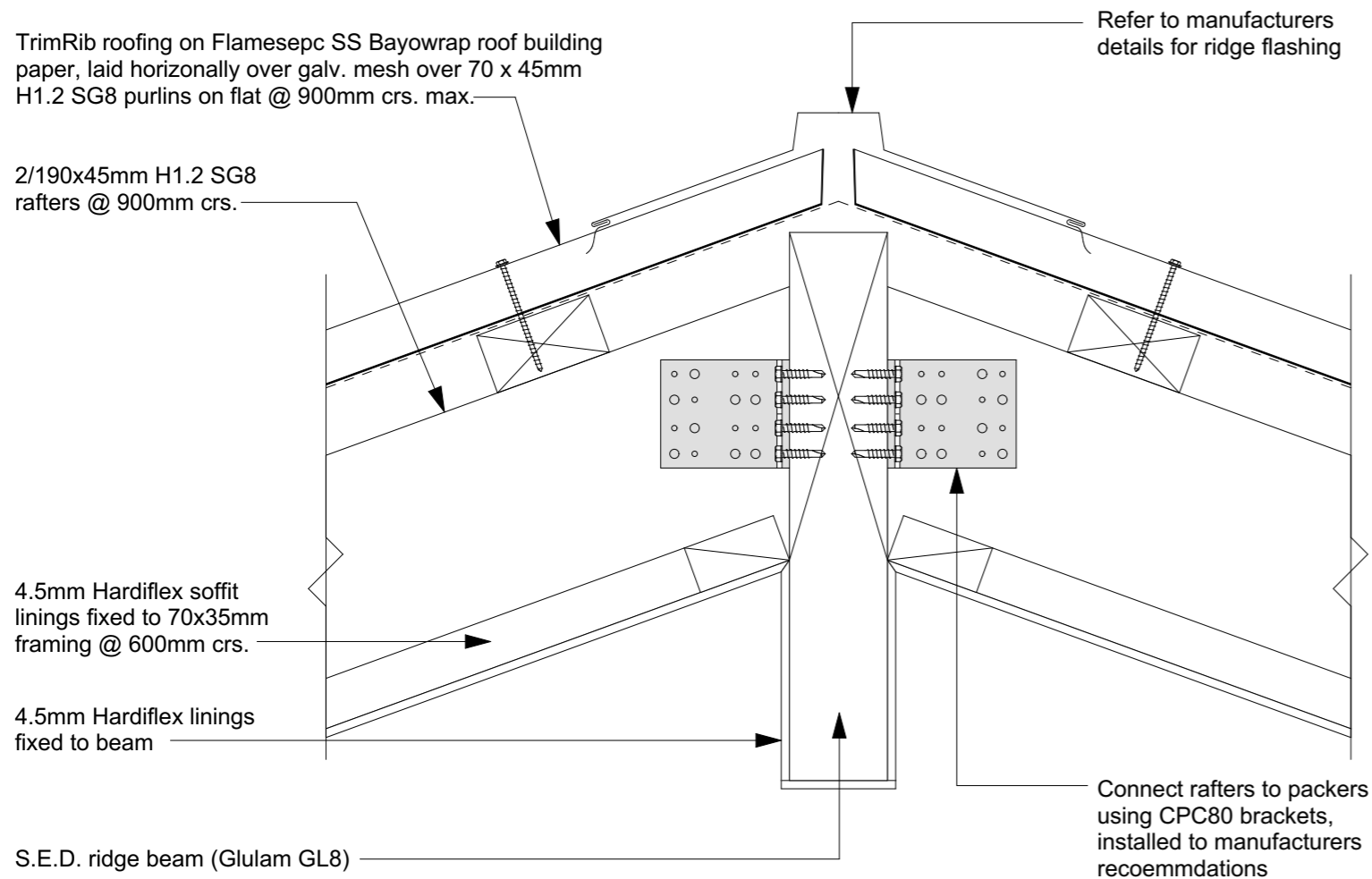
1:5



D-12

EAVES BEAM IN WALL DETAIL

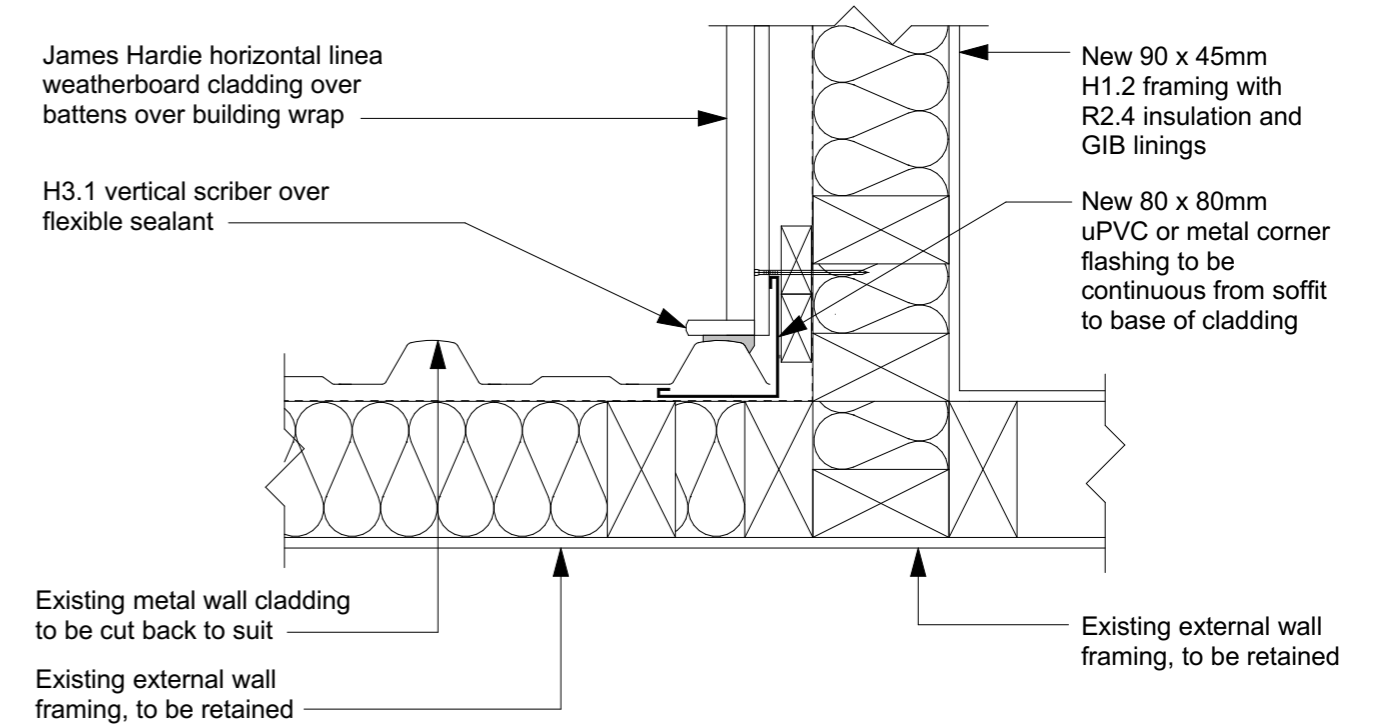
1:5



D-13

RIDGE BEAM DETAIL

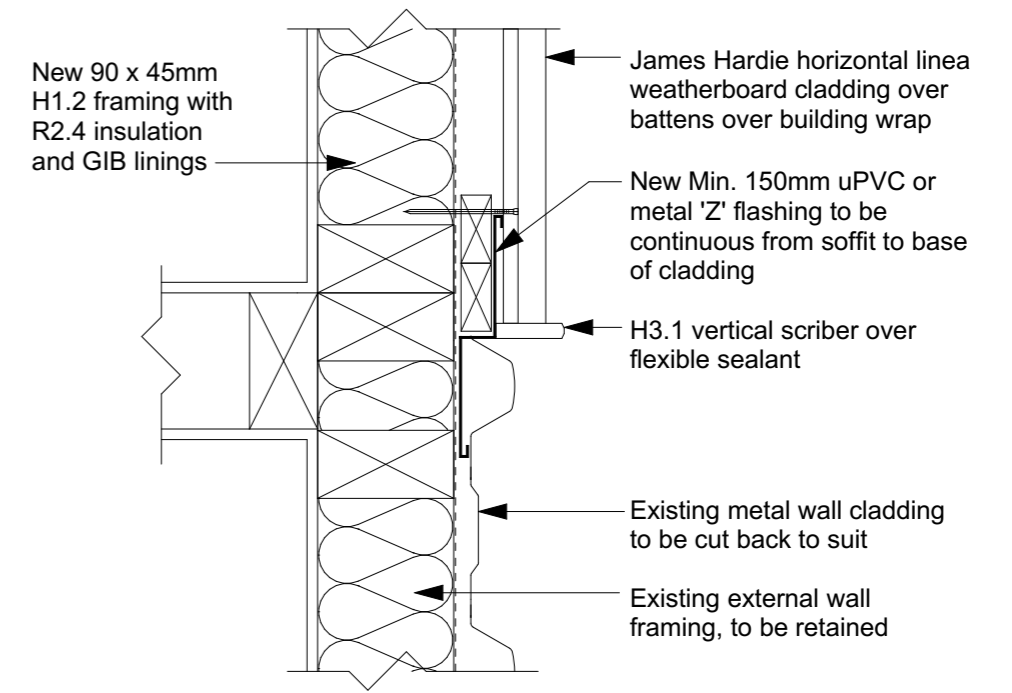
1:5



D-14

INTERNAL CORNER BETWEEN CLADDINGS DETAIL

1:5



D-15

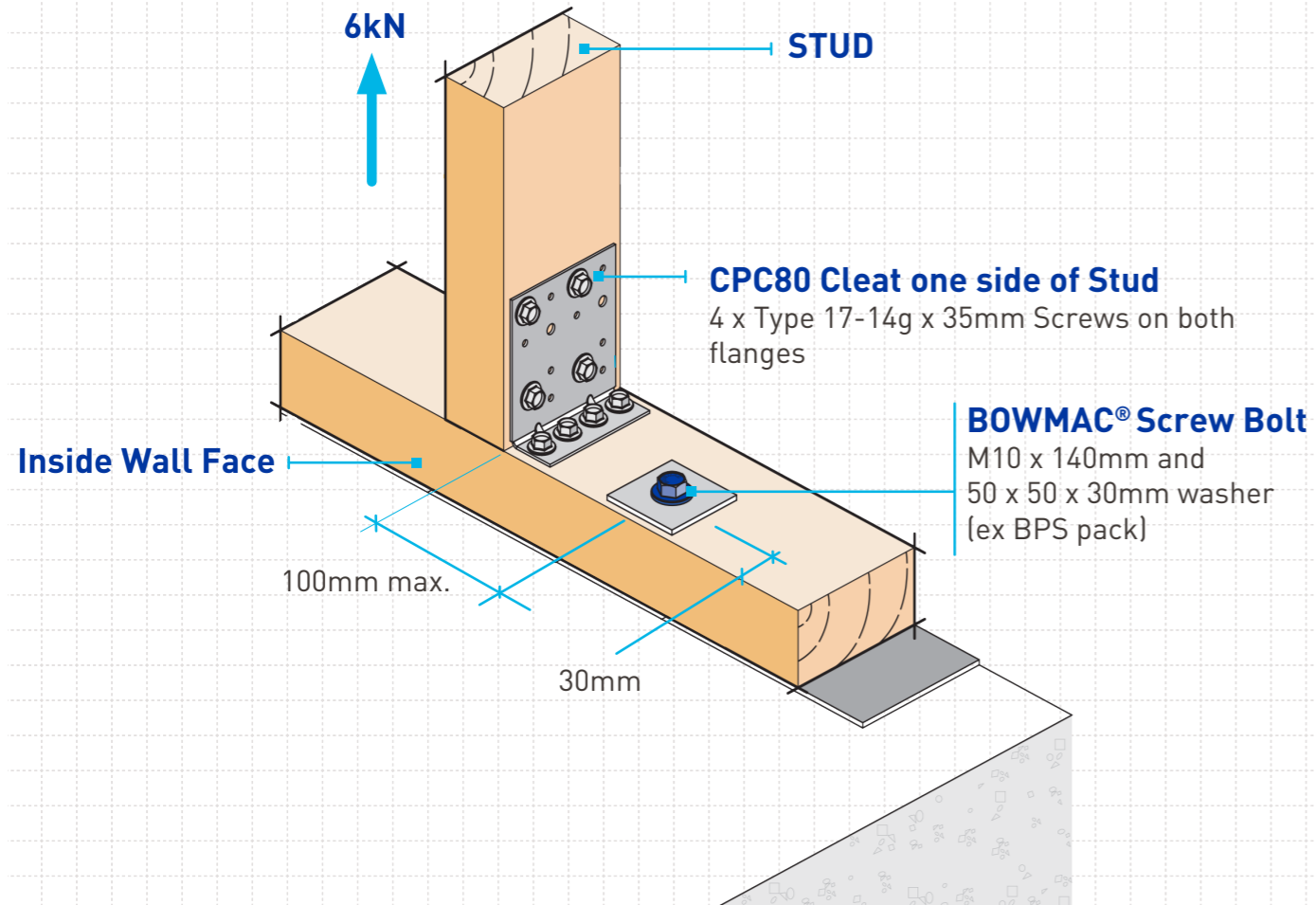
STRAIGHT JUNCTION BETWEEN CLADDINGS DETAIL

1:5

# 6kN STUD TO BOTTOM PLATE FIXING

IDEAL AS RETRO FIT FIXING AFTER LINING/CLADDING INSTALLED

FOR CONCRETE FLOOR SLABS

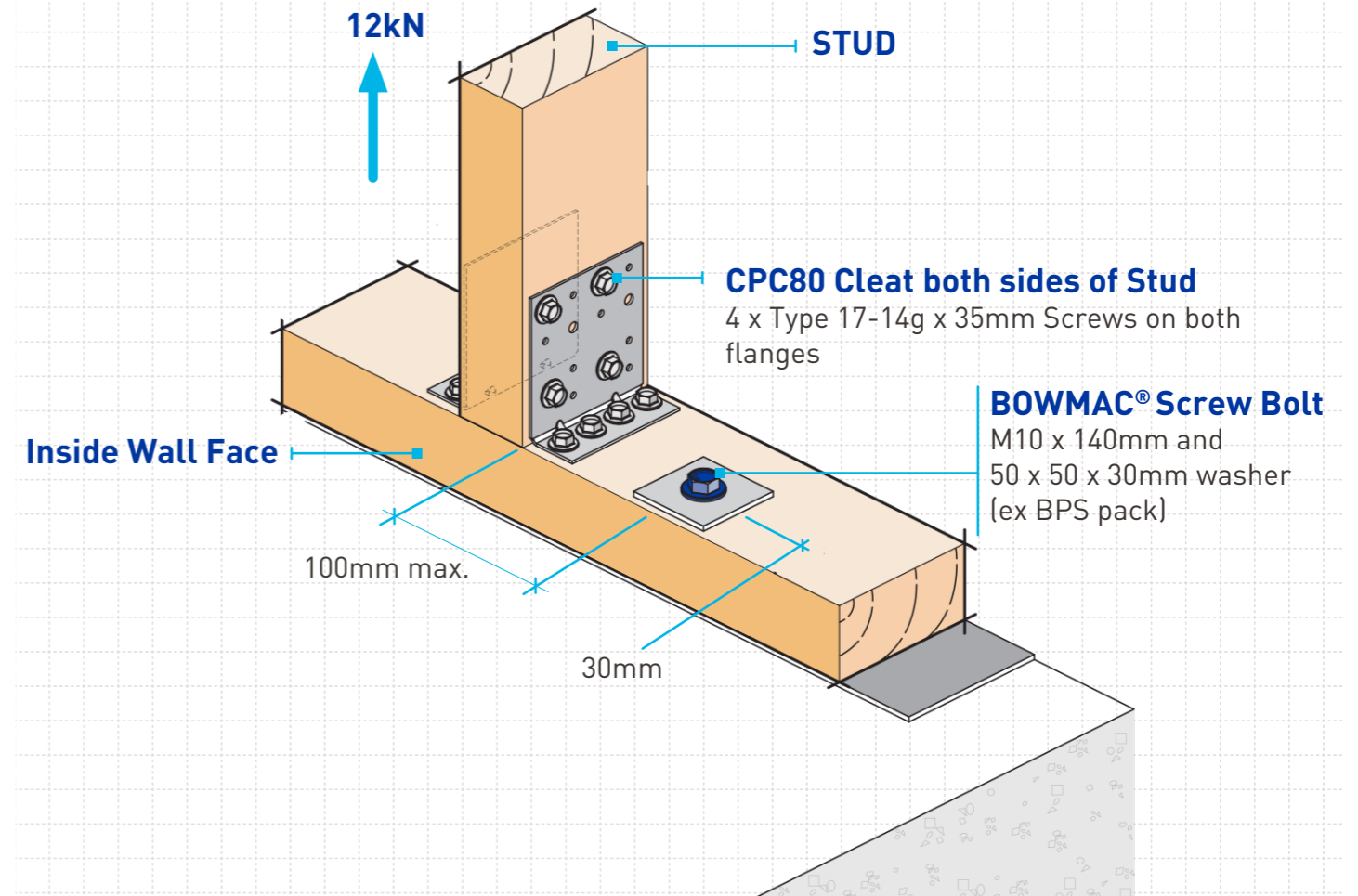


**CODE:** SBP  
**MATERIAL:** CPC80 1.55mm G300 Z275 Galvanised Steel  
**PACKED:** 2 x CPC80 Cleats  
 16 x Type 17-14g x 35mm Hex Head Galvanised Screws

# 12kN STUD TO BOTTOM PLATE FIXING

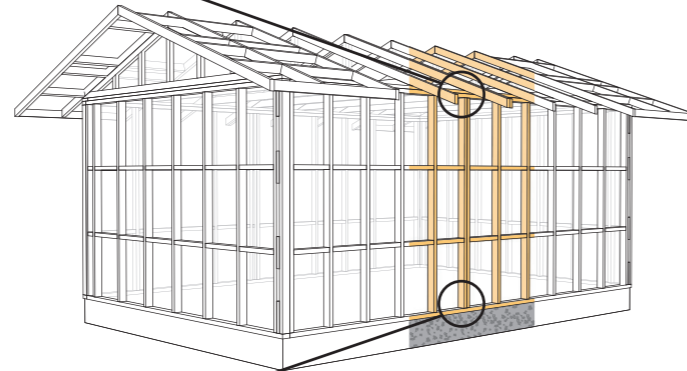
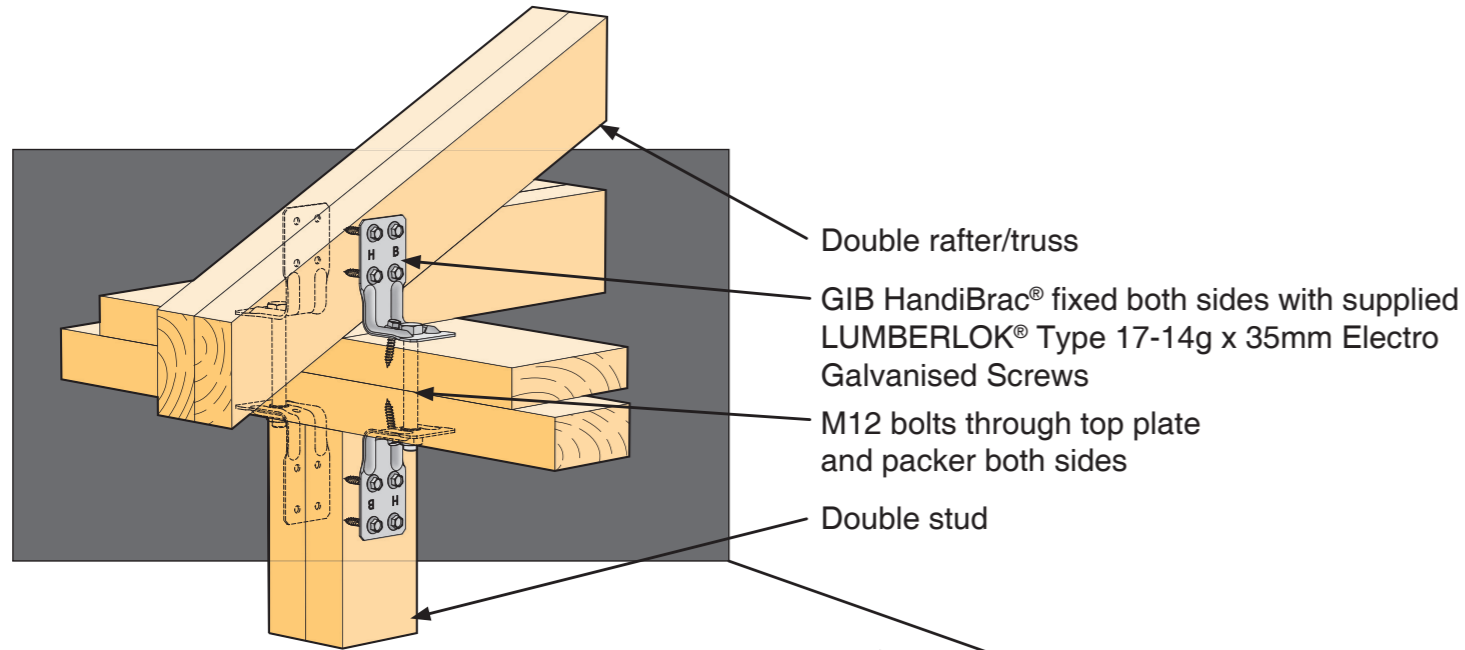
IDEAL AS RETRO FIT FIXING AFTER LINING/CLADDING INSTALLED

FOR CONCRETE FLOOR SLABS

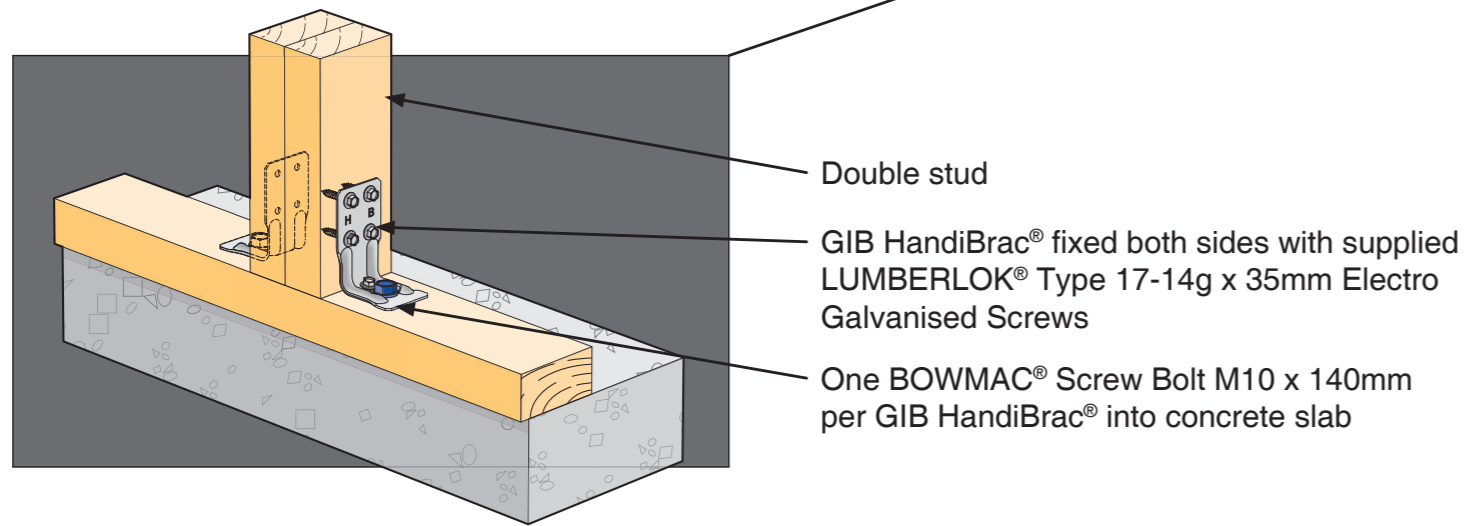


**CODE:** SBP  
**MATERIAL:** CPC80 1.55mm G300 Z275 Galvanised Steel  
**PACKED:** 2 x CPC80 Cleats  
 16 x Type 17-14g x 35mm Hex Head Galvanised Screws

## Truss To Top Plate Fixing



## Stud To Bottom Plate Fixing

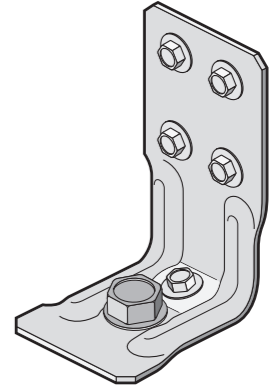


## GIB HandiBrac® installation

Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested by Winstone Wallboards for use in GIB EzyBrace® elements that require hold-downs. The GIB HandiBrac® is a substitute for bottom plate hold-down straps.

- Quick and easy to fit.
- May be fitted at any stage before lining.
- Framing face is clear to allow flush lining.
- Easily inspected.

The GIB HandiBrac® with BOWMAC® blue head screw bolt is suitable for timber and concrete floors constructed in accordance with NZS 3604:2011.



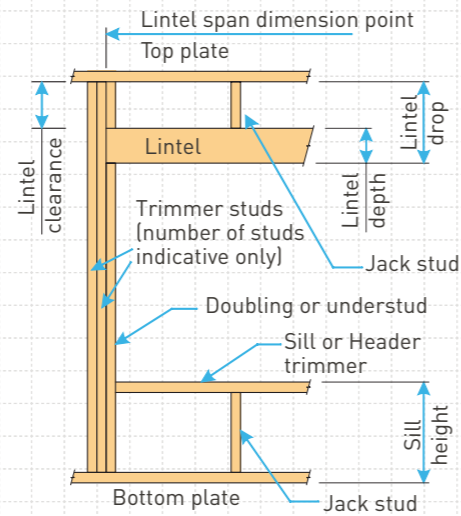
Concrete floor		Timber floor	
External walls	Internal walls	External walls	Internal walls
GEB009	GEB010	GEB011	GEB012
Position GIB HandiBrac® as close as practicable to the internal edge of the bottom plate.		Position GIB HandiBrac® flush with the outside stud face, as close as practicable to the centre of the boundary joist.	
Position GIB HandiBrac® at the stud/plate junction and at mid-width of plate.		Position GIB HandiBrac® in the centre of floor joist or full depth solid block.	
Hold-down fastener requirements			
A mechanical fastening with a minimum characteristic uplift capacity of 15kN or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.		12 x 150mm galvanised coach screw or use supplied BT10/140 screwbolt in GIB HandiBrac® pack.	



# STUDLOK™ LINTEL FIXING OPTIONS FOR ON-SITE

ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

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



## LINTEL SUPPORTING GIRDER TRUSSES

Roof Tributary Area	Light Roof Wind Zone			Heavy Roof Wind Zone		
	Low, Medium, High	Very High	Extra High	Low, Medium, High	Very High	Extra High
8.6m <sup>2</sup>	G	G	H	G	G	H
11.6m <sup>2</sup>	G	H	H	G	G	H
12.1m <sup>2</sup>	G	H	H	G	H	H
15.3m <sup>2</sup>	H	H	-	G	H	H
19.1m <sup>2</sup>	H	-	-	G	H	-
20.9m <sup>2</sup>	H	-	-	H	H	-
21.8m <sup>2</sup>	H	-	-	H	-	-
34.3m <sup>2</sup>	-	-	-	H	-	-

### NOTES:

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

# STUDLOK™ LINTEL FIXING OPTIONS FOR ON-SITE

ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

Lintel Span (m)	Loaded Dimension (m)	Light Roof Wind Zone					Heavy Roof Wind Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		Low	Medium	High	Very High	Extra High	Low	Medium	High	Very High	Extra High																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		1.0	2.0	E	E	E	F	F	E	E	E	E	F	3.0	E	E	F	F	F	E	E	E	F	F	4.0	E	F	F	F	G	E	E	F	F	F	5.0	E	F	F	G	G	E	E	F	F	G	6.0	E	F	F	G	G	E	E	F	F	G	1.2	2.0	E	E	F	F	F	E	E	E	F	F	3.0	E	E	F	F	F	E	E	F	F	F	4.0	E	F	F	G	G	E	E	F	F	G	5.0	E	F	F	G	G	E	E	F	F	G	6.0	F	F	G	G	H	E	E	F	G	G	1.5	2.0	E	E	F	F	F	E	E	E	F	F	3.0	E	F	F	F	G	E	E	F	F	F	4.0	E	F	F	G	G	E	E	F	F	G	5.0	F	F	G	G	H	E	E	F	G	G	6.0	F	F	G	H	H	E	E	F	G	H	2.0	2.0	E	F	F	F	F	E	E	E	F	F	3.0	E	F	F	G	G	E	E	F	F	G	4.0	F	F	G	G	H	E	E	F	G	G	5.0	F	F	G	H	H	E	E	F	G	H	6.0	F	G	G	H	H	E	F	G	H	H	2.4	2.0	E	F	F	G	G	E	E	F	F	G	3.0	F	F	G	G	H	E	E	F	G	G	4.0	F	F	G	H	H	E	E	F	G	H	5.0	F	G	G	H	H	E	F	G	H	H	6.0	F	G	H	H	-	E	F	G	H	H	3.0	2.0	E	F	F	G	G	E	E	F	F	G	3.0	F	F	G	H	H	E	E	F	G	H	4.0	F	G	G	H	H	E	F	G	H	H	5.0	F	G	H	H	-	E	F	G	H	H	6.0	F	G	H	-	-	E	F	G	H	-	3.6	2.0	F	F	G	G	H	E	E	F	G	G	3.0	F	F	G	H	H	E	F	G	H	H	4.0	F	G	H	H	-	E	F	G	H	H	5.0	F	G	H	-	-	E	F	G	H	-	6.0	G	H	H	-	-	E	F	H	-	-	4.2	2.0	F	F	G	G	H	E	E	F	G	G	3.0	F	G	H	H	-	E	F	G	H	H	4.0	F	G	H	-	-	E	F	G	H	-	5.0	G	H	H	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	F	H	-	-	4.5	2.0	F	F	G	H	H	E	E	F	G	H	3.0	F	G	H	H	-	E	F	G	H	H	3.4	F	G	H	H	-	E	F	G	H	H	4.0	F	G	H	-	-	E	F	G	H	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	F	H	-	-	4.8	2.0	F	F	G	H	H	E	E	F	G	H	3.0	F	G	H	H	-	E	F	G	H	H	3.2	F	G	H	H	-	E	F	G	H	H	4.0	F	G	H	-	-	E	F	H	H	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	F	H	-	-	5.1	2.0	F	F	G	H	H	E	F	G	G	H	3.0	F	G	H	H	-	E	F	G	H	H	3.5	F	G	H	-	-	E	F	G	H	-	4.0	G	G	H	-	-	E	F	H	H	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	G	H	-	-	5.4	2.0	F	F	G	H	H	E	F	G	G	H	2.8	F	G	H	H	-	E	F	G	H	H	3.0	F	G	H	-	-	E	F	G	H	-	4.0	G	H	H	-	-	E	F	H	-	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	G	H
1.2	2.0	E	E	F	F	F	E	E	E	F	F	3.0	E	E	F	F	F	E	E	F	F	F	4.0	E	F	F	G	G	E	E	F	F	G	5.0	E	F	F	G	G	E	E	F	F	G	6.0	F	F	G	G	H	E	E	F	G	G	1.5	2.0	E	E	F	F	F	E	E	E	F	F	3.0	E	F	F	F	G	E	E	F	F	F	4.0	E	F	F	G	G	E	E	F	F	G	5.0	F	F	G	G	H	E	E	F	G	G	6.0	F	F	G	H	H	E	E	F	G	H	2.0	2.0	E	F	F	F	F	E	E	E	F	F	3.0	E	F	F	G	G	E	E	F	F	G	4.0	F	F	G	G	H	E	E	F	G	G	5.0	F	F	G	H	H	E	E	F	G	H	6.0	F	G	G	H	H	E	F	G	H	H	2.4	2.0	E	F	F	G	G	E	E	F	F	G	3.0	F	F	G	G	H	E	E	F	G	G	4.0	F	F	G	H	H	E	E	F	G	H	5.0	F	G	G	H	H	E	F	G	H	H	6.0	F	G	H	H	-	E	F	G	H	H	3.0	2.0	E	F	F	G	G	E	E	F	F	G	3.0	F	F	G	H	H	E	E	F	G	H	4.0	F	G	G	H	H	E	F	G	H	H	5.0	F	G	H	H	-	E	F	G	H	H	6.0	F	G	H	-	-	E	F	G	H	-	3.6	2.0	F	F	G	G	H	E	E	F	G	G	3.0	F	F	G	H	H	E	F	G	H	H	4.0	F	G	H	H	-	E	F	G	H	H	5.0	F	G	H	-	-	E	F	G	H	-	6.0	G	H	H	-	-	E	F	H	-	-	4.2	2.0	F	F	G	G	H	E	E	F	G	G	3.0	F	G	H	H	-	E	F	G	H	H	4.0	F	G	H	-	-	E	F	G	H	-	5.0	G	H	H	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	F	H	-	-	4.5	2.0	F	F	G	H	H	E	E	F	G	H	3.0	F	G	H	H	-	E	F	G	H	H	3.4	F	G	H	H	-	E	F	G	H	H	4.0	F	G	H	-	-	E	F	G	H	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	F	H	-	-	4.8	2.0	F	F	G	H	H	E	E	F	G	H	3.0	F	G	H	H	-	E	F	G	H	H	3.2	F	G	H	H	-	E	F	G	H	H	4.0	F	G	H	-	-	E	F	H	H	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	F	H	-	-	5.1	2.0	F	F	G	H	H	E	F	G	G	H	3.0	F	G	H	H	-	E	F	G	H	H	3.5	F	G	H	-	-	E	F	G	H	-	4.0	G	G	H	-	-	E	F	H	H	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	G	H	-	-	5.4	2.0	F	F	G	H	H	E	F	G	G	H	2.8	F	G	H	H	-	E	F	G	H	H	3.0	F	G	H	-	-	E	F	G	H	-	4.0	G	H	H	-	-	E	F	H	-	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	G	H	-	-																																																								
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3.6	2.0	F	F	G	G	H	E	E	F	G	G	3.0	F	F	G	H	H	E	F	G	H	H	4.0	F	G	H	H	-	E	F	G	H	H	5.0	F	G	H	-	-	E	F	G	H	-	6.0	G	H	H	-	-	E	F	H	-	-	4.2	2.0	F	F	G	G	H	E	E	F	G	G	3.0	F	G	H	H	-	E	F	G	H	H	4.0	F	G	H	-	-	E	F	G	H	-	5.0	G	H	H	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	F	H	-	-	4.5	2.0	F	F	G	H	H	E	E	F	G	H	3.0	F	G	H	H	-	E	F	G	H	H	3.4	F	G	H	H	-	E	F	G	H	H	4.0	F	G	H	-	-	E	F	G	H	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	F	H	-	-	4.8	2.0	F	F	G	H	H	E	E	F	G	H	3.0	F	G	H	H	-	E	F	G	H	H	3.2	F	G	H	H	-	E	F	G	H	H	4.0	F	G	H	-	-	E	F	H	H	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	F	H	-	-	5.1	2.0	F	F	G	H	H	E	F	G	G	H	3.0	F	G	H	H	-	E	F	G	H	H	3.5	F	G	H	-	-	E	F	G	H	-	4.0	G	G	H	-	-	E	F	H	H	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	G	H	-	-	5.4	2.0	F	F	G	H	H	E	F	G	G	H	2.8	F	G	H	H	-	E	F	G	H	H	3.0	F	G	H	-	-	E	F	G	H	-	4.0	G	H	H	-	-	E	F	H	-	-	5.0	G	H	-	-	-	E	F	H	-	-	6.0	G	H	-	-	-	E	G	H	-	-																																																																																																																																																																																																																																																																																																																																																
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MiTek  
BOWMAC  
Structural Fasteners

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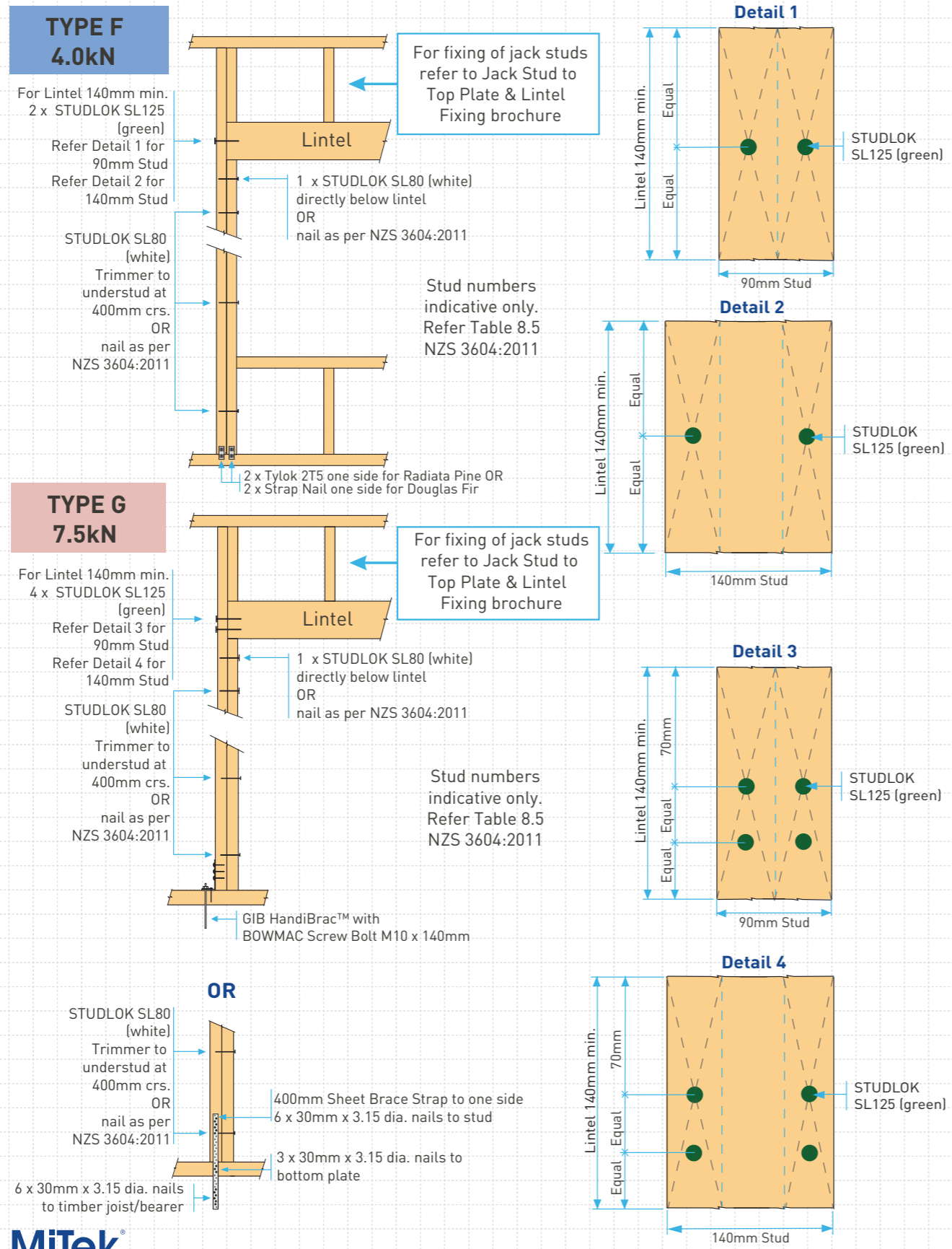
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# STUDLOK™ LINTEL FIXING OPTIONS FOR ON-SITE

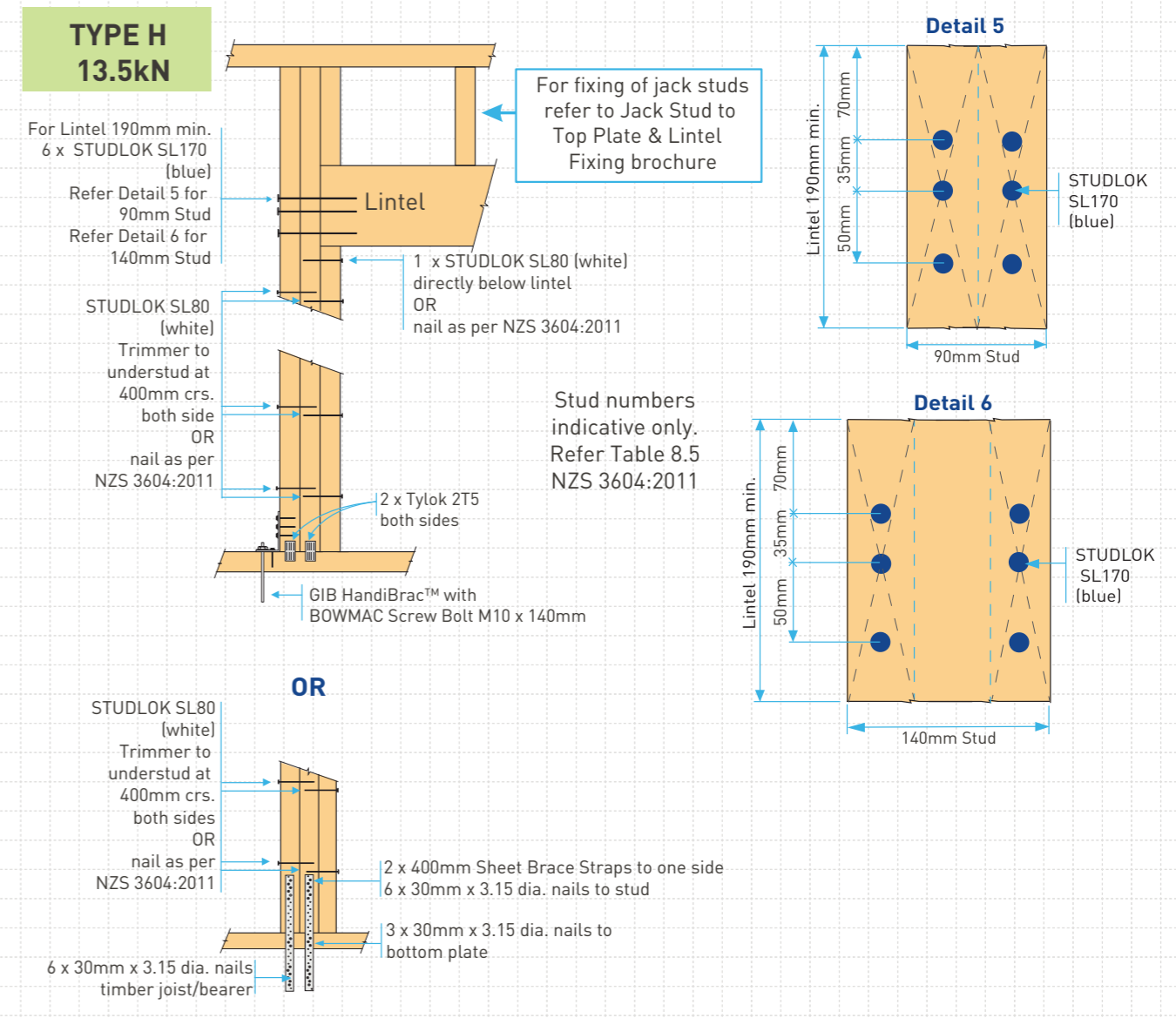
ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011



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# STUDLOK™ LINTEL FIXING OPTIONS FOR ON-SITE

ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011



**NOTE:** STUDLOK TYPE F 4.0 kN fixing can be used for TYPE E 1.4 kN fixing

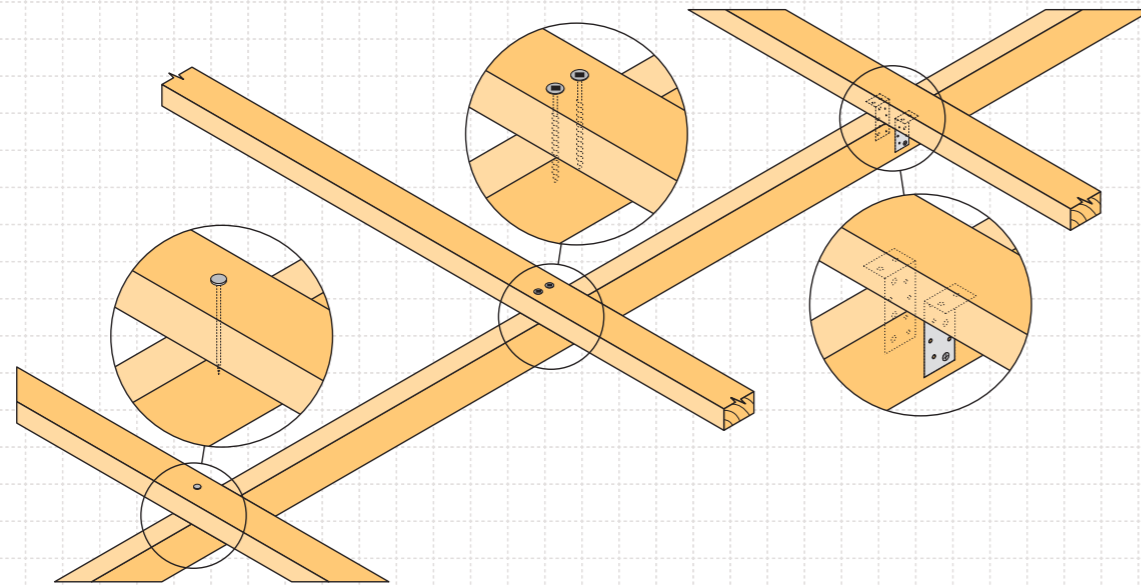


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# PURLIN & BATTEN FIXING CHART

## ALTERNATIVE SOLUTION TO NZS 3604:2011 TABLES 10.10 & 10.2

- All purlin and batten sizes are as per NZS 3604:2011.
- All fixings assume that the purlin and battens are installed on their flat over the top of the rafter or truss.
- The minimum fixing requirements apply to all purlin locations with the roof area.
- The LUMBERLOK BLUE SCREW where specified requires a minimum of 30mm penetration into rafter or truss. i.e. it is suitable for rough sawn timber up to 50mm thick at 18% moisture content.



**SELECTION CHART FIXING OPTIONS**  
(minimum fixing requirements)

ROOF WEIGHT	MAX. PURLIN SPAN (mm)	MAX. PURLIN CRS. (mm)	WIND ZONE				
			L	M	H	VH	EH
HEAVY ROOF Tile Battens	900	370	A	A	A	A	A
LIGHT ROOF Tile Battens	900 1200	370	A	A	B	C	C
LIGHT ROOF Purlins	900	900	C	C	C	C	D
	1200	900	C	C	C	D	D
	1200	1200	C	C	D	E	E

Wind Zone:  
As per NZS 3604:2011

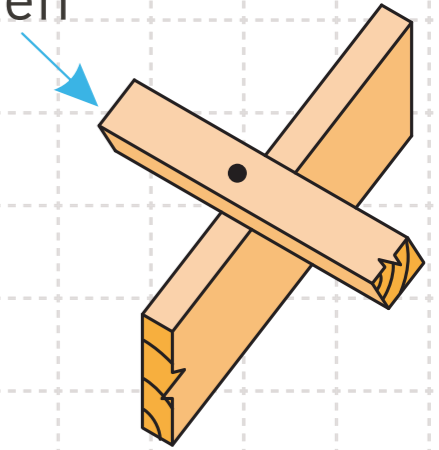
L = Low Wind  
M = Medium Wind  
H = High Wind  
VH = Very High Wind  
EH = Extra High Wind

# PURLIN & BATTEN FIXING CHART

**FIXING TYPE C**  
2.4kN

**1 BLUE SCREW**

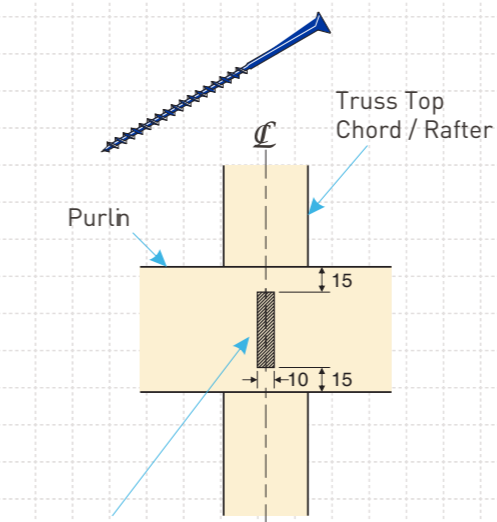
Purlin / Batten



### FIXING DEFINITIONS

<b>Nail</b>	Either 90mm x 3.15 dia. power-driven nail or 100mm x 3.75 dia, hand driven nail
<b>BLUE SCREW</b>	80mm x 10 gauge LUMBERLOK BLUE SCREW
<b>WIRE DOG</b>	LUMBERLOK WIRE DOG either LH or RH
<b>CT200</b>	LUMBERLOK Ceiling tie CT200 bend over purlin, 4 x LUMBERLOK product nails 30mm x 3.15 dia. each end.
<b>CTC40</b>	LUMBERLOK CPC40 with 2 x Type 17-14g x 35mm Hex Head screws per flange

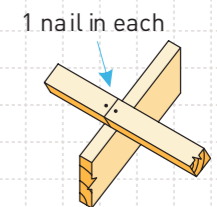
### FIXING TOLERANCES LUMBERLOK BLUE SCREW



**NOTE:**  
Locate fixings within the shaded area. Care to be taken to avoid over tightening of screws.

### PURLIN / BATTEN SPLICE FIXING OPTIONS

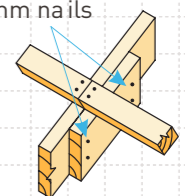
**FIXING TYPE A & B OVER PURLIN SPLICE**



**NOTE:**  
Skew nail when fixing to 35mm rafter or truss

**FIXING TYPE C, D or E OVER PURLIN SPLICE**

90 x 35mm block fixed to chord or rafter with 4 x 75mm nails



• TYPE C  
1 SCREW  
to each purlin

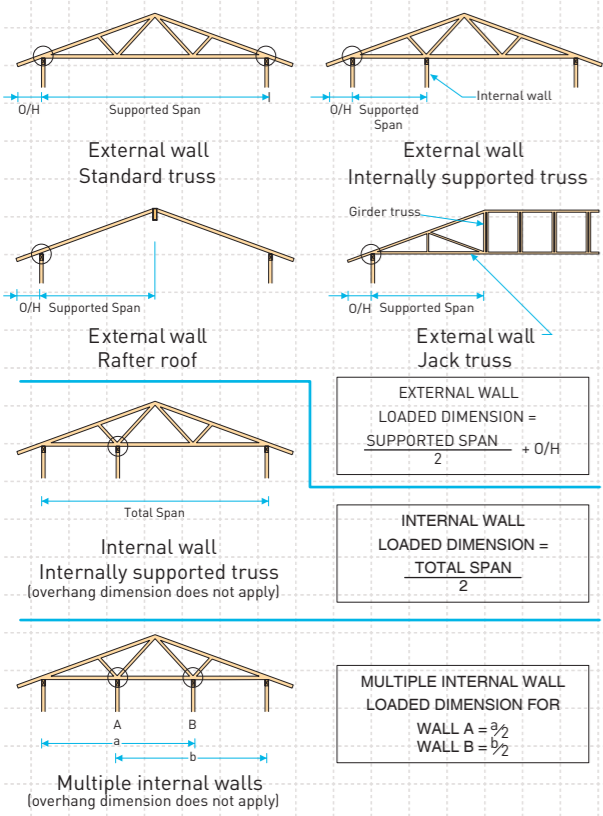
• TYPE D & E  
1 NAIL plus 1 SCREW to each purlin

# STUD TO TOP PLATE FIXING SCHEDULE

## ALTERNATIVE TO TABLE 8.18 NZS 3604:2011

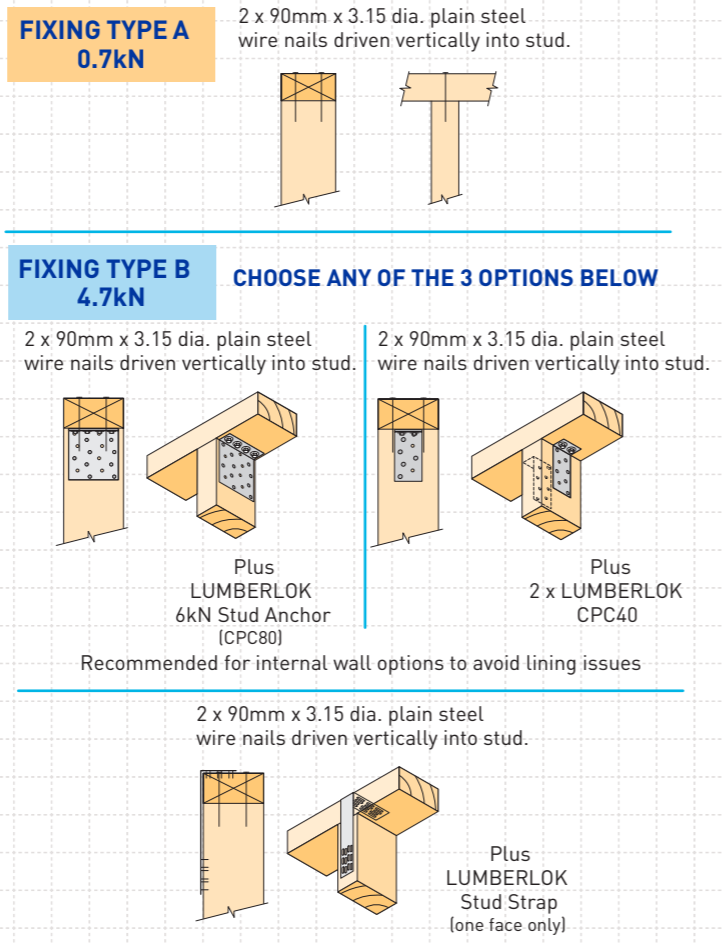
- Fixings are designed to resist vertical loads only. Dead loads include roof weight and standard ceiling weight of .20kPa
- Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist lateral loads
- These fixings assume the correct choice of rafter/truss to top plate connections have been made
- For gable end walls where the adjacent rafter/truss is located within 1200mm and with a maximum verge overhang of 750mm, select stud to top plate fixing using a loaded dimension of 1.5m
- All fixings assume top plate thickness of 45mm maximum
- Wall framing arrangements under girder trusses are not covered in this schedule
- All timber selections are as per NZS 3604:2011

### LOADED DIMENSION DEFINITION



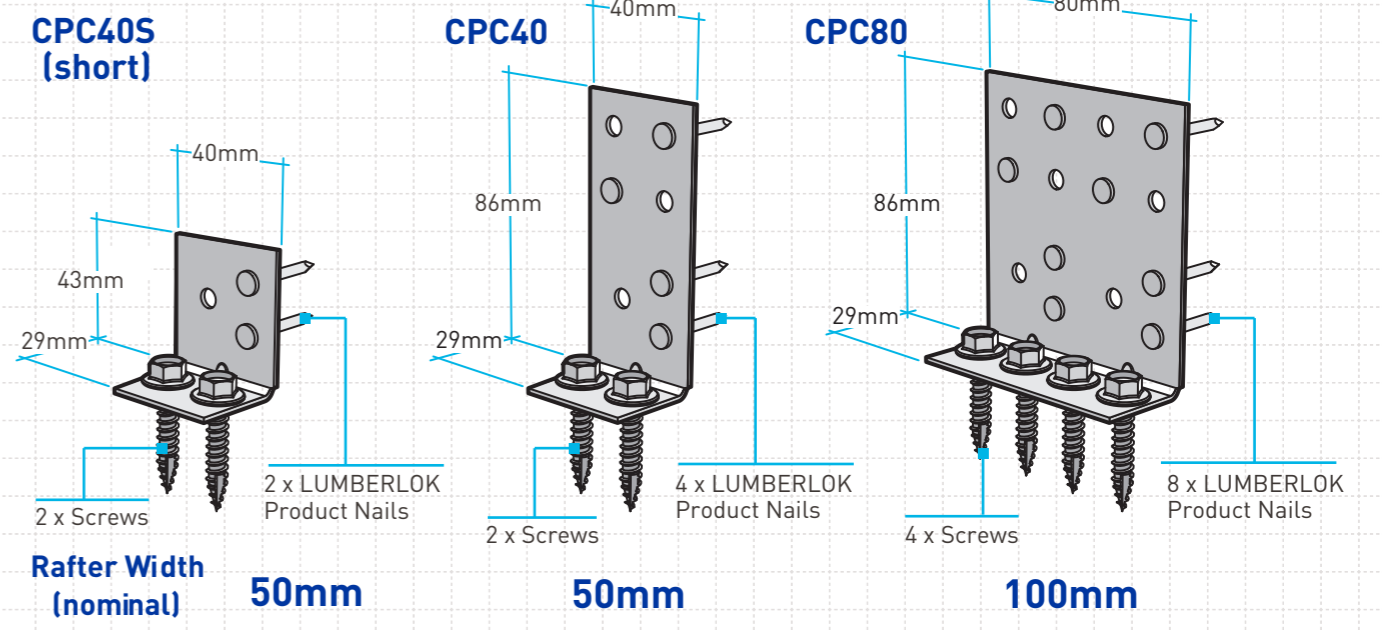
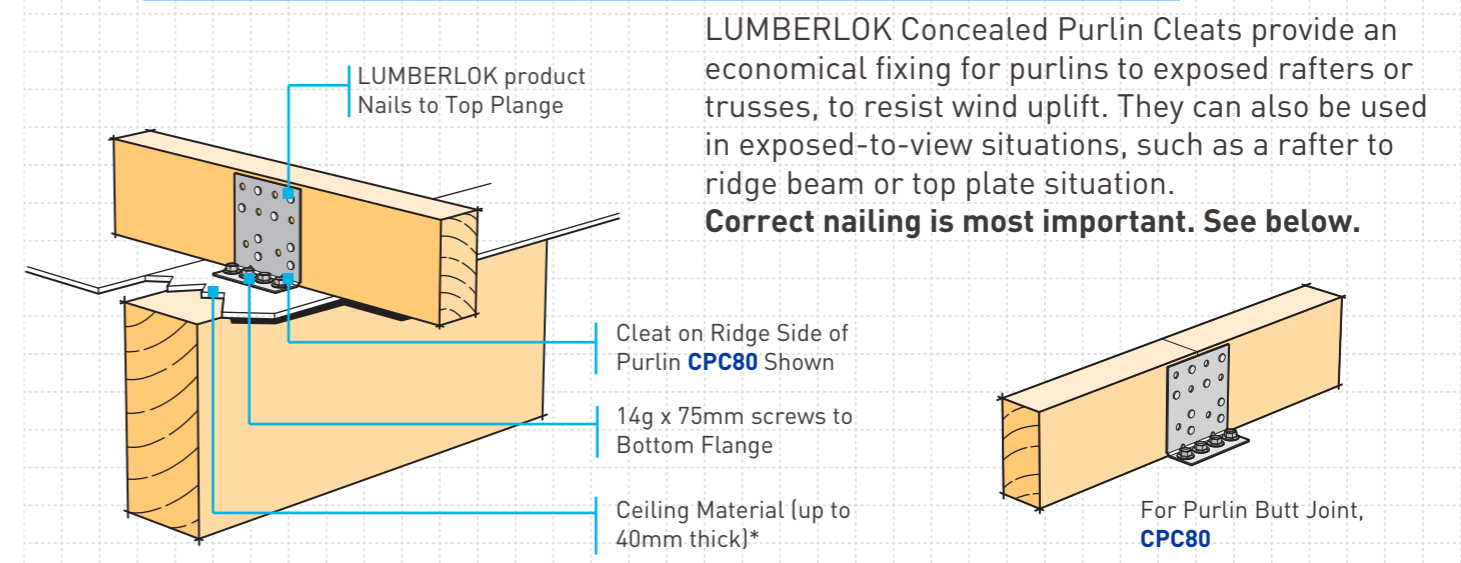
**TOP PLATE FIXING NOTE:**  
 NON LOAD BEARING WALLS USE FIXING TYPE A 0.7kN,  
 LOAD BEARING WALLS USE FIXING TYPE B-4.7 kN.

### FIXING OPTIONS



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

## CONCEALED FIXING DETAILS-IF REQUIRED



Uplift Direction	CPC40S	CPC40	CPC80
Characteristic Load	4kN/pair	8kN/Pair	16kN/Pair

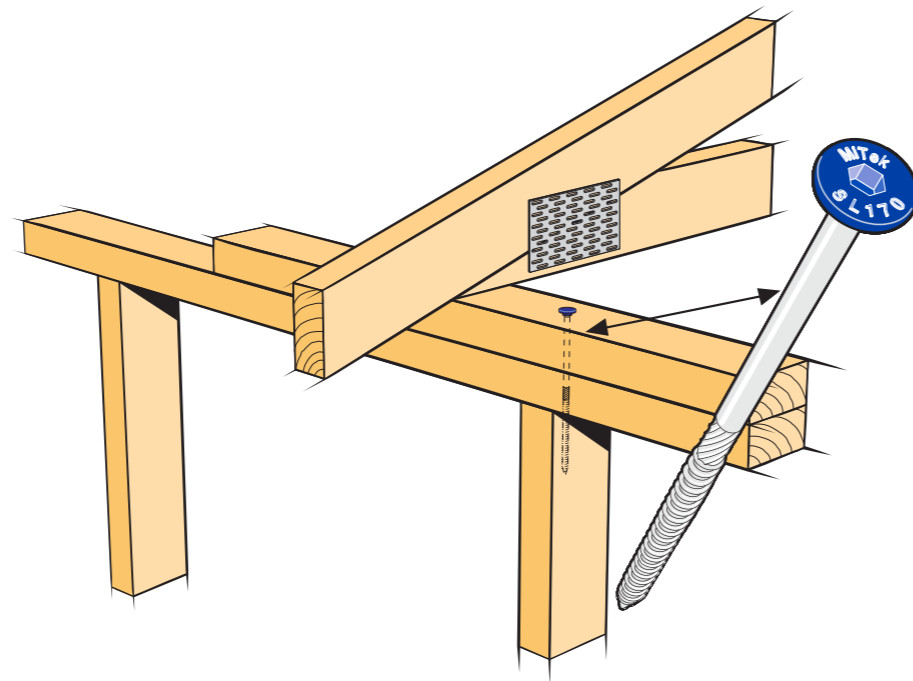
Fix as shown with:  
 LUMBERLOK product nails 30mm x 3.15 dia.  
 Type 17-14g x 35mm Hex Head Screws\*

**FIXING:**  
 To Top Flange: LUMBERLOK Product Nails 30mm x 3.15 dia. or Type 17-14g x 35mm Hex Head Screws  
 Bottom Flange: Type 17-14g x 35mm Hex Head Screws  
 \*Note: with ceiling materials use Type 17-14g x 75mm Screws  
 Note: For Stainless Steel CPC use Stainless Steel Screws and Nails

**MATERIAL:**  
 1.55mm G300 Z275 Galvanised Steel or 0.9mm Stainless Steel 304-2b (SSCPC40S and SSCPC40)  
 1.5mm Stainless Steel 304-2B (SSCPC40 and SSCPC80)

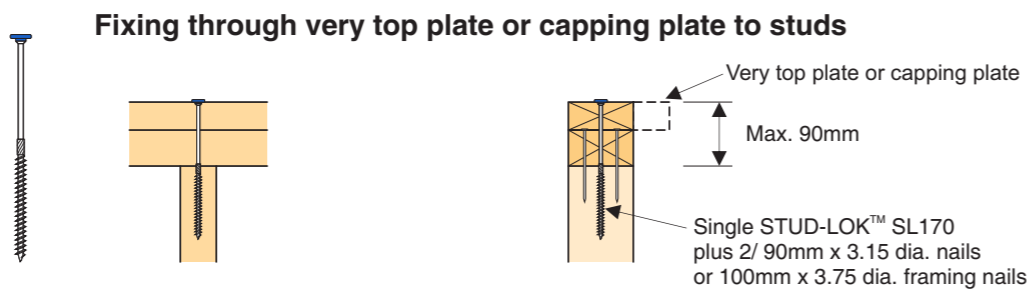
# STUD-LOK<sup>™</sup>

Provides a solution for top plate to stud fixings for residential timber frame buildings



- ★ Complies with fixing requirements in Section 8 NZS 3604:2011
- ★ The BOWMAC<sup>®</sup> STUD-LOK<sup>™</sup> forms an integral part of the MiTek Truss & Frame design and layout

- NOTE:**
- ★ Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist lateral loads.
  - ★ The STUD-LOK<sup>™</sup> connections assume that the correct choice of rafter/truss fixings have been made.
  - ★ Wall framing arrangements under girder trusses are not covered in this schedule.
  - ★ All timber selections are as per NZS 3604:2011 and include LVL8 timber grades.



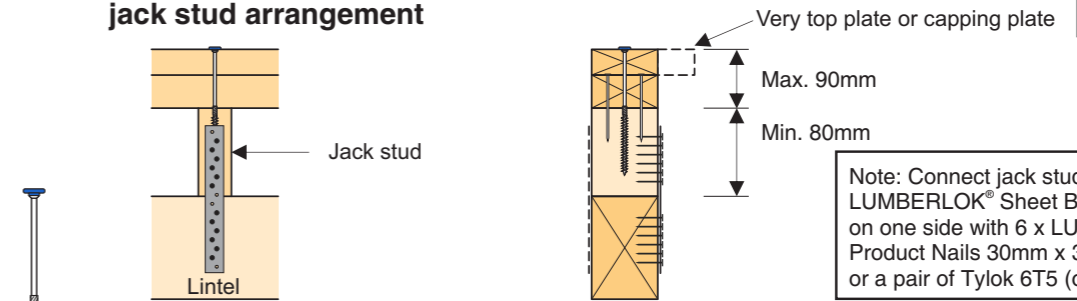
**MiTek**<sup>®</sup>

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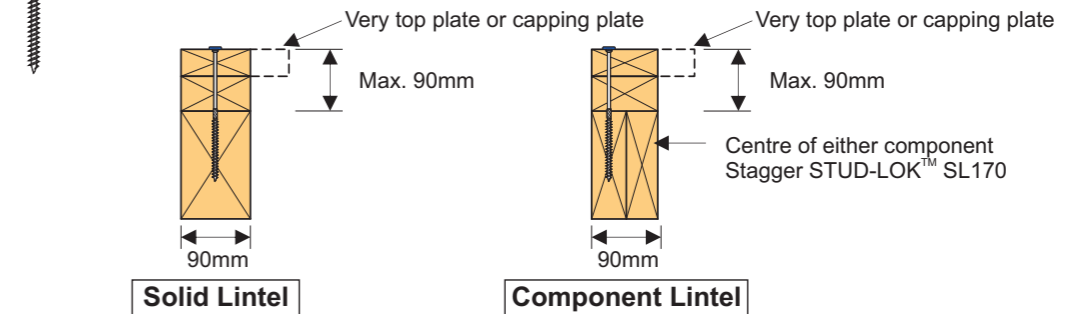
12/2018

## Fixing through very top plate or capping plate to lintel with jack stud arrangement

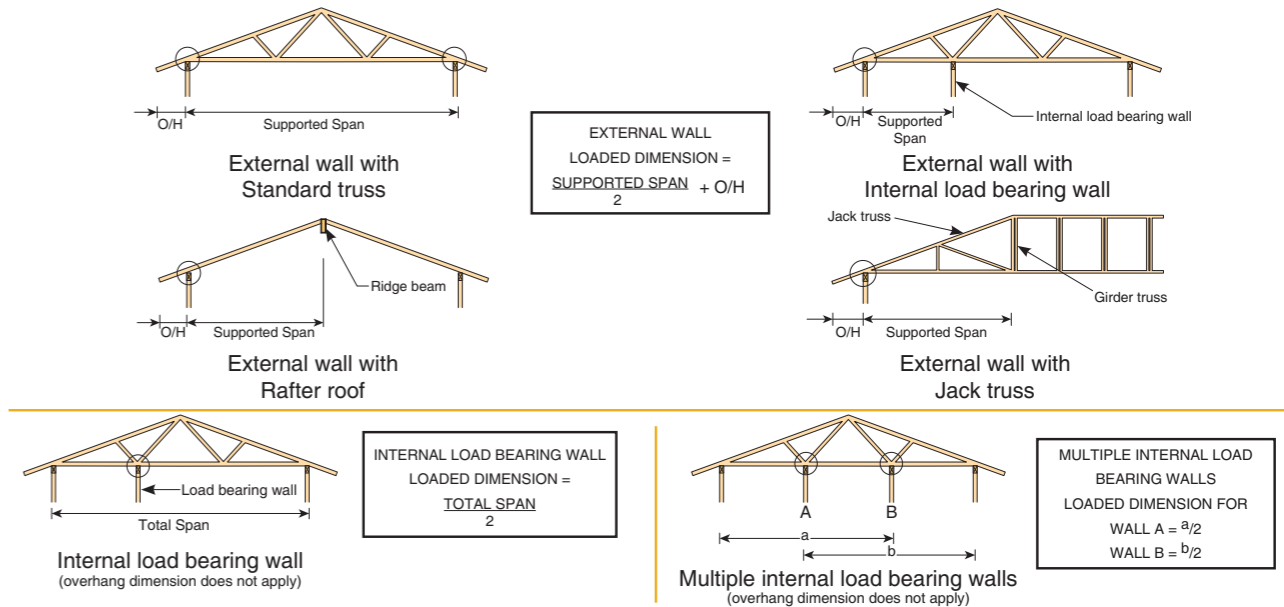


Note: Connect jack stud to lintel with LUMBERLOK<sup>®</sup> Sheet Brace Strap 200mm on one side with 6 x LUMBERLOK<sup>®</sup> Product Nails 30mm x 3.15 dia. each end or a pair of Tylok 6T5 (one side each)

## Fixing through very top plate or capping plate with lintels directly under top plate



## LOAD DIMENSION DEFINITION



## FIXING SELECTION CHART

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

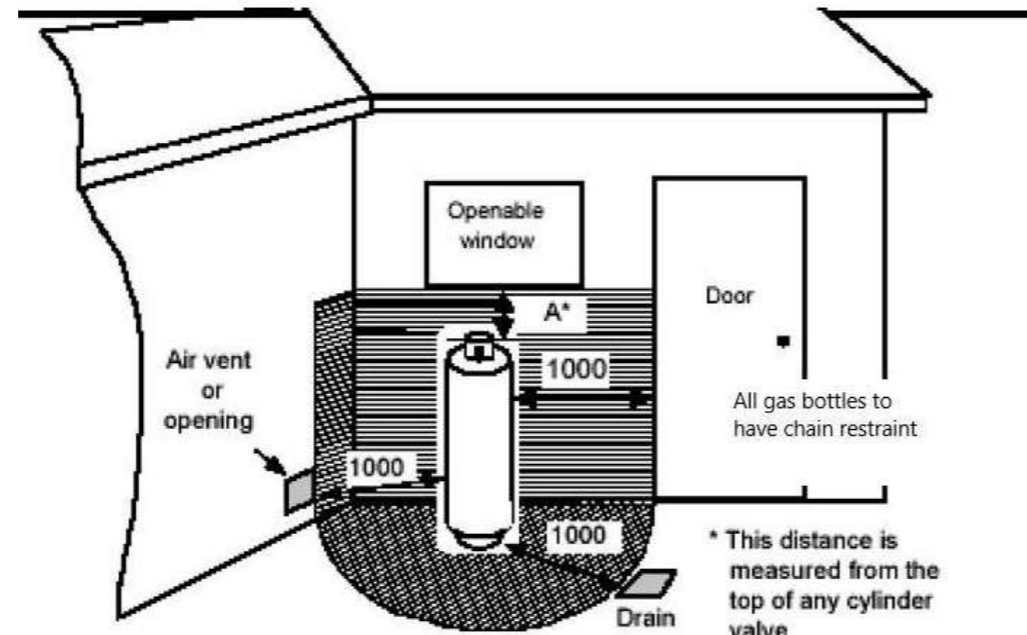
Wind Zones L, M, H, VH, EH as per NZS 3604:2011

Loaded Dimension (m)	Stud Centres					Light Roof Wind Zone					Heavy Roof Wind Zone				
	300mm	400mm	600mm	L	M	H	VH	EH	L	M	H	VH	EH		
3.0	2.3	1.5	2N	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL		
4.0	3.0	2.0	2N	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL		
5.0	3.8	2.5	2N	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL		
6.0	4.5	3.0	2N	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL		
7.0	5.3	3.5	2N	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL		
8.0	6.0	4.0	2N	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL		
9.0	6.8	4.5	SL	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL		
10.0	7.5	5.0	SL	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL		
11.0	8.3	5.5	SL	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL		
12.0	9.0	6.0	SL	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL		

2N = 2/ 90mm x 3.15 dia. nails

SL = Single STUD-LOK<sup>™</sup> SL170 plus 2/ 90mm x 3.15 dia. nails or 100mm x 3.75 dia. framing nails

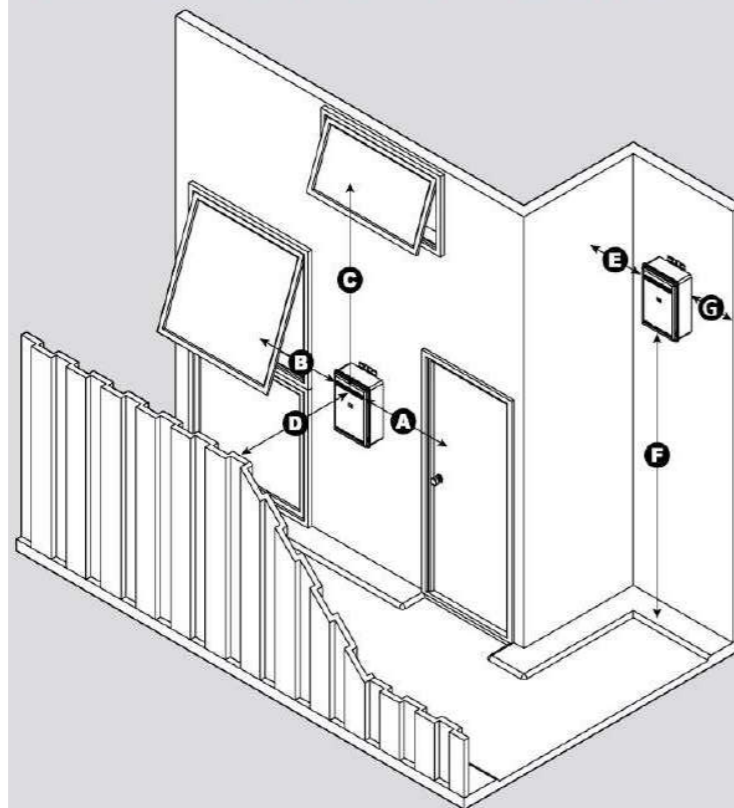
**NOTE:** To calculate the number of STUD-LOK<sup>™</sup> fixings required, divide the wall length by the stud centres, add 1 to this figure and locate this number of fixings as evenly as possible along the wall length. This figure includes the start and end studs in each wall length.



Shading indicates prohibited area for a drain or opening

	Exchange cylinder	In Situ Fill Cylinder
A	150	500

### External models: General flue clearances



Dim.	INFINITY A-Series, HD200, EF models	INFINITY HD250 model
A	Min. 300 mm	Min. 500 mm
B	Min. 300 mm	Min. 500 mm
C	Min. 1.5 m	Min. 1.5 m
D	Min. 500 mm	Min. 500 mm
E	Min. 300 mm	Min. 300 mm
F	Min. 300 mm*	Min. 300 mm*
G	Min. 300 mm	Min. 300 mm

#### Other clearances

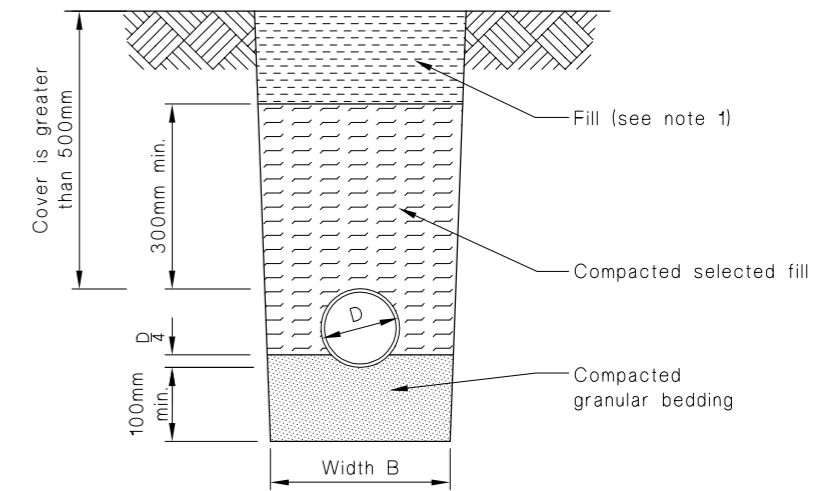
Below eaves, balconies, and other projections, minimum 300 mm.

From a gas meter, minimum 1000 mm.

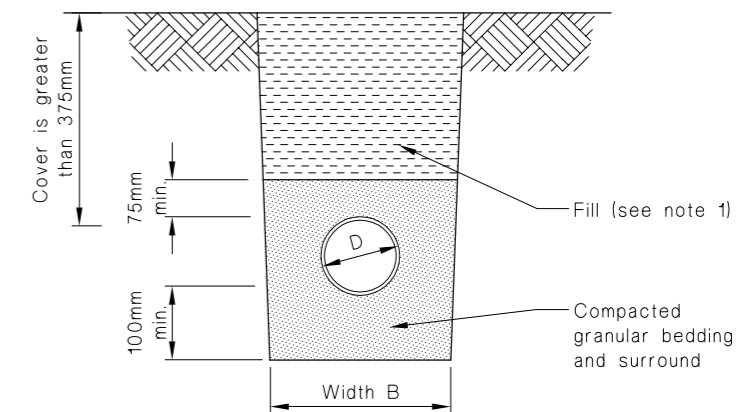
From an electricity meter or fuse box, minimum 500 mm.

\* Rinnai recommend 1.5 m to give enough clearance for the pipe work, and to safely expel flue gases.

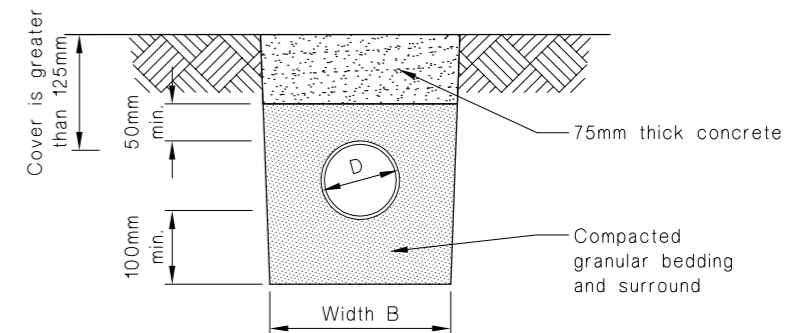
Figure 13: Bedding and Backfilling  
Paragraphs 3.9.2, 3.9.4 and 3.9.5



(a) Cover greater than 500 mm  
Bedding type 'B' of NZS 4452



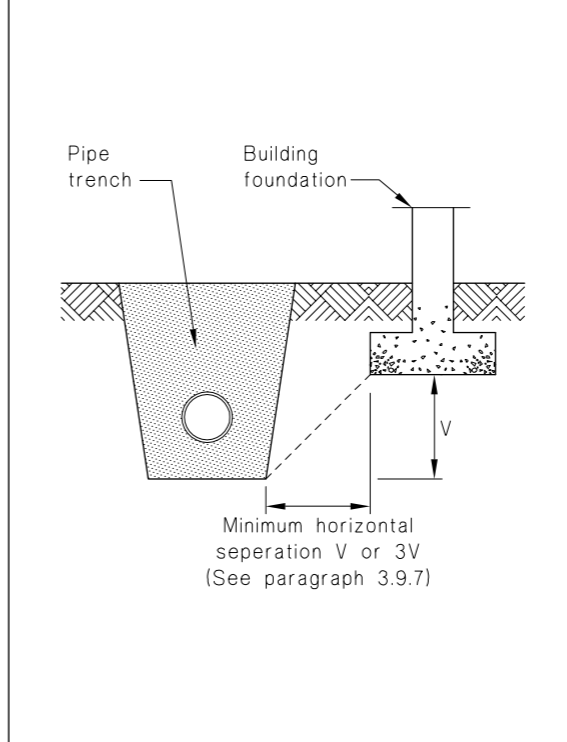
(b) Cover greater than 375 mm  
Bedding type 'D' of NZS 4452



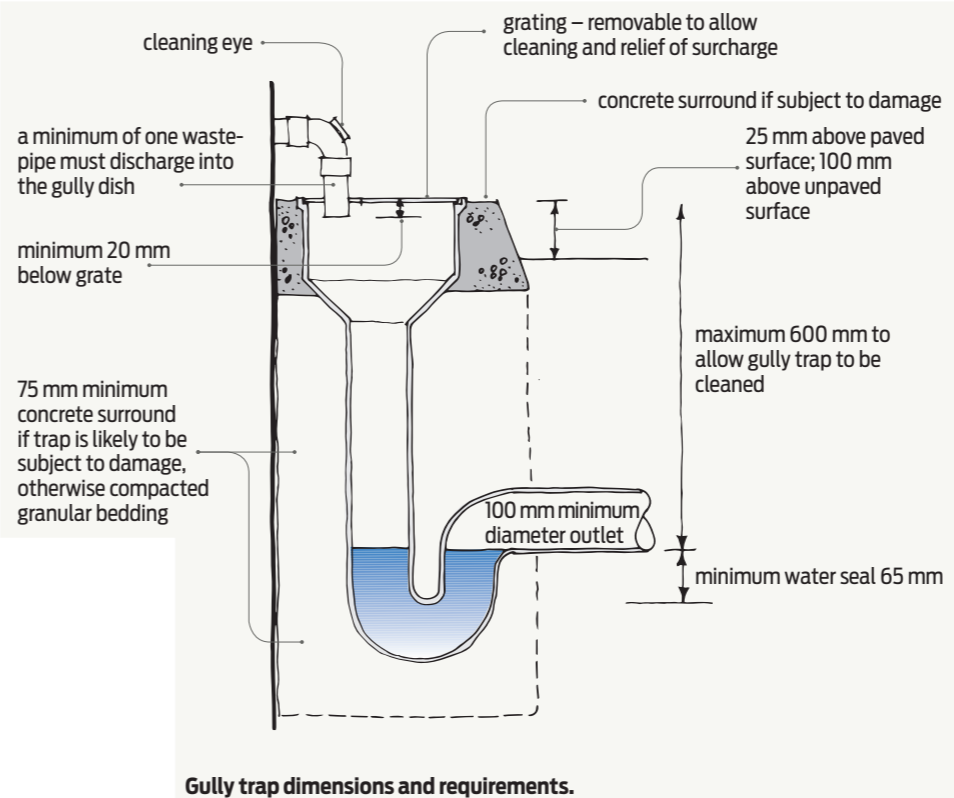
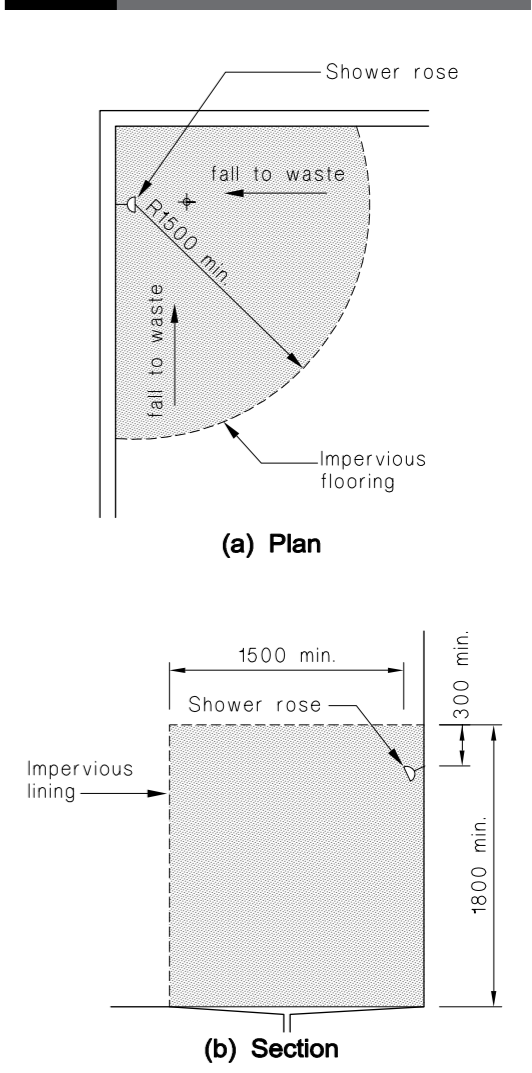
(c) Cover greater than 125 mm

NOTE:  
1. Fill shall be:  
- Ordinary fill where drains are located below gardens and open country.  
- Compacted selected fill where the drains are located below residential driveways and similar areas subjected to light traffic.

**Figure 14: Relationship of Pipe Trench to Building Foundation**  
Paragraph 3.9.7



**Figure 5: Wall and Floor Coverings to Unenclosed Showers**  
Paragraphs 3.3.1 and 3.3.5



**Gully trap dimensions and requirements.**



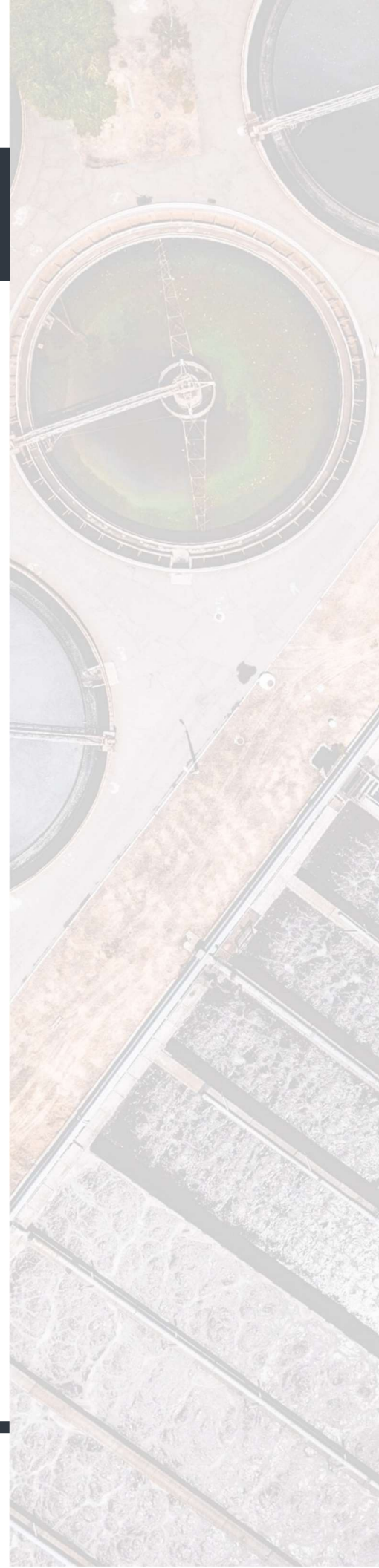
**geologix**  
consulting engineers

# STORMWATER MANAGEMENT REPORT

PARIHAKA MARAE,  
101 TE IRINGA ROAD, KAIKOHE

WATERFLOW NZ LTD

**C0181-3W-01**  
**OCTOBER 2023**  
**REVISION 1**







## DOCUMENT MANAGEMENT

<b>Document Title</b>	Stormwater Management Report
<b>Site Reference</b>	Parihaka Marae, 101 Te Iringa Road, Kaikohe
<b>Client</b>	Waterflow NZ Ltd
<b>Geologix Reference</b>	C0181-3W-01
<b>Issue Date</b>	25 October 2023
<b>Revision</b>	01
<b>Prepared</b>	Sander Derks Graduate Civil Engineer, Dip Eng  
<b>Approved</b>	Edward Collings Managing Director, CEnvP, CPEng, MPhys (Hons)
<b>File Reference</b>	<small>Z:\Projects\C0100-C0199\Parihaka Marae, 101 Te Iringa Road, Kaikohe - C0181\05 - Reports\C0181-SW-01-R01.docx</small>

## REVISION HISTORY

Date	Issue	Prepared	Approved
October 2023	First Issue	SD	EC



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## 1 INTRODUCTION

This Stormwater Management Report has been prepared by Geologix Consulting Engineers Ltd (Geologix) for Waterflow NZ Ltd as our Client in accordance with our standard short form agreement and general terms and conditions of engagement.

Our scope of works has been undertaken to assist with Resource and Building Consent application in relation to the proposed extension of buildings in a property at 101 Te Iringa Road, Kaikohe, the 'site'. This assessment provides means of managing stormwater runoff from proposed impervious surfaces with a less than minor effect on the environment as a result of the proposed activities outlined in Section 1.1.

### 1.1 Proposal

A proposed development plan was presented to Geologix at the time of writing, prepared by Arcline Architecture<sup>1</sup> and is reproduced within Appendix A as Drawing No. 400. It is understood the Client proposes to extend the existing Wharekai building and to construct a new ablution block between the existing Wharekai and hui building, both adjacent to the western site boundary. Amendments to the referenced plan may require an update to the recommendations of this report.

## 2 SITE DESCRIPTION AND DESKTOP ASSESSMENT

The site is legally described as Punakitere 4K1A1A Block and occupies approximately 4,087m<sup>2</sup> to the east of Te Iringa Road, designated as Māori Purpose – within a Rural Production Zone, according to the Far North District Plan zone maps, see Figure 1.

The site is rectangular in shape with Te Iringa Road delineating the western boundary alongside farmland pasture surrounding the site to the north, east, and south. The adjacent properties present as similar and some moderately larger sized parcels developed with a rural residential purpose. On the adjacent site to the north a meandering un-named watercourse flows west. Topographically, the site is generally flat with gentle undulation.

### 2.1 Flood Hazard Assessment

Stormwater at the site is anticipated to move as sheet flow across the property to the north and north-west, progressing towards the watercourse and roadside swales. From there, flows continue west. No overland flow paths have been identified within the site boundaries.

Road stormwater runoff will be intercepted by well-defined roadside swales. Available GIS data from the NRC<sup>2</sup> and FNDC<sup>3</sup> systems indicate no flood hazard either adjacent or within the

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<sup>1</sup> Arcline Architecture, Sheet Ref. 4, Parihaka Marae, 101 Te Iringa Road Kaikohe, dated 15 September 2022.

<sup>2</sup> <https://localmaps.nrc.govt.nz/LocalMapsGallery/>

<sup>3</sup> <https://www.fndc.govt.nz/Our-Services/Online-maps/Far-North-Maps>

site boundaries as a result of river and coastal flood inundation processes. A summary of flood potential and the downstream environment is presented as Table 1.

*Table 1: Summary of Flood Hazard Potential*

Event	Location	Prediction at Site	Downstream Prediction
River Flood, 10 % AEP			
River Flood, 2 % AEP*			
River Flood, 1 % AEP*	Nearest flood hazard mapped approximately 1,300m south of site	No hazards mapped	No hazards mapped
Coastal Flood, current			
Coastal Flood, 2 % AEP			
Coastal Flood, 1 % AEP & Rapid Sea Level Rise			

## 2.2 Design Storm Event

This assessment has been modelled to provide stormwater attenuation and management as follows:

Due to no flooding potential within the boundary, surrounding area, and downstream properties stormwater attenuation and management will be designed to accommodate and limit the post-development 50 % and 20 % AEP event flow rates to 80 % of the pre-development flows as required by the FNDC Engineering Standards<sup>4</sup>. This will be through controlled attenuation and release, with provision for climate change.

In addition, our design has been prepared to accommodate a permitted activity under the proposed regional plan for Northland as the above design storm event is more conservative than the 10 % AEP event.

Attenuation modelling under the above scenarios avoids exacerbating downstream flooding and correctly sized discharge and management devices reduce scour and erosion at discharge locations which may otherwise result in concentrated discharge.

## 2.3 Existing Stormwater Management

Existing impervious surfaces and associated stormwater devices are recorded within the site boundaries. Stormwater from existing building roof areas is directed to three 25,000 litre concrete water tanks and roadside swale drain. Metal internal driveway and carpark area stormwater runoff is diverted to surrounding areas. Roadside stormwater management

<sup>4</sup> Table 4-1 FNDC Engineering Standards 2023



includes a well-defined grassed swale drain and driveway culvert at both vehicle crossings. See Figure 1.

Figure 1: Site Location and Stormwater System



### 3 PROPOSED DEVELOPMENT

Proposed development plans presented to Geologix at the time of writing, indicate an extension to one of the current existing buildings, an additional small building. Based on the information presented to us some key design assumptions have been made below. Should the proposed development or the built environment differ from these assumptions, amendments to this report and design may be required.

#### 3.1 Design Assumptions

- The existing consented development comprises of one large building and one smaller building, a separate toilet building, a metal driveway and carpark area.
- New toilet building constructed.
- Demolition of the existing toilet building once the new toilet building is completed.
- The proposed extension of the existing Wharekai building.
- Three existing 25,000 litre water tanks remain to be used.
- Driveway and parking area to remain as metal cover.

#### 3.2 Impermeable Surfaces

A summary of existing and proposed impermeable surfaces is presented as Table 2.

Table 2: Summary of Impermeable Surfaces

Surface	Type	Area	Difference
<b>Existing Condition</b>			
Existing Buildings (to be retained)	Impermeable	204 m <sup>2</sup>	
Existing Buildings (to be demolished)	Impermeable	140 m <sup>2</sup>	
Metal Driveway/ Parking	Impermeable	750 m <sup>2</sup>	
Grass/ lawn	Permeable	2952 m <sup>2</sup>	
	Total	4046 m <sup>2</sup>	
Total Impermeable		1094 m <sup>2</sup> / 27.0 %	
<b>Proposed Condition</b>			
Existing and Proposed Buildings	Impermeable	545 m <sup>2</sup>	+201 m <sup>2</sup>
Parking/ Driveway Paving	Impermeable	750 m <sup>2</sup>	+/-0 m <sup>2</sup>
Grass/ lawn	Permeable	2751 m <sup>2</sup>	- 201 m <sup>2</sup>
	Total	4046 m <sup>2</sup>	
Total Impermeable		1295 m <sup>2</sup> / 32.0 %	

FNDC District Plan Rule 8.6.5.1.3<sup>5</sup> defines the Permitted Activity stormwater criteria as 15 % of the gross site area. At a current development level of 27.0 % and the further addition of 201 m<sup>2</sup> development following scheduled demolition, this will increase to 32.0 % of the gross site area.

The proposed development impermeable surfaces will not comply with Permitted or Controlled Activity and is non-complying. Mitigation of any environmental effect can be achieved through Low Impact Design principles. Because the existing development is presently over the Permitted Activity threshold in addition to being unattenuated, it is recommended to limit the post-development 50 % and 20 % AEP event flow rates to 80 % of the Permitted Activity flows through controlled attenuation and release, providing additional benefit to the receiving environment.

In addition, to satisfy the proposed regional plan, the 20 % AEP event at 80 % of pre-development level has been calculated to be more conservative than the 10 % AEP event and shall be taken as the design case.

Geologix were not presented with any existing Consents and associated conditions to consider any further requirements of the site.

## 4 STORMWATER MANAGEMENT

### 4.1 Guideline Documents

This stormwater management design has been prepared in general accordance with the following stormwater legislation and good practice guidelines.

- New Zealand Building Code, Clause E1: Surface Water.

<sup>5</sup> District Plan Rule 8.6.5.1.3. The maximum proportion of the gross site area covered by buildings and other impermeable surfaces shall be 15%.



- Auckland Regional Council, TP10.
- Auckland Council, GD01.
- Auckland Regional Council, TP108.
- FNDC Operative District Plan.
- NRC Proposed Regional Plan for Northland.

#### 4.2 Stormwater Management Design Concept

This stormwater management design meets the requirements of the local and regional consent authorities by providing stormwater management up to and including the design storm event as below.

- **Building roof areas, 545 m<sup>2</sup>.** Proposed and existing roof area runoff will be attenuated within three existing Duracrete concrete 25,000 litre roof water tanks, sited on the western boundary to the Permitted Activity standard. The tanks will continue to serve as potable water supply.
- **Covered decking and associated canopies.** These are incorporated into the main building roof guttering plan.
- **Driveway and parking.** The existing driveway/ parking will remain metalled and be attenuated as an off-set within the three roof water tanks. The parking area will shed as sheet flow to adjacent areas.
- **Vehicle Crossing.** Currently two vehicle crossings are installed with existing culvert pipes. Upgrading of the vehicle crossings are not proposed in this application.
- **Discharge.** To limit scour and erosion at the roof water tank outlet a specifically sized dispersion device has been designed in this report and will be situated across the northern boundary of the site parallel with the contours.

#### 4.3 Device Standards

##### 4.3.1 Fittings

No drainage fittings including chambers, manholes, frames, grates etc. are anticipated. If any fittings are proposed at ground level, these shall meet the requirements of AS3996 Class C (Heavy Duty) or EN1433 Class C for use in metalled or parking areas.

##### 4.3.2 Stormwater Pipes

All proposed piping shall be minimum 80 mm uPVC with sealed joints. This design included a minimum 100 mm diameter sealed DN100 piping for tank inlets and outlets. The installation of stormwater pipes shall be per manufacturers guidelines to meet the requirements of NZBC Clause E1 Acceptable Solutions.

#### 4.3.3 Stormwater Tanks

At the time of writing, Geologix were informed that the proposal includes three existing Duracrete concrete water tanks to provide attenuation and suitable potable water supply. The three existing 25,000 litre water tanks will remain suitable for the design capacity.

Any new tanks proposed will require a review of the recommendations of this report.

#### 4.3.4 Dispersion Pipe/Trench

Roof water tank overflows shall be directed to a new dispersion device contained within the site boundaries to avoid concentrated discharge and associated erosion and designed to accommodate the 10 % AEP flow events. A typical dispersion pipe and trench detail is presented as Drawing No. 402 within Appendix A. The final device shall be chosen by the Client as part of the application. An above ground dispersion pipe shall comprise a 100 mm diameter, DN100 PVC or PE pipe, drilled with 10 mm diameter holes at 200 mm c/c spacing. The pipe shall be laid flat on the surface, parallel to the ground contour to ensure uniform discharge. The pipe should be pegged to hold in place.

Alternatively, a below ground dispersion trench may be adopted. The trench shall be a minimum of 300 mm wide and 450 mm deep. The trench shall be lined with a woven geotextile fabric with general opening size of 0.06 to no more than 0.2 mm to minimise sedimentation in the trench. The DN100 stormwater pipe, drilled as above shall be laid upon a minimum 50 mm bed of cohesionless drainage metal such as scoria or approved similar in the base of the trench. The same drainage medium shall also be used to backfill the trench. A 100 mm thick low permeability clay cap or topsoil horizon will seal the trench at ground level.

#### 4.4 Stormwater Attenuation

Relevant design rainfall intensity and depths have been ascertained for the site location from the NIWA HIRDS meteorological model<sup>7</sup>. NIWA provides guidelines for modelling the effects of potential climate change effects of rainfall intensity increase by applying a potential change factor to historical data. This report has adopted potential change factors to account for a 2.1 °c climate change increase scenario. NIWA HIRDS and climate change data is presented in full within Appendix B. This stormwater attenuation design has accounted for peak flow attenuation up to and including the 20 % AEP rainstorm event at flow rates to 80 % of the pre-development flows. Attenuation design has been calculated adopting the Rational Method to attenuate to permitted activity detailed in Table 2. Full calculations are presented as Appendix B, summarised as Table 3 and a schematic typical attenuation tank detail is presented within Appendix A as Drawing No. 401. The proposed attenuation design confirms peak flows discharging to land up to and including the design (20 % AEP) storm event will be reduced by means of attenuation.

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<sup>7</sup> NIWA High Intensity Rainfall Data System, <https://hirds.niwa.co.nz>.



Table 3: Summary of Stormwater Attenuation

Condition	50 % AEP Peak Flow (80 % pre dev flows)	20 % AEP Peak Flow (80 % pre dev flows)	10 % AEP Peak Flow	Total Storage Volume Required	Design
Pre- development	43.89 l/s	57.29 l/s	83.90 l/s		3x 25,000 litre retention/ detention tank with 36 mm
Post- development	57.69 l/s	75.30 l/s	88.23 l/s	20,679 litres (20 % AEP)	orifice installed 0.72 m below outflow and water supply outlet installed 150 mm above base of tank for sedimentation.

Refer Table 2.

\* Lower post-development peak flows demonstrate the parking area as an offset.

#### 4.5 Discharge

The direct discharge of water tank overflow in a concentrated manner can cause scour and erosion in addition to excessive saturation of shallow soils. It is recommended that overflow from rainwater detention tanks is conveyed in sealed DN100 type pipes to a dispersion pipe which may be either pegged to the surface above ground or installed into a shallow below ground trench, see Section 4.3.4. Feeding pipes can be either buried or pinned to the surface as desired. Based on the proposed development. A dispersion pipe or trench design summary is presented as Table 4. Calculations to derive this are presented within Appendix B based on the NIWA HIRDS Depth-Duration data. A typical detail of the concept dispersion options is presented within Appendix A as Drawing No. 402.

Table 4: Summary of Concept Dispersion Devices

Concept Impervious Area to Tank	Design Velocity	Dispersion Pipe/ Trench Min. Length	Min. No. of Drilled Holes
1295 m <sup>2</sup>	3.75 m/s	17.2 m	87

#### 4.6 Stormwater Quality

The proposed development is for a rural residential development. The key contaminant risks in this setting include:

- Sediments and minor contaminants washed from impervious surfaces, in particular from roof areas to the water tank.
- Leaf matter, grass and other organic debris.

Stormwater treatment requirements are minor to maintain good quality stormwater discharge. Stormwater quality will be provided by:

- Leaf guards on roof guttering and first flush devices on roof guttering and downpipes.



- Rainwater tank for potable use onsite only to be filled by roof runoff.
- Room for sedimentation within the base of the roof runoff water tank as dead storage volume.
- Stormwater runoff from impervious surfaces not discharged directly to existing watercourses or overland flow paths.

The risk of other contaminants being discharged out of the site boundaries (hydrocarbons, metals etc.) as a result of the proposed activities once stormwater has been processed through the above measures that will affect the downstream water quality is considered low.

#### 4.7 Assessment Criteria

##### 4.7.1 District Plan

The proposed activity has been assessed as a non-Complying Activity according to District Plan Rule 8.6.5.1 and 8.6.5.2. However, compliance with positive effect on the downstream environment, including the existing development can be achieved by attenuating back to Permitted Activity through Low Impact Design principles. A full local consent authority assessment criterion in accordance with that is presented under Rule 11.3 of the District Plan and can be found within Appendix D.

##### 4.7.2 Regional Plan

The proposed activity is determined to meet the requirements of a **Permitted Activity** according to the provisions of Proposed Regional Plan Rule C.6.4.2.

## 5 LIMITATIONS

This report has been prepared for Waterflow NZ Ltd as our Client. It may be relied upon by our Client and their appointed Consultants, Contractors and for the purpose of Consent as outlined by the specific objectives in this report. This report and associated recommendations, conclusions or intellectual property is not to be relied upon by any other party for any purpose unless agreed in writing by Geologix Consulting Engineers Ltd and our Client. In any case the reliance by any other party for any other purpose shall be at such parties' sole risk and no reliability is provided by Geologix Consulting Engineers Ltd.

The opinions and recommendations of this report are based on plans, specifications and reports provided to us at the time of writing, as referenced. Any changes, additions or amendments to the project scope and referenced documents may require an amendment to this report and Geologix Consulting Engineers should be consulted. Geologix Consulting Engineers Ltd reserve the right to review this report.



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## APPENDIX A

### Drawings



# GENERAL NOTES

- DRAWING REPRODUCED FROM ARCLINE ARCHITECTURE, DATED SEPTEMBER 2022.
- CONTOURS AT 0.25 m INTERVALS.
- TOPOGRAPHIC SURVEY DATA PROVIDED BY ARCLINE ARCHITECTURE.
- FOR INDICATION ONLY, NOT FOR CONSTRUCTION.
- FEATURES PRESENTED ARE INDICATIVE AND HAVE NOT BEEN VERIFIED.
- DO NOT SCALE FROM THIS DRAWING.

- SITE BOUNDARY
- OVERLAND FLOWPATH
- CONCEPT 25,000 LITRE WATER TANK ATTENUATING TO DISPERSION DEVICE
- EXISTING ROADSIDE SWALE
- BUILDINGS TO BE DEMOLISHED
- PROPOSED DEVELOPMENT
- EXISTING BUILDINGS REMAINING
- METAL DRIVEWAY & PARKING

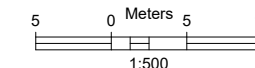
### EXISTING IMPERMEABLE AREA

EXISTING BUILDINGS	344 m <sup>2</sup>
METAL DRIVEWAY/ PARKING	750 m <sup>2</sup>
<b>TOTAL</b>	<b>1,094 m<sup>2</sup></b>
	<b>27.0 %</b>

### PROPOSED IMPERMEABLE AREA

PROPOSED BUILDINGS	545 m <sup>2</sup>
PARKING/ DRIVEWAY PAVING	750 m <sup>2</sup>
<b>TOTAL</b>	<b>1,295 m<sup>2</sup></b>
	<b>32.0 %</b>

<b>TOTAL SITE AREA</b>	<b>4,046 m<sup>2</sup></b>
------------------------	----------------------------



A	CONSENT	24/10/2023
Revision	Issue	Date



AUCKLAND | NORTHLAND

Project Name and Address  
**PARIHAKA MARAE**  
 101 TE IRINGA ROAD, KAIKOHE  
 PUNAKITARE 4K1A1A BLOCK

Project	Drawn By
<b>C0181</b>	<b>SD</b>

Client  
**WATERFLOW NZ LTD**

Sheet Title  
**STORMWATER LAYOUT PLAN**

Sheet  
400



FILE PATH: Z:\Projects\C0181\C0181-0195\Parihaka Marae - 101 Te Iringa Road, Kaitiaki - C0181\06 - Technical & Drawing\Drawings\C0181-SW-01.dwg

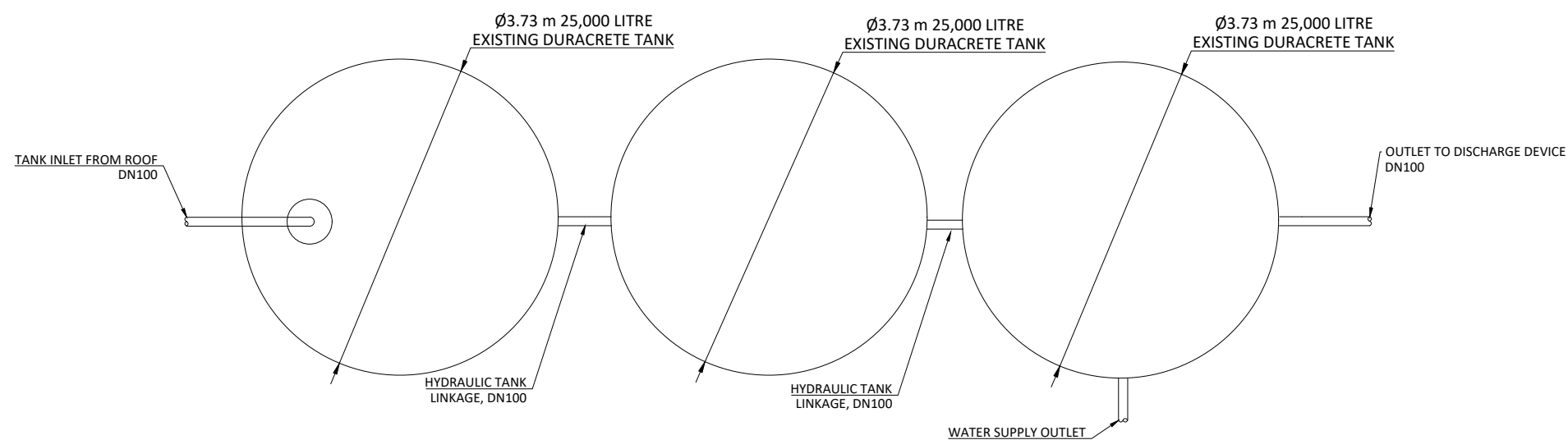
PLOTED: 03/04/2023

# GENERAL NOTES

- TANK, PIPING AND FITTINGS TO BE INSTALLED AS PER MANUFACTURERS RECOMMENDATIONS AND IN ACCORDANCE WITH NZBC E1, UNLESS SPECIFICALLY STATED OTHERWISE.
1. ALL WORK TO BE UNDERTAKEN IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 ACCEPTABLE SOLUTIONS, RELEVANT STANDARDS AND GUIDELINES.
  2. DO NOT SCALE FROM THIS DRAWING.
  3. CONTRACTOR IS TO ORGANISE ALL SET OUT, INSPECTIONS AND MONITORING AS REQUIRED TO MEET CONSENT CONDITIONS.

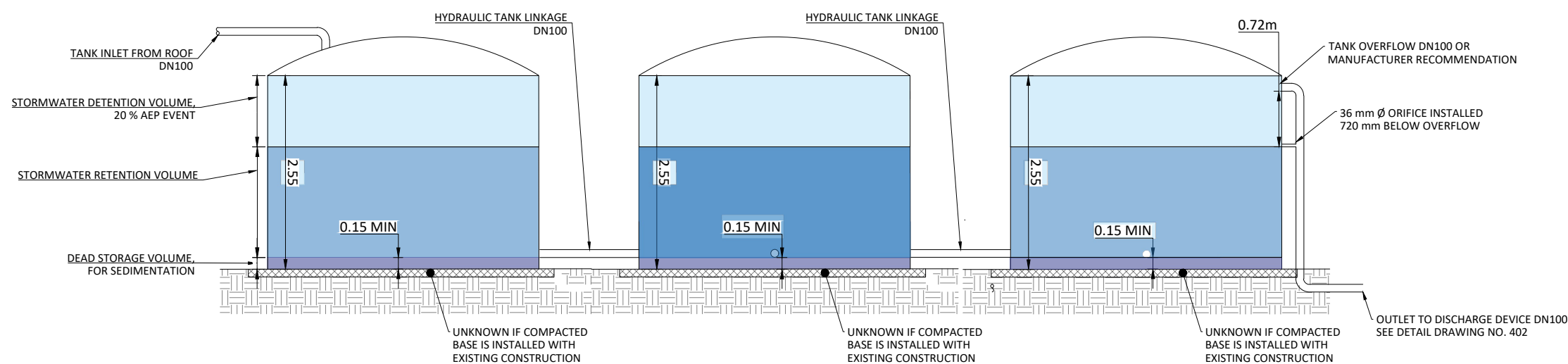
## TANK PLAN VIEW

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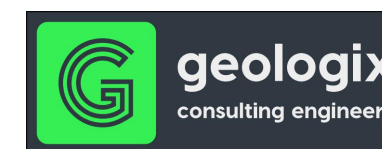


## TANK SIDE VIEW

1:50, A3



0	CONSENT	24/10/2023
Revision	Issue	Date



AUCKLAND | NORTHLAND

Project Name and Address  
**PARIHAKA MARAE**  
 101 TE IRINGA ROAD, KAIKOHE  
 PUNAKITARE 4K1A1A BLOCK

Project  
**C0181**

Drawn By  
**SD**

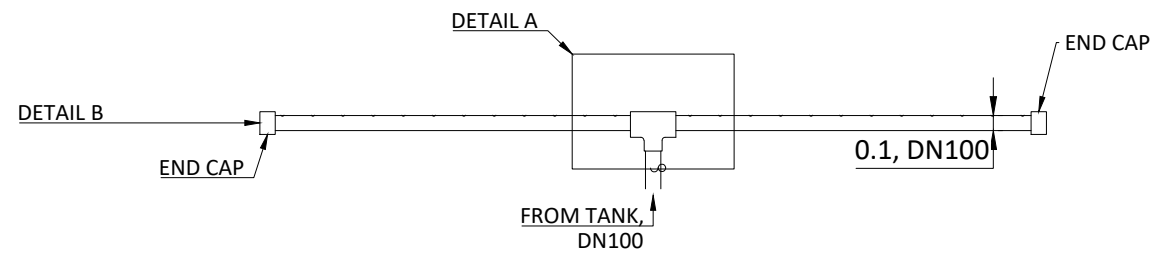
Client  
**WATERFLOW NZ LTD**

Sheet Title  
**EXISTING TANK DETAIL**

Sheet  
**401**

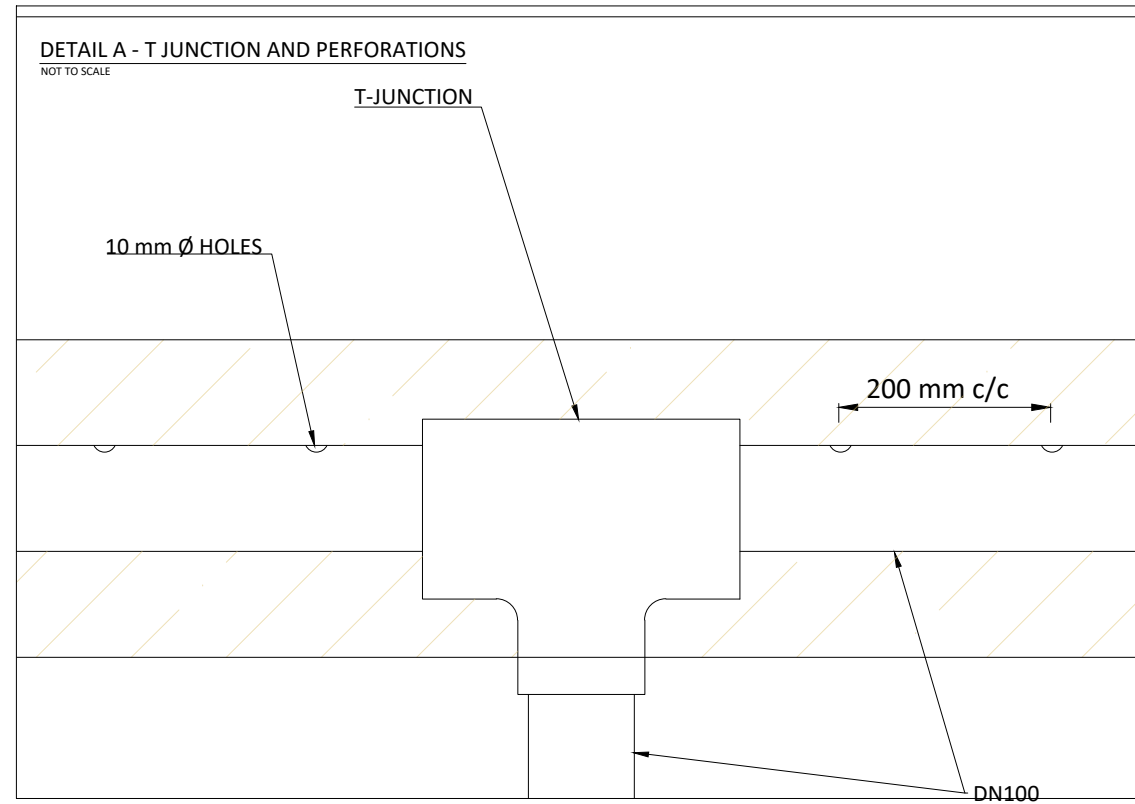
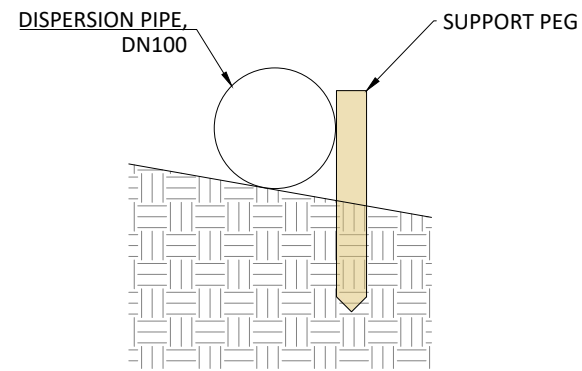
### OPTION 1: DISPERSION VIA ABOVE GROUND PIPE

NOT TO SCALE



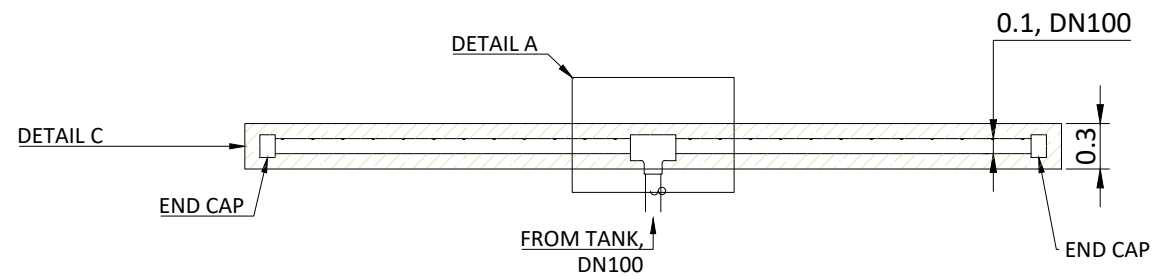
### DETAIL B - SIDE VIEW

NOT TO SCALE



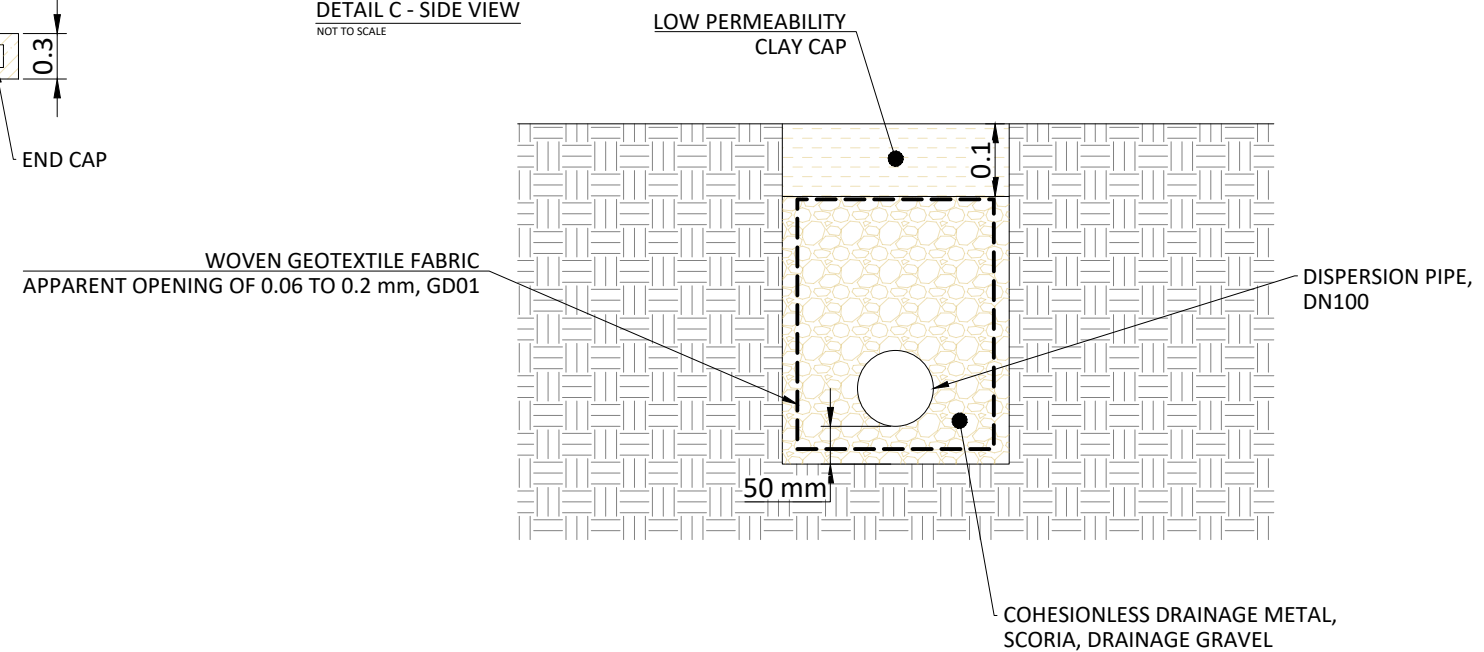
### OPTION 2: DISPERSION VIA BELOW GROUND TRENCH

NOT TO SCALE



### DETAIL C - SIDE VIEW

NOT TO SCALE



### GENERAL NOTES

1. ALL WORK TO BE UNDERTAKEN IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 ACCEPTABLE SOLUTIONS, RELEVANT STANDARDS AND GUIDELINES INCLUDING AUCKLAND COUNCIL GD01, WHERE APPLICABLE.
2. DO NOT SCALE FROM THIS DRAWING.
3. CONTRACTOR IS TO ORGANISE ALL SET OUT, INSPECTIONS AND MONITORING AS REQUIRED TO MEET CONSENT CONDITIONS.

0	CONSENT	24/10/2023
Revision	Issue	Date



AUCKLAND | NORTHLAND

Project Name and Address  
**PARIHAKA MARAE**  
 101 TE IRINGA ROAD, KAIKOHE  
 PUNAKITARE 4K1A1A BLOCK

Project  
**C0181**

Drawn By  
**SD**

Client  
**WATERFLOW NZ LTD**


Sheet Title  
**TYPICAL DISPERSION PIPE DETAIL**

Sheet  
**402**

## APPENDIX B

### Calculations



Project Ref:	CO181	<b>STORMWATER ATTENUATION TANK DESIGN</b>	
Project Address:	101 TE IRINGA ROAD, KAIKOHE		
Design Case:	CONCEPT FUTURE DEVELOPMENT		
Date:	24 October 2023	<b>50 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT</b>	

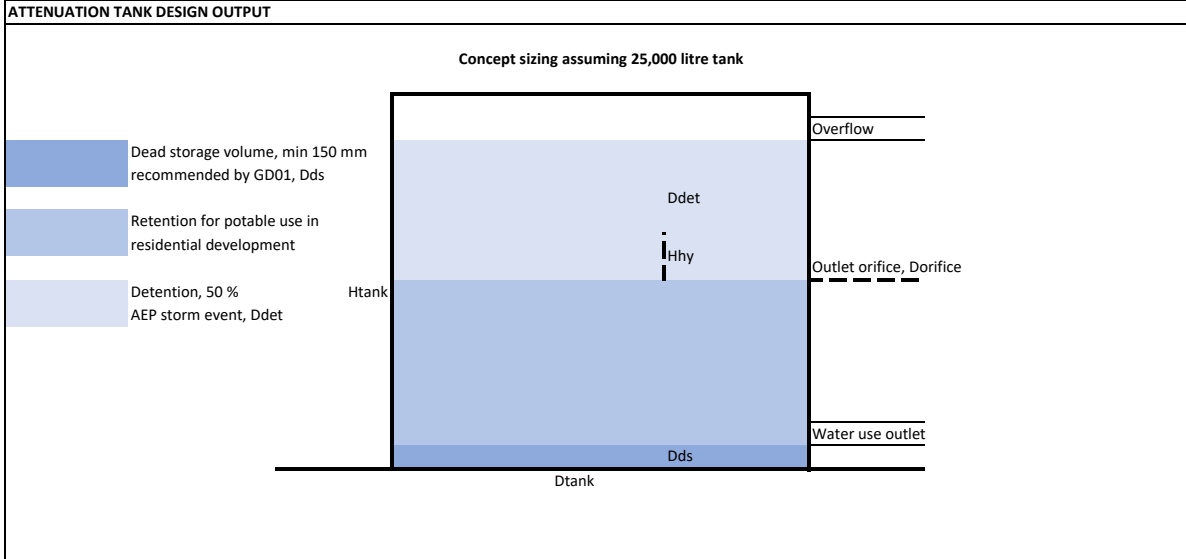
ATTENUATION DESIGN PROVIDED IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 FOR THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF PREDICTED 2.1 DEGREE CLIMATE CHANGE. RESIDENTIAL DEVELOPMENT AREAS ARE BASED ON EXISTING SURVEY DATA. RUNOFF COEFFICIENTS DETERMINED FROM FNDC ENGINEERING STANDARDS 2023 TABLE 4-3.

PREDEVELOPMENT SCENARIO				POST DEVELOPMENT SCENARIO			
ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	RUNOFF, l/s	ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	RUNOFF, l/s
IMPERVIOUS A	607	0.96	12.24	TO TANK	545	0.96	10.99
IMPERVIOUS B	0	0	0.00	OFFSET	750	0.80	12.60
IMPERVIOUS C	0	0	0.00	PERVIOUS	2751	0.59	34.10
EX. PERVIOUS	3439	0.59	42.62	EX. CONSENTED	0	0.96	0.00
<b>TOTAL</b>	<b>4046</b>	<b>TYPE C</b>	<b>54.86</b>	<b>TOTAL</b>	<b>4046</b>	<b>TYPE C</b>	<b>57.69</b>


PRE DEVELOPMENT RUNOFF			
50 % AEP RAINFALL INTENSITY, 10 MIN, i, mm/hr	60.2	mm/hr	* CLIMATE CHANGE FACTOR CALCULATED IN ACCORDANCE WITH NIWA
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	25.62	%	HIRDS RECOMMENDATIONS. HISTORIC RAINFALL INTENSITY, 10 MINUTES IS
50 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	75.62	mm/hr	MULTIPLIED BY POTENTIAL CLIMATE CHANGE FACTORS. NIWA
50 % AEP PRE DEVELOPMENT PEAK FLOW	54.86	l/s	RECOMMENDS THAT FOR 10 MINUTE TO 1 HOUR ADOPT THE 1 HR FACTOR.
80 % OF PRE DEVELOPMENT PEAK FLOW	43.89	l/s	

INCREASED POST DEVELOPMENT RUNOFF, 50 % AEP WITH CLIMATE CHANGE PROJECTION OF 2.1 DEGREES							
TIME, min	INTENSITY, mm/hr	CC FACTOR	CC INTENSITY, mm/hr	RUNOFF, Q, l/s	Allowable flow, l/s	Difference, l/s	Required Storage, litres
10	60.20	1.2562	75.62	57.69	31.29	26.40	15842
20	42.40	1.2562	53.26	40.63	31.29	9.35	11214
30	34.60	1.2562	43.46	33.16	31.29	1.87	3367
60	24.30	1.2562	30.53	23.29	31.29	No Att. Req.	0
120	16.80	1.2457	20.93	15.96	31.29	No Att. Req.	0
360	9.09	1.2058	10.96	8.36	31.29	No Att. Req.	0
720	5.96	1.1785	7.02	5.36	31.29	No Att. Req.	0
1440	3.79	1.1512	4.36	3.33	31.29	No Att. Req.	0
2880	2.32	1.1281	2.62	2.00	31.29	No Att. Req.	0
4320	1.70	1.1155	1.90	1.45	31.29	No Att. Req.	0

NOTE: ALLOWABLE FLOW PROVIDES FOR ANY OFFSET ARISING FROM FLOWS NOT DIRECTLY DISCHARGING TO TANK



SPECIFICATION		NOTES:
TOTAL STORAGE REQUIRED	15.842 m <sup>3</sup>	
TANK HEIGHT, H <sub>tank</sub>	2.6 m	Concept sizing assuming 25,000 litre tank
TANK DIAMETER, D <sub>tank</sub>	3.5 m	No. of Tanks 3
TANK AREA, A <sub>tank</sub>	28.86 m <sup>2</sup>	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, V <sub>tank</sub>	75045 litres	
REQUIRED STORAGE HEIGHT, D <sub>det</sub>	0.55 m	Below overflow
DEAD STORAGE VOLUME, D <sub>ds</sub>	0.15 m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.70 m	
AVERAGE DISCHARGE RATE, Q <sub>avg</sub>	0.00018 m <sup>3</sup> /s	
AVERAGE HYDRAULIC HEAD, H <sub>hy</sub>	0.27 m	
AREA OF ORIFICE, A <sub>orifice</sub>	6.86E-04 m <sup>2</sup>	
ORIFICE DIAMETER, D <sub>orifice</sub>	30 mm	Minimum 10 mm diameter
VELOCITY AT ORIFICE	3.28 m/s	
ACHIEVABLE STORAGE OF SURFACES	106345 litres/ 24hrs	
TO TANK IN 24 HOURS		
AREA TO TANK CAN SERVICE ATTENUATION?	YES	

Project Ref:	C0181	<b>STORMWATER ATTENUATION TANK DESIGN</b>	
Project Address:	101 TE IRINGA ROAD, KAIKOHE		
Design Case:	CONCEPT FUTURE DEVELOPMENT		
Date:	24 October 2023 REV 1		
		<b>20 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT</b>	

ATTENUATION DESIGN PROVIDED IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 FOR THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF PREDICTED 2.1 DEGREE CLIMATE CHANGE. RESIDENTIAL DEVELOPMENT AREAS ARE BASED ON EXISTING SURVEY DATA. RUNOFF COEFFICIENTS DETERMINED FROM FNDC ENGINEERING STANDARDS 2023 TABLE 4-3.

PREDEVELOPMENT SCENARIO				POST DEVELOPMENT SCENARIO			
ITEM	AREA, A, m2	COEFFICIENT, C	RUNOFF, l/s	ITEM	AREA, A, m2	COEFFICIENT, C	RUNOFF, l/s
IMPERVIOUS A	607	0.96	15.98	TO TANK	545	0.96	14.35
IMPERVIOUS B	0	0	0.00	OFFSET	750	0.8	16.45
IMPERVIOUS C	0	0	0.00	PERVIOUS	2751	0.59	44.51
EX. PERVIOUS	3439	0.59	55.64	EX. CONSENTED	0	0.96	0.00
<b>TOTAL</b>	<b>4046</b>	<b>TYPE C</b>	<b>71.61</b>	<b>TOTAL</b>	<b>4046</b>	<b>TYPE C</b>	<b>75.30</b>

#### PRE DEVELOPMENT RUNOFF

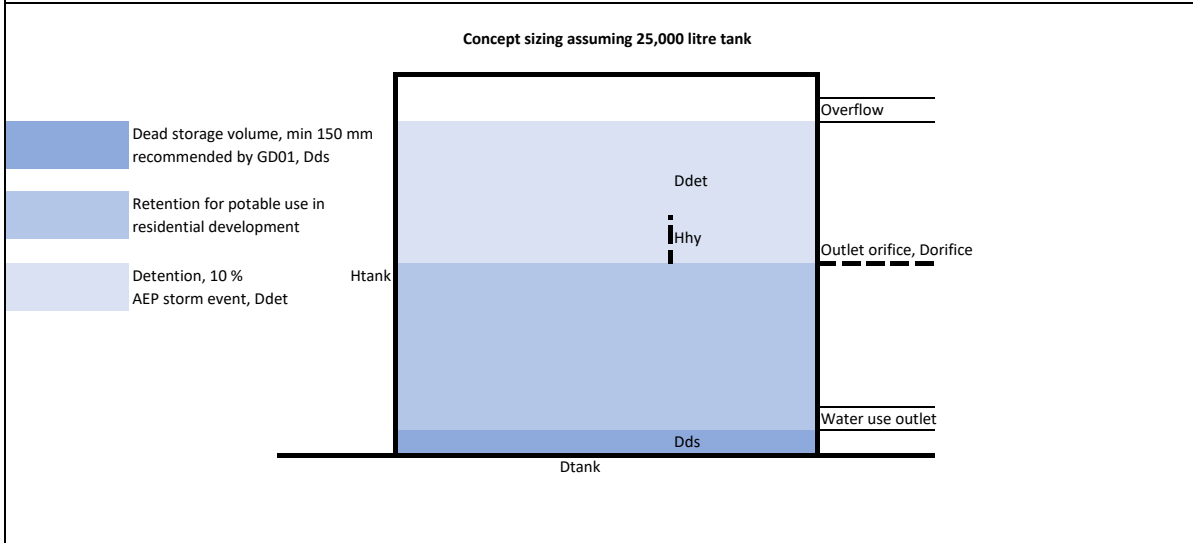
20 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	77.8	mm/hr	* CLIMATE CHANGE FACTOR CALCULATED IN ACCORDANCE WITH NIWA HIRDS RECOMMENDATIONS. HISTORIC RAINFALL INTENSITY, 10 MINUTES IS MULTIPLIED BY POTENTIAL CLIMATE CHANGE FACTORS. NIWA RECOMMENDS THAT FOR 10 MINUTE TO 1 HOUR ADOPT THE 1 HR FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	26.88	%	
20 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	98.7	mm/hr	
20 % AEP PRE DEVELOPMENT PEAK FLOW	71.61	l/s	
<b>80 % OF PRE DEVELOPMENT PEAK FLOW</b>	<b>57.29</b>	<b>l/s</b>	

#### INCREASED POST DEVELOPMENT RUNOFF, 10 % AEP WITH CLIMATE CHANGE PROJECTION OF 2.1 DEGREES

TIME, min	INTENSITY, mm/hr	CC FACTOR	CC INTENSITY, mm/hr	RUNOFF, Q, l/s	Allowable flow, l/s	Difference, l/s	Required Storage, litres
10	77.80	1.2688	98.71	75.30	40.84	34.46	20679
20	55.00	1.2688	69.78	53.24	40.84	12.40	14875
30	44.80	1.2688	56.84	43.36	40.84	2.52	4542
60	31.50	1.2688	39.97	30.49	40.84	No Att. Req.	0
120	21.90	1.2583	27.56	21.02	40.84	No Att. Req.	0
360	11.90	1.2205	14.52	11.08	40.84	No Att. Req.	0
720	7.81	1.1932	9.32	7.11	40.84	No Att. Req.	0
1440	4.97	1.1638	5.78	4.41	40.84	No Att. Req.	0
2880	3.05	1.1407	3.48	2.65	40.84	No Att. Req.	0
4320	2.24	1.1302	2.53	1.93	40.84	No Att. Req.	0


NOTE: ALLOWABLE FLOW PROVIDES FOR ANY OFFSET ARISING FROM FLOWS NOT DIRECTLY DISCHARGING TO TANK

#### ATTENUATION TANK DESIGN OUTPUT



#### SPECIFICATION

TOTAL STORAGE REQUIRED	20.679 m3	
TANK HEIGHT, Htank	2.6 m	Concept sizing assuming 25,000 litre tank
TANK DIAMETER, Dtank	3.5 m	No. of Tanks 3
TANK AREA, Atank	28.86 m2	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, Vtank	75045 litres	
REQUIRED STORAGE HEIGHT, Ddet	0.72 m	Below overflow
DEAD STORAGE VOLUME, Dds	0.15 m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.87 m	
AVERAGE DISCHARGE RATE, Qavg	0.00024 m3/s	
AVERAGE HYDRAULIC HEAD, Hhy	0.36 m	
AREA OF ORIFICE, Aorifice	1.02E-03 m2	
ORIFICE DIAMETER, Dorifice	36 mm	Note minimum 10 mm diameter
VELOCITY AT ORIFICE	3.75 m/s	
ACHIEVABLE STORAGE OF SURFACES	140487 litres/ 24hrs	
AREA TO TANK CAN SERVICE ATTENUATION?	YES	

Project Ref:	C0181	<b>STORMWATER ATTENUATION TANK DESIGN</b>	<b>10 % AEP STORM EVENT</b>	
Project Address:	101 TE IRINGA ROAD, KAIKOHE			
Design Case:	CONCEPT FUTURE DEVELOPMENT			
Date:	24 October 2023 REV 1			

ATTENUATION DESIGN PROVIDED IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 FOR THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF PREDICTED 2.1 DEGREE CLIMATE CHANGE. RESIDENTIAL DEVELOPMENT AREAS ARE BASED ON EXISTING SURVEY DATA.

RUNOFF COEFFICIENTS DETERMINED FROM FNDC ENGINEERING STANDARDS 2023 TABLE 4-3.

PREDEVELOPMENT SCENARIO				POST DEVELOPMENT SCENARIO			
ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	RUNOFF, l/s	ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	RUNOFF, l/s
IMPERVIOUS A	607	0.96	18.72	TO TANK	545	0.96	16.81
IMPERVIOUS B	0	0	0.00	OFFSET	750	0.8	19.28
IMPERVIOUS C	0	0	0.00	PERVIOUS	2751	0.59	52.14
EX. PERVIOUS	3439	0.59	65.18	EX. CONSENTED	0	0.96	0.00
<b>TOTAL</b>	<b>4046</b>	<b>TYPE C</b>	<b>83.90</b>	<b>TOTAL</b>	<b>4046</b>	<b>TYPE C</b>	<b>88.23</b>

#### PRE DEVELOPMENT RUNOFF

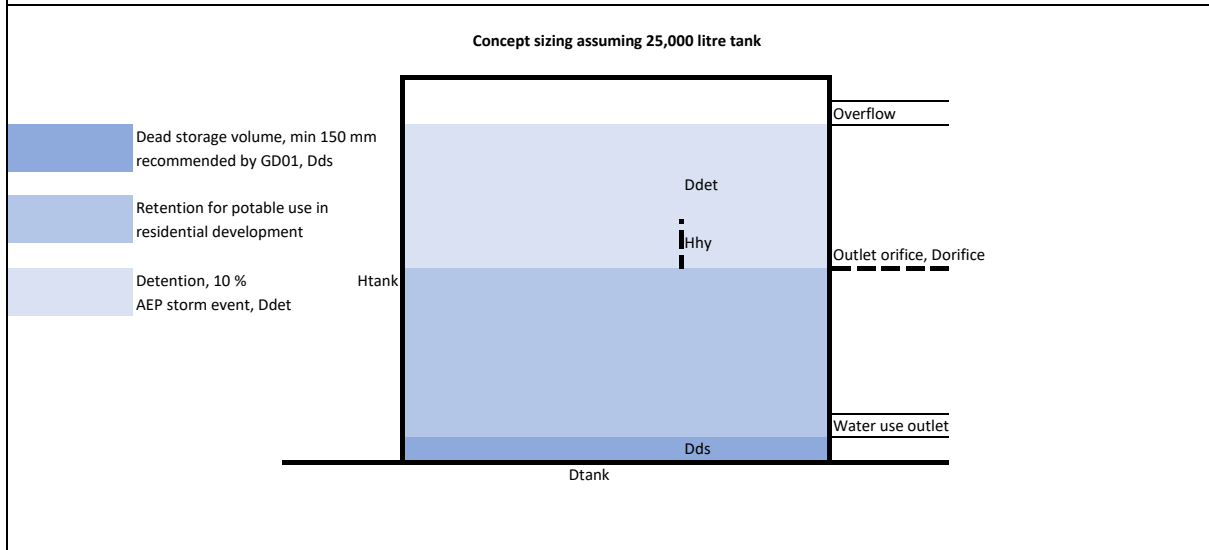
10 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	90.7	mm/hr	* CLIMATE CHANGE FACTOR CALCULATED IN ACCORDANCE WITH NIWA HIRDS RECOMMENDATIONS. HISTORIC RAINFALL INTENSITY, 10 MINUTES IS MULTIPLIED BY POTENTIAL CLIMATE CHANGE FACTORS. NIWA RECOMMENDS THAT FOR 10 MINUTE TO 1 HOUR ADOPT 1 HR FACTOR
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	27.51	%	
10 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	115.7	mm/hr	
10 % AEP PRE DEVELOPMENT PEAK FLOW	83.90	l/s	

#### INCREASED POST DEVELOPMENT RUNOFF, 10 % AEP WITH CLIMATE CHANGE PROJECTION OF 2.1 DEGREES

TIME, min	INTENSITY, mm/hr	CC FACTOR	CC INTENSITY, mm/hr	RUNOFF, Q, l/s	Allowable flow, l/s	Difference, l/s	Required Storage, litres
10	90.70	1.2751	115.65	88.23	64.63	23.60	14159
20	64.20	1.2751	81.86	62.45	64.63	No Att. Req.	0
30	52.40	1.2751	66.82	50.97	64.63	No Att. Req.	0
60	36.90	1.2751	47.05	35.89	64.63	No Att. Req.	0
120	25.70	1.2646	32.50	24.79	64.63	No Att. Req.	0
360	13.90	1.2268	17.05	13.01	64.63	No Att. Req.	0
720	9.18	1.1995	11.01	8.40	64.63	No Att. Req.	0
1440	5.85	1.1701	6.85	5.22	64.63	No Att. Req.	0
2880	3.59	1.147	4.12	3.14	64.63	No Att. Req.	0
4320	2.65	1.1365	3.01	2.30	64.63	No Att. Req.	0


NOTE: ALLOWABLE FLOW PROVIDES FOR ANY OFFSET ARISING FROM FLOWS NOT DIRECTLY DISCHARGING TO TANK

#### ATTENUATION TANK DESIGN OUTPUT



#### SPECIFICATION

TOTAL STORAGE REQUIRED	14.159 m <sup>3</sup>	
TANK HEIGHT, H <sub>tank</sub>	2.6 m	Concept sizing assuming 25,000 litre tank
TANK DIAMETER, D <sub>tank</sub>	3.5 m	No. of Tanks 3
TANK AREA, A <sub>tank</sub>	28.86 m <sup>2</sup>	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, V <sub>tank</sub>	75045 litres	
REQUIRED STORAGE HEIGHT, D <sub>det</sub>	0.49 m	Below overflow
DEAD STORAGE VOLUME, D <sub>ds</sub>	0.15 m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.64 m	
AVERAGE DISCHARGE RATE, Q <sub>avg</sub>	0.00016 m <sup>3</sup> /s	
AVERAGE HYDRAULIC HEAD, H <sub>hy</sub>	0.25 m	
AREA OF ORIFICE, A <sub>orifice</sub>	5.80E-04 m <sup>2</sup>	
ORIFICE DIAMETER, Dorifice	27 mm	Note minimum 10 mm diameter
VELOCITY AT ORIFICE	3.10 m/s	
ACHIEVABLE STORAGE OF SURFACES	165593 litres/ 24hrs	
AREA TO TANK CAN SERVICE ATTENUATION?	YES	

Project Ref:	C0181	<b>STORMWATER ATTENUATION TANK DESIGN</b>	
Project Address:	101 TE IRINGA ROAD, KAIKOHE		
Design Case:	CONCEPT FUTURE DEVELOPMENT		
Date:	24 October 2023 REV 1		
<b>1 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT</b>			

ATTENUATION DESIGN PROVIDED IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 FOR THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF PREDICTED 2.1 DEGREE CLIMATE CHANGE. RESIDENTIAL DEVELOPMENT AREAS ARE BASED ON EXISTING SURVEY DATA.

RUNOFF COEFFICIENTS DETERMINED FROM FNDC ENGINEERING STANDARDS 2023 TABLE 4-3.

PREDEVELOPMENT SCENARIO				POST DEVELOPMENT SCENARIO			
ITEM	AREA, A, m2	COEFFICIENT, C	RUNOFF, l/s	ITEM	AREA, A, m2	COEFFICIENT, C	RUNOFF, l/s
IMPERVIOUS A	607	0.96	27.86	TO TANK	545	0.96	25.02
IMPERVIOUS B	0	0	0.00	OFFSET	200	0.8	7.65
IMPERVIOUS C	0	0	0.00	PERVIOUS	2751	0.59	77.61
EX. PERVIOUS	3439	0.59	97.02	EX. CONSENTED	0	0.96	0.00
<b>TOTAL</b>	<b>4046</b>	<b>TYPE C</b>	<b>124.88</b>	<b>TOTAL</b>	<b>3496</b>	<b>TYPE C</b>	<b>110.28</b>

#### PRE DEVELOPMENT RUNOFF

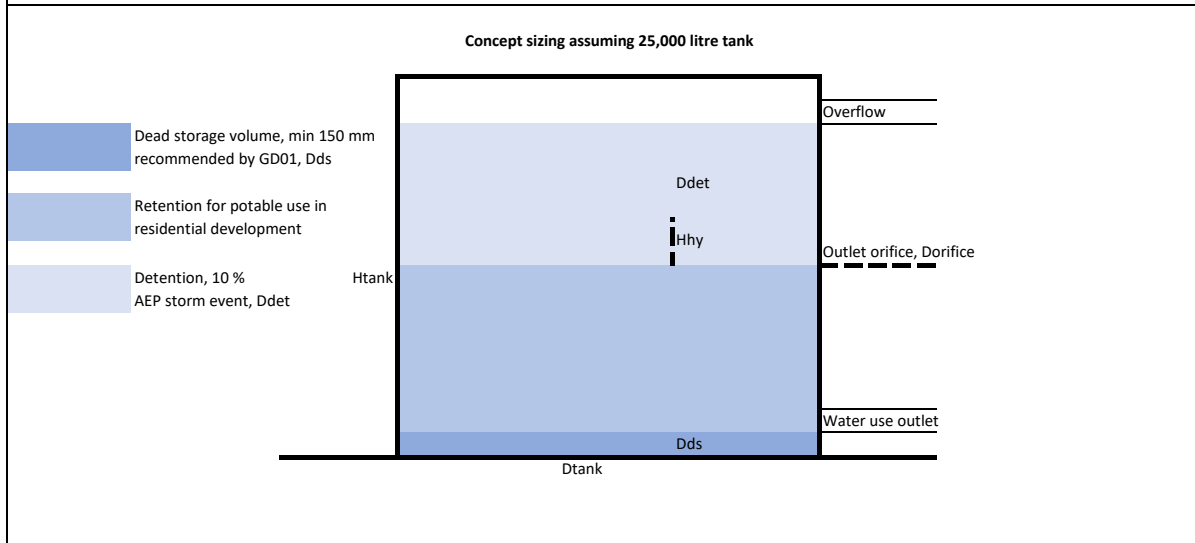
1 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	135.0	mm/hr	* CLIMATE CHANGE FACTOR CALCULATED IN ACCORDANCE WITH NIWA HIRDS RECOMMENDATIONS. HISTORIC RAINFALL INTENSITY, 10 MINUTES IS MULTIPLIED BY POTENTIAL CLIMATE CHANGE FACTORS. NIWA RECOMMENDS THAT FOR 10 MINUTE TO 1 HOUR ADOPT THE 1 HR FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	27.51	%	
1 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	172.1	mm/hr	
1 % AEP PRE DEVELOPMENT PEAK FLOW	124.88	l/s	
<b>80 % OF PRE DEVELOPMENT PEAK FLOW</b>	<b>99.91</b>	<b>l/s</b>	

#### INCREASED POST DEVELOPMENT RUNOFF, 10 % AEP WITH CLIMATE CHANGE PROJECTION OF 2.1 DEGREES

TIME, min	INTENSITY, mm/hr	CC FACTOR	CC INTENSITY, mm/hr	RUNOFF, Q, l/s	Allowable flow, l/s	Difference, l/s	Required Storage, litres
10	135.00	1.2751	172.14	110.28	92.26	18.02	10813
20	95.60	1.2751	121.90	78.09	92.26	No Att. Req.	0
30	78.30	1.2751	99.84	63.96	92.26	No Att. Req.	0
60	55.30	1.2751	70.51	45.17	92.26	No Att. Req.	0
120	38.70	1.2646	48.94	31.35	92.26	No Att. Req.	0
360	21.20	1.2268	26.01	16.66	92.26	No Att. Req.	0
720	14.00	1.1995	16.79	10.76	92.26	No Att. Req.	0
1440	8.97	1.1701	10.50	6.72	92.26	No Att. Req.	0
2880	5.53	1.147	6.34	4.06	92.26	No Att. Req.	0
4320	4.08	1.1365	4.64	2.97	92.26	No Att. Req.	0


NOTE: ALLOWABLE FLOW PROVIDES FOR ANY OFFSET ARISING FROM FLOWS NOT DIRECTLY DISCHARGING TO TANK

#### ATTENUATION TANK DESIGN OUTPUT



#### SPECIFICATION

TOTAL STORAGE REQUIRED	10.813 m3	
TANK HEIGHT, Htank	2.6 m	Concept sizing assuming 25,000 litre tank
TANK DIAMETER, Dtank	3.5 m	No. of Tanks 3
TANK AREA, Atank	28.86 m2	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, Vtank	75045 litres	
REQUIRED STORAGE HEIGHT, Ddet	0.37 m	Below overflow
DEAD STORAGE VOLUME, Dds	0.15 m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.52 m	
AVERAGE DISCHARGE RATE, Qavg	0.00013 m3/s	
AVERAGE HYDRAULIC HEAD, Hhy	0.19 m	
AREA OF ORIFICE, Aorifice	3.87E-04 m2	
ORIFICE DIAMETER, Dorifice	22 mm	Note minimum 10 mm diameter
VELOCITY AT ORIFICE	2.71 m/s	
ACHIEVABLE STORAGE OF SURFACES	251441 litres/ 24hrs	
AREA TO TANK CAN SERVICE ATTENUATION?	YES	

Project Ref:	C0181	STORMWATER DISPERSION PIPE/ TRENCH	
Project Address:	101 TE IRINGA ROAD, KAIKOHE		
Design Case:	CONCEPT FUTURE DEVELOPMENT	WEIGHTED RUNOFF	
Date:	24 October 2023		REV 1

**TP108 Worksheet 1 - Runoff curve number & Initial Abstraction**

Soil Class	Cover description	Curve Number, CN	Area	Product of CN * Area
TYPE C	TO TANK	98	545	53410
TYPE C	OFFSET	89	750	66750
TYPE C	PERVIOUS	74	2751	203574
TYPE C	EX. CONSENTED	98	0	0
		<b>Total</b>	<b>4046</b>	<b>323734</b>
		Total Pervious	2751 m2	
		Total Impervious	1295 m2	
		<b>Weighted Runoff, CN</b>	<b>80.01</b>	
		<b>Weighted Initial Abstraction, Ia</b>	<b>3.4 mm</b>	

**TP108, FIGURE 5.1**

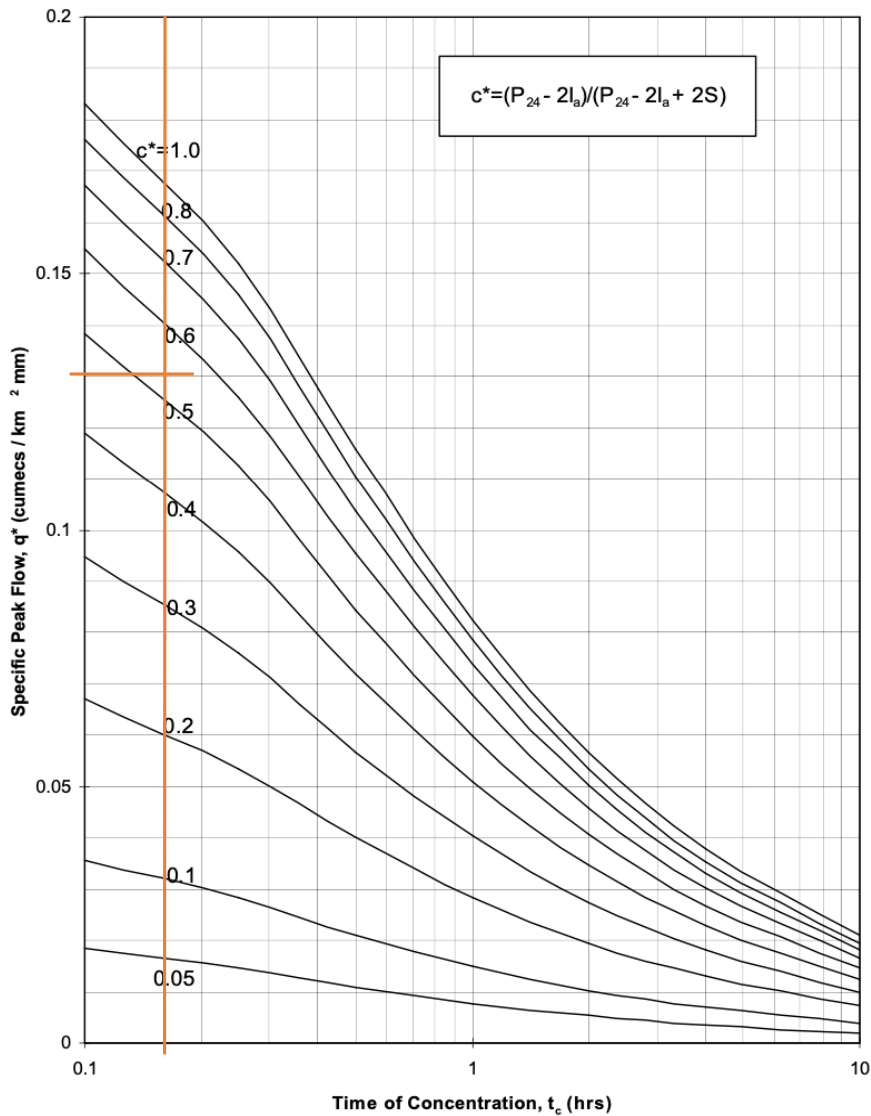



Figure 5.1 Specific Peak Flow Data

Project Ref:	C0181	<b>STORMWATER DISPERSION PIPE/ TRENCH</b>	
Project Address:	101 TE IRINGA ROAD, KAIKOHE		
Design Case:	CONCEPT FUTURE DEVELOPMENT		
Date:	24 October 2023 REV 1		
		<b>DISCHARGE DEVICE - LEVEL SPREADER OR TRENCH</b>	

DESIGN BASED ON REFERENCED DEVELOPMENT PLANS TO PROVIDE A MINIMUM LENGTH OF ABOVE OR BELOW GROUND STORMWATER TANK OVERFLOW DISCHARGE DISPERSION DEVICE. IN GENERAL ACCORDANCE WITH TP108 GRAPHICAL METHOD BASED ON NIWA HIRDS DEPTH-DURATION DATA AND ACCOUNTING FOR THE PROVISION OF CLIMATE CHANGE.

DESIGN STORM EVENT 10% AEP EVENT

**ESTIMATE DESIGN RAINFALL DEPTH, P24**

RAINFALL DEPTH	24 HR DURATION	10%	140	mm
CLIMATE CHANGE FACTOR	2.1 DEGREE INCREASE, 24 HR	10%	8.1	%
RAINFALL DEPTH WITH CC, P24			151.3	mm

**ESTIMATE DETENTION VOLUME, TP108 GRAPHICAL METHOD**


PEAK FLOW RATE,  $q_p = q^* \times A \times P_{24}$

WHERE,  
 $q^*$  = SPECIFIC PEAK FLOW RATE (l/s)  
 $P_{24}$  = 24 HR DESIGN RAINFALL DEPTH (mm)  
 $A$  = CATCHMENT AREA TO BE MITIGATED (m<sup>2</sup>)

CURVE NUMBER, CN (WEIGHTED)	80	See summary table.
INITIAL ABSTRACTION, $I_a$	3.40 mm	As TP108, adopt 0 mm impervious, 5 mm pervious, value adopted is weighted
MITIGATION AREA, $A_m$	1295 m <sup>2</sup>	Impervious areas within this design
SOIL STORAGE, $S$	63.4 mm	
RUNOFF INDEX, $C^*$	0.53 mm	
TIME OF CONCENTRATION, $t_c$	0.167	hrs
SPECIFIC PEAK FLOWRATE, $q^*$	0.13	TP108, Figure 5.1, see next page.
PEAK FLOWRATE, $q_p$	25.48	l/s
RUNOFF DEPTH, $Q_{24}$	103.5	mm
RUNOFF VOLUME, $V_{24}$	134080	litres

**CONSTRUCTION OF DISPERSION ABOVE GROUND PIPE OR PIPE WITHIN TRENCH**

DIA. OF ORIFICE, $D$	10	mm
AREA OF ORIFICE, $A$	78.54	mm <sup>2</sup>
DESIGN VELOCITY, $D_v$	3.75	m/s
NUMBER OF ORIFICES	87	No.
ORIFICE INTERVALS, $C/C$	200	mm
DISPERSION PIPE LENGTH	17.2	m

Project Ref:	C0181	<b>STORMWATER ATTENUATION TANK DESIGN</b>	
Project Address:	101 TE IRINGA ROAD, KAIKOHE		
Design Case:	CONCEPT FUTURE DEVELOPMENT	<b>CLIMATE CHANGE FACTORS</b>	
Date:	24 October 2023	REV 1	

## CLIMATE CHANGE PROJECTIONS

REPRODUCED FROM NIWA HIRDS, <https://niwa.co.nz/information-services/hirds/help>

Duration/ARI	2 yr	5 yr	10 yr	20 yr	30 yr	40 yr	50 yr	60 yr	80 yr	100 yr
1 hour	12.2	12.8	13.1	13.3	13.4	13.4	13.4	13.5	13.5	13.6
2 hours	11.7	12.3	12.6	12.8	12.9	12.9	12.9	13	13	13.1
6 hours	9.8	10.5	10.8	11.1	11.2	11.3	11.3	11.3	11.4	11.4
12 hours	8.5	9.2	9.5	9.7	9.8	9.9	9.9	9.9	10	10
24 hours	7.2	7.8	8.1	8.2	8.3	8.4	8.4	8.4	8.5	8.5
48 hours	6.1	6.7	7	7.2	7.3	7.3	7.4	7.4	7.4	7.5
72 hours	5.5	6.2	6.5	6.6	6.7	6.8	6.8	6.8	6.9	6.9
96 hours	5.1	5.7	6	6.2	6.3	6.3	6.4	6.4	6.4	6.4
120 hours	4.8	5.4	5.7	5.8	5.9	6	6	6	6	6.1

HIRDS V4 Intensity-Duration-Frequency Results

SiteName: 101 Te Hinga Road

Coordinate system: WGS84

Longitude: 173.7746

Latitude: -35.4553

DDF Mode Parameters: c d e f R h i

Values: 0.00270693 0.48089277 -0.01124585 -0.0029804 0.25277612 -0.01166655 3.09759955

Example: Duration (hrs) ARI (yrs) x V Rainfall Rate (mm/hr) 8.966734881

Rainfall intensities (mm/hr) :: Historical Data

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.

Intensity standard error (mm/hr) :: Historical Data

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.

Rainfall intensities (mm/hr) :: RCP2.6 for the period 2031-2050

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.

Rainfall intensities (mm/hr) :: RCP2.6 for the period 2031-2100

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.

Rainfall intensities (mm/hr) :: RCP4.5 for the period 2031-2050

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.

Rainfall intensities (mm/hr) :: RCP4.5 for the period 2031-2100

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.

Rainfall intensities (mm/hr) :: RCP6.0 for the period 2031-2050

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.

Rainfall intensities (mm/hr) :: RCP6.0 for the period 2031-2100

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.

Rainfall intensities (mm/hr) :: RCP8.5 for the period 2031-2050

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.

Rainfall intensities (mm/hr) :: RCP8.5 for the period 2031-2100

Table with columns: ARI, AEP, 10m, 20m, 30m, 1h, 2h, 6h, 12h, 24h, 48h, 72h, 96h, 120h. Rows include values for 1.58, 2, 5, 10, 20, 30, 40, 50, 60, 80, 100, 250 ARI.







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## APPENDIX C

### Product Specifications



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## APPENDIX D

### Assessment Criteria



### FAR NORTH DISTRICT PLAN – 11.3 STORMWATER MANAGEMENT

Assessment Criteria	Response
a. the extent to which building site coverage and impermeable surfaces contribute to total catchment impermeability and the provisions of any catchment or drainage plan for that catchment;	The proposed development presents as only a minor increase of the total catchment impermeability and has been fully mitigated to permitted activity standards provided the recommendations of this report are adopted.
b. The extent to which Low Impact Design principles have been used to reduce site impermeability.	Stormwater management and attenuation devices have been designed to cater for the 20 % AEP event flow rates to 80% of the pre-development according to good practice guidelines and FNDC Engineering Standards.
c. any cumulative effects on total catchment impermeability;	None anticipated provided the recommendations of this report are adopted.
d. the extent to which building site coverage and impermeable surfaces will alter the natural contour or drainage of the site or disturb the ground and alter its ability to absorb water;	Natural contour will be retained. Not anticipated to alter its ability to absorb water. Provided the recommendations of this report are adopted.
e. the physical qualities of the soil type;	No changes anticipated.
f. Any adverse effects on the life supporting capacity of soils.	No effects anticipated.
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.	Wastewater disposal field area will not be affected. Water tanks are near boundary and discharge device drains out of the site boundary.
h. The extent to which paved, impermeable surfaces are necessary for the proposed activity.	No unnecessary impermeable surfaces sited. Development is modest and in line with adjacent approved site development.
i. The extent to which landscaping may reduce adverse effects of run-off.	Not required.
j. Any recognised standards promulgated by industry groups.	Attenuation in the runoff tank to attenuate runoff for up to and including the 20 % AEP event flow rates to 80% of the pre-development with provision of climate change.
k. The means and effectiveness of mitigating stormwater run-off to that expected by the permitted activity threshold.	Attenuation is a proven method for controlling stormwater runoff.
l. The extent to which the proposal has considered and provided for climate change.	Climate change factor, 2.1 degrees.
m. The extent to which stormwater detention ponds and other engineering solutions are used to mitigate any adverse effects.	Not required.

## **Project location – Wastewater Treatment System for Parihaka Marae at 101 Te Iringa Road**

*As requested by the Parihaka Marae Trustees, we (Waterflow NZ Ltd), are engaged to assess the stability and the soil condition for a suitable Onsite Wastewater Treatment System and Disposal field system for the Parihaka Marae at 101 Te Iringa Road.*

We understand it is proposed to renovate / build a Marae used for Tangihanga events (day+ overnight) max of 3 days fortnightly and Hui twice a month, potable water for use across the site is collected via rainwater tanks. Due to the size of the section the discharge of the treated effluent will be on the adjacent properties owned by members of the Trust.

### **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 AS/NZS 1547:2012 Table H4 of:

- Tangi day visitor 3 days every fortnight of 40 ppl at 40L per person per day
- Tangi overnight visitor 3 days every fortnight of 40 ppl, at 150L wastewater production per person per day
- Hui attendee twice a month of 20 ppl, at 40L per person per day
- Max Wastewater production per day is 7600L buffered to a daily discharge of 2400L/per day
- Disposal system to be ETS beds in Class 5 Soils, (as per AC TP-58, Table 5.1) with a DLR of 12mm taking in consideration the advanced secondary treatment level of the effluent

### **What are the disposal field requirements?**

We recommend an EconoTreat VBB-C-2200-Twin including a 22500l Buffer tanks, an advanced secondary Treatment System with de-nitrification to ETS (evapotranspiration & seepage) Beds at a recommended loading rate of 12l/m<sup>2</sup>/day for silty clay-loamy soils. The primary irrigation field requires 200m<sup>2</sup> to be laid on level contours. And a minimum reserve field of 100% is recommended.

### **Is Discharge Consent required?**

Yes, due to proposed activities onsite the Wastewater volume exceeds the Northland Regional Council and Far North's Districts 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

**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**

## **STATEMENT OF DESIGN - PS1**

**Issued by:** Dean Hoyle

**To:** PARIHAKA MARAE TRUSTEES

**Copy to be supplied to:** Far North District Council

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

**At:** 101 TE IRINGA ROAD, KAIKOHE

**Legal Description:** Lot Punakitere 4K1A1A Block DP .

Waterflow NZ Ltd has been engaged by PARIHAKA MARAE TRUSTEES 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: PARIHAKA MARAE TRUSTEES 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: 17/01/2022

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

**PARIHAKA MARAE TRUSTEES**  
**101 TE IRINGA ROAD**  
**KAIKOHE**  
**Block DP .**  
**17.01.2022**

**[ ONSITE WASTEWATER DESIGN REPORT ]**

Onsite Wastewater Design Report by Waterflow NZ Ltd – Copyright 2014



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**Attachments**

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



**PART A: CONTACT AND PROPERTY DETAILS**

**A 1. Consultant / Evaluator**

<b>Name:</b>	Dean Hoyle
<b>Company/Agency:</b>	Waterflow New Zealand Ltd
<b>Address:</b>	1160 SH 12 Maungaturoto
<b>Phone:</b>	09 431 0042
<b>Fax:</b>	09 431 8845
<b>Email Address:</b>	<a href="mailto:dean@waterflow.co.nz">dean@waterflow.co.nz</a>

**A 2: Applicant Details**

<b>Applicant Name:</b>	PARIHAKA MARAE TRUSTEES
<b>Company Name:</b>	
<b>Property Owner:</b>	PARIHAKA MARAE TRUSTEES
<b>Owner Address:</b>	101 TE IRINGA ROAD, KAIKOHE
<b>Phone:</b>	
<b>Mobile:</b>	
<b>Email Address:</b>	

**A 3: Site Information**

<b>Sited Visited by:</b>	Caleb Pirini	<b>Date:</b>	
<b>Physical Address:</b>	101 TE IRINGA ROAD, KAIKOHE		
<b>Territorial Authority:</b>	Far North District Council		
<b>Regional Council:</b>	Northland Regional Council		
<b>Regional Rule</b>	Resource Consent		
<b>Legal Status of Activity:</b>	<b>Permitted:</b>	<input checked="" type="checkbox"/> x	<b>Controlled:</b> <input type="checkbox"/> <b>Discretionary:</b> <input type="checkbox"/>
<b>Total Property Area (m<sup>2</sup>):</b>	4046m <sup>2</sup>		
<b>Map Grid Reference:</b>			
<b>Legal Description of Land (as on Certificate of Title):</b>			
<b>Lot No:</b>	Punakitere 4K1A1A Block		
<b>DP No:</b>	.		
<b>CT No:</b>			

**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"/>
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**If yes, give reference No's and description:**

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

<b>Status of building(s) to be serviced:</b>	<b>New</b>	<input type="checkbox"/>	<b>Existing</b>	<input checked="" type="checkbox"/>	<b>Multiple</b>	<input type="checkbox"/>
<b>How many dwellings on the property?</b>	Parihaka Marae					
<b>Capacity of building:</b>	<b>Building 1</b>	Multiple groups using the Facilities - see Flow Calculation attached				
<b>(or number of bedrooms)</b>	<b>Building 2</b>					
	<b>Building 3</b>					
	<b>Other:</b>					
<b>Notes:</b>						

**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 and soakage		
Flooding potential?	Yes:	No:	x
If Yes, specify relevant flood levels relative to disposal area:			
Site characteristics:	a communal rural property. Property is generally covered with pasture grass and trees. Property boundaries are on Te Iringa Road to the West and farmland on all other boundaries.		

**B 2: Slope Stability**

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

Yes:		No:	x
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If no, why not?

Low slope:	x	No signs of instability:	x	Other:	
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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		West	
North-West	x	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)
<b>Boundaries:</b>	>1.5	>1.5
<b>Surface Water:</b>	>15	>15
<b>Ground Water:</b>	>1.2	>1.2
<b>Stands of Trees / Shrubs:</b>	n/a	n/a
<b>Wells/Water Bores:</b>	>20	>20
<b>Embankments / Retaining Walls:</b>	>3	>3
<b>Buildings:</b>	>3	>3
<b>Other:</b>		

**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"/>
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If yes, please specify the effect of the fill on wastewater disposal:

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**C 3: Permeability Testing**

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

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

250mm 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
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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: (As per Calculations attached) 2: 3:
Design occupance (people): (as per AC TP-58, Table 6.1)	1: (As per Calculations attached) 2: 3:
	<b>Black / Grey water</b>
Per capita wastewater production (litres/person/day): (as per ARC TP-58, Table 6.2)	1: (As per Calculations attached) 2: 3:
Total daily wastewater production (litres per day):	7600 L/day (Buffered to 2400L/p/d)

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

Yes:	x	No:	
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**D 5: Gross lot area to discharge ratio:**

Gross lot area:	4046 m <sup>2</sup>
Total daily wastewater production (litres/day):	2400 L
Lot area to discharge ratio:	1.69

**D 6: Net Lot Area**

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

Net lot area (m <sup>2</sup> ):	3046 m <sup>2</sup>
Reserve area (m <sup>2</sup> ):	100%

**PART E: LAND DISPOSAL METHOD**

**E 1: Indicate the proposed loading method:**

	<b>Black / Grey Water</b>
Gravity Dose:	
Dosing Siphon:	
Pump:	BIA-B25VAS2

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

Total Design Head (m):	5
Pump Chamber Volume (litres):	5000
Emergency Storage Volume (litres):	5000

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

Yes:	<input checked="" type="checkbox"/>	No:	<input type="checkbox"/>
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**E 3: Identify the type(s) of Land Disposal method proposed for this site:**

	<b>Black / Grey Water</b>
P.C.D.I. Dripper Irrigation:	
L.P.E.D. System:	
Evapo-Transpiration Beds:	ETS 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	<b>Black / Grey Water</b>
Loading Rate (litres/m <sup>2</sup> /day):	12
Disposal Area Basal (m <sup>2</sup> ):	200
Areal (m <sup>2</sup> ):	

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

Length (m):	33.3	No. ETS Beds	2	Hole Size:	16.0
Width (m):	3.0	Spacing (m):	1.5	Hole Spacing:	500.0
Notes:	Conventional ETS beds laid on level contour. To be protected from stock and vehicle movements, as per schematic drawing attached. See schematic drawing attached.				



## **PART F: PROPOSED WASTEWATER TREATMENT SYSTEM**

A Econotreat EconoTreat VBB-C-2200-Twin System with a 225000l buffer tank, fed through ETS Beds 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 2400ltrs 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**



250mm 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.

<b>Prepared By:</b>	
<b>Name:</b>	Alexandra Sabath - Wastewater Design Technician
<b>Signature:</b>	
<b>Date:</b>	17/01/2022

<b>Reviewed By:</b>	
<b>Name:</b>	Dean Hoyle – PS Author ‘3037’ Auckland Council, NZQA Onsite Wastewater Training/Opus, BOINZ OWM, HBRC Approved Designer
<b>Signature:</b>	
<b>Date:</b>	17/01/2022

**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](http://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

## Parihaka Marae

Proposal is to design a treatment system that will cater for a maximum loading scenerio over a fortnight/month period.

Discharge per Day	System Recommendation	Buffer Required	DLR Beds
2400	VBB-C-2200 - Twin	21600	12
			200

Event	Numbers	Flow Rates	Daily Flow	Frequency per Month	Duration
Day Visitors Tangi	40	40	1600	2	3
Overnight Tangi	40	150	6000	2	3
Hui	20	40	800	2	1

Parihaka Marae Occupancy/Flow Calculations						
Day	Tangihanga Day	Tangihanga Night	Hui	Total Flow	Discharge L/p/day	Buffer L/p/day
Mon 1	0	0	800	800	2400	0
Tues 2	0	0	0	0	2400	0
Wed 3	0	0	0	0	2400	0
Thurs 4	0	0	0	0	2400	0
Fri 5	1600	6000	0	7600	2400	5200
Sat 6	1600	6000	0	7600	2400	10400
Sun 7	1600	6000	0	7600	2400	15600
Mon 8	0	0	0	0	2400	13200
Tues 9	0	0	0	0	2400	10800
Wed 10	0	0	0	0	2400	8400
Thurs 11	0	0	0	0	2400	6000
Fri 12	1600	6000	0	7600	2400	11200
Sat 13	1600	6000	0	7600	2400	16400
Sun 14	1600	6000	0	7600	2400	21600
Mon 15	0	0	800	800	2400	20000
Tues 16	0	0	0	0	2400	17600
Wed 17	0	0	0	0	2400	15200
Thurs 18	0	0	0	0	2400	12800
Fri 19	0	0	0	0	2400	10400
Sat 20	0	0	0	0	2400	8000
Sun 21	0	0	0	0	2400	5600

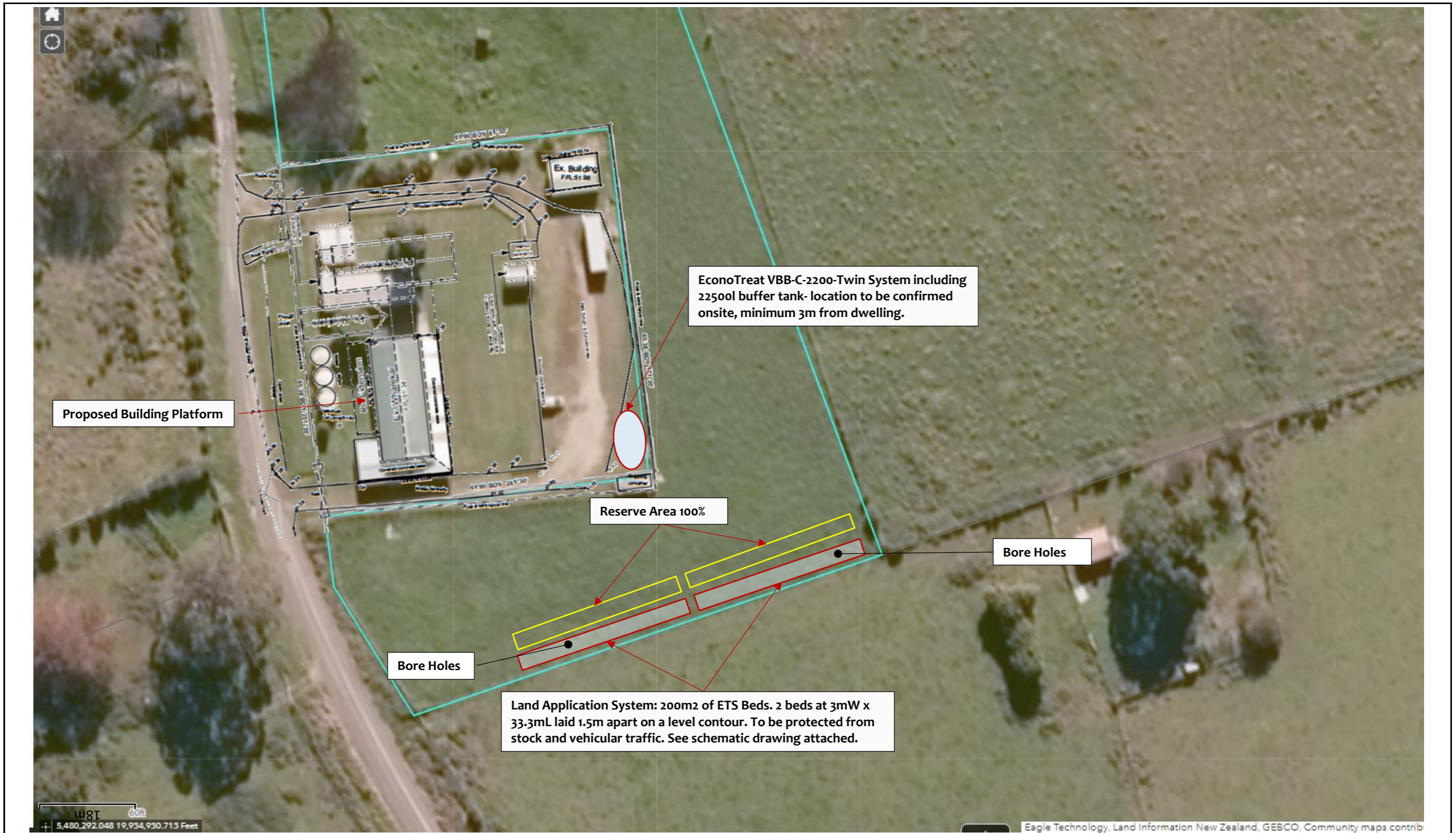
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Fri 26	0	0	0	0	2400	0
Sat 27	0	0	0	0	2400	0
Sun 28	0	0	0	0	2400	0
						21600
						<b>22500 Litre Buffer Volume required</b>



Enlargement on next page



<p><b>SITE LOCATION PLAN:</b></p> <p>PARIHAKA MARAE TRUSTEES          101 TE IRINGA ROAD          KAIKOHE          Lot Punakitere 4K1A1A BlockDP .          0.4046HA</p>	<p><b>SCALE:</b></p> <p>1 : 265</p> <p>@ A3</p>
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Eagle Technology, Land Information New Zealand, GEBCO, Community maps contrib



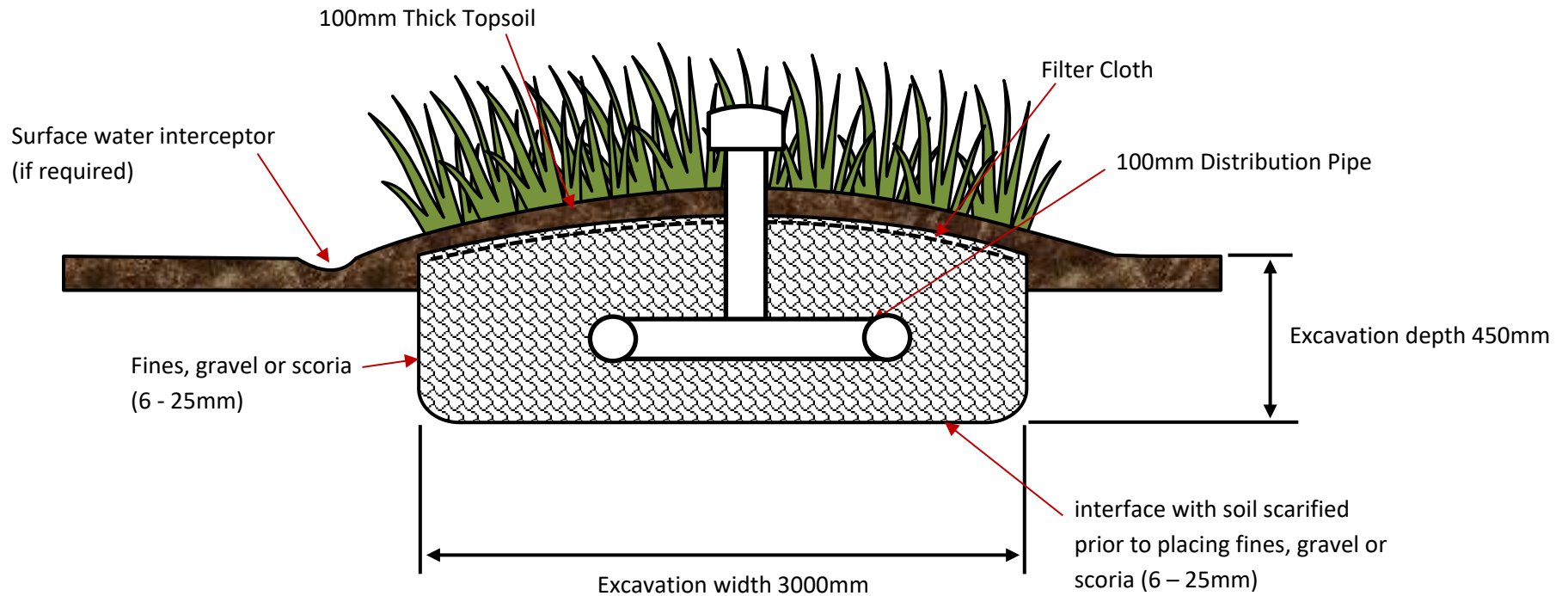
DATE DRAW: 17/01/2022  
 PREPARED BY: Alexandra Sabath  
 REVISED: Dean Hoyle

**SITE LAYOUT PLAN:**  
 PARIHAKA MARAE TRUSTEES  
 101 TE IRINGA ROAD  
 KAIKOHE  
 Lot Punakitere 4K1A1A Block DP .  
 0.4046HA

**SCALE:**  
 1 : 63  
 @ A3



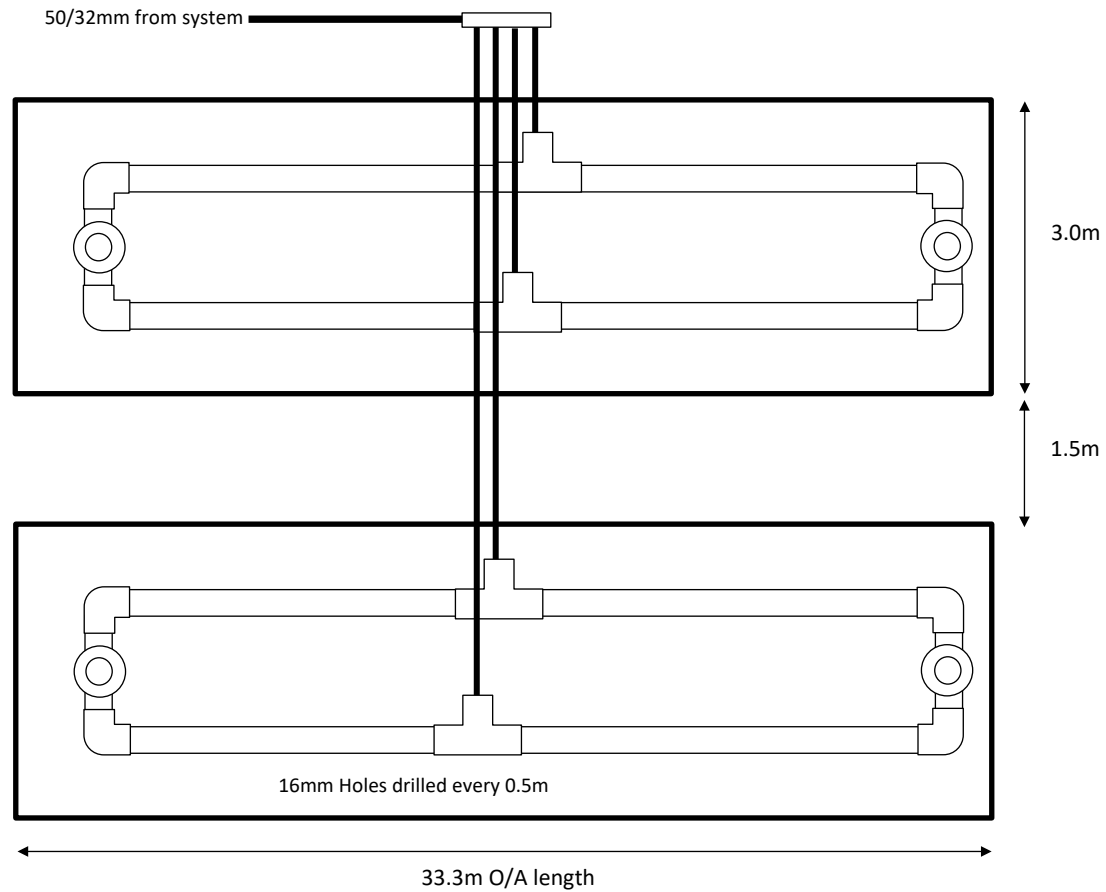
## ETS (EVAPOTRANSPIRATION SEEPAGE) CONTOUR BEDS



The standard width for ETS beds is from 750 – 1500mm, but 1800mm up to 3000mm maximum can be utilised provided crowing to shed rainfall is increased accordingly. Contour ETS beds of 450mm to 750mm width can be used on sloping sites.

# ETS (EVAPOTRANSPIRATION SEEPAGE) CONTOUR BEDS

Top Elevation



# **Assessment of Environmental Effects**

## **PARIHAKA MARAE TRUSTEES of 101 TE IRINGA ROAD, KAIKOHE Lot Punakitere 4K1A1A Block DP .**

### **1.1 Description of Proposal**

The owners of this site propose the construction of a new Marae.

### **1.2 Site Description**

This site, located at 101 TE IRINGA ROAD, is a a communal rural property. Property is generally covered with pasture grass and trees. Property boundaries are on Te Iringa Road to the West and farmland on all other boundaries.

### **1.3 Wastewater Volume**

In calculating the wastewater flows we have allowed for a maximum occupancy, based on the proposed Marae (as per AS/NZS 1547:2012 Table J1). Total wastewater production is based on an allowance of (various) litres per person per day (as per AS/NZS 1547:2012 Table H3, Note 2), which is conservative given that water supply is roof collected rain water and

### **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 LPED dispersal system into a purpose-designed ETS bed system, 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

- Buffer Tank

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 land application system uses a LPED dispersal system into ETS beds, to disperse the treated wastewater into the receiving soils and dense planting is required to enhance evapo-transpiration. This land application system will be installed in conjunction with existing and proposed landscaping as detailed on the site plan.

## 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 ETS Beds. 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 ETS Beds 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 land application 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 are 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 visual checks of the treatment system and land application system. 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 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 <sup>3</sup> )	3.4	1.5	A+	<5	<10	<20	<30	≥30
TSS (g/m <sup>3</sup> )	4.98	3.49	A+	<5	<10	<20	<30	≥30
Total nitrogen TN (g/m <sup>3</sup> )	13.6	1.3	A	<5	<15	<25	<30	≥30
Ammonia Nitrogen NH <sub>4</sub> -N (g/m <sup>3</sup> )	1.1	1.8	A	<1	<5	<10	<20	≥20
Total phosphorus TP (g/m <sup>3</sup> )	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](http://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

#### **Aeration Tank**

5200L Nominal Capacity  
2500mm Long  
1700mm Wide  
1975mm High

### 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***

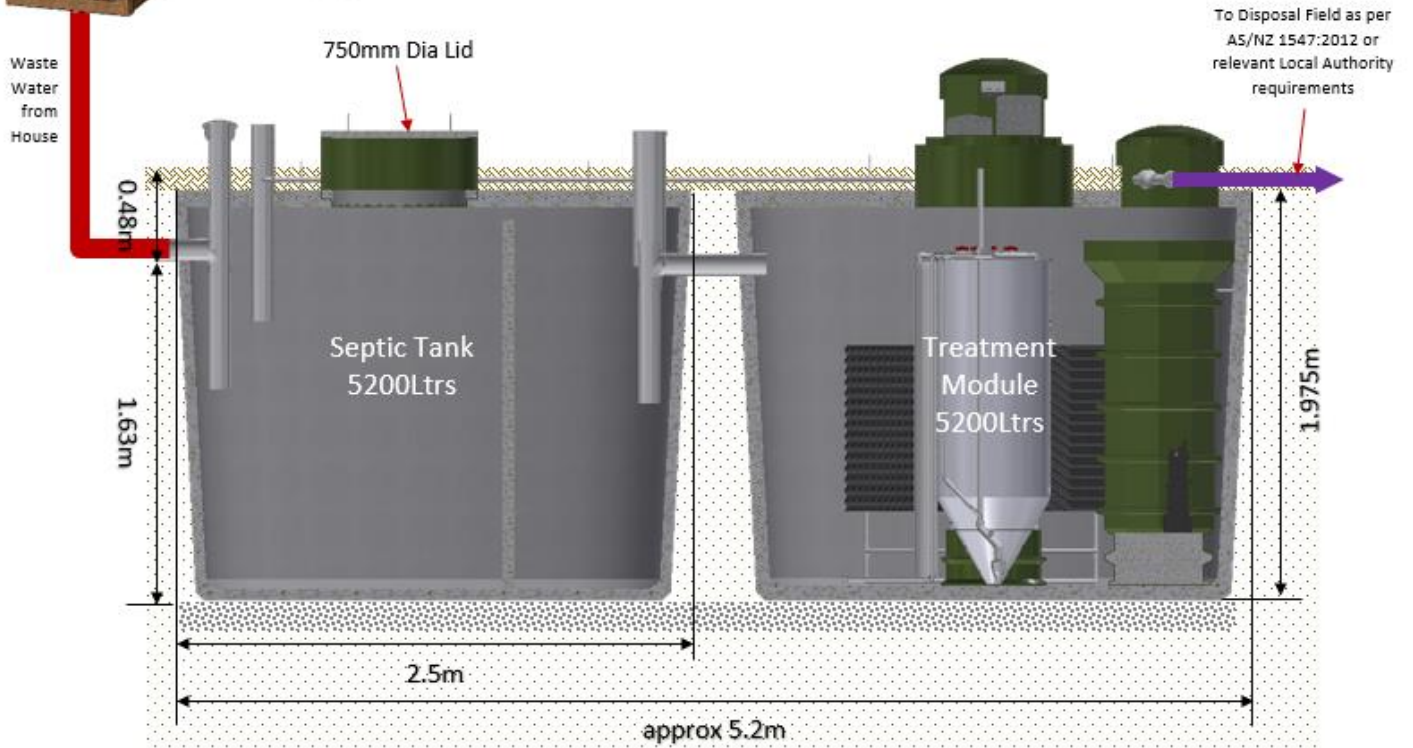
# ECONOTREAT VBB-C-2200

## System Specification & Installation Instructions

### Econotreat VBB-C-2200 Schematic Drawings



### Econotreat VBB-C-2200



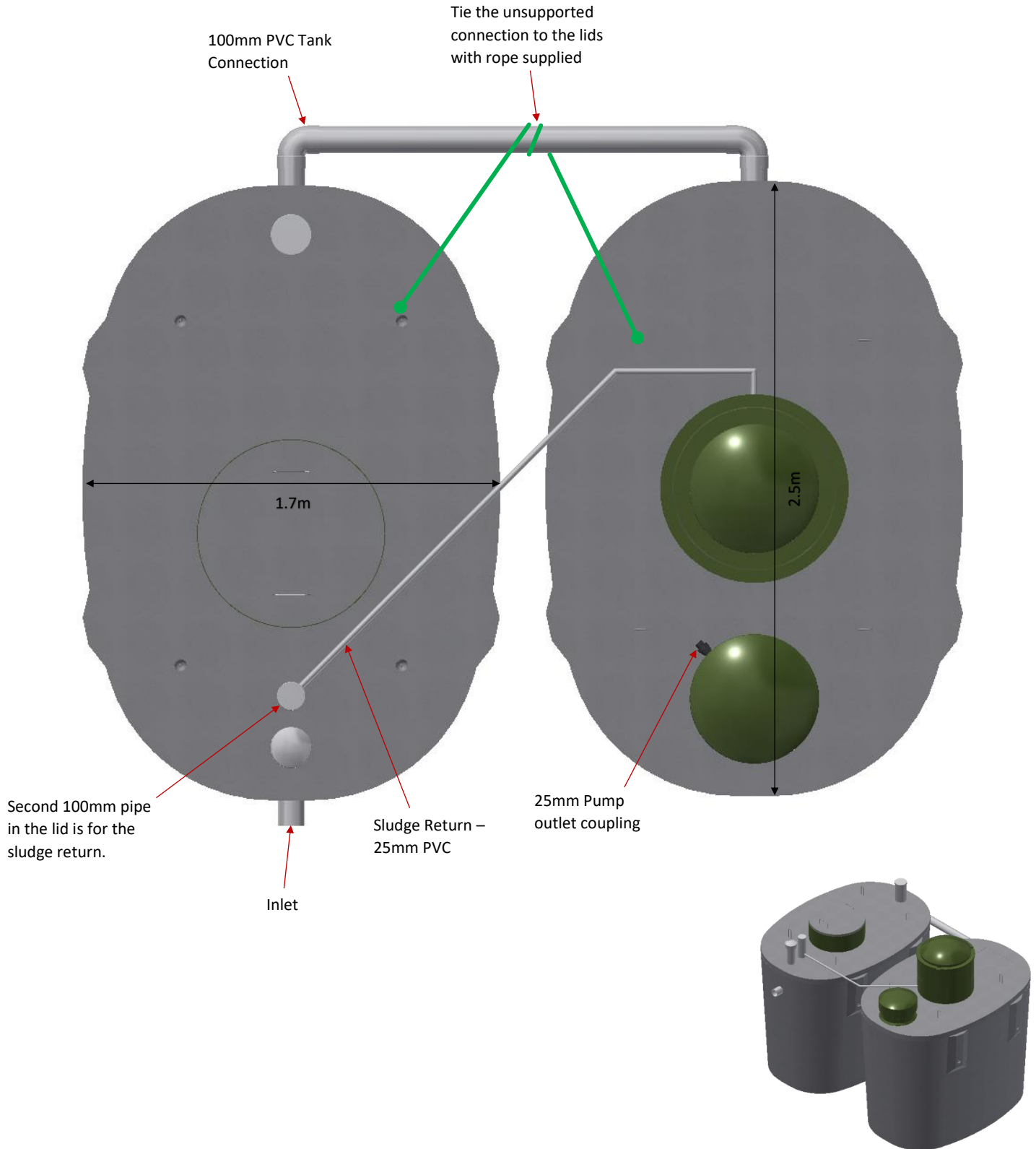
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# ECONOTREAT VBB-C-2200

## System Specification & Installation Instructions

### Econotreat VBB-C-2200 Schematic Drawings

#### Side by Side Installation



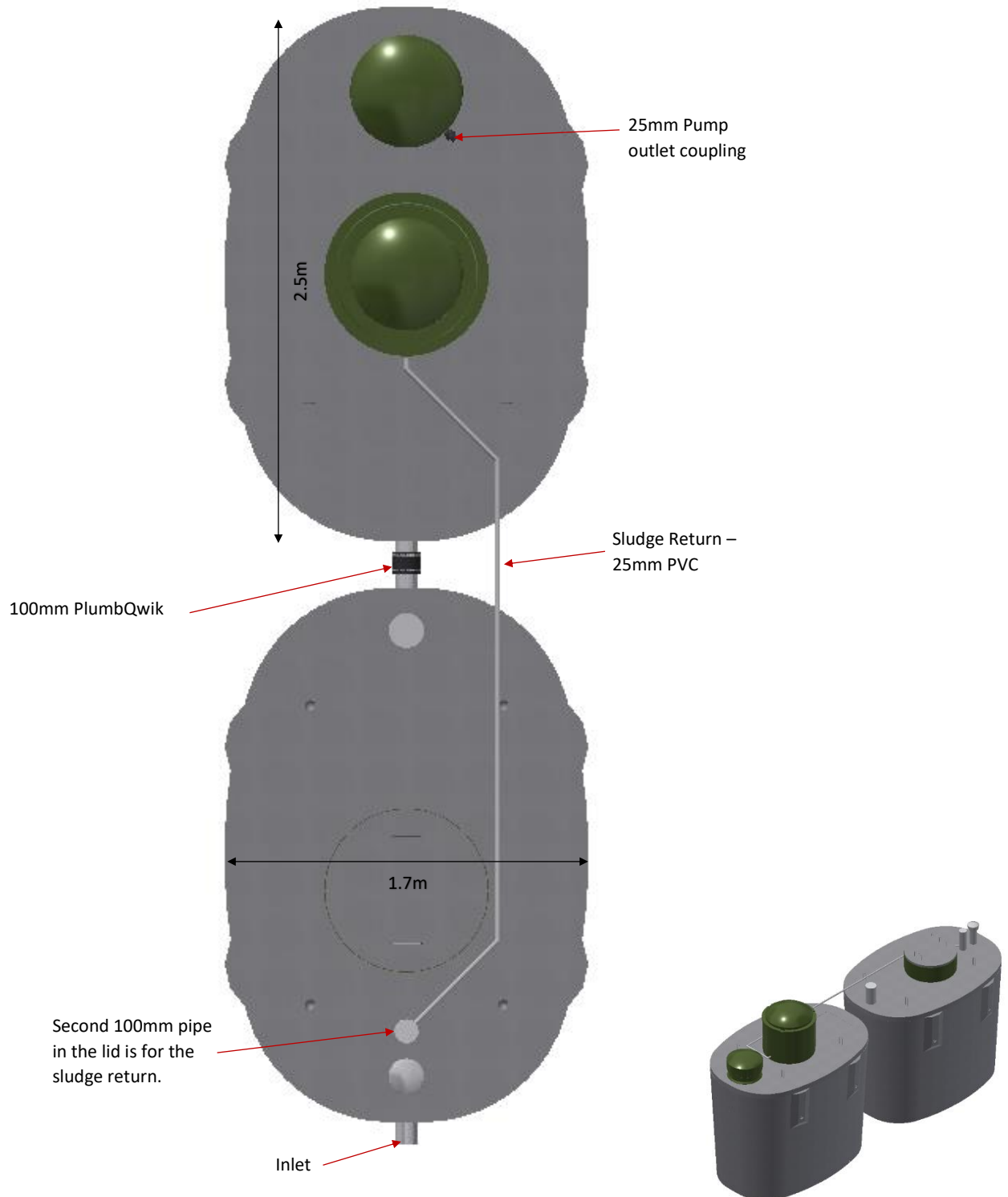
If in doubt contact the experts on 0800 SEWAGE or [sales@waterflow.co.nz](mailto:sales@waterflow.co.nz)

# 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**

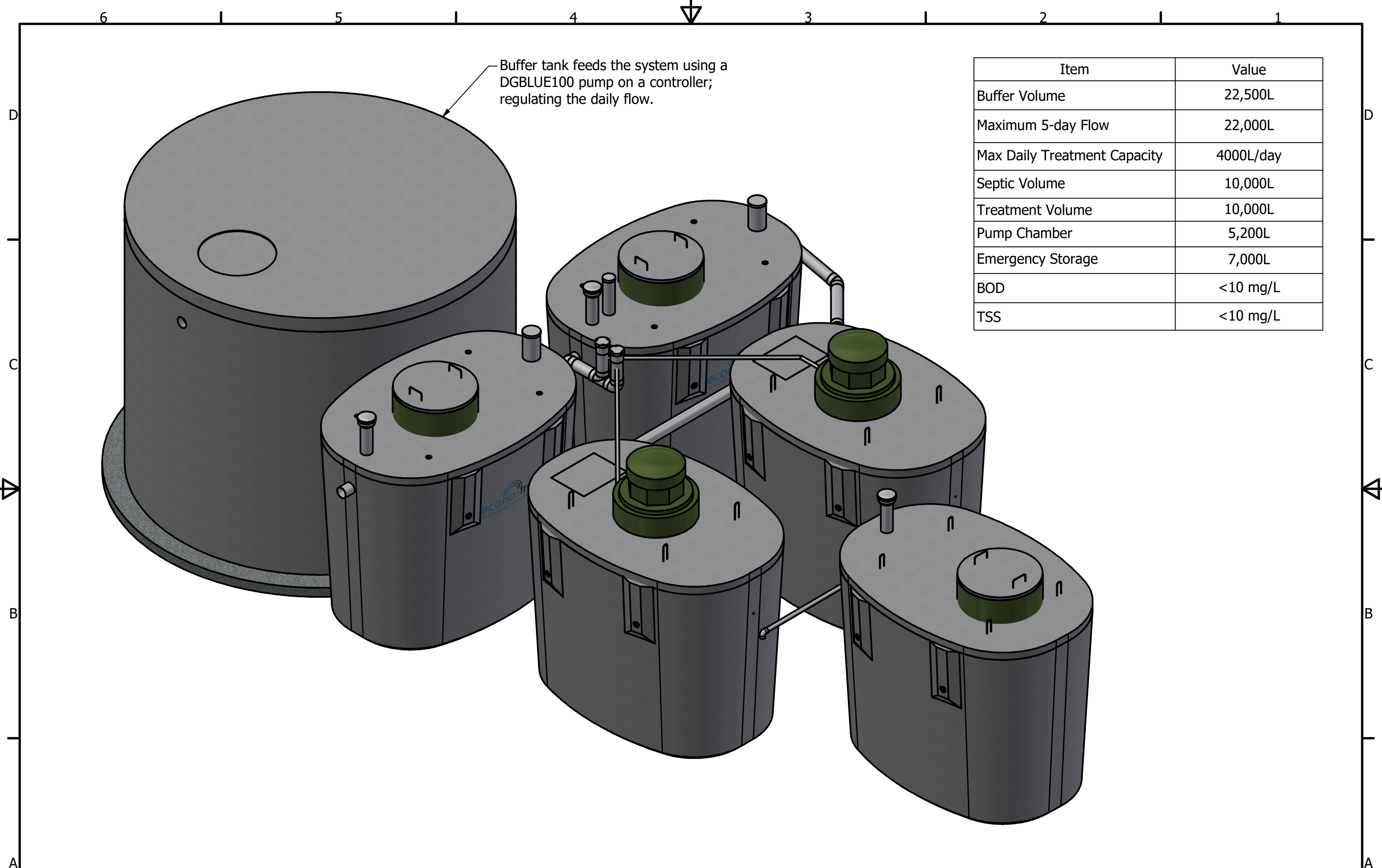
**0800 SEWAGE**

**Or for more information [www.waterflow.co.nz](http://www.waterflow.co.nz)**



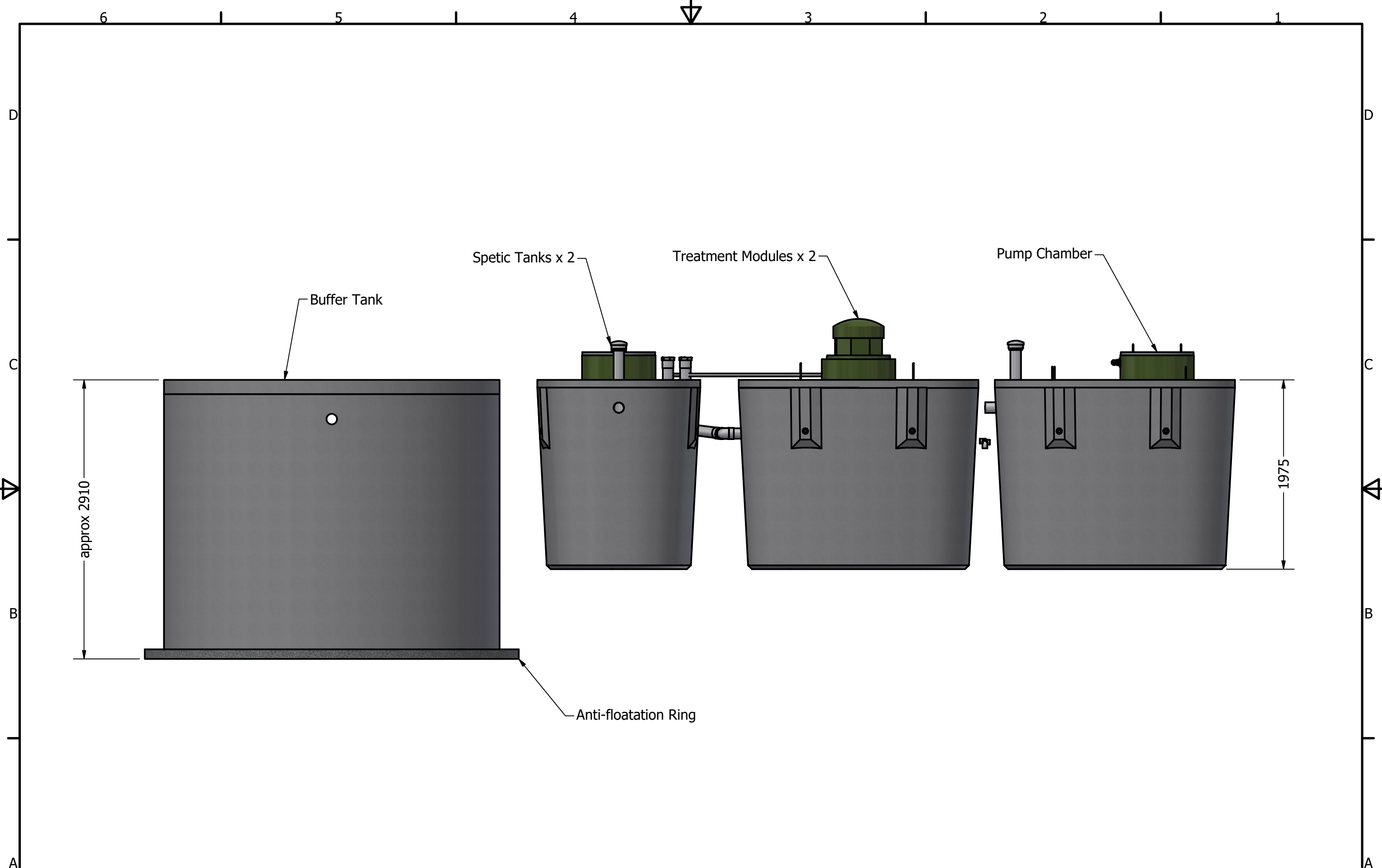
Head Office Waterflow NZ Ltd 1160 State Highway 12, Maungaturoto P. 09 431 0042	Waipapa Branch Waterflow NZ Ltd 166 Waipapa Road, Kerikeri P. 09 407 8323
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FF. 0800 SEWAGE  
E. [sales@waterflow.co.nz](mailto:sales@waterflow.co.nz)  
[www.waterflow.co.nz](http://www.waterflow.co.nz)



Buffer tank feeds the system using a DGBLUE100 pump on a controller; regulating the daily flow.

Item	Value
Buffer Volume	22,500L
Maximum 5-day Flow	22,000L
Max Daily Treatment Capacity	4000L/day
Septic Volume	10,000L
Treatment Volume	10,000L
Pump Chamber	5,200L
Emergency Storage	7,000L
BOD	<10 mg/L
TSS	<10 mg/L



Spetic Tanks x 2

Treatment Modules x 2

Pump Chamber

Buffer Tank

approx 2910

1975

Anti-floatation Ring



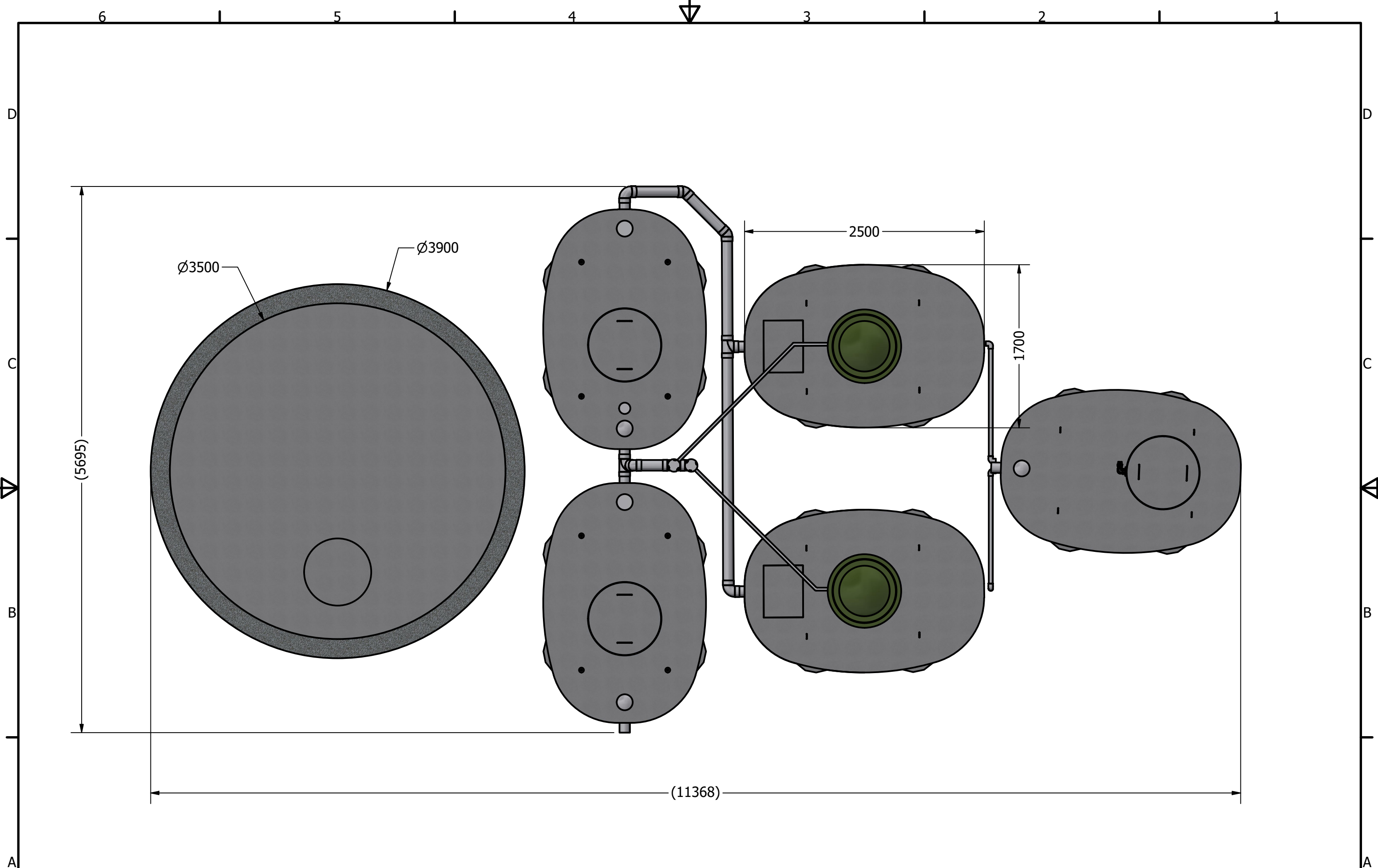
1160 SH12  
 MAUNGATUROTO 0548  
 PH: 0800 628 356  
 E: sales@waterflow.co.nz

**Econotreat VBB C 2200 Twin - 22500L Buffer**

PREPARED FOR:		SCALE: 1 : 35	REF:
DRAWN: Geraldine	DATE: 17/04/2019		
REVISION			

Sheet 2 of 3





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

**Econotreat VBB C 2200 Twin - 22500L Buffer**

PREPARED FOR:		Sheet 3 of 3	
DRAWN: Gerald	DATE: 17/04/2019	SCALE: 1 : 35	REF:
REVISION			



**econo-treat**  
Advanced Secondary Treatment

**Econotreat Aerated Wastewater Systems**

Home Owners Guide



# ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

*Trusted Wastewater Management Solutions*

## Contents

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# 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](http://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**

## 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](http://www.waterflow.co.nz)



**"Making it Easy"**

**Call us today to discuss your needs**

**0800 SEWAGE**

**Or for more information [www.waterflow.co.nz](http://www.waterflow.co.nz)**



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

## **Project location – Wastewater Treatment System for Parihaka Marae at 101 Te Iringa Road**

*As requested by the Parihaka Marae Trustees, we (Waterflow NZ Ltd), are engaged to assess the stability and the soil condition for a suitable Onsite Wastewater Treatment System and Disposal field system for the Parihaka Marae at 101 Te Iringa Road.*

We understand it is proposed to renovate / build a Marae used for Tangihanga events (day+ overnight) max of 3 days fortnightly and Hui twice a month, potable water for use across the site is collected via rainwater tanks. Due to the size of the section the discharge of the treated effluent will be on the adjacent properties owned by members of the Trust.

### **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 AS/NZS 1547:2012 Table H4 of:

- Tangi day visitor 3 days every fortnight of 40 ppl at 40L per person per day
- Tangi overnight visitor 3 days every fortnight of 40 ppl, at 150L wastewater production per person per day
- Hui attendee twice a month of 20 ppl, at 40L per person per day
- Max Wastewater production per day is 7600L buffered to a daily discharge of 2400L/per day
- Disposal system to be ETS beds in Class 5 Soils, (as per AC TP-58, Table 5.1) with a DLR of 12mm taking in consideration the advanced secondary treatment level of the effluent

### **What are the disposal field requirements?**

We recommend an EconoTreat VBB-C-2200-Twin including a 22500l Buffer tanks, an advanced secondary Treatment System with de-nitrification to ETS (evapotranspiration & seepage) Beds at a recommended loading rate of 12l/m<sup>2</sup>/day for silty clay-loamy soils. The primary irrigation field requires 200m<sup>2</sup> to be laid on level contours. And a minimum reserve field of 100% is recommended.

### **Is Discharge Consent required?**

Yes, due to proposed activities onsite the Wastewater volume exceeds the Northland Regional Council and Far North's Districts 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

**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**

## **STATEMENT OF DESIGN - PS1**

**Issued by:** Dean Hoyle

**To:** PARIHAKA MARAE TRUSTEES

**Copy to be supplied to:** Far North District Council

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

**At:** 101 TE IRINGA ROAD, KAIKOHE

**Legal Description:** Lot Punakitere 4K1A1A Block DP .

Waterflow NZ Ltd has been engaged by PARIHAKA MARAE TRUSTEES 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: PARIHAKA MARAE TRUSTEES 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: 17/01/2022

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

**PARIHAKA MARAE TRUSTEES**  
**101 TE IRINGA ROAD**  
**KAIKOHE**  
**Block DP .**  
**17.01.2022**

**[ ONSITE WASTEWATER DESIGN REPORT ]**

Onsite Wastewater Design Report by Waterflow NZ Ltd – Copyright 2014



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**Attachments**

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

**PART A: CONTACT AND PROPERTY DETAILS**

**A 1. Consultant / Evaluator**

<b>Name:</b>	Dean Hoyle
<b>Company/Agency:</b>	Waterflow New Zealand Ltd
<b>Address:</b>	1160 SH 12 Maungaturoto
<b>Phone:</b>	09 431 0042
<b>Fax:</b>	09 431 8845
<b>Email Address:</b>	<a href="mailto:dean@waterflow.co.nz">dean@waterflow.co.nz</a>

**A 2: Applicant Details**

<b>Applicant Name:</b>	PARIHAKA MARAE TRUSTEES
<b>Company Name:</b>	
<b>Property Owner:</b>	PARIHAKA MARAE TRUSTEES
<b>Owner Address:</b>	101 TE IRINGA ROAD, KAIKOHE
<b>Phone:</b>	
<b>Mobile:</b>	
<b>Email Address:</b>	

**A 3: Site Information**

<b>Sited Visited by:</b>	Caleb Pirini	<b>Date:</b>	
<b>Physical Address:</b>	101 TE IRINGA ROAD, KAIKOHE		
<b>Territorial Authority:</b>	Far North District Council		
<b>Regional Council:</b>	Northland Regional Council		
<b>Regional Rule</b>	Resource Consent		
<b>Legal Status of Activity:</b>	<b>Permitted:</b>	<input checked="" type="checkbox"/> x	<b>Controlled:</b> <input type="checkbox"/> <b>Discretionary:</b> <input type="checkbox"/>
<b>Total Property Area (m<sup>2</sup>):</b>	4046m <sup>2</sup>		
<b>Map Grid Reference:</b>			
<b>Legal Description of Land (as on Certificate of Title):</b>			
<b>Lot No:</b>	Punakitere 4K1A1A Block		
<b>DP No:</b>	.		
<b>CT No:</b>			

**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"/>
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**If yes, give reference No's and description:**

--

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

<b>Status of building(s) to be serviced:</b>	<b>New</b>	<input type="checkbox"/>	<b>Existing</b>	<input checked="" type="checkbox"/>	<b>Multiple</b>	<input type="checkbox"/>
<b>How many dwellings on the property?</b>	Parihaka Marae					
<b>Capacity of building:</b>	<b>Building 1</b>	Multiple groups using the Facilities - see Flow Calculation attached				
<b>(or number of bedrooms)</b>	<b>Building 2</b>					
	<b>Building 3</b>					
	<b>Other:</b>					
<b>Notes:</b>						

**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 and soakage		
Flooding potential?	Yes:	No:	x
If Yes, specify relevant flood levels relative to disposal area:			
Site characteristics:	a communal rural property. Property is generally covered with pasture grass and trees. Property boundaries are on Te Iringa Road to the West 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**

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**B 4: Slope Direction**

What aspect does the proposed disposal system face?

North		West	
North-West	x	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)
<b>Boundaries:</b>	>1.5	>1.5
<b>Surface Water:</b>	>15	>15
<b>Ground Water:</b>	>1.2	>1.2
<b>Stands of Trees / Shrubs:</b>	n/a	n/a
<b>Wells/Water Bores:</b>	>20	>20
<b>Embankments / Retaining Walls:</b>	>3	>3
<b>Buildings:</b>	>3	>3
<b>Other:</b>		

**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?

250mm 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
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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: (As per Calculations attached) 2: 3:
Design occupance (people): (as per AC TP-58, Table 6.1)	1: (As per Calculations attached) 2: 3:
	<b>Black / Grey water</b>
Per capita wastewater production (litres/person/day): (as per ARC TP-58, Table 6.2)	1: (As per Calculations attached) 2: 3:
Total daily wastewater production (litres per day):	7600 L/day (Buffered to 2400L/p/d)

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

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

**D 5: Gross lot area to discharge ratio:**

Gross lot area:	4046 m <sup>2</sup>
Total daily wastewater production (litres/day):	2400 L
Lot area to discharge ratio:	1.69

**D 6: Net Lot Area**

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

Net lot area (m <sup>2</sup> ):	3046 m <sup>2</sup>
Reserve area (m <sup>2</sup> ):	100%

**PART E: LAND DISPOSAL METHOD**

**E 1: Indicate the proposed loading method:**

	<b>Black / Grey Water</b>
Gravity Dose:	
Dosing Siphon:	
Pump:	BIA-B25VAS2

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

Total Design Head (m):	5
Pump Chamber Volume (litres):	5000
Emergency Storage Volume (litres):	5000

**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:**

	<b>Black / Grey Water</b>
P.C.D.I. Dripper Irrigation:	
L.P.E.D. System:	
Evapo-Transpiration Beds:	ETS 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	<b>Black / Grey Water</b>
Loading Rate (litres/m <sup>2</sup> /day):	12
Disposal Area Basal (m <sup>2</sup> ):	200
Areal (m <sup>2</sup> ):	

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

Length (m):	33.3	No. ETS Beds	2	Hole Size:	16.0
Width (m):	3.0	Spacing (m):	1.5	Hole Spacing:	500.0
Notes:	Conventional ETS beds laid on level contour. To be protected from stock and vehicle movements, as per schematic drawing attached. See schematic drawing attached.				

## **PART F: PROPOSED WASTEWATER TREATMENT SYSTEM**

A Econotreat EconoTreat VBB-C-2200-Twin System with a 225000l buffer tank, fed through ETS Beds 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 2400ltrs 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**



250mm 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.

<b>Prepared By:</b>	
<b>Name:</b>	Alexandra Sabath - Wastewater Design Technician
<b>Signature:</b>	
<b>Date:</b>	17/01/2022

<b>Reviewed By:</b>	
<b>Name:</b>	Dean Hoyle – PS Author ‘3037’ Auckland Council, NZQA Onsite Wastewater Training/Opus, BOINZ OWM, HBRC Approved Designer
<b>Signature:</b>	
<b>Date:</b>	17/01/2022

**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](http://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

## Parihaka Marae

Proposal is to design a treatment system that will cater for a maximum loading scenerio over a fortnight/month period.

Discharge per Day	System Recommendation	Buffer Required	DLR Beds
2400	VBB-C-2200 - Twin	21600	12
			200

Event	Numbers	Flow Rates	Daily Flow	Frequency per Month	Duration
Day Visitors Tangi	40	40	1600	2	3
Overnight Tangi	40	150	6000	2	3
Hui	20	40	800	2	1

Parihaka Marae Occupancy/Flow Calculations						
Day	Tangihanga Day	Tangihanga Night	Hui	Total Flow	Discharge L/p/day	Buffer L/p/day
Mon 1	0	0	800	800	2400	0
Tues 2	0	0	0	0	2400	0
Wed 3	0	0	0	0	2400	0
Thurs 4	0	0	0	0	2400	0
Fri 5	1600	6000	0	7600	2400	5200
Sat 6	1600	6000	0	7600	2400	10400
Sun 7	1600	6000	0	7600	2400	15600
Mon 8	0	0	0	0	2400	13200
Tues 9	0	0	0	0	2400	10800
Wed 10	0	0	0	0	2400	8400
Thurs 11	0	0	0	0	2400	6000
Fri 12	1600	6000	0	7600	2400	11200
Sat 13	1600	6000	0	7600	2400	16400
Sun 14	1600	6000	0	7600	2400	21600
Mon 15	0	0	800	800	2400	20000
Tues 16	0	0	0	0	2400	17600
Wed 17	0	0	0	0	2400	15200
Thurs 18	0	0	0	0	2400	12800
Fri 19	0	0	0	0	2400	10400
Sat 20	0	0	0	0	2400	8000
Sun 21	0	0	0	0	2400	5600

Mon 22	0	0	0	0	2400	3200
Tues 23	0	0	0	0	2400	800
Wed 24	0	0	0	0	2400	0
Thurs 25	0	0	0	0	2400	0
Fri 26	0	0	0	0	2400	0
Sat 27	0	0	0	0	2400	0
Sun 28	0	0	0	0	2400	0
						21600
						<b>22500 Litre Buffer Volume required</b>



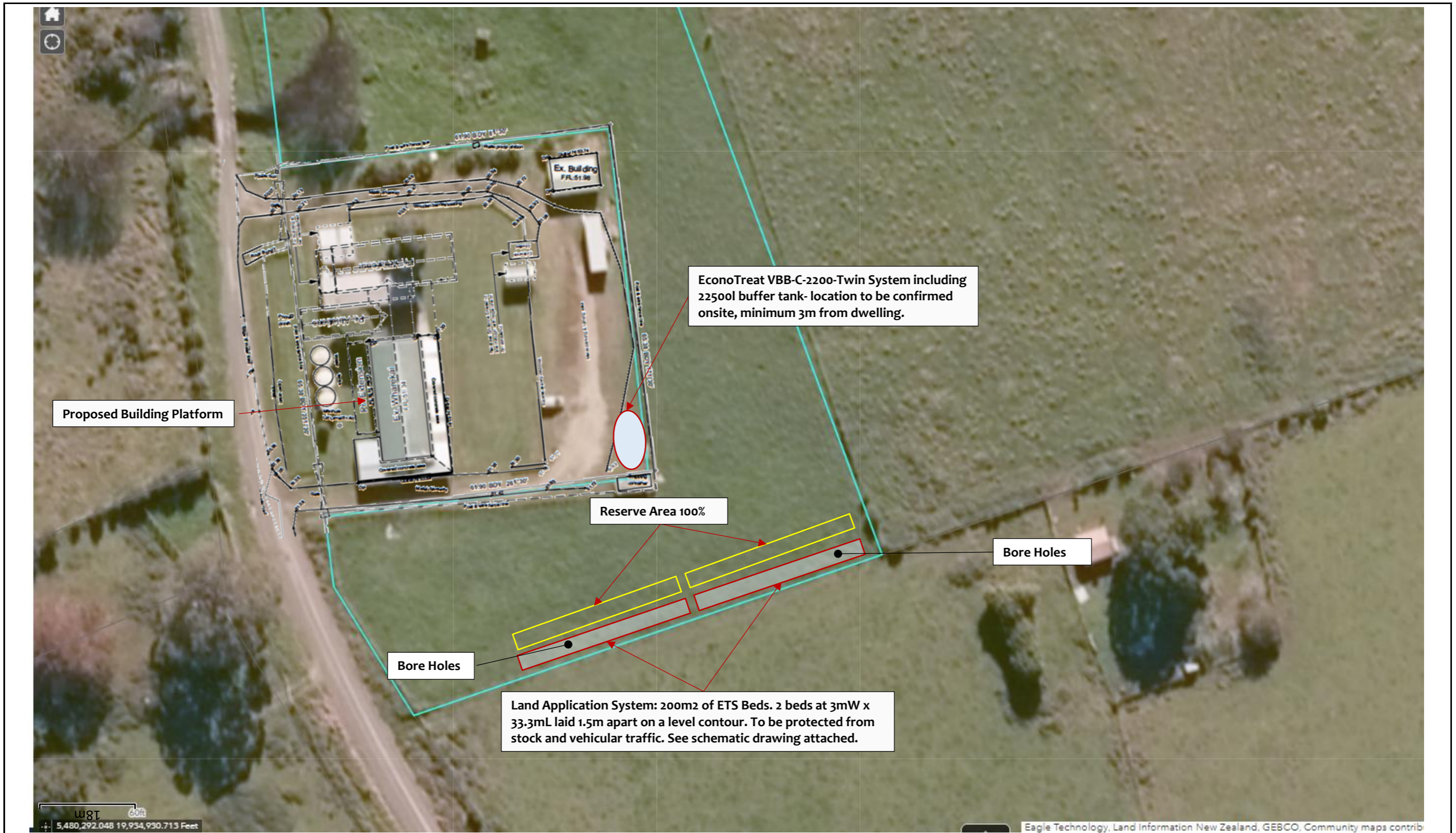


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**SITE LOCATION PLAN:**  
 PARIHAKA MARAE TRUSTEES  
 101 TE IRINGA ROAD  
 KAIKOHE  
 Lot Punakitere 4K1A1A BlockDP .  
 0.4046HA

**SCALE:**  
 1 : 265  
 @ A3



Eagle Technology, Land Information New Zealand, GEBCO, Community maps contrib

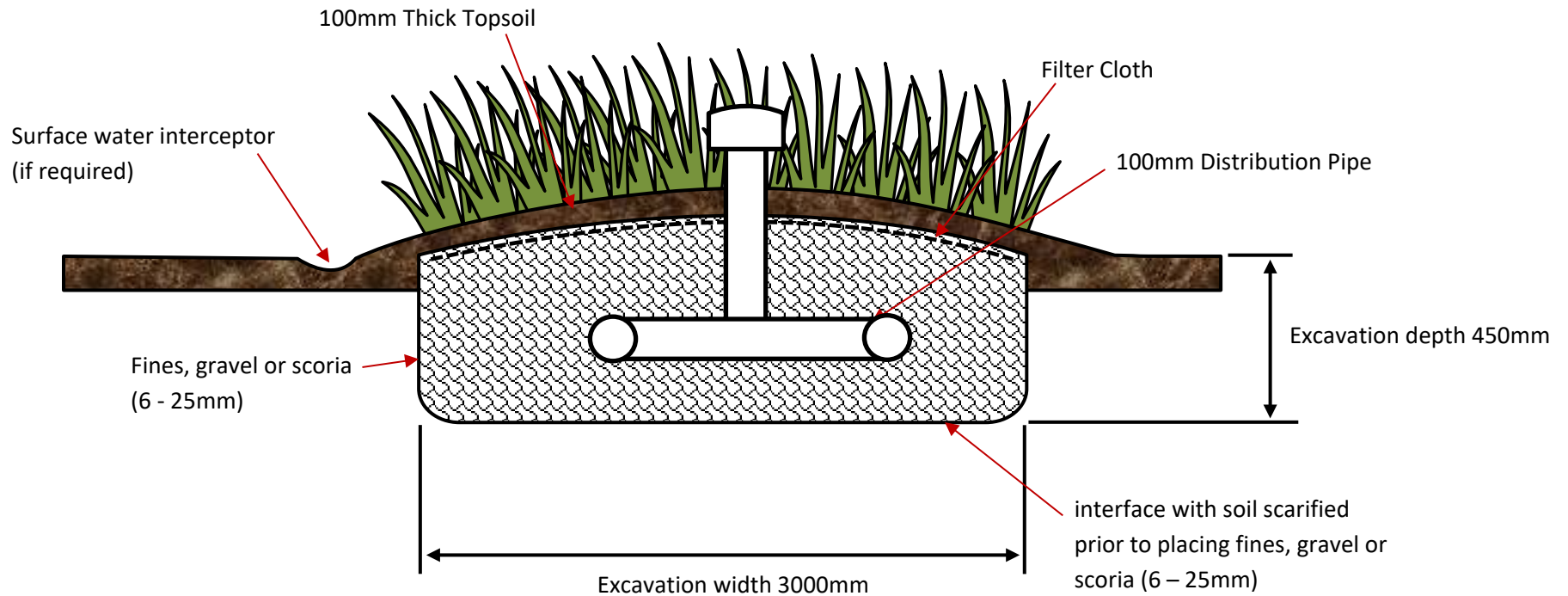


**DATE DRAW:** 17/01/2022  
**PREPARED BY:** Alexandra Sabath  
**REVISED:** Dean Hoyle

**SITE LAYOUT PLAN:**  
 PARIHAKA MARAE TRUSTEES  
 101 TE IRINGA ROAD  
 KAIKOHE  
 Lot Punakitere 4K1A1A Block DP .  
 0.4046HA

**SCALE:**  
 1 : 63  
 @ A3

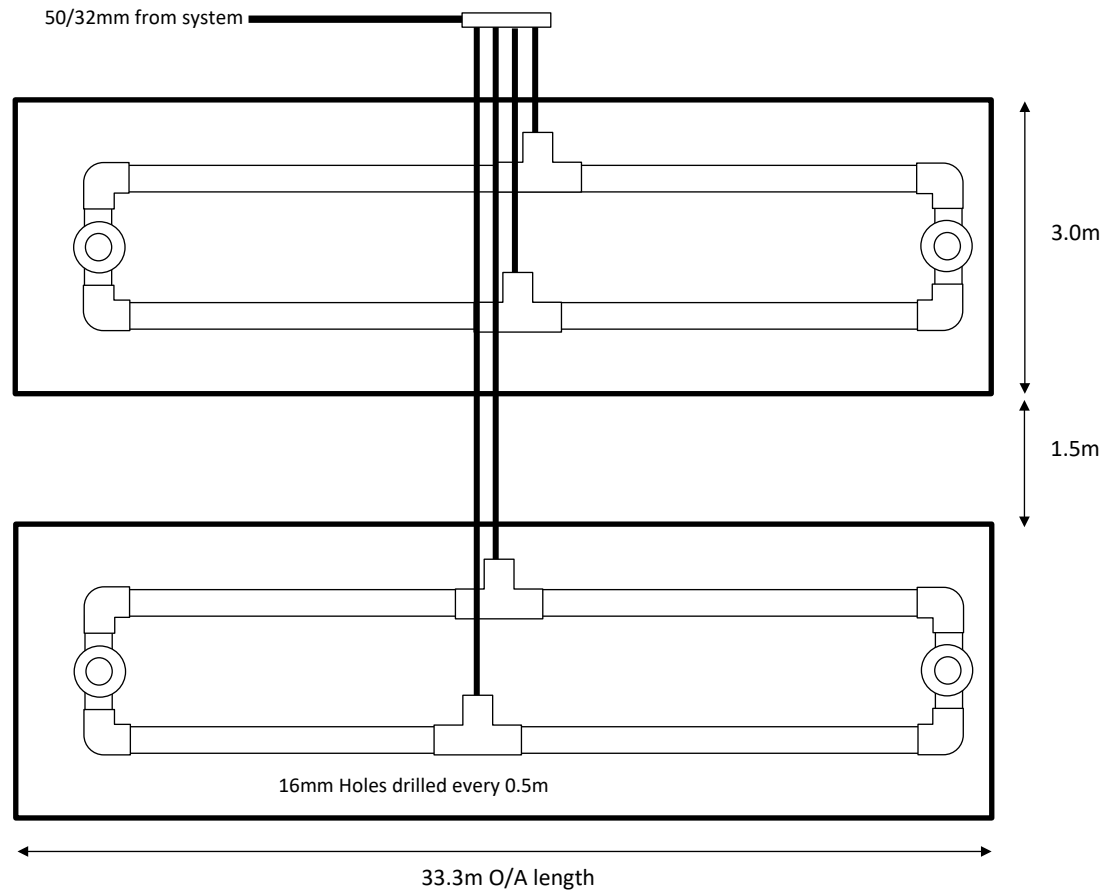
## ETS (EVAPOTRANSPIRATION SEEPAGE) CONTOUR BEDS



The standard width for ETS beds is from 750 – 1500mm, but 1800mm up to 3000mm maximum can be utilised provided crowing to shed rainfall is increased accordingly. Contour ETS beds of 450mm to 750mm width can be used on sloping sites.

# ETS (EVAPOTRANSPIRATION SEEPAGE) CONTOUR BEDS

Top Elevation



# **Assessment of Environmental Effects**

## **PARIHAKA MARAE TRUSTEES of 101 TE IRINGA ROAD, KAIKOHE Lot Punakitere 4K1A1A Block DP .**

### **1.1 Description of Proposal**

The owners of this site propose the construction of a new Marae.

### **1.2 Site Description**

This site, located at 101 TE IRINGA ROAD, is a a communal rural property. Property is generally covered with pasture grass and trees. Property boundaries are on Te Iringa Road to the West and farmland on all other boundaries.

### **1.3 Wastewater Volume**

In calculating the wastewater flows we have allowed for a maximum occupancy, based on the proposed Marae (as per AS/NZS 1547:2012 Table J1). Total wastewater production is based on an allowance of (various) litres per person per day (as per AS/NZS 1547:2012 Table H3, Note 2), which is conservative given that water supply is roof collected rain water and

### **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 LPED dispersal system into a purpose-designed ETS bed system, 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

- Buffer Tank

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 land application system uses a LPED dispersal system into ETS beds, to disperse the treated wastewater into the receiving soils and dense planting is required to enhance evapo-transpiration. This land application system will be installed in conjunction with existing and proposed landscaping as detailed on the site plan.

## 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 ETS Beds. 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 ETS Beds 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 land application 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 are 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 visual checks of the treatment system and land application system. 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....

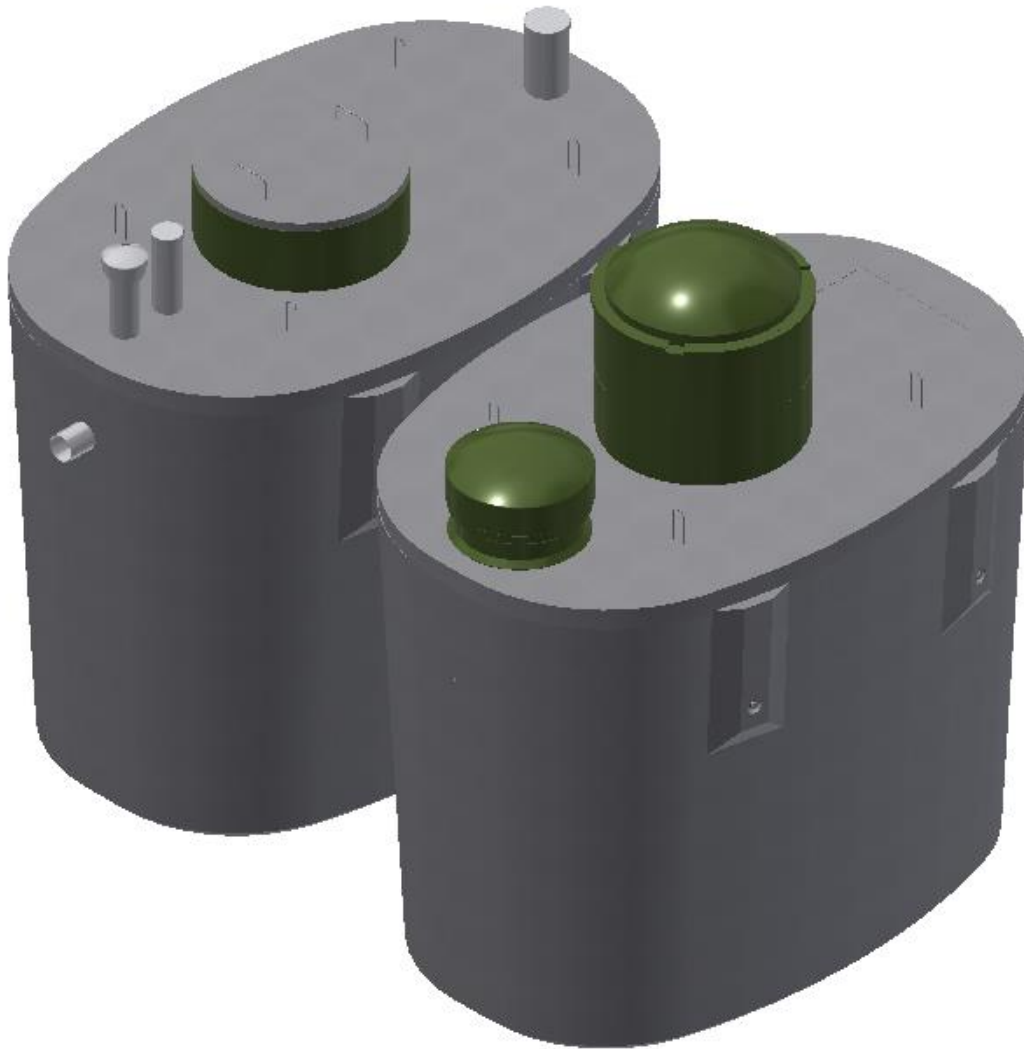
The owners will be verbally informed at the commissioning of this system of all maintenance requirements and strongly advised to have a service contract in place prior to final sign off of the system installation.



# 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 <sup>3</sup> )	3.4	1.5	A+	<5	<10	<20	<30	≥30
TSS (g/m <sup>3</sup> )	4.98	3.49	A+	<5	<10	<20	<30	≥30
Total nitrogen TN (g/m <sup>3</sup> )	13.6	1.3	A	<5	<15	<25	<30	≥30
Ammonia Nitrogen NH <sub>4</sub> -N (g/m <sup>3</sup> )	1.1	1.8	A	<1	<5	<10	<20	≥20
Total phosphorus TP (g/m <sup>3</sup> )	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

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# 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

#### **Aeration Tank**

5200L Nominal Capacity  
2500mm Long  
1700mm Wide  
1975mm High

### 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



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# 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***

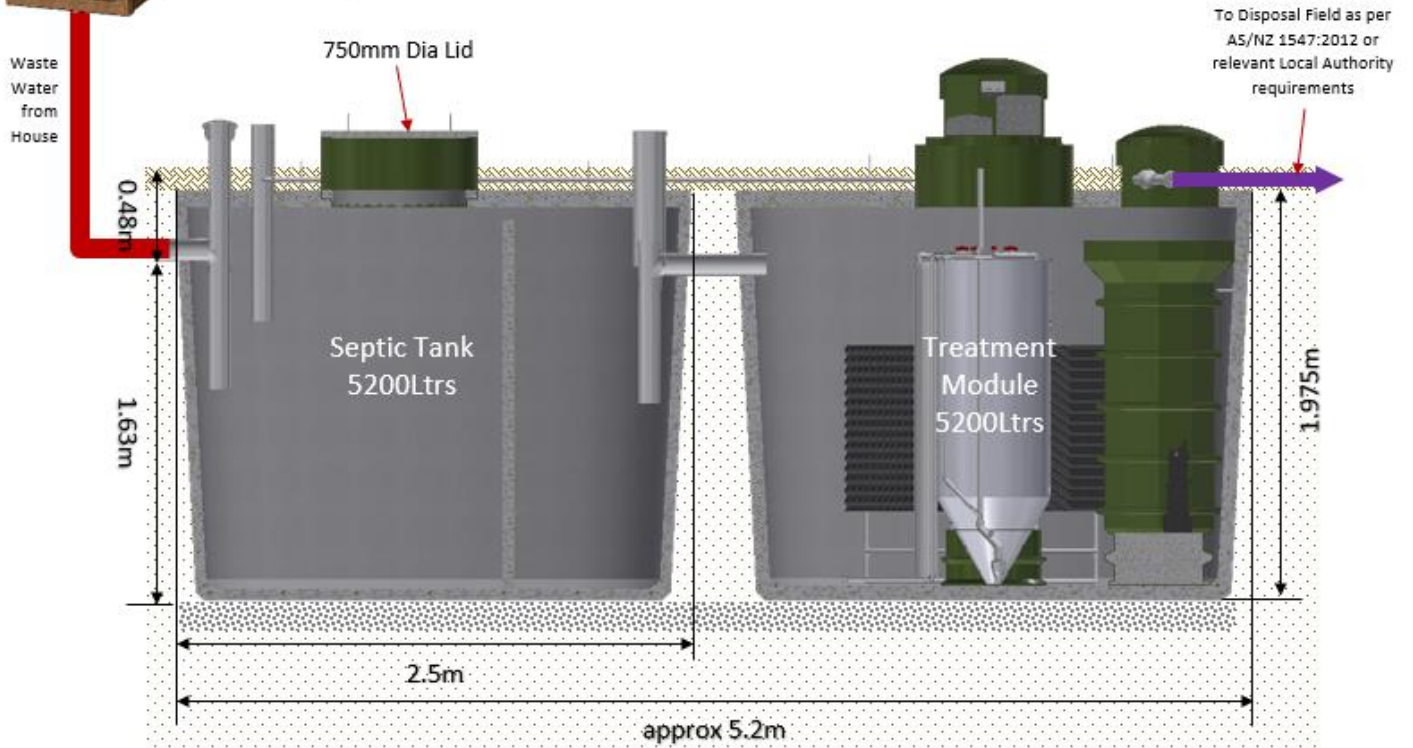
# ECONOTREAT VBB-C-2200

## System Specification & Installation Instructions

### Econotreat VBB-C-2200 Schematic Drawings



### Econotreat VBB-C-2200



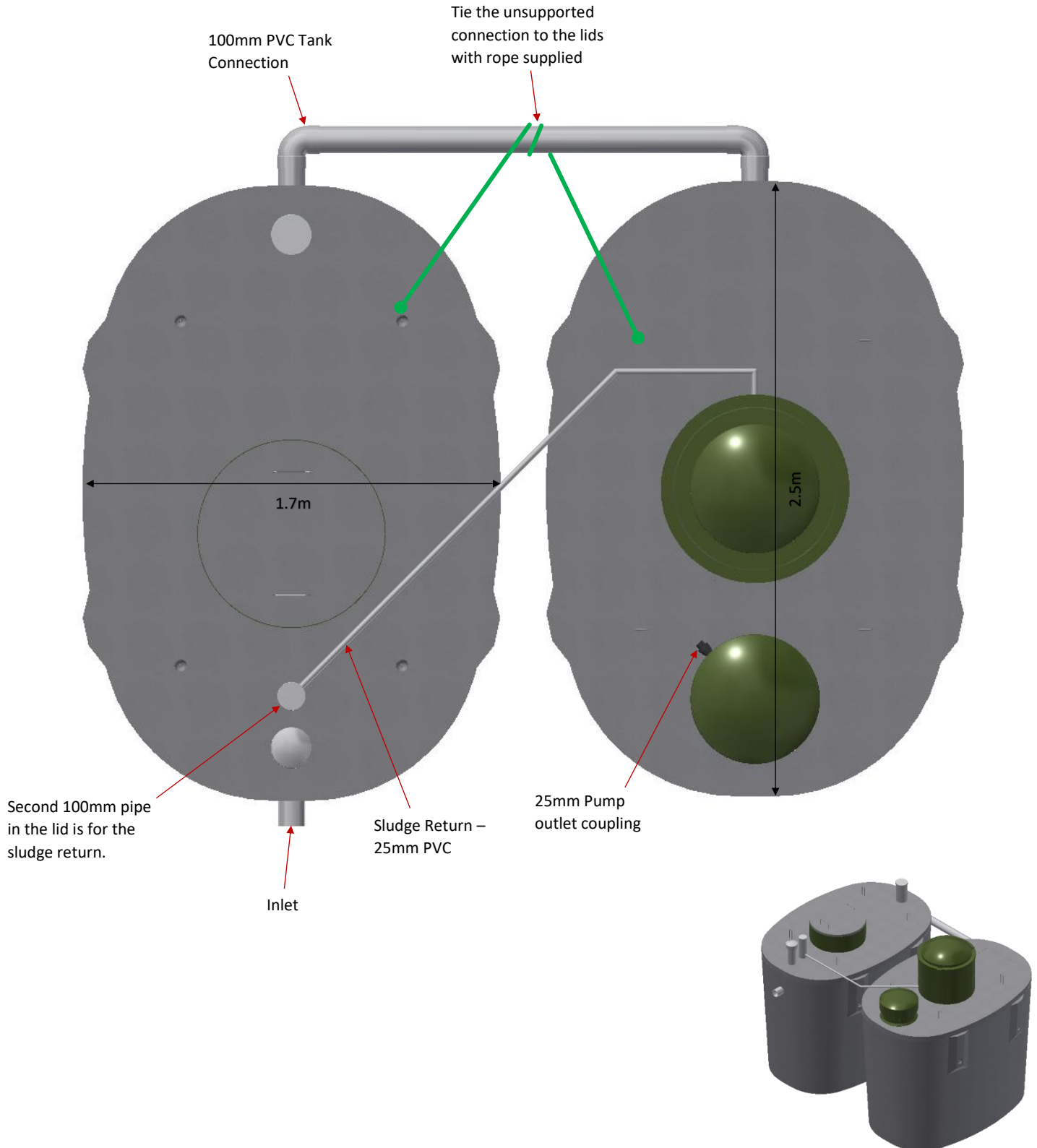
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# ECONOTREAT VBB-C-2200

## System Specification & Installation Instructions

### Econotreat VBB-C-2200 Schematic Drawings

#### Side by Side Installation



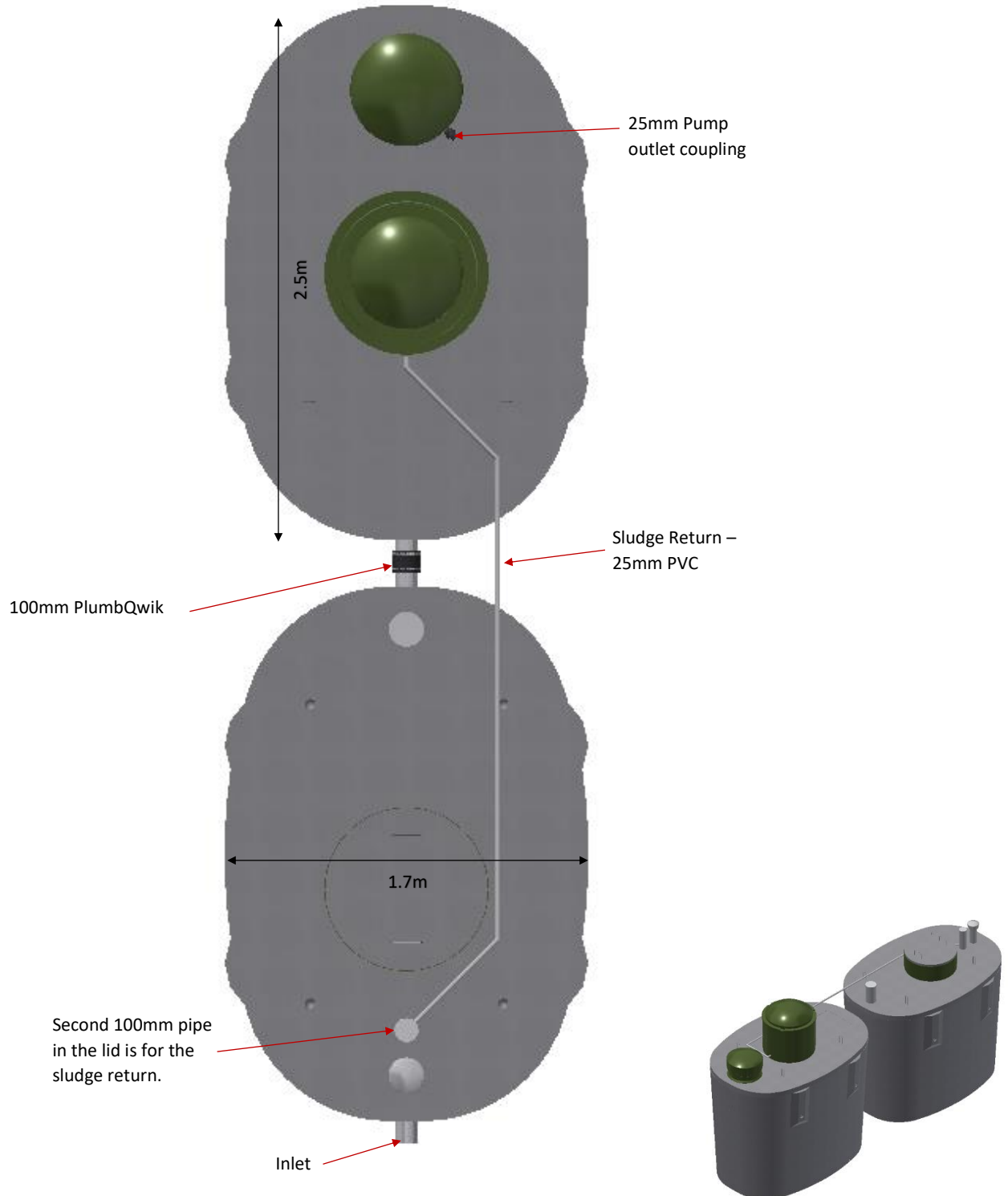
If in doubt contact the experts on 0800 SEWAGE or [sales@waterflow.co.nz](mailto:sales@waterflow.co.nz)

# 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**

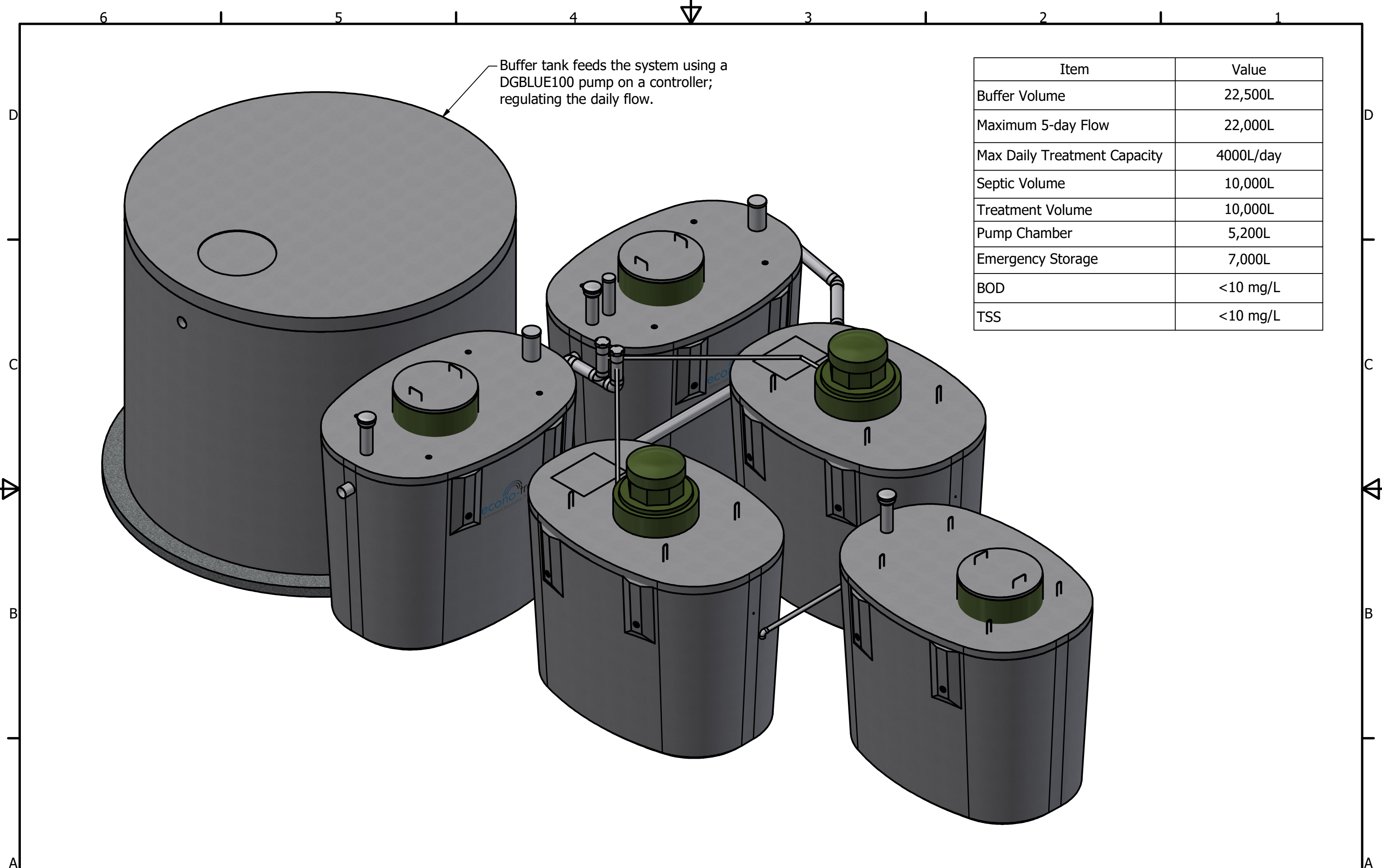
**Or for more information [www.waterflow.co.nz](http://www.waterflow.co.nz)**



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](mailto:sales@waterflow.co.nz)  
[www.waterflow.co.nz](http://www.waterflow.co.nz)





Buffer tank feeds the system using a DGBLUE100 pump on a controller; regulating the daily flow.

Item	Value
Buffer Volume	22,500L
Maximum 5-day Flow	22,000L
Max Daily Treatment Capacity	4000L/day
Septic Volume	10,000L
Treatment Volume	10,000L
Pump Chamber	5,200L
Emergency Storage	7,000L
BOD	<10 mg/L
TSS	<10 mg/L

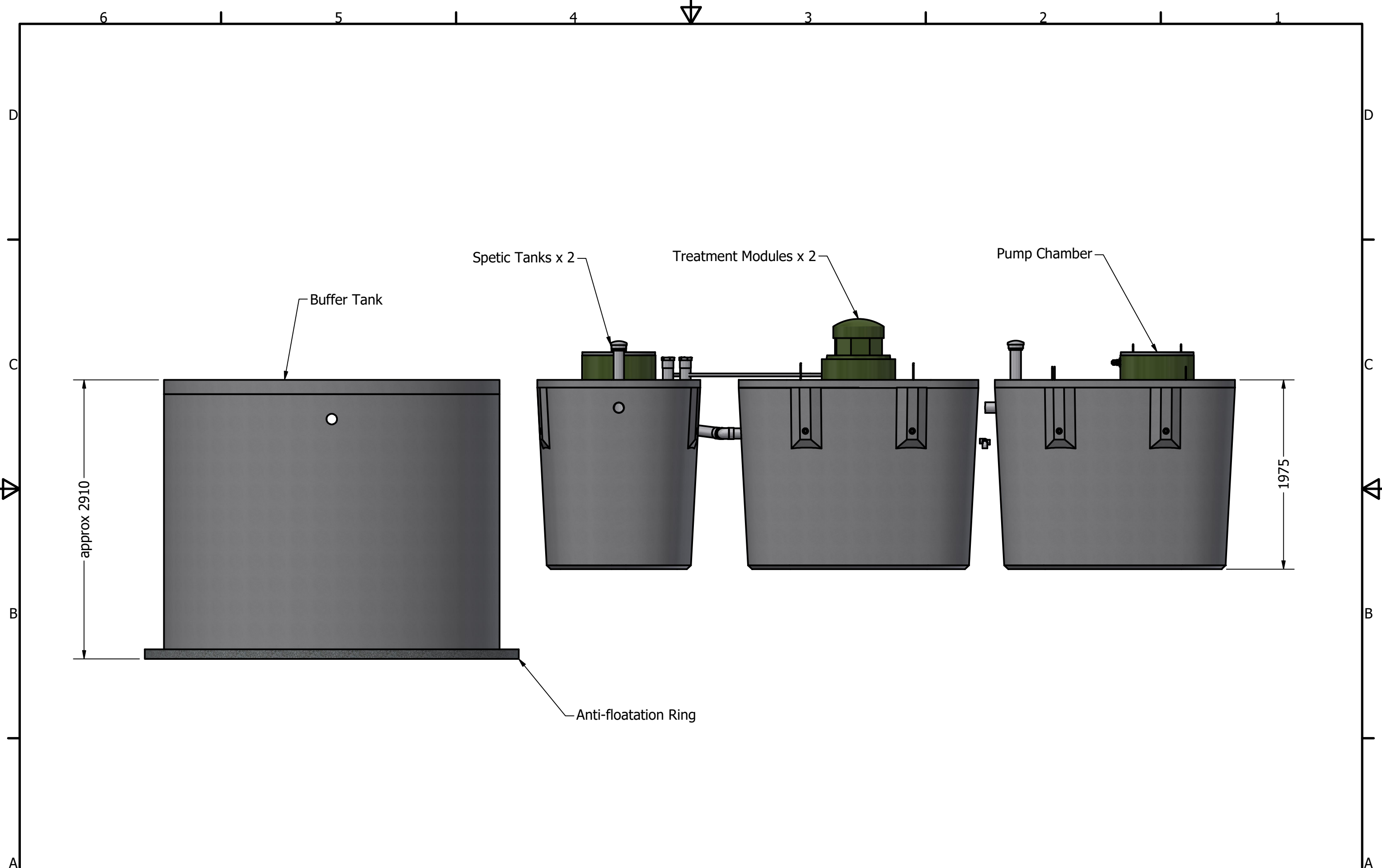


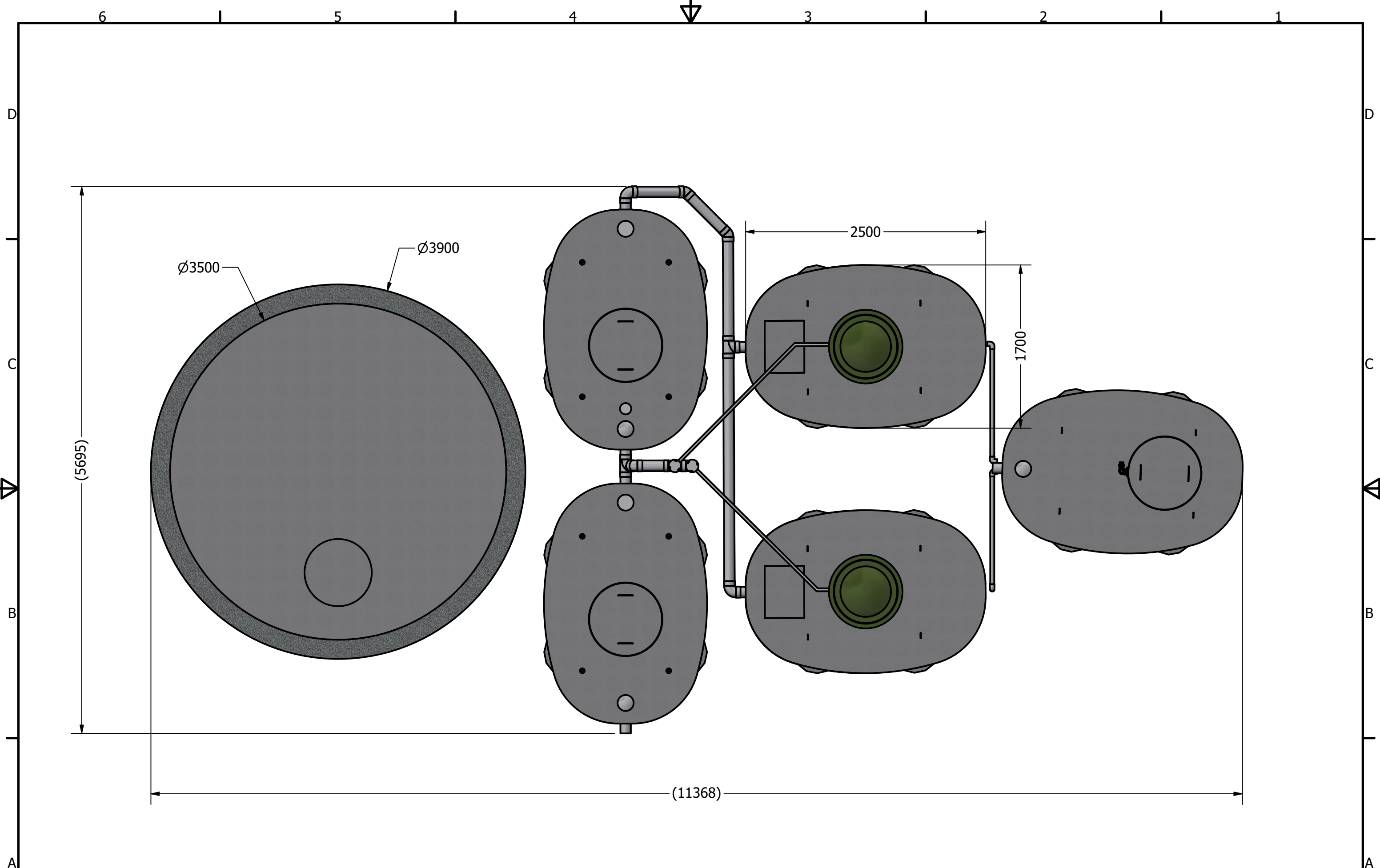
1160 SH12  
 MAUNGATUROTO 0548  
 PH: 0800 628 356  
 E: sales@waterflow.co.nz

### Econotreat VBB C 2200 Twin - 22500L Buffer

PREPARED FOR:		SCALE: 1 / 30	REF:
DRAWN: Gerald Dwyer	DATE: 17/04/2019		
REVISION			

Sheet 1 of 3







econo-treat  
Advanced Secondary Treatment

**Econotreat Aerated Wastewater Systems**

Home Owners Guide



# ECONOTREAT AERATED WASTEWATERSYSTEMS

Home Owners Care Guide

*Trusted Wastewater Management Solutions*

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# 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.



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# 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**

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# 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](mailto: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

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## 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](http://www.waterflow.co.nz)



**"Making it Easy"**

**Call us today to discuss your needs**

**0800 SEWAGE**

**Or for more information [www.waterflow.co.nz](http://www.waterflow.co.nz)**



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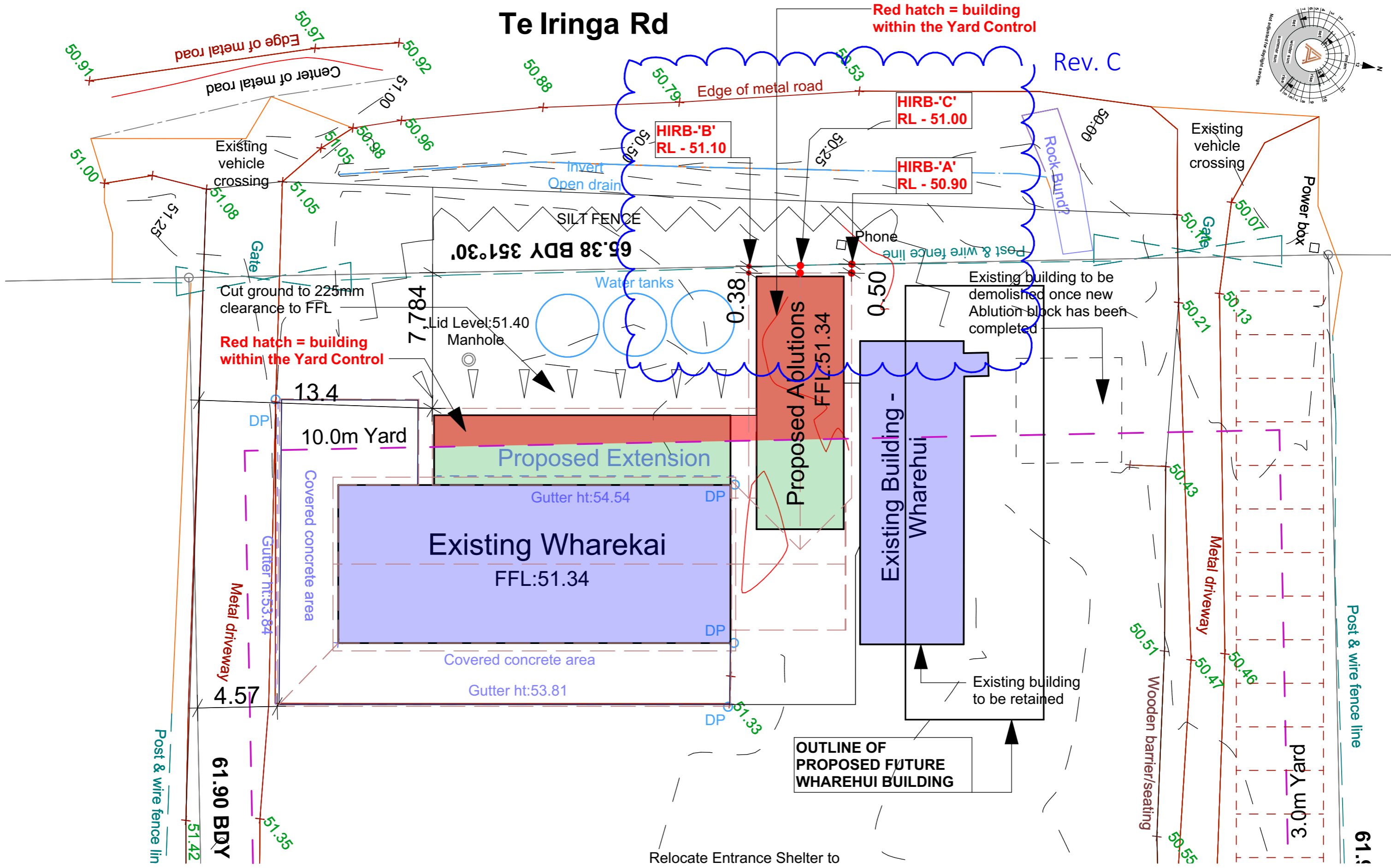
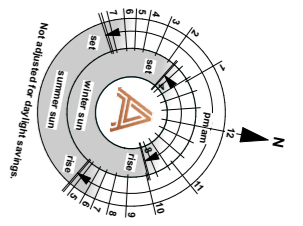
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[www.waterflow.co.nz](http://www.waterflow.co.nz)



# Te Iringa Rd

Red hatch = building within the Yard Control



Rev. C

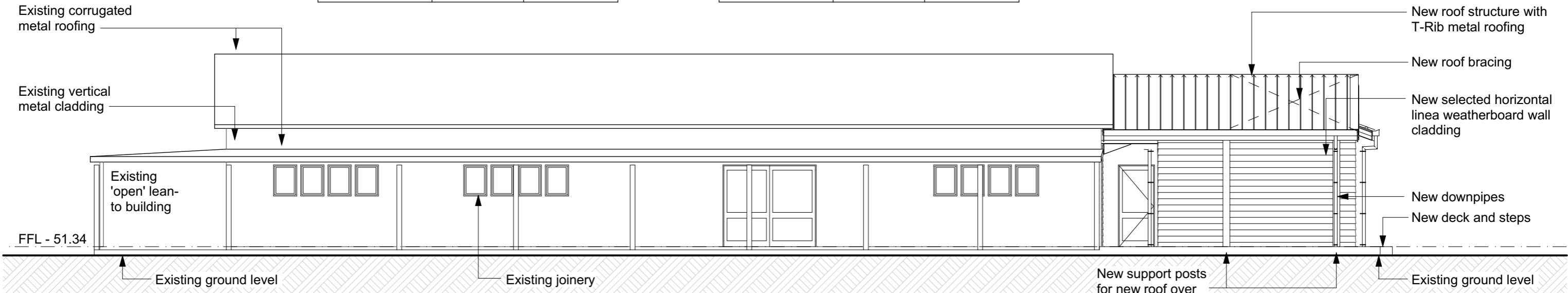
Red hatch = building within the Yard Control

OUTLINE OF PROPOSED FUTURE WHAREHUI BUILDING

Relocate Entrance Shelter to

BUILDING ENVELOPE RISK MATRIX		
East Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (NZS3604)	High Risk	2
Number of storeys	Low risk	1
Roof/wall intersection	Very High Risk	5
Eaves width	Medium Risk	1
Envelope complexity	Medium risk	1
Deck design	Low risk	0
TOTAL SCORE		10

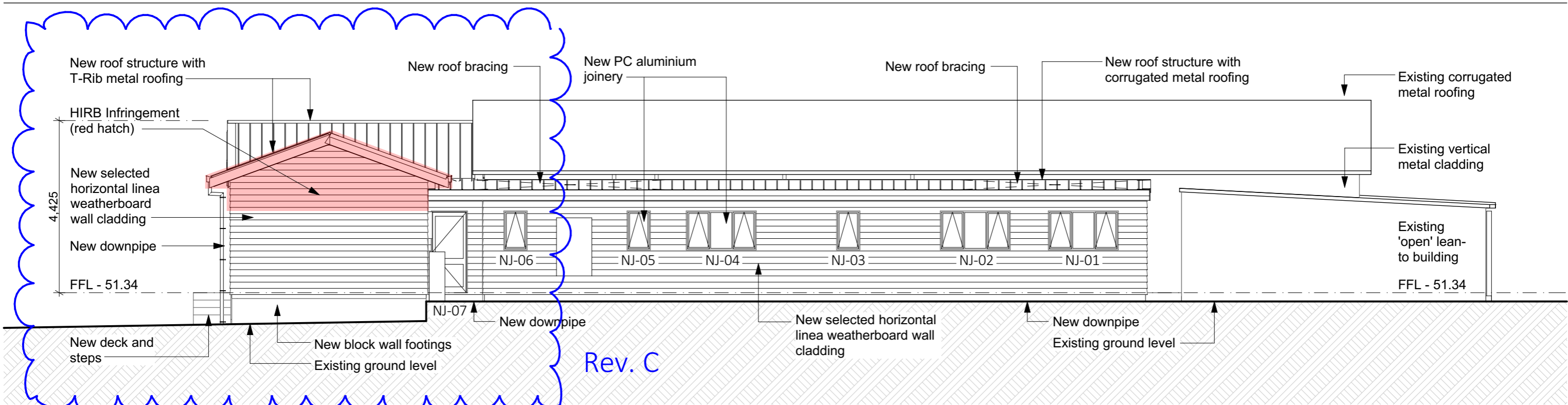
BUILDING ENVELOPE RISK MATRIX		
West Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (NZS3604)	High Risk	2
Number of storeys	Low risk	1
Roof/wall intersection	Very High Risk	5
Eaves width	Medium Risk	1
Envelope complexity	Medium risk	1
Deck design	Low risk	0
TOTAL SCORE		10



EAST ELEVATION - AS PROPOSED

1:100

11

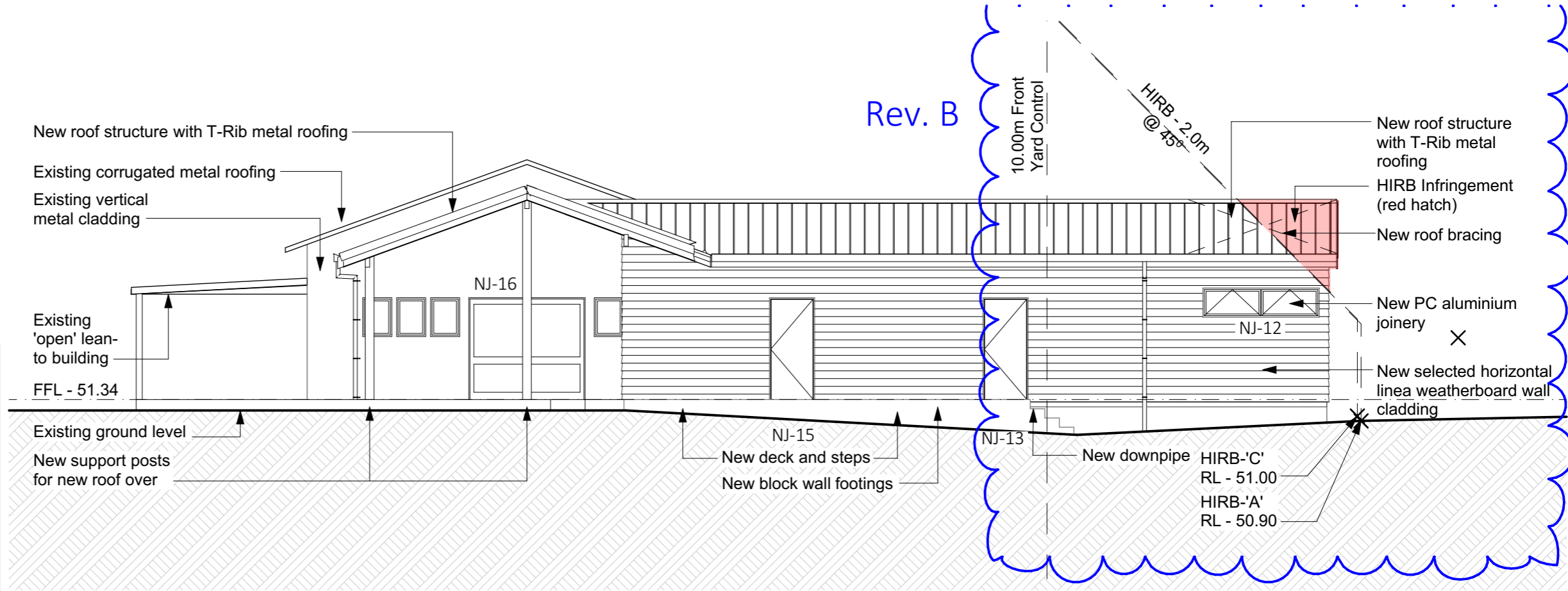


WEST ELEVATION - AS PROPOSED

1:100

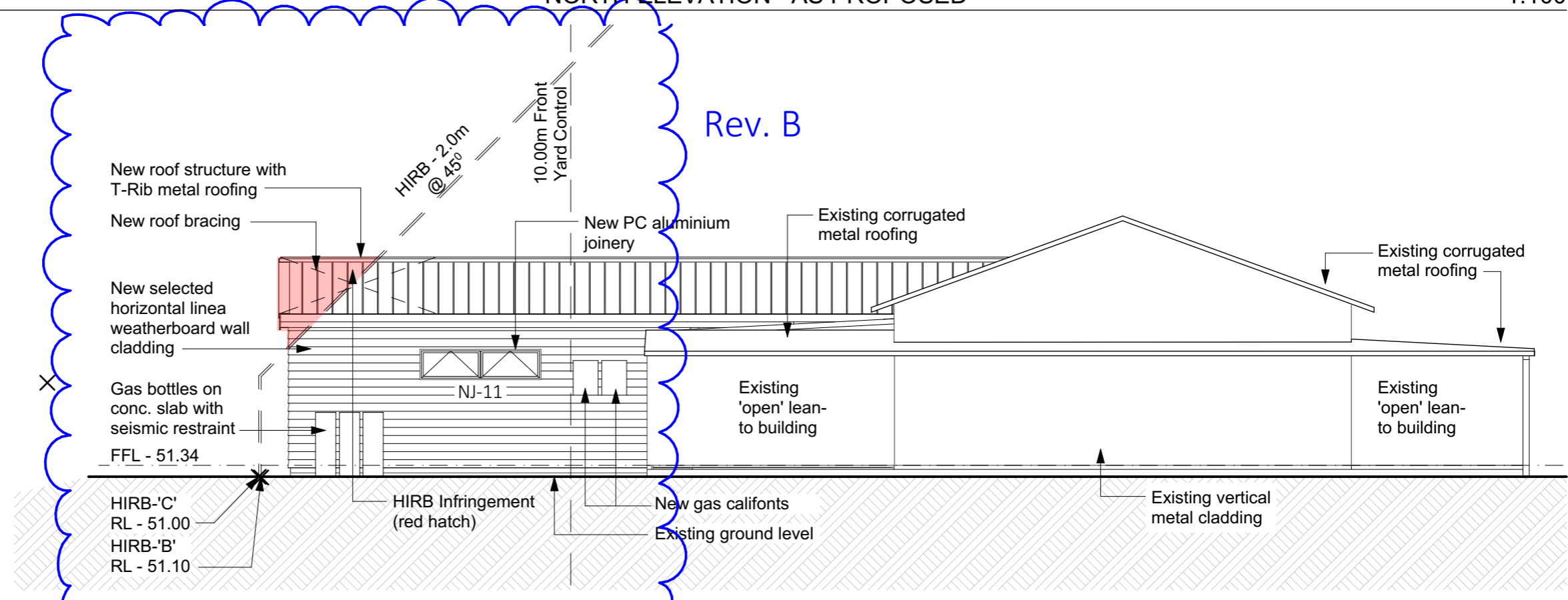
11

BUILDING ENVELOPE RISK MATRIX		
North Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (NZS3604)	High Risk	2
Number of storeys	Low risk	1
Roof/wall intersection	Very High Risk	5
Eaves width	Medium Risk	1
Envelope complexity	Medium risk	1
Deck design	Low risk	0
<b>TOTAL SCORE</b>		<b>10</b>



12 NORTH ELEVATION - AS PROPOSED 1:100

BUILDING ENVELOPE RISK MATRIX		
South Elevation		
Risk Factor	Risk Severity	Risk Score
Wind zone (NZS3604)	High Risk	2
Number of storeys	Low risk	1
Roof/wall intersection	Very High Risk	5
Eaves width	Medium Risk	1
Envelope complexity	Medium risk	1
Deck design	Low risk	0
<b>TOTAL SCORE</b>		<b>10</b>



12 SOUTH ELEVATION - AS PROPOSED 1:100