

Application for resource consent or fast-track resource consent

(Or Associated Consent Pursuant to the Resource Management Act 1991 (RMA)) (If applying for a Resource Consent pursuant to Section 87AAC or 88 of the RMA, this form can be used to satisfy the requirements of [Form 9](#)). Prior to, and during, completion of this application form, please refer to [Resource Consent Guidance Notes](#) and [Schedule of Fees and Charges](#) — both available on the Council's web page.

1. Pre-Lodgement Meeting

Have you met with a council Resource Consent representative to discuss this application prior to lodgement?

Yes No

If yes, who have you spoken with?

2. Type of consent being applied for

(more than one circle can be ticked):

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

Other (please specify)

**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?

As advised by FNDC Planning Technicians and listed in Appendix 8

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

5. Applicant details

Name/s:	Paul and Jennifer Smith
Email:	
Phone number:	
Postal address: (or alternative method of service under section 352 of the act)	

Have you been the subject of abatement notices, enforcement orders, infringement notices and/or convictions under the Resource Management Act 1991? Yes No

If yes, please provide details.

6. Address for correspondence

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

Name/s:	Northland Planning and Development c/ Rochelle Jacobs
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.

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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:	Paul and Jennifer Smith
Property address/ location:	380C Opito Bay Road, Kerikeri
	Lot 8 DP 89303 & 1/6 share of Lot 10 DP 89303
	Postcode

8. Application site details

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

Name/s:	Paul and Jennifer Smith		
Site address/ location:	380C Opito Bay Road, Kerikeri		
	Lot 8 DP 89303 & 1/6 share of Lot 10 DP 89303		
			Postcode
Legal description:	Lot 8 DP 89303	Val Number:	
Certificate of title:	NA46B/737		

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.

Proposed single dwelling, excavation earthworks comprising 353m3, impermeable surfaces, vegetation clearance, fire risk to residential buildings

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):

<input checked="" type="radio"/> Building Consent	Enter BC ref # here (if known)
<input type="radio"/> Regional Council Consent (ref # if known)	Ref # here (if known)
<input type="radio"/> National Environmental Standard Consent	Consent here (if known)
<input type="radio"/> Other (please specify)	Specify 'other' here

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

Disturbing, removing or sampling soil

Changing the use of a piece of land

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

14. Draft conditions:

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

If yes, please be advised that the timeframe will be suspended for 5 working days as per s107G of the RMA to enable consideration for the draft conditions.

15. 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)

Paul and Jennifer Smith

Email:

Phone number:

Postal address:

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

FUSCONE 030

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.

15. Billing details continued...

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)

JENNIFERA SMITH

Signature:

(signature of bill payer)

16. 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.fnfdc.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.

17. Declaration

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

Name (please write in full)

Rochelle Jacobs

Signature

✓

See overleaf for a checklist of your information...

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.

Land Use Resource Consent
Paul & Jennifer Smith
380C Opito Bay Road, Kerikeri

18 March 2026

Attention: Liz Searle and Jo Graham – Team Leader(s) Resource Consents

Paul and Jennifer Smith are seeking a land use consent to construct a new dwelling on their vacant coastal property at 380C Opito Bay Road, Kerikeri. The site is zoned Coastal Living under the Operative District Plan (ODP) and Rural Lifestyle under the Proposed District Plan (PDP). The PDP also has overlays of Coastal Environment and High Natural Characters which apply to the site.

The proposed activity requires a resource consent under the ODP for visual amenity, vegetation clearance and fire risk to residential units. The proposal is a '**Discretionary Activity**' overall.

If you require further information, please do not hesitate to contact me.

Regards,



Rochelle Jacobs
Director/Senior Planner
NORTHLAND PLANNING & DEVELOPMENT 2020 LIMITED

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- 1. Far North District Council Application Form**
- 2. Record of Title – LINZ**
- 3. Site and Building Plans – Arcline**
- 4. Stormwater Report - Geologix**
- 5. Wastewater Report - Waterflow NZ**
- 6. FFWS - FENZ**
- 7. Geotechnical Report – Geologix**
- 8. Correspondence – Various Iwi**
- 9. Correspondence - HNZPT**
- 10. ODP and PDP Objectives and Policies – Northland Planning and Development 2020 Ltd**

Assessment of Environment Effects Report

1. Description of the Proposed Activity

- 1.1. The applicants Paul and Jennifer Smith are seeking a land use consent to construct a new dwelling on their 3,441m² coastal property at 380C Opito Bay Road, Kerikeri. Site layout and building plans prepared by Arcline Architecture are attached at **Appendix 3**.



Figure 1 – Proposed dwelling

- 1.2. The house building is a contemporary style, 235m² three-bedroom, single storey dwelling and attached double garage on a combination excavated and pole type foundation. The building design is a response to the sloping site topography and its vegetated coastal location. Exterior building materials comprise coloursteel roof and cladding. Exterior colours will be recessive Resene 'Flaxpod' (LRV 7%). The exterior cladding colours will comply with BS5252 and both the cladding and the roof will have a reflectance value that is less than 30%.
- 1.3. The building will be located centrally in the lower part of the site. The relatively narrow site (approximately 33m) provides limited options for a dwelling site and driveway. Vehicle access would be via the existing access lot (Lot 10 DP 89303) from Opito Bay Road that also provides access to 382, 376, 380A, 380B and a vacant lot at Lot 2 DP 522973. A concrete driveway extension from the access lot to the house site and vehicle turning area is proposed. The concrete will incorporate black oxide to minimise visibility and a coarse brush finish to increase traction.

1.4. The area of impermeable surfaces within the site comprises the following:

Driveway	214m ²
Paving (vehicle turning area)	126m ²
Roof area	303m ²
Existing 1/6 ROW shared pavement (total 270m ²)	45m ²
Total	688m ² or 20% of the site area

1.5. The proposed impermeable surface coverage will exceed the permitted standard for the Coastal Living Zone. Geologix engineers have prepared an engineering design for the stormwater management system on the site. A copy of this report is attached at **Appendix 4**. The assessment includes the proposed new impermeable surfaces on the site comprising 617m² and excludes the existing access lot driveway pavement. Stormwater management has been designed for the 10% AEP storm with an adjustment for climate change of 20% in accordance with the 2023 FNDC Engineering Standards.

1.6. As illustrated on the Geologix Drawings 400 and 401, the proposed method to manage runoff from the site includes a combination of rainwater tanks to capture building roof water, driveway channel drains and riprap dissipation devices discharging to above ground level spreaders located below the house building. Runoff above the retaining wall and within the lower driveway and manoeuvring area will be directed to open channels and catchpits that also discharge to the lower spreaders. Attenuation of runoff is not required or proposed.

1.7. Approximately 993m² of indigenous vegetation will be removed from the site to provide a cleared area for the driveway, house and driveway, parking, and on-site services and curtilage area. In accordance with FENZ recommendations, buffer areas around the perimeter of the house will be maintained to mitigate future fire risk.

1.8. 353m³ of cut/fill earthworks is required to construct the rear part of the building platform and driveway turning area. Engineered timber retaining walls of up to 2.9m are required around the perimeter of the vehicle turning area and at the rear of the house building. A rock protection batter will provide additional stability to the slopes above the house.

- 1.9. Excess cut will be removed from the site. As indicated on the Arcline site plan (A1001), sediment and erosion control will be undertaken in accordance with GD05 comprising silt fences constructed around the perimeter of the house site.
- 1.10. On-site infrastructure services include a secondary wastewater disposal system with a surface laid dripper type irrigation field to service the dwelling and also potable water tanks. Waterflow NZ Ltd has designed a wastewater disposal system for the site to comply with NRC Regional Plan Rule C.6.1.3 and FNDC Engineering standards. The design is based on a 3-bedroom dwelling that assumes a 5-person occupancy. A copy of the Waterflow wastewater report is attached at **Appendix 5**.
- 1.11. As illustrated on the Waterflow 'Site Layout Plan' The wastewater treatment tank will be located below the south-east corner of the house. The wastewater disposal field and reserve areas will be located above the house between the driveway and boundary. The location of the disposal areas includes a 10m downslope buffer in accordance with NRC Regional Plan Rule C.6.1.3(6)(d). The minimum 5m setback from the driveway (defined in the PRPN as stormwater flowpath) is also complied with.
- 1.12. Two, 25000 litre potable water tanks will be provided at the rear of the house. A single 25,000 litre dedicated fire-fighting water supply tank will also be provided at the rear of the house in accordance with FENZ standards, which include the minimum 6m setback from the dwelling.
- 1.13. Approval from FENZ for the proposed house design, including access for fire trucks and proximity to fire-fighting water supply is attached at **Appendix 6**. Fire vegetation risk reduction recommendations are set out in Section 7 of that approval.

2. Description of the Site and Surrounding Environment

- 2.1. The application site is located at 380C Opito Bay Road, Kerikeri. The site is legally described as Lot 8 DP 89303. A copy of the record of title and the associated land covenants is attached at **Appendix 2**.



Figure 2 – Site and surrounds (source Prover)

- 2.2. The site is 3,441m² located on the southern side of the Opito Bay Peninsula. Vehicle access to the site is via a shared access lot from Opito Bay Road, that is Lot 10 DP 89303.
- 2.3. The site is within the mapped Regional Policy Statement for Northland (RPSN) and the PDP ‘Coastal Environment’ and area of ‘High Natural Character (Refer **Figure 4** below). The site topography is moderate-steep sloping (15-24°), south facing, vegetated coastal hill country that overlooks the Apple Tree Bay and the Doves Bay marina.



Figure 3 - Approximate house site as viewed from boat ramp at Doves Bay marina

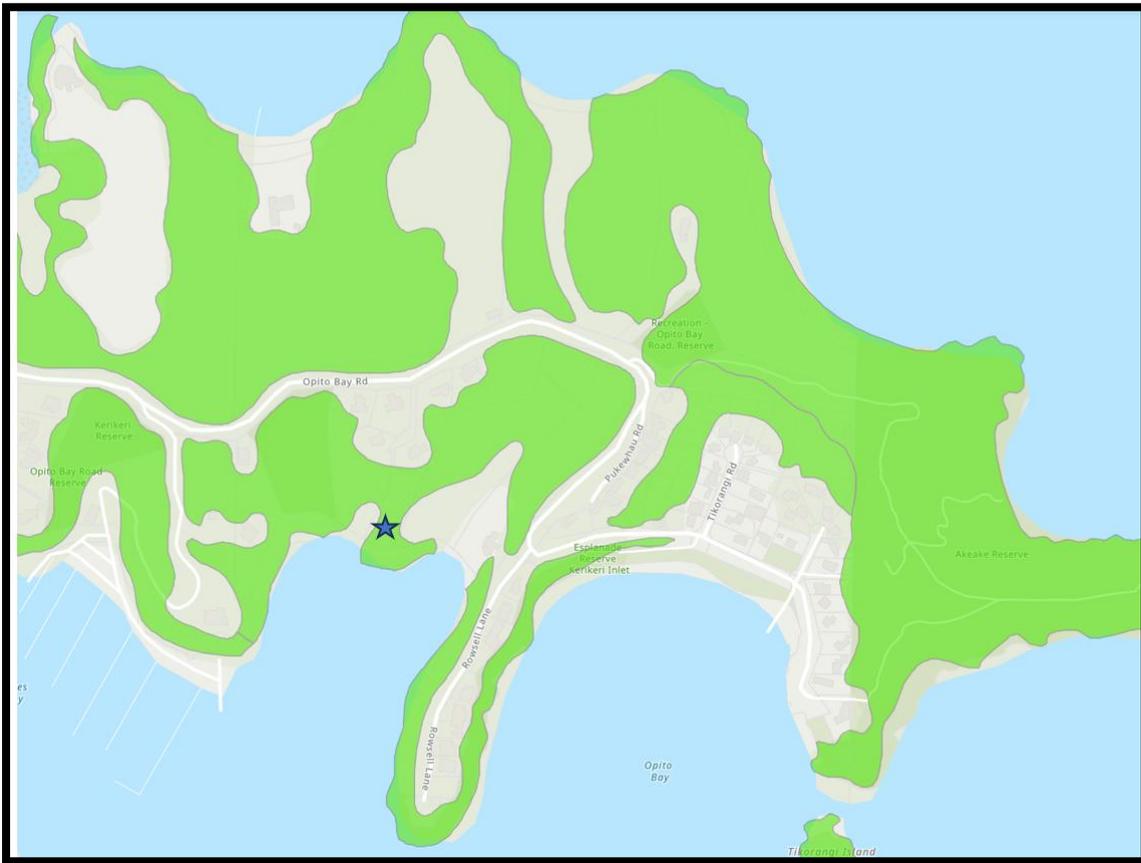


Figure 4– Building site location within mapped RPSN ‘coastal environment’ and ‘high natural character’

- 2.4. The site is covered in mixed indigenous vegetation that is predominantly kanuka and pittosporum species, with very little understorey. There is an existing cleared walking track in the upper part of the site that narrows further down the site to provide access through the vegetation.
- 2.5. The southern boundary of the site is adjacent to Crown Land Marginal Strip that bounds the coastline between Rangitane coastal settlement and Opito Bay. The site is within the DOC 2016 mapped Rangitane Shrublands Protected Natural Area, which extends along the southern side of the peninsula from Aroha Island to Opito Bay.
- 2.6. The site is within the DOC mapped ‘Kiwi High Density’ area.



Figure 5 – ODP mapped Kiwi 'High Density'

2.7. Far North District Plan maps indicate that the site is in proximity to archaeological sites PO5/86 and PO5/87. The Applicant has consulted with Heritage NZ. Their email response is attached at **Appendix 9**.

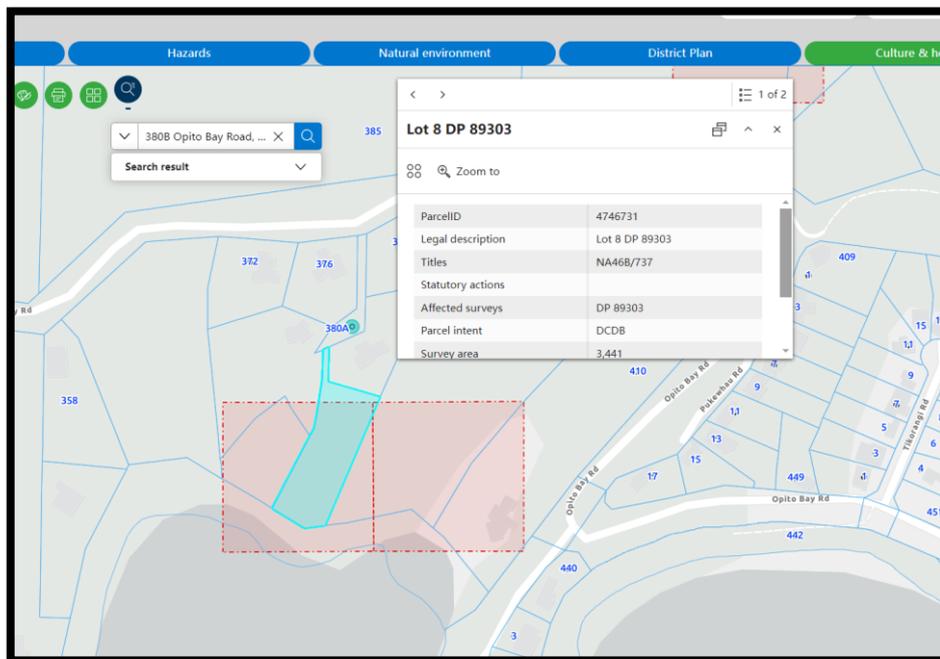


Figure 6 – Location of site in proximity to archaeological sites

2.8. The surrounding area is developed with coastal residential properties and houses set within a native bush environment. There are existing dwellings on adjacent properties with frontage to Opito Bay Road and immediately above the site. There is a consented single dwelling (not yet constructed) on the adjoining site to the west that is Lot 2 DP 354217 – RC2220795.

3. Reasons for Consent

Operative District Plan (ODP)

3.1. The site is zoned ‘Coastal Living’ (CLZ) under the Operative Far North District Plan (ODP). There are no other resource layers that apply to the site.



Figure 7 -Operative District Plan Zone – Coastal Living

3.2. The proposed activity is assessed against the following CLZ rules set out in [Table 1](#) below and the District-wide rules in [Table 2](#).

TABLE 1 - ASSESSMENT AGAINST THE APPLICABLE ODP ZONE RULES:

PERFORMANCE STANDARDS – COASTAL LIVING		
10.8.5.1.1	Visual Amenity	<p>Restricted Discretionary</p> <p>The proposal is for a new 303m² dwelling. The proposed building will not be located within an approved building envelope.</p> <p>It is noted that the roof will be coloursteel such that the BS5252 range is not adhered to.</p>
10.8.5.1.2	Residential Intensity	<p>Permitted</p> <p>A single dwelling is proposed.</p>
10.8.5.1.3	Scale of Activities	Not applicable
10.8.5.1.4	Building Height	<p>Permitted</p> <p>The proposed building has a maximum building height of 7.305m above EGL.</p>
10.8.5.1.5	Sunlight	<p>Permitted</p> <p>The proposed building(s) will comply with sunlight recession plane building setback requirements.</p>
10.8.5.1.6	Stormwater Management	<p>Discretionary</p> <p>The total proposed area of impermeable surface is 688m² (including the 1/6 share of existing driveway paving). This is 19.32% of the site area.</p>
10.8.5.1.7	Setback from boundaries	<p>Permitted</p> <p>The proposed building(s) will be located more than 10 metres from external site boundaries.</p>

10.8.5.1.8	Screening for Neighbours Non-Residential Activities	Not applicable
10.8.5.1.9	Transportation	<p>Permitted</p> <p>A single dwelling is proposed with the associated permitted vehicle 20 one-way vehicle movements.</p> <p>On-site car parking standards no longer apply as at 19 December 2025.</p> <p>Access is via an existing vehicle crossing and access lot.</p>
10.8.5.1.11	Keeping of Animals	Not applicable
	Hours of operation – non-residential activities	Not applicable
10.6.5.10	Noise	Permitted
10.6.5.1.11	Helicopter Landing Area	Not applicable
10.7.5.4	Discretionary Activities	<p>Discretionary</p> <p>The proposed residential dwelling activity does not comply with one or more of the Coastal Living Zone standards and is a Discretionary Activity under Rule 10.7.5.4(c).</p>

TABLE 2 - ASSESSMENT AGAINST THE APPLICABLE OPERATIVE PLAN DISTRICT-WIDE RULES:		
Plan Reference	Rule	Performance of Proposal
12.1	LANDSCAPE AND NATURAL FEATURES	<p>Not applicable</p> <p>The proposed building site is not within any mapped outstanding landscape or natural feature.</p>

12.2	INDIGENOUS FLORA AND FAUNA Rule 12.2.6.2.2	Restricted Discretionary 993m ² of indigenous vegetation clearance is required. Vegetation type is predominantly kanuka, with limited understory. The total cleared area on the site would exceed the permitted rule standard 12.2.6.1.4 of 500m ² .
12.3	SOILS AND MINERALS Rule 12.3.6.2.1 Excavation and / or filling in the General Coastal Zone	Restricted Discretionary 353m ³ of earthworks are required to construct the building foundation and driveway area. The proposed volume of earthworks exceeds the permitted rule standard 12.3.6.1.1 of 300m ² no cut / fill face exceeds 1.5m in height.
12.4	NATURAL HAZARDS (Fire Risk to Residential Units)	Discretionary The proposed dwelling building will be located within 20m of existing bush areas.
12.5	HERITAGE	Permitted There are no registered archaeological sites that would be affected by the proposed development.
12.7	LAKES, RIVERS, WETLANDS AND THE COASTLINE	Permitted
12.8	HAZARDOUS SUBSTANCES	Not applicable
12.9	RENEWABLE ENERGY AND ENERGY EFFICIENCY	Not applicable
15.1	TRANSPORTATION (TRAFFIC, ACCESS AND PARKING)	Permitted
16.6	SIGNS AND LIGHTING	Permitted No new signs are sought as part of this activity.

Operative District Plan Activity Status

3.3. Overall, the proposed activity is a **‘Discretionary’** activity under the ODP. This relates to the combined visual amenity, stormwater management, vegetation clearance, earthworks and fire risk to residential unit’s aspects of the proposed activity. A breach to one or more of the CLZ standards is also a Discretionary Activity under Rule 10.7.5.4(c).

Proposed District Plan

3.4. Under the Proposed Far North District Plan (PDP), the site is zoned ‘Rural Lifestyle. The building is within the ‘Coastal Environment’ and ‘High Natural Character’ overlays that apply to the development areas on the site (refer **Figure 8** below). The High Natural Character reference is 294 and is described as follows:

“Lower coastal faces with kanuka dominant shrubland & forest; mixed broadleaved shrubland & forest and discontinuous fringing pohutukawa. Large mature pohutukawa trees on eastern side of the Doves/Opito Bay peninsula. Buildings & roads generally excluded but the unit does include part of the road heading down to the marina.”

3.5. There are no historic or natural hazard overlays that apply to the site.



Figure 8 - Proposed District Plan Zone and coastal environment and high natural character overlay

- 3.6. The Council notified its' PDP on 27 July 2022. The period for public submissions closed on the 21 October 2022. A summary of submissions was notified on the 4 August 2023. The further submission period closed on the 5 September 2023. District Plan hearings on submissions concluded at the end of 2025. Hearings Panel recommendations on submissions are expected 31 March 2026. Until such time as Council decisions on submissions are made, limited weight is being given to the PDP provisions. A Council decision on submissions is expected in June 2026.
- 3.7. An assessment against PDP rules that have immediate legal effect is set out in **Table 3** below.

TABLE 3 - ASSESSMENT AGAINST THE PDP RULES THAT HAVE IMMEDIATE LEGAL EFFECT¹

Chapter	Rule Reference	Compliance of Proposal
Hazardous Substances	The following rules have immediate legal effect: 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 Rules HS-R5, HS-R6, HS-R9	Not applicable
Heritage Area Overlays	All rules have immediate legal effect (HA-R1 to HA-R14) All standards have immediate legal effect (HA-S1 to HA-S3)	Not applicable The application site is not within a proposed Heritage Area.
Historic Heritage	All rules have immediate legal effect (HH-R1 to HH-R10) Schedule 2 has immediate legal effect	Permitted The site does not contain any scheduled heritage items.
Notable Trees	All rules have immediate legal effect (NT-R1 to NT-R9)	Not applicable. The site does not contain any scheduled notable trees.

¹ As updated by PDP Plan Variation 1 dated 14 October 2024

	<p>All standards have legal effect (NT-S1 to NT-S2)</p> <p>Schedule 1 has immediate legal effect</p>	
<p>Sites and Areas of Significance to Māori</p>	<p>All rules have immediate legal effect (SASM-R1 to SASM-R7)</p> <p>Schedule 3 has immediate legal effect</p>	<p>Not applicable</p>
<p>Ecosystems and Indigenous Biodiversity</p>	<p>All rules have immediate legal effect (IB-R1 to IB-R5)</p>	<p>Permitted</p> <p>The proposed indigenous vegetation clearance is permitted under Rule IB-R1(7) which provides for the construction of a single residential unit on a title and essential on-site infrastructure and access that does not exceed 1,000m². The proposed vegetation clearance is 993m².</p>
<p>Subdivision</p>	<p>The following rules have immediate legal effect:</p> <p>SUB-R6, SUB-R13, SUB-R14, SUB-R15, SUB-R17</p>	<p>Not applicable.</p> <p>The proposal is not a subdivision</p>
<p>Activities on the Surface of Water</p>	<p>All rules have immediate legal effect (ASW-R1 to ASW-R4)</p>	<p>Not applicable.</p>
<p>Earthworks</p>	<p>The following rules have immediate legal effect:</p> <p>EW-R12, EW-R13</p> <p>The following standards have immediate legal effect:</p> <p>EW-S3, EW-S5</p>	<p>Permitted</p> <p>353m³ of cut and fill earthworks are required to construct the building platform and driveway areas.</p> <p>These works fall within the PDP definition of earthworks. The proposed earthworks will adhere to the accidental</p>

		discovery protocol (EW-12) and erosion and sediment control (EW-13) rule standards that have immediate legal effect.
Signs	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	Not applicable.
Orongo Bay Zone	Rule OBZ-R14 has partial immediate legal effect because RD-1(5) relates to water	Not applicable.

Proposed District Plan Activity Status

3.8. The proposal is a 'Permitted' activity under the notified PDP rules that have current legal effect.

National Environmental Standards

National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health 2011 (NESCS)

3.9. The site is not a HAIL site and has no history of HAIL activity.

National Environmental Standards for Freshwater Management 2020

3.10. There are no freshwater wetlands or other stream bodies affected by the proposal.

4. Statutory Assessment

Section 104B of the Resource Management Act 1991 (RMA)

4.1. Section 104B governs the determination of applications for a Discretionary Activity. A consent authority may grant or refuse consent and imposed conditions under section 108.

RMA Section 104

- 4.2. The application proposal is subject to the matters set out in Section 104.
- 4.3. Section 104(1) of the RMA states that when considering an application for resource consent –
- “the consent authority must, subject to Part 2, and section 77M have regard to –*
- (a) any actual and potential effects on the environment of allowing the activity; and*
- (ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment that will or may result from allowing the activity; and*
- (b) any relevant provisions of –*
- i. a national environmental standard:*
 - ii. other regulations:*
 - iii. a national policy statement:*
 - iv. a New Zealand Coastal Policy Statement:*
 - v. a regional policy statement or proposed regional policy statement:*
 - vi. a plan or proposed plan; and*
- (c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.”*

Assessment of Effects on the Environment

- 4.4. Actual and potential effects arising from a development as described in 104(1)(a) can be both positive and adverse (as described in section 3 of the RMA). Positive effects arising from this proposal include the establishment of a single dwelling on site as enabled by an earlier decision on a subdivision proposal that determined the site’s suitability for residential development. The new dwelling will be a permanent residence for the Applicant and contribute to housing supply within the Kerikeri surrounds.
- 4.5. Potential adverse effects on the environment that go beyond the threshold of effects permitted in the coastal living zone include the visual amenity impact of new buildings in the landscape, stormwater management (impermeable surfaces), vegetation clearance, earthworks and fire risk to residential buildings.

Visual Amenity Effects

- 4.6. The ODP limits the permitted area of buildings in coastal environment landscapes to protect natural character. This is an RMA section 6(a) matter. The site is in the Coastal Living zone, which is a lifestyle zone that anticipates a residential development on sites between 5,000m² and 4 hectares. Residential buildings are provided for, however habitable buildings larger than 50m² are required to meet specified criteria to minimise their visual impact. The PDP proposes a Rural Lifestyle zone for the site where the permitted residential intensity is 2 hectares.² The minimum controlled activity / permitted activity site size and residential intensity standards have been lowered but are, in the officer's opinion, still large enough to avoid visually dense rural development on land that is within the coastal environment. In terms of the management of visual effects, proposed coastal environment overlay rules will regulate the size of permitted buildings outside of an area of ONC or HNC to 100m², with controls on exterior colour and materials. Permitted building height will be limited to 5m above ground level.
- 4.7. The proposal is for a modest sized, single storey dwelling designed for a sloping site that overlooks Apple Tree Bay and Doves Bay marina. The suitability of the site for residential purposes was determined by a previous subdivision consent that created in the site in the early 1980s. The size and location of the house within bush surrounds is similar to other sites in the surrounding area. The proposed house cladding and colours comprise black (Resene Flaxpod) coloursteel.
- 4.8. The proposed activity is a Discretionary Activity overall. Section 11.5 of the ODP contains discretionary assessment criteria for visual amenity. These are commented on as follows:
- (a) The size, bulk, height and siting of the building or addition relative to skyline, ridges, areas of indigenous vegetation and habitat of indigenous fauna, or outstanding landscapes and natural features.*
- 4.8.1. The proposed dwelling is a modest sized, single storey building located well below any surrounding ridgelines and outside of any mapped outstanding landscapes or natural features. The house design is a response to the site constraints, including topography, existing vegetation and visibility from the coastal marine area. Vegetation clearance is

² As per officers recommendation – Hearing 9 – officers report [p66]

limited to that which is necessary to establish the house building platform and vehicle access. The southern side of the Opito Bay peninsula is already developed with lifestyle residential housing, which includes adjacent properties. Houses nestled in coastal bush settings is a feature of this location. There is an existing resource consent for a new dwelling on the adjacent site at Lot 2 DP 354217. This site has not yet been built on. The ODP and PDP plans anticipate and provide for the development of a single dwelling on this site.

(b) The extent to which landscaping of the site, and in particular the planting of indigenous trees, can mitigate adverse visual effects.

4.8.2. Vegetation clearance is limited to providing for a house site and driveway and vehicle manoeuvring areas. The balance of the site will remain in bush. This is appropriate for a site in this location where houses are situated within bush settings. Fire risk limits the extent to which cleared areas around the building can be replanted. Low level domestic underplanting will provide outdoor amenity to the house site but is unlikely to influence visual effects as seen beyond the site from the Doves Bay marina or the coastal marine area due to the retained canopy of trees around the building.

(c) The location and design of vehicle access, manoeuvring and parking areas.

4.8.3. The proposed driveway runs down through the central part of the site and parallel to the western and eastern boundaries. Due to the gradient, the driveway will be paved in concrete, tinted with black oxide to minimise visibility. Bush will continue to frame and screen either side of the driveway. In terms of views, direct site visibility is limited to the eastern end of the Doves marina and boat ramp and the coastal marine area. The site may also be visible from some of the sites to the east on Rowsell Lane. Land along this roadway is zoned 'Coastal Residential' so appears more intensive than the CLZ to the west.

4.8.4. The suitability of the site for residential development and the appropriateness of vehicle access from a shared access lot has been pre-determined. The house site has been positioned in terms of the most suitable building site, particularly geotechnical constraints. The proposed development is a reasonable design response to the constraints presented

by the site, including topography, land stability, existing vegetation, fire risk and coastal visibility.

(d) The means by which permanent screening of the building from public viewing points on a public road, public reserve, or the foreshore may be achieved.

4.8.5. The site is a coastal property that is visible from the coastal marine area. The site is not visible from any public land, except for public access use of the Doves Bay marina boat ramp, which is a private facility. The southern side of the Opito peninsula is already developed with residential dwellings set amongst native vegetation. The proposed dwelling development is consistent with development in the immediately surrounding area.

(e) The degree to which the landscape will retain the qualities that give it naturalness and visual value as seen from the coastal marine area.

4.8.6. The site as viewed from the coastal marine area will change as a result of the development. This visible change is anticipated by the applicable ODP and PDP zones and has been pre-determined by a decision on an earlier subdivision. The site is currently covered in mixed native vegetation, predominantly kanuka and manuka with larger Pohutukawa framing the coastal line within the Crown marginal strip. The ODP (and PDP) set limits on indigenous vegetation clearance to provide for residential buildings and driveways within already bush clad sites. To the extent possible, the natural state of the site will be preserved while utilising it for its' residential purpose. The area of proposed vegetation clearance is within the PDP permitted standard which has immediate legal effect.

(f) Where a building is in the coastal environment and it is proposed to be located on a ridgeline, whether other more suitable sites should be used and if not, whether landscaping, planting or other forms of mitigation can be used to ensure no more than minor adverse visual effects on the coastal environment.

4.8.7. The site and building location are not on a ridgeline, which is Opito Bay Road. The building site will retain a visible vegetated backdrop and will be below other house building sites located off the access lot and the southern side of Opito Bay Road.

(g) The extent to which the activity may cause or exacerbate natural hazards or may be adversely affected by natural hazards, and therefore increase the risk to life, property and the environment.

4.8.8. Other than fire risk to residential units, there are no other mapped or otherwise identified natural hazards that apply to the site. The site building location has been assessed for geotechnical suitability, and an appropriate building foundation has been designed. Recommendations from Geologix are that the building should not be located within 21.7m of the southern boundary, hence the location of the house above this building restriction line. A copy of the Geologix Geotechnical Report is attached at **Appendix 7**.

(h) The extent to which private open space can be provided for future uses;

4.8.9. The proposal is a residential development on coastal lifestyle site. Private open space is provided in the form of outdoor deck areas and around the perimeter of the building for domestic utility.

(i) The extent to which the siting, setback and design of building(s) avoid visual dominance on landscapes, adjacent sites and the surrounding environment;

4.8.10. The application site is zoned CLZ where residential lifestyle development is enabled. Residential buildings and associated driveways are a landscape feature of in this environment. Where sites have indigenous vegetation cover, clearance areas are limited to that which is necessary to establish and dwelling and access. Boundary setbacks on smaller lots (<5,000m²) are set at 3m, which is achieved on this site. The proposed building is not located on a ridgeline and will continue to be separated from other dwellings by the existing native bush environment. The location and length of the driveway is necessary for access to the dwelling. Driveway visibility will be minimised through the use of tinted (black oxide) concrete materials and retaining the bush canopy down the sides of the driveway.

(j) The extent to which non-compliance affects the privacy, outlook and enjoyment of private open spaces on adjacent sites.

4.8.11. Compliance matters relate to visual amenity and the visual impact of larger buildings in the coastal landscape. The extent of paved surfaces exceeds the permitted and restricted

discretionary thresholds standards due to the existing accessway, new driveway paving, and the proposed building. The effect of these non-compliances will not affect the privacy, outlook and enjoyment of private open spaces on adjacent sites.

- 4.9. In the context of what is anticipated in the CLZ for a single residential dwelling on an established site and the development constraints presented by the location, potential adverse effects are assessed to be no more than minor. Potential changes to the visual appearance of the site to include a dwelling have been inevitable since the site was created in the early 1980s. Whilst new residential buildings and associated development activities are not permitted by the zone, they are in accordance with its intended purpose which is to enable low density residential development to locate in coastal areas where any adverse effects on the environment, particularly the overall natural character of the coastal environment can be avoided, remedied or mitigated.³

Vegetation clearance effects

- 4.10. To accommodate a house and driveway, the proposal requires the removal of 993m² of indigenous vegetation from the currently undeveloped, bush covered site. The site is zoned and subdivided for residential purposes therefore residential buildings and associated driveway access are anticipated on the site.
- 4.11. The ODP and PDP recognise and provide for indigenous vegetation clearance to enable development. The ODP permits up to 500m² total cleared area and the PDP up to 1,000m² for the purpose of a single residential unit and the associated on-site infrastructure and access. The PDP IB-R1 rule has immediate legal effect and is a consideration when deciding the extent of vegetation clearance that is acceptable in this location. At this stage in the PDP process, increased weight can be given to these rules to reflect officer's rights of reply and imminent Hearings Panel recommendations. As recommended by reporting officers, changes to the permitted activity Rule IB-R1(7) are to limit the vegetation clearance to an 'existing' title.
- 4.12. The ODP does not recognise the site as an outstanding landscape or feature. The value of vegetation on the site is in the context of the Rangitane Shrublands PNA and its location in the Regional Policy Statement coastal environment and area of high natural character. The more conservative ODP 500m² standard would be exceeded.

³ CLZ Objective 10.7.3.1 and 10.7.3.2

- 4.13. Under the PDP, and despite the application of the ‘high natural character’ overlay, the site zone environment is changing with greater leniency being given to vegetation clearance to accommodate a residential development on an existing site that also relies on on-site infrastructure services. The proposed clearance would be within the permitted standards of the PDP and is considered to meet the intent of the rule, which is that it is the ‘minimum necessary’ to allow for the construction of a single dwelling and essential on-site infrastructure. The balance areas of the site will remain vegetated and part of the wider indigenous protected natural area. To the extent possible, the site will remain in its natural state. The development will not affect the coastal margin and its vegetation.
- 4.14. Potential adverse effects on local biodiversity and life-supporting capacity of this area will be no more than minor. The site remains connected to the wider ecological environment, with fragmentation limited to the centre of the site where the building and driveway are to be located. The High Natural Character value of the site will remain intact as a continuous area of bush through the lower part of the site adjacent to the coastal margin and as a vegetation corridor connecting through adjacent sites. In accordance with CLZ Objective 10.7.3.2, the overall natural character of the coastal environment will be preserved.
- 4.15. Notwithstanding the proposed permitted status of vegetation clearance (and the currently operative restricted discretionary status), higher order RPS policy requires that adverse effects (that are not significant) on areas of predominantly indigenous vegetation and associated habitat values in the coastal environment are avoided and / or remedied or mitigated⁴ (also reflected in PDP IB-P2). To determine the extent to which the development site provides habitat to indigenous species such as kiwi or herpetofauna, the Applicant would agree to a pre-construction habitat survey to identify and potentially relocate species within the site prior to works commencing.
- 4.16. It is notable that a ‘lifestyle’ type zoning in this location has been adopted by the PDP and that the adverse effects associated with vegetation clearance (up to 1,000m²) associated with residential development on existing sites are generally accepted. The RPS recognises and provides for the practical aspects of developing legacy sites for their zone purposes. For sites that are within areas of high natural character, the test for acceptable effects is minimising to

⁴ RPS Policy 4.4.1(1) and (2)

the extent practicable the effects of vegetation clearance and site modification including earthworks.⁵ This is also reflected in the PDP Indigenous Biodiversity objectives and policies.⁶

- 4.17. For the reasons stated above, it is considered that potential adverse effects on indigenous vegetation, habitat values and the high natural character values will be no more than minor.

Earthworks Effects

- 4.18. Development of the site requires 353m³ of excavation earthworks to construct the driveway, building platform and on-site infrastructure. Engineered retaining walls of up to 2.9m in height are proposed around the western and northern perimeter of the lower driveway and turning area and a rock protected batter on the northern side. The permitted combined excavation and fill volume standard in the CLZ is 300m³ per year. The extent of earthworks has been minimised to the extent possible by adopting what is largely a pole foundation for the house building and a retained concrete foundation for the attached garage and vehicle turning area at the end of the driveway. Limited fill (36m³) is required in addition to cut material that will be removed from the site. On-site earthworks will be managed in accordance with current practice outlined in GD-05 and as required by the PDP. This will comprise a downslope silt fence as shown on the application plan A1001.

- 4.19. The proposed earthworks volume is a restricted discretionary activity. While this is the case, the overall application when bundled is Discretionary. Section 12.3.7 of the ODP contains discretionary assessment criteria for earthworks. These are commented on as follows:

(a) the degree to which the activity may cause or exacerbate erosion and/or other natural hazards on the site or in the vicinity of the site, particularly lakes, rivers, wetlands and the coastline;

- 4.19.1. The proposed building site avoids instability on the site as identified by the Geologix engineers and is located more than 50m from the coastal marine area. Existing vegetation will be retained downslope of the house site and assist in stabilising the slope and as a secondary filter for any sediment runoff that travels beyond the constructed silt fence. It is not expected that the earthworks will exacerbate any other natural hazards at the site or impact the adjacent coastal marine area.

⁵ RPS Policy 4.6.1(1)(ii)

⁶ IB-O2 and IB-P10

(b) any effects on the life supporting capacity of the soil;

4.19.2. The proposed activity will not affect the life-supporting capacity of the soil. The site has been subdivided for residential purposes and is within a residential lifestyle zone. The site is not a rural production site. Soil types are not defined as highly productive. The balance areas of the site outside of the residential building and driveway areas will remain in bush.

(c) any adverse effects on stormwater flow within the site, and stormwater flow to or from other properties in the vicinity of the site including public roads;

4.19.3. There will be no adverse effects on adjacent properties or public roads.

(d) any reduction in water quality;

4.19.4. There will be no reduction on water quality or effect on the coastal marine area below the site. The development area is set well back from the coastal marginal strip and is protected by erosion and sediment control silt fences and natural filtration provided by the bush area in the lower part of the site.

(e) any loss of visual amenity or loss of natural character of the coastal environment;

4.19.5. There will be temporary adverse visual effects generated by the proposed earthworks; however these are not significantly above what is permitted by the ODP. The site is zoned for residential development and the effects associated with construction of a dwelling, access and infrastructure are anticipated by the Plan. Development of the site requires the construction of a driveway for access that is unable to follow the contour due to the narrowness of the site. Until the driveway is paved and tinted, it is likely to be relatively visible, as will be the cleared area for the building platform where the excavation area will be visible until such time as the house is constructed. In the context of the zoning and what is enabled at the site, adverse visual effects arising from earthworks will be no more than minor.

*(f) effects on Outstanding Landscape Features and Outstanding Natural Features (refer to **Appendices 1A and 1B in Part 4, and Resource Maps**);*

4.19.6. The site is not within a mapped outstanding landscape feature and will not affect any natural features.

(g) the extent to which the activity may adversely affect areas of significant indigenous vegetation or significant habitats of indigenous fauna;

4.19.7. As previously described, vegetation clearance is required to establish the building and driveway areas. These areas are within the Rangitane Shrublands PNA and are subject to separate vegetation clearance rules. The proposed residential dwelling is enabled by the site zone and by way of a previous subdivision resource consent decision. The vegetation clearance and earthworks areas are limited to the proposed house site and its immediate surrounds, including the driveway. All other vegetation will be retained.

(h) the extent to which the activity may adversely affect heritage resources, especially archaeological sites;

4.19.8. The site is within the vicinity of registered archaeological sites. The Applicant has consulted with Heritage NZ, who have indicated there are no concerns with the proposed activity and its location and that standard ADP procedures should apply. A copy of this email correspondence is attached at **Appendix 9**.

*(i) the extent to which the activity may adversely affect the cultural and spiritual values of Maori, especially Sites of Cultural Significance to Maori and waahi tapu (as listed in **Appendix 1F in Part 4**, and shown on the **Resource Maps**);*

4.19.9. There are no known cultural or spiritual values associated with this site. Local Iwi have been contacted as part of this application. At time of lodgement no responses had been received. The development will not affect the coastal margin which is protected by the marginal strip land. A copy of the email correspondence to the relevant hapu as advised by the Council's planning technician is attached at **Appendix 10**.

(j) any cumulative adverse effects on the environment arising from the activity;

4.19.10. There are no cumulative adverse effects that would arise from the proposed activity which is zoned for the residential purpose applied for.

(k) the effectiveness of any proposals to avoid, remedy or mitigate any adverse effects arising from the activity;

4.19.11. The proposed activity is a residential dwelling and associated driveway access. The site is zoned for low density residential activity. The site is constrained in terms of vegetation cover and topography. The proposed house design reflects the location and site constraints and includes mitigation measures where possible to avoid adverse effects on the environment.

4.19.12. Works will be undertaken in accordance with a construction management plan agreed with the site contractor. This includes the use of the shared access lot and management of earthworks effects within the site, particularly sediment runoff. Earthworks effects are temporary and will be largely contained within the site boundary. It is expected that any potential adverse effects will be no more than minor.

(l) the ability to monitor the activity and to take remedial action if necessary;

4.19.13. The earthworks activity will be monitored by the Council through both the resource and building consent, which will ensure erosion and sediment controls are effective.

*(m) the criteria in **Section 11.20 Development Plans** in **Part 2**.*

4.19.14. Not applicable for this activity.

*(n) the criteria (p) in **Section 17.2.7 National Grid Yard**.*

4.19.15. Not applicable for this activity.

Stormwater Effects

4.20. Proposed impermeable surfaces on the site will exceed the permitted standard for the CLZ, which is 10% of the site area. Impermeable surfaces include the house building and driveway areas (including a 1/6th share of the access lot) comprising a total of 688m². The proposed house site is to be located two thirds into the property on the central slopes and outside of the building restriction line identified by Geologix. Sites within the lower slopes and below the existing houses necessitate longer driveways and result from the original subdivision configuration.

4.21. Expert civil engineers, Geologix have assessed the potential adverse effects of additional impermeable surfaces on the site. Potential effects predominantly relate to erosion control and the 10% AEP storm event. There is no identified flooding issue in this location where stormwater runoff discharges directly into the coastal marine area. Concentrated flow within the proposed driveway will be directed to channel drains and constructed riprap to slow runoff and direct to spreaders located downslope of the house building. This is considered to be an acceptable design solution for the management of runoff within the site and as such potential adverse stormwater effects are assessed to be no more than minor.

Wastewater Disposal Effects

4.22. Waterflow NZ has designed a wastewater treatment and disposal system for residential use of the site. The treatment and disposal design complies with the permitted standard of the Regional Plan for Northland, including the additional buffer areas on steeper slopes and setbacks from the adjacent driveway stormwater drainage channels. The proposed disposal system includes surface laid dripper lines within the bush area to the north, which will result in minimal disturbance to the vegetation. Potential adverse effects are assessed to be less than minor and within the permitted standards of the relevant Regional Plan.

Fire Risk Effects

4.23. The proposed house site location is within 20m of existing bush areas. To accommodate the house and avoid excessive vegetation clearance, fire risk to the house building will remain a potential hazard at the site. Houses situated in bush settings are a feature of the immediate area. To mitigate this risk, the proposal includes provision for dedicated on-site fire-fighting water supply and access to parking for a fire truck within the shared access lot at the top of the site driveway. The proposal has been assessed by FENZ, who have approved the site layout, the way fire risk will be mitigated and fire-fighting services accessed at the property. Recommendations include use of fire safe construction materials, regularly maintaining gutters to remove flammable material, establishing safety zones around the house building, including restricting perimeter vegetation to low flammable species. The proposed house and site design complies with these recommendations. Potential adverse effects from fire risk are assessed to be no more than minor.

4.24. Rule 12.4.7 sets out the discretionary activity assessment matters for residential development proposals that may generate a fire risk. The matters that are relevant to fire risk are commented on below:

(a) the degree to which the activity may cause or exacerbate natural hazards or may be adversely affected by natural hazards, and therefore increase the risk to life, property and the environment;

4.24.1. The introduction of a residential activity into bush environments has the potential to exacerbate fire risk. The ODP seeks to manage fire risk 'to' residential units, that is ensuring that any risk to life or property is avoided or mitigated where possible. The application site is an existing property that is currently covered in bush and has been subdivided and zoned for residential purposes. Similar to other sites in the immediate area, houses are located within the bush, and mitigation measures put in place to ensure that fire risk to life and buildings is minimised. This includes the distance between remaining bush areas and buildings, the provision of adequate on-site (or nearby) fire-fighting water supply, and use of low flammable building and landscaping materials / plants. All of these methods have been adopted and approved by FENZ.

(b) – (i) not relevant

(j) in respect of fire risk to residential units:

(i) the degree of fire risk to dwellings arising from the proximity of the woodlot or forest and vice versa; and

4.24.2. Without resulting in excessive clearance, the proximity of vegetation to house buildings has been maximised to the extent possible and is between 2-4 metres. This is significantly less than the permitted standard and will remain a risk for the dwelling should the bush ignite. The house cladding and roof material is coloursteel which is a non-flammable building material that will reduce building fire risk.

(ii) any mitigation measures proposed to reduce the fire risk;

4.24.3. Fire risk mitigation includes ensuring that there are properly fitted and operational smoke alarms inside the dwelling, adequate fire-fighting water supply that is readily accessible to FENZ fire trucks that will need to park within the access lot. Building cladding and roof materials have a low flammability.

(iii) the adequacy of the water supply; and

4.24.4. An adequate and approved volume of fire-fighting water supply will be available at the site.

(iv) the accessibility of the water supply to fire service vehicles

4.24.5. Tank fire-fighting water supply will be available at the site and readily accessible to fire service vehicles.

Relevant Statutory Provisions

4.25. Section 104(1)(b) requires the consideration of any relevant provisions found in national policy statements or standards, regional policy statements or plans and operative or proposed district plans. Relevant statutory documents include:

- New Zealand Coastal Policy Statement
- Regional Policy Statement for Northland
- Far North District Plan
- Proposed Far North District Plan

4.26. The scale of development is such that the National Policy Statement for Indigenous Biodiversity has limited relevance.

New Zealand Coastal Policy Statement 2010 (with 2025 amendments)

4.27. The NZCPS provisions apply to this proposal but are generally given effect to within the context of the District Plan and the higher order RPSN. The NZCPS is concerned with sustainable management of the coastal environment including its ecological function, and the preservation of its natural character and landscape values. Effects on Te Tiriti values, public access to the coast, coastal hazards and the wellbeing of people are also relevant considerations.

- 4.28. The site is within the coastal environment as mapped by the Regional Policy Statement for Northland. The current District Plan site zone is CLZ, which is within the ODP coastal environment. The PDP zoning is Rural Production. Coastal values and features are to be managed via a coastal environment overlay. Matters relating to the preservation of natural character and associated landscape and ecological values subject to building (visual amenity), vegetation clearance, and earthworks rules that are directly relevant to RMA s6(a) matters of national importance.
- 4.29. The proposed house site is existing. Despite the relatively intact natural character of the site that sits above the coastal marine area, the District Plan zone does enable vegetation clearance, earthworks and associated built development on the site. This is consistent with development along this part of the Opito Bay peninsula coastline which in this location is characterised by more intensive development within the adjacent Opito Bay coastal residential settlement, and the adjacent Doves Bay marina. The consolidation of development within existing coastal settlements is supported by the NZCPS.⁷

Regional Policy Statement for Northland (2016 - updated 2018)

- 4.30. The purpose of the Regional Policy Statement for Northland (RPS) is to promote the sustainable management of Northland's natural and physical resources by providing an overview of the region's resource management issues.
- 4.31. The RPS sets out policies and methods to achieve integrated management of Northland's natural and physical resources. The proposed activity is located outside of any regionally mapped outstanding landscape. It is within an area of high natural character that includes the coastal margin that bounds the southern side of the Opito Bay Peninsula. It is noted that the 2009 ODP predates the 2016 RPSN and does not reflect the mapped areas of high natural character that were applied to the site. This has been rectified in the PDP which includes a high natural character overlay.
- 4.32. Objective 3.4 seeks to protect areas of significant indigenous vegetation and fauna habitats, maintain the extent of ecosystem diversity and habitat and where practicable, enhance these environments. Within the coastal environment, this includes avoiding adverse effects on threatened or at-risk indigenous species and avoiding significant adverse effects on areas of

⁷ NZCPS Policy 6(c)

indigenous vegetation, habitats that have recreational, commercial, traditional or cultural value.⁸ The application site is within a previously developed part of the Optio Bay peninsula and is zoned for low density residential development. Existing indigenous vegetation and associated habitat values will be protected to the extent possible, whilst enabling a residential dwelling on a site that was previously subdivided for residential purposes.

- 4.33. It is considered that in the context of the existing site zoning and the extent to which existing vegetation will be retained, the proposed residential development will not be contrary to the objectives and policies of the RPSN.

Far North District Plan

- 4.34. The proposed residential activity has been assessed against the applicable objectives and policies of the ODP. A copy of these provisions is attached at **Appendix 10**.

Coastal Environment & Coastal Living Zone

- 4.35. The application site is within the ODP Coastal Environment which comprises rural land and coastal settlements along the District's coastline. The site location is the Opito Bay peninsula near the township of Kerikeri where there is residential development of varying intensity, significant bush areas, indigenous fauna habitat (particularly for kiwi) and significant marine infrastructure at Doves Bay. Within the Coastal Environment, it is expected that where natural character exists it will be preserved and that landscape and visual qualities will be protected from inappropriate development. Wherever possible, development is to be consolidated within existing settlements to provide medium and low-density settlements along the coastline.⁹

- 4.36. Coastal Environment Objective 10.3.1 recognises the tension between managing avoiding the adverse effects of subdivision and development and the practicalities around providing for appropriate development. As per s6(a) of the RMA, the NZCPS and the RPSN, the preservation of the natural character of the coastline and the coastal environment and any other associated natural and landscape values is sought (Objective 10.3.2). The CLZ forms part of the coastal environment and is a transition zone between denser residential coastal settlements and the General Coastal zone. Smaller lot sizes and clustered development is anticipated and provided for in the CLZ as a location where the coastal environment has already been developed, or

⁸ RPSN Policy 4.4.1(1)-(2)

⁹ Coastal Environment – Expected Outcomes 10.2.1, 10.2.2, 10.2.3

modified in some way. The CLZ is described as having an ability to absorb further low density, development without detriment to the overall coastal character.¹⁰

- 4.37. In the context of this application, appropriate development includes development on a previously subdivided site that is zoned for residential lifestyle purposes. This is provided for in Rule 10.7.5.1.2. The site was created prior to the current ODP and is a legacy site that has been vacant for the past forty years. Potential adverse effects associated with establishing a dwelling are to be avoided, remedied or mitigated. This includes minimising indigenous vegetation clearance, earthworks and the visibility of new buildings on a currently undeveloped site. The proposed dwelling is a modestly sized, 3-bedroom home with a building footprint of 235m² plus an attached garage at the rear that is positioned within suitably stable slopes within the site and a similar location to the consented dwelling on the adjacent site to the west. A south (coast) facing deck will attach to the front façade providing an above ground outdoor living space. The area of vegetation clearance is limited to the building area and the driveway that extends from the access lot. All other bush areas will remain enabling a continuous area of vegetation through neighbouring sites and the Crown owned marginal strip to be maintained.
- 4.38. In accordance with Policy 10.7.4.3(a), the proposal consolidates new coastal development within an existing residential lifestyle environment that is characterised by dwellings set amongst the bush. The design of the dwelling being single storey with discrete black coloured roof and cladding materials will minimise its visual appearance as seen from the coastal marine area and the adjacent marina. This is consistent with Policy 10.7.4.3(b). The building site is positioned well away from the coastal margin and steeper topography. The continuous, unfragmented character of indigenous vegetation within the lower part of the site will remain unchanged. The proposed development will not adversely affect nearby archaeological sites or sites of interest to Iwi (Policy 10.7.3.4(f)).
- 4.39. It is considered that the proposed dwelling would not be contrary to the coastal environment or the CLZ objectives and policies.

Indigenous Flora and Fauna

- 4.40. The combined cleared area required to accommodate the dwelling and driveway exceeds the permitted 500m² total cleared area standard for general vegetated sites that have no

¹⁰ CLZ context statement – para 2

outstanding natural feature or landscape value. In the context of the coastal environment, section 6(a) & (b) of the RMA provides the basis for ODP objectives and policies that seek to protect existing indigenous vegetation and their associated habitat values. This includes kiwi habitat (Policy 12.2.4.11).

- 4.41. In the ODP context, the significance of such vegetation is determined using the methods set out in 12.2.5.6. As vegetation that forms part of the Rangitane Shrubland PNA that is adjacent to the coast, its significance is acknowledged with careful consideration given to the extent of clearance that should be enabled. The ODP maps do not currently reflect the high natural character status given that the RPSN has applied to the site, presumably because the ODP maps were developed prior to the RPSN in 2016. This is changing under the PDP where the site will have high natural character status. However, with that increased status will come rules that enable a larger clearance area. The updated planning framework for the district will better reflect the provisions of the RPSN and provide greater flexibility for clearance areas, particularly on existing sites that are constrained in terms of access and topography.
- 4.42. Consistent with the ODP objectives and policies, the ecological values at the site can be maintained within unfragmented bush areas within the lower parts of the site which will continue through adjacent sites. The natural character of the coastal environment in this location will remain unchanged where this is characterised by indigenous vegetation along the coastal margin and steeper site slopes and residential dwellings located within bush areas.
- 4.43. Regarding kiwi habitat it is encouraging to note that North Island Brown Kiwi were re-assessed as 'not threatened' and are predicted to increase >10% over three generations¹¹. The PDP and Submissions by the Department of Conservation on the Indigenous and Biodiversity chapter have highlighted and updated the current situation on indigenous species in the Far North District. The change in rules and policy supports the use of the terms 'at risk or threatened indigenous fauna' when seeking management of pets and pests. As kiwi are no longer considered 'at risk or threatened' conditions through this land use consent restricting the introduction of pets to the site to protect kiwi are no longer considered warranted.

¹¹ Conservation Status of Birds in Aotearoa NZ 2021, Department of Conservation [Pg 12].

Soils (Earthworks)

- 4.44. The application includes excavation earthworks that exceed the maximum 300m³ per annum standard. As previously explained, the earthworks are required to construct the driveway and a level paved area for the driveway turning area and part of the house foundation. The ODP Chapter 12, section 3 objectives and policies are concerned with maintaining the life-supporting capacity of soils in the district and managing adverse effects associated with excavation and filling. The application site is not a coastal rural-residential type site that is zoned for low density rural lifestyle type activity. Site soil types are not highly productive as defined by the NPS-HPL.¹²
- 4.45. Excavation earthworks will be managed in accordance with a construction plan provided by the contractor that will include adherence to conditions of consent requiring erosion and sediment control downslope of the construction site and protecting the condition of the shared access lot. Other than the coastal marine area, there are no other 'at risk' waterbodies nearby that could be affected by the proposed earthworks activity. It is considered that the proposed activity will not be contrary of the objectives and policies of the ODP relating to the protection of District soils.

Natural Hazards – Fire Risk

- 4.46. The location of residential buildings in bush environments generates a potential risk to human life and property. Conversely, there is an increased risk to vegetated bush areas from residential activity. The ODP seeks to manage the risk of fire to residential units where these are located within 20m of established vegetation. Avoiding the risk of severe damage to property and loss of indigenous vegetation, particularly where sites are not close to firefighting services is an objective of the ODP (Objective 12.4.3.1 and 12.4.3.7, Policy 12.4.4.7).
- 4.47. The proposal includes methods for avoiding the risk of fire to adjoining vegetation and properties. As described above, these include the proposed type of inflammable cladding and roofing materials, providing adequate fire-fighting water supply and access for fire truck vehicles and limiting flammable planting around the perimeter of the house. FENZ has approved the proposal in terms of managing fire risk and meeting the relevant NZ standards.

¹² Site soil type is 6e9.

It is considered that fire risk will be sufficiently mitigated at the site and the proposed activity will not be contrary to ODP objectives and policies that manage natural hazards.

Proposed Far North District Plan

Rural Lifestyle Zone, coastal environment, and high natural area overlay

- 4.48. The proposed site zoning is Rural Lifestyle which has been applied to coastal land that is currently zoned 'Coastal Living'. Zone rules, objectives and policies do not have current legal effect, however they do provide an indication of how this part of the district is to be managed. RLZ-O1 and RLZ-O2 state that the predominant character and amenity of the RLZ will be characterised by, amongst other things, low density residential and small-scale farming activities, limited buildings and structures and areas of vegetation, natural features and open space.
- 4.49. To manage resource management issues relating to the coastal environment, a mapped coastal overlay has been applied to District land to differentiate between land that is within, or outside of, the mapped coastal environment. To manage effects on the natural environment, the PDP has adopted environment overlays, including a high natural character overlay, which applies to the site. This overlay adopts the same RPSN high natural character area overlay, the basis of which is the Rangitane Shrublands PNA.
- 4.50. The proposed residential activity is consistent with the intent of the Rural Lifestyle zone which provides for rural lifestyle living. The Council has deemed this part of the District to be suitable for rural residential type living. The zone provides for residential activity on existing sites where it is recognised that land is already fragmented, it is on low value soils or is where a resource consent has enabled a denser form of residential living.¹³
- 4.51. Currently, in respect of this application, only rules relating to vegetation clearance and aspects of earthworks activities have current legal effect. To accommodate a house and driveway, the proposed activity requires the removal of up to 993m² of indigenous vegetation from a site that is existing. This is within the permitted threshold of the PDP (Rule IB-R1(7)) for indigenous vegetation clearance within a significant natural area. IB-02 states that *'indigenous biodiversity is managed to maintain its extent and diversity in a way that provides for the social, economic*

¹³ PDP Rural Lifestyle Zone – Overview statement – paragraph 3

and cultural wellbeing of people and communities.’ Enabling a single dwelling on the site is consistent with this objective, particularly where the proposed clearance is within permitted standards and on a site that has already been created for a residential purpose.

- 4.52. The location of a single residential dwelling on an existing site in the coastal environment would not be contrary to the objectives and policies of the PDP that have current legal effect.

5. Notification Assessment

- 5.1. Section 95A-95G sets out the public and limited notification criteria for resource consent applications.

Section 95A – Public Notification Assessment

- 5.2. Section 95A requires a council to follow specific steps when deciding whether to publicly notify an application for resource consent. These steps are set out and commented on as follows.

Step 1: Mandatory public notification in certain circumstances

S95A(3)(a)	The applicant requests public notification
S95A(3)(b)	Public notification is required under section 95C
S95A(3)(c)	The application is made jointly with an application to exchange recreation reserve land under section 15AA of the Reserves Act 1977.

- 5.3. The Applicant has not requested public notification, nor is it required under section 95C. Section 95A(3)(c) is not applicable.

- 5.4. The Applicant has not requested public notification, nor is it required under section 95C. Section 95A(3)(c) is not applicable.

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

S95A(5)(a)	Is the application for a resource consent for one or more activities and each activity is subject to a rule or national environmental standard that precludes public notification.
S95A(5)(b)	Is the application for a resource consent for 1 or more of the following, but not other, activities; a controlled activity; a restricted

	discretionary, discretionary or non-complying activity, but only if the activity is a boundary activity.
--	--

- 5.5. The proposed activity applied for is not precluded from notification by a rule or a national environmental standard. The activity is not a boundary activity.

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

S95A(8)(a)	The application is for a resource consent for 1 or more activities, and any one of those activities is subject to a rule or national environmental standard that requires public notification.
S95(8)(b)	In accordance with section 95D, the activity has or is likely to have adverse effects on the environment that are more than minor.

- 5.6. The proposed activity applied for is not subject to a rule or national environmental standard that requires public notification.

- 5.7. Section 95D specifies the criteria by which a consent authority may decide whether an activity will have or is likely to have adverse effects on the environment that are more than minor. This includes what a council may or may not have regard to:

S95D(a)(i)-(ii)	A consent authority <u>must</u> disregard any effects on persons who own or occupy- <ul style="list-style-type: none"> (i) The land in, on, or over which the activity will occur, or (ii) Any land adjacent to that land
S95D(b)	A consent authority <u>may</u> disregard an adverse effect of the activity if a rule or national environmental standard permits an activity with that effect.
S95D(c)	A consent authority <u>must</u> , in the case of a restricted discretionary activity, disregard an adverse effect of the activity that does not relate to a matter for which a rule or national environmental standard restricts its discretion.
S95D(d)	A consent authority <u>must</u> disregard trade competition and the effects of trade competition.

S95D(e)	A consent authority <u>must</u> disregard any effect on a person who has given written approval to the relevant application
---------	---

5.8. For the purposes of deciding public notification, any effects on persons who own or occupy the application site, or adjacent land may be disregarded. The land adjacent to the application site is set out in **Table A** below. Assessment of effects matters as they potentially impact adjacent landowners and occupiers is set out in Section 4 above.

376 Opito Bay Road	Heather and Robert Morgan
382 Opito Bay Road	Leanne Ray and Lance Stubbs
380B Opito Bay Road	Fab1 Limited
380A Opito Bay Road	Khyber Pass Trustee Company Limited, Alexandra and Marcus Te Brake
380 Opito Bay Road	BTC Trustees 2013 and Shirley Jonas
Marginal Strip	Crown Land (DOC)

Step 4: Public notification in special circumstances

S95(9)	Do special circumstances exist in relation to the application that warrant the application being publicly notified?
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5.9. When considering public notification, current caselaw has defined ‘special circumstances’ as those outside the common run of things which are exceptional, abnormal or unusual, but they may be less than extraordinary or unique. The proposed activity is a single dwelling on a low-density coastal living type site that is anticipated by the District Plan. There are no extraordinary or unique circumstances.

5.10. Potential adverse effects beyond the immediate site boundary are less than minor. Public notification of the application is not deemed necessary, nor is it required.

Section 95B – Limited Notification Assessment

5.11. If an application is not publicly notified, a consent authority must follow the steps of section 95B to decide if limited notification is required. A Section 95B assessment requires a decision about whether there are any specified affected groups or affected persons (under section 95E).

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

S95B(2)(a)	Are there any affected protected customary rights groups
S95B(2)(b)	Are there any affected customary marine title groups (in the case of an application for a resource consent for an accommodated activity)?
S95B(3)(a)	Is the proposed activity adjacent to, or may affect land that is the subject of a statutory acknowledgement made in accordance with an Act specified in Schedule 11?
S95B(3)(b)	Is the person to whom the statutory acknowledgement is made is an affected person under section 95E?

- 5.12. The proposed activity would not affect any protected customary rights groups or marine title groups. The proposed activity is not adjacent to and would not affect land (or persons) that are the subject of a statutory acknowledgement.

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

S95B(6)(a)	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.
S95B(6)(b)	The application is for a controlled activity (but no other activities) that requires a resource consent under a district plan (other than a subdivision of land).

- 5.13. The proposed activity is not subject to a rule or national environmental standard that precludes limited notification. The application activity status is not 'controlled'.

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

S95B(7)	In the case of a boundary activity, determine in accordance with section 95E whether an owner of an allotment with an infringed boundary is an affected person.
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S95B(8)	In the case of any other activity, determine whether a person is an affected person in accordance with section 95E.
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5.14. The proposed activity is not a boundary activity. The proposed activity is a Discretionary Activity that results from a proposal to construct a dwelling that requires consent for Visual Amenity, Vegetation Clearance, Earthworks, Stormwater and Fire Risk.

5.15. Section 95E provides the basis on which a person is deemed to be affected by a proposed activity. Section 95E(1) a person is an affected person if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (but not less than minor). Section 95E(2)(a)-(c) sets out the adverse effects a consent authority can disregard or matters it must have regard to when assessing adverse effects on a person:

Affected Persons

S95E(2)(a)	A consent authority <u>may</u> disregard adverse effect of an activity on the person if a rule or a national environmental standard permits an activity with that effect.
S95E(2)(b)	A consent authority <u>must</u> disregard an adverse effect arising from a a controlled activity or a restricted discretionary activity if the effect of the activity does not relate to a matter for which a rule or a national environmental standard reserves control or restricts discretion.
S95E(2)(c)	A consent authority <u>must</u> have regard to every relevant statutory acknowledgement made in accordance with an Act specified in Schedule 11.

5.16. The application proposal is a Discretionary Activity. It is not a Controlled Activity or a Restricted Discretionary Activity. An assessment of the proposal requires consideration of all potential effects on the environment. The Council may disregard the effects of an activity where they are permitted under a rule or a national environmental standard.

5.17. There are no other persons on adjacent sites that would be adversely affected to a minor or more than minor extent. The proposed location of the dwelling meets the setback from

boundary requirements for the CLZ. Adverse effects associated with development activities, including earthworks and the removal of soil and vegetation material are temporary and can be managed in accordance with a construction management plan to ensure that effects are no more than minor. The Applicant requests that the application be processed on a non-notified basis.

6. Part 2 Assessment

- 6.1. The application must be considered in relation to the purpose and principles of the Resource Management Act 1991 which are contained in Section 5 to 8 of the Act inclusive.
- 6.2. The proposal will meet Section 5 of the RMA as the proposal will sustain the potential of natural and physical resources whilst meeting the foreseeable needs of future generations. The proposed activity will contribute to housing supply in and around Kerikeri.
- 6.3. Section 6 of the Act sets contains the matters of national importance. These matters of national importance are considered relevant to this application. The proposal is located within the coastal environment. The site has high natural character in the form of intact indigenous vegetation. Residential development on the site is enabled by the Plan zone(s). Providing for the social and economic wellbeing of the Applicant must be balanced with natural environment protection policies where locations are not identified as being outstanding and where residential development potential is signalled as being appropriate.
- 6.4. Section 7 identifies a number of “other matters” to be given particular regard by a Council in the consideration of any assessment for resource consent, including the maintenance and enhancement of amenity values. The proposal maintains amenity values in the area which is a coastal living environment.
- 6.5. Section 8 requires Council to take into account the principals of the Treaty of Waitangi. It is considered that the proposal raises no Treaty issues. The subject site is not within a documented area of significance to Māori and HNZPT have recommended proceeding on the basis of an ADP. The proposal has considered the principals of the Treaty of Waitangi and would not be contrary to these principals.

- 6.6. Overall, the application is assessed to be consistent with the relevant provisions of Part 2 of the Act, as expressed through the objectives, policies and rules reviewed in earlier sections of this application. Given that consistency, we conclude that the proposal achieves the purposes of sustainable management set out by Sections 5-8 of the Act.

7. Conclusion

- 7.1. The Applicant is seeking a resource consent to construct a new dwelling on a currently vacant and bush clad site at 380C Opito Bay Road, Kerikeri. The site is existing and was created in 1981. The site is heavily vegetated in predominantly indigenous Kanuka with little in the way of understorey. The site vegetation forms part of the wider Rangitane Shrublands PNA.
- 7.2. The site is zoned 'Coastal Living' in the ODP and 'Rural Lifestyle' in the PDP. Low density residential activity is enabled by both zones, subject to avoiding and / or mitigating potential adverse effects on the natural character values of the site, including coastal character. The activity is Discretionary overall for matters relating to visual amenity, impermeable surfaces (stormwater management), vegetation clearance, earthworks volumes and fire risk to residential units.
- 7.3. An assessment of potential adverse effects on the environment concludes that these effects will be no more than minor. The zone and site subdivision history envisages residential development in this location. To the extent possible, the proposal has been designed to comply with the permitted standards of both the ODP and the PDP.
- 7.4. In the context of the ODP and PDP zone framework, the activity is a consentable proposal, being a single residential dwelling on a vacant rural residential (coastal) site. The extent of necessary vegetation clearance and earthworks is such that it would not be contrary to the objectives and policies of the ODP and PDP. The Applicant requests that the application be processed on a non-notified basis.

8. Limitations

- 8.1. This report has been commissioned solely for the benefit of our client, in relation to the project as described above, and to the limits of our engagement, with the exception that the Far North District Council or Northland Regional Council may rely on it to the extent of its appropriateness, conditions and limitations, when issuing their subject consent.

- 8.2. Copyright of Intellectual Property remains with Northland Planning and Development 2020 Limited, and this report may NOT be used by any other entity, or for any other proposals, without our written consent. Therefore, no liability is accepted by this firm or any of its directors, servants or agents, in respect of any information contained within this report.
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- 8.4. Although this report may be submitted to a local authority in connection with an application for a consent, permission, approval, or pursuant to any other requirement of law, this disclaimer shall still apply and require all other parties to use due diligence where necessary.



**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 **NA46B/737**
Land Registration District **North Auckland**
Date Issued 22 December 1981

Prior References
NA14C/1224

Estate Fee Simple
Area 3441 square metres more or less
Legal Description Lot 8 Deposited Plan 89303

Registered Owners

Paul Alan Smith as to a 9/20 share
Jennifer Frances Smith as to a 11/20 share

Estate Fee Simple - 1/6 share
Area 716 square metres more or less
Legal Description Lot 10 Deposited Plan 89303

Registered Owners

Paul Alan Smith as to a 9/20 share
Jennifer Frances Smith as to a 11/20 share

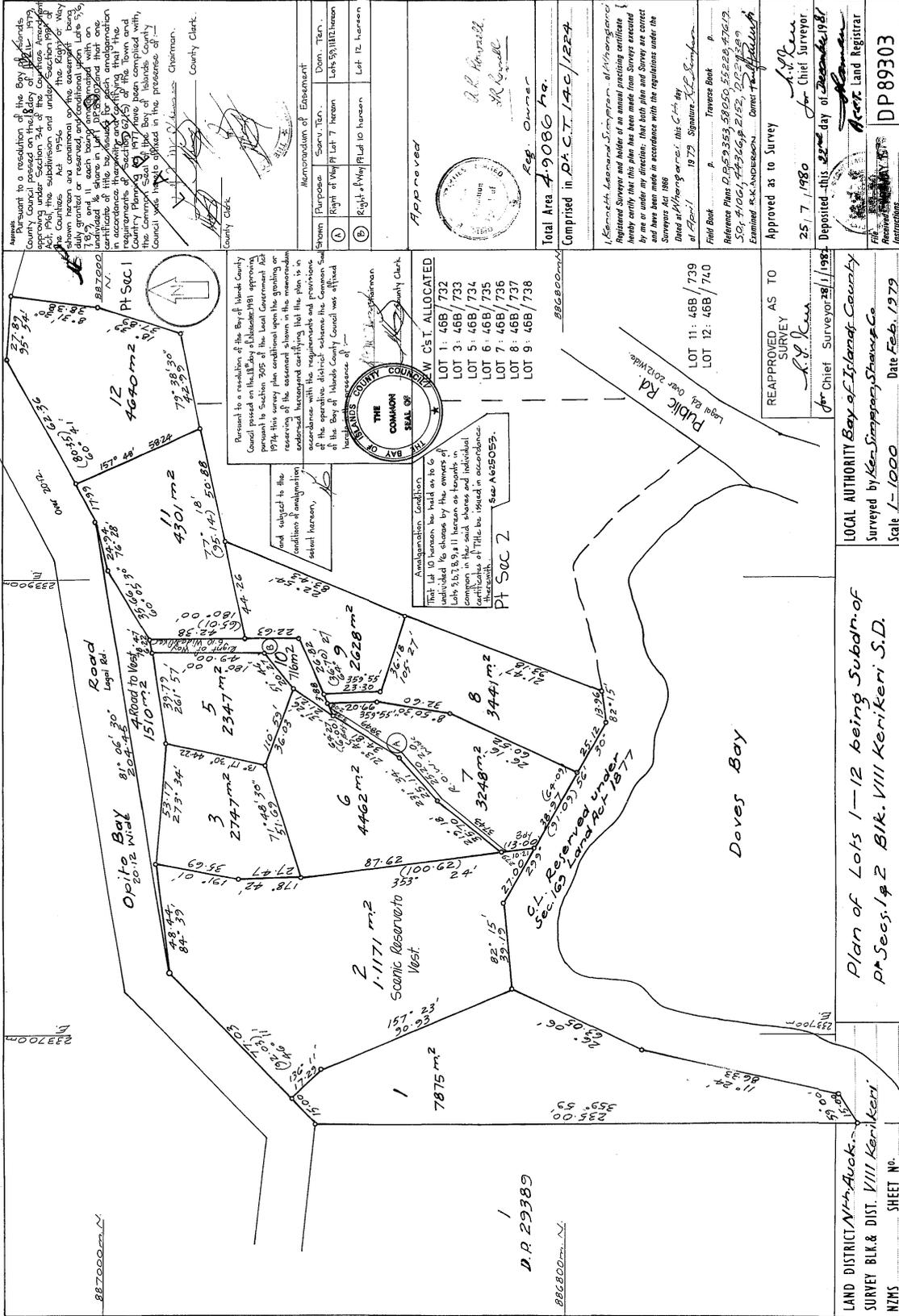
Interests

Subject to Section 308 (4) Local Government Act 1974

Subject to a right of way over part marked B on DP 89303 specified in Easement Certificate B019469.3 - 22.12.1981 at 11.40 am (affects Lot 10 DP 89303)

The easements specified in Easement Certificate B019469.3 are subject to Section 309 (1) (a) Local Government Act 1974

Subject to a right of way over part marked B on DP 89303 specified in Easement Certificate B105628.4 - 13.9.1982 at 10.53 am (affects Lot 10 DP 89303)



LAND DISTRICT/Vth Auckland SURVEY BLK & DIST. VIII Kerikeri. NZMS SHEET NO. 2127

Plan of Lots 1-12 being Subdiv. of P. Secs. 1 & 2 Bk. VIII Kerikeri S.D.

LOCAL AUTHORITY Bay of Islands County Surveyed by Ken Simpson, Surveyor Scale 1:1000 Date Feb. 1979

REAPPROVED AS TO SURVEY for Chief Surveyor 28/1/1981 R. P. Marshall

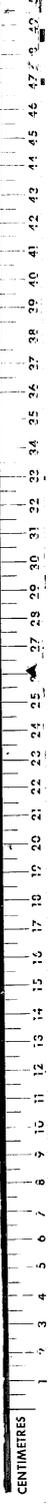
Approved as to Survey 25/7/1980 for Chief Surveyor A. P. Rea

Deposited this 22nd day of December 1981

DP89303

Scale 1:1000 Date Feb. 1979

OPITO 541 I 880303



NEW RESIDENTIAL DWELLING FOR SMITH



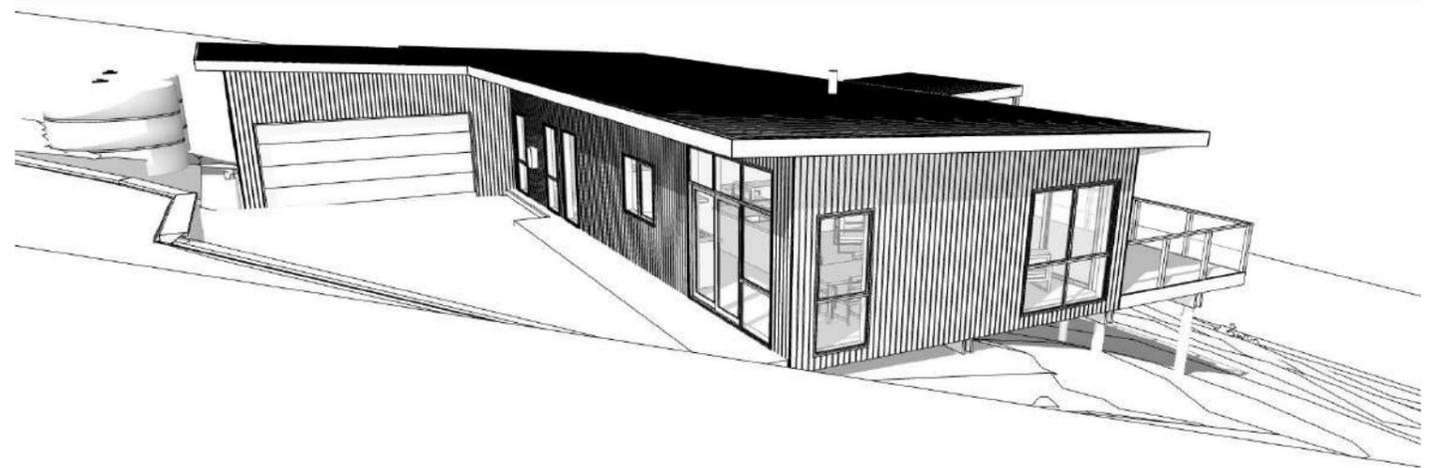
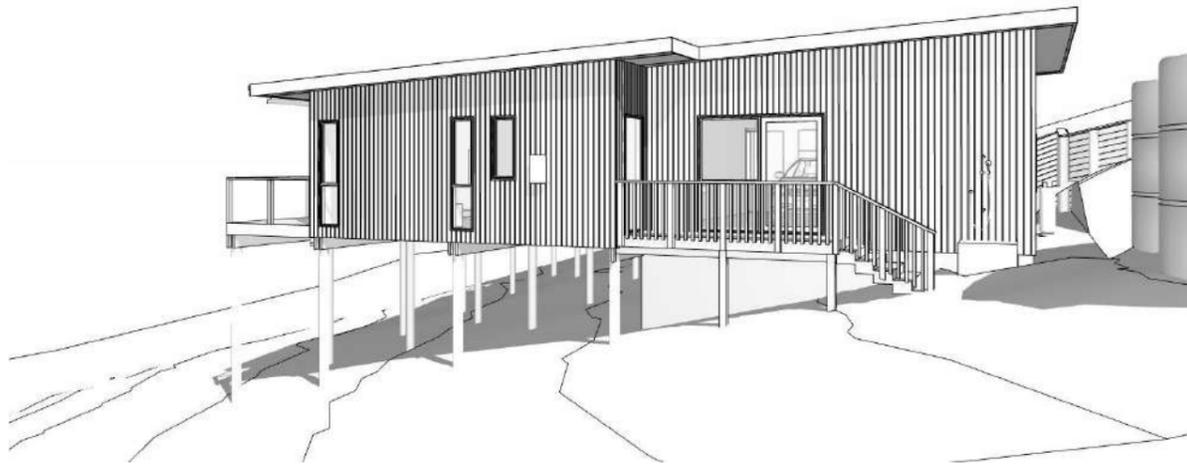
LOT 08 DP 89303
380C OPITO BAY ROAD OPITO BAY
KERIKERI



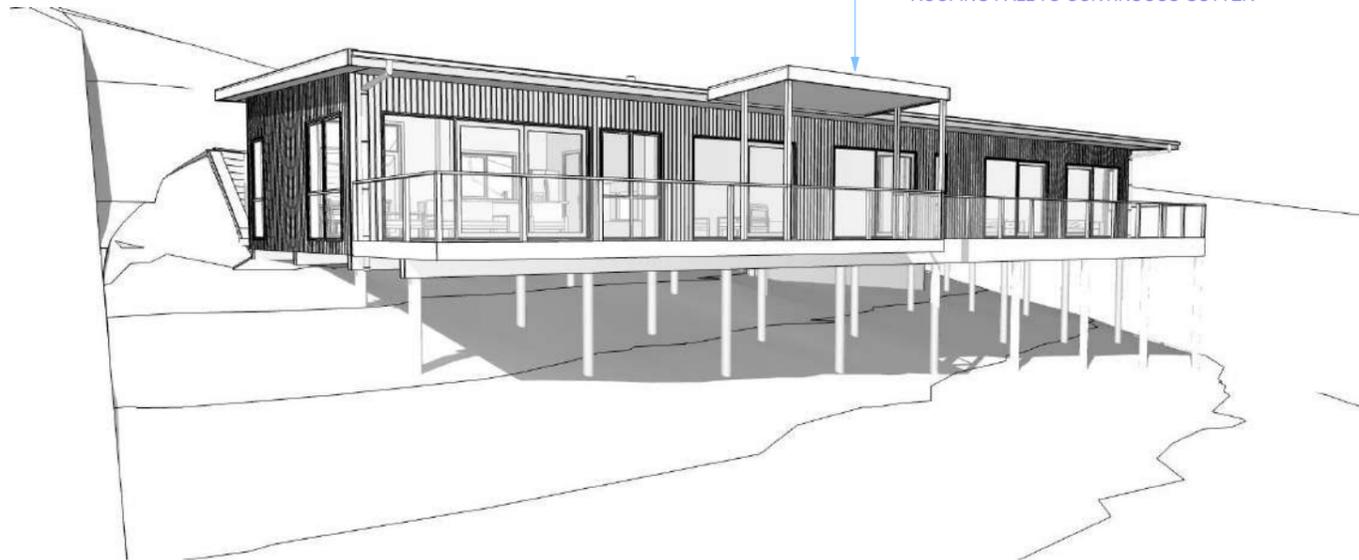
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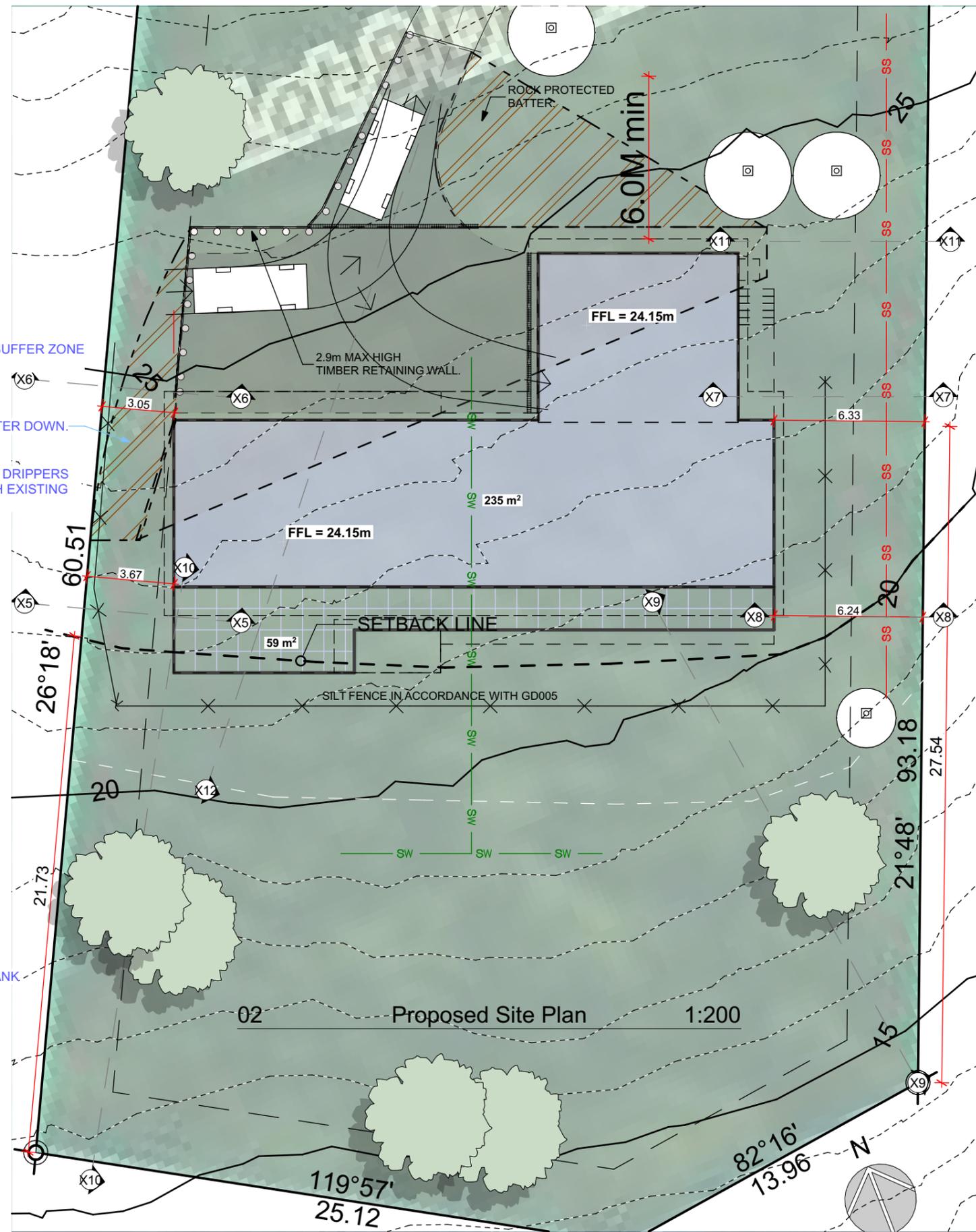
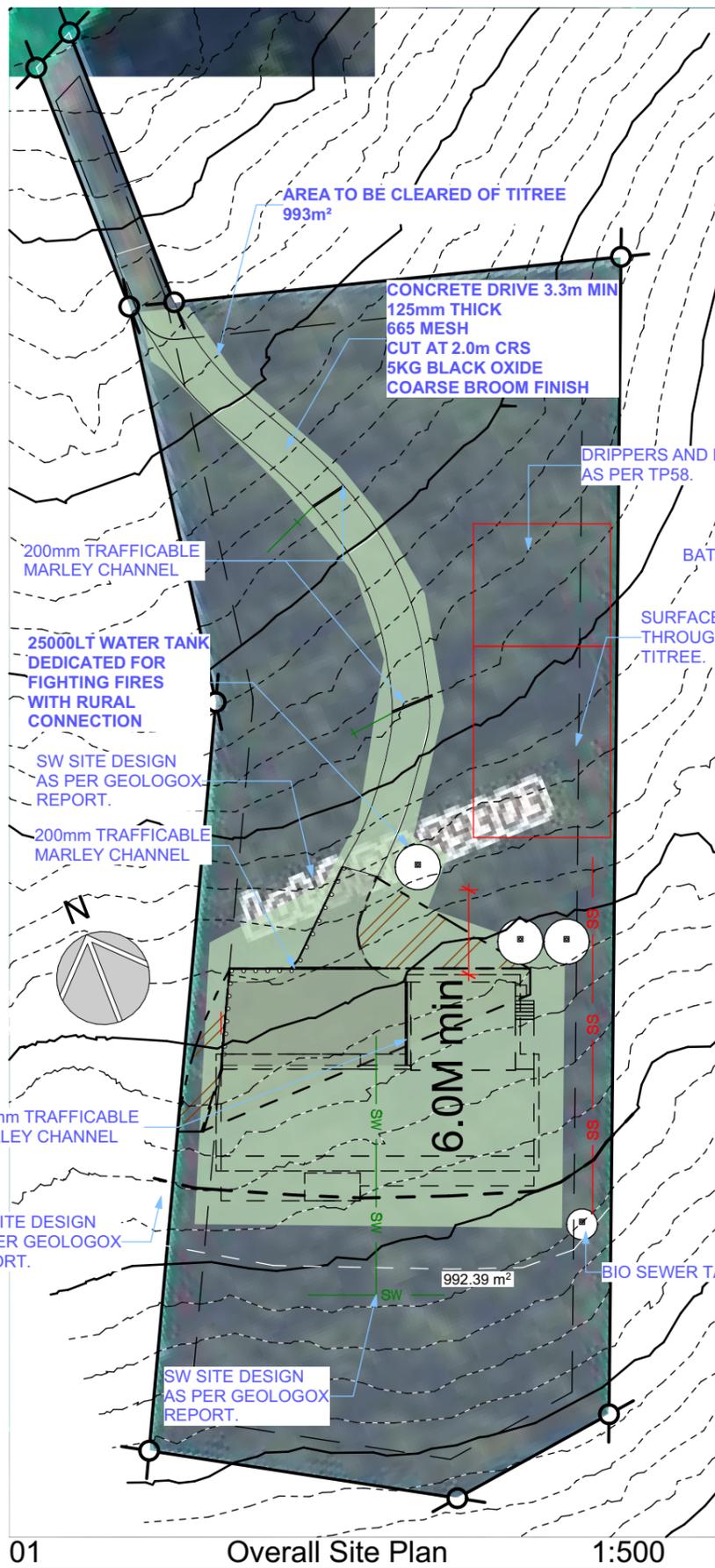
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A1002	Proposed Site Information
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A4706	Bracing Details
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A4709	Bracing Details
A4710	Bearer Details
A4711	Spax Deck Joist Fixing Details
A4712	Balustrade Details
A4713	Joist Stiffener
A4801	Bathroom Details
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A4806	Califont Details
A4807	Fire Place Details
A4808	Drainage Details
A5001	Door & Window Schedule
A5002	Door & Window Schedule



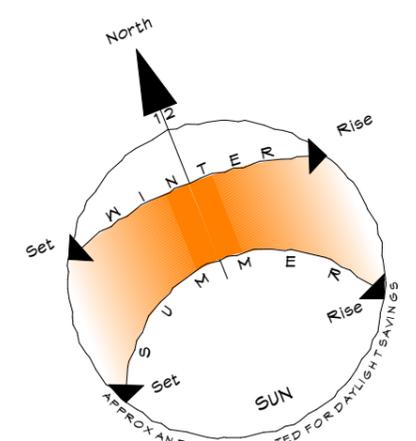
ENGINEER DESIGNED
 FREE STANDING ROOF COVERED PERGOLA
 RHS COLUMNS AND BEAMS FRAME BOLTED TO DECK FRAMING
 ROOFING FALL TO CONTINUOUS GUTTER





SITE PLAN NOTES:

SITE DESCRIPTION	
LOT NUMBER:	LOT 08
DP NUMBER:	DP 89303
1/6 SHARE OF	LOT 10 DP 89303 716M ² (716/6=119m ²)
ADDRESS:	380C OPITO BAY ROAD OPITO BAY KERIKERI
SITE AREA:	3441m ²
SITE ENVIRONMENT	
CLIMATE ZONE	1
EARTHQUAKE ZONE	ZONE 01
EXPOSURE ZONE	ZONE D
LEE ZONE	NO
WIND ZONE	EXTRA HIGH
WIND REGION	A
RAINFALL RANGE	90mm/hr
SNOW ZONE	NO
DISTRICT PLAN COMPLIANCE	
PLANNING ZONE	COASTAL LIVING
PLANNING OVERLAY	RURAL LIFESTYLE
BUILDING COVERAGE	
SITE AREA	3441m ²
MAX. FLOOR AREA PERMITTED:	50m ² DOES NOT COMPLY
BUILDING HEIGHT	
MAX. HEIGHT PERMITTED	8m COMPLIES
HIRB	2m/45° COMPLIES
SETBACK TO BOUNDARIES	3.0m COMPLIES
SETBACK TO BUSH GREATER THAN 20m?	NO DOES NOT COMPLY
LRV	30% MAX. LRV COMPLIES



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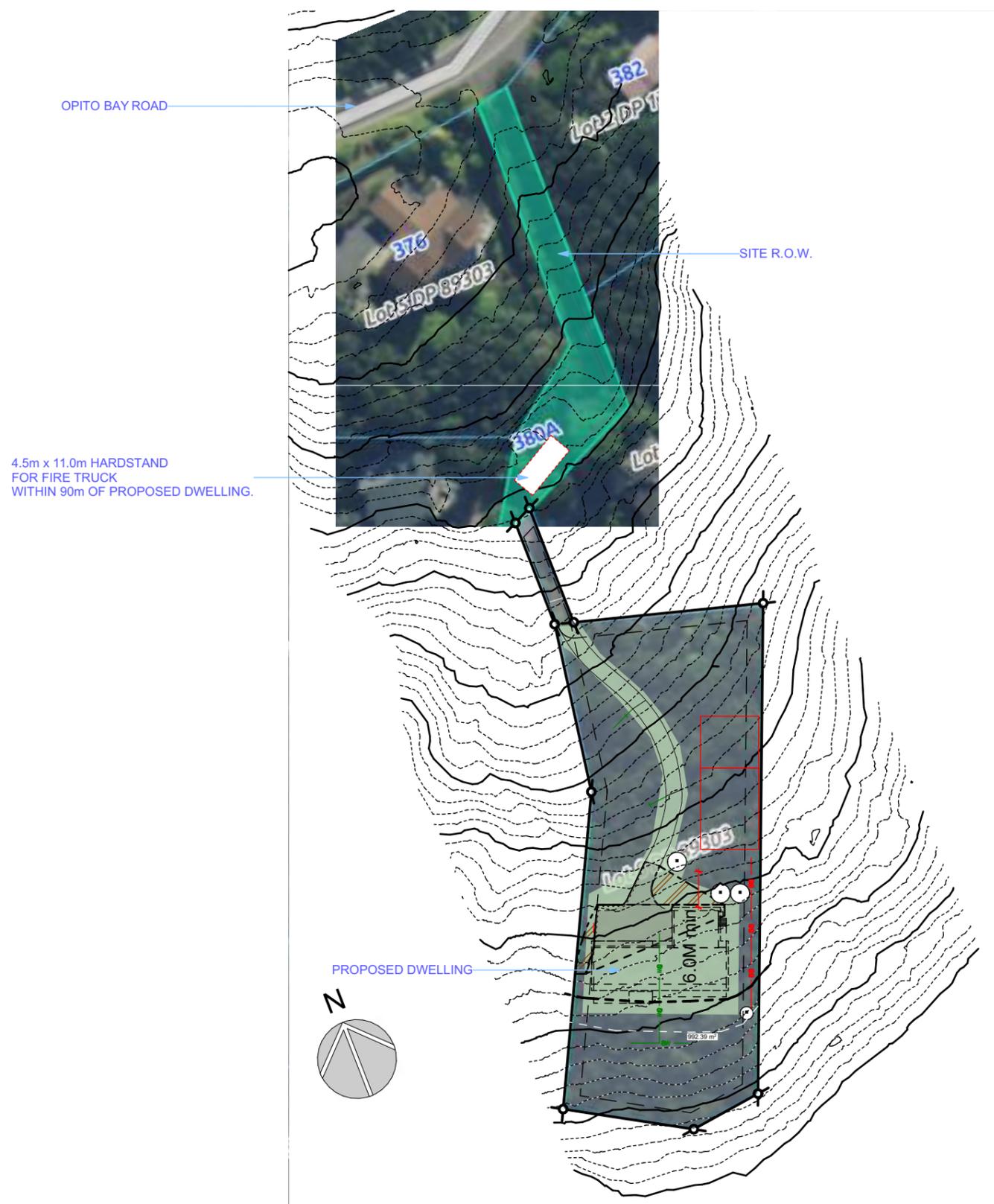
Proposed Site Plan

SMITH
380C OPITO BAY ROAD, OPITO BAY
KERIKERI

Rev No. Revision Date

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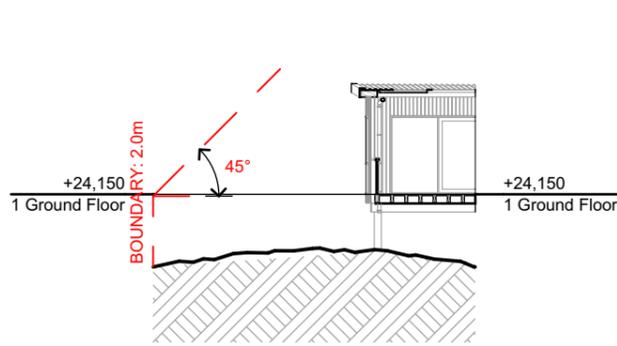
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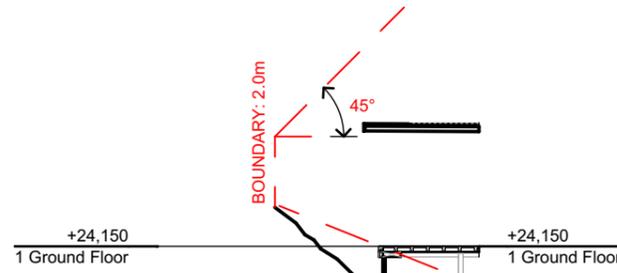
SITE PLAN NOTES:

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1/6 SHARE OF	LOT 10 DP 89303 716M ² (716/6=119m ²)
ADDRESS:	380C OPITO BAY ROAD OPITO BAY KERIKERI
SITE AREA:	3441m ²
SITE ENVIRONMENT	
CLIMATE ZONE	1
EARTHQUAKE ZONE	ZONE 01
EXPOSURE ZONE	ZONE D
LEE ZONE	NO
WIND ZONE	EXTRA HIGH
WIND REGION	A
RAINFALL RANGE	90mm/hr
SNOW ZONE	NO
DISTRICT PLAN COMPLIANCE	
PLANNING ZONE	COASTAL LIVING
PLANNING OVERLAY	RURAL LIFESTYLE
BUILDING COVERAGE	
SITE AREA	3441m ²
MAX. FLOOR AREA PERMITTED:	50m ² DOES NOT COMPLY
BUILDING HEIGHT	
MAX. HEIGHT PERMITTED	8m COMPLIES
HIRB	2m/45° COMPLIES
SETBACK TO BOUNDARIES	
	3.0m COMPLIES
SETBACK TO BUSH	
GREATER THAN 20m?	NO DOES NOT COMPLY
LRV	
30% MAX. LRV	COMPLIES

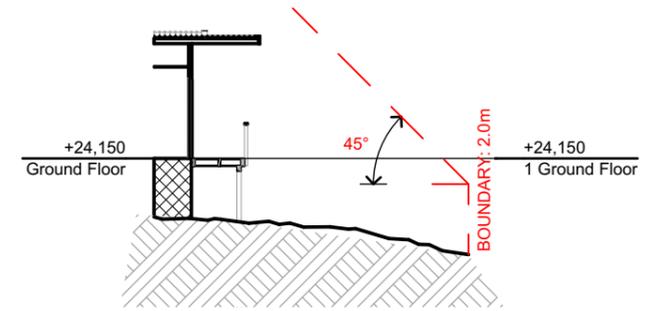
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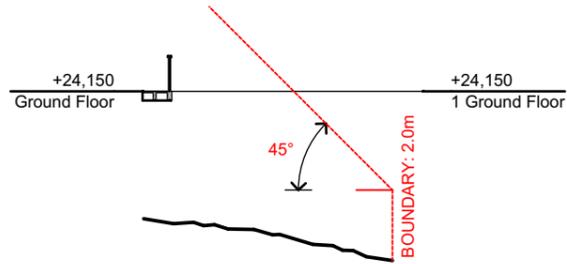
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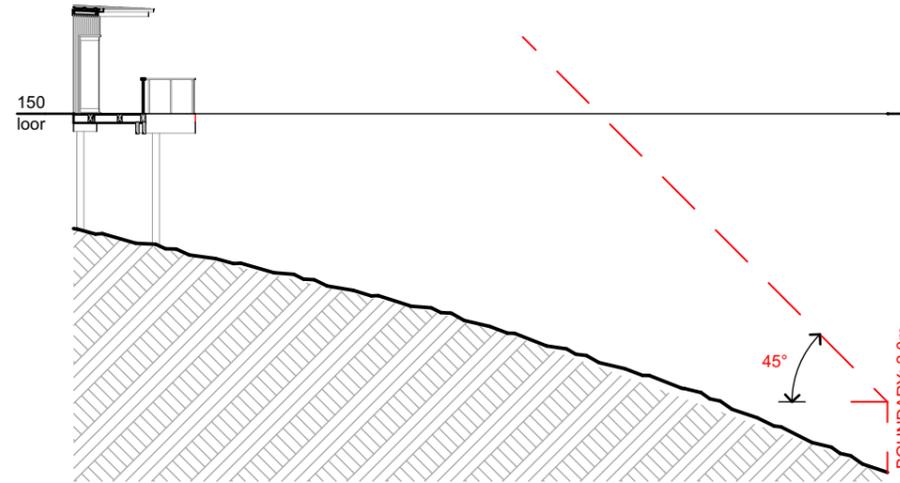
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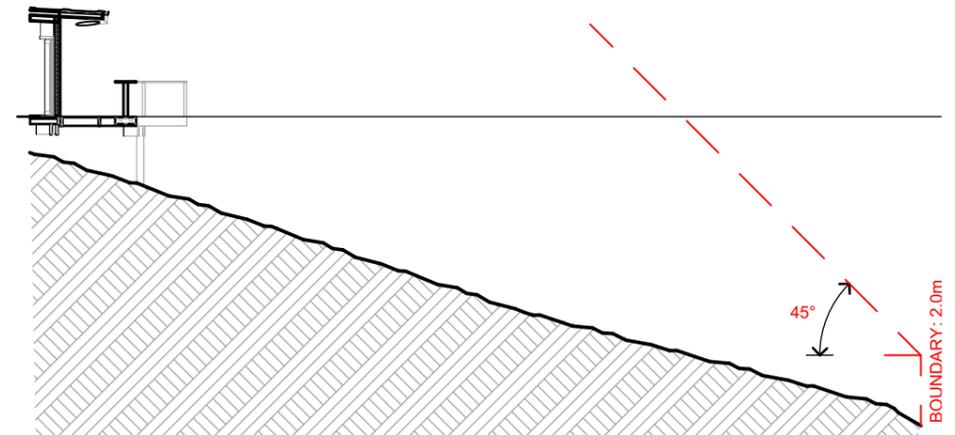
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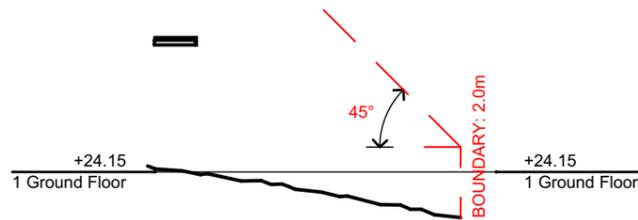
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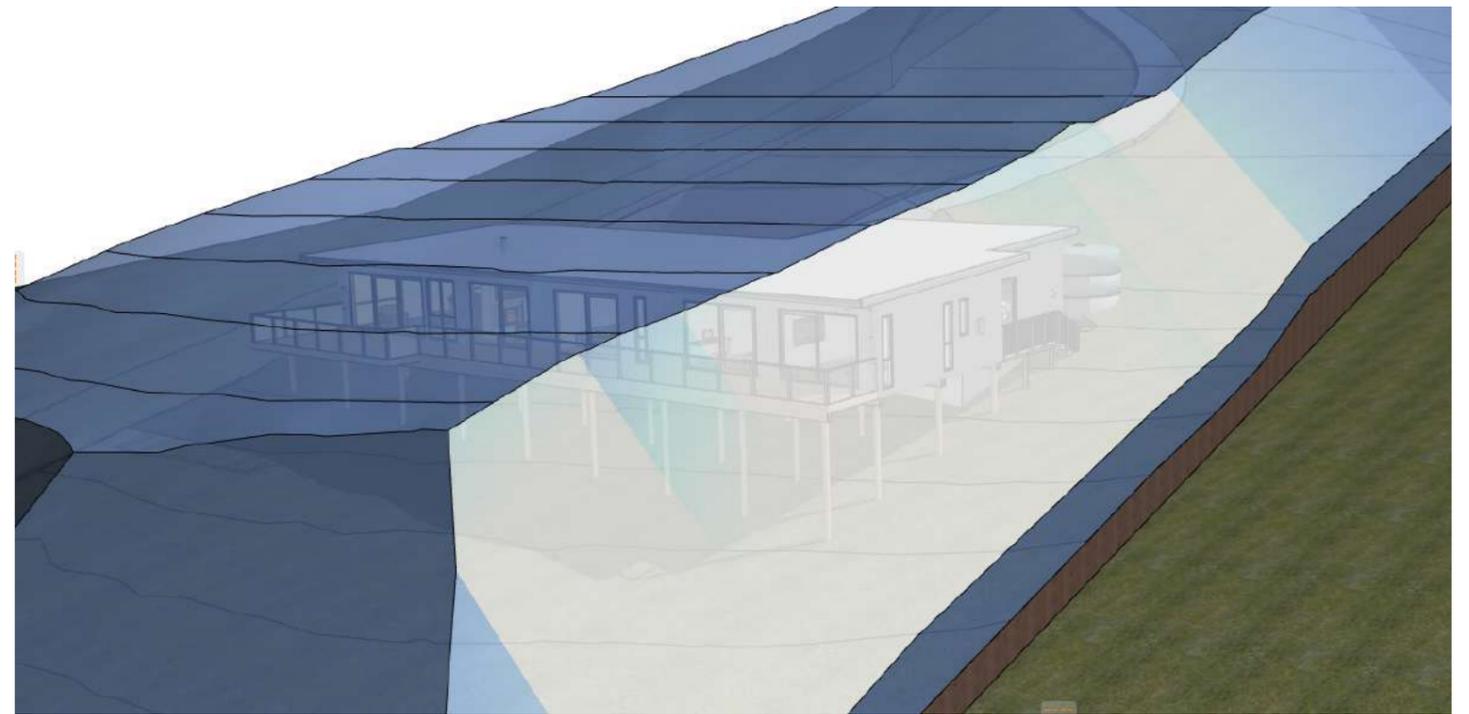
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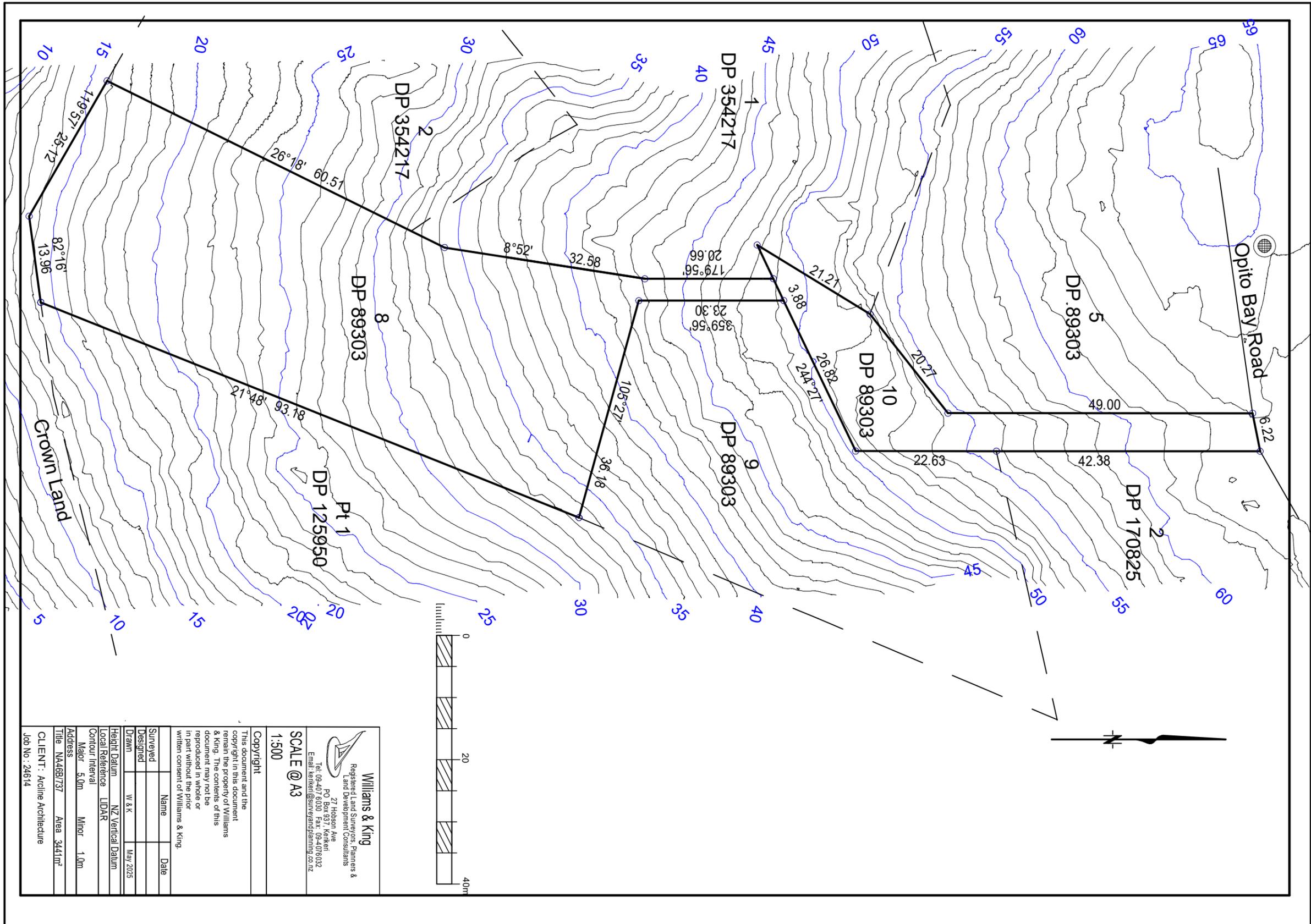


06 X10 1:200



07 X11 1:200





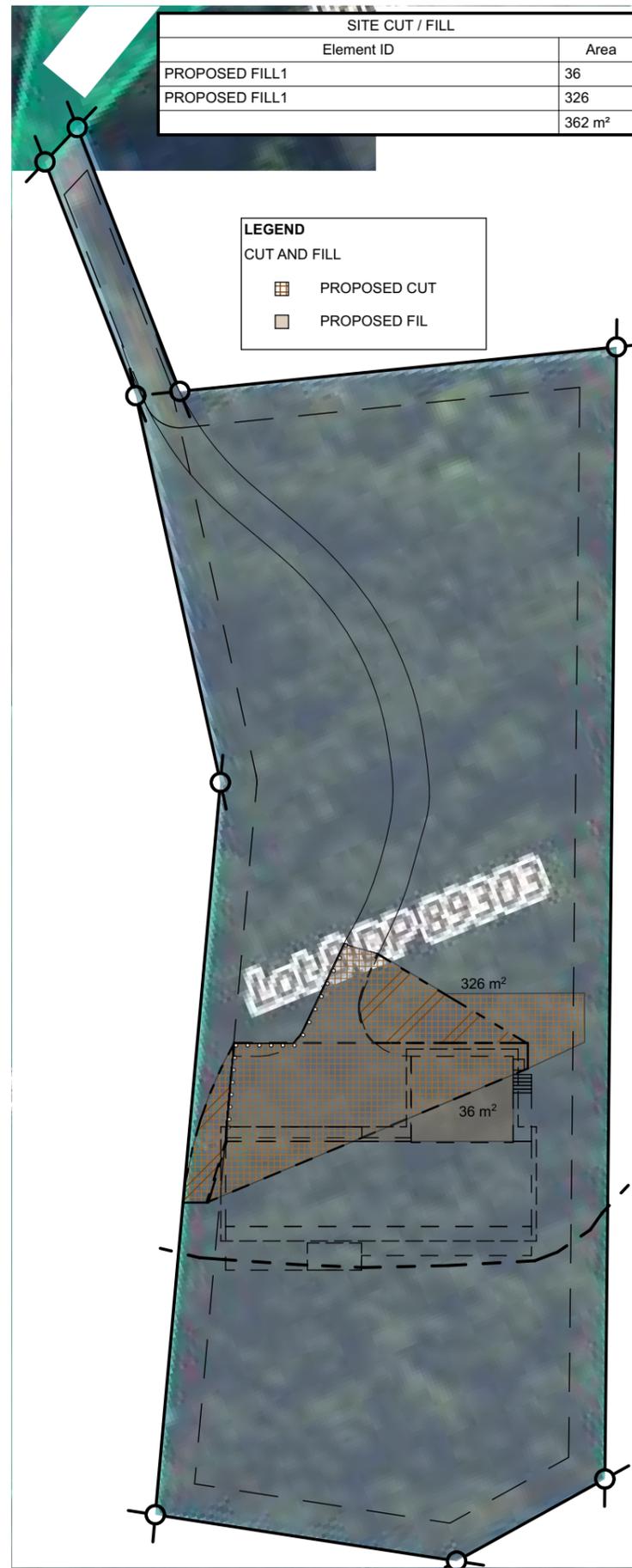
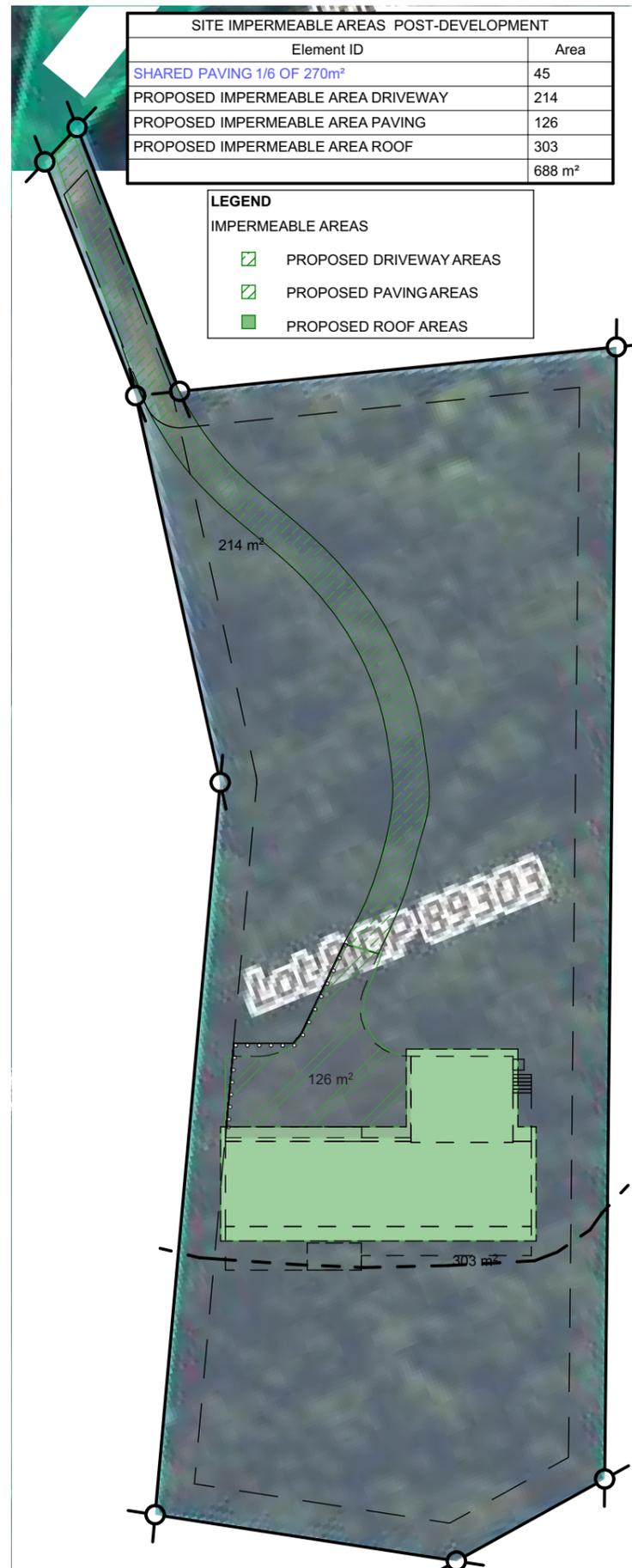
Williams & King
 Registered Land Surveyors, Planners &
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Surveyed	Name	Date
Designed		
Drawn	W & K	May 2025

Height Datum: NZ Vertical Datum
 Contour Interval: LIDAR
 Major: 5.0m Minor: 1.0m
 Address: Title NA459737 Area 3441m²
 CLIENT: Arcline Architecture
 Job No: 24614



SITE PLAN NOTES:

SITE DESCRIPTION
LOT NUMBER: LOT 08
DP NUMBER: DP 89303
1/6 SHARE OF: LOT 10
DP 89303
716M²
(716/6=119m²)
ADDRESS: 380C OPITO BAY ROAD
OPITO BAY
KERIKERI
SITE AREA: 3441m²

SITE ENVIRONMENT
CLIMATE ZONE: 1
EARTHQUAKE ZONE: ZONE 01
EXPOSURE ZONE: ZONE D
LEE ZONE: NO
WIND ZONE: EXTRA HIGH
WIND REGION: A
RAINFALL RANGE: 90mm/hr
SNOW ZONE: NO

DISTRICT PLAN COMPLIANCE
PLANNING ZONE: COASTAL LIVING
PLANNING OVERLAY: RURAL LIFESTYLE

BUILDING COVERAGE
SITE AREA: 3441m²
MAX. FLOOR AREA PERMITTED: 50m²
DOES NOT COMPLY

BUILDING HEIGHT
MAX. HEIGHT PERMITTED: 8m
COMPLIES

HIRB: 2m/45°
COMPLIES

SETBACK TO BOUNDARIES
3.0m
COMPLIES

SETBACK TO BUSH
GREATER THAN 20m? **NO**
DOES NOT COMPLY

LRV: 30% MAX. LRV
COMPLIES

EARTHWORKS:
VOLUME PERMITTED 300m³
CUT: 317m³
FILL: 36m³
GROSS CUT/FILL (EST): 353m³
DOES NOT COMPLY

AREA PERMITTED: 50m²
DOES NOT COMPLY

EARTHWORKS PERMIT REQUIRED IF EXCAVATIONS ARE:
>50m² AREA
>50m³ VOLUME
>0.5m HEIGHT
<3.0m TO BOUNDARY

REMOVE EXCESS SOIL FROM SITE TO APPROVED DUMP SITE.

STORMWATER MANAGEMENT
SITE AREA: 3441m²
PLUS 1/6 SHARE OF 716m²: 119m²
TOTAL SITE AREA: 3560m²
TOTAL AREA PERMITTED: 10% 356m²
DOES NOT COMPLY

STORMWATER MANAGEMENT	
SITE AREA	3441m ²
PLUS 1/6 SHARE OF 716m ²	119m
TOTAL SITE AREA	3560m ²
TOTAL AREA PERMITTED	10% 356m ²
	DOES NOT COMPLY

LEGEND	
IMPERMEABLE AREAS	
	PROPOSED DRIVEWAY AREAS
	PROPOSED PAVING AREAS
	PROPOSED ROOF AREAS



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Existing Site Plan

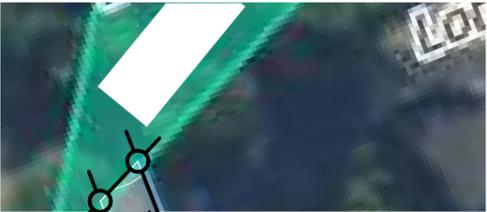
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STORMWATER MANAGEMENT	
SITE AREA	3441m ²
PLUS 1/6 SHARE OF 716m ²	119m
TOTAL SITE AREA	3560m ²
TOTAL AREA PERMITTED	10% 356m ²
	DOES NOT COMPLY



EXISTING IMPERMEABLE AREA DRIVEWAY 9

LABEL AND INSERT FILL AREAS BELOW

LEGEND	Area Label
IMPERMEABLE AREAS PRE DEVELOPMENT	9 m ²
EXISTING ROOF 1	9 m ²
EXISTING DRIVEWAY AREAS	9 m ²
EXISTING PAVING AREAS	9 m ²
EXISTING ROOF AREAS	9 m ²

THESE FILLS NO AFFECT ON SCHEDULE. THESE FILLS ADD TO SCHEDULE. THESE FILLS NO AFFECT ON SCHEDULE. THESE FILLS ADD TO SCHEDULE.

Existing Site Coverage

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STORMWATER MANAGEMENT	
SITE AREA	3441m ²
PLUS 1/6 SHARE OF 716m ²	119m
TOTAL SITE AREA	3560m ²
TOTAL AREA PERMITTED	10% 356m ²
	DOES NOT COMPLY

LEGEND	
IMPERMEABLE AREAS	
	PROPOSED DRIVEWAY AREAS
	PROPOSED PAVING AREAS
	PROPOSED ROOF AREAS



STORMWATER MANAGEMENT	
SITE AREA	3441m ²
PLUS 1/6 SHARE OF 716m ²	119m
TOTAL SITE AREA	3560m ²
TOTAL AREA PERMITTED	10% 356m ²
	DOES NOT COMPLY



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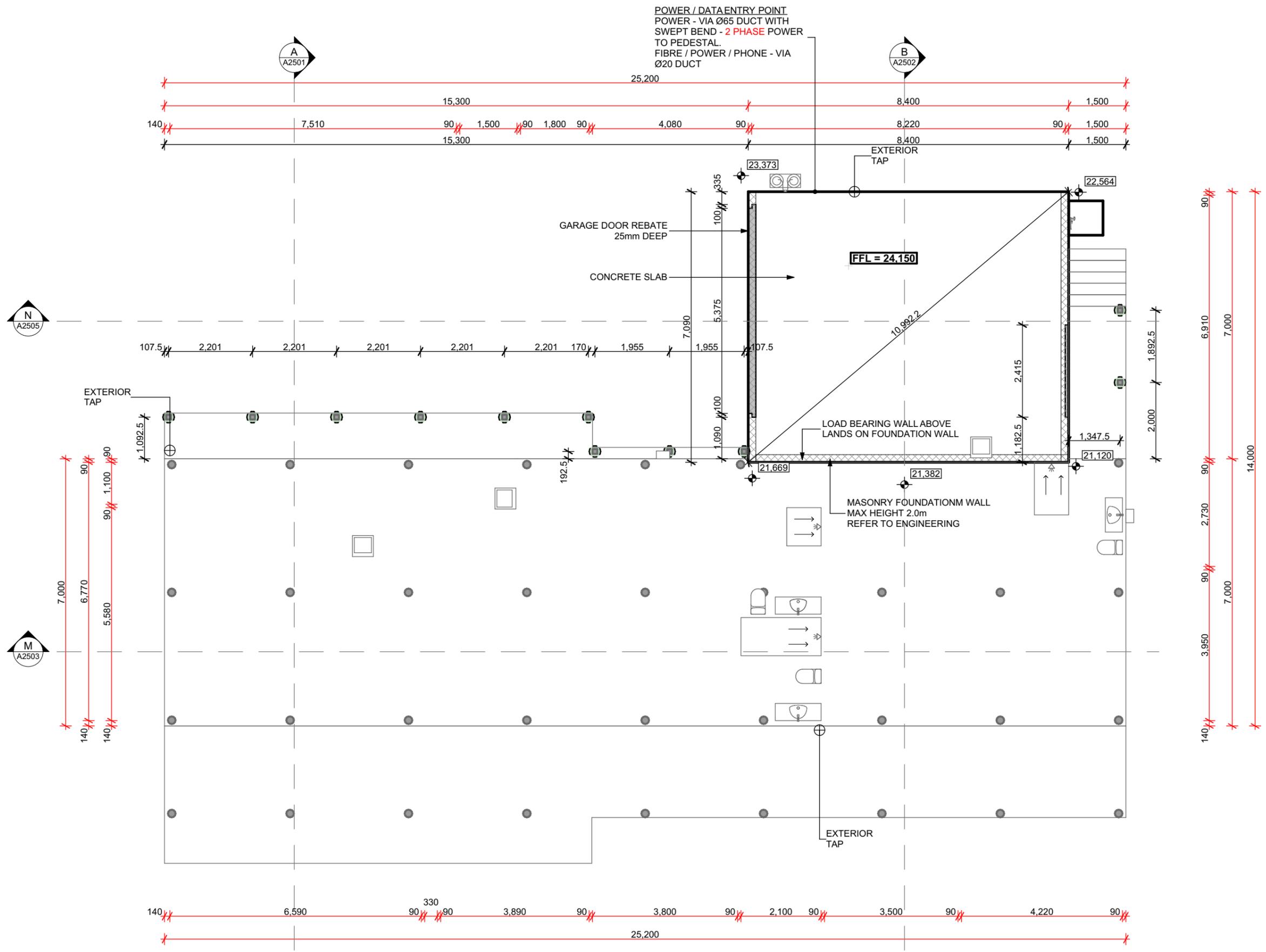
Site Services Plan

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POWER / DATAENTRY POINT
 POWER - VIA Ø65 DUCT WITH
 SWEEP BEND - 2 PHASE POWER
 TO PEDESTAL.
 FIBRE / POWER / PHONE - VIA
 Ø20 DUCT

FOUNDATION NOTES

ACCESS ROUTES
 TO ALL ACCESS ROUTES BOTH EXTERNAL AND
 INTERNAL, PROVIDE ANTI-SLIP SURFACE COMPLYING
 NZ BC D1/AS1.

FLOOR SLAB
 100mm THICK 20MPa CONCRETE FLOOR SLAB
 500E MESH WITH 30mm TOP COVER (LAP JOINS MIN.
 225mm)

ENGINEERED RAFT SLAB TO ENGINEER DESIGN.
 SLAB MESH AS PER ENGINEER DESIGN.
 ALL ENGINEER DESIGNED FOUNDATIONS TO BE
 INSPECTED BY ENGINEER PRIOR TO POUR (MIN. 48
 HRS NOTICE TO BE GIVEN).

0.25mm POLYTHENE MOISTURE BARRIER (TAPE ALL
 CUTS AND PENETRATIONS AND LAP MIN. 225mm AT ALL
 SEAMS).
 50mm HD POLYSTYRENE ON
 25mm BLINDING ON
 100mm MIN. COMPACTED GAP 40 OR OTHER
 ACCEPTABLE HARDFILL

**RIGID AIR BARRIERS - ALLOW 6mm OVERHANG TO
 SLAB EDGE - SEE MANUFACTURERS DETAILS.**

30mm STEEL COVER - ENCLOSED
 50mm STEEL COVER - EXPOSED
 75mm STEEL COVER - TO GROUND

CHECK PLUMBING PLAN AND ELECTRICAL PLAN
 THOROUGHLY FOR ANY SERVICES REQUIRING CONDUIT
 PRIOR TO POURING THE SLAB.

CONCRETE PATIOS
 MIN. 1:100 FALL AWAY FROM BUILDING

FLOOR SLAB LEGEND

MARKER INDICATES FFL HEIGHT ABOVE /
 BELOW EXISTING GROUND LEVEL

SUPPLEMENTARY REINFORCING:
 2/D10 1,200mm LONG AT INTERNAL
 CORNERS (DO NOT PLACE OVER CONTROL
 JOINTS).

SAW CUT
 SHRINKAGE CONTROL JOINTS
 5 x 25mm DEEP SAW CUT TO FORM
 SHRINKAGE CONTROL JOINT @ 6m MAX.
 CRS.

LOAD BEARING WALL
 INTERNAL LOAD BEARING WALL ABOVE

POINT LOAD ABOVE
 ENSURE PAD TO SUPPORT POINT LOAD
 ABOVE

JOINERY / DOOR REBATES:
 REBATE LOCATIONS SHOWN AS
 DIMENSIONED - REBATE WIDTH AND DEPTH
 CONFIRMED ON SITE BY JOINERY
 MANUFACTURER - CONFIRM FLOOR
 COVERINGS AND CONFIRM ANY CLASHES
 WITH SWING DOORS TO EXTERIOR PATIO/
 DECK LEVELS PRIOR

POWER / DATAENTRY POINT
 POWER - VIA Ø65 DUCT WITH SWEEP BEND -
 2 PHASE POWER TO PEDESTAL.
 FIBRE / POWER / PHONE - VIA Ø20 DUCT.

SUB FLOOR FRAMING NOTES

- ALL FOOTINGS MIN. 20MPa CONCRETE. FOOTING DEPTHS LISTED INTO GOOD GROUND
- ALL SUBFLOOR FIXINGS STAINLESS STEEL
- PILE LAYOUT IS INDICATIVE ONLY & SUBJECT TO ON-SITE CONFIRMATION.

SUB FLOOR LEGEND

ORDINARY PILE
 125 x 125mm H5 PILE SET INTO Ø200x???mm
 MIN. DEEP FOOTING
 - FIXED TO BEARER WITH 2/100x3.75mm NAILS
 & 2/WIRE DOGS.

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Foundation Plan

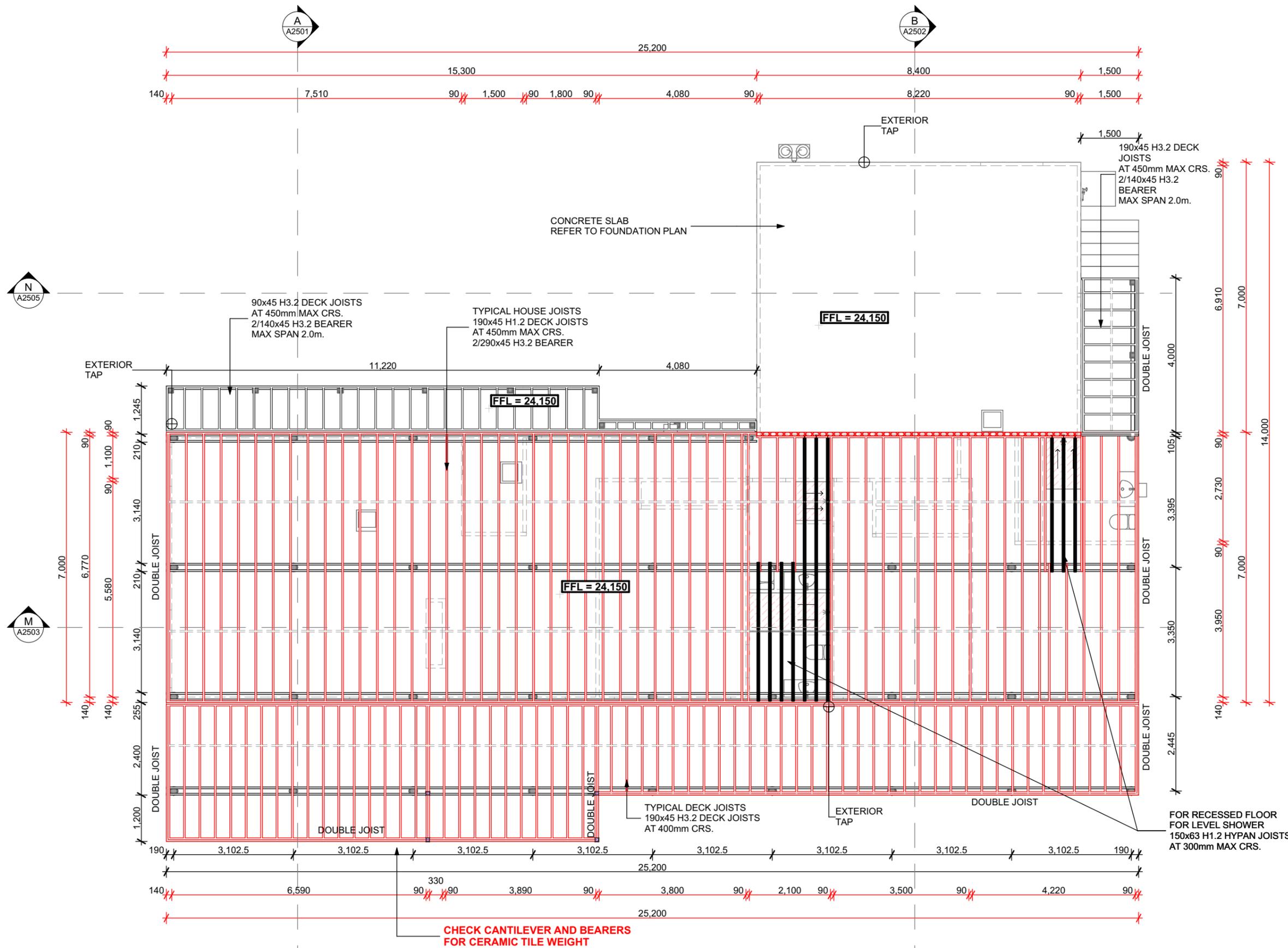
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FLOOR FRAMING NOTES

BUILDER TO CONFIRM THE FOLLOWING PRIOR TO SETTING OUT FLOOR JOISTS

- PLUMBING FIXTURES AND WASTE LOCATIONS
- BALUSTRADE TYPE / BRAND AND FIXING
- REQUIREMENTS

DURABILITY

- EXPOSURE ZONE D:
- ALL HOUSE FRAMING H1.2 SG8 UNLESS STATED OTHERWISE
- ALL DECK / EXPOSED FRAMING TO BE H3.2 SG8 UNLESS STATED OTHERWISE.
- ALL BEARERS H3.2
- ALL EXPOSED FIXINGS TO BE STAINLESS STEEL
- ALL JOIST FIXINGS AS PER TABLE 7.5 NZS3604

SUBFLOOR INSULATION

MAMMOTH FLOOR SECTIONS SUBFLOOR INSULATION R2.8

FLOORING TYPICAL:

DWELLING - 21mm H3 PLY FLOORING..

FLOORING WET AREAS:

JH SECURA FLOORING TO WET AREAS.

PROVIDE WET AREA FLOORING IN ALL KITCHENS, LAUNDRIES AND BATHROOMS INCLUDING MIN. 1.5m AWAY FROM SINKS / BASINS / TUBS

DECKING - SILCA SYSTEM TILE

LEGEND

- LOAD BEARING WALL**
ENSURE TO PROVIDE JOIST / NOG FRAMING TO SUPPORT POINT LOAD FROM LOAD BEARING WALL ABOVE.
- ROOF POINT LOAD**
ROOF STRUCTURE POINT LOAD ABOVE AS INDICATED
- LINTEL POINT LOAD**
OVER SIZE LINTEL POINT LOAD ABOVE AS INDICATED
- WALL BRACE ABOVE**
ENSURE TO PROVIDE JOIST / NOG FRAMING TO FIX WALL BRACE WITH HOLD DOWN FIXING ABOVE.
NOG OR PROVIDE EXTRA JOIST BENEATH WALL BEARING WALL RUNS PARALLEL TO FLOOR JOIST GREATER THAN 150mm APART CENTRE TO CENTRE. 2) SUPPORTS A BRACING ELEMENT
- REBATES:**
DIMENSIONS SHOWN TO REBATE LENGTH ONLY. REBATE WIDTH AND DEPTH DEPENDANT ON FLOORING FINISH USED. CONFIRM WITH MANUFACTURER ON SITE.
- WET AREA FLOORING. ENSURE FRAMING / NOGS TO ALLOW FOR FLOORING CHANGE (DIMENSIONS SHOWN TO INSIDE WALL OF BATHROOM ONLY)
- LEVEL ENTRY TILED SHOWER WITH MIN. 1:50 FALL TO WASTE. PROVIDE OPENING AS DIMENSIONED FOR FRAMING TO LOWER FLOOR LEVEL AT THIS LOCATION FOR **NEWLINE SHOWER TRAY.**

CHECK CANTILEVER AND BEARERS FOR CERAMIC TILE WEIGHT

FOR RECESSED FLOOR FOR LEVEL SHOWER
150x63 H1.2 HYPAN JOISTS AT 300mm MAX CRS.

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Floor Framing Plan

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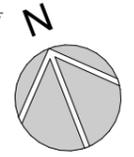
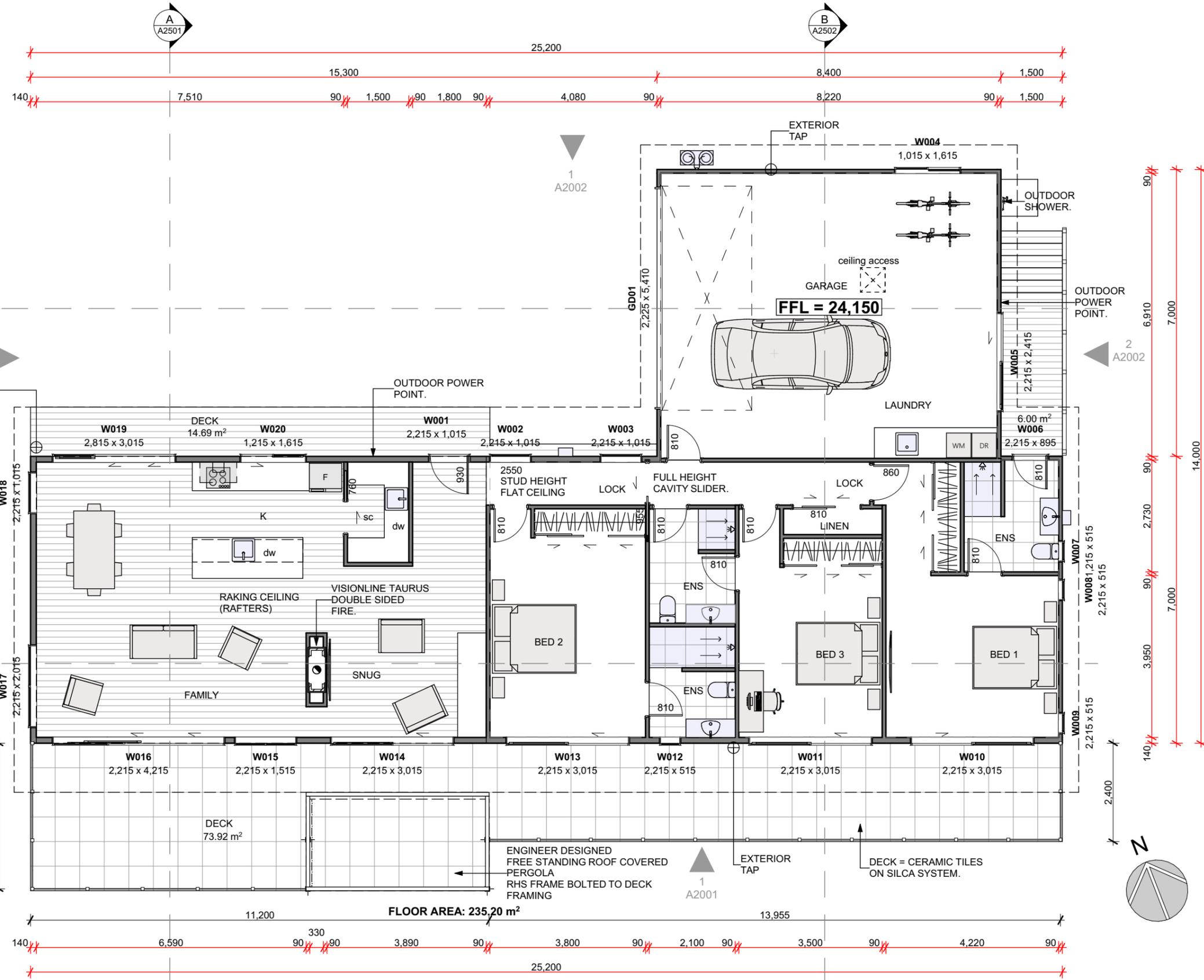
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ACCESS
 SLIP RESISTANCE SHALL BE PROVIDED TO EXTERIOR ACCESS ROUTES AS BELOW OR BY OTHER MEANS IN ACCORDANCE WITH TABLE 2 / SECTION 2 NZBC D1/AS1:
LEVEL SURFACE FINISH
 CONCRETE WET - BROOMED OR WOOD FLOAT
 TIMBER WET - GROOVED ACROSS PROFILE
RAMP OR STAIRS FINISH
 TIMBER WET - GROOVED ACROSS PROFILE

STAIRS / STEPS
 ALL STAIRS TO BE AS PER MAIN PRIVATE TO NZBC D1 FIG. 11
 MAX. RISE: 190mm (ENSURE EQUAL RISE)
 MIN. TREAD: 280mm
 ENSURE HAND RAIL TO AT LEAST ONE SIDE OF STAIR WITH 3 OR MORE STEPS

SAFETY FROM FALLING
 PROVIDE MIN. 1.0m HIGH BARRIER / BALUSTRADE WHERE RISK OF FALL IS 1.0m OR GREATER.



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Floor Plan

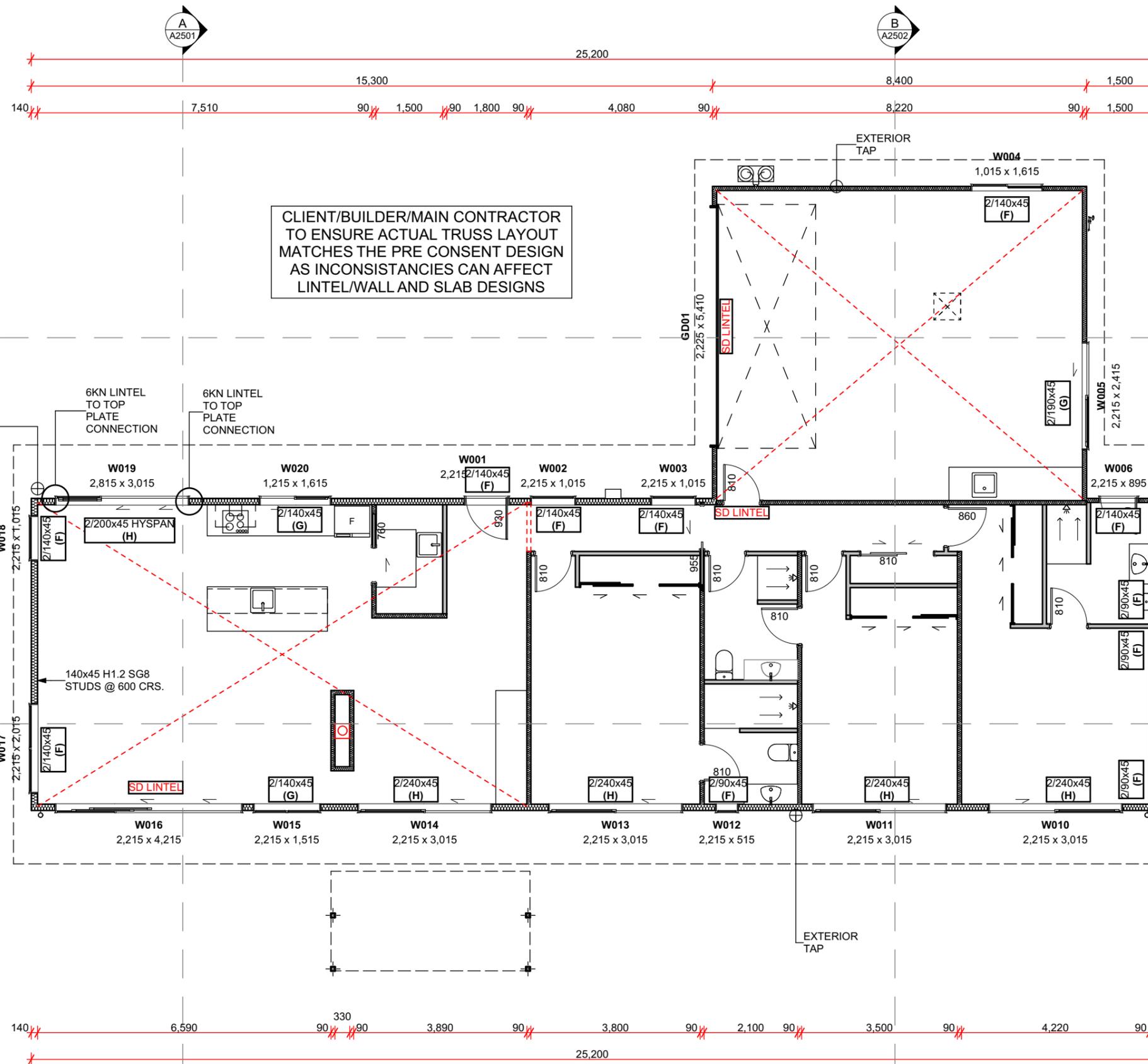
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CLIENT/BUILDER/MAIN CONTRACTOR
TO ENSURE ACTUAL TRUSS LAYOUT
MATCHES THE PRE CONSENT DESIGN
AS INCONSISTANCIES CAN AFFECT
LINTEL/WALL AND SLAB DESIGNS

WALL FRAMING
GENERAL WALL FRAMING NOTES
ALL DIMENSIONS TO TIMBER FRAMING NOT FINISHED ROOM SIZES

FIXINGS / DURABILITY
PROTECTION REQUIREMENT FOR STEEL FIXINGS AND FASTENINGS TO BE IN ACCORDANCE WITH CURRENT NZS 3604 TABLE 4.1

ALL JOINERY SIZES ARE TO TRIM / OPENING SIZE

ALL FRAMING & BOTTOM PLATES TO BE H1.2 TREATED UNLESS SPECIFIED OTHERWISE

INTERIOR DOORS - TBC

STUD HEIGHT VARIES

TRIMMING STUDS
AS REQUIRED TO SECTION 8.5.2 - TABLE / FIGURE 8.5 NZS3604

STUD SIZES:
ALL STUDS H1.2 SG8 AND AS BELOW UNLESS STATED ON PLANS.

EXTERNAL WALLS: (TO EXTRA HIGH WIND ZONE)
EXTRA STUDS - PROVIDE DOUBLE STUDS @ 1,200 CRS FOR WALL CLADDING JOINTS. SEE ELEVATIONS

INTERIOR WALLS:
UP TO 3.0m STUD
90 x 45mm STUDS @ 600mm CRS.

NOGS:
EXTERIOR -: ALL NOGS @ 600mm MAX. CRS.
INTERIOR: ALL @ 800mm MAX. CRS.

EXTRA NOGS:
WALL NOGGING FOR HAND RAILS BY TOILETS AND SHOWERS

LINTELS:
ALL LINTELS TO BE H1.2 SG8 UNLESS STATED OTHERWISE.
WARDROBE SLIDER AND BIFOLD LINTELS TO BE 20mm HIGHER THAN STANDARD LINTELS.
MOUNT SLIDING DOOR TRACK FLUSH WITH OUTSIDE OF JAMB WITH 130mm TOP ARCHITRAVE DROPPED TO HIDE TRACK.

FIXINGS:
AS PER LUMBERLOK STUDLOK LINTEL FIXING TABLES (E = 1.4kN, F = 4.0kN, G = 7.5kN, H = 13.5kN).
LINTEL FIXINGS UP TO 7.5kN CAN BE SUBSTITUTED FOR ECOPLY BARRIER LINTEL CONNECTION DETAIL.
ALLOW TO PACK OUT ALL LINTELS TO SUIT 140mm STUDS

TOP PLATES:
DOUBLE TOP PLATE. SINGLE TOP PLATE WITH 140x35mm TOP PLATE PACKER TYPICAL

FIXINGS:
EXTERIOR WALLS - STUDLOK TYPE SL (4.7kN)
INTERIOR LOAD BEARING WALLS - STUDLOK SL.
INTERIOR NON-LOAD BEARING WALLS STUDLOK 2N.

BOTTOM PLATE FIXING
ALL PROPRIETARY ANCHORS TO BE STRICTLY INSTALLED TO MANUFACTURERS SPECIFICATIONS.
TIMBER FLOOR: AS PER TABLE 8.19 NZS3604
CONC. SLAB EDGE: 7kN SCREWBOLTS @ 900 CRS. MAX. 150mm FROM ENDS OF PLATE & CORNERS (MIN. 2kN FOR INTERNAL WALLS)
CONC. MASONRY EDGE: 7kN SCREWBOLTS @ 600 CRS. MAX. 150mm FROM ENDS OF PLATE & CORNERS (MIN. 2kN FOR INTERNAL WALLS)

LEGEND
INTERNAL LOAD BEARING WALL



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Wall Framing Plan

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ROOF PLAN NOTES:

ROOFING
 COLORSTEEL MAXAM
 0.40G TRIMLINE.
 SCREW FIXED WITH
 PROFILED WASHERS WITH EPDM SEALING WASHER
 AS PER ROOFING MANUFACTURERS SPECIFICATIONS
 0.55 COLORSTEEL MAXAM EDGE FLASHINGS, COLOUR TO
 MATCH ROOFING

PURLINS
 90x45 SG8 H1.2 PURLINS AT 900mm CRS.
 100mm, 14g SCREW FIXING

ROOF UNDERLAY
 BAYONET BAYOWRAP FLAMESPEC 05 ROOF UNDERLAY
 LAID HORIZONTALLY (OVER GALV MESH TO 3° ROOF
 ONLY).

GUTTER
 CONTINUOUS TEXAN BLACK GUTTER
 BRACKETS WITH SS SCREWS, 10mm MIN GAP TO FASCIA.
 INSTALL TO MANUFACTURERS' RECOMMENDATIONS

DOWNPIPES
 100Ø UPVC DOWNPIPES, COLOURED BLACK (ETCH
 PRIMER AND PAINTED TO MATCH GUTTER)
 INSTALL TO MANUFACTURERS' RECOMMENDATIONS, LEAF
 SLIDERS

FASCIA
 Ex 40 H3.1 FASCIA BOARD

**FIX ROOF CLADDING IN ACCORDANCE WITH
 MANUFACTURERS SPECIFICATIONS. MAKE WATER TIGHT
 ALL FLASHINGS: HIPS, VALLEYS, APRONS, RIDGES ETC.**

**EXECUTE AND COMPLETE ALL PLUMBING AND DRAINAGE
 REQUIREMENTS IN ACCORDANCE WITH NZBC E1**

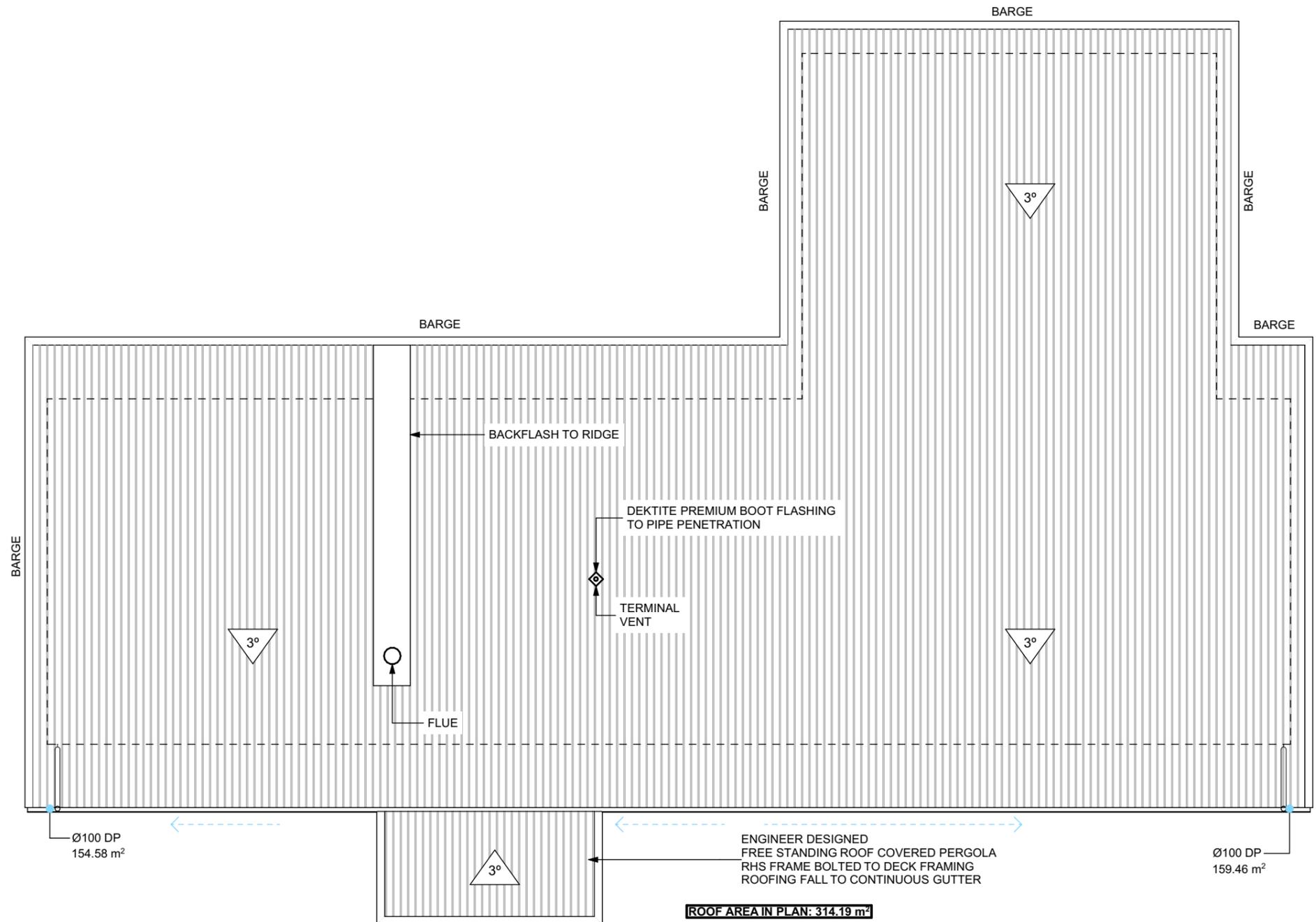
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GUTTER FALL: ARROW DENOTES DIRECTION
 OF FALL TO DOWNPIPE MIN. 1:500 FALL
 LINE OF SOFFIT

RAINWATER CALCULATIONS

RAINFALL INTENSITY 90mm/hr
 TOTAL ROOF PLAN AREA
 GUTTER CROSS SECTIONAL AREA: 17525mm²
 DOWNPIPE DIAMETER Ø100
 ROOF PITCH: 3°

MAX. ROOF PLAN AREA TO GUTTER: 160m²
 MAX. ROOF PLAN AREA TO DP: 195m²



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Roof Plan

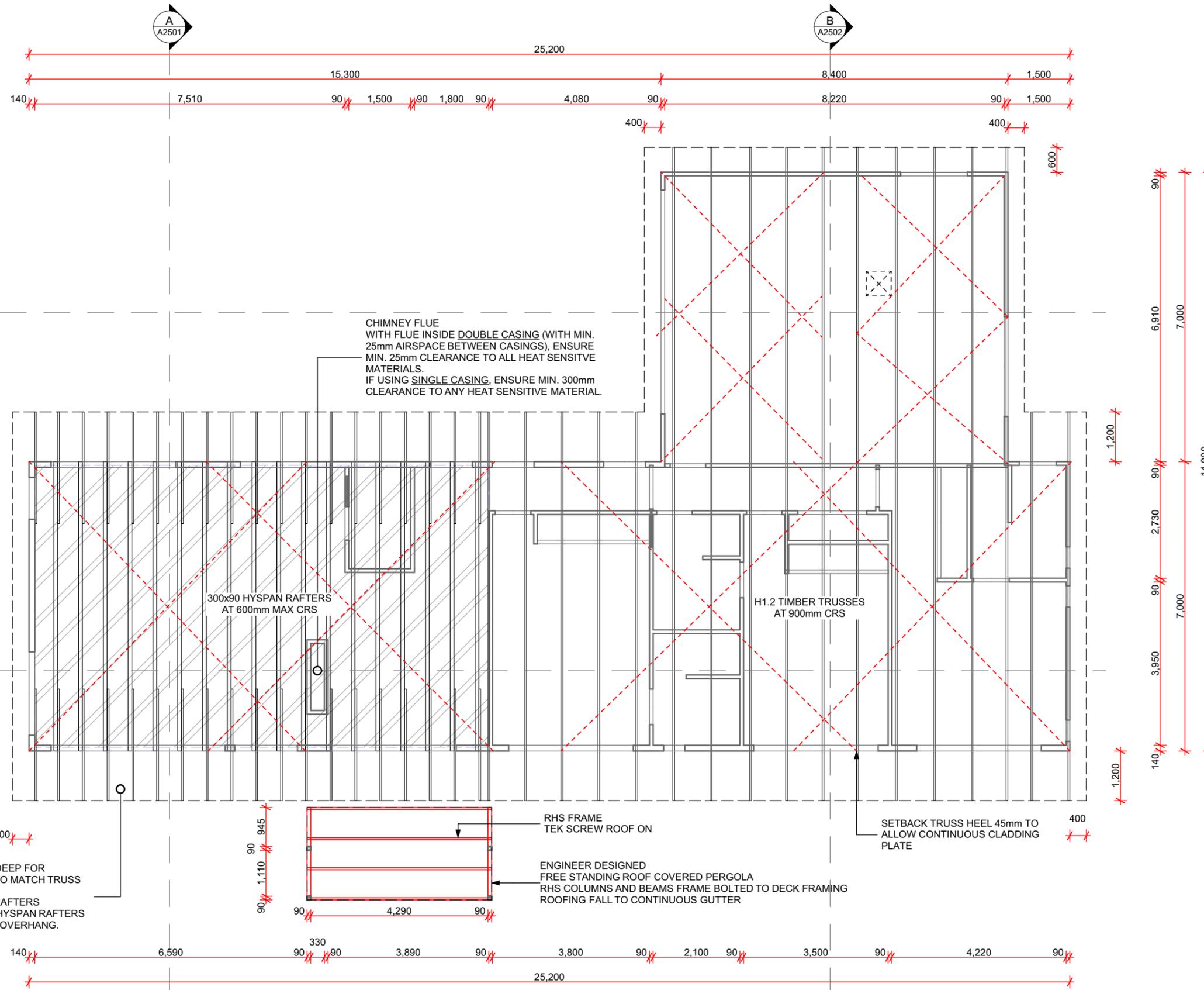
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ROOF FRAMING NOTES:

TRUSSES
 AS PER TRUSS DESIGN PLANS @ 900MM CRS MAX,
 FIXED TO TOP PLATE AS PER TRUSS DESIGN.
 90x45 H1.2 RESTRAINTS REQUIRED TO TRUSS BOTTOM
 CHORDS @ 1.8m MAX. CRS. IF RONDO BATTENS USED

PURLINS
 90x45 SG8 H1.2 PURLINS AT 900mm CRS.
 100mm, 14g SCREW FIXING
 TOP PURLINS 600MM MAX FROM RIDGE, BOTTOM
 PURLIN 600MM MAX FROM FASCIA.

CANTILEVERED PURLINS AS OUTRIGGERS:
 PURLIN OR BATTEN TO EXTEND OVER AT LEAST 3
 RAFTER/TRUSS SUPPORTS.
90x45 H1.2 SG8 PURLINS ON FLAT @ 900CRS.
CANTILEVERED MAX. 450mm

OUTRIGGERS
 H1.2 SG8 OUTRIGGERS. SIZE AND FIXINGS AS PER
 MITEK OUTRIGGER DETAILS ATTACHED

SOFFITS
 TYPICAL:
 JH 6.0mm HARDIE SOFFIT LINING, INSTALL TO
 MANUFACTURERS RECOMMENDATIONS,(PVC
 JOINTERS).
 VERANDAH:
 JH 6.0mm HARDIE SOFFIT LINING ,INSTALL TO
 MANUFACTURERS RECOMMENDATIONS,(PVC
 JOINTERS).

LEGEND

ROOF PLANE BRACING
 DIAGONALLY OPPOSING PAIR TENSIONED
 LUMBERLOK STRIP BRACE ROOF PLANE
 BRACING RUNNING FROM RIDGE TO TOP
 PLATE INSTALLED AS PER
 MANUFACTURERS SPECIFICAITONS
 5/30X3.15 NAILS EACH END & 1/30X3.15 NAIL
 AT CROSSING (AFTER TENSIONING)

LOAD BEARING WALL
 INTERNAL LOAD BEARING WALL BELOW
 SUPPORTING ROOF STRUCTURE ABOVE.

RAFTERED ROOF
 RAFTERED ROOF WITH RAKING CEILING TO
 HATCHED AREA(S) AS SHOWN.

ROOF BRACING:

ROOF WEIGHT: LIGHT
 BRACING REQUIRED: ONE PER
 50m²

ROOF PLAN AREA = 304m²
 BRACES REQUIRED (ROOF AREA/50): 7
 PAIR ROOF PLANE BRACES: 7
 TOTAL NUMBER OF BRACES ACHIEVED: 7



For Building Consent purposes.
Truss Manufacturer to provide
as-built documents upon completion of job.

Connections	
-	Trusses need to be fixed at each timber support with 2/90x3.15 dia Skew Nails unless otherwise noted.
C	50 x 2/MPMGL Multigrip (long)
Z	15 x 2/Z Z nail

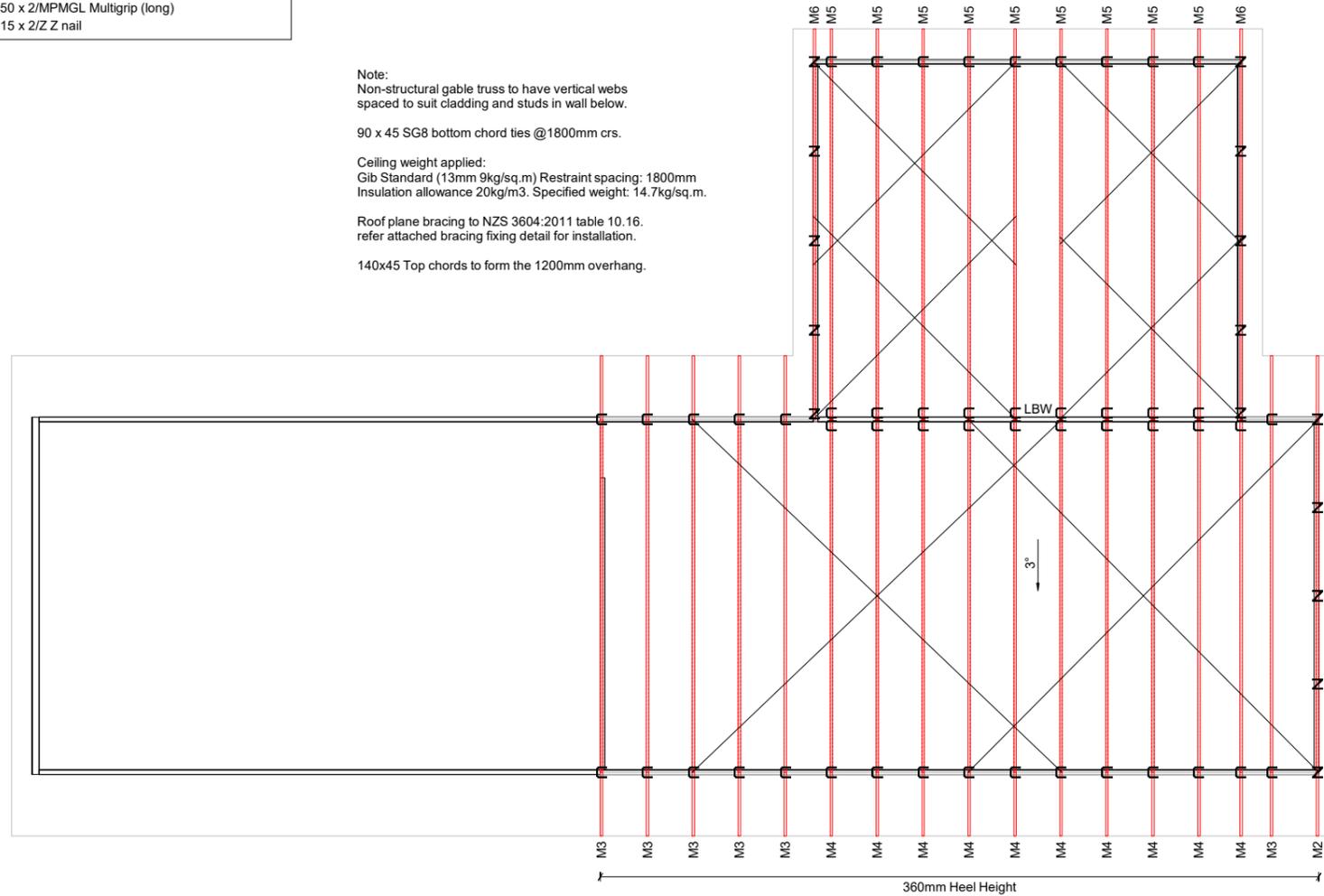
Note:
Non-structural gable truss to have vertical webs spaced to suit cladding and studs in wall below.

90 x 45 SG8 bottom chord ties @1800mm crs.

Ceiling weight applied:
Gib Standard (13mm 9kg/sq.m) Restraint spacing: 1800mm
Insulation allowance 20kg/m3. Specified weight: 14.7kg/sq.m.

Roof plane bracing to NZS 3604:2011 table 10.16.
refer attached bracing fixing detail for installation.

140x45 Top chords to form the 1200mm overhang.



BUILDABLE TRUSS LAYOUT

Job Reference:
J024201
Monday, 17 November 2025

Client:
Arcline Architecture
Address:
380c Opito Bay Road
Kerikeri

Roof Pitch:
3.00 Deg.
Truss Spacing:
900
Roofing Material:
Longrun
Design Wind Velocity:
50.00 m/s (Ult.)
Ceiling Material:
Specified (14.7 kg/sq.m.)



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ROOF FRAMING NOTES:

TRUSSES
AS PER TRUSS DESIGN PLANS @ 900MM CRS MAX,
FIXED TO TOP PLATE AS PER TRUSS DESIGN.
90x45 H1.2 RESTRAINTS REQUIRED TO TRUSS BOTTOM
CHORDS @ 1.8m MAX. CRS. IF RONDO BATTENS USED

PURLINS
90x45 SG8 H1.2 PURLINS AT 900mm CRS.
100mm, 14g SCREW FIXING
TOP PURLINS 600MM MAX FROM RIDGE, BOTTOM
PURLIN 600MM MAX FROM FASCIA.

CANTILEVERED PURLINS AS OUTRIGGERS:
PURLIN OR BATTEN TO EXTEND OVER AT LEAST 3
RAFTER/TRUSS SUPPORTS.
90x45 H1.2 SG8 PURLINS ON FLAT @ 900CRS.
CANTILEVERD MAX. 450mm

OUTRIGGERS
H1.2 SG8 OUTRIGGERS, SIZE AND FIXINGS AS PER
MITEK OUTRIGGER DETAILS ATTACHED

SOFFITS
TYPICAL:
JH 6.0mm HARDIE SOFFIT LINING, INSTALL TO
MANUFACTURERS RECOMMENDATIONS,(PVC
JOINTERS).
VERANDAH:
JH 6.0mm HARDIE SOFFIT LINING ,INSTALL TO
MANUFACTURERS RECOMMENDATIONS,(PVC
JOINTERS).

LEGEND

 **ROOF PLANE BRACING**
DIAGONALLY OPPOSING PAIR TENSIONED
LUMBERLOK STRIP BRACE ROOF PLANE
BRACING RUNNING FROM RIDGE TO TOP
PLATE INSTALLED AS PER
MANUFACTURERS SPECIFICAITONS
5/30X3.15 NAILS EACH END & 1/30X3.15 NAIL
AT CROSSING (AFTER TENSIONING)

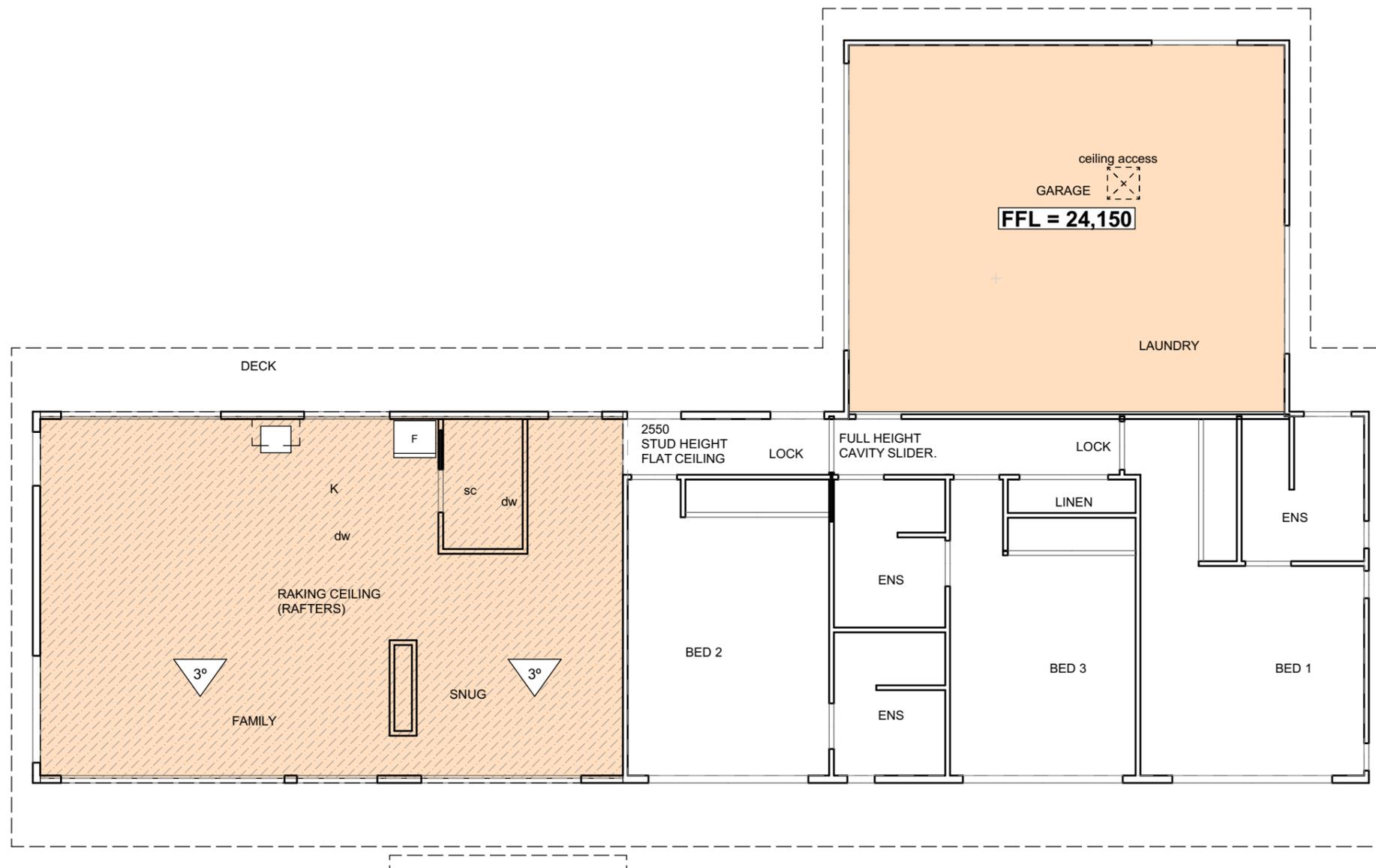
 **LOAD BEARING WALL**
INTERNAL LOAD BEARING WALL BELOW
SUPPORTING ROOF STRUCTURE ABOVE.

 **RAFTERED ROOF**
RAFTERED ROOF WITH RAKING CEILING TO
HATCHED AREA(S) AS SHOWN.

ROOF BRACING:

ROOF WEIGHT: LIGHT
BRACING REQUIRED: 50m² ONE PER

ROOF PLAN AREA = 304m²
BRACES REQUIRED (ROOF AREA/50): 7
PAIR ROOF PLANE BRACES: 7
TOTAL NUMBER OF BRACES ACHIEVED: 7



REFLECTED CEILING PLAN NOTES

CEILINGS HOUSE:
13mm GIB CEILING TO DWELLING
GIB AQUALINE TO WET AREAS

CEILINGS GARAGE:
13mm GIB CEILING TO GARAGE.

CEILINGS RAKING:
RAKING CEILINGS. TO LIVING AREAS.

CEILING BATTENS:
RONDO CEILING BATTENS CLIP FIXED @ 600CRS
70x35 H1.2 TIMBER CEILING BATTENS @ 600CRS TO SOFFITS.

CEILING INSULATION HOUSE:
TBC ROOF INSULATION.
ENSURE MIN. 25mm AIR GAP TO ROOF UNDERLAY.

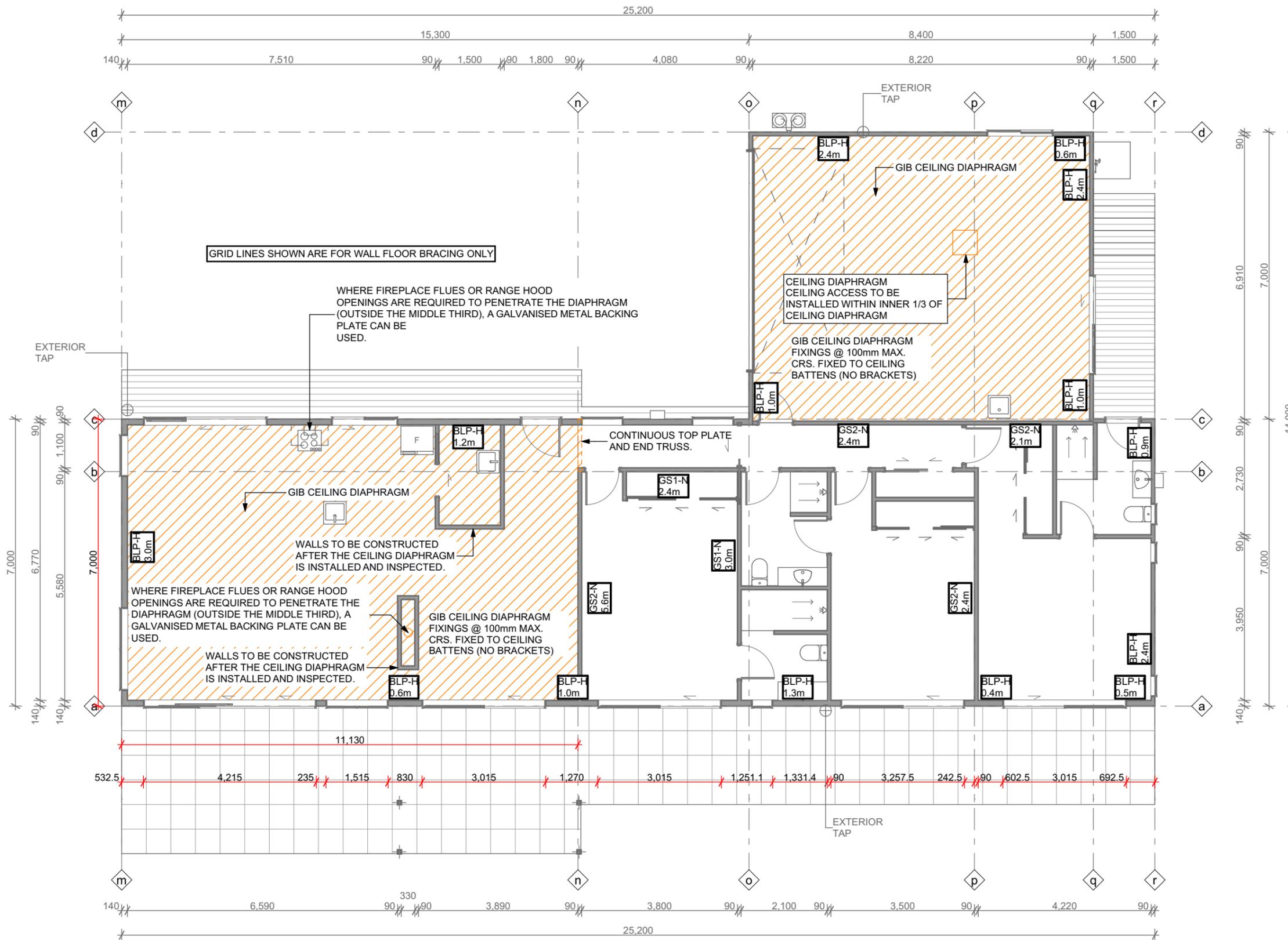
CEILING INSULATION GARAGE:
GARAGE ROOF INSULATED

SOFFIT LINING TYPICAL:
JH 6.0mm HARDIE SOFFIT LINING, INSTALL TO MANUFACTURERS RECOMMENDATIONS.(PVC JOINTERS).

SOFFIT LINING VERANDAH:
JH 6.0mm HARDIE SOFFIT LINING ,INSTALL TO MANUFACTURERS RECOMMENDATIONS.(PVC JOINTERS).

LEGEND

-  RAKING CEILING - RAFTERED ROOF
-  FORM BULKHEAD
-  GIB CEILING DIAPHRAGM



BRACING NOTES:
 BRACING SHOWN INSTALLED AS PER TRIBOARD, SPECIFICATIONS AND INSTALLATION MANUAL
 TRIBOARD SHEETS USED FOR BRACING TO BE FULL HEIGHT (NO HORIZONTAL JOINS).
 NO POWER POINTS OR LIGHT SWITCH OUTLETS TO BE SITUATED WITHIN 90mm OF EDGE OF THE BRACING ELEMENT.

BRACING NOTES:
 BRACING SHOWN INSTALLED AS PER GIB EZYBRACE, SPECIFICATIONS AND INSTALLATION MANUAL
 NO POWER POINTS OR LIGHT SWITCH OUTLETS TO BE SITUATED WITHIN 90mm OF EDGE OF THE BRACING ELEMENT.
LEGEND
 GIB CEILING DIAPHRAGM
 INSTALL AS PER GIB BRACING SPECIFICATION MANUAL
 CONTINUOUS TOP PLATE TO WALL
 INTERNAL BRACED WALLS TO BE CONNECTED TO PERPENDICULAR EXTERNAL WALLS VIA TOP PLATE / CEILING BATTENS AS PER NZS3604:2011 8.7.3.4:

TOTAL BRACING UNITS ON WALL	FIXING AT TOP PLATE LEVEL
< 125 B/U	6kN (TO 1 WALL)
< 250 B/U	6kN (TO 2 WALLS)
> 250 B/U	2.4kN PER 100 B/U (TO 2 WALLS)

Where fireplace flues or range hood openings are required to penetrate the diaphragm (outside the middle third), a galvanised metal backing plate can be used



Ceiling Diaphragms – let's start with the basics

by Russell Pedersen



Talking Trade: Here at the GIB® Helpline, we get a tonne of confused calls about ceiling diaphragms.

The first question we always ask is, "is it a GIB® ceiling diaphragm?". Why? Because under NZS 3604:2011 there can be many different types of ceiling diaphragms. And while some of them have GIB® plasterboard as the lining, they're not necessarily a GIB® ceiling diaphragm cut and pasted from our GIB® EzyBrace Systems Manual.

So, let's start with the basics. Ceiling diaphragms under light and heavy roofs are required to comply with NZS 3604:2011.

Foundationally it helps to understand how bracing lines work – bracing lines are the imaginary lines running along and across the full length or width of a timber framed building plan (they're usually a maximum of 6m apart). While these lines have no physical significance, they're needed to control the positioning of bracing elements and allow even distribution of bracing and stiffness to the structure as a whole. By understanding the bracing line concept and not being restricted by exact placement of physical walls, designers have more freedom with room sizes.

Ceiling diaphragm confusion usually stems from the tight rules to comply with the GIB® solution to diaphragm requirements, which makes the full list of requirements essential reading before plans go to Council or the first sheet of plasterboard is cut.

Whilst not a bracing element itself, a GIB® plasterboard ceiling diaphragm is a stiff and strong horizontal component which transfers loads to connected bracing walls/lines exceeding 6m separation (or 7.5m with dragon ties) to a maximum of 12m (if you have a double top plate).

Any 10mm or 13mm GIB® plasterboard can be used for a GIB® ceiling diaphragm and both timber and steel battens can be used for the structure of the diaphragm (timber

battens for when there are three or more tapered edge joints in a ceiling area, and metal battens for when there are six or more).

The basic shape of a ceiling diaphragm is square or rectangular (1:1 to 1:2). Protrusions (like a cupboard) are allowed, but cut-outs for walls or sky lights are not. If a larger opening is unavoidable it must be in the middle third of the diaphragm*. Where fireplace flues or range hood openings are required to penetrate the diaphragm (outside the middle third), a galvanised metal backing plate can be used as shown in the image on page 2.

* For guidance on openings in the middle third, please see page 20 of our GIB EzyBrace® Systems Book.

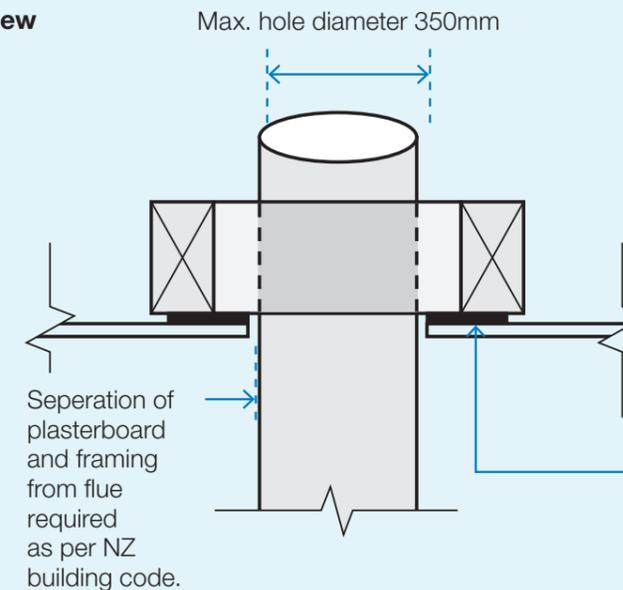
The length of a ceiling diaphragm (measured between supporting bracing lines, not physical walls) cannot be more than twice its width. The supporting bracing lines need a bracing capacity no less than the greater of: 100 bracing units or 15 bracing units per metre of diaphragm dimension. These supporting walls are measured at right angles to the line being considered.

Linings have to be installed over the entire area of the diaphragm. Fasteners are placed at specific centres around the perimeter of the ceiling diaphragm using the GIB EzyBrace® fastener pattern. For GIB® Rondo® Metal Battens, a metal channel or metal angle is required at the perimeter of the diaphragm. When planning your sheet set out, use full width sheets where possible. Minimum sheet size of 600mm x 1800mm provided all adjacent sheets are back blocked.

If a Level 5 finish is required, or for larger areas, other back blocking requirements may apply. Head to page 47 of the GIB® Site Guide for details.

Figure 1: Fireplace Flues and Range Hood Openings

Section view

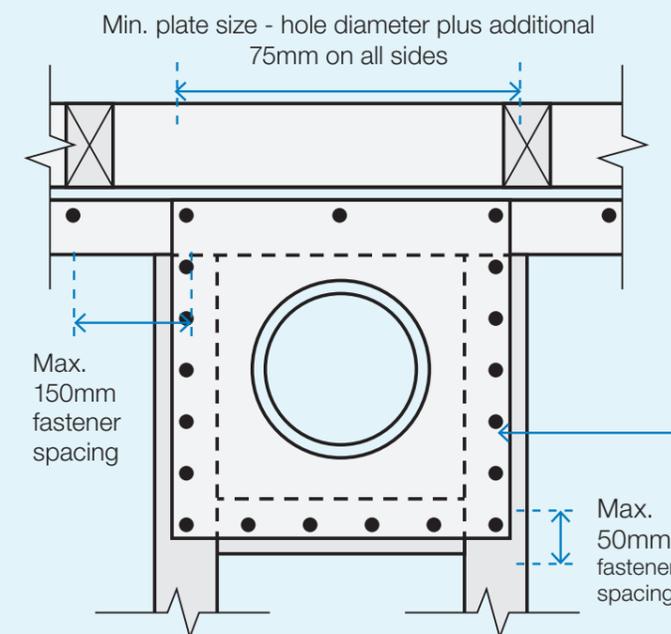


Steel plate
0.55 BMT
Galvanised sheet
Max. opening
350mm diameter.
Installed prior to
GIB® plasterboard.

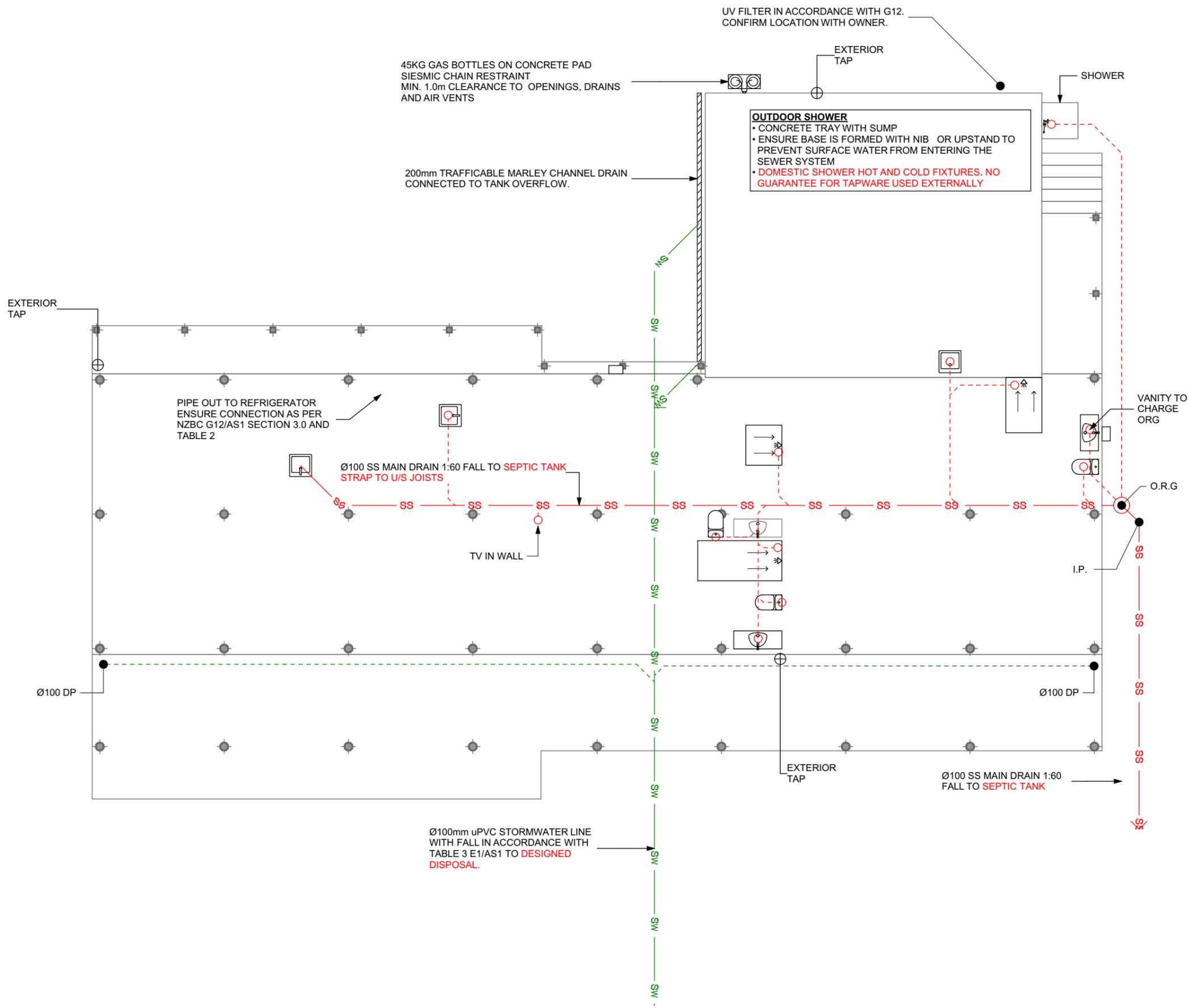
Framing
90 x 45mm framing
trimmed to provide
extra fixing.

GIB® plasterboard ceiling
Installed over the
steel plate and into
framing using a
minimum of 32mm
x 6g GIB® Grabber®
High Thread or
32mm x 7g GIB®
Grabber® Dual
Thread screws at
50mm max centre
spacing.

Plan view



Plasterboard ceiling not shown in plan view



PLUMBING NOTES:
 ALL PLUMBING & DRAINAGE TO COMPLY WITH AS/NZS3500 'THE NATIONAL PLUMBING AND DRAINAGE CODE'
 INSTALL ALL PLUMBING 100mm BELOW CONCRETE FLOOR SLAB / PODS.
 CHECK POSITION OF SEWER AND STORMWATER LATERALS ENTERING SITE BEFORE START OF WORK. ALL INSPECTION POINTS /INSPECTION BENDS UNDER PAVING OR DRIVES TO HAVE REMOVABLE AIRTIGHT LIDS AT GROUND LEVEL

WATER SERVICES
 WATER MAINS 25mm POLYTHENE
 ALL INTERNAL WATER PIPES 15mm BUTYLENE

DRAIN JUNCTIONS
 ALL DRAIN JUNCTIONS SHALL BE BY MEANS OF A JUNCTION WITH AN UPSTREAM ANGLE NOT GREATER THAN 45° AND AS PER NZS 3500.2

SHOWERS
 ALL SHOWERS MIN. 1:50 FALL TO EZY CLEAN WASTE. CHANNEL DRAINS MIN. 1:100 FALL TO EZY CLEAN WASTE. CONFIRM POSITION OF WASTE WITH CLIENT PRIOR INSTALLING WASTE PIPES

DRAINAGE GUIDE
 DRAINAGE PIPES TO BE PROVIDED TO CORRECT DIAMETER AND MINIMUM FALLS AS SHOWN BELOW TO AS/NZS3500 PART 2.2.
 - ALL PIPES IN CONCRETE SLAB TO BE Ø100MIN.

FIXTURE TYPE	DIA. MIN.	FALL MIN.	UNIT RATING	QTY	TOTAL RATING
SHOWER	65mm	1:40	2	8	
VANITY / BASIN	65mm	1:40	2	6	
SINK	65mm	1:40	3	6	
BATH / SHUB	65mm	1:40	4	0	
TUB / WM	65mm	1:40	5	5	
WC	100mm	1:60	6	18	
TOTAL FIXTURE RATING:				43	

TERMINAL VENT 65mm (OVER 30 F/U)
 MITEK TOP PLATE STIFFENER TO TOP PLATE

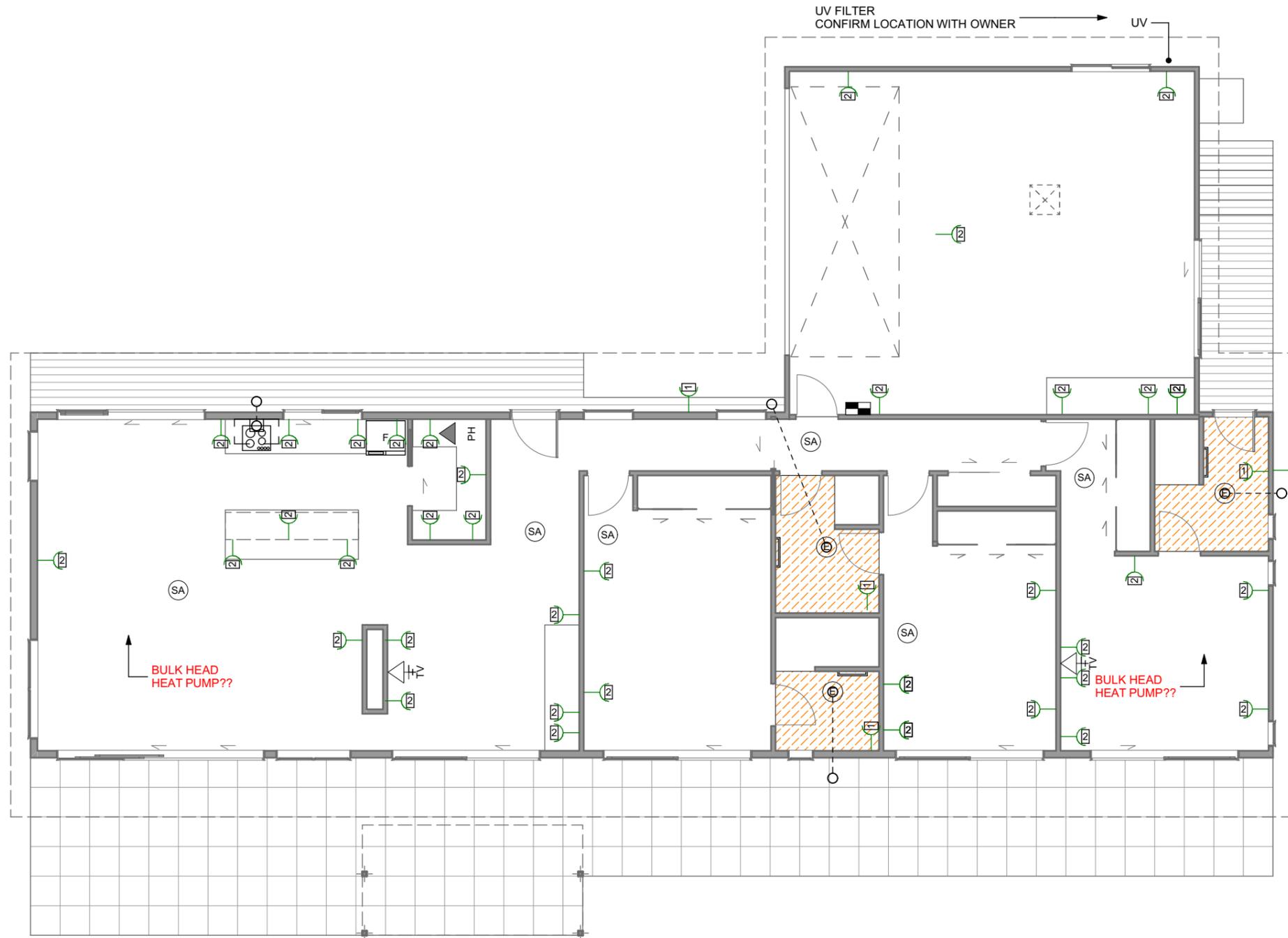
ALL MAIN SS DRAINS Ø100 WITH MIN. 1:60 FALL.

GULLY TRAPS
 LOCATE GULLY TRAPS 150mm MIN. BELOW THE LOWEST FIXTURE AND 25mm MIN. ABOVE PAVED SURFACES

CALIFONT WATER TEMPERATURE TO BE LIMITED VIA TEMPERING VALVE IN ACCORDANCE WITH 6.14 G12/AS1

HOT WATER SUPPLY TO KITCHEN ISLAND TO BE 13mm POLYBUTYLENE AND INSULATED WITH 12mm FOAM POLYMER INSULATION - LAID IN PVC DUCT UNDER CONCRETE FLOOR

LEGEND
 O.R.G. OVERFLOW RELIEF GULLY TRAP
 T.V. TERMINAL VENT
 I.P. INSPECTION POINT
 I.B. INSPECTION BEND
 R.E. RODDING EYE
 -SS- SEWER LINE
 -SW- STORMWATER LINE
 ⊕ EXTERIOR WATER TAP
 ▨ EXTERIOR CHANNEL DRAIN - OUTLET AT MAX. 7.6m CRS. MIN. 1:200 FALL
 ▨ SHOWER CHANNEL DRAIN. 120mm WIDE. MIN. 1:100 FALL TO EZYCLEAN WASTE.
 - - - - - ARROW SHOWS DIRECTION OF REQUIRED FALL



- ELECTRICAL NOTES:**
- CONFIRM KITCHEN LAYOUT WITH OWNER AND KITCHEN MANUFACTURER BEFORE COMMENCING ELECTRICAL FITOUT
- NO POWER POINTS OR LIGHT SWITCH OUTLETS TO BE SITUATED WITHIN 90mm OF EDGE OF BRACING ELEMENTS (SEE BRACING PLAN)
- MAINTAIN CLEARANCE BETWEEN INSULATION AND RECESSED DOWNLIGHTS TO MANUFACTURERS SPECIFICATIONS
- LOCATIONS OF ELECTRICAL FITTINGS SHOWN INDICATIVE ONLY - TO BE CONFIRMED WITH ON SITE WITH CLIENT PRIOR TO INSTALLATION.
- CONFIRM FINAL ELECTRICAL DESIGN WITH CLIENT PRIOR TO QUOTING.
- LEGEND**
- METER BOARD **INTERNAL SMART METER**
 - SINGLE POWER OUTLET
 - DOUBLE POWER OUTLET
 - USB
USB CHARGER INTERGRATED INTO POWER OUTLET
 - TELEVISION / SATELLITE
 - PHONE CONNECTION
 - HEATED TOWEL RAIL
 - EXTRACT FAN / LIGHT
 - DUCTED VENT / EXTRACT FAN
KITCHEN MIN. 50l/s
BATHROOM MIN. 25l/s
LAUNDRY MIN. 20l/s
 - INTERCONNECTED SMOKE ALARM (HEAT ALARM FITTED TO KITCHEN) FITTED WITH HUSH & TEST ABILITY CONFORMING WITH NZBC F7/AS1, C/AS1 AND NZS 4514
 - CONNECT UNDER FLOOR HEATING SYSTEMS IN BATHROOMS, COMPLETE WITH THERMOSTATS TO MANUFACTURERS REQUIREMENTS.
 - UV FILTER IN ACCORDANCE WITH NZBC/G12. CONFIRM LOCATION WITH OWNER.

ELEVATION NOTES

ROOFS
 COLORSTEEL MAXAM
 0.40G TRIMLINE.
 SCREW FIXED WITH
 PROFILED WASHERS WITH EPDM SEALING
 WASHER
 AS PER ROOFING MANUFACTURERS
 SPECIFICATIONS
 0.55 COLORSTEEL MAXAM EDGE
 FLASHINGS, COLOUR TO MATCH ROOFING

CONTINUOUS TEXAN BLACK GUTTER
 BRACKETS WITH SS SCREWS, 10mm MIN
 GAP TO FASCIA. INSTALL TO
 MANUFACTURERS' RECOMMENDATIONS

100Ø UPVC DOWNPIPES, COLOURED BLACK
 (ETCH PRIMER AND PAINTED TO MATCH
 GUTTER)

INSTALL TO MANUFACTURERS'
 RECOMMENDATIONS, LEAF SLIDERS

Ex 40 H3.1 FASCIA BOARD

JH 6.0mm HARDIE SOFFIT LINING, INSTALL
 TO MANUFACTURERS
 RECOMMENDATIONS, (PVC JOINTERS).

JH 6.0mm HARDIE SOFFIT LINING, INSTALL
 TO MANUFACTURERS
 RECOMMENDATIONS, (PVC JOINTERS).

WALLS
 FLAXPOD TRS COLORSTEEL CLADDING
 INSTALLED AS PER MANUFACTURERS
 SPECIFICATIONS ON
 20mm CAVITY SYSTEM - CAVITY
 TREATMENT TO COMPLY WITH B2.

GLAZING / JOINERY
 1.3UG THERMALLY BROKEN DOUBLE
 GLAZED POWDER COATED ALUMINIUM
 JOINERY. (FLAXPOD)

AS SHOWN

SUBFLOOR / EXTERIOR
 NO SUB FLOOR CLADDING

SEMI FRAMELESS BELAIR CHANNEL
 SYSTEM/TOP CAP

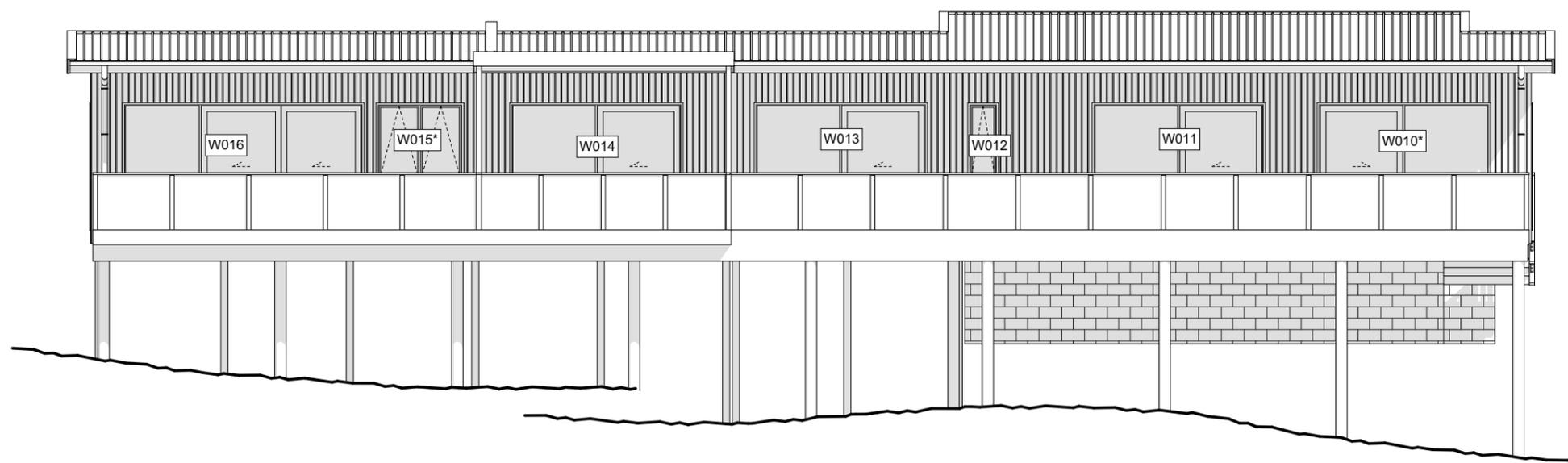
INSULATION
 TBC ROOF INSULATION.
 ENSURE MIN. 25mm AIR GAP TO ROOF
 UNDERLAY. TBC WALL INSULATION####

MAMMOTH FLOOR SECTIONS SUBFLOOR
 INSULATION R2.8

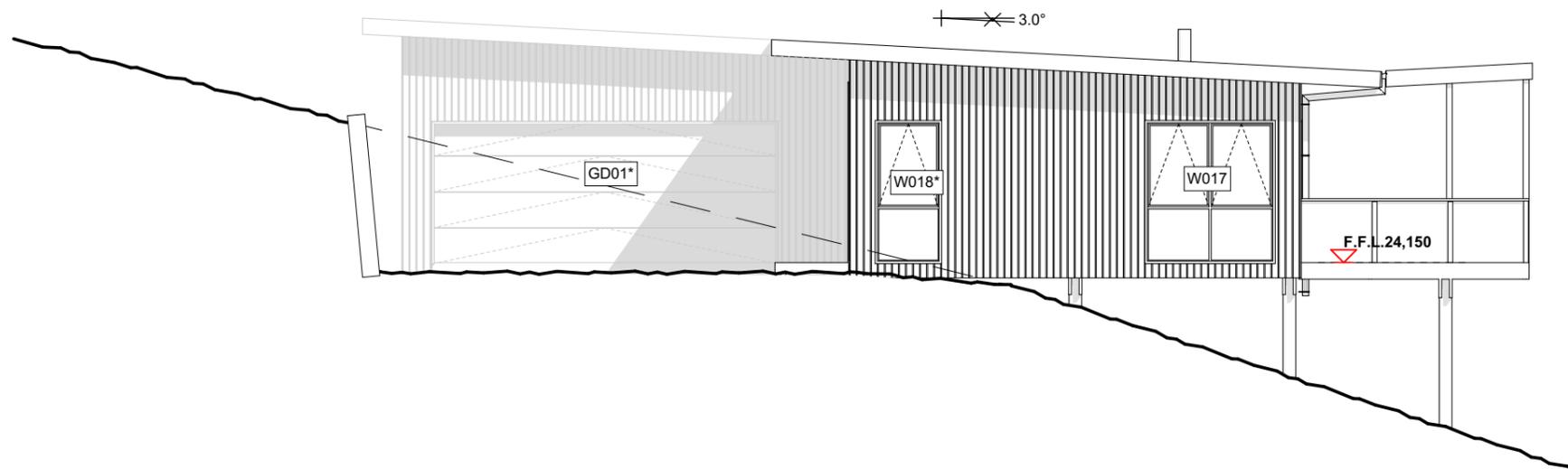
GARAGE INSULATED

GARAGE ROOF INSULATED

GARAGE DOOR TO BE INSULATED.

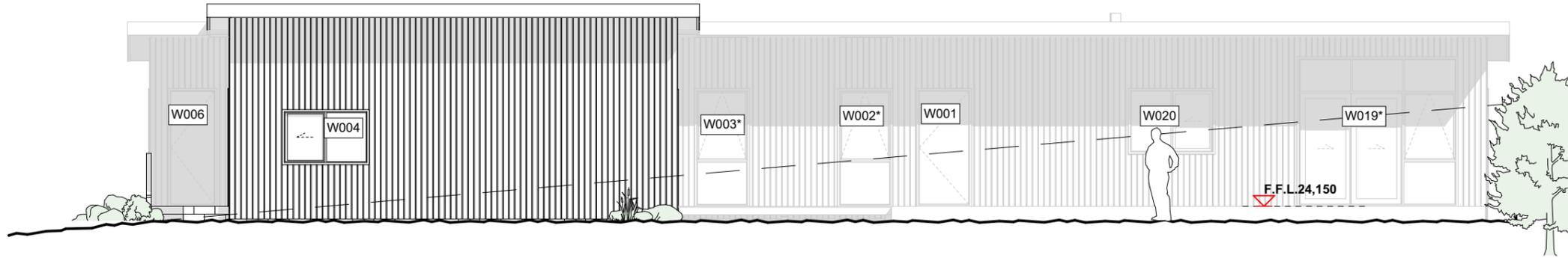


1
 A1501
 South Elevation
 1:100



2
 A1501
 West Elevation
 1:100

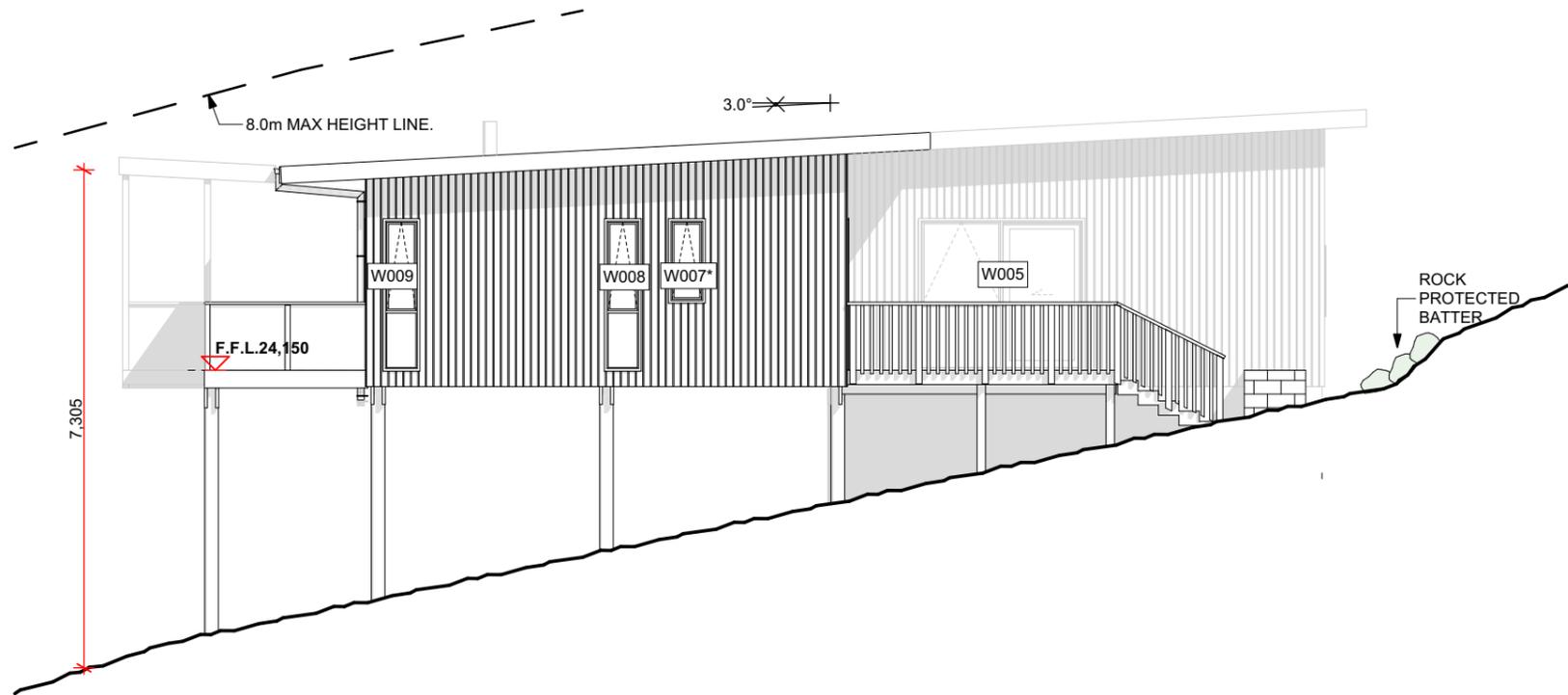
BUILDING ENVELOPE RISK MATRIX		
All Elevations		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	Extra high risk	2
Number of storeys	Low risk	0
Roof/wall intersection design	Low risk	0
Eaves width	High risk	2
Envelope complexity	Low risk	0
Deck design	Low	0
Total Risk Score:		4



1
A1501

North Elevation

1:100



2
A1501

East Elevation

1:100

ELEVATION NOTES

ROOFS
 COLORSTEEL MAXAM
 0.40G TRIMLINE.
 SCREW FIXED WITH
 PROFILED WASHERS WITH EPDM SEALING
 WASHER
 AS PER ROOFING MANUFACTURERS
 SPECIFICATIONS
 0.55 COLORSTEEL MAXAM EDGE
 FLASHINGS, COLOUR TO MATCH ROOFING

CONTINUOUS TEXAN BLACK GUTTER
 BRACKETS WITH SS SCREWS, 10mm MIN
 GAP TO FASCIA. INSTALL TO
 MANUFACTURERS' RECOMMENDATIONS

100Ø UPVC DOWNPIPES, COLOURED BLACK
 (ETCH PRIMER AND PAINTED TO MATCH
 GUTTER)

INSTALL TO MANUFACTURERS'
 RECOMMENDATIONS, LEAF SLIDERS

Ex 40 H3.1 FASCIA BOARD

JH 6.0mm HARDIE SOFFIT LINING, INSTALL
 TO MANUFACTURERS
 RECOMMENDATIONS, (PVC JOINTERS).

JH 6.0mm HARDIE SOFFIT LINING, INSTALL
 TO MANUFACTURERS
 RECOMMENDATIONS, (PVC JOINTERS).

WALLS

FLAXPOD TRS COLORSTEEL CLADDING
 INSTALLED AS PER MANUFACTURERS
 SPECIFICATIONS ON
 20mm CAVITY SYSTEM - CAVITY
 TREATMENT TO COMPLY WITH B2.

GLAZING / JOINERY

1.3UG THERMALLY BROKEN DOUBLE
 GLAZED POWDER COATED ALUMINIUM
 JOINERY. (FLAXPOD)

AS SHOWN

SUBFLOOR / EXTERIOR

NO SUB FLOOR CLADDING

SEMI FRAMELESS BELAIR CHANNEL
 SYSTEM/TOP CAP

INSULATION

TBC ROOF INSULATION.
 ENSURE MIN. 25mm AIR GAP TO ROOF
 UNDERLAY. TBC WALL INSULATION####

MAMMOTH FLOOR SECTIONS SUBFLOOR
 INSULATION R2.8

GARAGE INSULATED

GARAGE ROOF INSULATED

GARAGE DOOR TO BE INSULATED.

BUILDING ENVELOPE RISK MATRIX

All Elevations		
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	Extra high risk	2
Number of storeys	Low risk	0
Roof/wall intersection design	Low risk	0
Eaves width	High risk	2
Envelope complexity	Low risk	0
Deck design	Low	0
Total Risk Score:		4



(Ph): 09 408 2233
 (Email): info@arcline.co.nz
 (Web): www.arcline.co.nz

Elevations

SMITH

380C OPITO BAY ROAD, OPITO BAY
 KERIKERI

Rev No. Revision

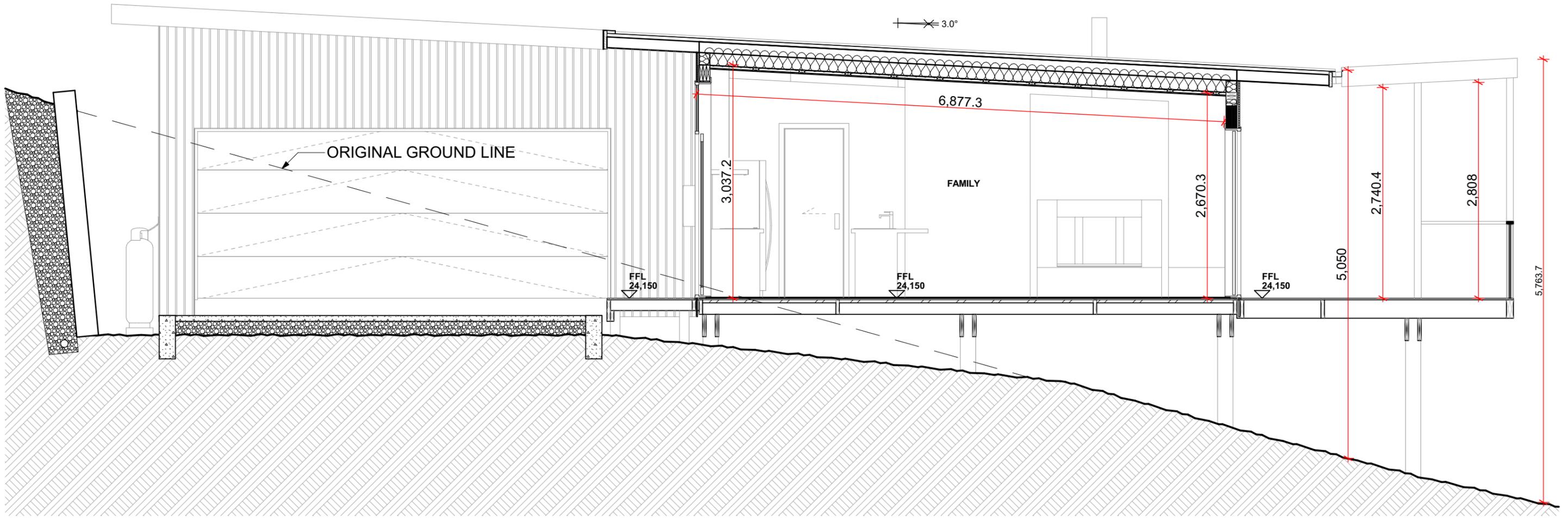
Date

Scale @ A3: 1:100
 Drawn By: SE
 Issued: 16/03/2026
 12:02 pm

Sheet No:

A2002

DRAFT BC



A
A1501

Section A

1:50

ROOFS
 ROOFING
 COLORSTEEL MAXAM
 0.40G TRIMLINE.
 SCREW FIXED WITH
 PROFILED WASHERS WITH EPDM SEALING WASHER
 AS PER ROOFING MANUFACTURERS SPECIFICATIONS
 0.55 COLORSTEEL MAXAM EDGE FLASHINGS, COLOUR
 TO MATCH ROOFING
 ROOF UNDERLAY
 BAYONET BAYOWRAP FLAMESPEC 05 ROOF UNDERLAY
 LAID HORIZONTALLY (OVER GALV MESH TO 3° ROOF
 ONLY).
 PURLINS TYPICAL
 90x45 SG8 H1.2 PURLINS AT 900mm CRS.
 100mm, 14g SCREW FIXING
 ROOF STRUCTURE
 TRUSSES/RAFTERS
 EAVES
 EAVE-1200mm/600mm
 BARGE-450mm

GUTTER / ROOF DRAINAGE
 CONTINUOUS TEXAN BLACK GUTTER
 BRACKETS WITH SS SCREWS, 10mm MIN GAP TO
 FASCIA. INSTALL TO MANUFACTURERS'
 RECOMMENDATIONS
 DOWNPIPES
 100Ø UPVC DOWNPIPES, COLOURED BLACK (ETCH
 PRIMER AND PAINTED TO MATCH GUTTER)
 INSTALL TO MANUFACTURERS'
 RECOMMENDATIONS, LEAF SLIDERS
 FASCIA
 Ex 40 H3.1 FASCIA BOARD
 SOFFIT LININGS TYPICAL
 JH 6.0mm HARDIE SOFFIT LINING, INSTALL TO
 MANUFACTURERS RECOMMENDATIONS, (PVC
 JOINTERS).
 SOFFIT LININGS (VERANDAH)
 JH 6.0mm HARDIE SOFFIT LINING, INSTALL TO
 MANUFACTURERS RECOMMENDATIONS, (PVC
 JOINTERS).

WALLS
 WALL CLADDINGS
 FLAXPOD TRS COLORSTEEL CLADDING INSTALLED AS
 PER MANUFACTURERS SPECIFICATIONS ON
 20mm CAVITY SYSTEM - CAVITY TREATMENT TO
 COMPLY WITH B2.
 ECOPLY BARRIER WALL UNDERLAY.
 STUD HEIGHT
 VARIES
 BOTTOM PLATES
 H1.2 BOTTOM PLATES-6mm SLAB OVERHANG
 FLOOR SLAB
 TO GARAGE-100mm THICK 20MPA CONCRETE FLOOR
 SLAB, 500E MESH 30mm TOP COVER(LAP JOINS 225mm)
 OVER 0.25mm POLYTHENE MOISTURE BARRIER (TAPE
 ALL CUTS AND PENETRATIONS AND LAP 225mm AT ALL
 SEAMS) OVER 100mm MIN COMPACTED GAP 40 OR
 OTHER ACCEPTABLE HARDFILL.
 50mm HD POLYSTYRENE.

SLAB FOUNDATIONS
 MASONRY BLOCK FOOTINGS.
 DECKING
 SILCA SYSTEM TILE
JOINERY
 1.3UG THERMALLY BROKEN DOUBLE GLAZED POWDER
 COATED ALUMINIUM JOINERY. (FLAXPOD)
 AS SHOWN
BALUSTRADES
 EXTERIOR
 SEMI FRAMELESS BELAIR CHANNEL SYSTEM/TOP CAP
FLOORS
 FLOORING TYPICAL
 21mm H3 PLY FLOORING.
 WET AREA FLOORING
 JH SECURA FLOORING TO WET AREAS.
 FLOOR FINISHES
 TILES-WET AREAS
 CARPET

LININGS
 WALL LININGS DWELLING
 10mm GIB.
 GIB AQUALINE TO WET AREAS.
 9mm VILLABOARD TO TILED WALLS
 WALL LININGS GARAGE
 10mm GIB IN GARAGE.
 CEILING LININGS DWELLING
 13mm GIB CEILING TO DWELLING
 GIB AQUALINE TO WET AREAS
 CEILING LININGS GARAGE
 13mm GIB CEILING TO GARAGE.
 RAKING CEILINGS
 RAKING CEILINGS, TO LIVING AREAS.
 CEILING BATTENS
 RONDO CEILING BATTENS CLIP FIXED @ 600CRS
 70x35 H1.2 TIMBER CEILING BATTENS @ 600CRS TO
 SOFFITS.

INTERIOR DOORS
 TBC
 TRIMS
 60x10 FJ PINE, SINGLE BEVEL SKIRTING.
 40x10 FJ PINE ARCHITRAVE.
 SQUARE STOP (40x18 IN CUPBOARDS) SCOTIA.
INSULATION
 TBC ROOF INSULATION.
 ENSURE MIN. 25mm AIR GAP TO ROOF UNDERLAY.
 TBC WALL INSULATION
 MAMMOTH FLOOR SECTIONS SUBFLOOR INSULATION
 R2.8
 GARAGE INSULATED
 GARAGE ROOFINSULATED
 GARAGE DOOR TO BE INSULATED.
 ACOUSTIC INSULATION TO BE INSTALLED
 AROUND/BETWEEN BATHROOMS AND BEDROOMS.
SPACE HEATING
 WOOD FIRE.
SHOWERS
 TILED SHOWERS/BATHROOMS (9mm VILLABOARD)
WATER HEATING
 GAS CALIFONT AS SHOWN ON THE ELECTRICAL PLAN.
 2X45KG BOTTLES AS SHOWN ON FLOOR PLAN. (WITH

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 (Web): www.arcline.co.nz

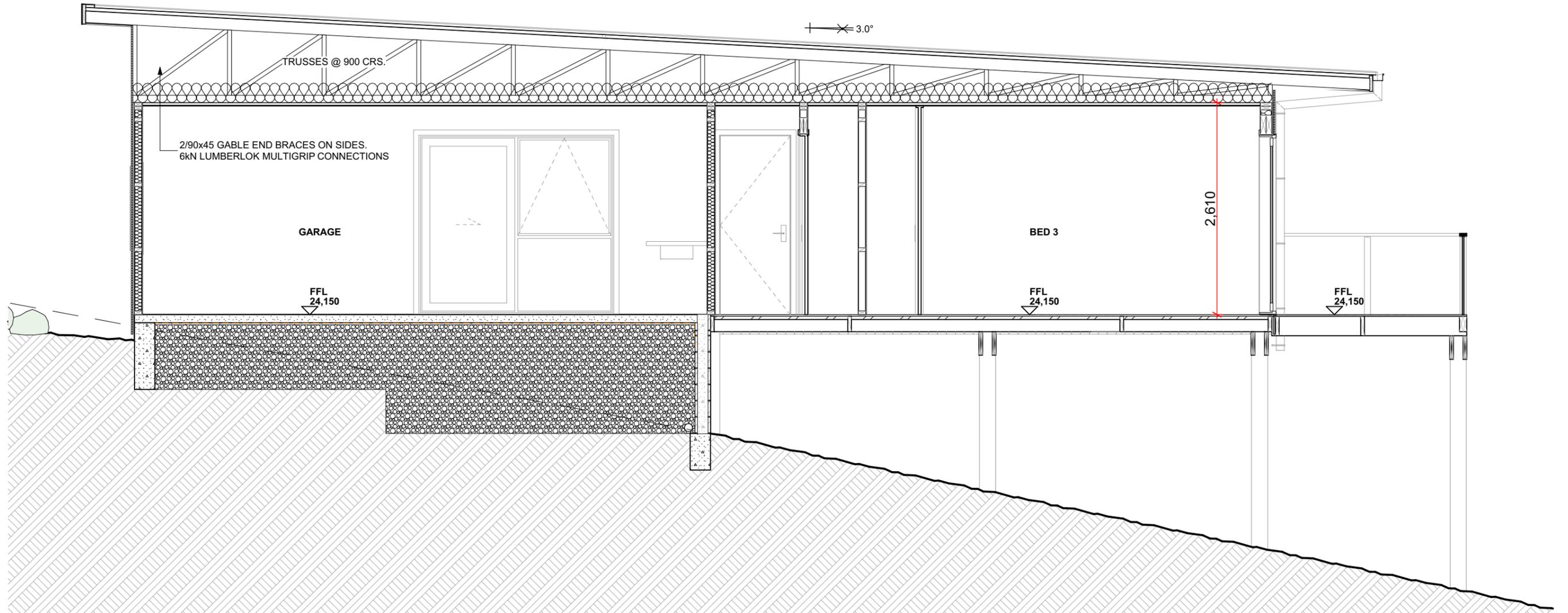
Section A-A

SMITH
 380C OPITO BAY ROAD, OPITO BAY
 KERIKERI

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A2501
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B Section B 1:50
A1501

ROOFS

ROOFING
 COLORSTEEL MAXAM
 0.40G TRIMLINE.
 SCREW FIXED WITH
 PROFILED WASHERS WITH EPDM SEALING WASHER
 AS PER ROOFING MANUFACTURERS SPECIFICATIONS
 0.55 COLORSTEEL MAXAM EDGE FLASHINGS, COLOUR
 TO MATCH ROOFING
 ROOF UNDERLAY
 BAYONET BAYOWRAP FLAMESPEC 05 ROOF UNDERLAY
 LAID HORIZONTALLY (OVER GALV MESH TO 3° ROOF
 ONLY).
 PURLINS TYPICAL
 90x45 SG8 H1.2 PURLINS AT 900mm CRS.
 100mm, 14g SCREW FIXING
 ROOF STRUCTURE
 TRUSSES/RAFTERS
 EAVES
 EAVE-1200mm/600mm
 BARGE-450mm

GUTTER / ROOF DRAINAGE

CONTINUOUS TEXAN BLACK GUTTER
 BRACKETS WITH SS SCREWS, 10mm MIN GAP TO
 FASCIA. INSTALL TO MANUFACTURERS'
 RECOMMENDATIONS
 DOWNPIPES
 100Ø UPVC DOWNPIPES, COLOURED BLACK (ETCH
 PRIMER AND PAINTED TO MATCH GUTTER)
 INSTALL TO MANUFACTURERS'
 RECOMMENDATIONS, LEAF SLIDERS
 FASCIA
 Ex 40 H3.1 FASCIA BOARD
 SOFFIT LININGS TYPICAL
 JH 6.0mm HARDIE SOFFIT LINING, INSTALL TO
 MANUFACTURERS RECOMMENDATIONS, (PVC
 JOINTERS).
 SOFFIT LININGS (VERANDAH)
 JH 6.0mm HARDIE SOFFIT LINING ,INSTALL TO
 MANUFACTURERS RECOMMENDATIONS, (PVC
 JOINTERS).

WALLS

WALL CLADDINGS
 FLAXPOD TRS COLORSTEEL CLADDING INSTALLED AS
 PER MANUFACTURERS SPECIFICATIONS ON
 20mm CAVITY SYSTEM - CAVITY TREATMENT TO
 COMPLY WITH B2.

ECOPLY BARRIER WALL UNDERLAY.

STUD HEIGHT
 VARIES
 BOTTOM PLATES
 H1.2 BOTTOM PLATES-6mm SLAB OVERHANG
 FLOOR SLAB
 TO GARAGE-100mm THICK 20MPA CONCRETE FLOOR
 SLAB, 500E MESH 30mm TOP COVER(LAP JOINS 225mm)
 OVER 0.25mm POLYTHENE MOISTURE BARRIER (TAPE
 ALL CUTS AND PENETRATIONS AND LAP 225mm AT ALL
 SEAMS) OVER 100mm MIN COMPACTED GAP 40 OR
 OTHER ACCEPTABLE HARDFILL.
 50mm HD POLYSTYRENE.

SLAB FOUNDATIONS

MASONRY BLOCK FOOTINGS.
 DECKING
 SILCA SYSTEM TILE
JOINERY
 1.3UG THERMALLY BROKEN DOUBLE GLAZED POWDER
 COATED ALUMINIUM JOINERY. (FLAXPOD)
 AS SHOWN
BALUSTRADES
 EXTERIOR
 SEMI FRAMELESS BELAIR CHANNEL SYSTEM/TOP CAP
FLOORS
 FLOORING TYPICAL
 21mm H3 PLY FLOORING.
 WET AREA FLOORING
 JH SECURA FLOORING TO WET AREAS.
 FLOOR FINISHES
 TILES-WET AREAS
 CARPET

LININGS

WALL LININGS DWELLING
 10mm GIB.
 GIB AQUALINE TO WET AREAS.
 WALL LININGS GARAGE
 9mm VILLABOARD TO TILED WALLS
 10mm GIB IN GARAGE.
 CEILING LININGS DWELLING
 13mm GIB CEILING TO DWELLING
 GIB AQUALINE TO WET AREAS
 CEILING LININGS GARAGE
 13mm GIB CEILING TO GARAGE.
 RAKING CEILINGS
 RAKING CEILINGS. TO LIVING AREAS.
 CEILING BATTENS
 RONDO CEILING BATTENS CLIP FIXED @ 600CRS
 70x35 H1.2 TIMBER CEILING BATTENS @ 600CRS TO
 SOFFITS.

INTERIOR DOORS

TBC
 TRIMS
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Section B-B

SMITH
 380C OPITO BAY ROAD, OPITO BAY
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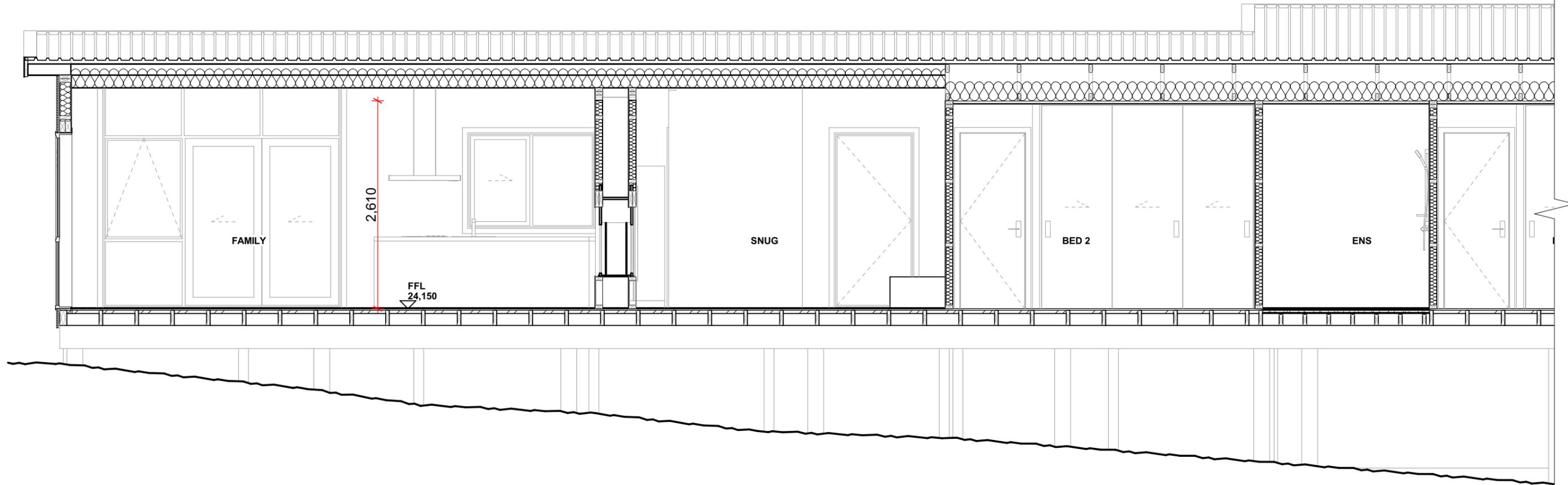
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A2502

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M
A1501

Section M

1:50

ROOFS
 ROOFING
 COLORSTEEL MAXAM
 0.40G TRIMLINE.
 SCREW FIXED WITH
 PROFILED WASHERS WITH EPDM SEALING WASHER
 AS PER ROOFING MANUFACTURERS SPECIFICATIONS
 0.55 COLORSTEEL MAXAM EDGE FLASHINGS, COLOUR
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 BAYONET BAYOWRAP FLAMESPEC 05 ROOF UNDERLAY
 LAID HORIZONTALLY (OVER GALV MESH TO 3° ROOF
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 TRUSSES/RAFTERS
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 EAVE-1200mm/600mm
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GUTTER / ROOF DRAINAGE
 CONTINUOUS TEXAN BLACK GUTTER
 BRACKETS WITH SS SCREWS, 10mm MIN GAP TO
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 DOWNPIPES
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 SOFFIT LININGS TYPICAL
 JH 6.0mm HARDIE SOFFIT LINING, INSTALL TO
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 JOINTERS).
 SOFFIT LININGS (VERANDAH)
 JH 6.0mm HARDIE SOFFIT LINING, INSTALL TO
 MANUFACTURERS RECOMMENDATIONS, (PVC
 JOINTERS).

WALLS
 WALL CLADDINGS
 FLAXPOD TRS COLORSTEEL CLADDING INSTALLED AS
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 20mm CAVITY SYSTEM - CAVITY TREATMENT TO
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SLAB FOUNDATIONS
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 SILCA SYSTEM TILE
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 AS SHOWN
BALUSTRADES
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 CEILING LININGS DWELLING
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 CEILING BATTENS
 RONDO CEILING BATTENS CLIP FIXED @ 600CRS
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 SQUARE STOP (40x18 IN CUPBOARDS) SCOTIA.
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 R2.8
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Section M-M

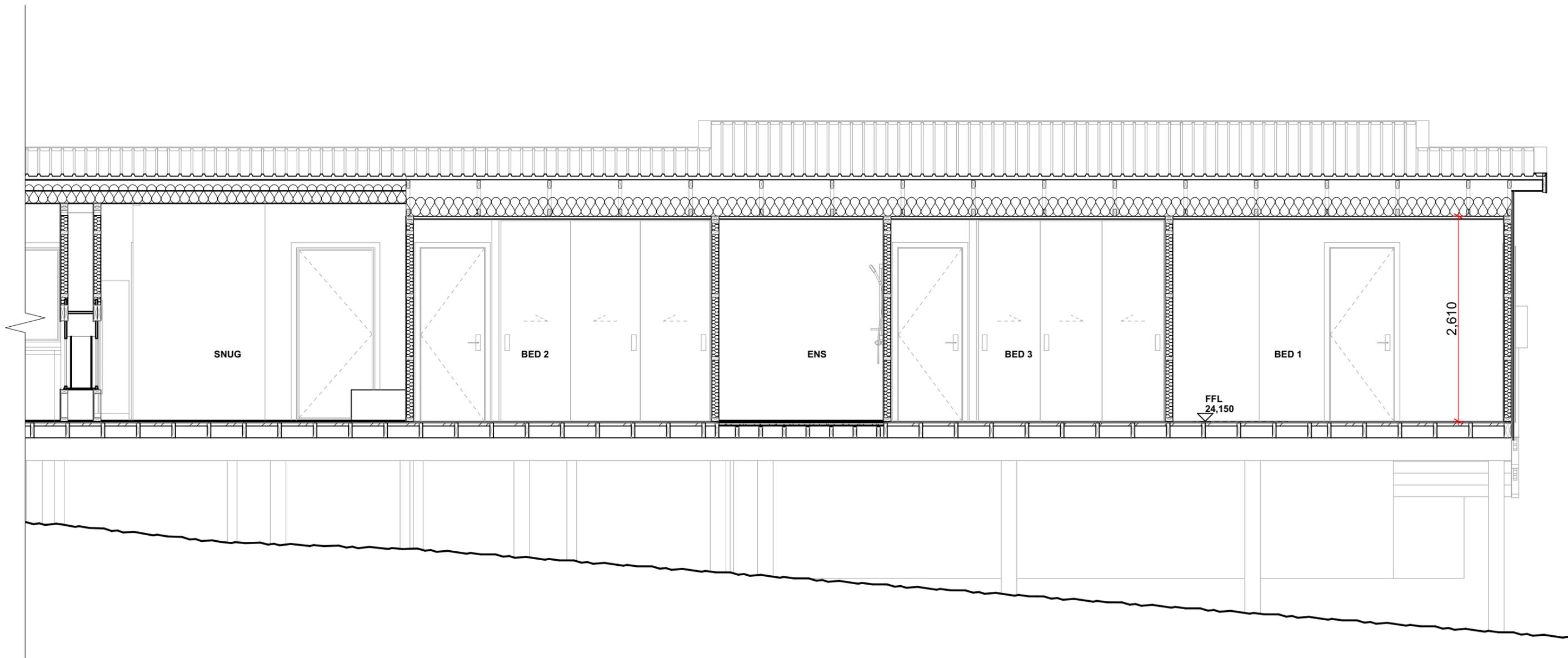
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M

Section M

1:50

A1501

ROOFS

ROOFING
 COLORSTEEL MAXAM
 0.40G TRIMLINE.
 SCREW FIXED WITH
 PROFILED WASHERS WITH EPDM SEALING WASHER
 AS PER ROOFING MANUFACTURERS SPECIFICATIONS
 0.55 COLORSTEEL MAXAM EDGE FLASHINGS, COLOUR
 TO MATCH ROOFING
 ROOF UNDERLAY
 BAYONET BAYOWRAP FLAMESPEC 05 ROOF UNDERLAY
 LAID HORIZONTALLY (OVER GALV MESH TO 3° ROOF
 ONLY).
 PURLINS TYPICAL
 90x45 SG8 H1.2 PURLINS AT 900mm CRS.
 100mm, 14g SCREW FIXING
 ROOF STRUCTURE
 TRUSSES/RAFTERS
 EAVES
 EAVE-1200mm/600mm
 BARGE-450mm

GUTTER / ROOF DRAINAGE

CONTINUOUS TEXAN BLACK GUTTER
 BRACKETS WITH SS SCREWS, 10mm MIN GAP TO
 FASCIA. INSTALL TO MANUFACTURERS'
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 DOWNPIPES
 100Ø UPVC DOWNPIPES, COLOURED BLACK (ETCH
 PRIMER AND PAINTED TO MATCH GUTTER)
 INSTALL TO MANUFACTURERS'
 RECOMMENDATIONS, LEAF SLIDERS
 FASCIA
 Ex 40 H3.1 FASCIA BOARD
 SOFFIT LININGS TYPICAL
 JH 6.0mm HARDIE SOFFIT LINING, INSTALL TO
 MANUFACTURERS RECOMMENDATIONS, (PVC
 JOINTERS).
 SOFFIT LININGS (VERANDAH)
 JH 6.0mm HARDIE SOFFIT LINING ,INSTALL TO
 MANUFACTURERS RECOMMENDATIONS, (PVC
 JOINTERS).

WALLS

WALL CLADDINGS
 FLAXPOD TRS COLORSTEEL CLADDING INSTALLED AS
 PER MANUFACTURERS SPECIFICATIONS ON
 20mm CAVITY SYSTEM - CAVITY TREATMENT TO
 COMPLY WITH B2.

ECOPLY BARRIER WALL UNDERLAY.

STUD HEIGHT
 VARIES
 BOTTOM PLATES
 H1.2 BOTTOM PLATES-6mm SLAB OVERHANG
 FLOOR SLAB
 TO GARAGE-100mm THICK 20MPA CONCRETE FLOOR
 SLAB, 500E MESH 30mm TOP COVER(LAP JOINS 225mm)
 OVER 0.25mm POLYTHENE MOISTURE BARRIER (TAPE
 ALL CUTS AND PENETRATIONS AND LAP 225mm AT ALL
 SEAMS) OVER 100mm MIN COMPACTED GAP 40 OR
 OTHER ACCEPTABLE HARDFILL.
 50mm HD POLYSTYRENE.

SLAB FOUNDATIONS

MASONRY BLOCK FOOTINGS.
 DECKING
 SILCA SYSTEM TILE
JOINERY
 1.3UG THERMALLY BROKEN DOUBLE GLAZED POWDER
 COATED ALUMINIUM JOINERY. (FLAXPOD)
 AS SHOWN
BALUSTRADES
 EXTERIOR
 SEMI FRAMELESS BELAIR CHANNEL SYSTEM/TOP CAP
FLOORS
 FLOORING TYPICAL
 21mm H3 PLY FLOORING.
 WET AREA FLOORING
 JH SECURA FLOORING TO WET AREAS.
 FLOOR FINISHES
 TILES-WET AREAS
 CARPET

LININGS

WALL LININGS DWELLING
 10mm GIB.
 GIB AQUALINE TO WET AREAS.
 WALL LININGS GARAGE
 9mm VILLABOARD TO TILED WALLS
 10mm GIB IN GARAGE.
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 RAKING CEILINGS
 RAKING CEILINGS. TO LIVING AREAS.
 CEILING BATTENS
 RONDO CEILING BATTENS CLIP FIXED @ 600CRS
 70x35 H1.2 TIMBER CEILING BATTENS @ 600CRS TO
 SOFFITS.

INTERIOR DOORS

TBC
 TRIMS
 60x10 FJ PINE, SINGLE BEVEL SKIRTING.
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INSULATION
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Section M-M

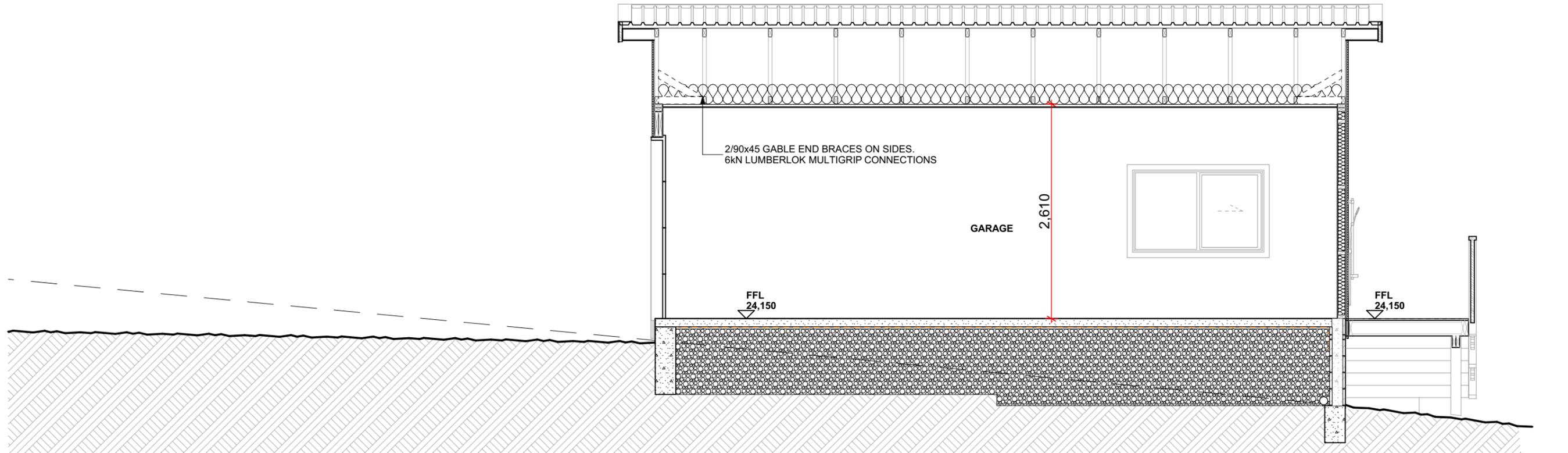
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A2504
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A1501

Section N

1:50

ROOFS
 ROOFING
 COLORSTEEL MAXAM
 0.40G TRIMLINE.
 SCREW FIXED WITH
 PROFILED WASHERS WITH EPDM SEALING WASHER
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 LAID HORIZONTALLY (OVER GALV MESH TO 3° ROOF
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GUTTER / ROOF DRAINAGE
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WALLS
 WALL CLADDINGS
 FLAXPOD TRS COLORSTEEL CLADDING INSTALLED AS
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 20mm CAVITY SYSTEM - CAVITY TREATMENT TO
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 ECOPLY BARRIER WALL UNDERLAY.
 STUD HEIGHT
 VARIES
 BOTTOM PLATES
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 TO GARAGE-100mm THICK 20MPA CONCRETE FLOOR
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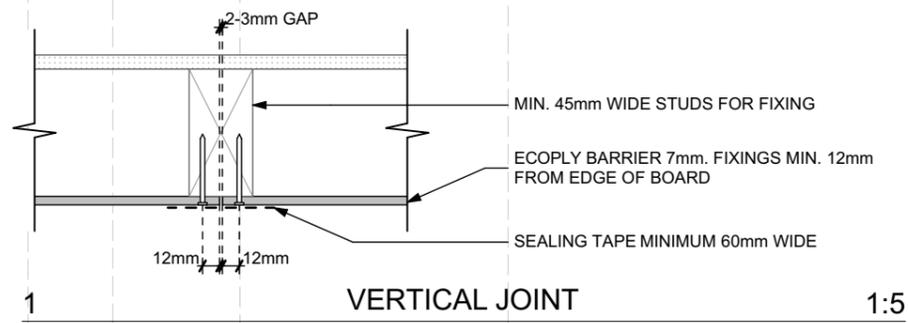
Section N-N

SMITH
 380C OPITO BAY ROAD, OPITO BAY
 KERIKERI

Rev No.	Revision	Date

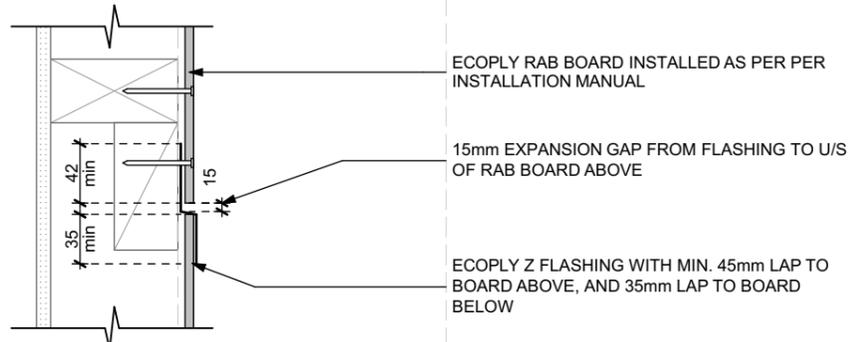
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A2505
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VERTICAL JOINT

1:5



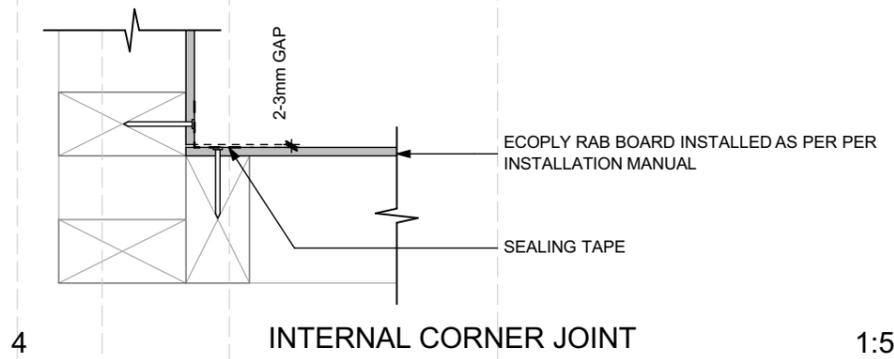
HORIZONTAL JOINT

1:5

Horizontal Sheet Joins (Three Options):

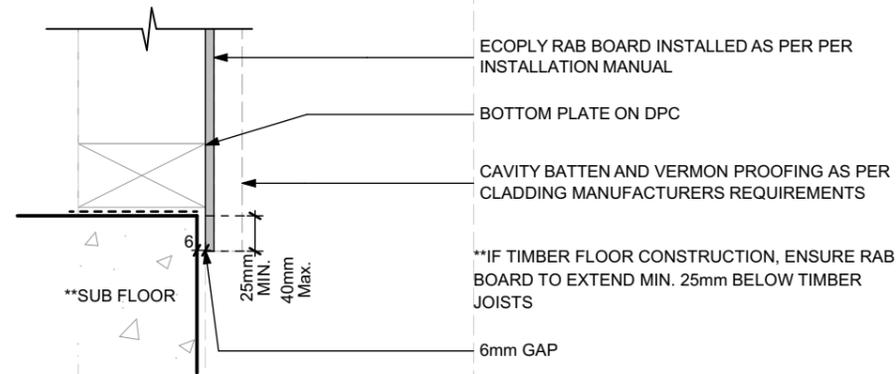
- EcoPLY Barrier PVC horizontal 'Z' Flashing (Product Code RDZF7) for horizontal sheet joints. Refer BAR007: Horizontal Sheet Joints (PVC Z Flashing).
 - 'Z' taped joint using EcoPLY Barrier 150mm OR 200mm Frame Sealing Tape. Refer BAR007A: Horizontal Sheet Joints (Tape Z Flashing).
 - 'Face' seal joint using EcoPLY Barrier 150mm OR 200mm Frame Sealing Tape. Refer to BAR007B: Face Sealed Horizontal Sheets Joins at Mid-floor or BAR007C: Face Sealed Horizontal Sheet Joins at Nog.
- Tape Splices and Joints:
- Whenever tape splices occur at a junction, create an overlapping splice of at least 50mm.
 - Make sure to apply adequate pressure for a secure bond between the plywood panel and the tape.
 - Take special care to remove any wrinkles or voids at splice areas.

2



INTERNAL CORNER JOINT

1:5

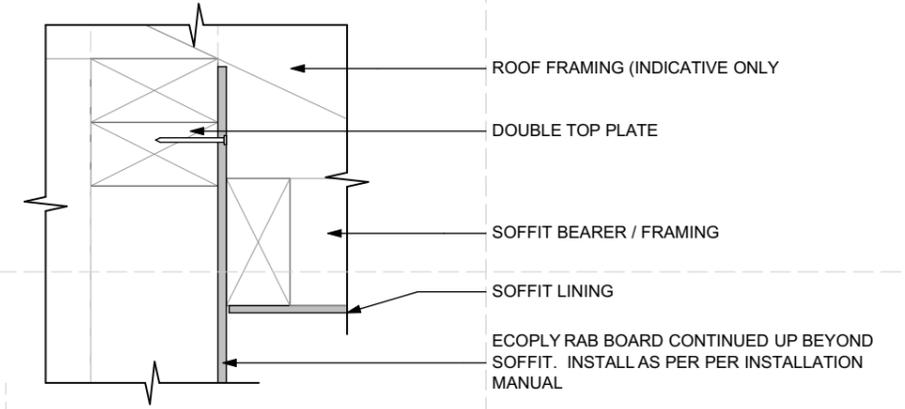


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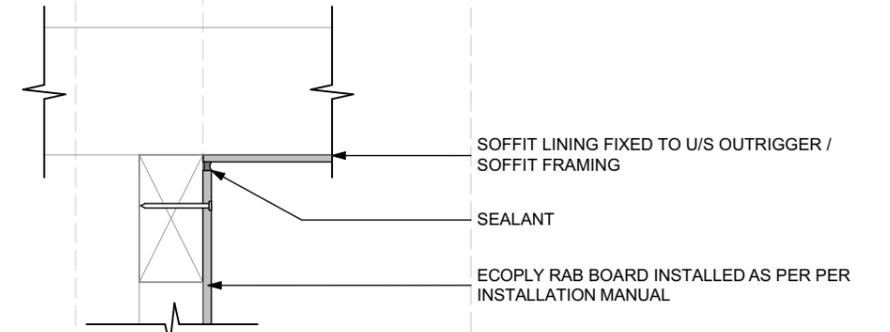
BASE DETAIL - CONCRETE

1:5

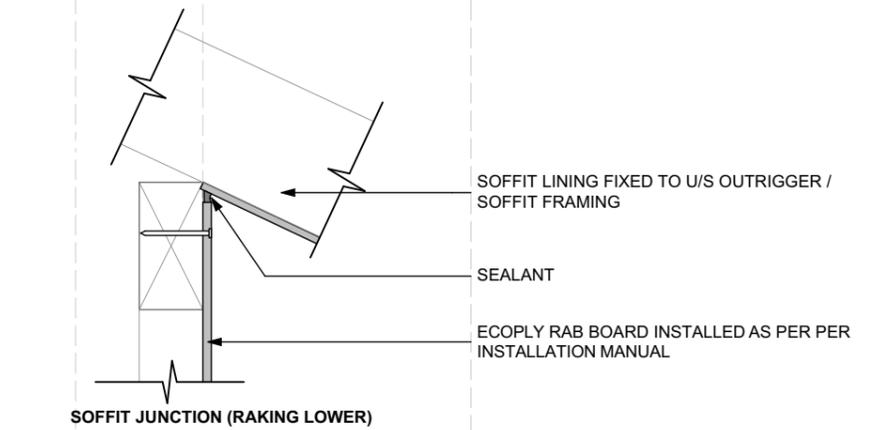
ALL DETAILS TO BE READ STRICTLY IN CONJUNCTION WITH LATEST CHH ECOPLY BARRIER SPECIFICATIONS AND INSTALLATION MANUAL



SOFFIT JUNCTION (FLAT SOFFIT)



SOFFIT JUNCTION (GABLE VERGE)

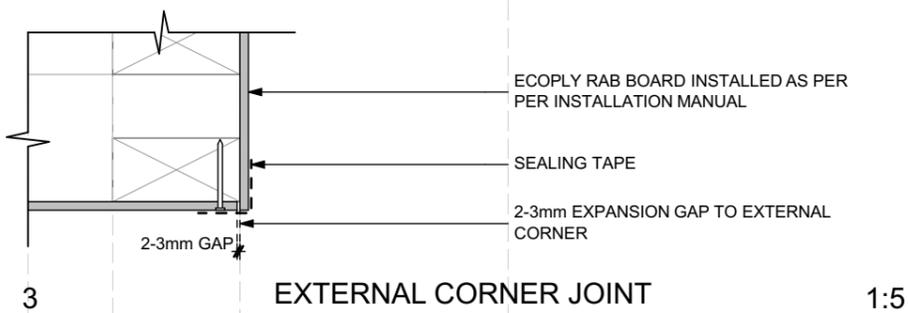


SOFFIT JUNCTION (RAKING LOWER)

SOFFIT DETAILS

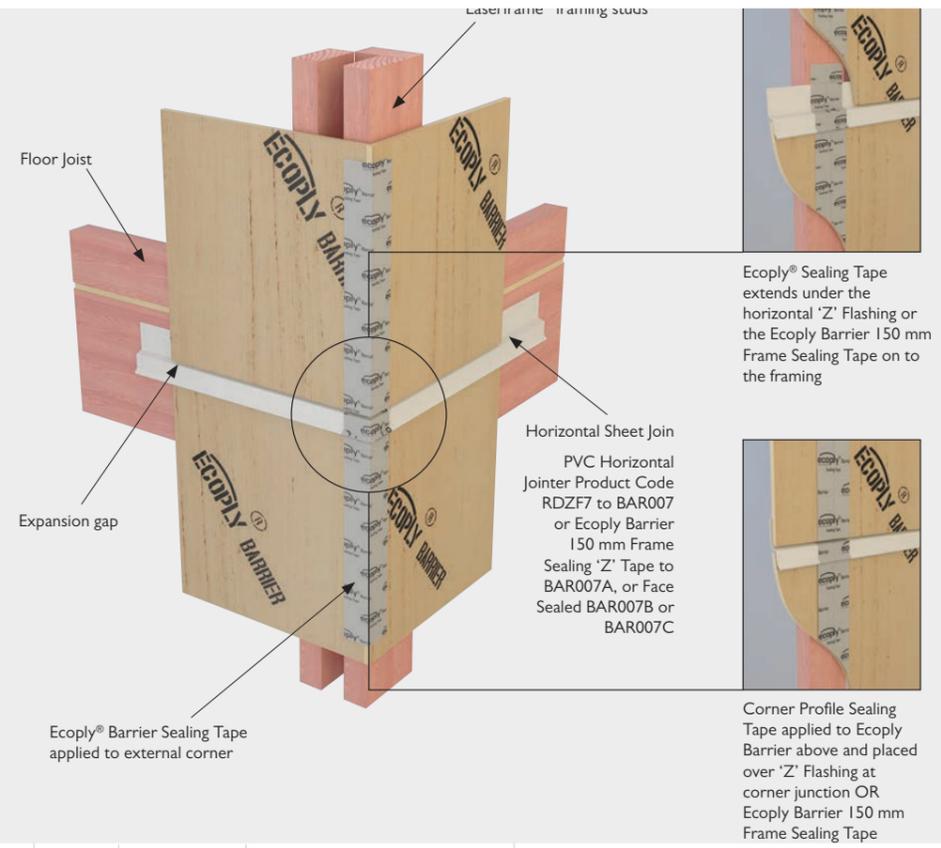
6

1:5

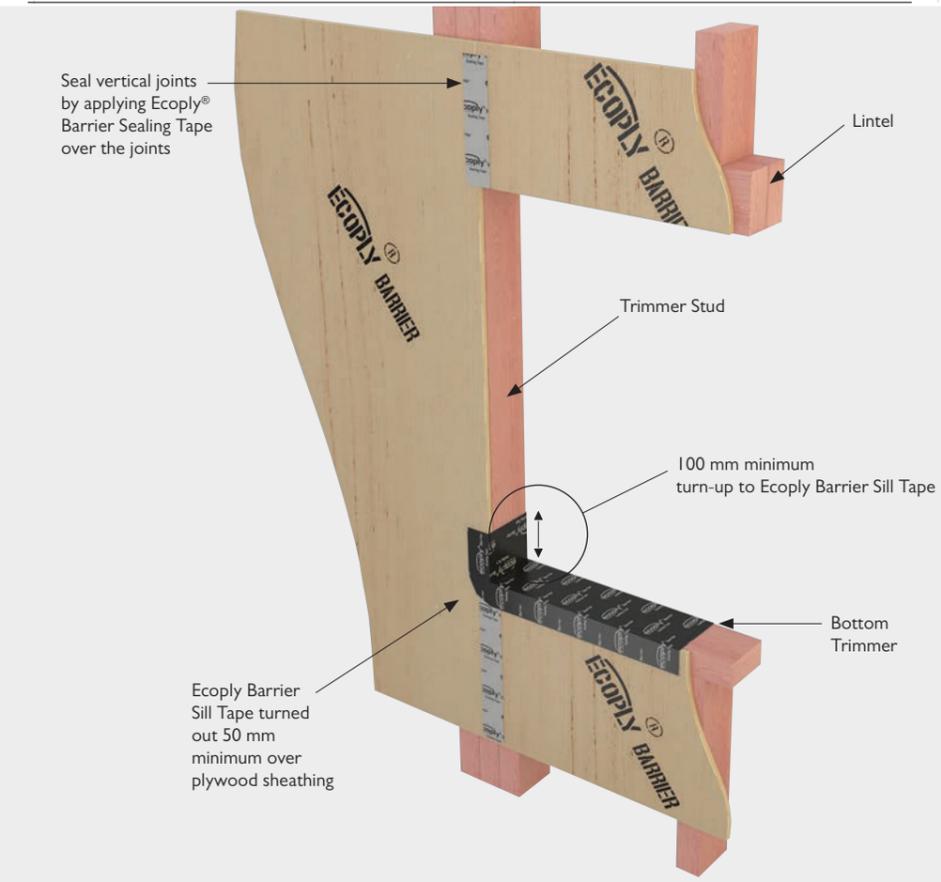


EXTERNAL CORNER JOINT

1:5



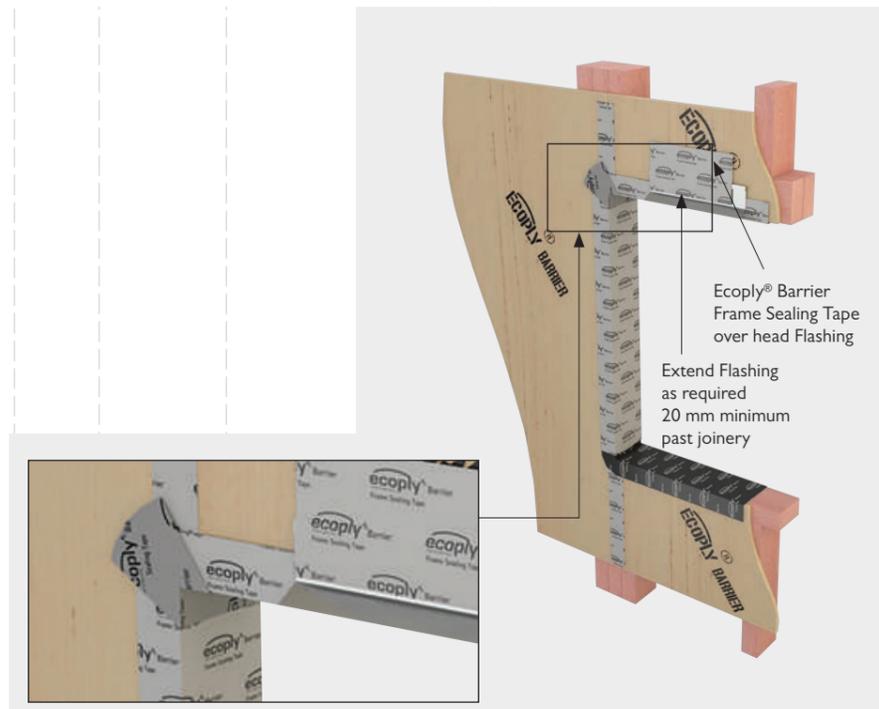
1 EXTERNAL CORNER TO HORIZONTAL JOINT 1:5



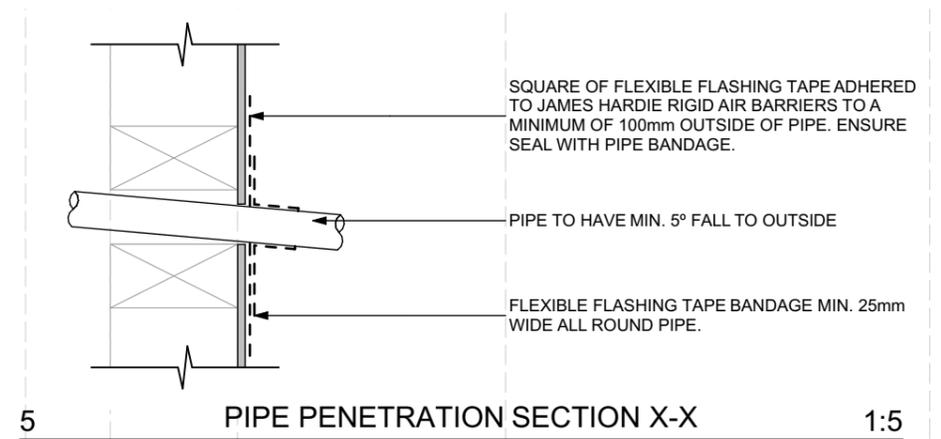
2 WINDOW DETAIL - SILL TAPE INSTALLATION 1:5



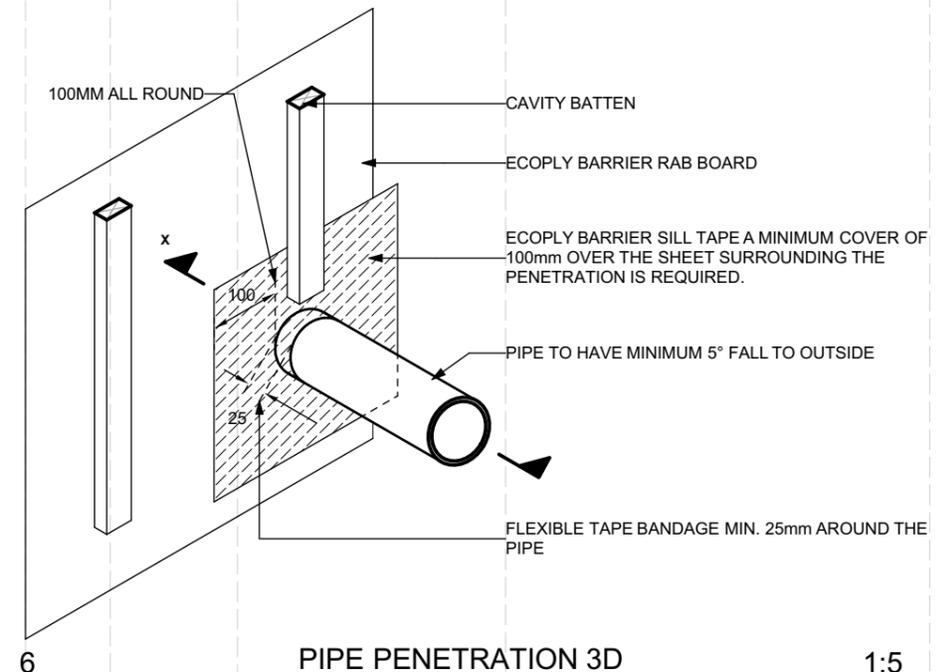
3 WINDOW DETAIL - SILL TAPE INSTALLATION 1:5



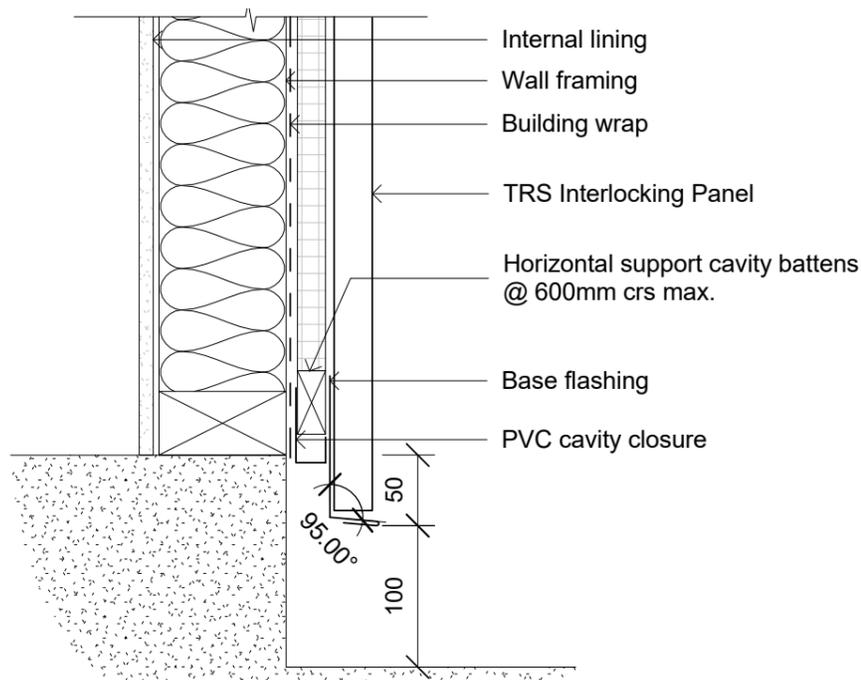
4 FRAME SEALING TAPE INSTALL WITH HEAD FLASHING 1:5



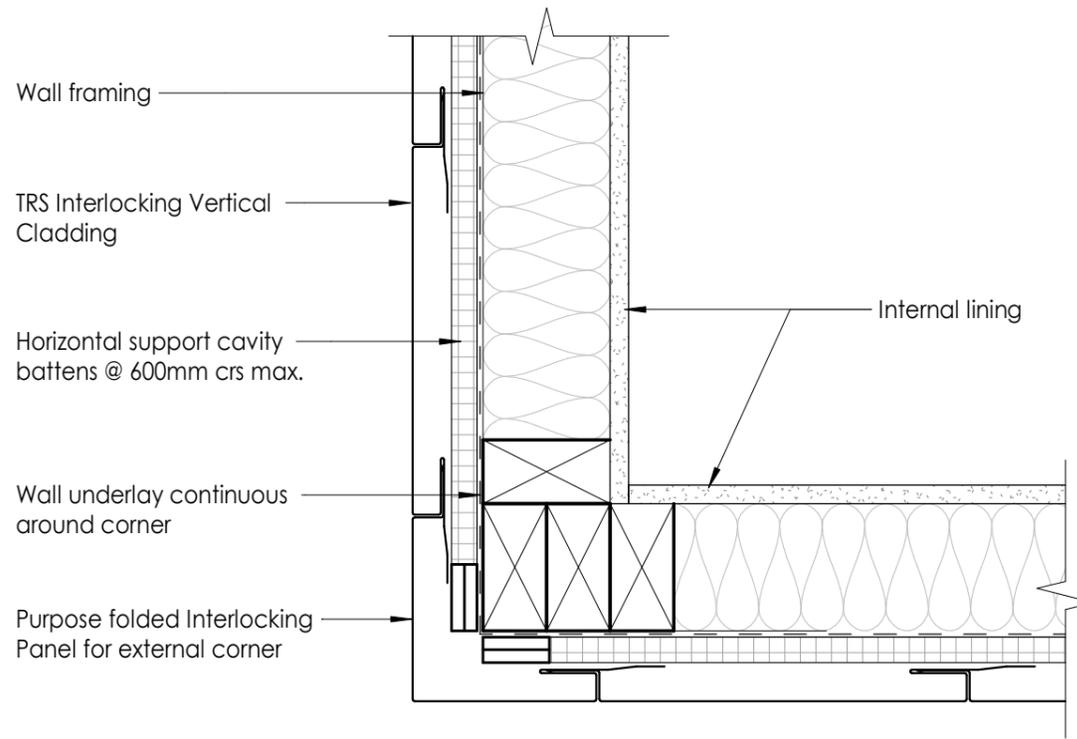
5 PIPE PENETRATION SECTION X-X 1:5



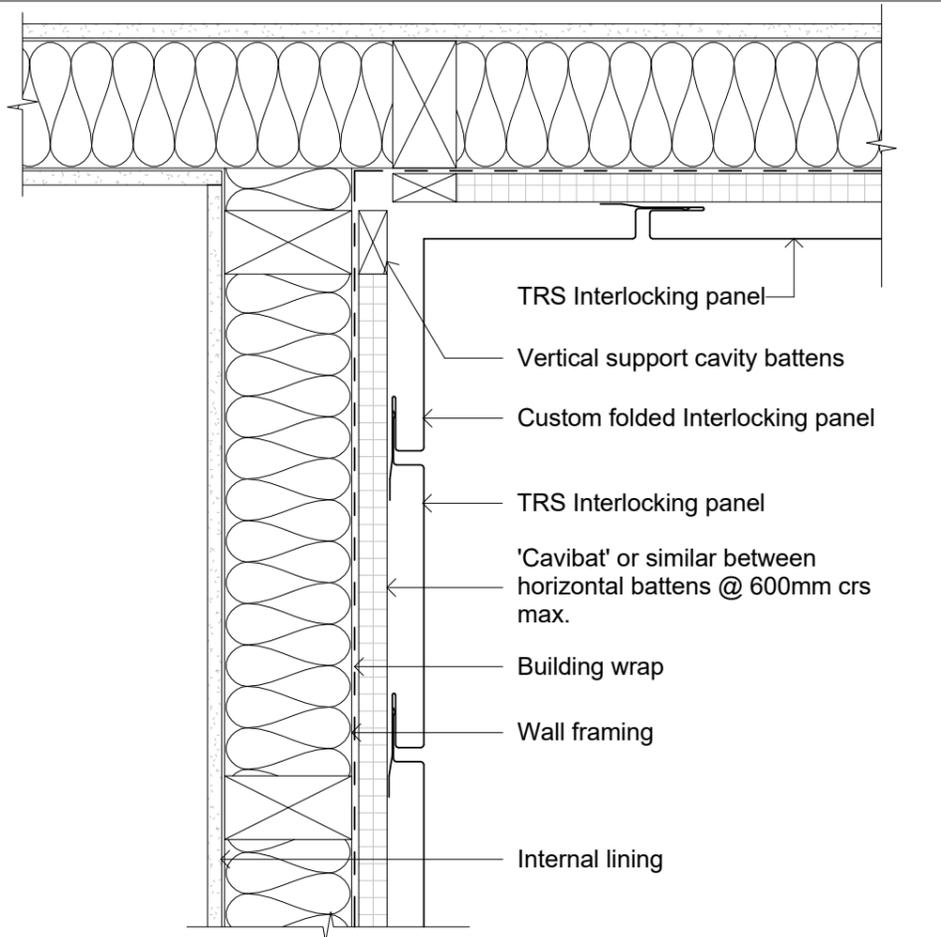
6 PIPE PENETRATION 3D 1:5



trs - w-trsil-03 - base to slab detail

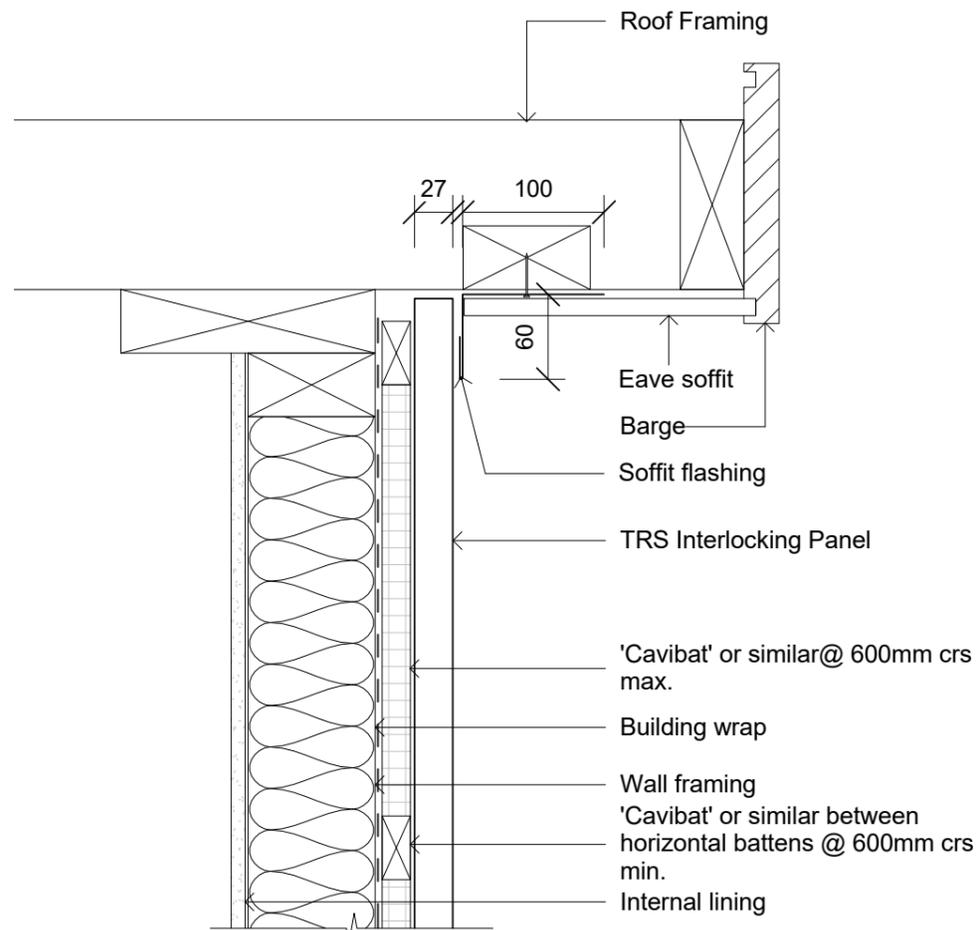


W-TRSIL-01-V - External Corner Detail (Ver.)



VERTICAL LAYOUT

trs - w-trsil-12 - internal corner - vertical layout



TRS Interlocking Detail Set

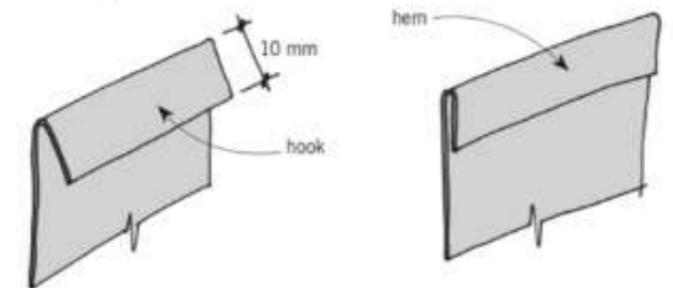
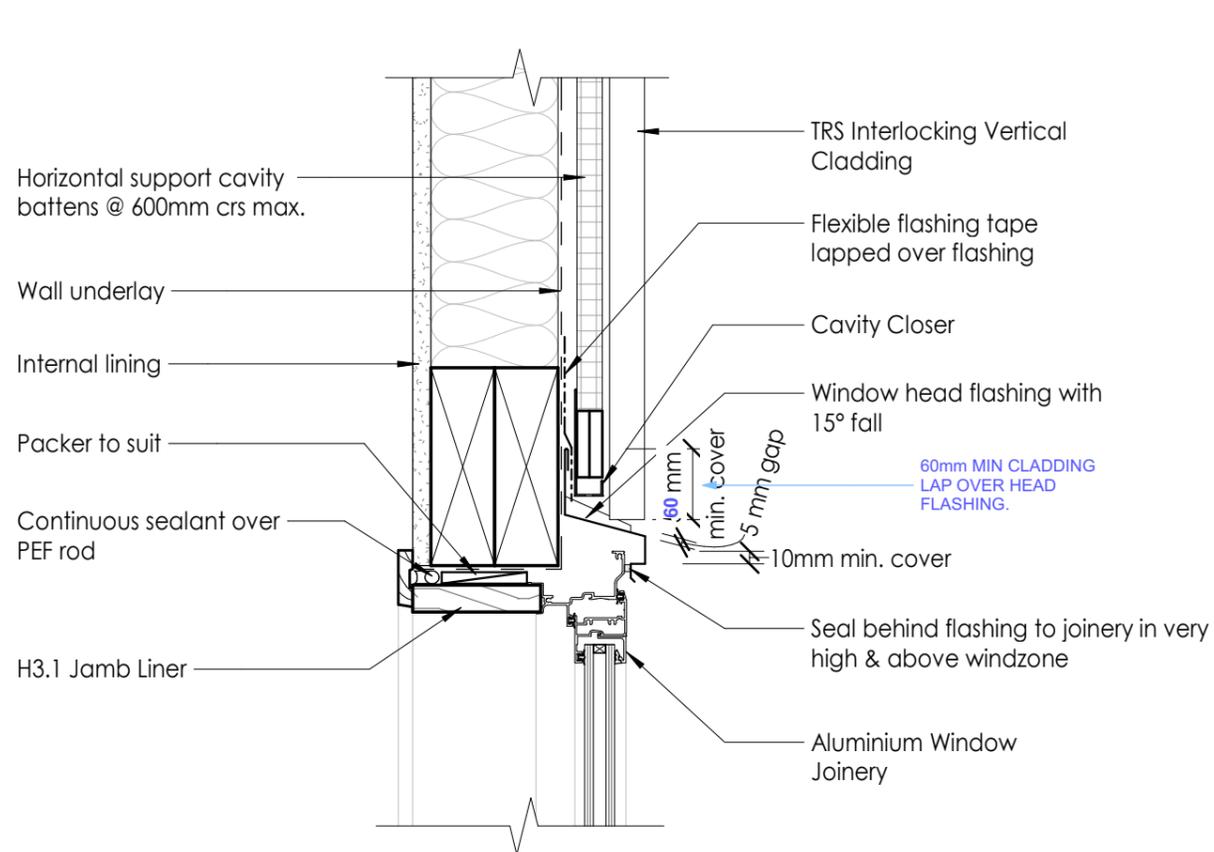
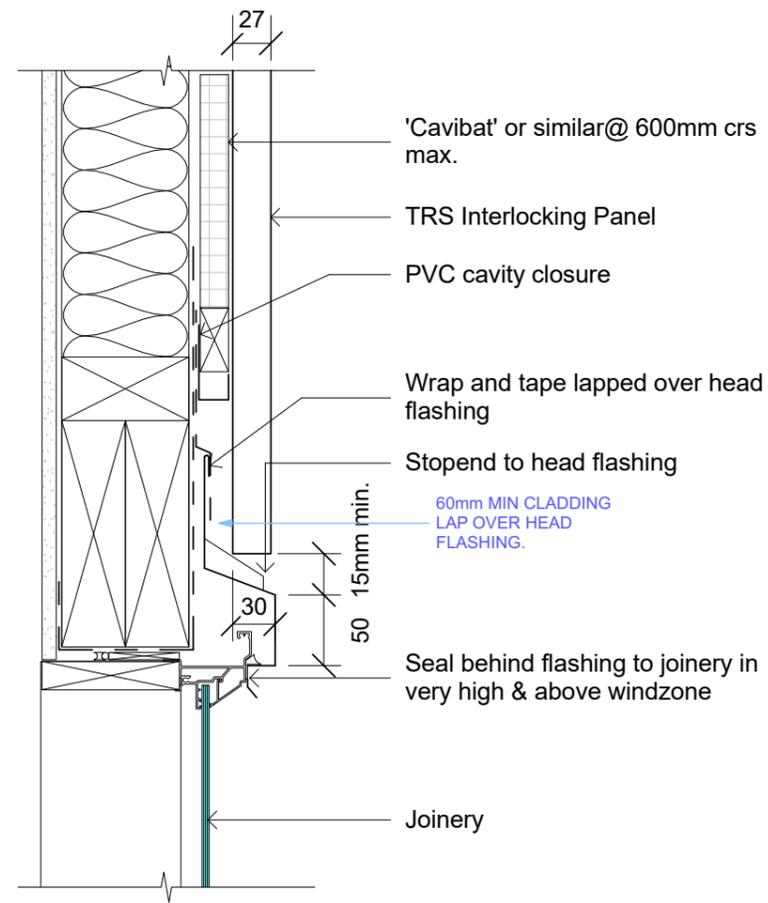


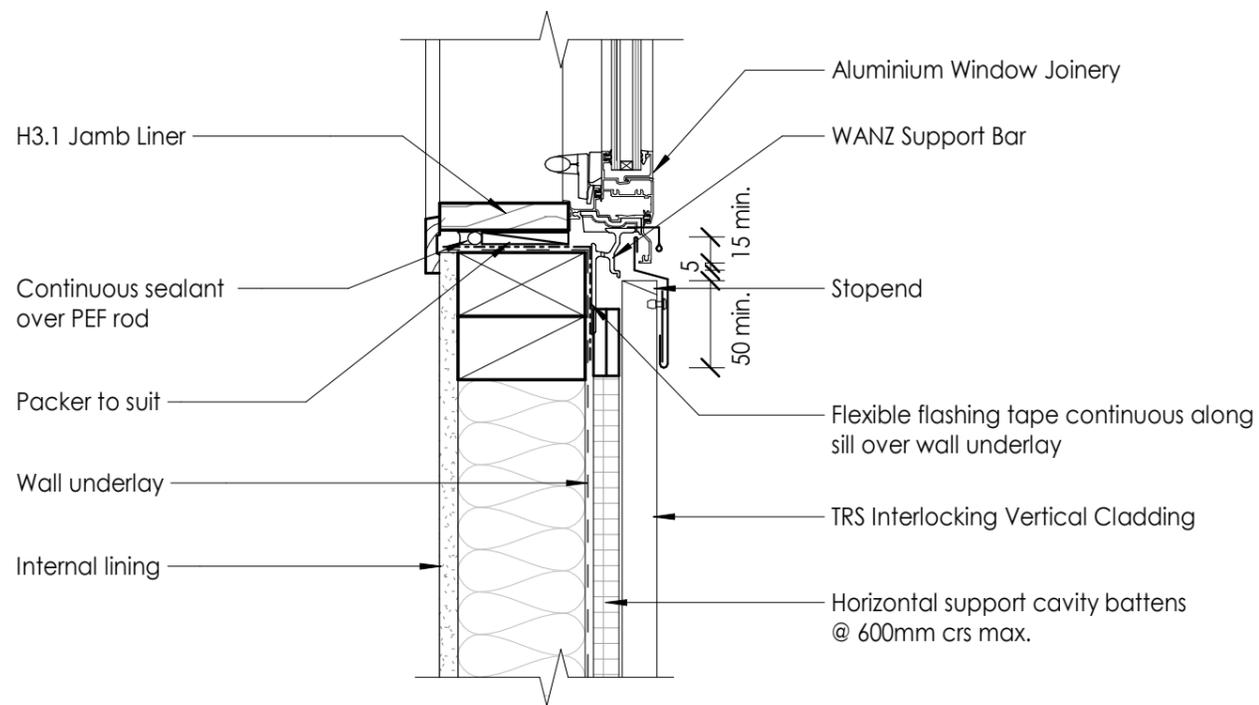
Figure 1: Hooks and hems to metal flashing edges.



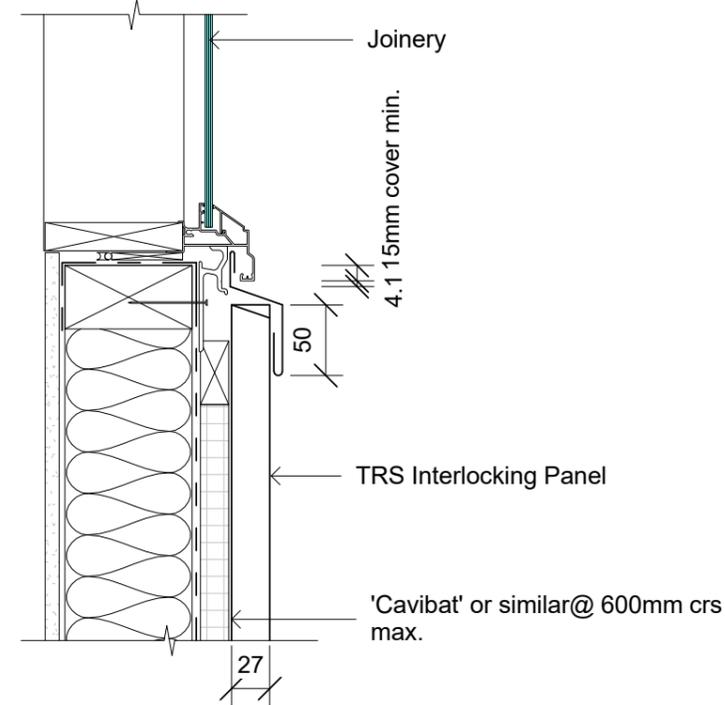
W-TRSIL-03-V-W - Window Head Flashing Detail (Ver.)



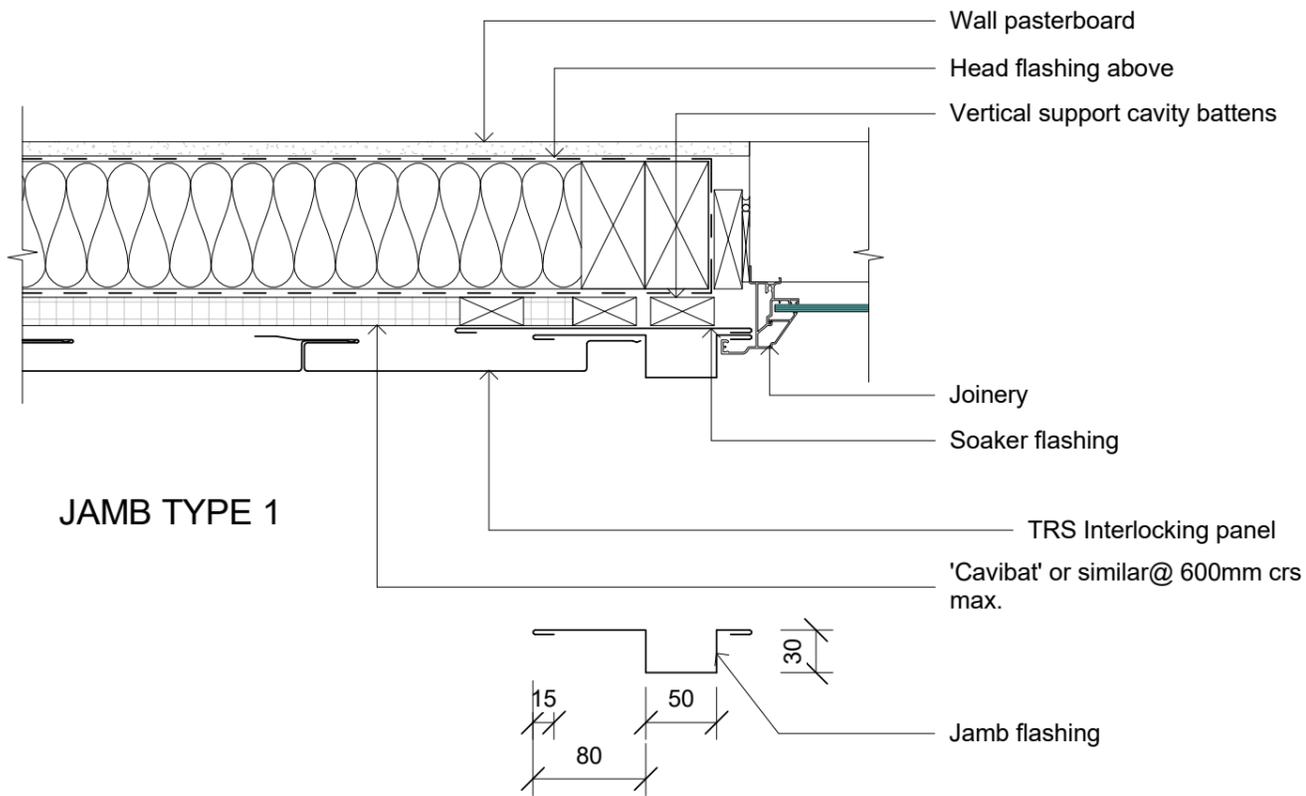
TRS Interlocking Detail Set



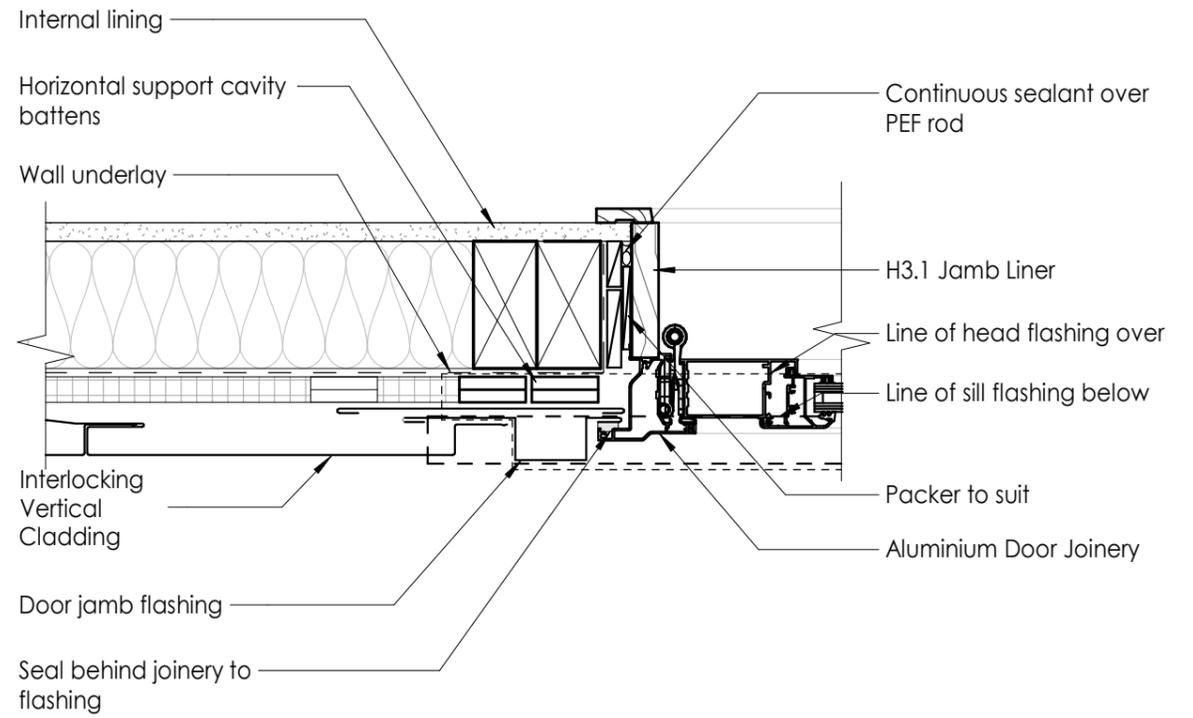
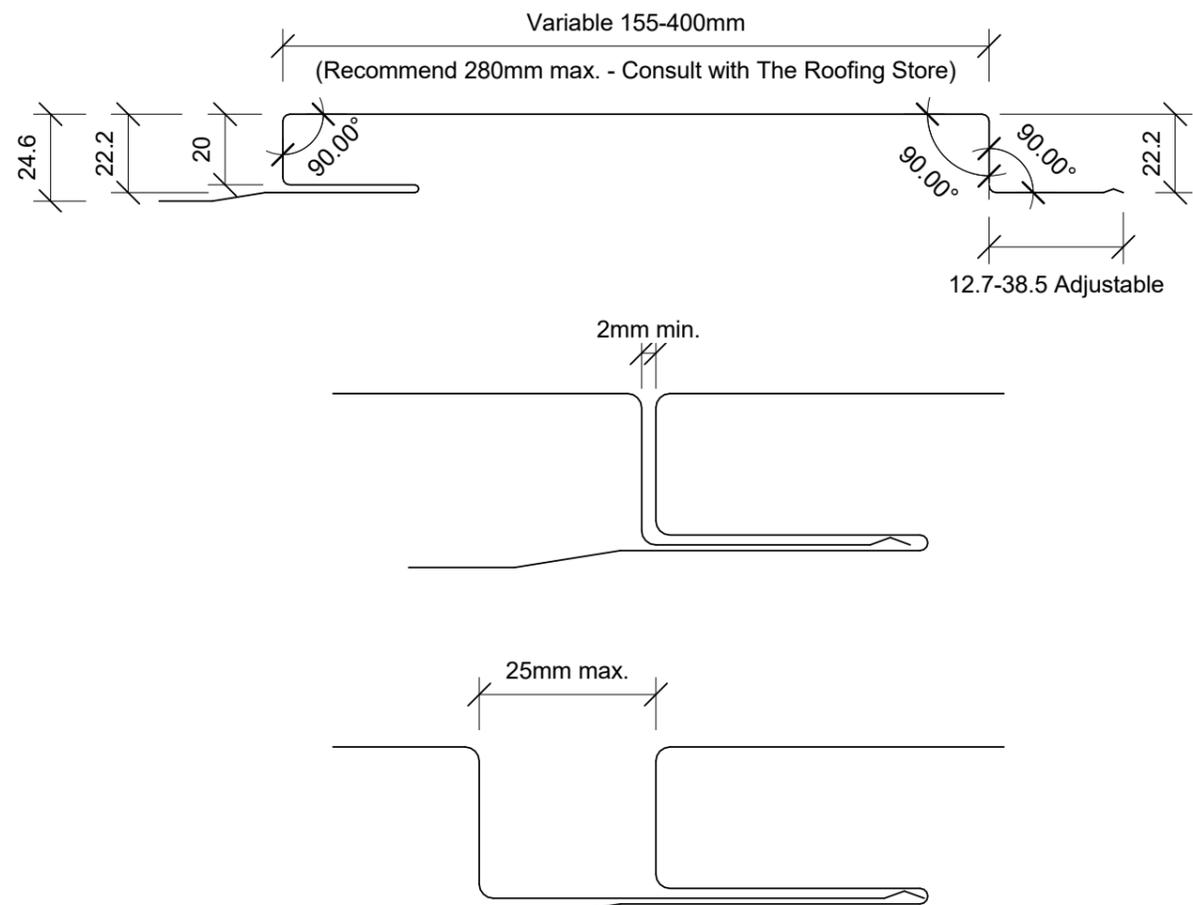
W-TRSIL-04-V - Window Sill Flashing Detail (Ver.)



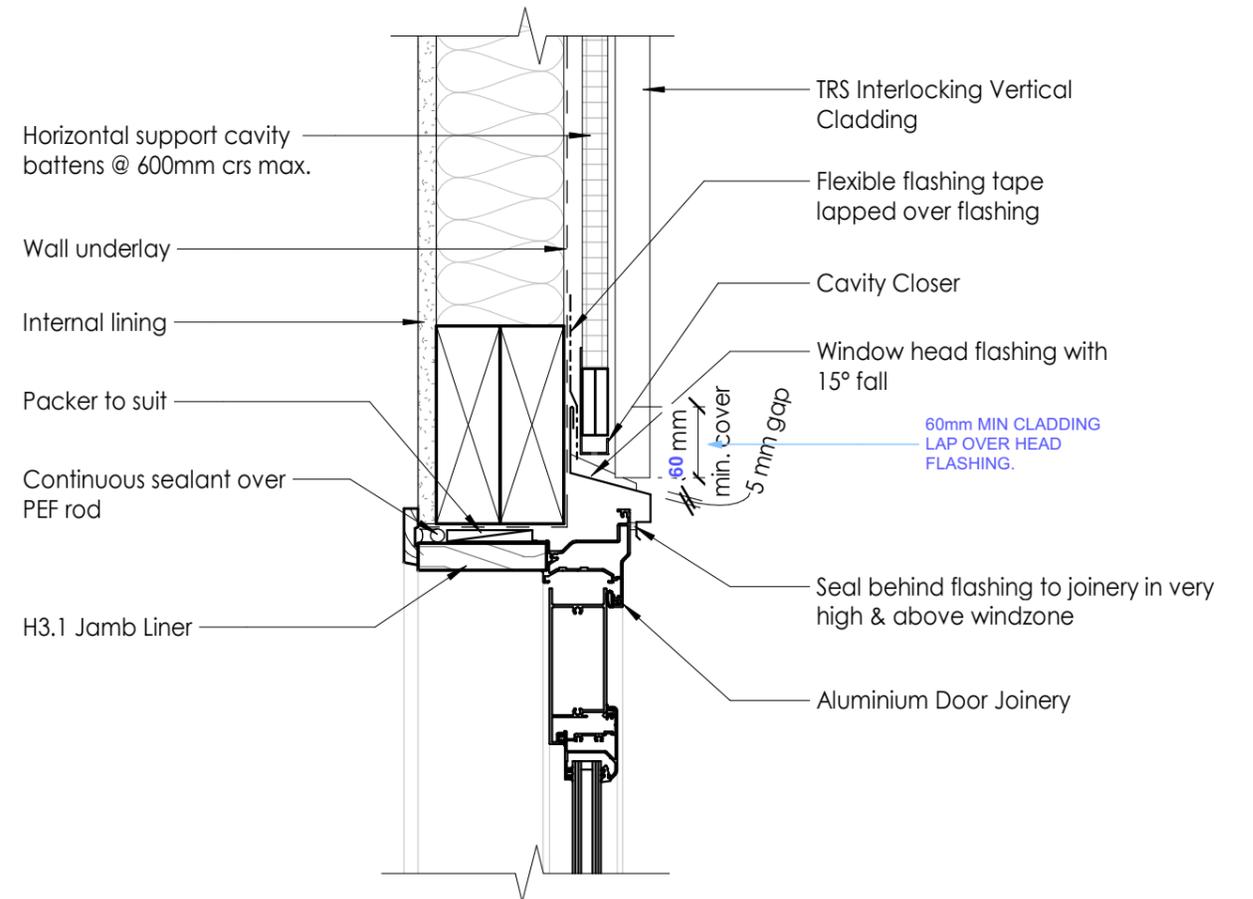
TRS Interlocking Detail Set



TRS Interlocking Detail Set

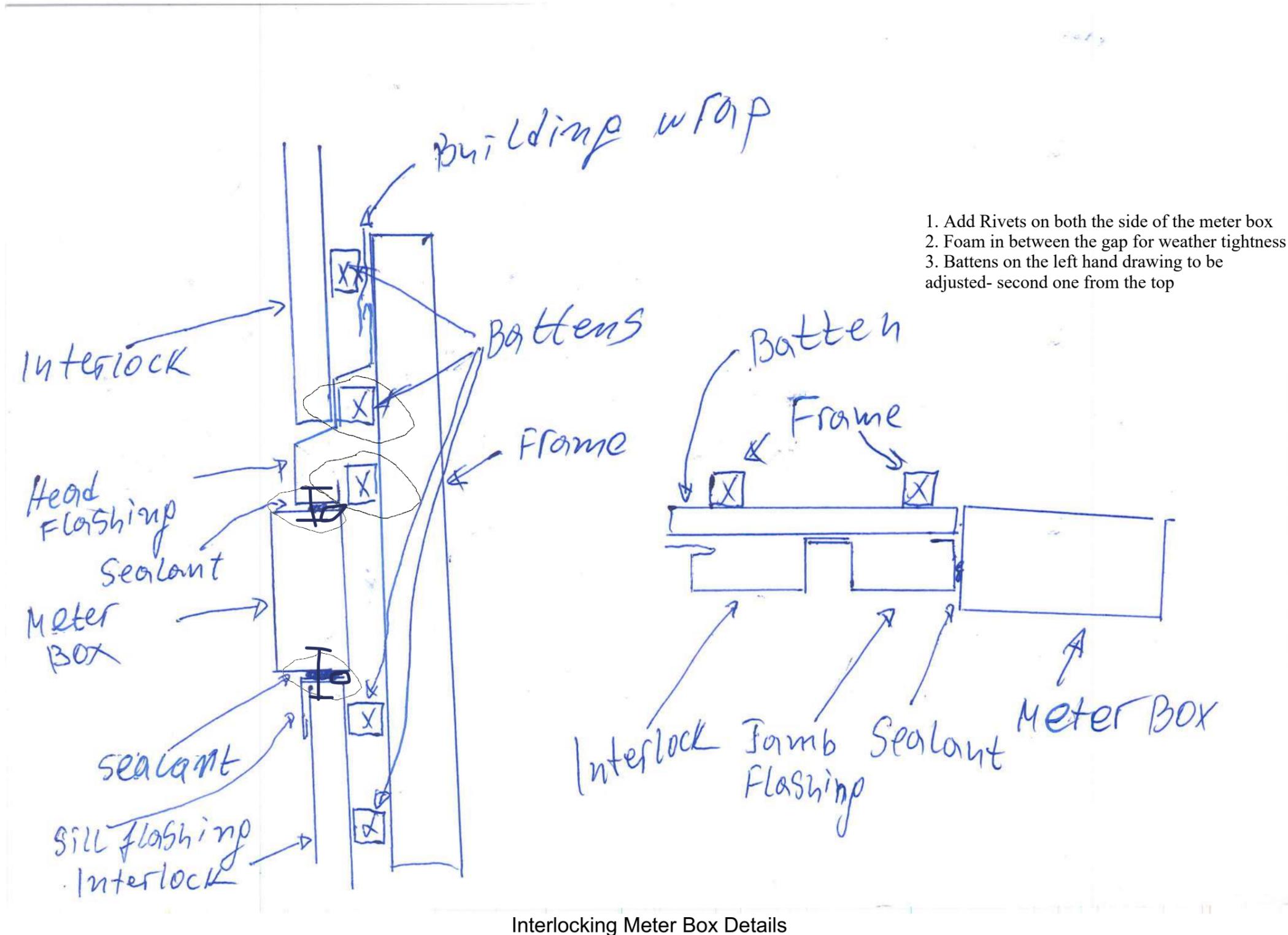


W-TRSil-05-V-D - Door Jamb Flashing Detail (Ver.) (1)

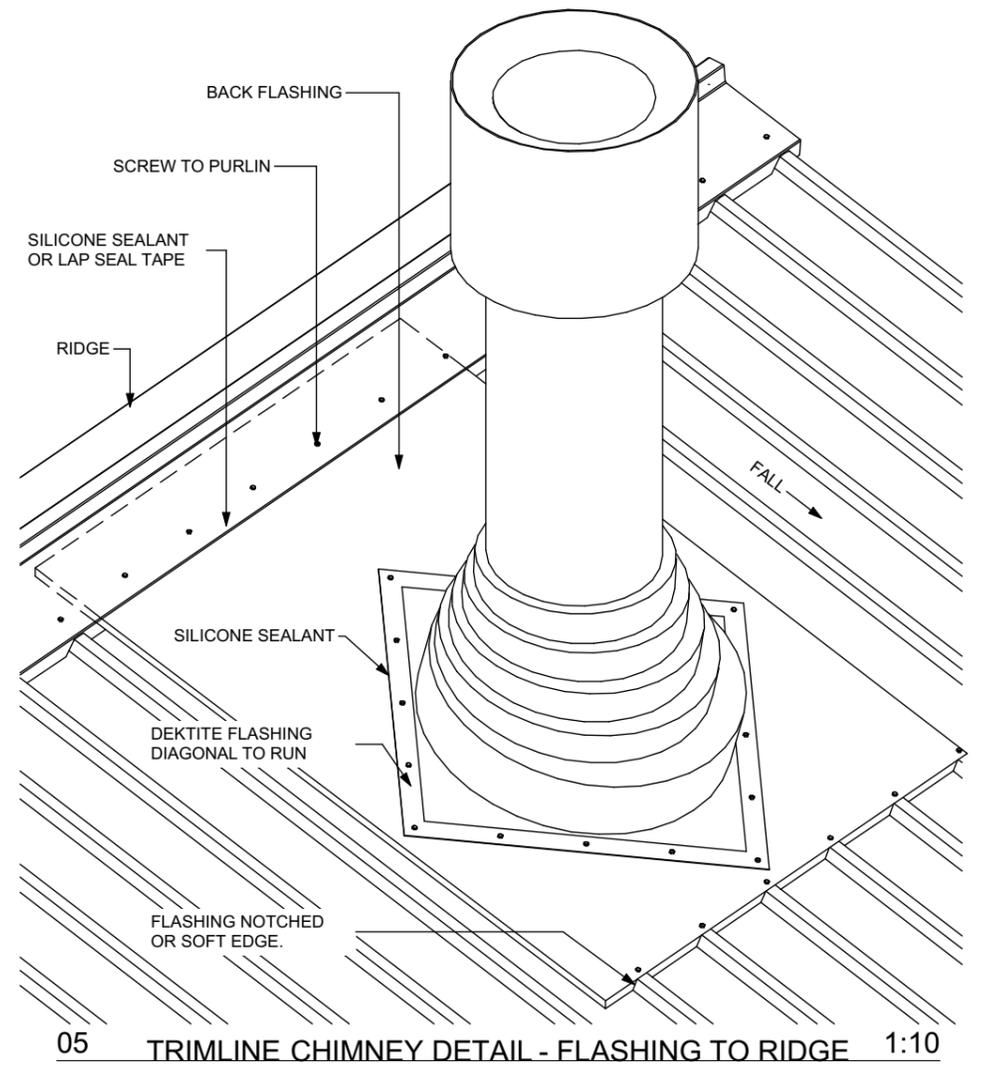
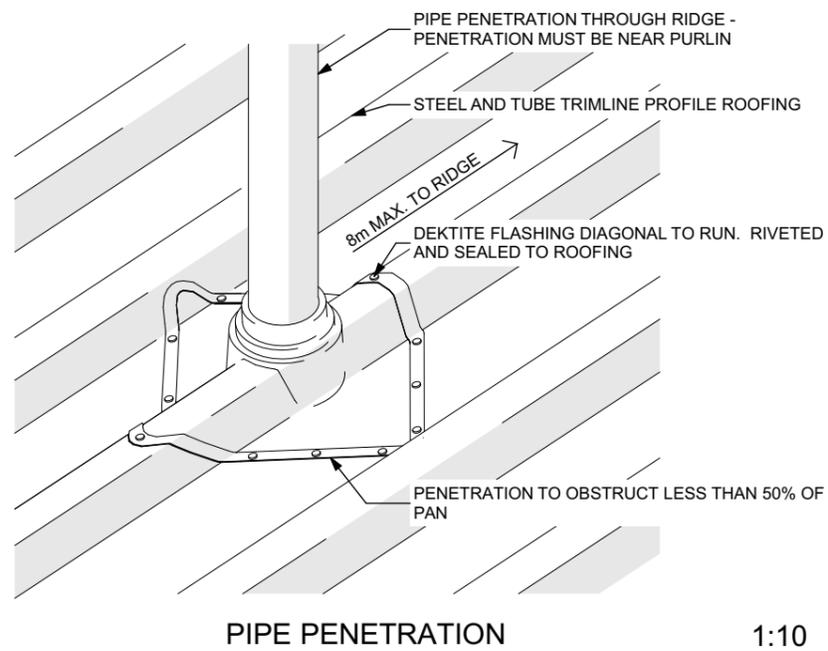
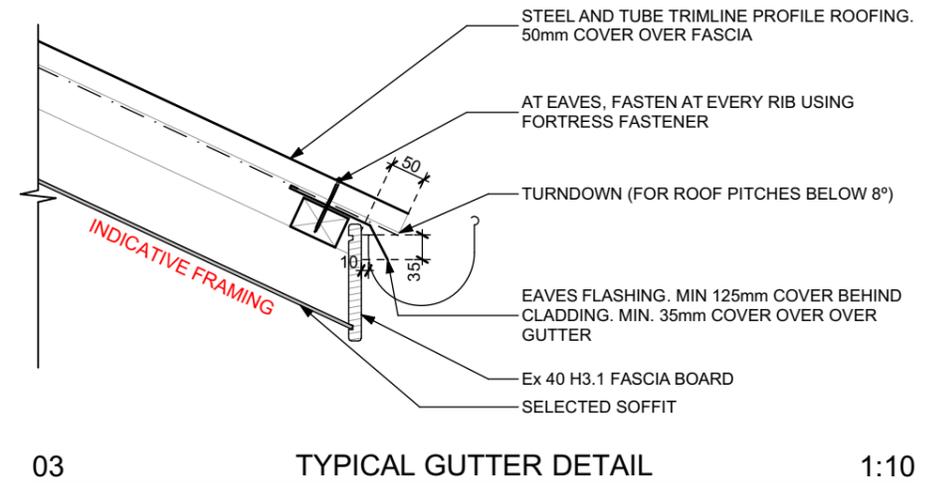
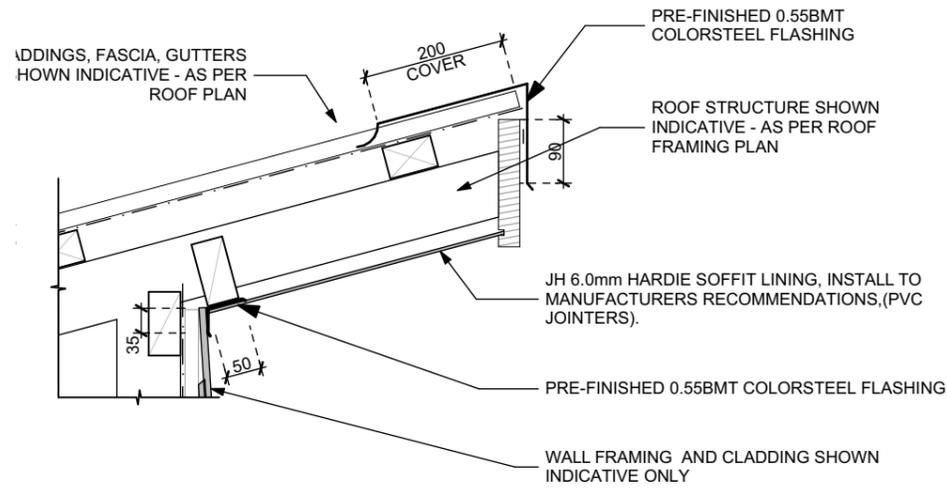
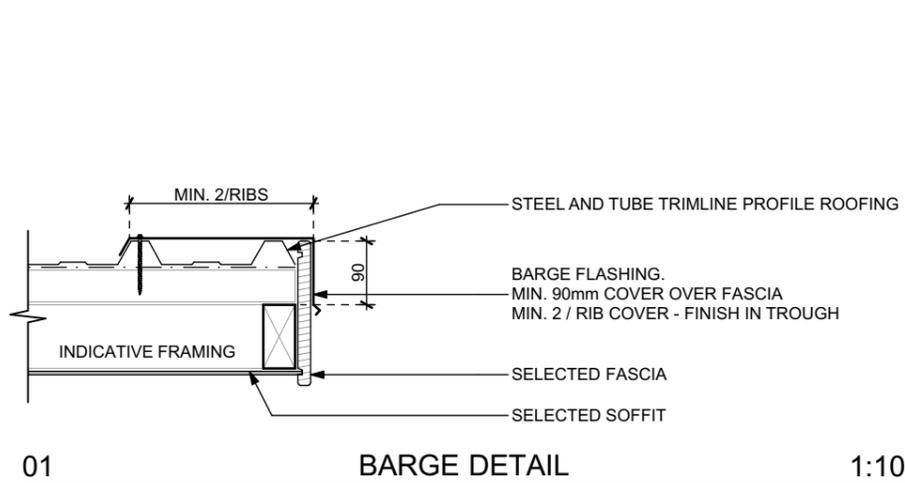


W-TRSil-03-V-D - Door Head Flashing Detail (Ver.)

<p>Arcline Architecture (Ph): 09 408 2233 (Email): info@arcline.co.nz (Web): www.arcline.co.nz</p>	trs - w-trsil-01 - panel overview	<p>SMITH</p> <p>380C OPITO BAY ROAD, OPITO BAY KERIKERI</p>	Rev No.	Revision	Date	Scale @ A3: NTS	Sheet No:
	<p>Details Claddings</p>						<p>Drawn By: SE</p> <p>Issued: 16/03/2026 12:03 pm</p>



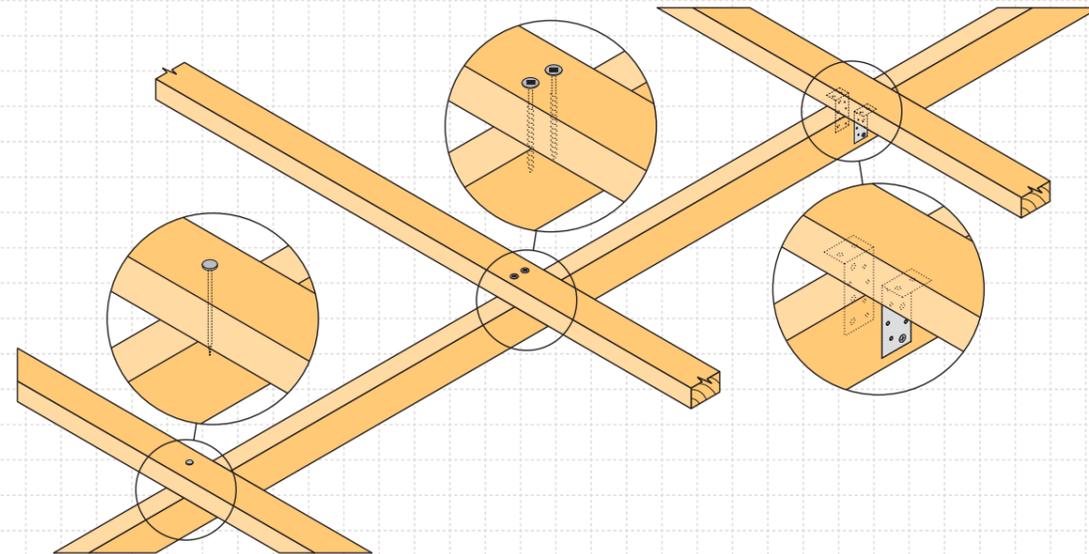
Interlocking Meter Box Details



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
	1200	370	A	B	C	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

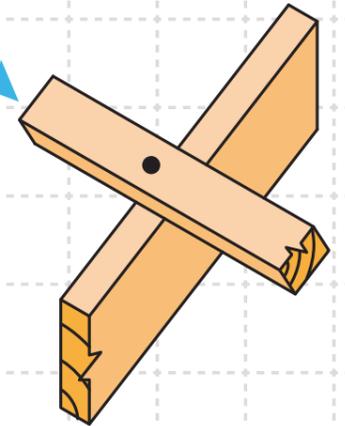
L = Low Wind
M = Medium Wind
H = High Wind
VH = Very High Wind
EH = Extra High Wind

PURLIN & BATTEN FIXING CHART

FIXING TYPE C
2.4kN

1 BLUE SCREW

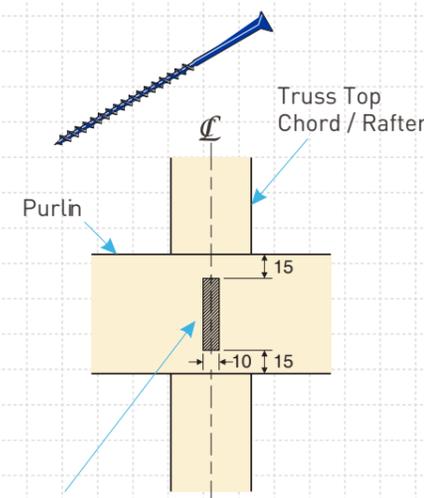
Purlin / Batten



FIXING DEFINITIONS

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

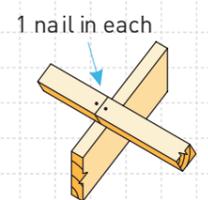
FIXING TOLERANCES LUMBERLOK BLUE SCREW



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

PURLIN / BATTEN SPLICE FIXING OPTIONS

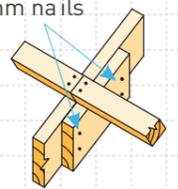
FIXING TYPE A & B OVER PURLIN SPLICE



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



(Ph): 09 408 2233
(Email): info@arcline.co.nz
(Web): www.arcline.co.nz

Purlin Fixing Details

SMITH
380C OPITO BAY ROAD, OPITO BAY
KERIKERI

Rev No. Revision

Date

Scale @ A3: NTS

Drawn By SE
Issued: 16/03/2026
12:03 pm

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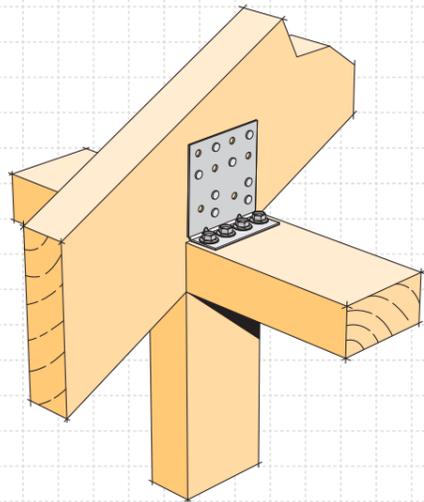
A4402

DRAFT BC

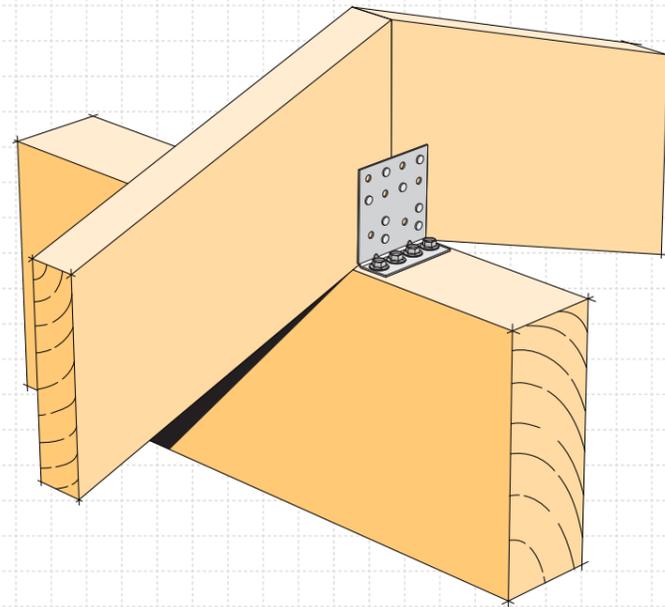
CONCEALED PURLIN CLEATS

RESISTS HIGH WIND UPLIFT - QUICK AND EASY TO APPLY

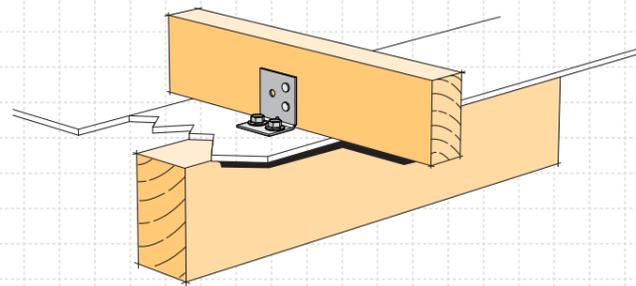
USE STAINLESS STEEL OPTION IN EXTERIOR SITUATION



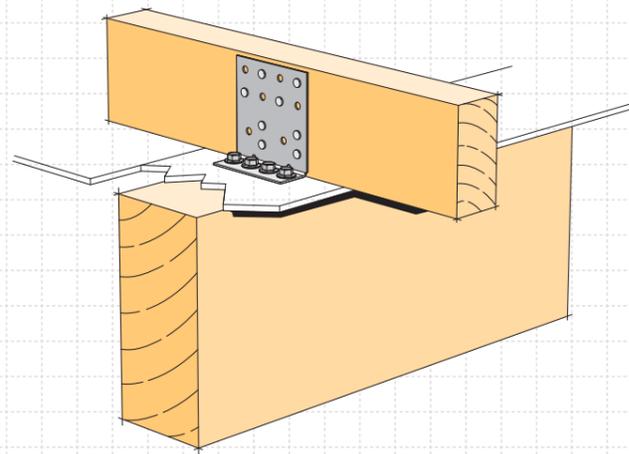
EXPOSED RAFTER TO WALL FIXING



EXPOSED RAFTER TO RIDGE BEAM FIXING



PURLIN TO EXPOSED RAFTER FIXING
CPC40S SHOWN

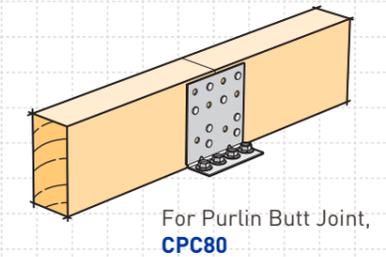
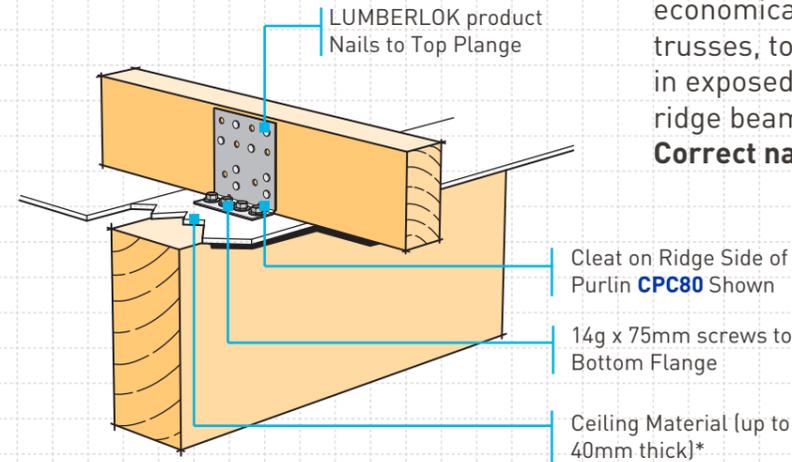


PURLIN TO EXPOSED RAFTER FIXING
CPC80 SHOWN

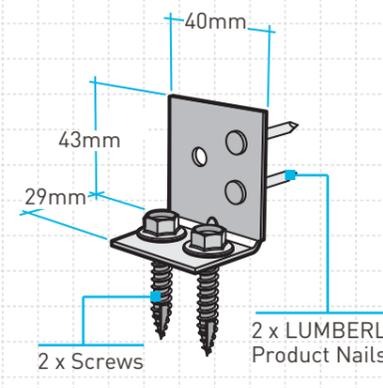
CONCEALED PURLIN CLEATS

LUMBERLOK Concealed Purlin Cleats provide an economical fixing for purlins to exposed rafters or trusses, to resist wind uplift. They can also be used in exposed-to-view situations, such as a rafter to ridge beam or top plate situation.

Correct nailing is most important. See below.

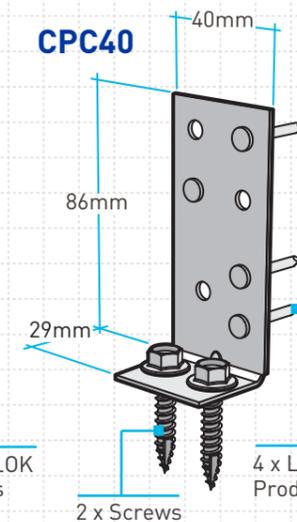


CPC40S (short)



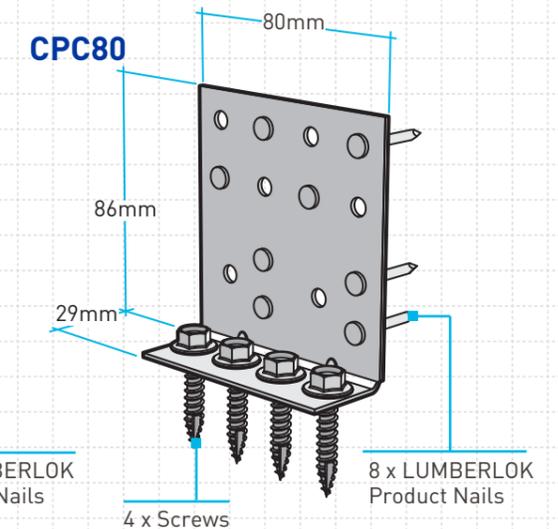
Rafter Width (nominal) 50mm

CPC40

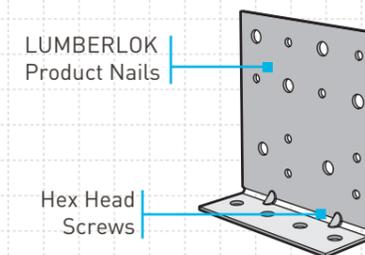


50mm

CPC80



100mm



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:

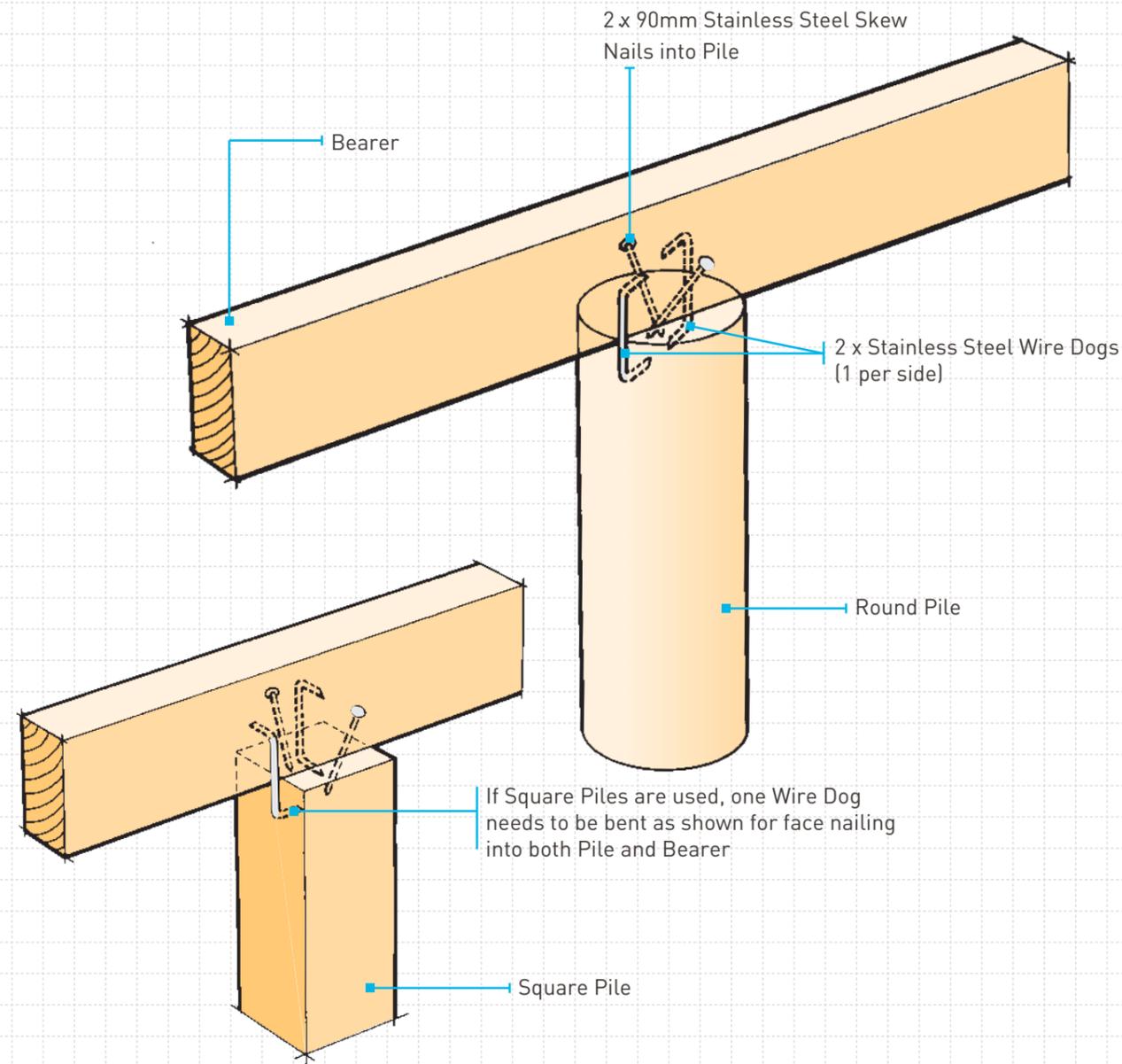
1.55mm G300 Z275 Galvanised Steel or 0.9mm Stainless Steel 304-2b (SSCPC40S and SSCPC80)
 1.5mm Stainless Steel 304-2B (SSCPC40 and SSCPC80)

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*			

ORDINARY PILE FIXING

COMPLIES WITH NZS 3604:2011

- All Fixings Stainless Steel
- For all Ordinary Piles (Refer to figure 6.3 NZS 3604:2011)

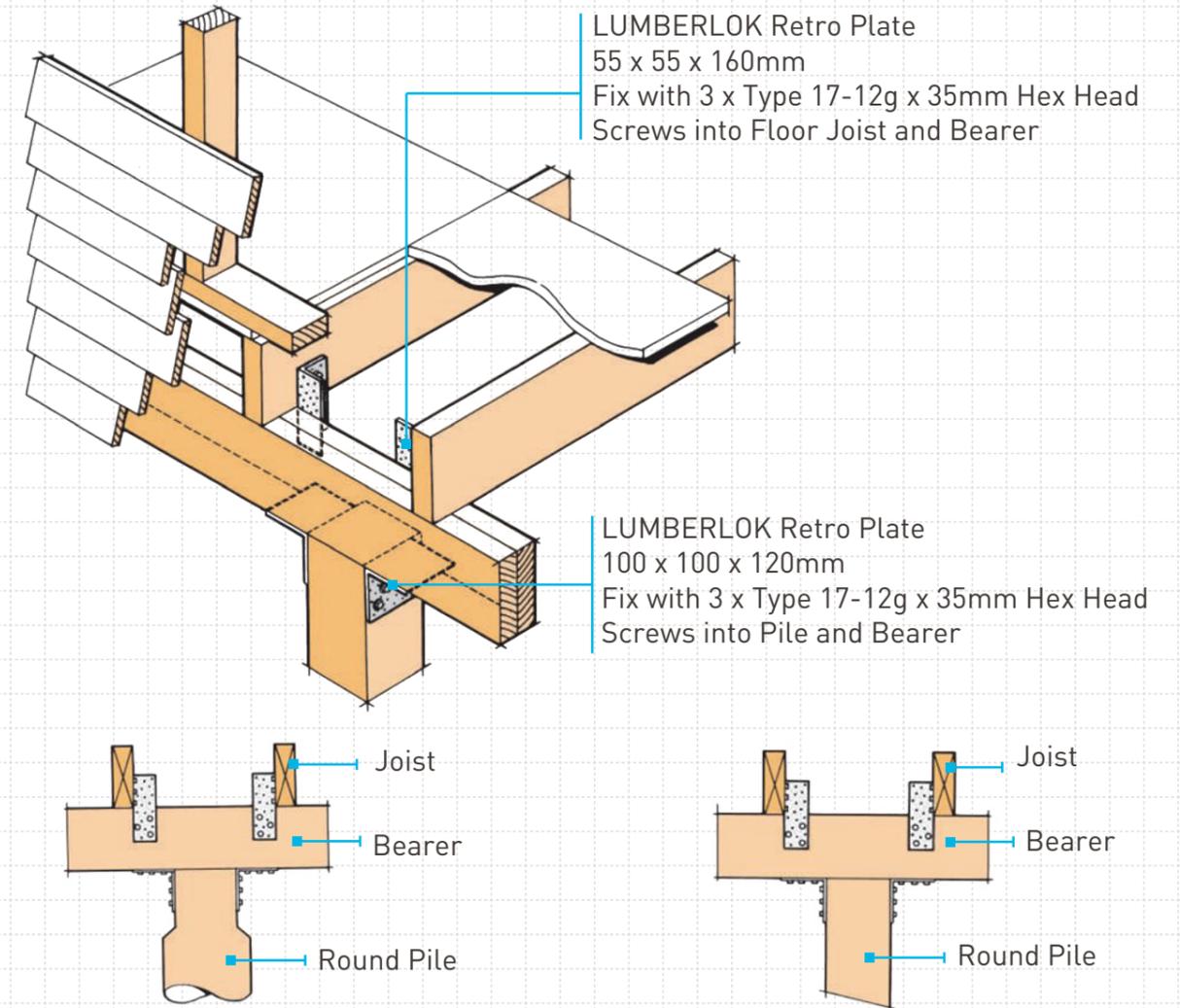


Code: OPF
Packed: 20 x Stainless Steel Wire Dog Staples
 20 x Stainless Steel Nails 90mm x 4 dia.

12kN RETRO SUBFLOOR FIXING

USED WHEN THE OUTSIDE FACE OF THE BEARER IS NOT ACCESSIBLE

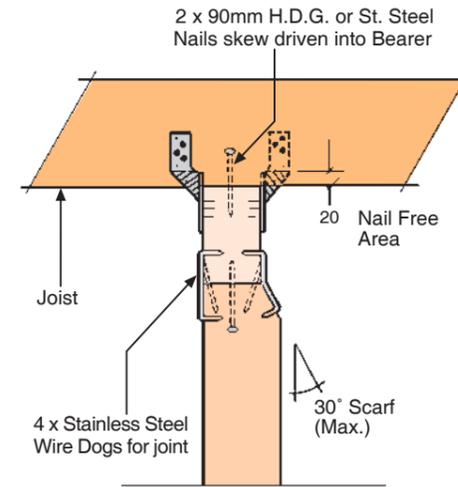
- Hot Dip Galvanised or Stainless Steel options available for required corrosive zone.



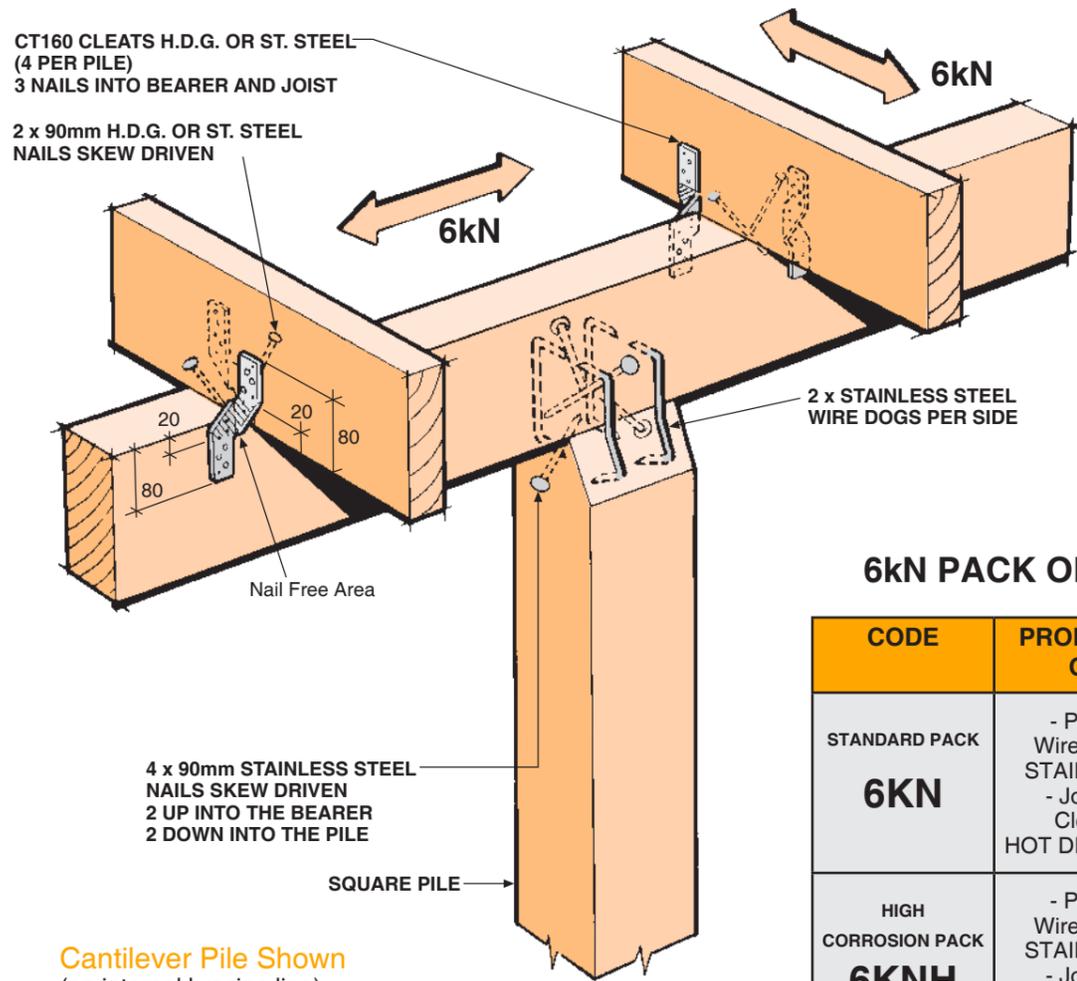
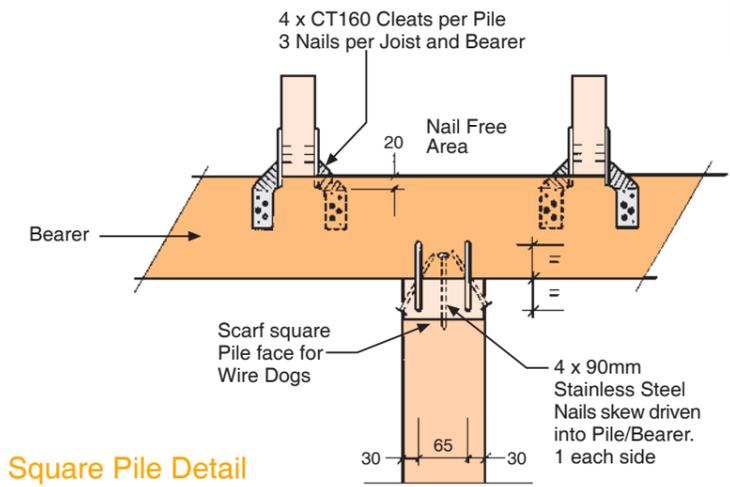
Code: 12KNRF
Material: 0.91mm G300 Z275 Hot Dip Galvanised Steel
Code: 12KNRFH
Material: 0.9mm Stainless Steel 304-2B
Packed: 8 x Retro Plate 55x 55 x 160mm
 8 x Retro Plate 100 x 100 x 120mm
 100 x Type 17-12 x 35mm Hex Head Screws

6kN PILE FIXING FOR CANTILEVER PILES

- ★ The 6kN Pile Fixing must be installed in accordance with this brochure
- ★ Auckland University Tested. Test Ref. 4613
- ★ All subfloor construction must be in accordance with NZS 3604:2011
- ★ NZS 3604 requires lines of lateral support to floor joists within 300mm of bearer or bracing lines, refer to Clause 7.1.2
- ★ Joists deeper than 150mm require solid nogging over cantilever pile



Square Pile Detail

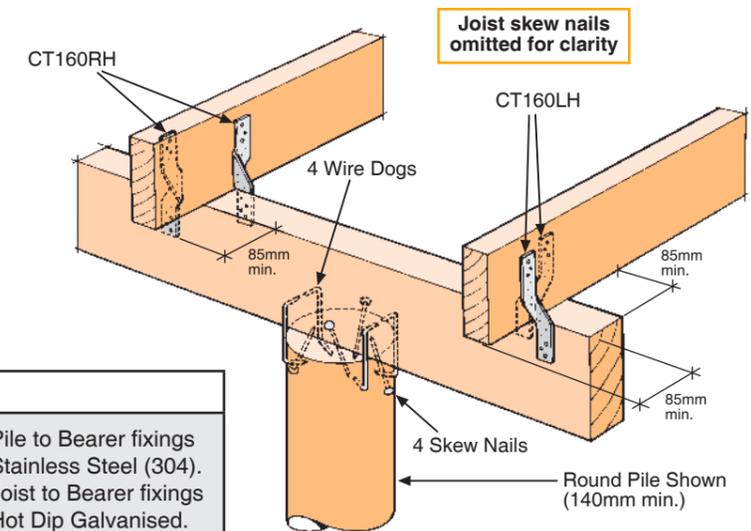
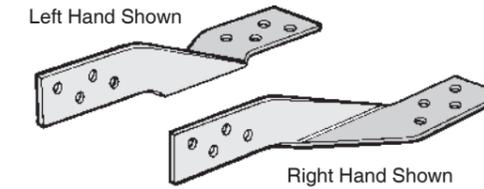


Cantilever Pile Shown (on internal bracing line)

6kN PACK OPTIONS

CODE	PRODUCT FINISH OPTIONS
STANDARD PACK 6KN	- Pile to Bearer Wire Dogs & Nails STAINLESS STEEL - Joist to Bearer Cleats & Nails HOT DIP GALVANISED
HIGH CORROSION PACK 6KNH	- Pile to Bearer Wire Dogs & Nails STAINLESS STEEL - Joist to Bearer Cleats & Nails STAINLESS STEEL

★ See Over For Corrosion Table.



CORROSION HAZARD USE TABLE

Standard Pack (6KN) - Zones B & C - If Joist to Bearer Fixings ABOVE 600mm from Ground level	Pile to Bearer fixings Stainless Steel (304). Joist to Bearer fixings Hot Dip Galvanised.
High Corrosion Pack (6KNH) - Zone D - All Fixings BELOW 600mm from Ground level	All items Stainless Steel (304).

6kN Joint Fixing Schedule

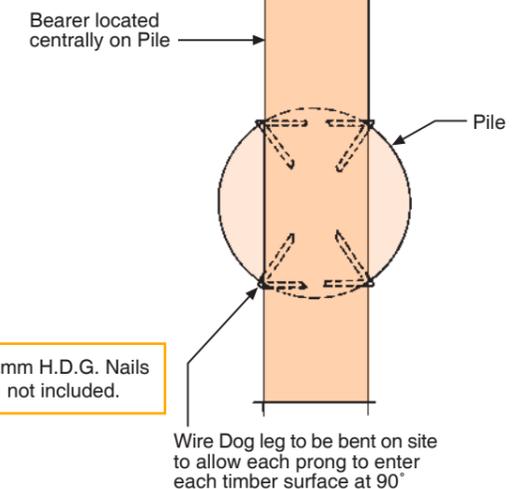
- PILE TO BEARER** - Wire Dog Staples (4 per joint) Stainless Steel
- 4 x 90mm Skew Nails (1 per face) Stainless Steel
- JOIST TO BEARER** - CT160 Cleats (4 per pile) 160mm long
- 3 Nails per Cleat into Joist
- 3 Nails per Cleat into Bearer
- 2 Skew Nails 90mm (1 per side)
- NAILS** - 24 x 45mm x 3.55 dia. Spiral Nails (for Joist to Bearer fixings)
- 4 x 90mm x 4 dia. St. Steel Nails (6KN Pack only)
- 8 x 90mm x 4 dia. St. Steel Nails (6KNH Pack only)

6kN Pile Set Contents

- Each set represents 1 x 6kN Pile Fixing (packed 10 sets per carton)
- 4 x Wire Dog Staples Stainless Steel
 - 4 x CT160 Cleats
 - 24 x 45mm x 3.55 dia. Spiral Nails
 - 90mm St. Steel Nails to suit 4 - 6KN pack
 - 8 - 6KNH pack
- Refer front page for Product Finish Options

90mm H.D.G. Nails not included.

External Bracing Line



SCAN FOR INSTALLATION VIDEO

<https://vimeo.com/117351500>



(Ph): 09 408 2233
(Email): info@arcline.co.nz
(Web): www.arcline.co.nz

6kN Pile Fixing Details

SMITH
380C OPITO BAY ROAD, OPITO BAY
KERIKERI

Rev No. Revision

Date

Scale @ A3: NTS

Drawn By SE
Issued: 16/03/2026
12:03 pm

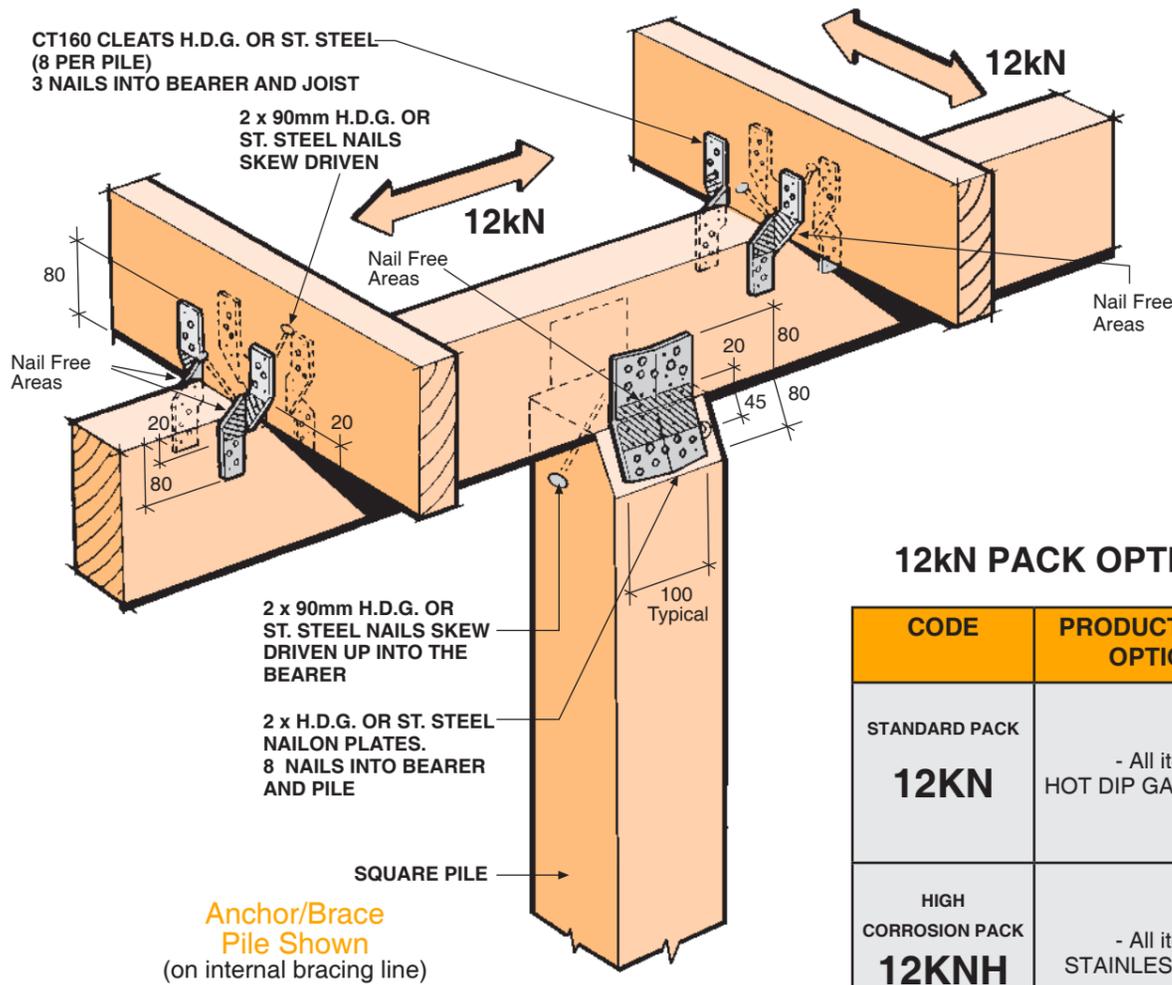
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A4602

DRAFT BC

12kN PILE FIXING FOR BRACED PILES OR ANCHOR PILES

- ★ The 12kN Pile Fixing must be installed in accordance with this brochure
- ★ Auckland University Tested. Test Ref. 4613
- ★ All subfloor construction must be in accordance with NZS 3604:2011
- ★ NZS 3604 requires lines of lateral support to floor joists within 300mm of bearer or bracing lines, refer to Clause 7.1.2
- ★ Joists deeper than 150mm require solid nogging over braced or anchor pile

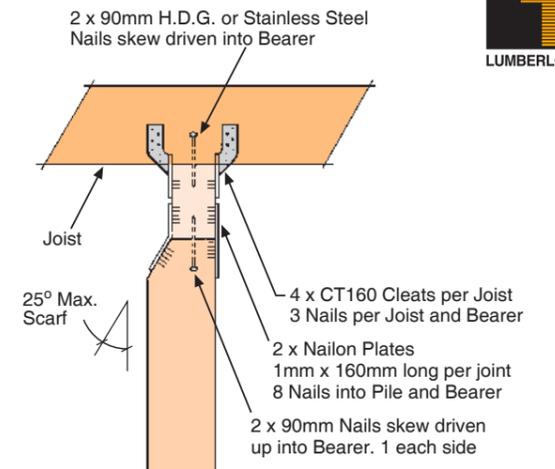
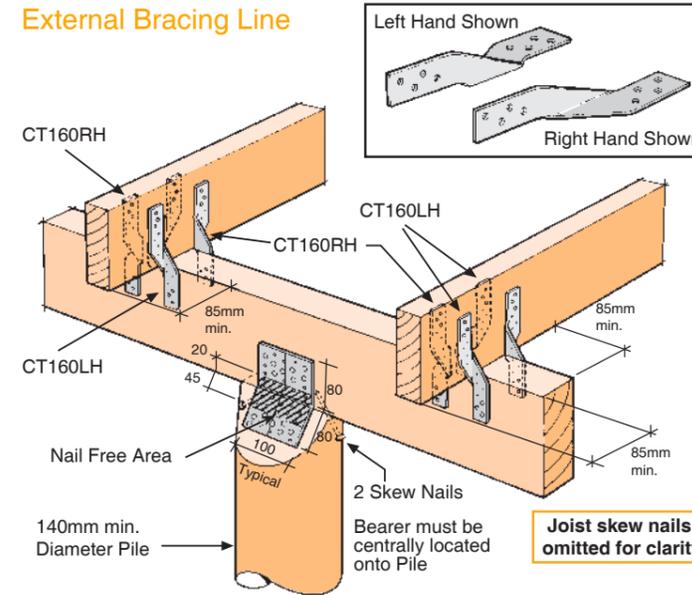


12kN PACK OPTIONS

CODE	PRODUCT FINISH OPTIONS
STANDARD PACK 12KN	- All items HOT DIP GALVANISED
HIGH CORROSION PACK 12KNH	- All items STAINLESS STEEL

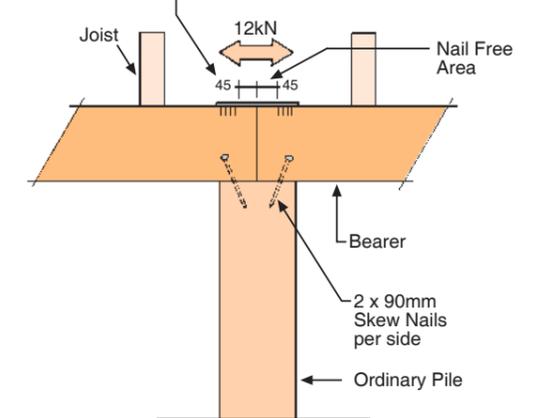
★ See Over For Corrosion Table.

External Bracing Line



Square Pile

Nailon Plate 1mm x 160mm long (ex 12kN Pack) 8 Nails per end. No Nails within 18mm of timber edge

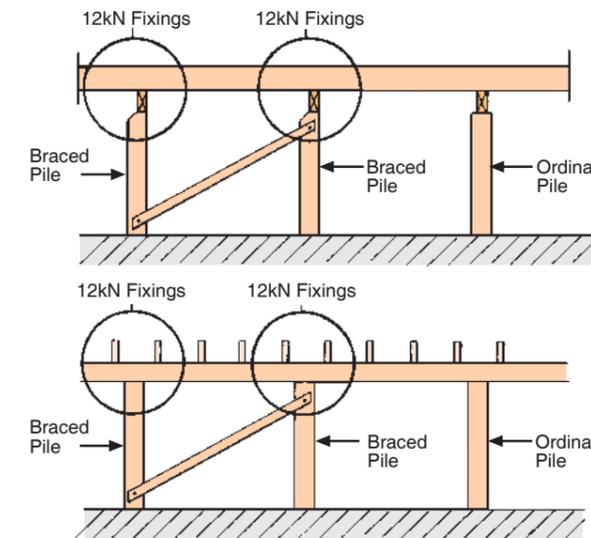


12kN Bearer Splice

Clause 6.12.7.2
NZS 3604:2011

CORROSION HAZARD USE TABLE

Standard Pack (12KN) - Zones B & C - All Fixings ABOVE 600mm from Ground level	All items Hot Dip Galvanised.
High Corrosion Pack (12KNH) - Zone D - All Fixings BELOW 600mm from Ground level	All items Stainless Steel (304).



Sample Subfloor Elevations

12kN Fixing - Pile to Bearer
- Joists to Bearer

90mm H.D.G. Nails not included.

12kN Joint Fixing Schedule

PILE TO BEARER

- Nailon Plate (2 per joint) 1mm x 100mm (Typical) x 160mm long
- 8 Nails per Plate into Pile
- 8 Nails per Plate into Bearer
- 2 Skew Nails 90mm (1 per face)

JOIST TO BEARER

- CT160 Cleats (4 per Joist) 160mm long
- 3 Nails per Cleat into Joist
- 3 Nails per Cleat into Bearer
- 2 Skew Nails 90mm (1 per side)

NAILS

- 80 x 45mm x 3.55 dia. Spiral Nails
- 6 x 90mm x 4 dia. St. Steel Nails (12KNH Pack only)

12kN Pile Set Contents

Each set represents 1 x 12kN Pile Fixing

(packed 4 sets per carton)

- 2 x Nailon Plates 160mm long
- 8 x CT160 Cleats
- 80 x 45mm x 3.55 dia. Spiral Nails
- 90mm x 4 dia. St. Steel Angular Groove 6 - 12KNH Pack

Refer front page for Product Finish Options



SCAN FOR
INSTALLATION
VIDEO

<https://vimeo.com/117350344>



(Ph): 09 408 2233
(Email): info@arcline.co.nz
(Web): www.arcline.co.nz

12kN Pile Fixing Details

SMITH
380C OPITO BAY ROAD, OPITO BAY
KERIKERI

Rev No. Revision

Date

Scale @ A3: NTS

Drawn By SE

Issued: 16/03/2026

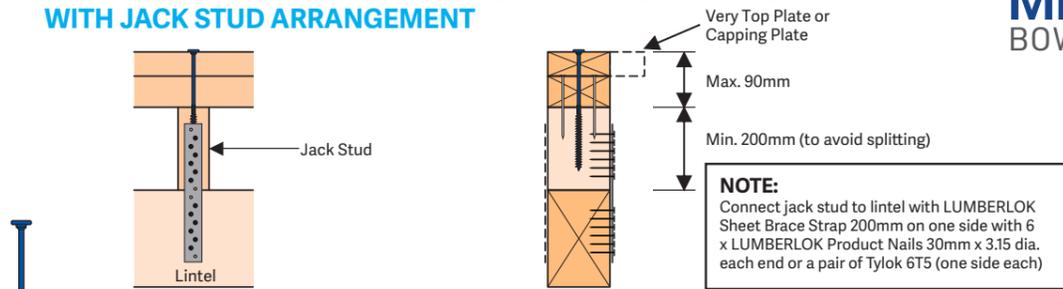
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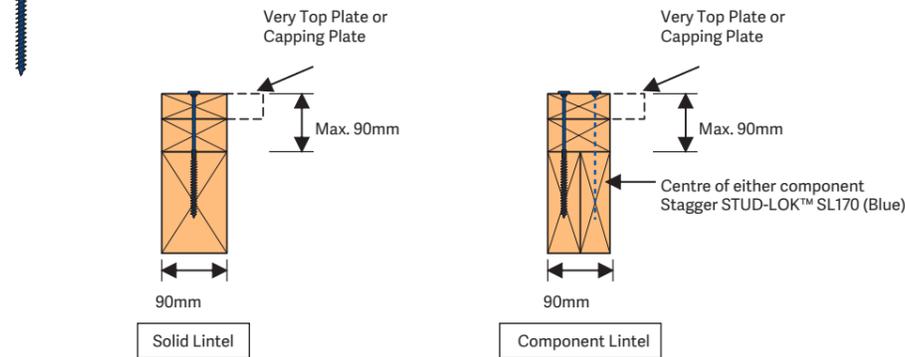
A4603

DRAFT BC

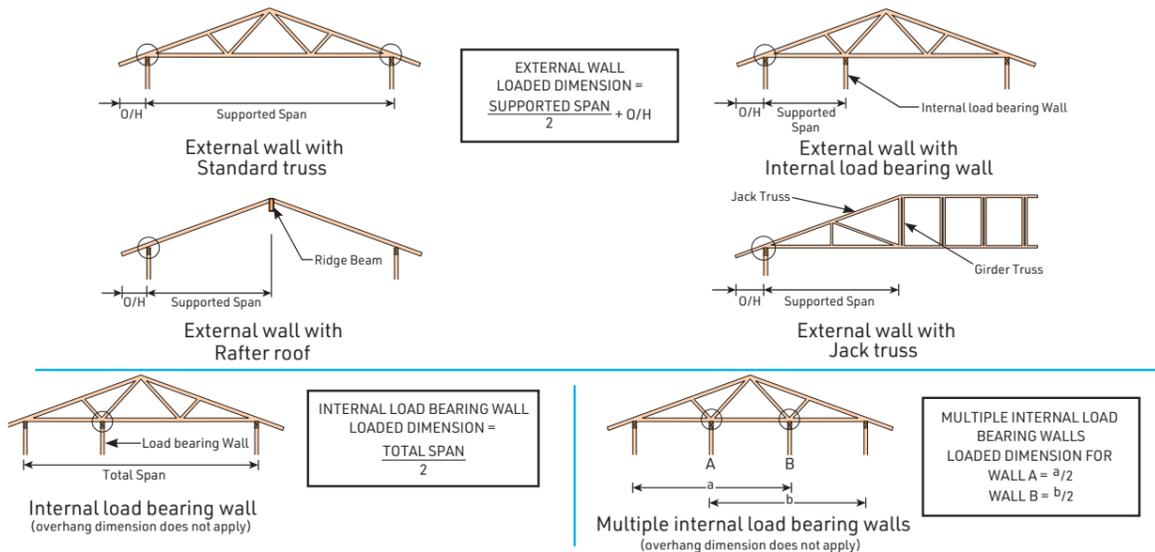
FIXING THROUGH VERY TOP PLATE OR CAPPING PLATE TO LINTEL WITH JACK STUD ARRANGEMENT



FIXING THROUGH VERY TOP PLATE OR CAPPING PLATE TO LINTELS DIRECTLY UNDER TOP PLATE



LOADED DIMENSION DEFINITION



FIXING SELECTION CHART

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

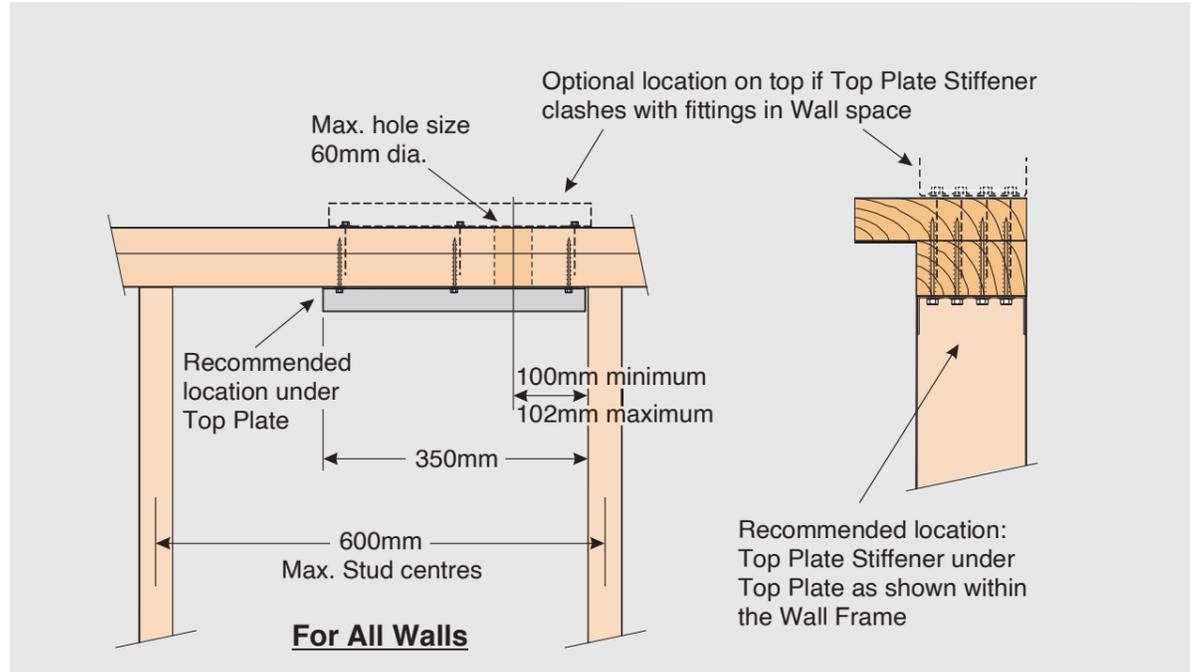
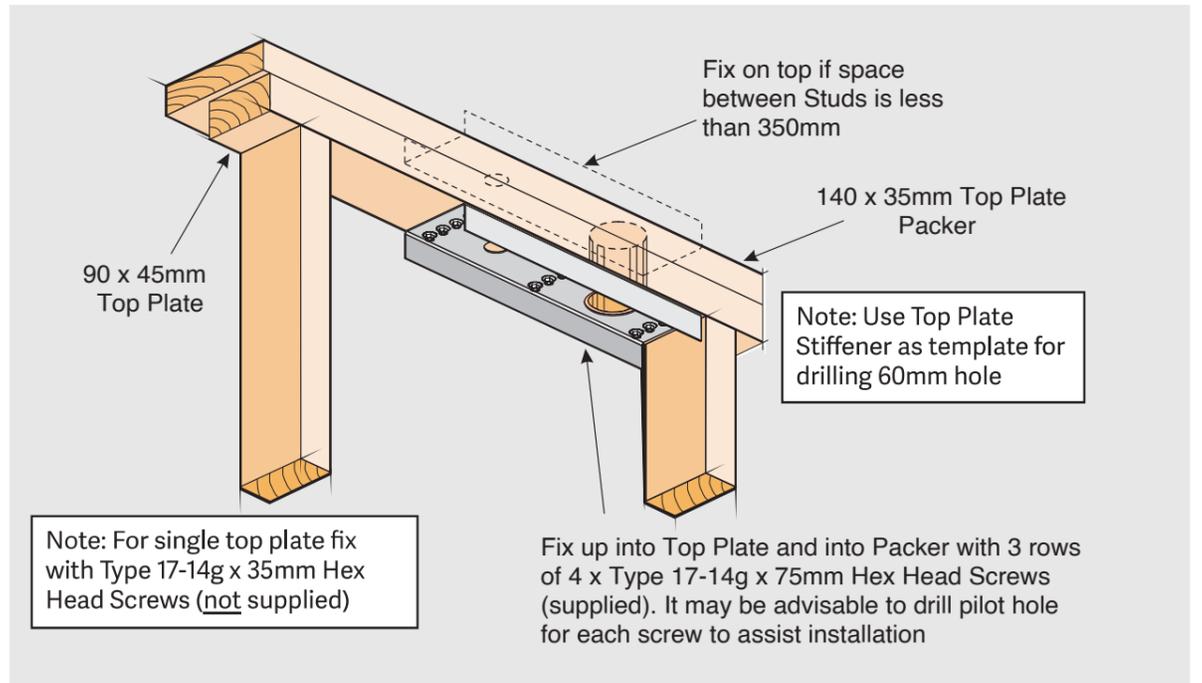
Wind Zones L, M, H, VH, EH as per NZS 3604:2011

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	2N	2N	SL	SL	SL
4.0	3.0	2.0	2N	2N	SL	SL	SL	2N	2N	SL	SL	SL
5.0	3.8	2.5	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
6.0	4.5	3.0	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
7.0	5.3	3.5	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
8.0	6.0	4.0	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
9.0	6.8	4.5	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
10.0	7.5	5.0	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
11.0	8.3	5.5	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
12.0	9.0	6.0	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL

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

SL = Single STUD-LOK SL170 (blue) plus 2/90mm x 3.15 dia. Nails or 100mm x 3.75 dia. Framing Nails

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

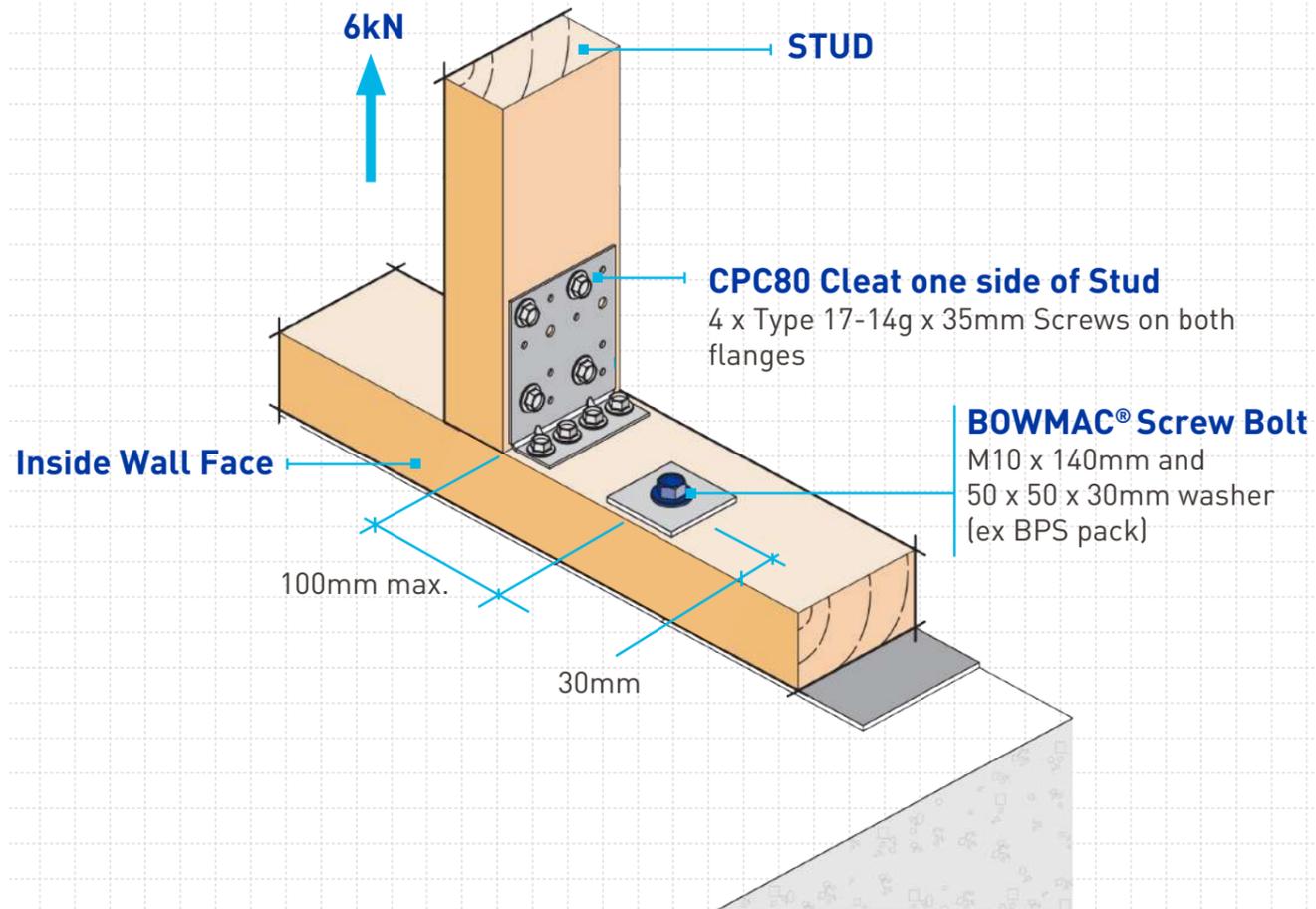


Code: TPS
Material: 1.55mm G300 Z275 Galvanised Steel
Packed: 8 x Top Plate Stiffeners per Carton
 100 x Type 17-14g x 75mm Hex Head Galvanised Screws

6kN STUD TO BOTTOM PLATE FIXING

IDEAL AS RETRO FIT FIXING AFTER LINING/CLADDING INSTALLED

FOR CONCRETE FLOOR SLABS

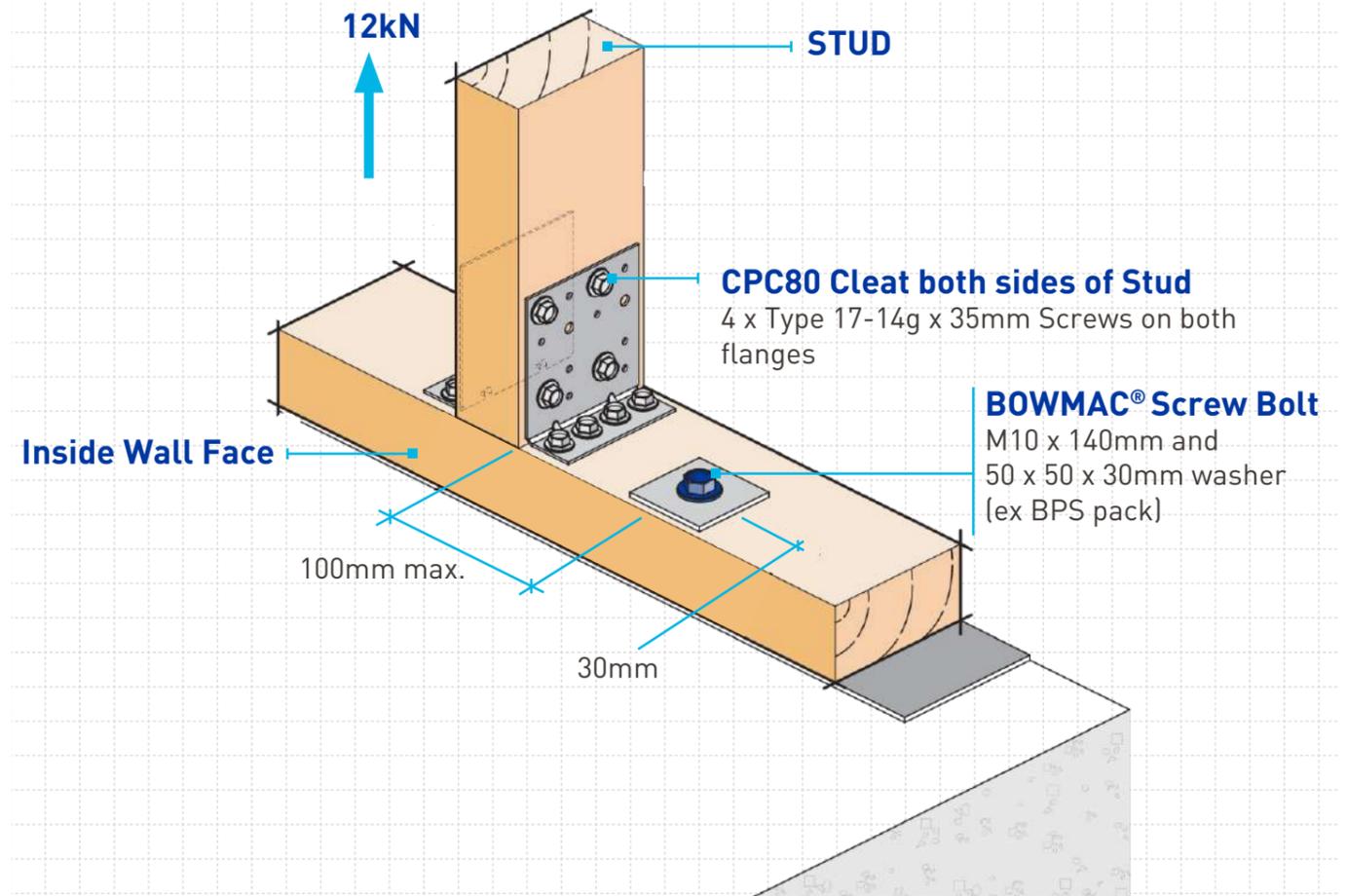


CODE: SBP
MATERIAL: CPC80 1.55mm G300 Z275 Galvanised Steel
PACKED: 2 x CPC80 Cleats
 16 x Type 17-14g x 35mm Hex Head Galvanised Screws

12kN STUD TO BOTTOM PLATE FIXING

IDEAL AS RETRO FIT FIXING AFTER LINING/CLADDING INSTALLED

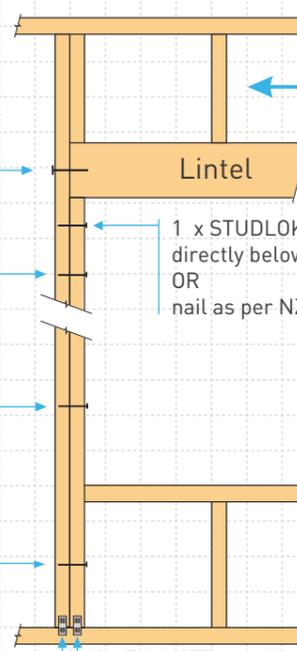
FOR CONCRETE FLOOR SLABS



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

**TYPE F
4.0kN**

For Lintel 140mm min.
2 x STUDLOK SL125 (green)
Refer Detail 1 for 90mm Stud
Refer Detail 2 for 140mm Stud

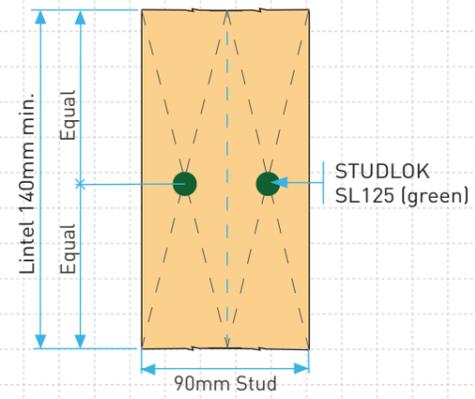


For fixing of jack studs refer to Jack Stud to Top Plate & Lintel Fixing brochure

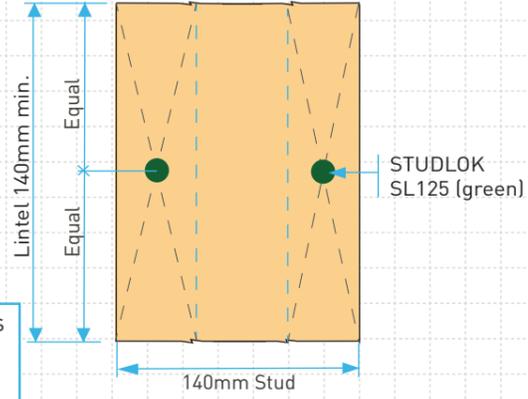
1 x STUDLOK SL80 (white) directly below lintel OR nail as per NZS 3604:2011

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

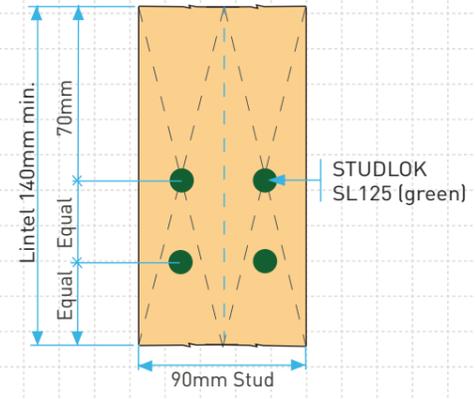
Detail 1



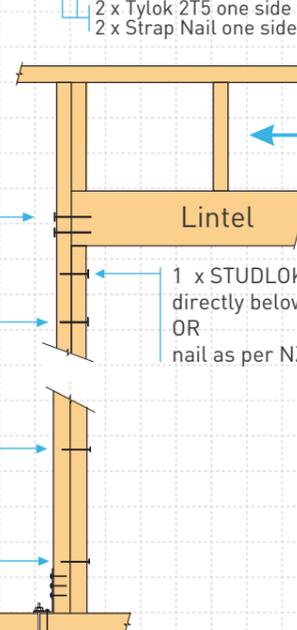
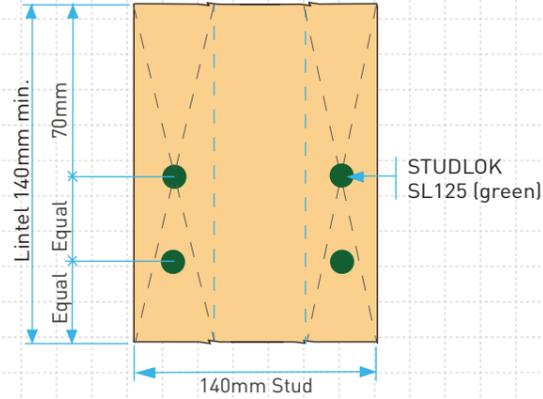
Detail 2



Detail 3



Detail 4



**TYPE G
7.5kN**

For Lintel 140mm min.
4 x STUDLOK SL125 (green)
Refer Detail 3 for 90mm Stud
Refer Detail 4 for 140mm Stud

For fixing of jack studs refer to Jack Stud to Top Plate & Lintel Fixing brochure

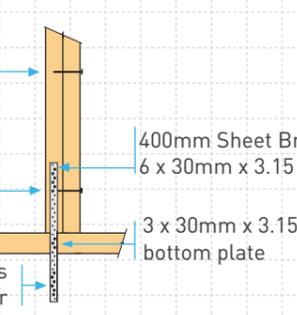
1 x STUDLOK SL80 (white) directly below lintel OR nail as per NZS 3604:2011

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

GIB HandiBrac™ with BOWMAC Screw Bolt M10 x 140mm

OR

STUDLOK SL80 (white) Trimmer to understud at 400mm crs. OR nail as per NZS 3604:2011



400mm Sheet Brace Strap to one side 6 x 30mm x 3.15 dia. nails to stud

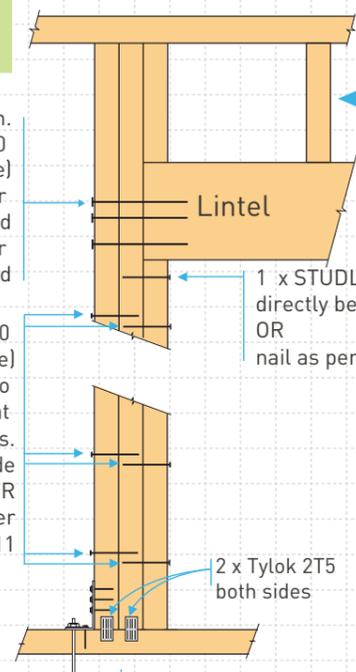
3 x 30mm x 3.15 dia. nails to bottom plate

6 x 30mm x 3.15 dia. nails to timber joist/bearer

STUDLOK™ LINTEL FIXING OPTIONS FOR ON-SITE
ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

**TYPE H
13.5kN**

For Lintel 190mm min.
6 x STUDLOK SL170 (blue)
Refer Detail 5 for 90mm Stud
Refer Detail 6 for 140mm Stud



For fixing of jack studs refer to Jack Stud to Top Plate & Lintel Fixing brochure

1 x STUDLOK SL80 (white) directly below lintel OR nail as per NZS 3604:2011

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

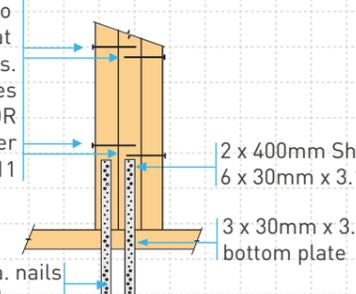
STUDLOK SL80 (white) Trimmer to understud at 400mm crs. both side OR nail as per NZS 3604:2011

2 x Tylok 2T5 both sides

GIB HandiBrac™ with BOWMAC Screw Bolt M10 x 140mm

OR

STUDLOK SL80 (white) Trimmer to understud at 400mm crs. both sides OR nail as per NZS 3604:2011

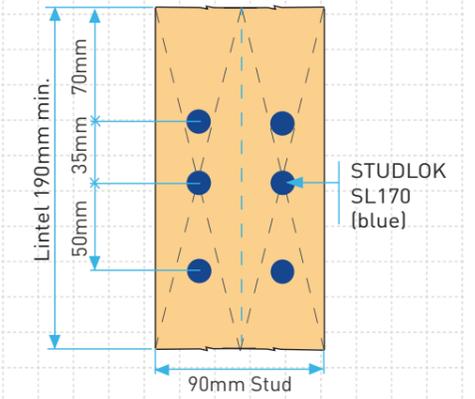


2 x 400mm Sheet Brace Straps to one side 6 x 30mm x 3.15 dia. nails to stud

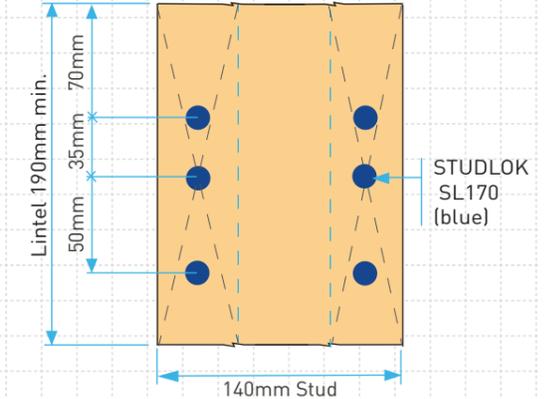
3 x 30mm x 3.15 dia. nails to bottom plate

6 x 30mm x 3.15 dia. nails timber joist/bearer

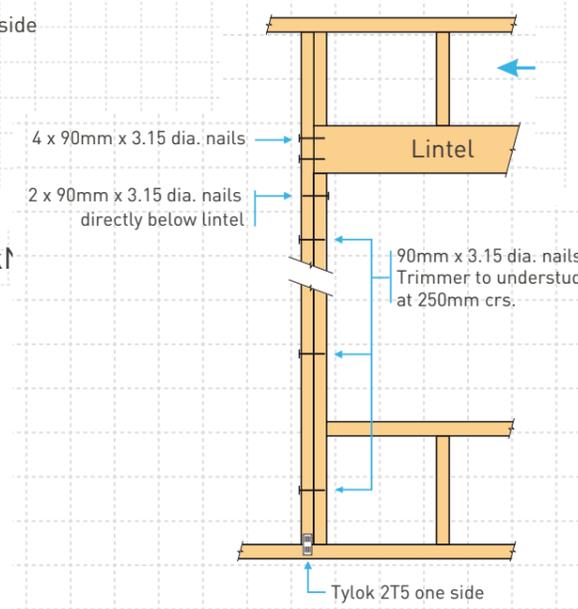
Detail 5



Detail 6



**TYPE E
1.4kN**



4 x 90mm x 3.15 dia. nails

2 x 90mm x 3.15 dia. nails directly below lintel

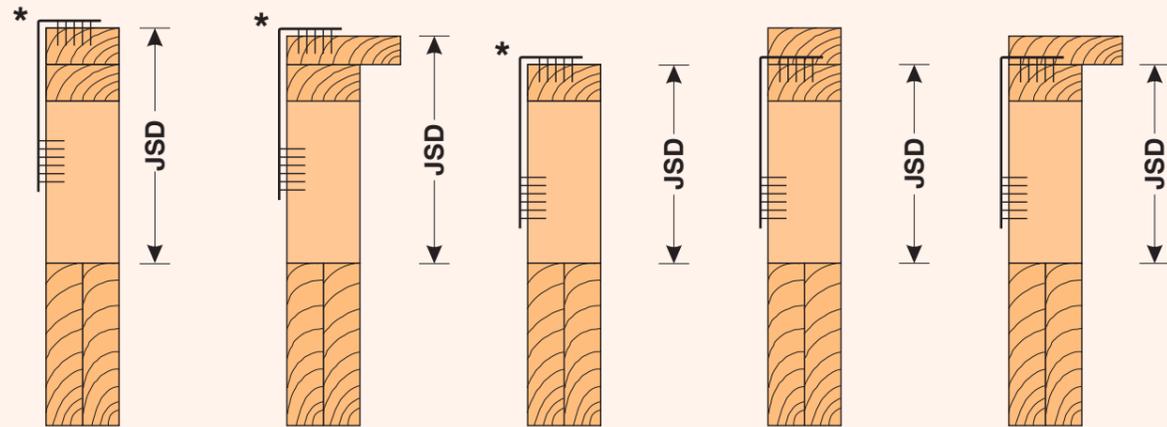
90mm x 3.15 dia. nails Trimmer to understud at 250mm crs.

Tylok 2T5 one side

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

FRAMING ARRANGEMENTS

Jack Stud Dimension Definition (JSD)

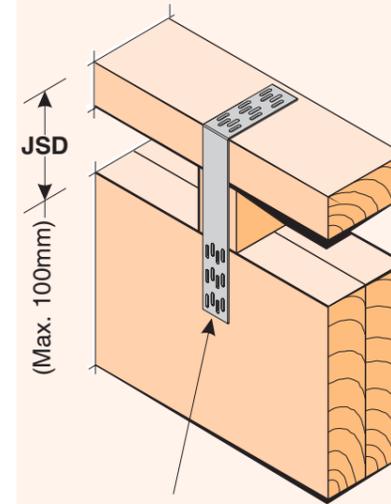


* Note: It is preferable for the top fixing to be located on the uppermost top plate or top plate packer to provide better fixing options for the truss connections

FIXING OPTIONS

FIXING 1

Jack Stud Dimension (JSD) up to a maximum of 100mm. Includes top plate fixed directly onto lintel i.e. no jack stud used.



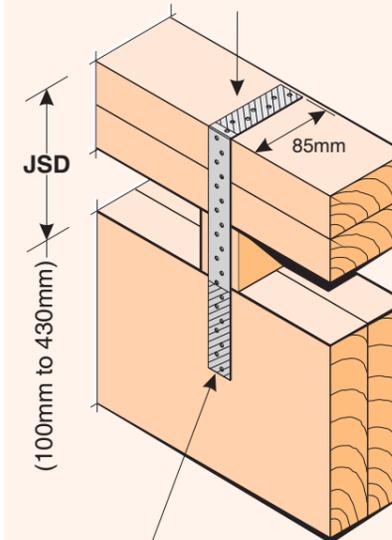
LUMBERLOK® Stud Strap on one face.

Note:
Fix jack stud with 2/ 90mm x 3.15 dia. nails from top plate and 2/ 90mm x 3.15 dia. skew nails to lintel (typical)

FIXING 2

Jack Stud Dimension (JSD) from a minimum of 100mm to a maximum of 430mm.

Fold at length of 85mm. Fill 6 holes in shaded area with LUMBERLOK® Product Nails 30mm x 3.15 dia.



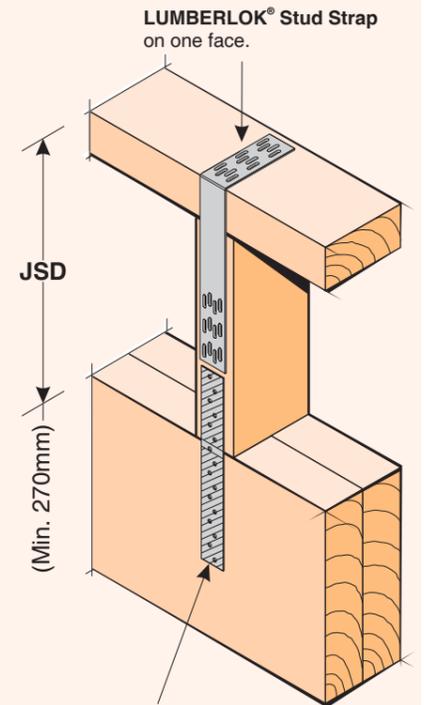
LUMBERLOK® Sheet Brace Strap on one face.

Fill 6 holes in shaded area with LUMBERLOK® Product Nails 30mm x 3.15 dia.

Note:
• JSD up to 230mm use Sheet Brace Strap 400mm.
• JSD from 230mm to 430mm use Sheet Brace Strap 600mm.

FIXING 3

Jack Stud Dimension (JSD) from a minimum of 270mm. No maximum dimension.



LUMBERLOK® Sheet Brace Strap 200mm on one face. Fill 6 holes in both shaded areas of jack stud and lintel with LUMBERLOK® Product Nails 30mm x 3.15 dia.



MITEK® LUMBERLOK® BOWMAC®

MiTek New Zealand Limited

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Jack Stud To Top Plate Details

SMITH
380C OPITO BAY ROAD, OPITO BAY
KERIKERI

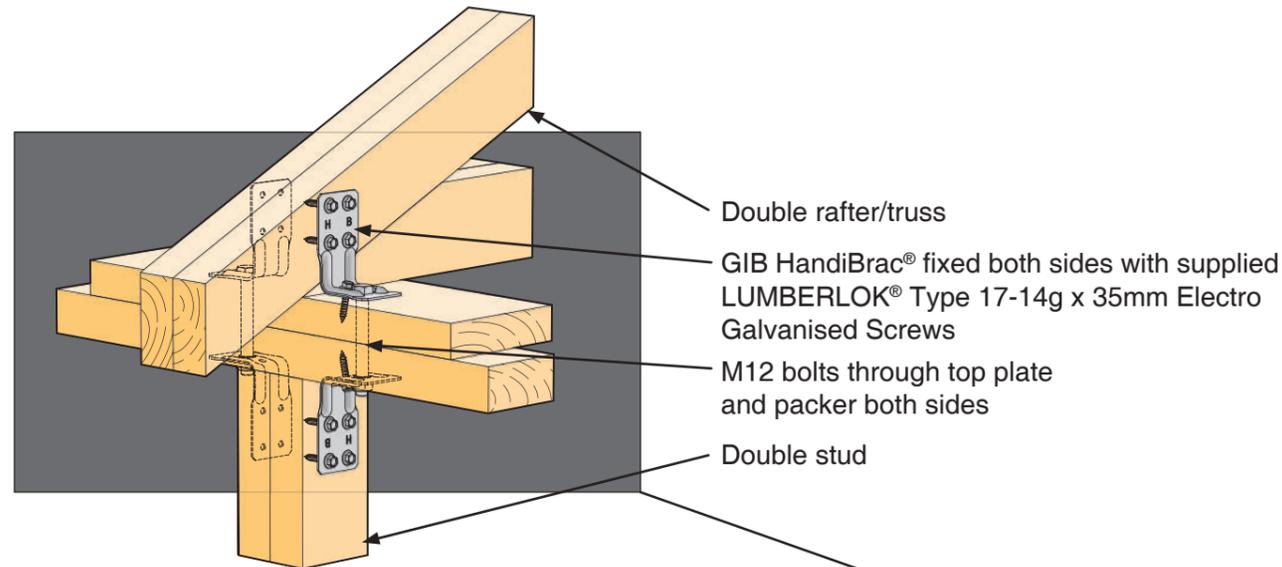
Rev No. Revision

Date

Scale @ A3: 1:1
Drawn By: SE
Issued: 16/03/2026
12:03 pm

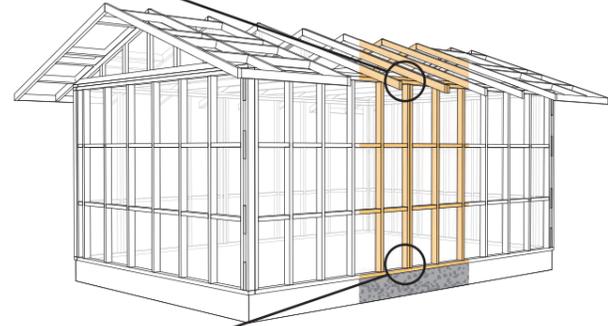
Sheet No:
A4704
DRAFT BC

Truss To Top Plate Fixing

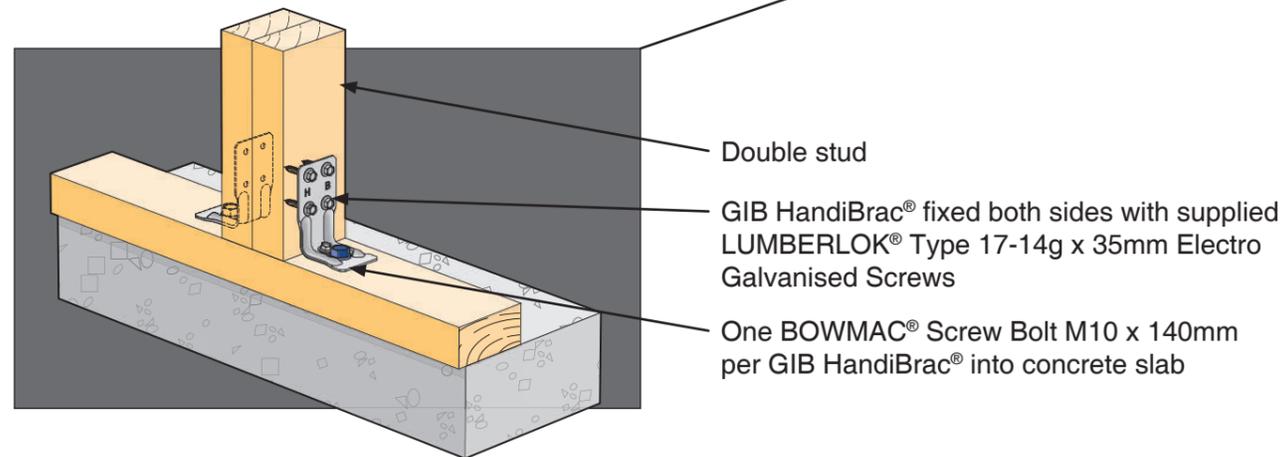


- Double rafter/truss
- GIB HandyBrac® fixed both sides with supplied LUMBERLOK® Type 17-14g x 35mm Electro Galvanised Screws
- M12 bolts through top plate and packer both sides
- Double stud

24kN



Stud To Bottom Plate Fixing



- Double stud
- GIB HandyBrac® fixed both sides with supplied LUMBERLOK® Type 17-14g x 35mm Electro Galvanised Screws
- One BOWMAC® Screw Bolt M10 x 140mm per GIB HandyBrac® into concrete slab

Ceiling battens in ceiling diaphragms

Ceiling diaphragms may be constructed using steel or timber ceiling battens.

Battens shall be spaced at a maximum of:

- 500mm for 10mm GIB® plasterboard.
- 600mm for 13mm GIB® plasterboard.

Timber battens shall be fixed in accordance with the requirements of NZS 3604:2011.

Metal battens shall be GIB® Rondo® battens with two external flanges of 8mm to allow direct screw fixing to roof framing.

GIB® Rondo® metal battens shall be fixed with 2/32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws to supporting framing.

GIB® Rondo® metal battens must be fixed directly to the roof framing. If a clip system has been used, a timber block (min 300mm) or a continuous timber member can be fixed alongside the bottom chord to permit a direct connection to the batten, see figure 26.

For GIB® Rondo® metal battens, a GIB® Rondo® metal channel or metal angle is required at the perimeter of the diaphragm. The perimeter channel shall be fastened to the top plate with 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screw at 300mm centres maximum.

Linings are fastened to metal using 25mm x 6g GIB® Grabber® Self Tapping screws and to timber framing using 32mm x 6g GIB® Grabber® High Thread screws. Alternatively 32mm x 7g GIB® Grabber® Dual Thread screws can be used in both cases. Fastener centres are specified on p.18.

Coved ceiling diaphragms can be achieved by using nominally 32 x 32 x 0.55mm proprietary galvanised metal angles ("back-flashing") at the changes in direction. These angles shall be:

- Fastened at 300mm on each edge to metal battens using 32mm x 8g GIB® Grabber® Wafer Head Self Tapping screws or 32mm x 7g GIB® Grabber® Dual Thread screws.
- Fastened to timber framing using 32mm x 7g GIB® Grabber® Dual Thread screws when linings are installed.

FIGURE 26: GIB® RONDO® METAL CEILING BATTEN INSTALLATION

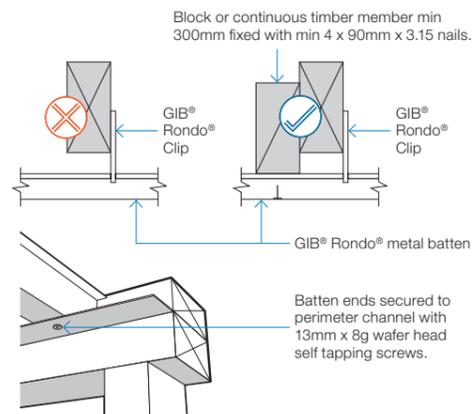
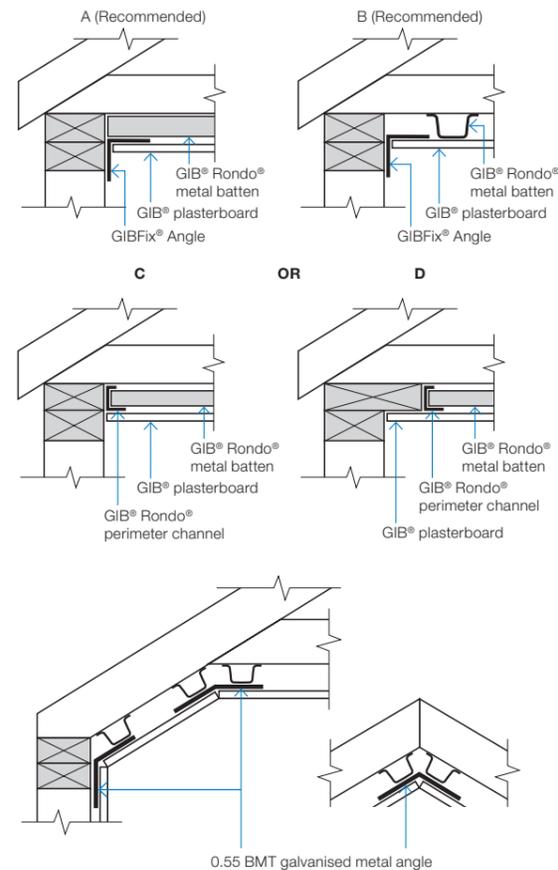
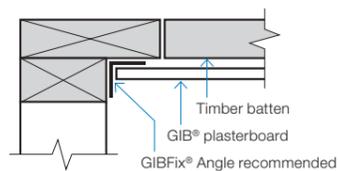


FIGURE 27: GIB® RONDO® METAL CEILING BATTENS WITH CORNER ANGLES



GEB017

FIGURE 28: TIMBER CEILING BATTENS*



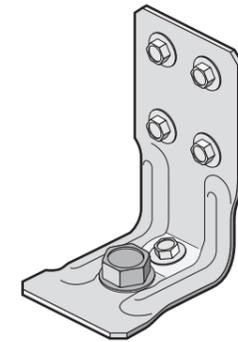
GEB018

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® at the stud/plate junction and at mid-width of plate.	Position GIB HandiBrac® flush with the outside stud face, as close as practicable to the centre of the boundary joist.	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.	

GIB EzyBrace® Systems specification GS1-N

Specification code	Minimum length (m)	Lining requirement
GS1-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard to one side only

WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centres thereafter.

External Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for external wall bottom plate fixing.

WALL LINING

- Any 10mm or 13mm GIB® plasterboard lining.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.

GIB EzyBrace® Systems specification GS2-NOM

Specification code	Minimum length (m)	Lining requirement
GS2-NOM	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Pairs of hand driven 100mm x 3.75mm nails at 600mm centres; or three power driven 90mm x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75mm x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

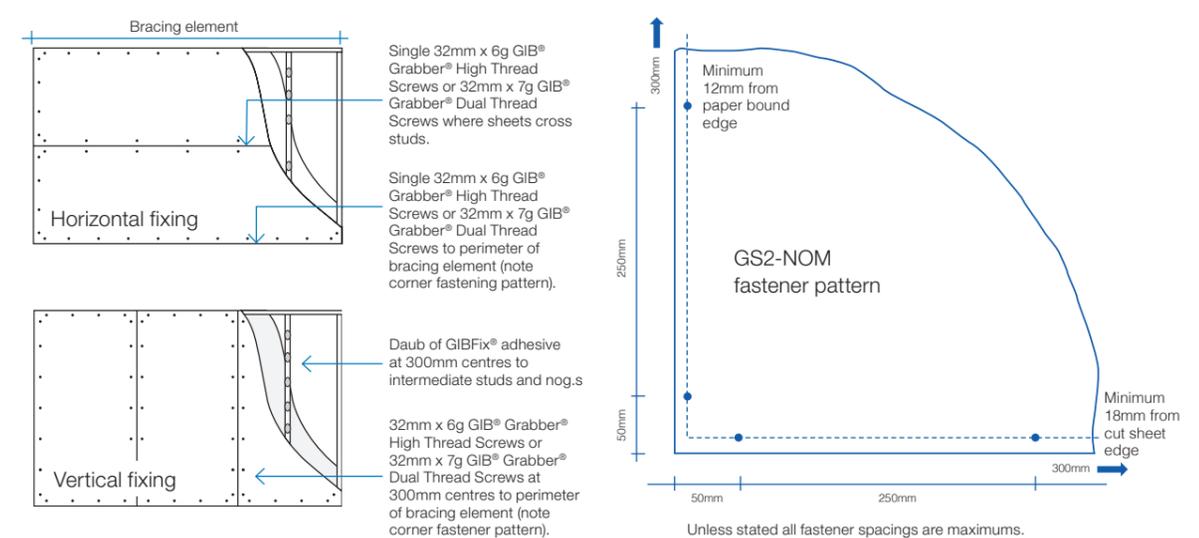
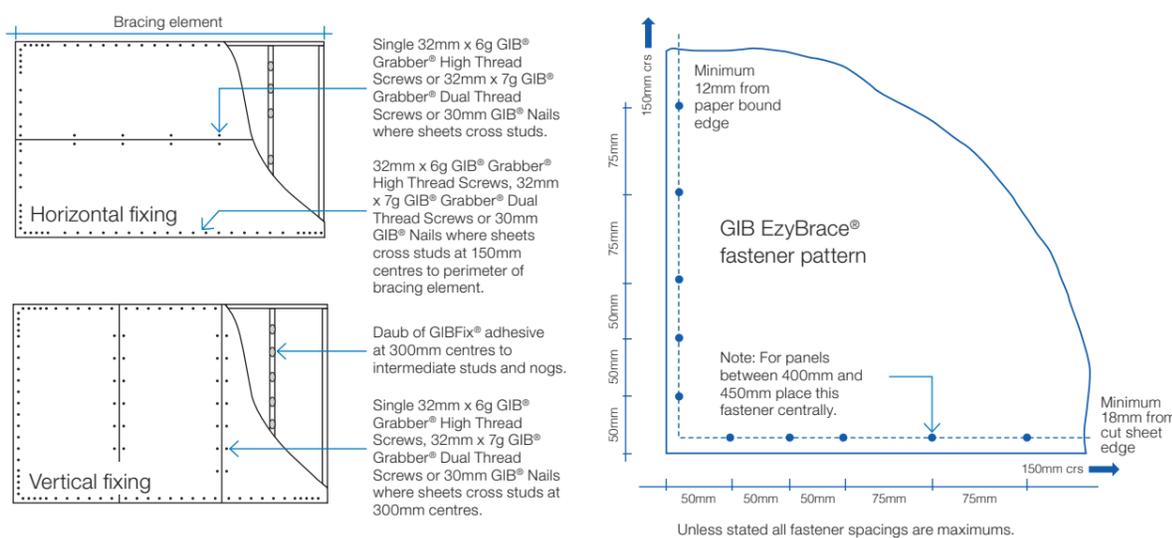
32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Angle use 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50, 300mm from each corner and 300mm maximum thereafter around the perimeter of the bracing element. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

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GIB EzyBrace® Systems specification BL1-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BL1-H	0.4	10mm or 13mm GIB Braceline® to one side only	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline®
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

50,100,150, 225, 300mm from maximum each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the sheet joint. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.

GIB EzyBrace® Systems specification BLG-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLG-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus any 10mm or 13mm GIB® plasterboard to the other side	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 – Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 – Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB HandiBrac® is recommended. See details in GIB EzyBrace® Systems 2011 or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of NZS 3604:2011.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus any 10mm or 13mm GIB® plasterboard lining to the other side.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Other side: 32mm x 6g GIB® Grabber® High Thread Screws, 30mm GIB Nails or 32mm x 7g GIB® Grabber® Dual Thread Screws.

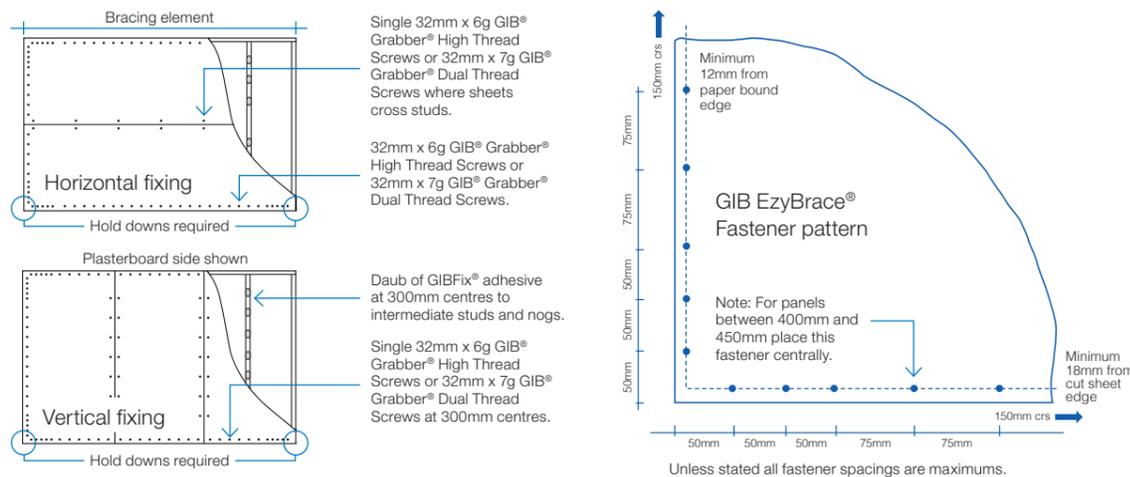
If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

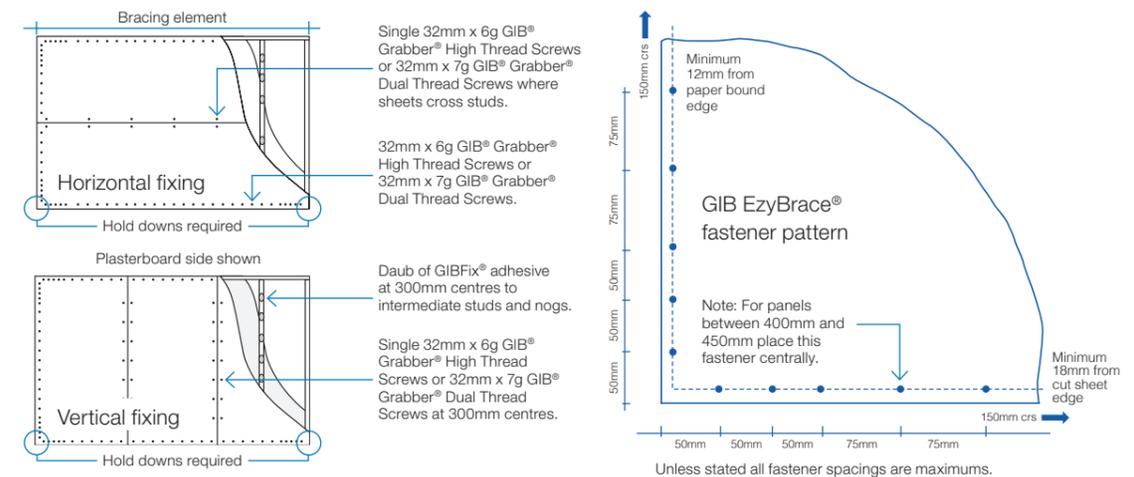
50,100,150, 225, 300mm maximum from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



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GIB EzyBrace® Systems specification BLP-H

Specification code	Minimum length (m)	Lining requirement	Other requirements
BLP-H	0.4	10mm or 13mm GIB Braceline® to one side of the frame plus minimum 7mm structural plywood manufactured to AS/NZ 2269.0 :2012 to the other side	Hold downs

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure; B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber floor

Use panel hold downs at each end of the bracing element. The GIB® HandiBrac is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide.

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or Three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Use panel hold downs at each end of the bracing element. The GIB® HandiBrac® is recommended. See details in GIB EzyBrace® Systems or GIB® Site Guide. Within the length of the bracing element bottom plates are to be fixed in accordance with the requirements of AS/NZ 2269/0 :2012.

WALL LINING

- A layer of 10mm or 13mm GIB Braceline® to one side of the wall plus minimum 7mm structural plywood manufactured to AS/NZS 2269.0 :2012 to the other side.
- Sheets can be fixed vertically or horizontally.
- Plywood is to be fixed vertically with edges supported.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

GIB Braceline® side: 32mm x 6g GIB® Grabber® High Thread Screws or 32mm x 7g GIB® Grabber® Dual Thread Screws. Plywood: 50 x 2.8mm Galv or Stainless steel annular grooved FH nails. If using the GIBFix® Framing System or if fastening through GIBFix® Angles use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

GIB® Plasterboard side: 50,100,150, 225, 300mm from each corner and then 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm centres to the intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge. Plywood side: 150mm centres to the perimeter of each sheet. GIB® corner fastener pattern does not apply to the plywood side. 300mm centres to intermediate studs.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.

GIB EzyBrace® Systems specification GS2-N

Specification code	Minimum length (m)	Lining requirement
GS2-N	0.4	Any 10mm or 13mm GIB® Standard plasterboard fixed to each side of the wall framing

WALL FRAMING

Wall framing to comply with;

- NZBC B1 — Structure B1/AS1 Clause 3 Timber (NZS 3604:2011).
- NZBC B2 — Durability B2/AS1 Clause 3.2 Timber (NZS 3602).

Framing dimensions and height as determined by NZS 3604:2011 stud and top plate tables for load bearing and non-bearing walls. The use of kiln dried stress graded timber is recommended.

BOTTOM PLATE FIXING

Timber Floor

Pairs of hand driven 100 x 3.75mm nails at 600mm centres; or three power driven 90 x 3.15mm nails at 600mm centres.

Concrete floor

Internal Wall Bracing Lines: In accordance with the requirements of NZS 3604:2011 for internal wall plate fixing or 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and then 600mm centres thereafter.

WALL LINING

- A layer of 10mm or 13mm GIB® plasterboard to each side of the wall.
- Sheets can be fixed vertically or horizontally.
- Sheet joints shall be touch fitted.
- Use full length sheets where possible.

PERMITTED ALTERNATIVES

For permitted GIB® plasterboard alternatives refer to p. 5 in GIB EzyBrace® Systems literature.

FASTENING THE LINING

Fasteners

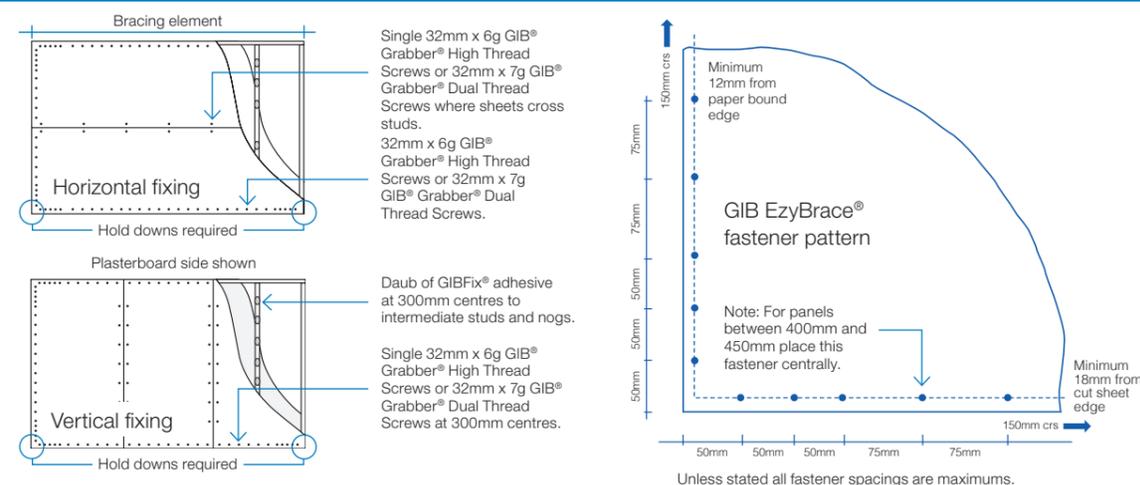
32mm x 6g GIB® Grabber® High Thread Screws, 32mm x 7g GIB® Grabber® Dual Thread Screws or 30mm GIB® Nails. If using the GIBFix® Angle use only 32mm x 7g GIB® Grabber® Dual Thread Screws.

Fastener centres

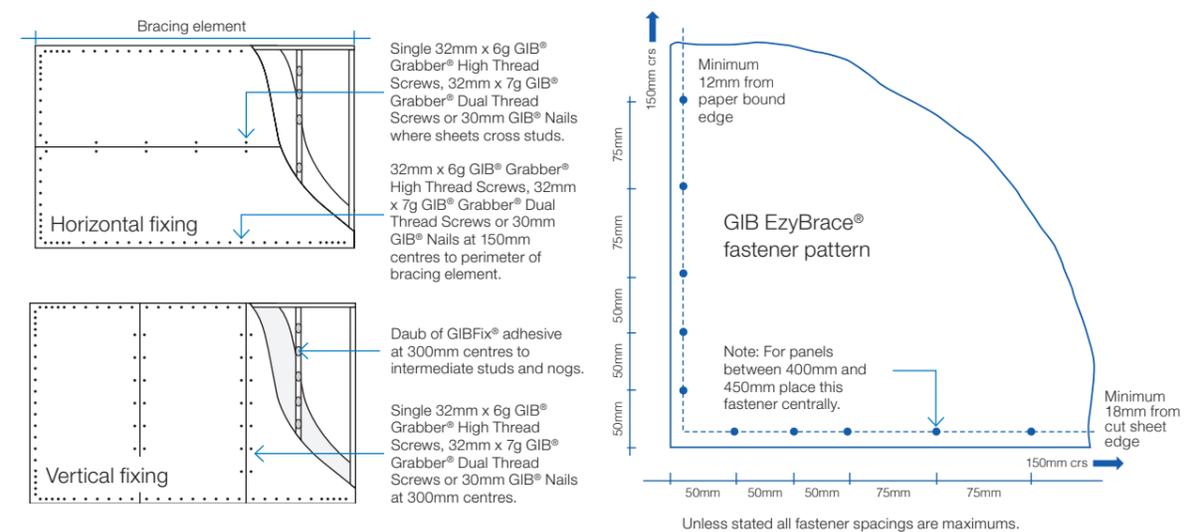
50,100,150, 225, 300mm maximum from each corner and 150mm thereafter around the perimeter of the bracing element. For vertically fixed sheets place fasteners at 300mm maximum centres to intermediate sheet joints. For horizontally fixed sheets place single fasteners to the sheet edge where it crosses the stud. Use daubs of GIBFix® adhesive at 300mm maximum centres to intermediate studs. Place fasteners no closer than 12mm from paper bound sheet edges and 18mm from any sheet end or cut edge.

JOINTING

Joint strength is important in delivering bracing system performance. All fastener heads stopped and all sheet joints GIB® Joint Tape reinforced and stopped in accordance with the GIB® Site Guide.



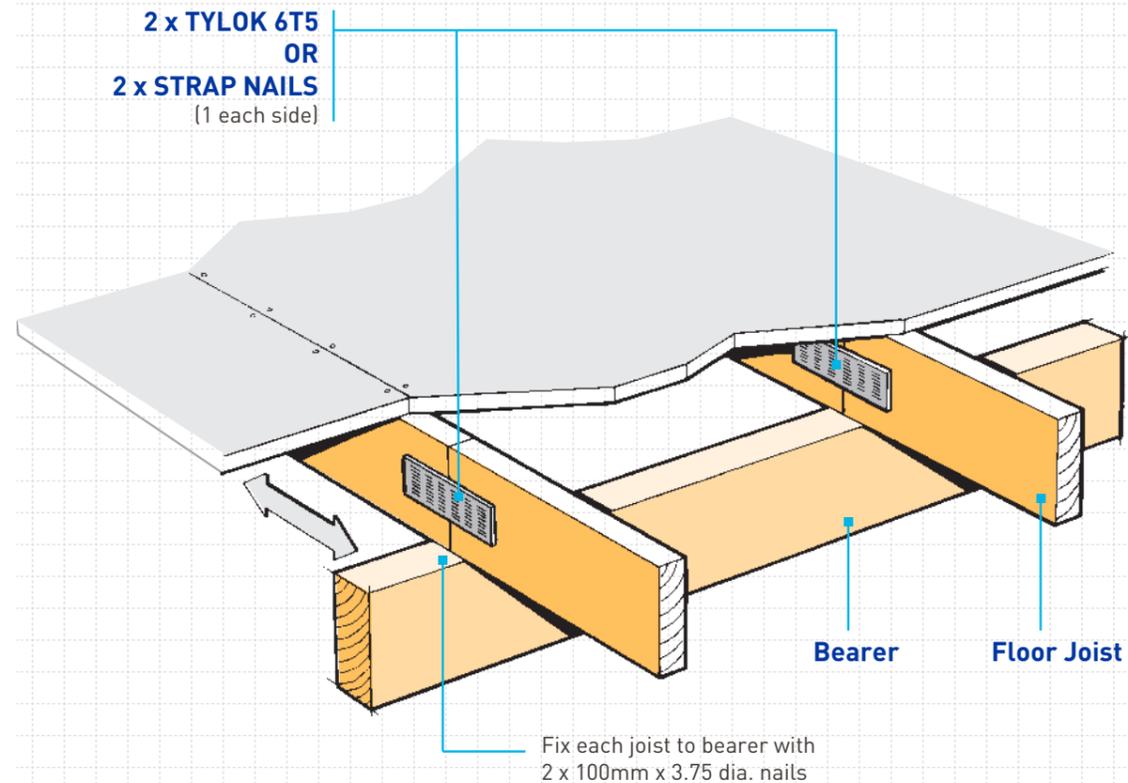
In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems



In order for GIB® systems to perform as tested, all components must be installed exactly as prescribed. Substituting components produces an entirely different system and may seriously compromise performance. Follow the specifications. This specification sheet is issued in conjunction with the publication GIB EzyBrace® Systems

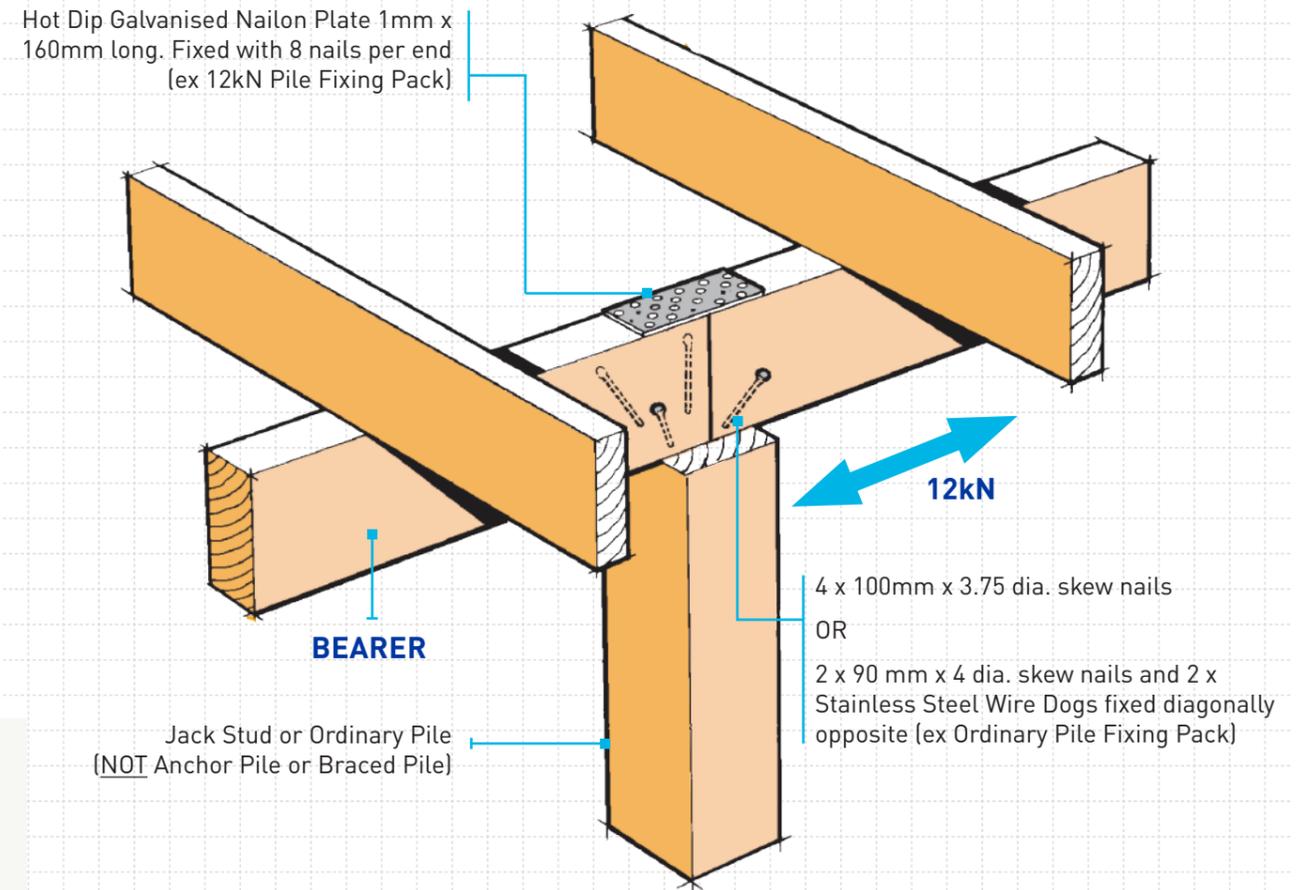
6kN FLOOR JOIST SPLICE OVER BEARER

AS PER CLAUSE 7.1.1.7(c) & FIGURE 7.1(c) NZS 3604:2011



12kN BEARER SPLICE OVER PILE

AS PER CLAUSE 6.12.7 NZS 3604:2011



Stainless Steel Nailon Plate and Nails to be used in high corrosion environments

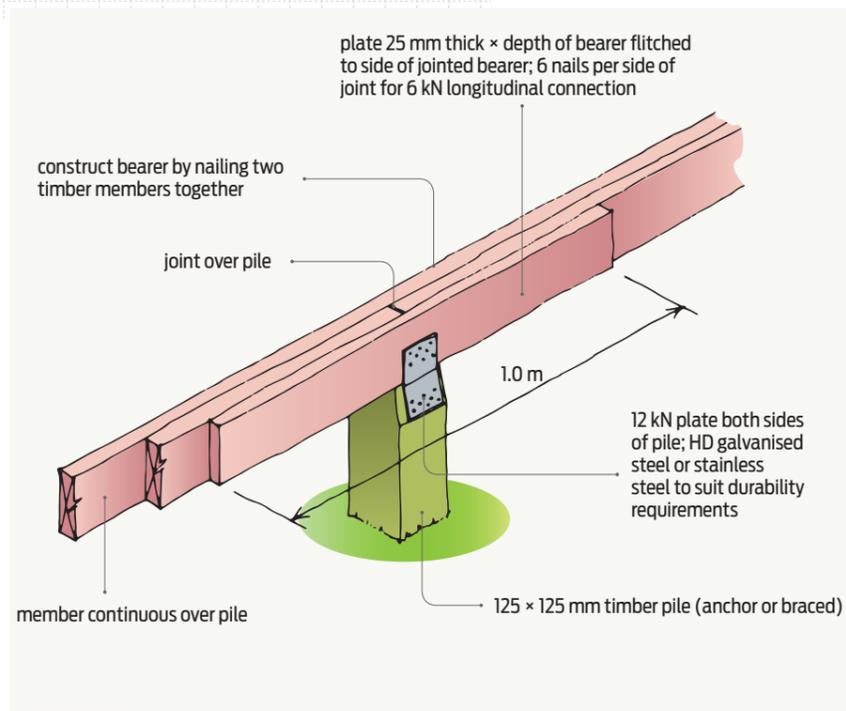
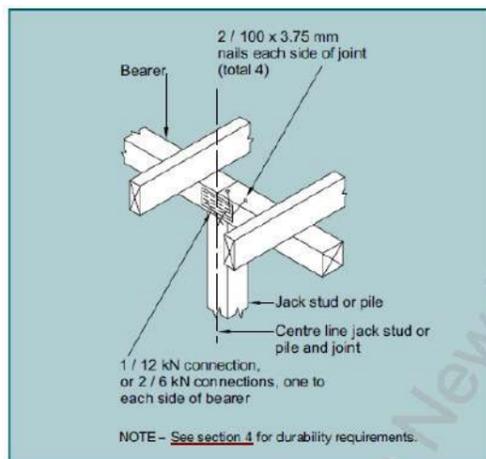


Figure 2 Laminated bearer joint.

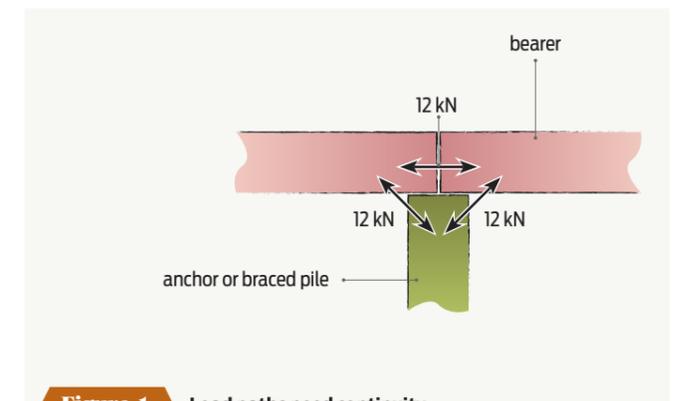


Figure 1 Load paths need continuity.

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

Setup for face-fixed baluster posts

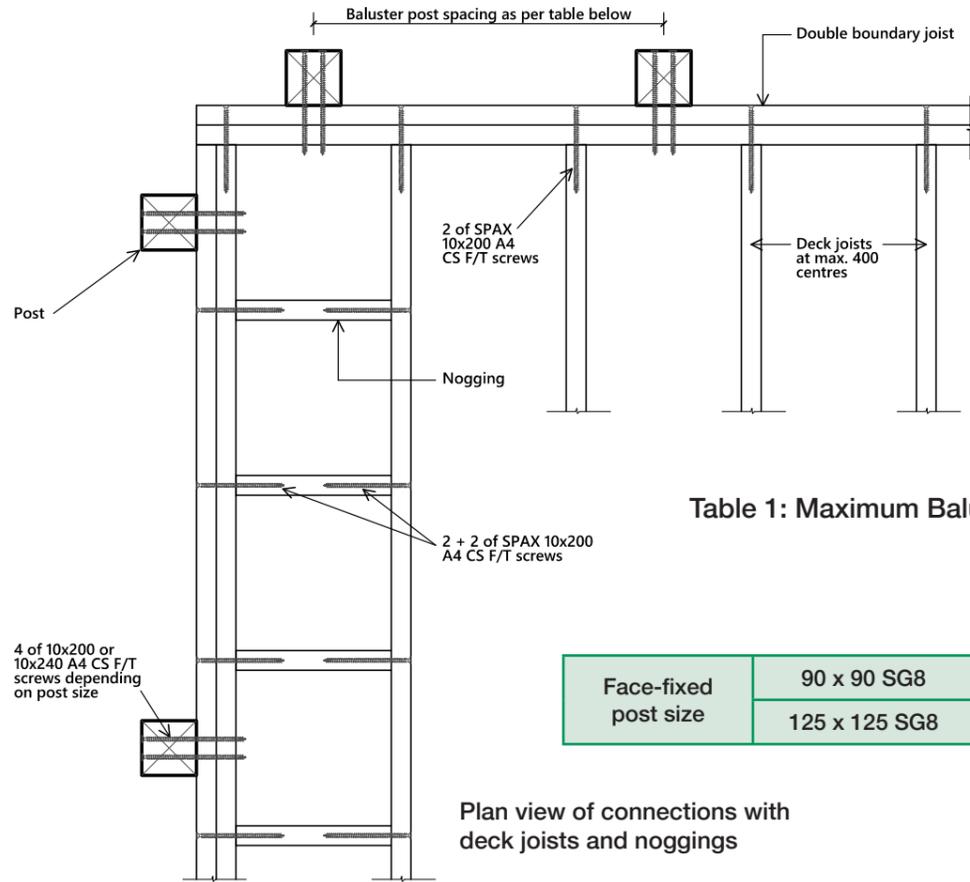
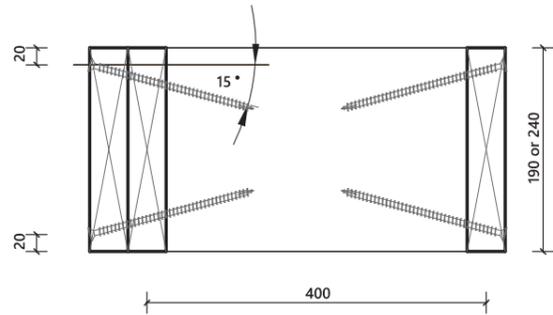


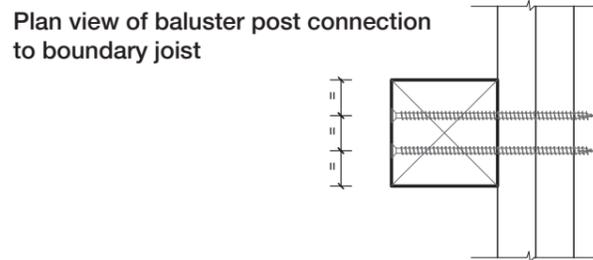
Table 1: Maximum Baluster Post Spacing (m)

Face-fixed post size	Joist Size	Joist Size	
		190 x 45	240 x 45
90 x 90 SG8	190 x 45	1.0 m	1.0 m
	240 x 45	1.0 m	1.0 m
125 x 125 SG8	190 x 45	1.4 m	1.8 m
	240 x 45	1.4 m	1.8 m

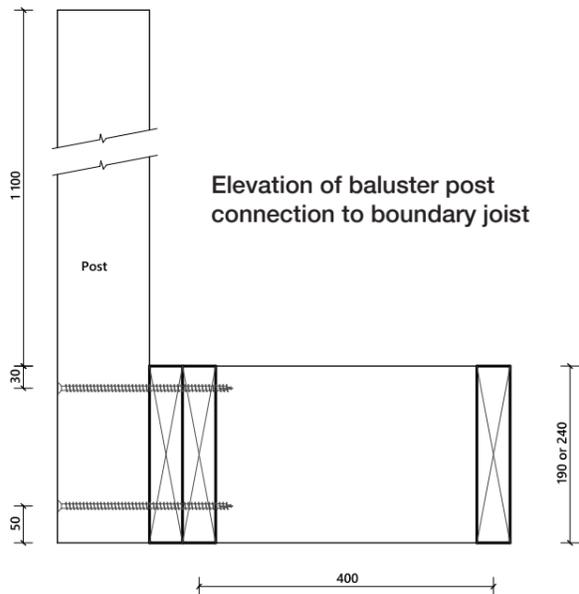
Plan view of connections with deck joists and noggings



Elevation of boundary joist connection to noggings



Plan view of baluster post connection to boundary joist



Elevation of baluster post connection to boundary joist

Issue date 07/2020

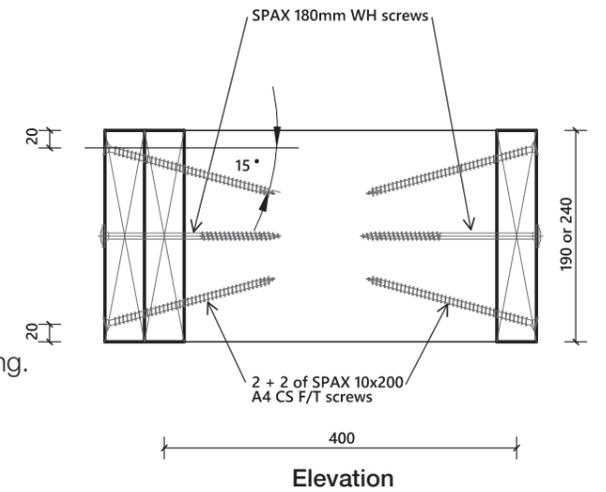
Installation instructions with face-fixed baluster posts

Double boundary joist:

Screws required

For deck joist - 2 of SPAX 10 x 200 A4 CS F/T plus 1 of SPAX 180mm long DELTA-SEAL WH
 For noggings - 4 of SPAX 10 x 200 A4 CS F/T plus 2 of SPAX 180mm long DELTA-SEAL WH

1. Hold the first (inner) boundary joist in place with either nails or screws into deck joists and noggings no more than 20mm from top and bottom of the boundary joist.
2. Install a SPAX 180mm DELTA-SEAL WH screw of any diameter through the outer boundary joist into the mid-point of the deck joist or nogging to clamp the timbers together.
3. Pre-drill two 6mm diameter holes to a depth of at least 150mm at 20mm from the top and bottom of the joist at an angle of 15° as shown in the diagram. Use the SPAX boundary joist drilling template for an accurate angle.
4. Install two SPAX 10 x 200 A4 CS F/T screws in the pre-drilled holes.
5. Remove the WH screw from the mid-point (this can be re-used a couple of times).
6. For noggings, repeat steps 2 to 5 at the rear of the nogging.

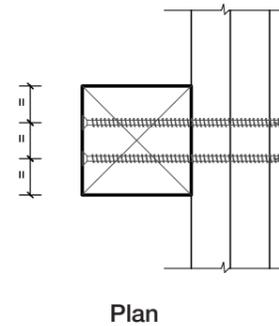


Baluster post:

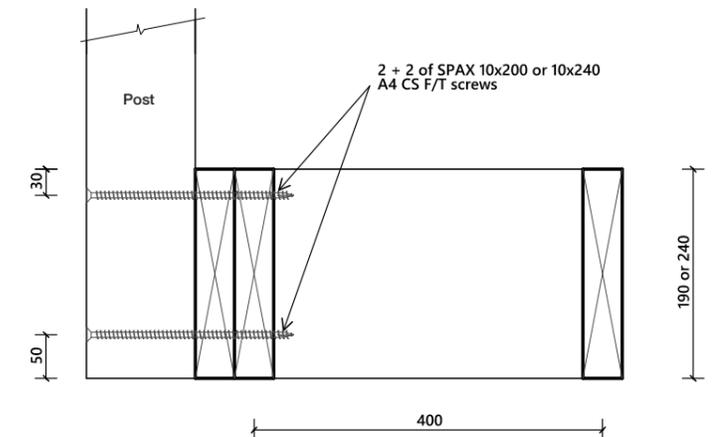
Screws required

For 90mm post - 4 of SPAX 10 x 200 A4 CS F/T
 For 125mm post - 4 of SPAX 10 x 240 A4 CS F/T

1. Clamp the post in place according to the spacing in table 1.
2. Install four SPAX 10mm A4 CS F/T screws through the post and the full depth of the boundary joists as shown in the diagram below, the length of the screw depending on the post thickness. The point of the screws protruding on the back of the joist can be cut off if desired.



Plan



Issue date 07/2020

Balustrade Details

SMITH
380C OPITO BAY ROAD, OPITO BAY
KERIKERI

Rev No.	Revision	Date
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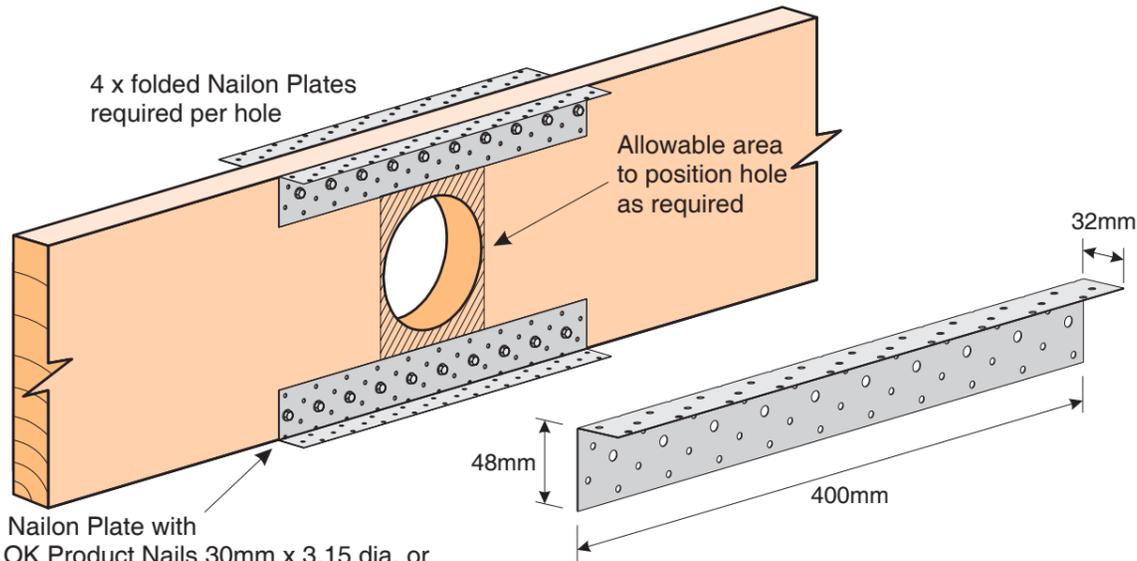
Scale @ A3: NTS
Drawn By SE
Issued: 16/03/2026
12:03 pm

Sheet No:
A4712
DRAFT BC

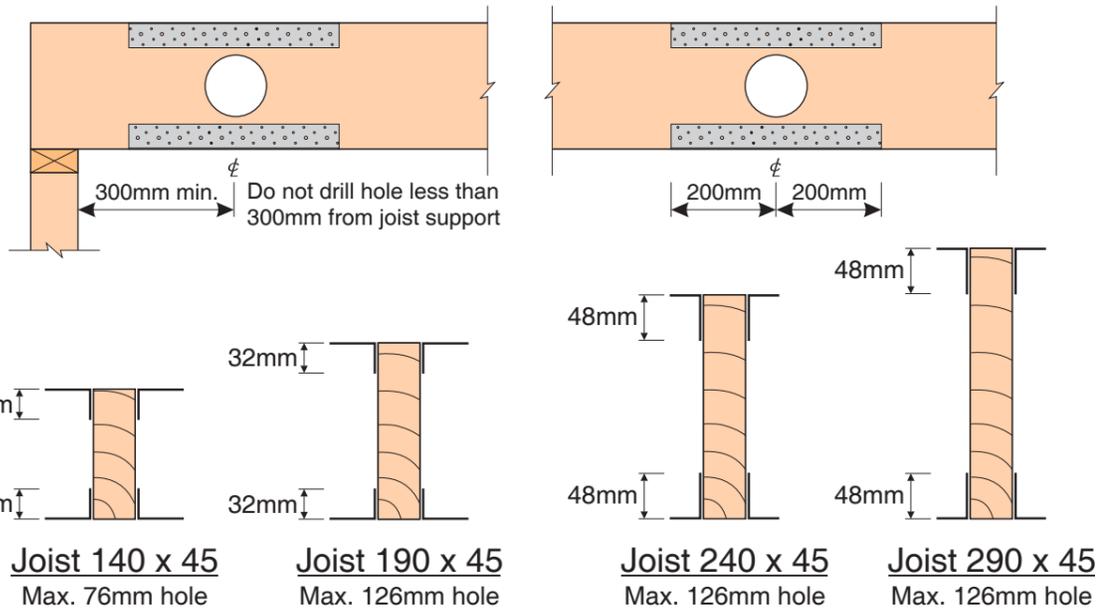
FLOOR JOIST STIFFENER

- ★ Suitable for running pipes/ducting through joists
- ★ Maintains timber joist strength and stiffness
- ★ Allows flexibility of hole location within specific areas
- ★ Able to be retro fitted after pipes/ducting are installed
- ★ One stock item for all floor joist sizes

NOT TO BE USED IN EXTERIOR SITUATIONS



Fix each folded Nailon Plate with 20 x LUMBERLOK Product Nails 30mm x 3.15 dia. or 10 x Type 17-12g x 35mm Hex Head Screws (not supplied)



Code: FJS
Material: 1.55mm G300 Z275 Galvanised Steel
Packed: 8 x Folded Nailon Plate per Carton

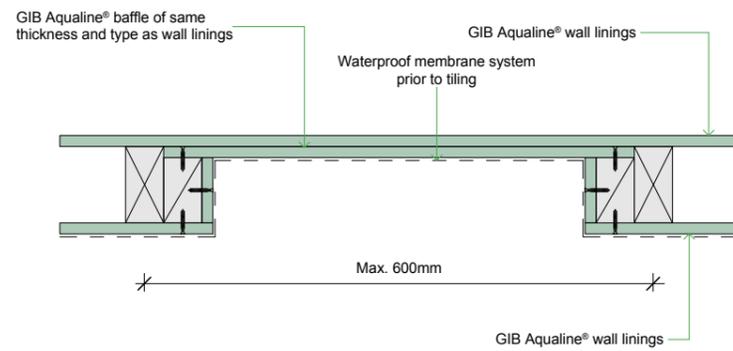


Joist Stiffener

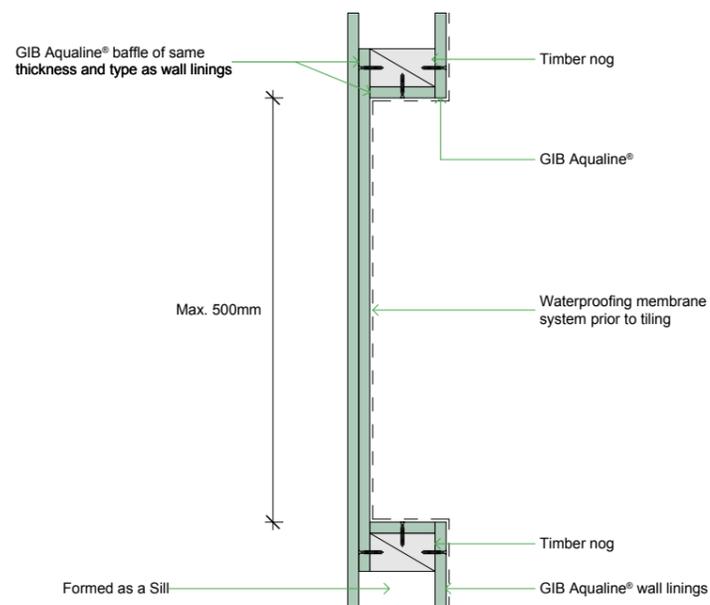
SMITH
 380C OPITO BAY ROAD, OPITO BAY
 KERIKERI

Rev No.	Revision	Date	Scale @ A3: 1:1	Sheet No:
			Drawn By: SE	A4713
			Issued: 16/03/2026 12:03 pm	DRAFT BC

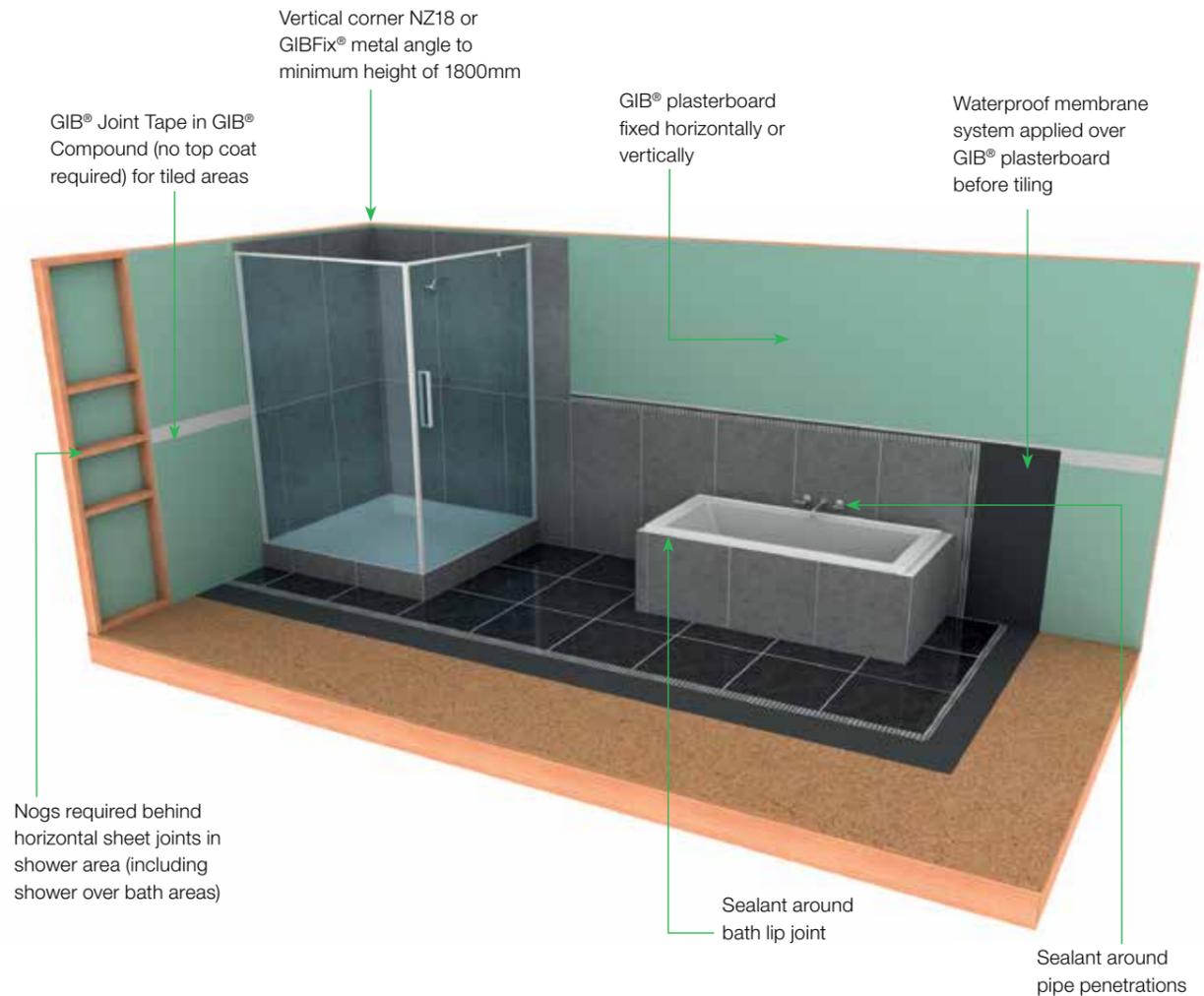
TIMBER FRAME TILE RECESS



Larger recesses can be accommodated depending on specific framing layout provided 500mm is not exceeded in at least one direction.



GAL-029B



TIMBER WALL FRAMING

Framing dimensions must comply with the requirements of NZS 3604:2011.

- The moisture content of timber framing shall be 18% or less at the time of lining
- Studs shall be spaced at 600mm centres maximum for both 10mm and 13mm GIB® plasterboard
- Nogs to be evenly spaced with a maximum spacing of 1350mm. Alternatively, nogs may be staggered 150mm maximum either side of a horizontal joint line
- Nogs are not required behind horizontal joints except in shower situations or specific fire or noise control systems

FASTENERS

- Minimum 32mm x 6g GIB® Grabber® High Thread screws.

FASTENER CENTRES

- 300mm centres to top and bottom plates and to perimeter studs
- Single fasteners to each stud where the horizontal joint crosses the studs

- Place fasteners 12mm from sheet edges and 18mm from sheet ends
- Daubs of GIBFix® adhesive at 300mm centres to intermediate studs
- Do not place adhesive at sheet edges or under fasteners. Sheet edges at door or window openings can be adhesive fixed unless forming part of the perimeter of a bracing element

For bracing, noise control or fire rating applications including fastener lengths consult the relevant GIB® technical publication.

LINING

- Use minimum 10mm GIB® plasterboard
- Install the sheets leaving a 5-10mm gap at the floor line to allow for movement of the framing members and to allow for cleaning dirt and rubbish before sealing
- Sheets to be touch fitted.

JOINTING

- Jointing shall be carried out in accordance with the instructions in the GIB® Site Guide.



(Ph): 09 408 2233
(Email): info@arcline.co.nz
(Web): www.arcline.co.nz

Bathroom Details

SMITH

380C OPITO BAY ROAD, OPITO BAY
KERIKERI

Rev No. Revision

Date

Scale @ A3: NTS

Drawn By SE

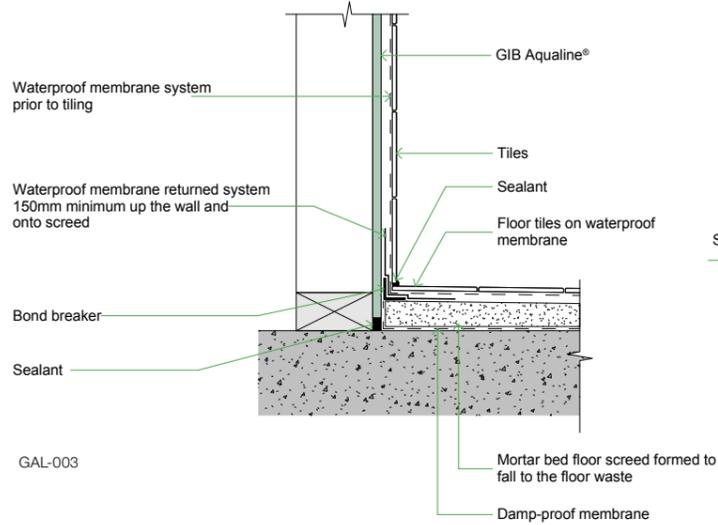
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12:03 pm

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A4801

DRAFT BC

A: MORTAR UNDER CERAMIC FLOOR LINING JUNCTION

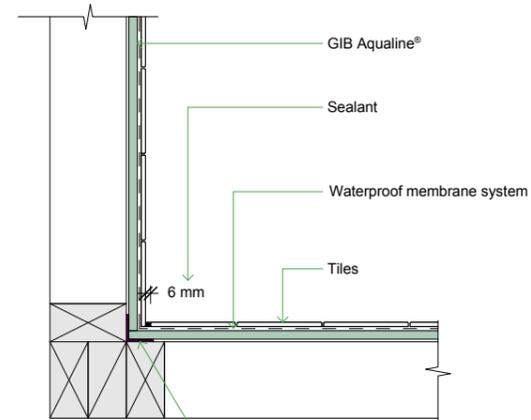


GAL-003

PREFORMED SHOWER BASE JUNCTIONS

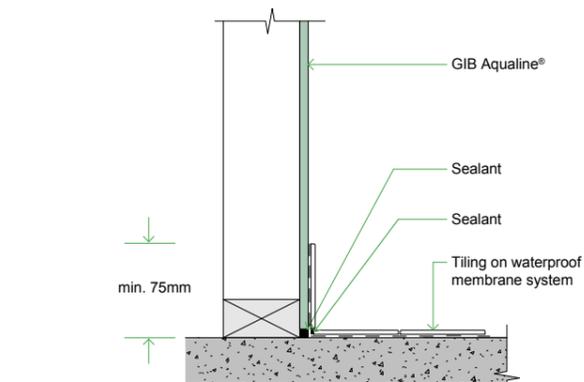
Refer to the shower base manufacturer for proprietary shower tray installation detailing including wet wall lining junction detailing.

B: TILED INTERNAL CORNER

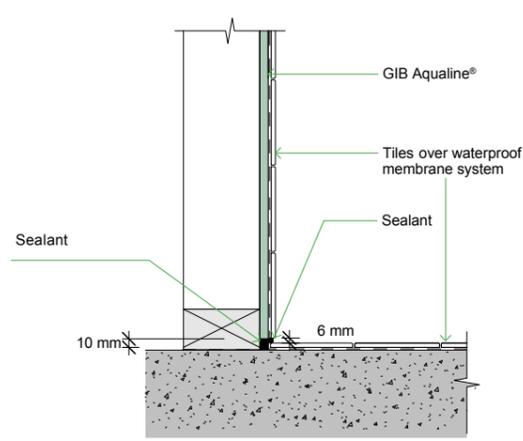


GAL-029

32 x 32 x 0.55mm vertical fixed galvanised steel angle NZ18 or GIBFix® Angle

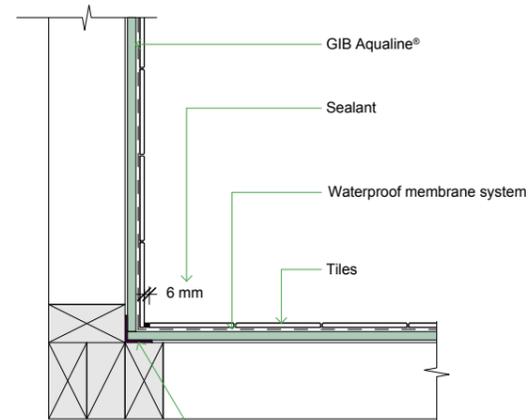


C: CERAMIC FLOOR LINING JUNCTION



GAL-002A

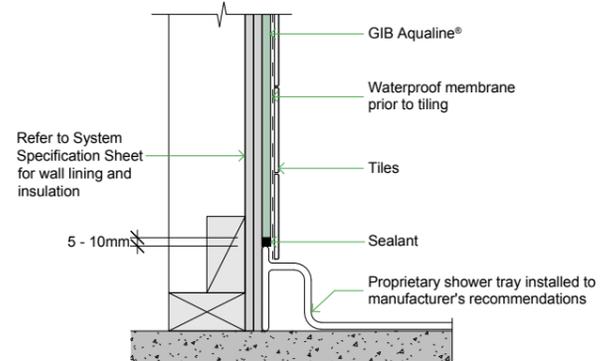
C: TILED INTERNAL CORNER



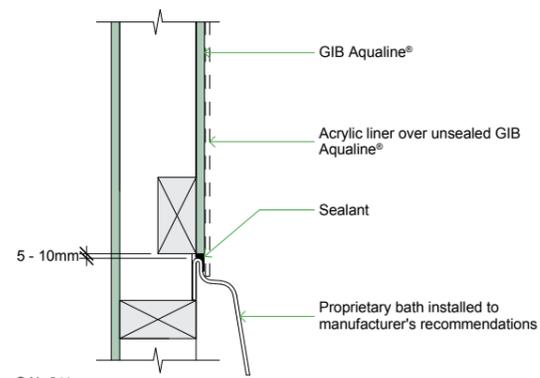
GAL-029

32 x 32 x 0.55mm vertical fixed galvanised steel angle NZ18 or GIBFix® Angle

B: MOULDED SHOWER TRAY DOUBLE LINING JUNCTION

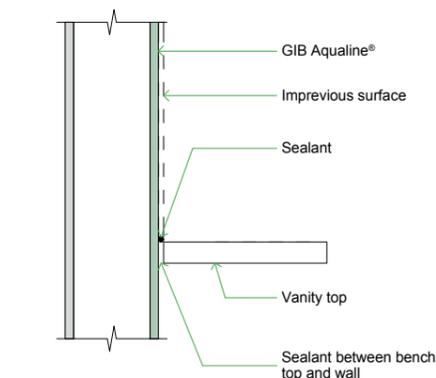


A: BATH LINING JUNCTION



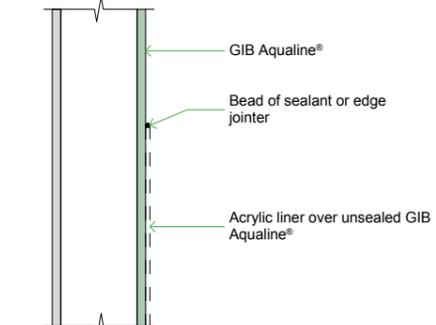
GAL-011

B: VANITY TOP LINING JUNCTION



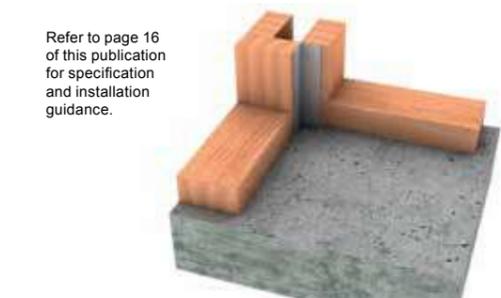
GAL-023A

C: UNSEALED PLASTERBOARD LINING

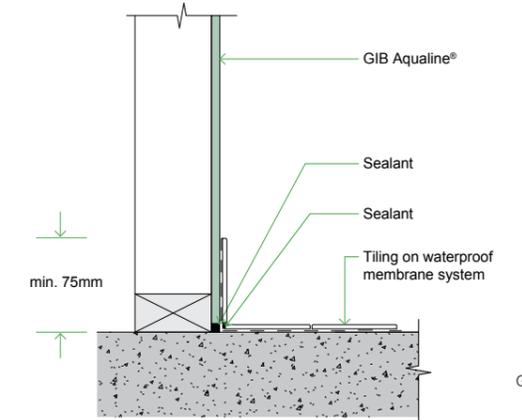


GAL-028

D: TILED INTERNAL CORNER METAL ANGLE POSITION

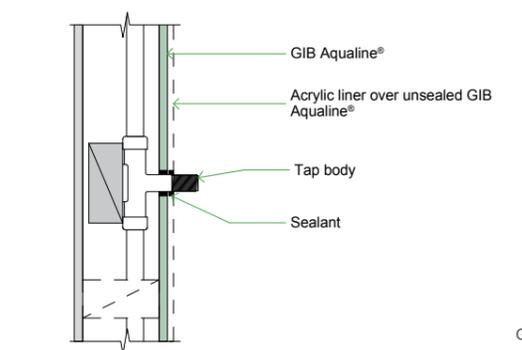


D: CERAMIC FLOOR SKIRTING LINING JUNCTION



GAL-001

E: SEALING SEMI WET AREA PENETRATION



GAL-019

F: SHOWER MIXER PENETRATION IN WET WALL LININGS

Refer to the shower mixer manufacturer for shower mixer installation detailing including the use of proprietary products to prevent water or moisture ingress behind the wet wall lining.



Bathroom Details

SMITH
380C OPITO BAY ROAD, OPITO BAY
KERIKERI

Rev No. Revision

Date

Scale @ A3: NTS

Drawn By SE

Issued: 16/03/2026

12:03 pm

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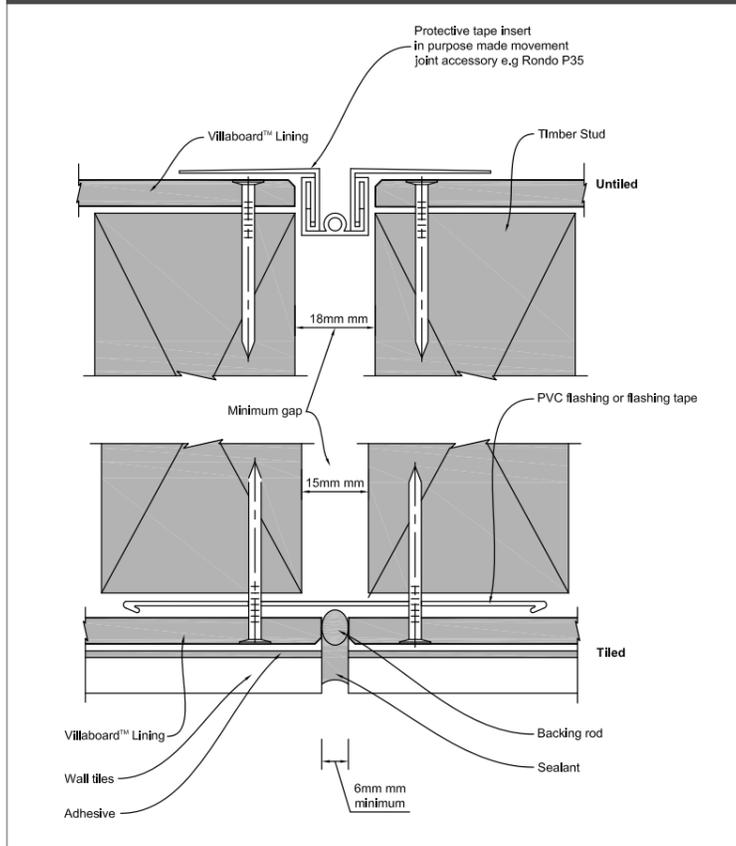
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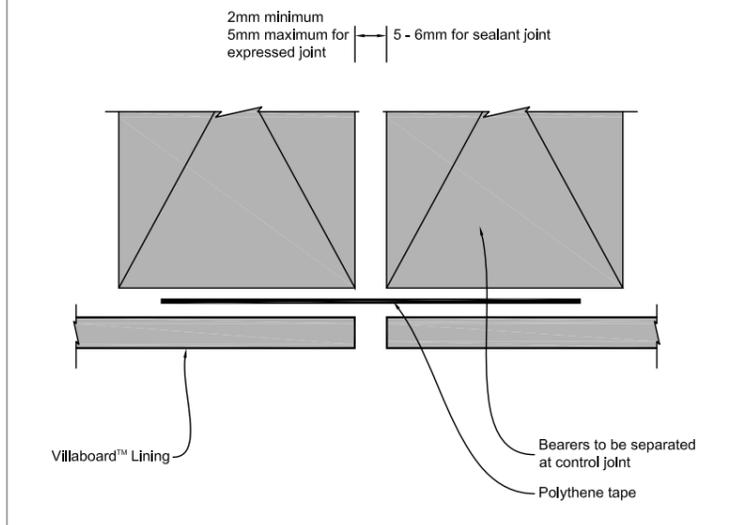
(Ph): 09 408 2233
(Email): info@arcline.co.nz
(Web): www.arcline.co.nz

Figure 18: Control joint



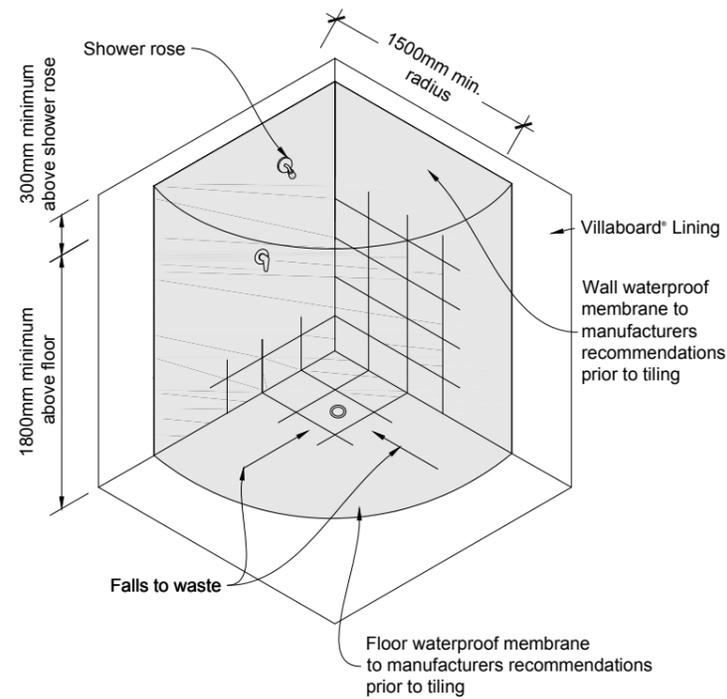
Notes: Alternatively a PVC control jointer supplied by James Hardie can also be used to form a control joint.

Figure 19: Control joint

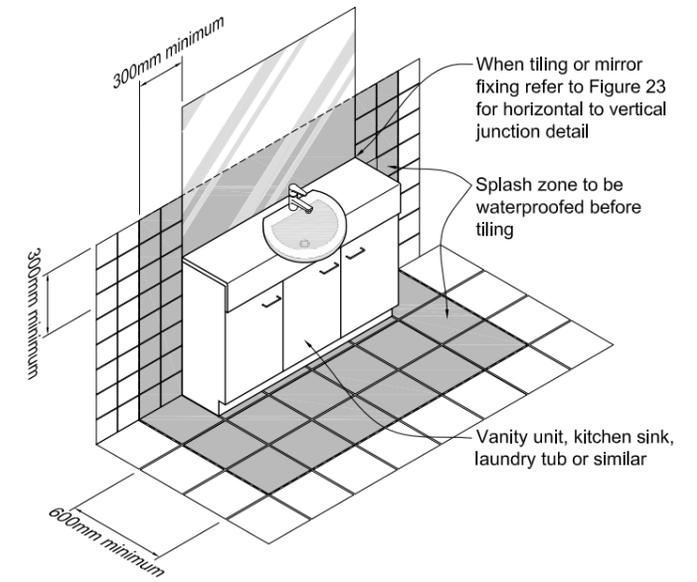


Note: Alternatively a PVC control jointer supplied by James Hardie can also be used to form a control joint.

Sealing around splash zones (showers)

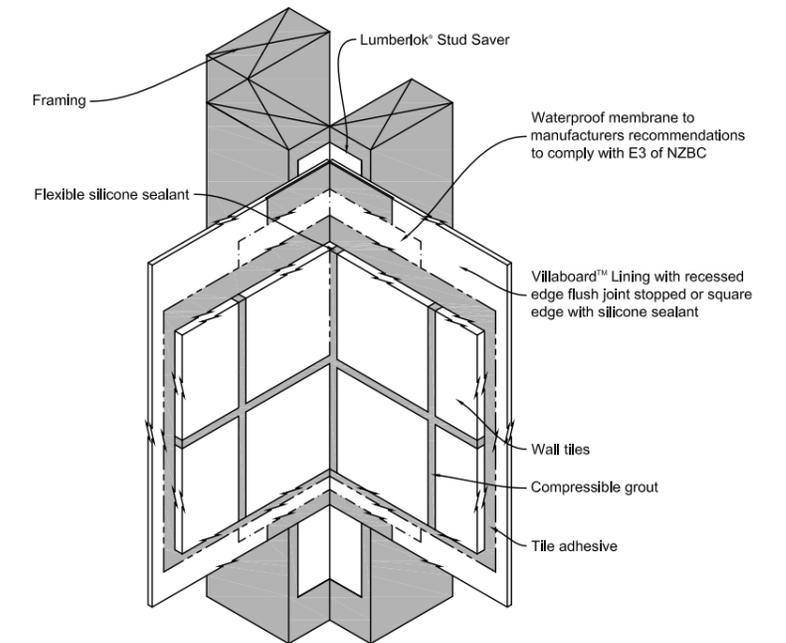


Sealing around splash zones

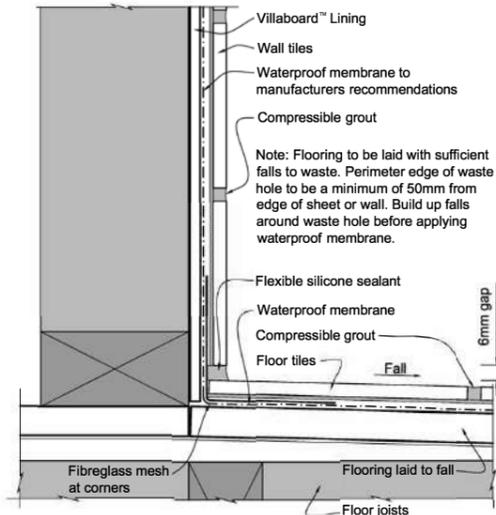


Note: The extent of floor or wall waterproofing depends on the extent of water to be splashed over these areas. Recommended area to be waterproofed outside of bath, shower or vanity is a minimum of 300mm on walls and 600mm on floors.

Wall to wall wet area tiled wall internal corner



Wall to floor junction

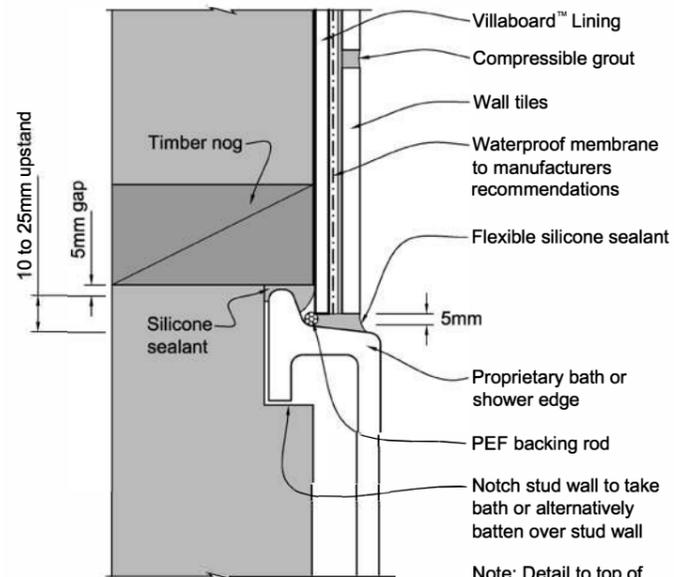


Note: Flooring to be laid with sufficient falls to waste. Perimeter edge of waste hole to be a minimum of 50mm from edge of sheet or wall. Build up falls around waste hole before applying waterproof membrane.

- Note for screeds:
1. The thickness of screeds should be applied to achieve the desired slope in accordance with the manufacturers recommendations.
 2. Clean down the surface of the sheet flooring thoroughly. Apply a coat of bonding chemical to improve the bonding of the mortar bed to the floor.
 3. To prevent cracking of the floor tiles, the mortar bed must be reinforced over all joints in floor sheets with 150mm wide galvanised mesh placed centrally over joints and in the centre of bedding.
 4. Control joints in the flooring must be continued through the tiles.
 5. Epoxy mortar screeds may also be used.

Clause 8.5 for further information

Wall to acrylic bath/shower

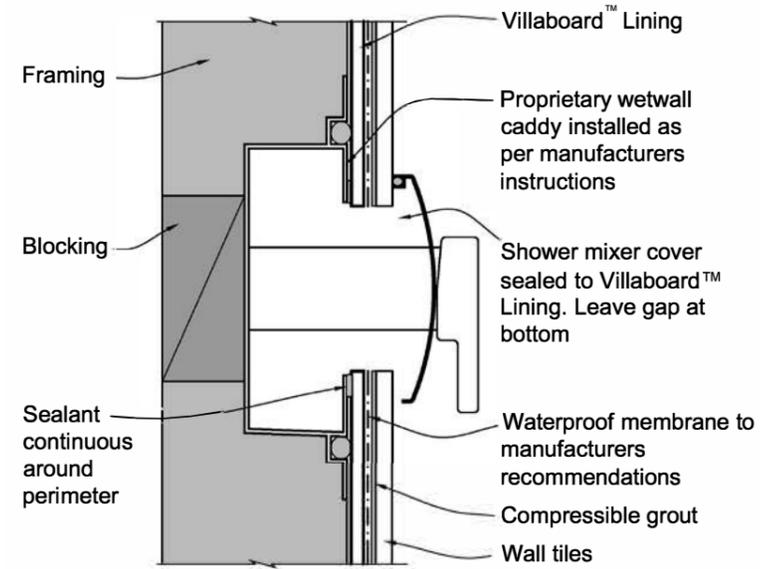


Note: Detail to top of non tiled vanity or sink is similar

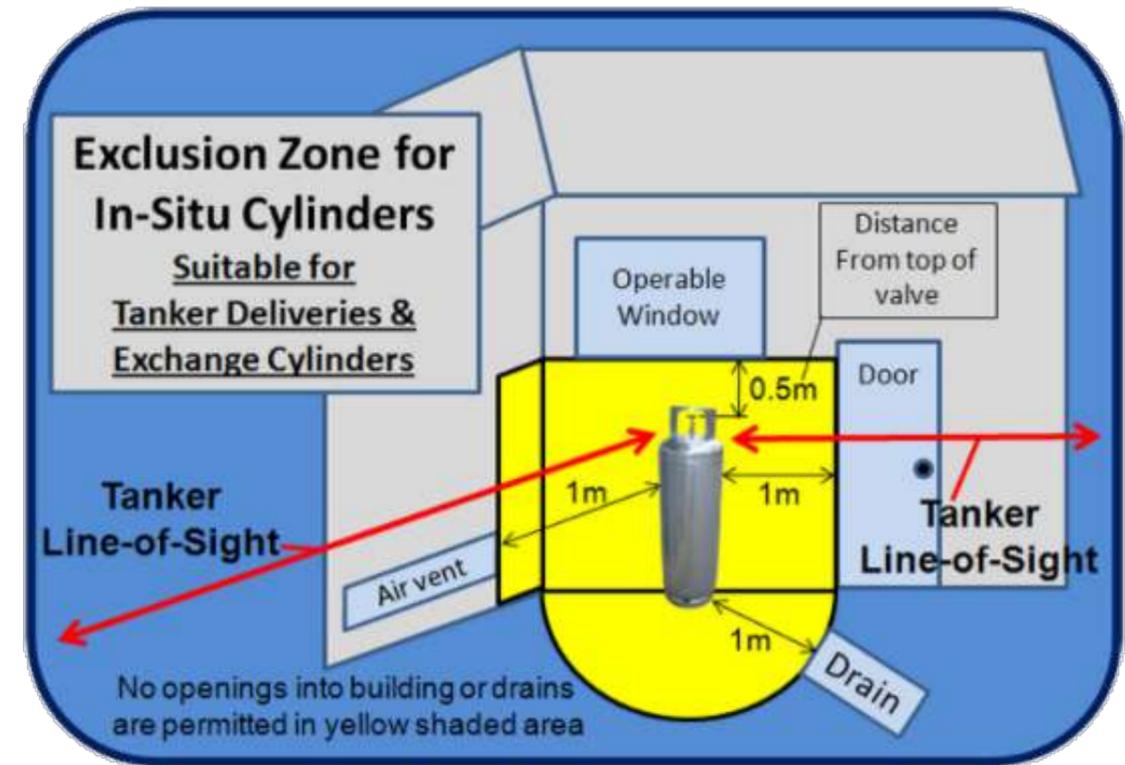
7.4 Wet area penetration

Sealing penetrations as per BRANZ Good Tiling Practice or as per Figure 26.

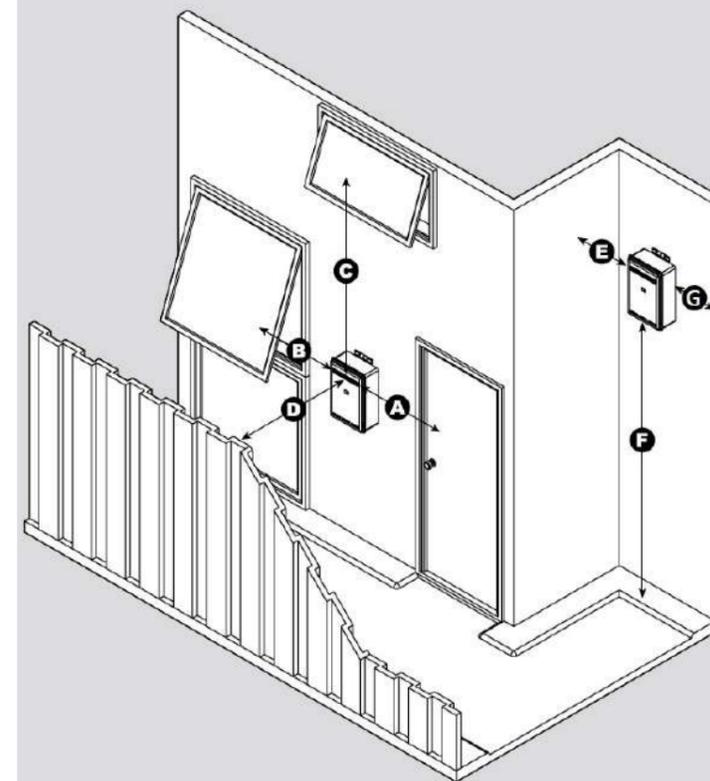
Figure 26: Wet wall caddy - optional



Note: Seal cut edges of Villaboard™ Lining



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.

Fire Place Details

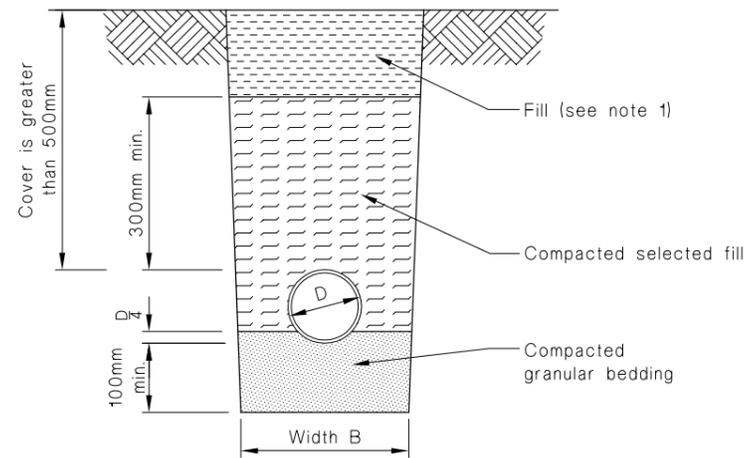
SMITH
380C OPITO BAY ROAD, OPITO BAY
KERIKERI

Rev No.	Revision	Date
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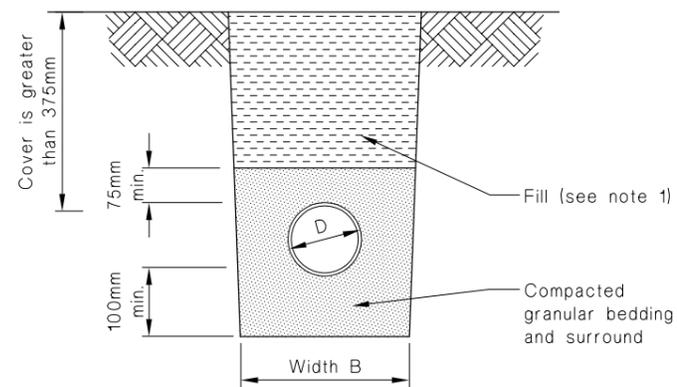
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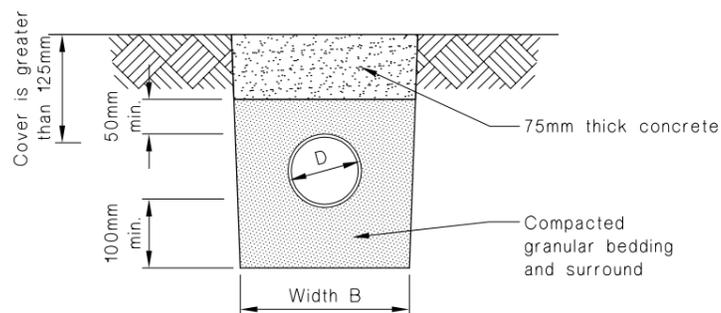
Figure 13: Bedding and Backfilling
Paragraphs 3.9.2, 3.9.4 and 3.9.5



(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

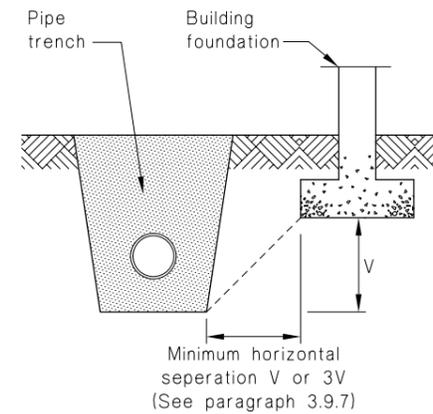
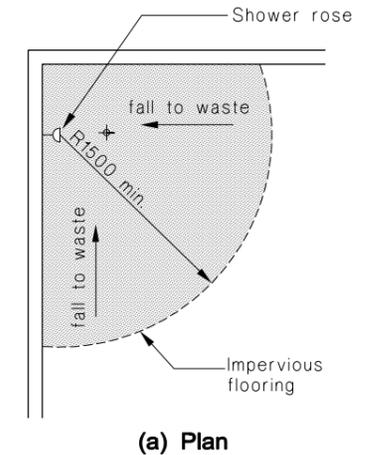
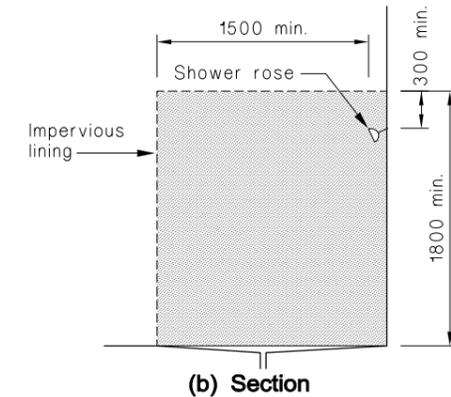


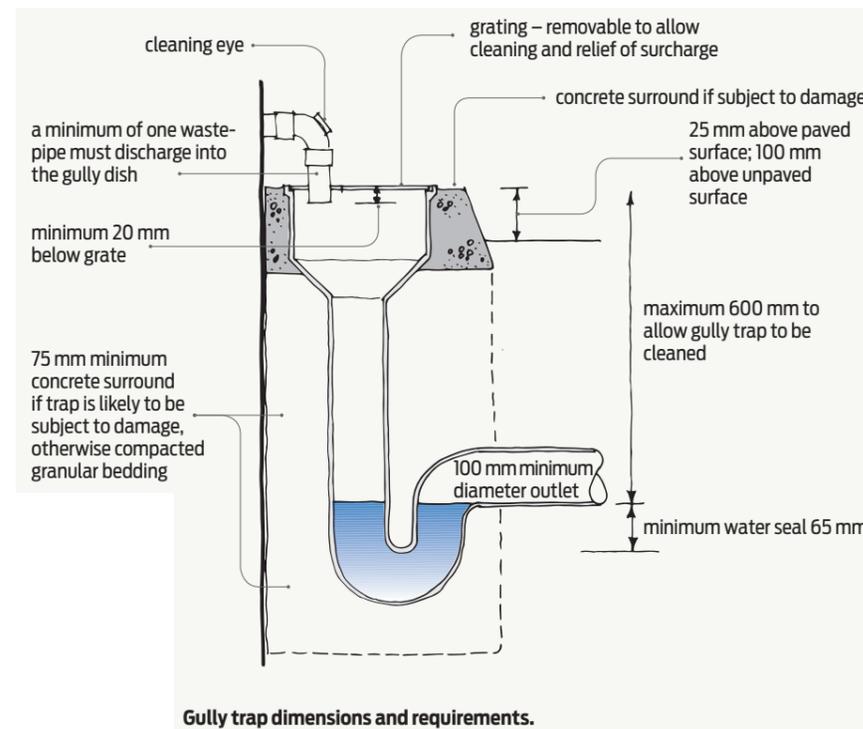
Figure 5: Wall and Floor Coverings to Unenclosed Showers
Paragraphs 3.3.1 and 3.3.5



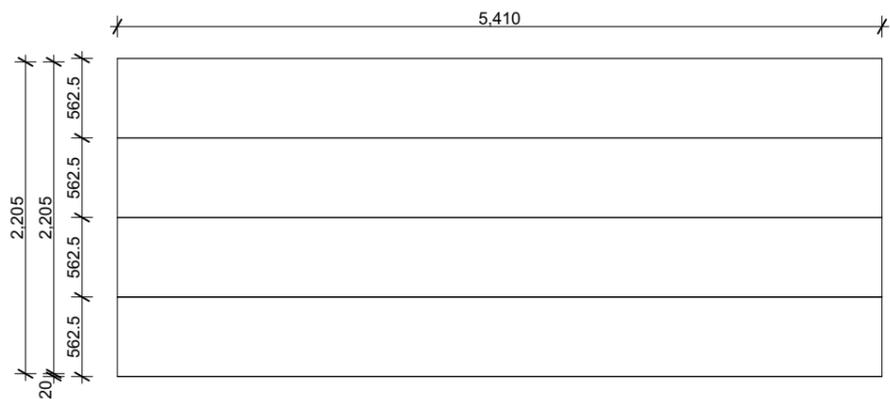
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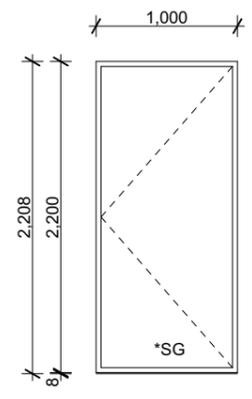
(b) Section



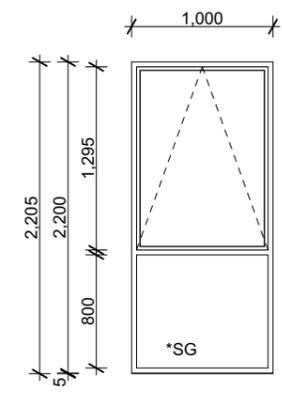
Gully trap dimensions and requirements.



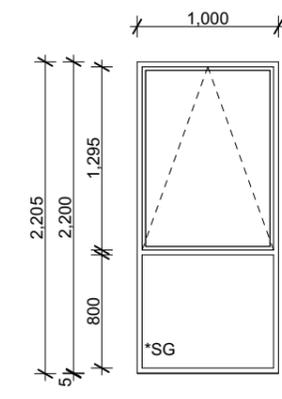
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GARAGE DOOR
COLORSTEEL INSULATED
2x REMOTES & DOOR SWITCH



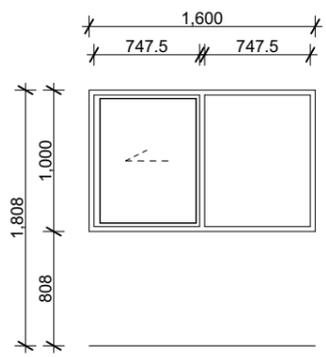
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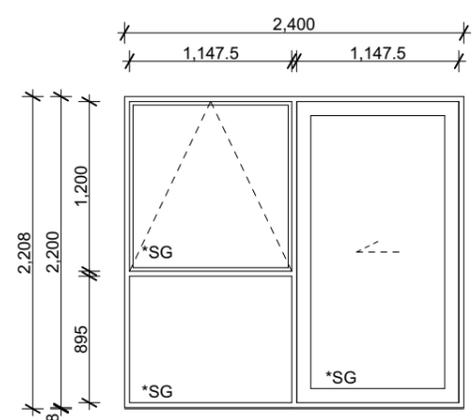
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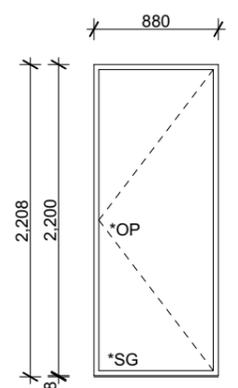
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HALL



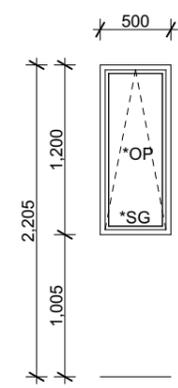
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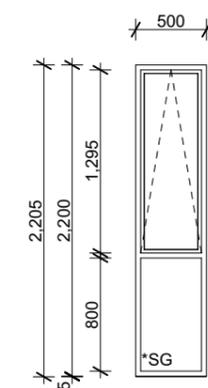
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W006
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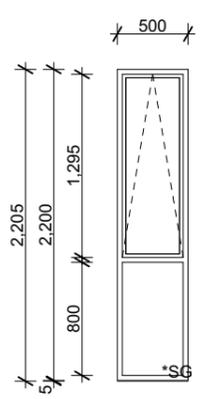


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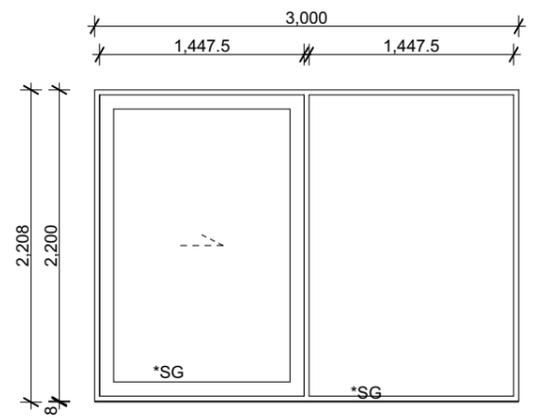


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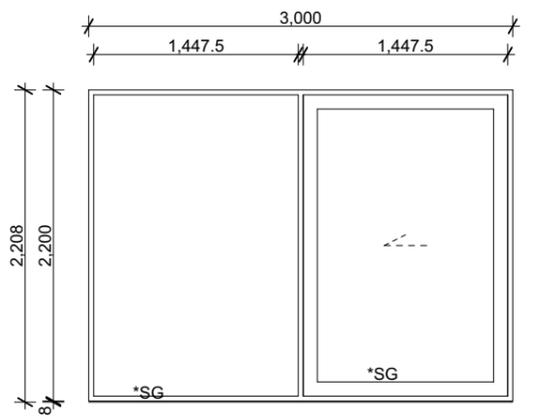
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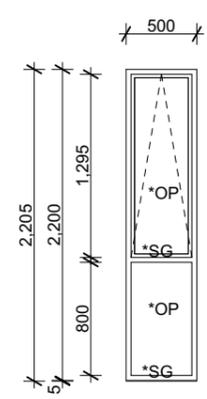
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BED1



W010
BED1



W011
BED 3



W012
ENS

JOINERY SCHEDULE NOTES:
- ALL DIMENSIONS ARE TO BE MEASURED AND CHECKED ON SITE BY JOINERY MANUFACTURER PRIOR TO COMMENCING MANUFACTURE.

GENERAL NOTES
- FLOOR PLANS AND ELEVATIONS TAKE PRECEDENCE OVER WINDOW SCHEDULE.
- ALL UNITS VIEWED FROM THE OUTSIDE
- ALL DIMENSIONS SHOWN ARE UNIT SIZE ALLOW 7.5MM EACH SIDE OF BOX SIZE I.E. 15MM OVERALL TO FRAMING

FRAME
- AS SHOWN
- 1.3UG THERMALLY BROKEN DOUBLE GLAZED POWDER COATED ALUMINIUM JOINERY. (FLAXPOD)

HARDWARE
- ALL HINGED DOORS TO HAVE SCP GRIPSET AND GUARDSMAN HOLDBACK STOPS
- RESTRICTOR STAYS AND DOUBLE SNIBS ON ALL OPENING WINDOWS ON SECOND STOREY LEVEL PLUS ALL OPENINGS <1.0m HIGH TO FFL AND FALL >1.0m TO EXTERNAL GROUND LEVEL.
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- KEY OPERATION IN THE DIRECTION OF THE ESCAPE IS NOT PERMITTED

GLAZING
- *GLAZING MIN. R0.37*
- SAFETY GLAZING - ALL SAFETY GLAZING LOCATIONS AND REQUIREMENTS AS PER NZS 4223:PART 3
- ALL BATHROOM AND / OR TOILET WINDOWS OR DOORS WHERE CLEAR GLAZING IS USED ARE TO HAVE BLINDS OR SIMILAR PRIVACY SCREEN INSTALLED

INSTALLATION
- POWDER COATED HEAD FLASHINGS TO MATCH.
- H3.1 TIMBER REVEALS TO SUIT ARCHITRAVES. INSTALL TO MANUFACTURERS RECOMMENDATIONS.
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- ALL FIXINGS AND FASTENINGS TO COMPLY WITH NZS3604-2011 PART 4 'DURABILITY' AND NZBC B2
- WINDOWS INSTALLATION, IN ACCORDANCE WITH WANZ RECOMMENDED PRACTICE.
- RETURN BUILDING WRAP AND PROVE AIR SEALS AND FLASHINGS AS PER WANZ.
- SILL SUPPORT BARS TO BE PROVIDED TO ALL EXTERNAL WINDOWS & DOORS WHERE REQUIRED TO COMPLY WITH E2/AS1 AND WANZ EVALUATION METHOD EM6
- PROTECTO WRAP TO ALL WINDOWS AND DOORS

ESCAPE ROUTES
KEYED LOCK MECHANISMS NOT PERMITTED ON DOORS IN THE DIRECTION OF ESCAPE ON ESCAPE PATHS AND FINAL EXITS AS PER C1-C6 PART 2.

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*SG = SAFETY GLAZING IN ACCORDANCE WITH NZS 4223.3

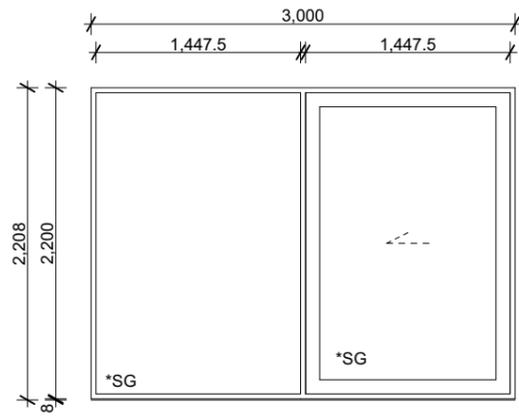
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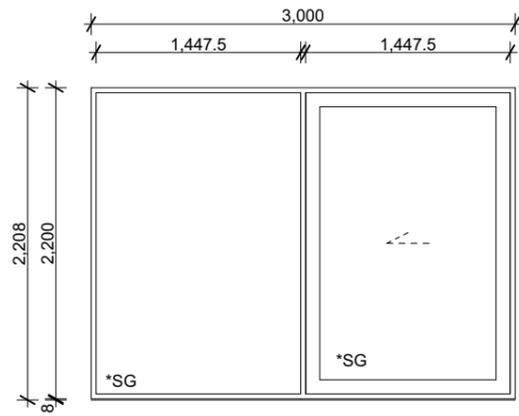
Door & Window Schedule

SMITH
380C OPITO BAY ROAD, OPITO BAY
KERIKERI

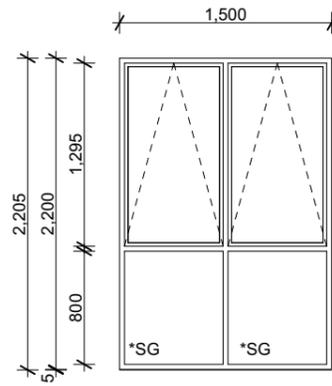
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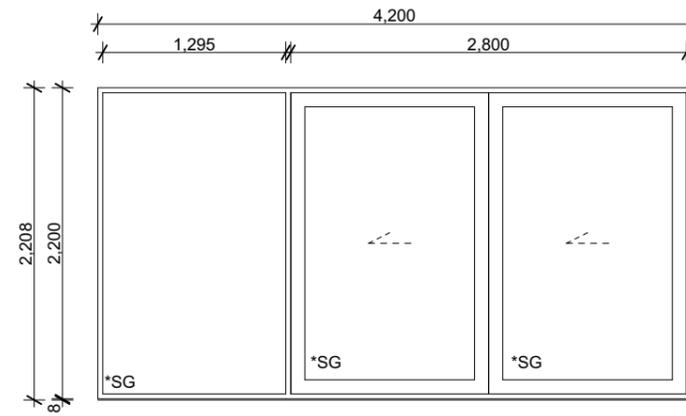
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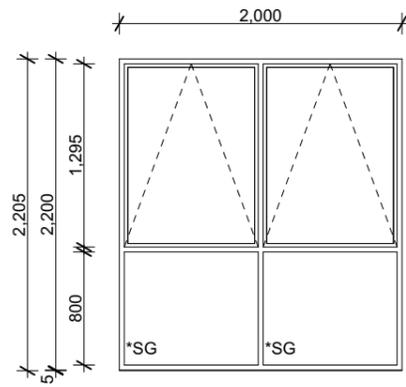
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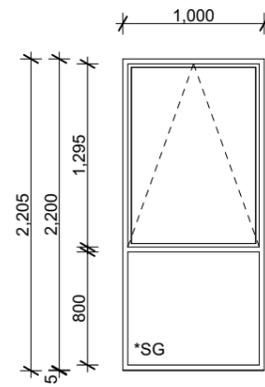


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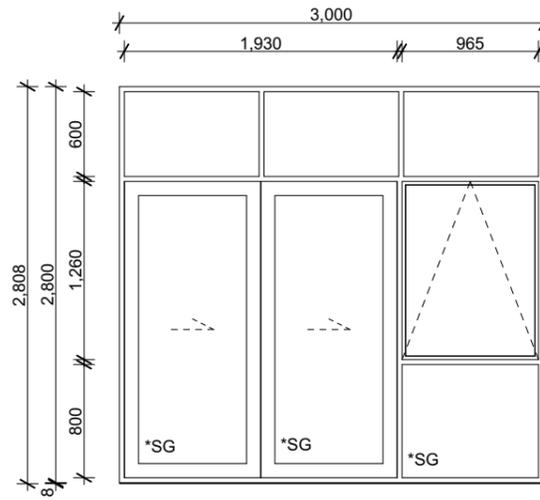


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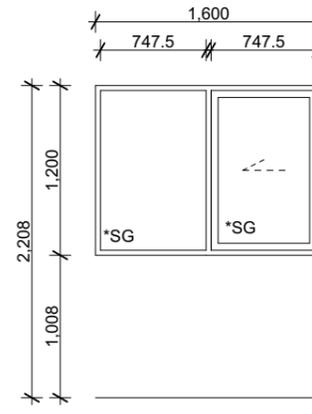
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W018
DINING



W019
DINING



W020
KITCHEN

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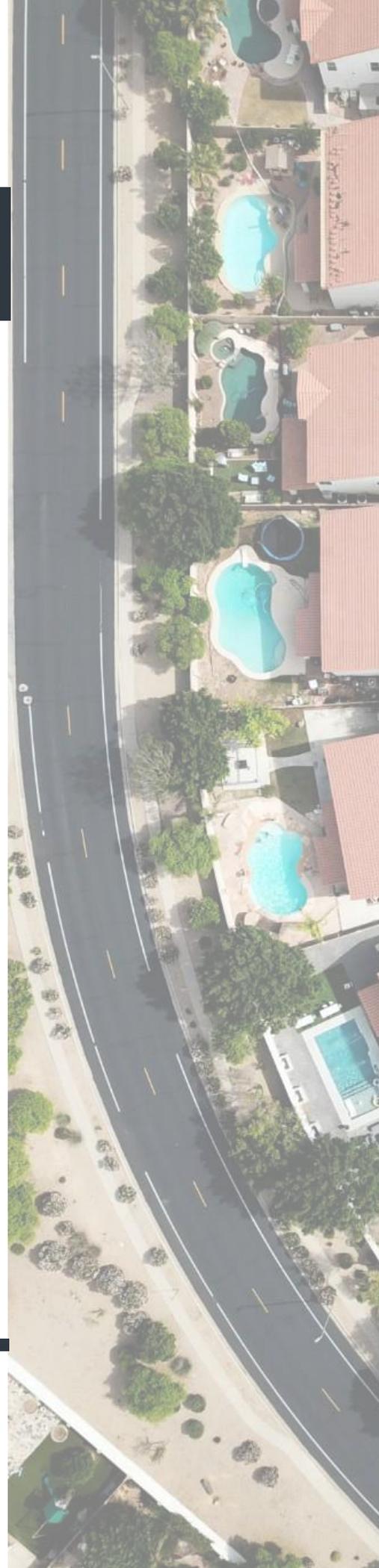
geologix
consulting engineers

STORMWATER DESIGN REPORT

380C OPITO BAY ROAD, KERIKERI

PAUL AND JENNIFER SMITH

C0640-SW-01
FEBRUARY 2026
REVISION 1





DOCUMENT MANAGEMENT

Document Title	Stormwater Design Report
Site Reference	380C Opito Bay Road, Kerikeri
Client	Paul and Jennifer Smith
Geologix Reference	C0640-SW-01
Issue Date	February 2026
Revision	01
Prepared by	Gerard McHardy Civil Design Engineer, BEng Civil, MEngNZ 
Reviewed by	Sebastian Hicks Principal Civil Engineer, CPEng Reg. 1168062, IntPE(NZ) /APEC Engineer, CMEngNZ 
Approved by	Edward Collings Managing Director, CEnvP Reg. 0861, CPEng Reg. 1033153, CMEngNZ
File Reference	Z:\Projects\C0600-C0699\C0640N - 380C-8 Opito Bay Road, Kerikeri\06 - Reports

REVISION HISTORY

Date	Issue	Prepared	Reviewed	Approved
February 2026	First Issue – For Consent	GM	SH	EC



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TABLES

	TABLE 1: SUMMARY OF SURFACE AREA IN POST-DEVELOPMENT CONDITIONS	6
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1 INTRODUCTION

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

The purpose of this report is to provide a specific design of a stormwater management solution to support the proposed construction of a new dwelling in a Coastal Living Zone at 380C Opito Bay Road, Kerikeri, the 'site'.

This report may be used to support the FNDC Resource Consent and Building Consent processes, particularly for addressing suitable discharge in accordance with TP10 Design guideline manual, stormwater treatment devices 2003.

This report should be read in conjunction with the following documents:

- Geologix Geotechnical Investigation C0640NA-TM01¹, prepared as a separately headed document

2 PROPOSED DEVELOPMENT

Architectural plans have been provided to us at the time of writing, prepared by Arcline Architecture Ltd, titled New Residential Dwelling for Smith, dated 19/01/2026.

The development involves the construction of a new single storey dwelling and associated driveway and parking/manoeuvring area.

The site plan has been reproduced as drawing 400 within Appendix A.

If architectural drawings and/or topographical survey data are supplied to Geologix after the time of writing, this report may require an update to the scope and/ or recommendations of this report.

3 SITE DESCRIPTION

The site is presented to the south of Opito Bay Road. The property is legally described as Lot 8 DP 89303 and is an irregularly shaped parcel of land with a gross site area of approximately 3,440 m². The site setting is presented schematically as Figure 1 below.

Topographically the site is situated over moderately to steeply sloping land dipping to the south/southeast with a natural slope angle ranging approximately 15 to 24°.

Furthermore, beyond the southern boundary, within the esplanade reserve, the ground becomes steep to very steep, being a shallow cliff to the CMA

The site setting is presented schematically as Figure 1 below.

¹ Geologix Geotechnical Design Report, C0722A-TM01, Revision 1



Figure 1: Site Setting



3.1 Existing Reticulated Networks

The FNDC GIS database Local Maps indicates the site is not serviced by a reticulated stormwater network.

4 STORMWATER DESIGN

4.1 Proposed Stormwater Management

It is proposed to manage the stormwater runoff from the proposed dwelling, associated driveway and paved areas and surface runoff above the proposed retaining wall by installing dissipation devices and an open channel, suitably sized to manage the 10% AEP storm event.

Overflow from the rainwater tanks and paved areas directly adjacent to the new dwelling will discharge to an aboveground level spreader below the dwelling and runoff from the



driveway will be collected by two channel drains across the driveway and discharged to riprap dissipation devices.

Surface runoff above the proposed retaining wall, including any residual runoff from the driveway’s upstream outlets, will be collected within a 0.2m deep, 0.4m wide open channel and directed around the building platform to discharge to a riprap dissipation device.

As the site discharges directly to the sea below the site, no attenuation is recommended.

4.2 Design Storm

- Dissipation devices will be provided to for the 10% AEP design storm to mitigate potential erosion.
- Rainfall intensities are referenced from the NIWA HIRDDs database Version 4.
- Post-development stormwater rainfall is adjusted for climate change of 20% in accordance with the FNDC Engineering Standards.

4.3 Post-development impervious area

- Summary of impervious areas for post development conditions is summarised as per Table 1 below:

Table 1: Summary of Surface Area in Post-development Conditions

Surface	Type	Area	Difference	Design Concept
Post-Development Condition				
Roof Area	Impervious	303 m ²	+ 303 m ²	Aboveground level spreader
Pavement Area & Lower Section of Driveway	Impervious	182 m ²	+ 182 m ²	Aboveground level spreader
Driveway Area, Upper & Middle Section	Impervious	132m ²	+ 132 m ²	Riprap dispersion devices
Total		617 m²		

Layout and elevations/sections of the level spreader are presented on Drawing 401 in Appendix A.

4.4 Dispersion Devices

The direct discharge of water tank overflow in a concentrated manner can cause scour and erosion in addition to excessive saturation of shallow soils.

Roof water will be captured in rainwater tanks and used for drinking supply needs. Overflows from rainwater tanks will be conveyed in sealed pipes to a designated discharge point downslope of the proposed building and dispersed by means of an



aboveground level spreader. Additionally, the lower section of driveway and parking/manoeuvring area will be directed towards the level spreader.

Runoff from the middle and upper sections of the driveway will be collected in 200mm wide Marley channel drains laid across the carriageway and discharged to riprap dispersion devices.

Surface runoff above the proposed retaining wall will be collected within a 0.2m deep, 0.4m wide, open channel (vee-shaped) and directed around the building platform to discharge to a riprap dissipation device. The open channel may alternatively be lined with stone-pitching, if preferable and practical on site.

A schematic of the proposed level spreader design is presented within Appendix A on Drawing No 401 and summarised in Table 2 below. The riprap dispersion device measurements are summarised in Table 3. Calculations to support the designs are included in Appendix B.

Table 2: Summary of Level Spreader Dispersion Device

Impervious Area to Dispersion Device	Velocity at single spreader orifice	Tank outlet pipe diameter	Spreader pipe diameter	Dispersion Pipe Length	Spreader orifice size	Dispersion Device Type
485 m ² (Lower section of driveway, parking & roof)	0.87 m/s	0.1 m	0.15 m	8.55 m	25 mm, spaced @150mm intervals	Above ground dispersion device.

Table 3: Summary of Riprap Dispersion Device

Area to Dispersion Device	Apron width W	Apron length L	Apron depth D	Diameter of stone (D ₅₀)	Design case
66 m ² concrete (Upper and middle section of driveway)	0.5 m	1.1 m	66 mm	33 mm	Design Minimum
Channel outlet 634m ² Pervious & 66 m ² concrete	0.5 m	1.1 m	66 mm	33 mm	Design Minimum
	1.0 m	2.0 m	150 mm	100 mm	<u>Recommended</u> (for all devices above)



4.5 Stormwater Quality

Stormwater quality will be provided by:

- Leaf guards on roof guttering and first flush devices on roof guttering and downpipes.
- Silt traps within channel drains and catchpits.

5 CONSTRUCTION MONITORING AND VERIFICATION

During construction it is recommended that specific monitoring is undertaken by a professional Civil Engineer in accordance with the recommendations of this report. It is anticipated that a professional Civil Engineer will be required to provide inspection of:

- Installation of the level spreader, confirming height at diameter of outlet orifices.
- Confirm dimensions of rip rap dispersal devices.
- Confirm dimensions of open channel.

Civil construction monitoring is recommended under CM2 level works. This should be undertaken as part time supervision by a qualified Civil Engineer, backed by a PS4 Producer Statement.

6 LIMITATIONS

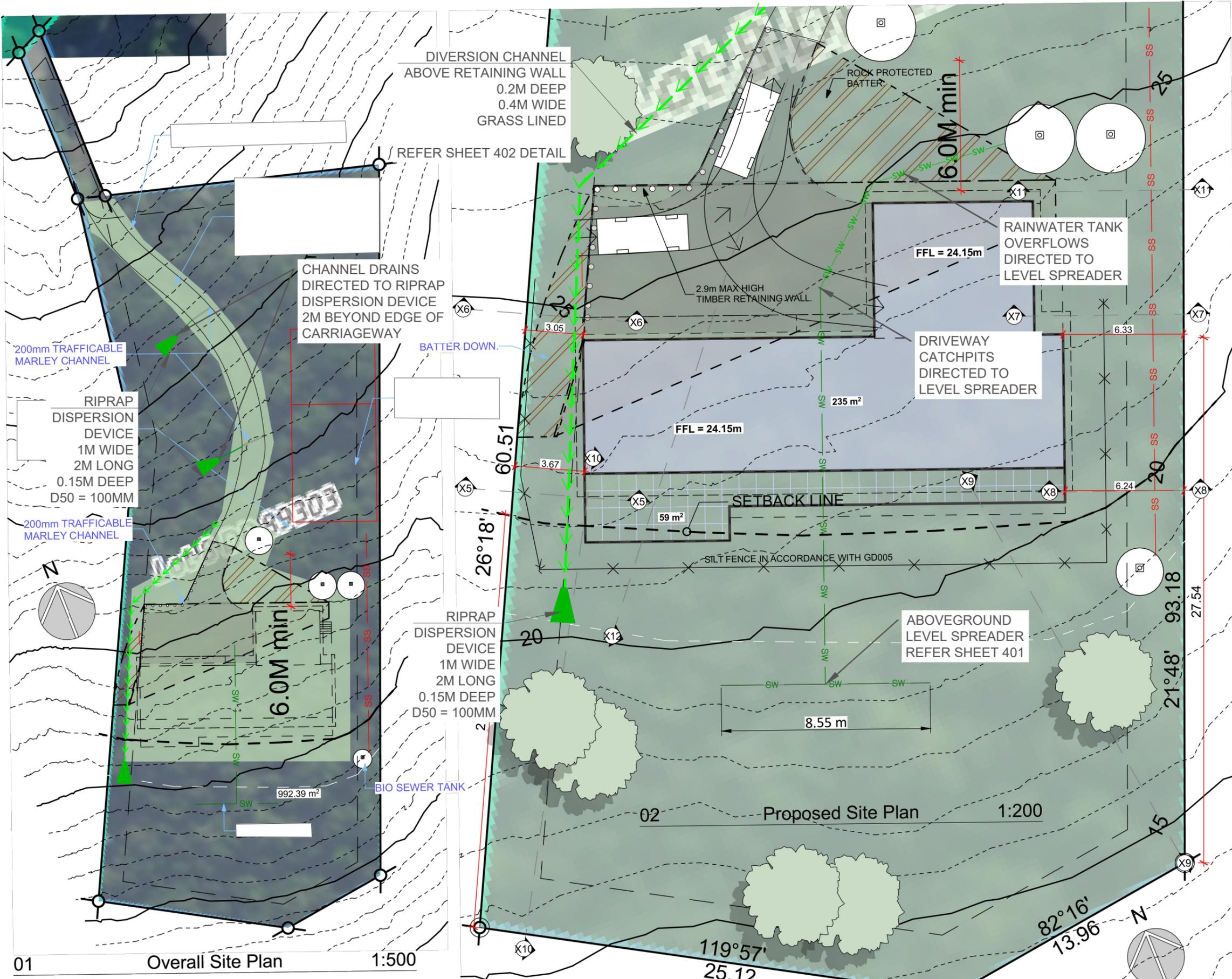
This report has been prepared for Paul and Jennifer Smith as our Client. It may be relied upon by our Client and their appointed Consultants, Contractors and for the purpose of Consent as outlined by the specific objectives in this report. This report and associated recommendations, conclusions or intellectual 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.



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APPENDIX A

Drawings



GENERAL NOTES

1. DRAWING REPRODUCED FROM ARCLINE ARCHITECTURE, SHEET A1001 PROPOSED SITE PLAN, DATED 19/01/2026.
2. DO NOT SCALE FROM THIS DRAWING.
3. CONTRACTOR IS TO ORGANISE ALL SET OUT, INSPECTIONS AND MONITORING AS REQUIRED TO MEET CONSENT CONDITIONS.

1	CONSENT	02/2026
Revision	Issue	Date



AUCKLAND | NORTHLAND

Project Name and Address
380C OPITO BAY ROAD
KERIKERI

Project
C0640

Drawn By
GM

Client
PAUL SMITH

Sheet Title
STORMWATER PLAN

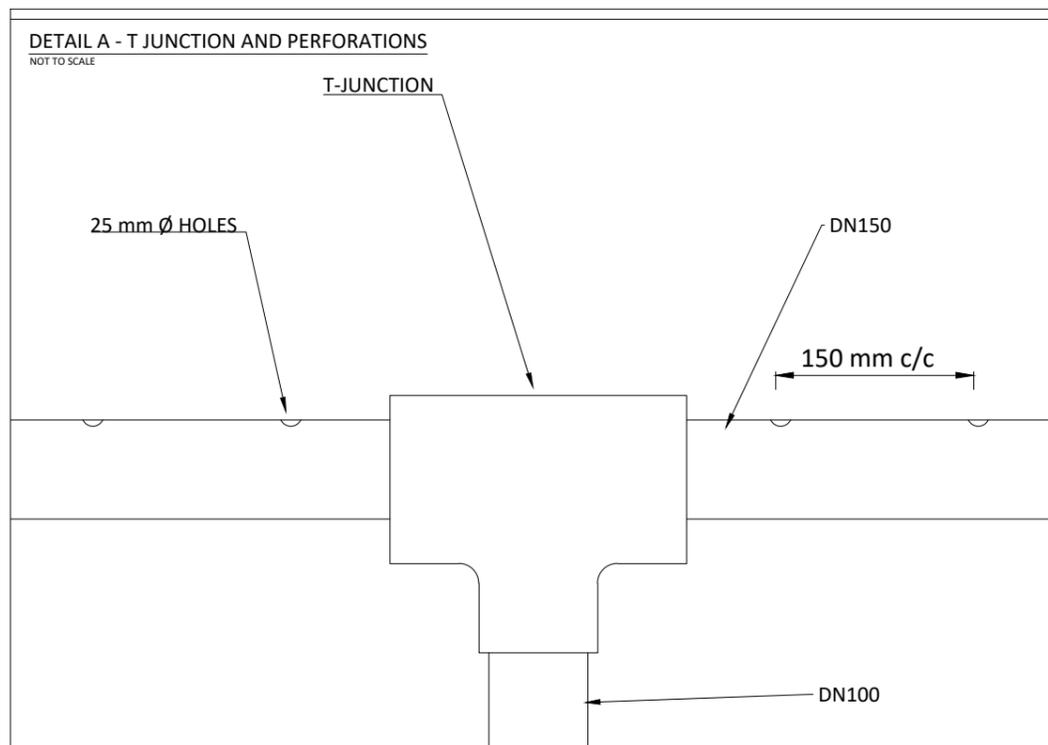
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400

FILE PATH: Z:\Projects\0600-C0640-380C-Opito Bay Road, Kerikeri\07 - Technical & Drawings\Drawings\0640-Stormwater Plans.dwg\0640-Stormwater Plans.dwg

PLOTED: 03/05/2022

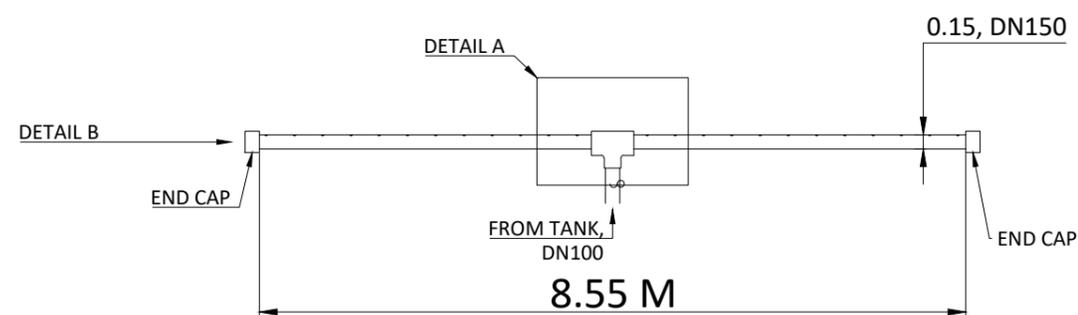
GENERAL NOTES

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.



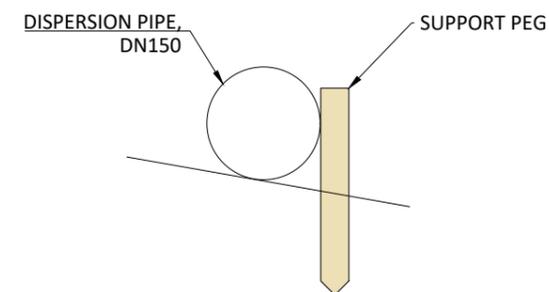
OPTION 1: DISPERSION VIA ABOVE GROUND PIPE

NOT TO SCALE



DETAIL B - SIDE VIEW

NOT TO SCALE



Revision	Issue	Date
1	CONSENT	02/2026



AUCKLAND | NORTHLAND

Project Name and Address
380C OPITO BAY ROAD
KERIKERI

Project C0640	Drawn By GM
-------------------------	-----------------------

Client
PAUL SMITH

Sheet Title
STORMWATER DETAILS

Sheet

401

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.

1	CONSENT	02/2026
Revision	Issue	Date



AUCKLAND | NORTHLAND

Project Name and Address
**380C OPITO BAY ROAD
 KERIKERI**

Project
C0640

Drawn By
GM

Client
PAUL SMITH

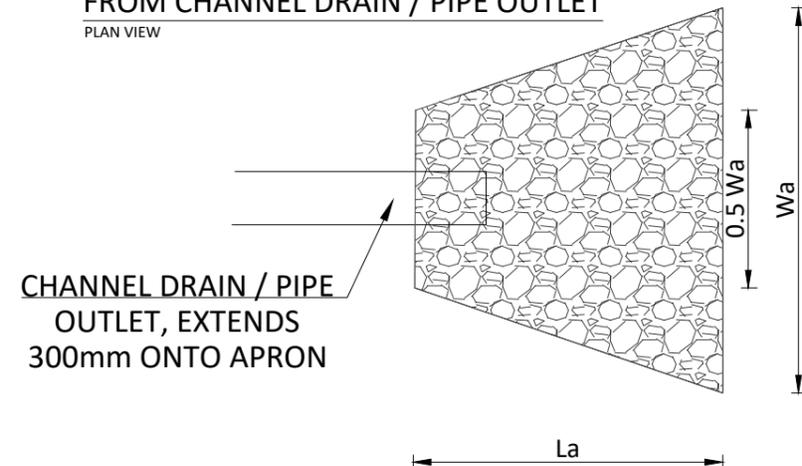
Sheet Title
DISCHARGE DETAILS

Sheet

402

RIP RAP ENERGY DISSIPATION DEVICE FROM CHANNEL DRAIN / PIPE OUTLET

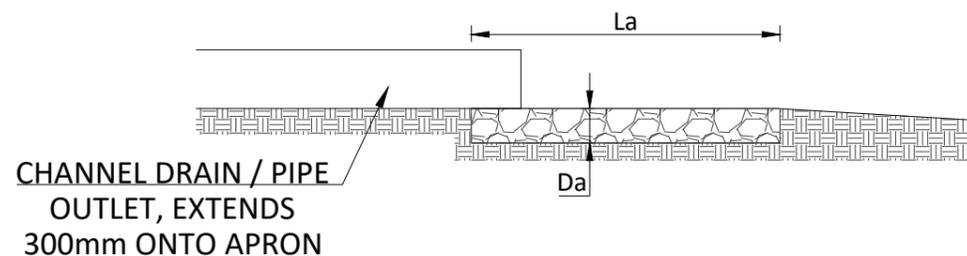
PLAN VIEW



CHANNEL DRAIN / PIPE
 OUTLET, EXTENDS
 300mm ONTO APRON

RIP RAP ENERGY DISSIPATION DEVICE FROM CHANNEL DRAIN / PIPE OUTLET

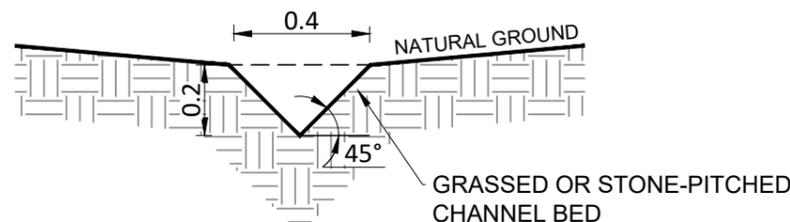
SIDE VIEW



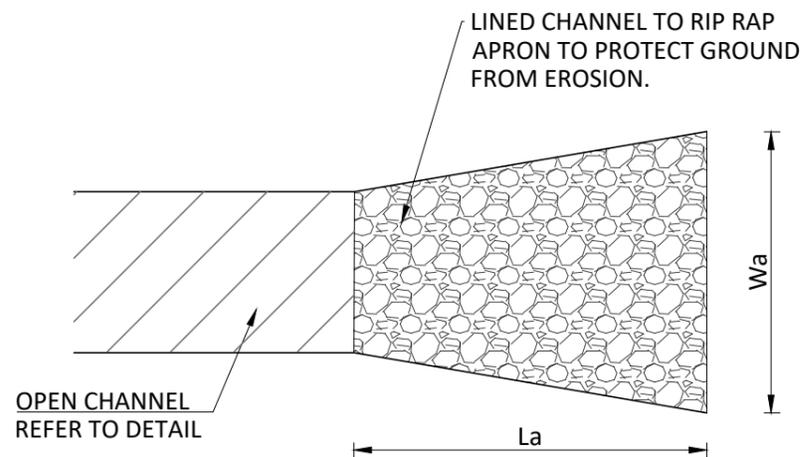
CHANNEL DRAIN / PIPE
 OUTLET, EXTENDS
 300mm ONTO APRON

RIP RAP ENERGY DISSIPATION DEVICE FROM OPEN CHANNEL

PLAN VIEW



OPEN CHANNEL VEE-DRAIN
 1:25



ENERGY DISSIPATION DEVICE SPECIFICATION					
DEVICE	CHANNEL/ SWALE DEPTH	DIA. OF STONES (D ₅₀)	Apron Width, Wa	Apron Length, La	Apron Depth, Da
ALL	VARIABLE	100	1000	2000	150

Note: All dimensions in mm



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APPENDIX B

Stormwater Calculations

Project Ref:	C0640
Project Address:	380C OPITO BAY ROAD, KERIKERI
Prepared By:	CONCEPT FUTURE DEVELOPMENT
Date:	22/1/2026 REV 1

PEAK RUNOFF ASSESSMENT



CATCHMENT 1 - UPPER SECTION OF DRIVEWAY CH 0 - 20

CATCHMENT FLOW ESTIMATED USING THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF CLIMATE CHANGE (20% FACTOR AS PER 2023 FNDC ENGINEERING STANDARDS).

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

PREDEVELOPMENT SCENARIO				POST DEVELOPMENT SCENARIO			
ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION	ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
PR CONC ROW	66	0.67	PASTURE/ GRASS	IMPERVIOUS	66	0.96	PROPOSED CONC ROW
PR GRAVEL ROW	0	0.83	UNSEALED ROW	IMPERVIOUS	0	0.83	PROPOSED GRAVEL ROW
EXISTING ROW	0	0.96	EXISTING CONCRETE	IMPERVIOUS	0	0.96	EXISTING CONC ROW
TOTAL	66	TYPE D	PR = PROPOSED	TOTAL	66	TYPE D	

PRE TO POST DEVELOPMENT RUNOFF - 50 % AEP

50 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	67.5	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
50 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	81.0	mm/hr	
50 % AEP PRE DEVELOPMENT PEAK FLOW	0.99	l/s	
50 % AEP POST DEVELOPMENT PEAK FLOW	1.43	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	0.43	l/s	

PRE TO POST DEVELOPMENT RUNOFF - 10 % AEP

10 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	102.0	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
10 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	122.4	mm/hr	
10 % AEP PRE DEVELOPMENT PEAK FLOW	1.50	l/s	
10 % AEP POST DEVELOPMENT PEAK FLOW	2.15	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	0.65	l/s	

PRE TO POST DEVELOPMENT RUNOFF - 1 % AEP

1 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	153.0	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
1 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	183.6	mm/hr	
1 % AEP PRE DEVELOPMENT PEAK FLOW	2.26	l/s	
1 % AEP POST DEVELOPMENT PEAK FLOW	3.23	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	0.98	l/s	

Project Ref:	C0640	PEAK RUNOFF ASSESSMENT	
Project Address:	380C OPITO BAY ROAD, KERIKERI		
Prepared By:	CONCEPT FUTURE DEVELOPMENT		
Date:	22/1/2026 REV 1		
CATCHMENT 2 - MIDDLE SECTION OF DRIVEWAY CH 20 - 40			

CATCHMENT FLOW ESTIMATED USING THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF CLIMATE CHANGE (20% FACTOR AS PER 2023 FNDC ENGINEERING STANDARDS).

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

PREDEVELOPMENT SCENARIO				POST DEVELOPMENT SCENARIO			
ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION	ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
PR CONC ROW	66	0.67	PASTURE/ GRASS	IMPERVIOUS	66	0.96	PROPOSED CONC ROW
PR GRAVEL ROW	0	0.83	UNSEALED ROW	IMPERVIOUS	0	0.83	PROPOSED GRAVEL ROW
EXISTING ROW	0	0.96	EXISTING CONCRETE	IMPERVIOUS	0	0.96	EXISTING CONC ROW
TOTAL	66	TYPE D	PR = PROPOSED	TOTAL	66	TYPE D	

PRE TO POST DEVELOPMENT RUNOFF - 50 % AEP			
50 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	67.5	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
50 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	81.0	mm/hr	
50 % AEP PRE DEVELOPMENT PEAK FLOW	0.99	l/s	
50 % AEP POST DEVELOPMENT PEAK FLOW	1.43	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	0.43	l/s	

PRE TO POST DEVELOPMENT RUNOFF - 10 % AEP			
10 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	102.0	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
10 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	122.4	mm/hr	
10 % AEP PRE DEVELOPMENT PEAK FLOW	1.50	l/s	
10 % AEP POST DEVELOPMENT PEAK FLOW	2.15	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	0.65	l/s	

PRE TO POST DEVELOPMENT RUNOFF - 1 % AEP			
1 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	153.0	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
1 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	183.6	mm/hr	
1 % AEP PRE DEVELOPMENT PEAK FLOW	2.26	l/s	
1 % AEP POST DEVELOPMENT PEAK FLOW	3.23	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	0.98	l/s	

Project Ref:	C0640	PEAK RUNOFF ASSESSMENT	
Project Address:	380C OPITO BAY ROAD, KERIKERI		
Prepared By:	CONCEPT FUTURE DEVELOPMENT		
Date:	22/1/2026 REV 1		
CATCHMENT 3 - LOWER SECTION OF DRIVEWAY, PARKING & ROOF			

CATCHMENT FLOW ESTIMATED USING THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF CLIMATE CHANGE (20% FACTOR AS PER 2023 FNDC ENGINEERING STANDARDS).

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

PREDEVELOPMENT SCENARIO				POST DEVELOPMENT SCENARIO			
ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION	ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
PR CONC ROW	485	0.67	PASTURE/ GRASS	IMPERVIOUS	485	0.96	CONC ROW, PARKING AND ROOF
PR GRAVEL ROW	0	0.83	UNSEALED ROW	IMPERVIOUS	0	0.83	PROPOSED GRAVEL ROW
EXISTING ROW	0	0.96	EXISTING CONCRETE	IMPERVIOUS	0	0.96	EXISTING CONC ROW
TOTAL	485	TYPE D	PR = PROPOSED	TOTAL	485	TYPE D	

PRE TO POST DEVELOPMENT RUNOFF - 50 % AEP

50 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	67.5	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
50 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	81.0	mm/hr	
50 % AEP PRE DEVELOPMENT PEAK FLOW	7.31	l/s	
50 % AEP POST DEVELOPMENT PEAK FLOW	10.48	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	3.16	l/s	

PRE TO POST DEVELOPMENT RUNOFF - 10 % AEP

10 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	102.0	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
10 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	122.4	mm/hr	
10 % AEP PRE DEVELOPMENT PEAK FLOW	11.05	l/s	
10 % AEP POST DEVELOPMENT PEAK FLOW	15.83	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	4.78	l/s	

PRE TO POST DEVELOPMENT RUNOFF - 1 % AEP

1 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	153.0	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
1 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	183.6	mm/hr	
1 % AEP PRE DEVELOPMENT PEAK FLOW	16.57	l/s	
1 % AEP POST DEVELOPMENT PEAK FLOW	23.75	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	7.17	l/s	

Project Ref:	C0640	PEAK RUNOFF ASSESSMENT	
Project Address:	380C OPITO BAY ROAD, KERIKERI		
Prepared By:	CONCEPT FUTURE DEVELOPMENT		
Date:	22/1/2026 REV 1		
CATCHMENT 4 - CATCHMENT ABOVE RET. WALL, PART DRIVEWAY & BUSH			

CATCHMENT FLOW ESTIMATED USING THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF CLIMATE CHANGE (20% FACTOR AS PER 2023 FNDC ENGINEERING STANDARDS).

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

PREDEVELOPMENT SCENARIO				POST DEVELOPMENT SCENARIO			
ITEM	AREA, A, m ²	COEFFICIENT, C	DESCRIPTION	ITEM	AREA, A, m ²	COEFFICIENT, C	DESCRIPTION
PR CONC ROW	766	0.67	PASTURE/ GRASS	IMPERVIOUS	132	0.96	CONC ROW, PARKING AND ROOF
PR GRAVEL ROW	0	0.83	UNSEALED ROW	IMPERVIOUS	634	0.67	PASTURE/ GRASS
EXISTING ROW	0	0.96	EXISTING CONCRETE	IMPERVIOUS	0	0.96	EXISTING CONC ROW
TOTAL	766	TYPE D	PR = PROPOSED	TOTAL	766	TYPE D	

PRE TO POST DEVELOPMENT RUNOFF - 50 % AEP			
50 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	67.5	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
50 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	81.0	mm/hr	
50 % AEP PRE DEVELOPMENT PEAK FLOW	11.55	l/s	
50 % AEP POST DEVELOPMENT PEAK FLOW	12.41	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	0.86	l/s	

PRE TO POST DEVELOPMENT RUNOFF - 10 % AEP			
10 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	102.0	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
10 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	122.4	mm/hr	
10 % AEP PRE DEVELOPMENT PEAK FLOW	17.45	l/s	
10 % AEP POST DEVELOPMENT PEAK FLOW	18.75	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	1.30	l/s	

PRE TO POST DEVELOPMENT RUNOFF - 1 % AEP			
1 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	153.0	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
1 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	183.6	mm/hr	
1 % AEP PRE DEVELOPMENT PEAK FLOW	26.17	l/s	
1 % AEP POST DEVELOPMENT PEAK FLOW	28.13	l/s	
PRE TO POST DEVELOPMENT DIFFERENCE	1.95	l/s	

ESTIMATION OF FLOW VELOCITIES			
OPEN CHANNEL			
MANNINGS ROUGHNESS COEFFICIENT	0.03	GRASSSED SWALE	CHECK AGAINST 1 % AEP FLOW RATE OK
BASE WIDTH, B	0	m	
WATER DEPTH, d	0.2	m	
SIDE SLOPE	1	1V:2h	
CROSS SECTIONAL AREA, Across	0.04	m ²	
HYDRAULIC RADIUS, R _{hy}	0.07	m	
LONGITUDINAL SLOPE	0.15	m/m	
FLOW VELOCITY IN CHANNEL, V	2.19	m/s	
CHANNEL FLOW, Q	88	l/s	

Project Ref:	CO640	STORMWATER DISPERSION PIPE/ TRENCH	
Project Address:	380C OPITO BAY ROAD, OPITO BAY KERIKERI		
Design Case:	CONCEPT FUTURE DEVELOPMENT	DISCHARGE DEVICE - LEVEL SPREADER	
Date:	22/1/2026	REV 1	

DESIGN BASED ON REFERENCED DEVELOPMENT PLANS TO PROVIDE A MINIMUM LENGTH OF ABOVE GROUND STORMWATER TANK OVERFLOW DISCHARGE DISPERSION DEVICE. IN GENERAL ACCORDANCE WITH MODIFIED RATIONAL METHOD AND AUCKLAND COUNCIL TR2013/018.

DESIGN STORM EVENT **10%** AEP EVENT

SLOPE BETWEEN SOURCE & DISPERSION DEVICE

ELEVATION	h	CHAINAGE, x	Δ x	h bar	Δ A
m	m	m	m	m	m ²
24.15	0	0	0	0	0
19	5.15	20.5	20.5	2.575	52.7875
TOTALS		20.5	20.5		52.7875
SLOPE, Sc		0.251	m/m		

MANNINGS PIPE FLOW - INCOMING PIPE

Dia. m	d/D	q. rad	P. m	A. m ²	R	1/S	n	V. m/s	Q. m ³ /s	Q. l/s	
0.1	0.000	6.283	0.0000	0.0000	0.000	3.98058252	0.009	0.000	0.0000	0.000	0 % full
0.100	0.050	5.381	0.0451	0.0001	0.003	3.980582524	0.009	1.223	0.0002	0.180	
0.100	0.100	4.996	0.0644	0.0004	0.006	3.980582524	0.009	1.910	0.0008	0.781	
0.100	0.150	4.692	0.0795	0.0007	0.009	3.980582524	0.009	2.461	0.0018	1.818	
0.100	0.200	4.429	0.0927	0.0011	0.012	3.980582524	0.009	2.929	0.0033	3.275	
0.100	0.250	4.189	0.1047	0.0015	0.015	3.980582524	0.009	3.336	0.0051	5.123	
0.100	0.300	3.965	0.1159	0.0020	0.017	3.980582524	0.009	3.696	0.0073	7.323	
0.100	0.350	3.751	0.1266	0.0024	0.019	3.980582524	0.009	4.014	0.0098	9.833	
0.100	0.400	3.544	0.1369	0.0029	0.021	3.980582524	0.009	4.296	0.0126	12.602	
0.100	0.450	3.342	0.1471	0.0034	0.023	3.980582524	0.009	4.544	0.0156	15.577	
0.100	0.500	3.142	0.1571	0.0039	0.025	3.980582524	0.009	4.762	0.0187	18.698	50 % full
0.100	0.550	2.941	0.1671	0.0044	0.026	3.980582524	0.009	4.949	0.0219	21.904	
0.100	0.600	2.739	0.1772	0.0049	0.028	3.980582524	0.009	5.106	0.0251	25.125	
0.100	0.650	2.532	0.1875	0.0054	0.029	3.980582524	0.009	5.234	0.0283	28.287	
0.100	0.700	2.319	0.1982	0.0059	0.030	3.980582524	0.009	5.332	0.0313	31.310	
0.100	0.750	2.094	0.2094	0.0063	0.030	3.980582524	0.009	5.397	0.0341	34.101	
0.100	0.800	1.855	0.2214	0.0067	0.030	3.980582524	0.009	5.427	0.0366	36.554	
0.100	0.850	1.591	0.2346	0.0071	0.030	3.980582524	0.009	5.416	0.0385	38.535	
0.100	0.900	1.287	0.2498	0.0074	0.030	3.980582524	0.009	5.353	0.0399	39.857	
0.100	0.950	0.902	0.2691	0.0077	0.029	3.980582524	0.009	5.214	0.0402	40.183	
0.100	1.000	0.000	0.3142	0.0079	0.025	3.980582524	0.009	4.762	0.0374	37.397	Flowing full

DISPERSION SPECIFICATION

INCOMING PIPE PROPERTIES:

TANK OUTFLOW, 10 % AEP	15.83 l/s	*note to designer = consider which design storm you need to allow for
MAXIMUM PIPE FLOW	40.18 l/s	
SUFFICIENT CAPACITY IN PIPE	YES	
LONGITUDINAL SLOPE	0.251 m/m	
DESIGN VELOCITY, Dv	5.427 m/s	

LEVEL SPREADER SPECIFICATIONS:

PIPE DIAMETER, m	0.15 m
MANNINGS PIPE ROUGHNESS	0.009
NUMBER OF ORIFICES	58 No.
DIA. OF ORIFICE, D	25 mm
ORIFICE INTERVALS, C/C	150 mm
DISPERSION PIPE LENGTH, L	8.55 m

ORIFICE DESIGN FLOW CHECK:

AREA OF SINGLE ORIFICE, A	0.00049 m ²		
FLOW OUT OF 1 ORIFICE	0.000426296 m ³ /s	0.43 l/s	
FLOW OUT OF ALL ORIFICES	0.02472516 m ³ /s	24.73 l/s	DESIGN OK
VELOCITY FROM SINGLE ORIFICE	0.87 m/s		

BROAD CRESTED WEIR DESIGN FLOW CHECK:

FLOW DEPTH, h	0.1 m	*note to designer = consider position of orifices on spreader pipe e.g. position at 1/3 of spreader φ is an effective outcome
BASE WIDTH = L	8.55 m	
FLOW AREA	0.86 m ²	
WEIR FLOW	0.01595 m ³ /s	15.95 l/s
WEIR VELOCITY	0.019 m/s	DESIGN OK

INCOMING PIPE & SPREADER SUMMARY:

	LOT 1	LOT 2	*note to designer = specify additional lots
INCOMING PIPE DIAMETER, m	0.100 m		
SPREADER PIPE DIAMETER, m	0.150 m		
MANNINGS PIPE ROUGHNESS	0.009		
NUMBER OF ORIFICES	58 No.		
DIA. OF ORIFICE, D	25 mm		
ORIFICE INTERVALS, C/C	150 mm		
DISPERSION PIPE LENGTH, L	8.55 m		

HIRDS V4 Intensity-Duration-Frequency Results
 Site name: Opito Bay
 Coordinate system: WGS84
 Longitude: 174.0383
 Latitude: -35.1913
 DDF Model

Parameters: c d e f g h i
 Values: 0.00208707 0.487539 -0.0208962 -0.00272658 0.25599311 -0.0118939 3.254953
 Example: Duration (hrs) ARI (yrs) x y Rainfall Rate (mm/hr)
 24 100 3.17805383 4.60014923 9.817651209

Rainfall Intensities (mm/hr) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	63.6	44.5	36.6	25.9	18	9.53	6.11	3.77	2.22	1.6	1.25	1.02
2	0.5	67.5	48.8	40.2	28.4	19.7	10.5	6.72	4.15	2.45	1.76	1.37	1.13
5	0.2	87.7	63.4	52.3	37	25.7	13.7	8.81	5.45	3.22	2.31	1.81	1.49
10	0.1	102	74.2	61.2	43.4	30.2	16.1	10.4	6.41	3.8	2.73	2.14	1.75
20	0.05	117	85.2	70.3	49.9	34.8	18.6	12	7.41	4.39	3.16	2.47	2.03
30	0.033	126	91.7	75.7	53.8	37.5	20	12.9	8.01	4.75	3.42	2.67	2.2
40	0.025	133	96.4	79.5	56.6	39.4	21.1	13.6	8.44	5	3.6	2.82	2.32
50	0.02	138	100	82.5	58.7	40.9	21.9	14.1	8.77	5.2	3.75	2.93	2.41
60	0.017	142	103	85	60.5	42.2	22.6	14.6	9.05	5.37	3.86	3.03	2.49
80	0.013	148	108	88.9	63.3	44.1	23.6	15.3	9.48	5.63	4.05	3.18	2.61
100	0.01	153	111	91.9	65.4	45.7	24.5	15.8	9.82	5.83	4.2	3.29	2.71
250	0.004	173	126	104	74.1	51.8	27.8	18	11.2	6.65	4.8	3.76	3.09

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	8	4.9	3.5	2.5	1.8	1.1	0.76	0.59	0.36	0.28	0.22	0.19
2	0.5	8.7	5.3	3.8	2.8	2	1.2	0.83	0.66	0.41	0.31	0.25	0.21
5	0.2	12	7.7	5.7	4	2.8	1.6	1.1	0.89	0.55	0.42	0.33	0.28
10	0.1	15	10	7.7	5.1	3.6	2.1	1.4	1.1	0.66	0.5	0.4	0.33
20	0.05	19	13	10	6.7	4.7	2.7	1.8	1.3	0.78	0.59	0.47	0.39
30	0.033	22	15	12	7.8	5.5	3.2	2.1	1.4	0.86	0.65	0.51	0.43
40	0.025	25	17	14	8.7	6.1	3.6	2.4	1.5	0.92	0.69	0.55	0.46
50	0.02	27	19	15	9.5	6.6	3.9	2.6	1.6	0.97	0.73	0.58	0.48
60	0.017	28	20	16	10	7.1	4.2	2.7	1.6	1	0.76	0.6	0.5
80	0.013	31	22	18	11	7.9	4.7	3.1	1.8	1.1	0.81	0.64	0.53
100	0.01	34	24	20	12	8.6	5.1	3.3	1.9	1.1	0.85	0.67	0.56
250	0.004	46	33	28	17	12	7.4	4.7	2.3	1.4	1	0.83	0.68

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	66	47.6	39.2	27.7	19.1	10	6.4	3.93	2.3	1.64	1.28	1.05
2	0.5	72.4	52.3	43	30.5	21.1	11.1	7.05	4.32	2.54	1.81	1.41	1.16
5	0.2	94.3	68.2	56.2	39.8	27.6	14.5	9.39	5.7	3.35	2.4	1.87	1.53
10	0.1	110	80	65.9	46.8	32.4	17.1	10.9	6.72	3.95	2.83	2.21	1.81
20	0.05	127	91.9	75.8	53.8	37.4	19.8	12.6	7.77	4.58	3.28	2.56	2.1
30	0.033	136	99	81.6	58	40.3	21.3	13.7	8.4	4.95	3.55	2.77	2.27
40	0.025	143	104	85.8	61	42.4	22.5	14.4	8.85	5.22	3.74	2.92	2.4
50	0.02	149	108	89.1	63.4	44.1	23.4	15	9.21	5.43	3.9	3.04	2.5
60	0.017	153	111	91.8	65.3	45.4	24.1	15.4	9.5	5.6	4.02	3.14	2.58
80	0.013	160	116	96	68.3	47.6	25.2	16.2	9.96	5.88	4.22	3.3	2.7
100	0.01	165	120	99.2	70.7	49.2	26.1	16.7	10.3	6.09	4.37	3.42	2.8
250	0.004	187	136	112	80.1	55.8	29.7	19.1	11.8	6.95	4.99	3.9	3.2

Rainfall Intensities (mm/hr) :: RCP2.6 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	66	47.6	39.2	27.7	19.1	10	6.4	3.93	2.3	1.64	1.28	1.05
2	0.5	72.4	52.3	43	30.5	21.1	11.1	7.05	4.32	2.54	1.81	1.41	1.16
5	0.2	94.3	68.2	56.2	39.8	27.6	14.5	9.39	5.7	3.35	2.4	1.87	1.53
10	0.1	110	80	65.9	46.8	32.4	17.1	10.9	6.72	3.95	2.83	2.21	1.81
20	0.05	127	91.9	75.8	53.8	37.4	19.8	12.6	7.77	4.58	3.28	2.56	2.1
30	0.033	136	99	81.6	58	40.3	21.3	13.7	8.4	4.95	3.55	2.77	2.27
40	0.025	143	104	85.8	61	42.4	22.5	14.4	8.85	5.22	3.74	2.92	2.4
50	0.02	149	108	89.1	63.4	44.1	23.4	15	9.21	5.43	3.9	3.04	2.5
60	0.017	153	111	91.8	65.3	45.4	24.1	15.4	9.5	5.6	4.02	3.14	2.58
80	0.013	160	116	96	68.3	47.6	25.2	16.2	9.96	5.88	4.22	3.3	2.7
100	0.01	165	120	99.2	70.7	49.2	26.1	16.7	10.3	6.09	4.37	3.42	2.8
250	0.004	187	136	112	80.1	55.8	29.7	19.1	11.8	6.95	4.99	3.9	3.2

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	67.1	48.4	39.8	28.2	19.5	10.2	6.47	3.97	2.32	1.66	1.29	1.06
2	0.5	73.6	53.2	43.8	31	21.4	11.2	7.14	4.37	2.56	1.83	1.42	1.17
5	0.2	96	69.5	57.2	40.6	28.1	14.8	9.41	5.76	3.38	2.42	1.89	1.54
10	0.1	112	81.4	67.1	47.6	33	17.4	11.1	6.8	3.99	2.86	2.23	1.83
20	0.05	129	93.6	77.2	54.8	38.1	20.1	12.8	7.61	4.63	3.29	2.59	2.12
30	0.033	139	101	83.2	59.1	41.1	21.7	13.9	8.5	5	3.58	2.8	2.29
40	0.025	146	106	87.4	62.2	43.2	22.8	14.6	8.96	5.27	3.78	2.95	2.42
50	0.02	151	110	90.8	64.6	44.9	23.7	15.2	9.32	5.49	3.93	3.07	2.52
60	0.017	156	113	93.5	66.5	46.2	24.5	15.7	9.61	5.66	4.06	3.17	2.6
80	0.013	163	118	97.8	69.6	48.4	25.6	16.4	10.1	5.94	4.26	3.24	2.73
100	0.01	168	122	101	72	50.1	26.5	17	10.4	6.15	4.41	3.45	2.83
250	0.004	190	138	114	81.6	56.8	30.2	19.3	11.9	7.02	5.04	3.94	3.23

Rainfall Intensities (mm/hr) :: RCP4.5 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	70.5	50.9	41.9	29.6	20.4	10.6	6.7	4.09	2.36	1.69	1.32	1.08
2	0.5	77.5	56	46.1	32.6	22.5	11.7	7.41	4.51	2.63	1.87	1.46	1.19
5	0.2	101	73.3	60.3	42.8	29.6	15.4	9.79	5.96	3.48	2.49	1.93	1.58
10	0.1	119	86	70.9	50.3	34.8	18.2	11.6	7.04	4.12	2.94	2.29	1.87
20	0.05	136	96.9	81.6	58	40.1	21	13.4	8.15	4.77	3.41	2.66	2.17
30	0.033	147	107	87.9	62.5	43.3	22.7	14.4	8.81	5.16	3.69	2.88	2.36
40	0.025	154	112	92.4	65.7	45.6	24	15.2	9.29	5.44	3.9	3.03	2.49
50	0.02	160	116	96	68.3	47.4	24.9	15.8	9.66	5.67	4.05	3.16	2.59
60	0.017	165	120	98.9	70.4	48.8	25.7	16.3	9.98	5.85	4.19	3.26	2.67
80	0.013	172	125	103	73.7	51.1	26.9	17.1	10.5	6.14	4.39	3.42	2.8
100	0.01	178	130	107	76.2	52.9	27.9	17.7	10.8	6.36	4.55	3.55	2.91
250	0.004	201	146	121	86.3	60	31.7	20.2	12.4	7.26	5.2	4.06	3.32

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	66.6	48.1	39.6	28	19.3	10.1	6.44	3.95	2.31	1.65	1.29	1.05
2	0.5	72.1	52.8	43.5	30.8	21.3	11.2	7.11	4.35	2.55	1.82	1.42	1.16

HIRDS V4 Depth-Duration-Frequency Results
 Sitename: Opito Bay
 Coordinate system: WGS84
 Longitude: 174.0383
 Latitude: -35.1913
 DDF Model

Parameters: c d e f g h i
 Values: 0.00208707 0.4875389 -0.0208962 -0.00272658 0.25599311 -0.0118939 3.25495
 Example: Duration (hrs) ARI (yrs) x V Rainfall Depth (mm) 24 100 3.17805383 4.60014923 255.623149

Rainfall depths (mm) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	10.3	14.8	18.3	25.9	35.9	57.1	73.3	91	107	115	120	123
2	0.5	11.3	16.3	20.1	28.4	39.4	62.8	80.6	100	117	126	132	135
5	0.2	14.6	21.1	26.1	37	51.5	82.2	106	131	155	167	174	178
10	0.1	17.1	24.7	30.6	43.4	60.4	96.5	124	154	182	196	205	210
20	0.05	19.6	28.4	35.1	49.9	69.5	111	144	178	211	227	237	244
30	0.033	21.1	30.6	37.8	53.8	75	120	155	192	228	246	257	264
40	0.025	22.1	32.1	39.8	56.6	78.9	126	161	202	240	259	271	278
50	0.02	22.9	33.3	41.3	58.7	81.9	131	170	210	250	270	282	289
60	0.017	23.6	34.3	42.5	60.5	84.4	135	175	217	258	278	291	299
80	0.013	24.7	35.9	44.4	63.3	88.3	142	183	228	270	292	305	313
100	0.01	25.5	37.1	45.9	65.4	91.3	147	190	236	280	302	316	325
250	0.004	28.8	41.9	52	74.1	104	167	216	269	319	345	361	371

Depth standard error (mm) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	1.3	1.6	1.8	2.5	3.4	6.5	9	15	17	20	21	22
2	0.5	1.4	1.8	2	2.8	3.7	7.2	10	17	19	22	23	25
5	0.2	2	2.5	2.9	3.9	5.3	10	14	22	26	30	31	34
10	0.1	2.5	3.2	3.9	5	7	13	17	27	32	35	38	41
20	0.05	3.2	4.2	5.2	6.5	9.2	17	22	32	38	42	45	49
30	0.033	3.7	4.8	6.1	7.6	11	20	26	35	41	46	49	54
40	0.025	4.1	5.3	6.8	8.4	12	22	29	37	44	49	52	58
50	0.02	4.4	5.8	7.4	9.2	13	24	32	39	47	52	55	61
60	0.017	4.7	6.2	8	9.8	14	26	34	41	49	54	58	64
80	0.013	5.1	6.8	8.9	11	16	30	39	44	52	58	61	68
100	0.01	5.5	7.3	9.7	12	18	33	42	46	55	61	65	72
250	0.004	7.5	9.9	14	17	25	47	61	58	69	76	80	89

Rainfall depths (mm) :: RCP2.6 for the period 2031-2050

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	11	15.9	19.6	27.7	38.3	60.3	76.8	94	110	118	123	126
2	0.5	12.1	17.4	21.5	30.5	42.2	66.4	84.7	104	122	131	136	139
5	0.2	15.7	22.7	28.1	39.8	55.2	87.2	111	137	161	173	180	184
10	0.1	18.4	26.7	32.9	46.8	64.9	103	131	161	190	204	212	218
20	0.05	21.1	30.6	37.9	53.8	74.8	119	152	186	220	236	246	252
30	0.033	22.7	33	40.8	58	80.7	128	164	202	238	256	266	273
40	0.025	23.9	34.7	42.9	61	84.9	135	173	212	250	270	281	288
50	0.02	24.8	36	44.6	63.4	88.2	140	180	221	260	280	292	300
60	0.017	25.5	37.1	45.9	65.3	90.8	145	185	228	269	290	302	309
80	0.013	26.7	38.8	48	68.3	95.1	151	194	239	282	304	316	325
100	0.01	27.5	40.1	49.6	70.7	98.4	157	201	248	292	315	328	336
250	0.004	31.1	45.3	56.1	80.1	112	178	229	282	333	359	375	385

Rainfall depths (mm) :: RCP2.6 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	11	15.9	19.6	27.7	38.3	60.3	76.8	94	110	118	123	126
2	0.5	12.1	17.4	21.5	30.5	42.2	66.4	84.7	104	122	131	136	139
5	0.2	15.7	22.7	28.1	39.8	55.2	87.2	111	137	161	173	180	184
10	0.1	18.4	26.7	32.9	46.8	64.9	103	131	161	190	204	212	218
20	0.05	21.1	30.6	37.9	53.8	74.8	119	152	186	220	236	246	252
30	0.033	22.7	33	40.8	58	80.7	128	164	202	238	256	266	273
40	0.025	23.9	34.7	42.9	61	84.9	135	173	212	250	270	281	288
50	0.02	24.8	36	44.6	63.4	88.2	140	180	221	260	280	292	300
60	0.017	25.5	37.1	45.9	65.3	90.8	145	185	228	269	290	302	309
80	0.013	26.7	38.8	48	68.3	95.1	151	194	239	282	304	316	325
100	0.01	27.5	40.1	49.6	70.7	98.4	157	201	248	292	315	328	336
250	0.004	31.1	45.3	56.1	80.1	112	178	229	282	333	359	375	385

Rainfall depths (mm) :: RCP4.5 for the period 2031-2050

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	11.2	16.1	19.9	28.2	38.9	61.1	77.7	95	111	119	124	127
2	0.5	12.3	17.7	21.9	31	42.9	67.3	85.7	105	123	132	137	140
5	0.2	16	23.2	28.6	40.6	56.2	88.5	113	138	162	174	181	185
10	0.1	18.7	27.1	33.5	47.6	66	104	133	163	199	206	214	219
20	0.05	21.5	31.2	38.6	54.8	76.1	120	150	181	219	226	234	239
30	0.033	23.2	33.6	41.6	59.1	82.1	130	166	204	248	258	265	275
40	0.025	24.3	35.3	43.7	62.2	86.4	137	175	215	253	272	283	290
50	0.02	25.2	36.7	45.4	64.6	89.8	142	182	224	263	283	295	302
60	0.017	26	37.8	46.7	66.5	92.5	147	188	231	272	292	304	312
80	0.013	27.2	39.5	48.9	69.6	95.9	154	197	242	285	307	319	327
100	0.01	28.1	40.8	50.6	72	100	159	204	251	295	318	331	339
250	0.004	31.7	46.1	57.2	81.6	114	181	232	286	337	363	378	388

Rainfall depths (mm) :: RCP4.5 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	11.8	17	20.9	29.6	40.8	63.6	80.4	98	114	122	127	129
2	0.5	12.9	18.7	23	32.6	45	70.2	88.9	108	126	135	140	143
5	0.2	16.9	24.4	30.2	42.8	59.1	92.6	117	143	167	179	186	190
10	0.1	19.8	28.7	35.4	50.3	69.6	109	139	169	198	212	220	225
20	0.05	22.7	33	40.8	58	80.3	126	160	195	229	245	255	261
30	0.033	24.5	35.5	44	62.5	86.7	136	172	211	249	266	276	283
40	0.025	25.7	37.3	46.2	65.7	91.2	144	183	223	261	281	291	298
50	0.02	26.7	38.8	48	68.3	94.8	149	190	232	272	292	303	310
60	0.017	27.5	39.9	49.4	70.4	97.6	154	196	239	281	301	313	320
80	0.013	28.7	41.8	51.7	73.7	102	161	205	251	295	316	328	336
100	0.01	29.7	43.2	53.5	76.2	106	167	213	260	305	328	341	349
250	0.004	33.5	48.8	60.5	86.3	120	190	242	296	348	374	389	399

Rainfall depths (mm) :: RCP6.0 for the period 2031-2050

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	11.1	16	19.8	28	38.7	60.8	77.3	95	111	119	124	127
2	0.5	12.2	17.6	21.7	30.8	42.6	66.9	85.3	104	122	131	136	140
5	0.2	15.9	23	28.4	40.3	55.8	88	112	138	162	174	180	185
10	0.1	18.6	26.9	33.3	47.3	65.6	104	132	162	191	205	213	219
20	0.05	21.3	31	38.3	54.4	75.6	120	153	188	221	238	247	253
30	0.033	23	33.4	41.3	58.7	81.5	129	165	203	239	257	268	274
40	0.025	24.1	35.1	43.4	61.7	85.8	136	174	214	253	271	282	289
50	0.02	25.1	36.4	45.1	64.1	89.1	141	181	223	262	282	294	301
60	0.017	25.8	37.5	46.4	66	91.8	146	187	230	271	291	303	311
80	0.013	27	39.2	48.5	69.1	96.2	153	196	241	284	305	318	326
100	0.01	27.9	40.5	50.2	71.5	99.5	158	203	249	294	317	330	338
250	0.004	31.5	45.8	56.8	81	113	180	231	284	336	361	377	387

Rainfall depths (mm) :: RCP6.0 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	12.3	17.7	21.9	30.9	42.5	65.9	82.9	101	117	124	129	13

**Energy Dissipation Device: 20M SECTION OF DRIVEWAY 3.3M WIDE - EXIT OF TRAFFICABLE
MARLEY CHANNEL & CHANNEL DRAIN**

Inlet pipe size: $D_o := 150 \text{ mm}$

Hydraulic depth (50 %): $D := \frac{D_o}{2} = 75 \text{ mm}$

Velocity, 50 % flow: $V := 0.143 \frac{\text{m}}{\text{s}}$

Froude number: $F_o := \frac{V}{\sqrt{g \cdot D}}$

Froude number: $F_o := 0.88$

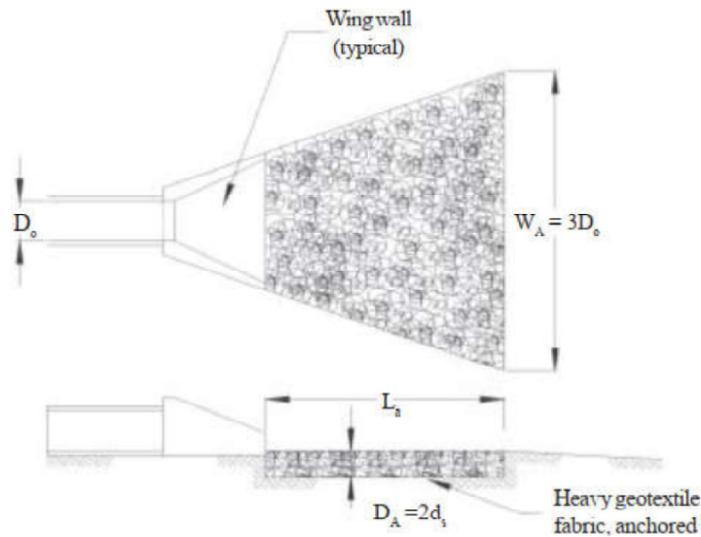
Diameter of stone within dissipation device: $D_s := 0.25 \cdot D_o \cdot F_o = 33 \text{ mm}$

Apron width: $W_a := 3 \cdot D_o = 0.5 \text{ m}$

Apron length: $L_a := D_o \cdot (8 + 17 \cdot \log(F_o)) = 1.1 \text{ m}$

Apron depth: $D_a := 2 \cdot D_s = 0.066 \text{ m}$

**Figure 13-2
Schematic of outfall protection**



STATEMENT OF DESIGN - PS1

Issued by: Matt Riddell

To: Smith

Copy to be supplied to: Far North District Council

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

At: 380c Opito Bay Road, Kerikeri

Legal Description: Lot 8 DP 89303

Waterflow NZ Ltd has been engaged by Smith 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: Smith 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: Matt Riddell - PS Author '2384' Auckland Council, NZQA Onsite Wastewater Training/Opus, Approved Designer

Date: 18/02/2026

Signature:



Waterflow NZ Ltd
4/525 Great South Road
Penrose, Auckland 1061

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.*



WaterFlow
Bringing Clarity to Wastewater

2026

Waterflow NZ Ltd
Certified Designer

Smith
380c Opito Bay Road
Kerikeri
Lot 8 DP 89303

Reference Number: WF25295

Issued 18/02/2026

ONSITE WASTEWATER DESIGN REPORT

Limitations / Disclaimer

This document has been prepared by Waterflow NZ Ltd specifically for the commissioning client and for the project described. It should not be used, copied, or relied upon by any other party without written confirmation from Waterflow NZ Ltd that the report is appropriate for their intended purpose.

The design and recommendations presented are based on the site information, test results, and reference material made available at the time the assessment was undertaken. Any assumptions or data provided by others are considered correct unless clearly stated otherwise. Waterflow NZ Ltd cannot accept responsibility for the consequences of relying on information that is later found to be incomplete or inaccurate.

Site conditions, development plans, or client requirements may change over time. If this occurs, the conclusions and design in this report may no longer be suitable. It is the client's responsibility to seek a review of this report if new information emerges or if the project scope is amended.

This report focuses on wastewater treatment and disposal design. It does not include a geotechnical stability assessment. Waterflow NZ Ltd are not Geotechnical Engineers and make no representations regarding slope stability, ground settlement, or subsurface hazards. Where ground stability or geotechnical risk is a concern, a separate assessment by a suitably qualified professional is required.

The successful performance of any wastewater system depends on correct installation. Installers must follow all manufacturer instructions and Waterflow NZ Ltd design details. Any proposed departures from the design must be approved by the property owner, Waterflow NZ Ltd, and the relevant Council before the work proceeds.

Compliance with regional and district rules, consent conditions, and relevant legislation remains the responsibility of the property owner. Routine servicing, monitoring, and desludging of the system are essential to maintain performance and minimise environmental effects. Failure to undertake required maintenance may result in system malfunction or regulatory non-compliance, for which Waterflow NZ Ltd cannot be held liable.



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Attachments

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

**Disclaimer**

The design presented herein is based on the information available at the time of preparation and reflects the conditions known at that time.

If additional information comes to light or if there are significant changes in site conditions or circumstances, the design may no longer be valid. In such cases, the design must be reassessed and potentially revised by the designer to ensure its continued suitability.

The designer(s) disclaim any responsibility for the design's applicability or effectiveness under new or altered conditions and recommend a review before implementation if any such changes occur.

**PART A: CONTACT AND PROPERTY DETAILS****A 1. Consultant / Evaluator**

Name:	Xandir Fatialofa
Company/Agency:	Waterflow New Zealand Ltd
Address:	4/525 Great South Road, Penrose, Auckland 1061
Phone:	09 431 0042
Fax:	
Email Address:	xandir@waterflow.co.nz

A 2: Applicant Details

Applicant Name:	Smith
Company Name:	
Property Owner:	Smith
Owner Address:	380c Opito Bay Road, Kerikeri
Phone:	
Mobile:	
Email Address:	

A 3: Site Information

Sited Visited by:	Ken Hoyle	Date:	Tuesday, 27 January 2026
Physical Address:	380c Opito Bay Road, Kerikeri		
Territorial Authority:	Far North District Council		
Regional Council:	Northland Regional Council		
Regional Rule	C.6.1.3		
Legal Status of Activity:	Permitted:	<input checked="" type="checkbox"/>	Controlled: <input type="checkbox"/> Discretionary: <input type="checkbox"/>
Total Property Area (m²):	3441m ²		
Map Grid Reference:			
Legal Description of Land (as on Certificate of Title):			
Lot No:	8		
DP No:	89303		
CT No:	NA46B/737		



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

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

**PART B: SITE ASSESSMENT - SURFACE EVALUATION****B 1: Site Characteristics**

Performance of adjacent systems:	(Unknown)		
Estimated annual rainfall (mm):	1250 - 1500 (as per NIWA statistics)		
Seasonal variation (mm):	300-400mm		
Vegetation cover:	Bush		
Slope shape:	Linear Planar		
Slope angle:	12-14 °		
Surface water drainage characteristics:	overland to the beach		
Flooding potential?	Yes:	No:	x
If Yes, specify relevant flood levels relative to disposal area:			
Site characteristics:	380C Opito Bay Road is a rural property of 3441m ² located on the southern side of Opito Bay Road about 8km northeast of Kerikeri. The property has a moderately sloping southerly aspect and is generally covered in titree bush. The owners propose a new three bedroom residential dwelling which will require an onsite wastewater management system. The land in the area of the wastewater management system is moderately sloped with a gradient of up to 15 degrees. There are no surface waters, overland flow paths or flood plains on the property in the area proposed for onsite wastewater management.		

B 2: Slope Stability

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

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

If no, why not?

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

If yes, give brief details of report:

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

B 3: Site Geology

--

**B 4: Slope Direction**

What aspect does the proposed disposal system face?

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

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

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

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

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



PART C: SITE ASSESSMENT - SOIL INVESTIGATION

C 1: Soil Profile Determination Method

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

C 2: Fill Material

Was fill material intercepted during the subsoil investigation?

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

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

--

C 3: Permeability Testing

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

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

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

--

Test report attached?

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

C 4: SURFACE WATER CUT OFF DRAINS

Are surface water interception/diversion drains required?

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

C 5: DEPTH OF SEASONAL WATER TABLE:

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

Was this:

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

C 6: SHORT CIRCUITS

Are there any potential short circuit paths?

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

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?

100mm topsoil over silty clay loam over clay

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	
6	Sandy clay, non-swelling clay & silty clay	Slow draining	x
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

D 1: Water supply source for the property:

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

D 2: Are water reduction fixtures being used?

Yes:	<input type="checkbox"/>	No:	<input checked="" type="checkbox"/>	(according to our knowledge at time of design report)
------	--------------------------	-----	-------------------------------------	---

If 'yes' Please state:

Standard Fixtures include dual flush 11/5.5 or 6/3 litre toilet cisterns, and includes standard automatic washing machine, but a low water use dishwasher, no garbage grinder.

D 3: Daily volume of wastewater to be discharged:

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

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

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

D 5: Gross lot area to discharge ratio:

Gross lot area:	3441 m ²
Total daily wastewater production (litres/day):	800 L
Lot area to discharge ratio:	4.30

D 6: Net Lot Area

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

Net lot area (m ²):	2441 m ²
Reserve area (m ²):	30% 80m ²

**PART E: LAND DISPOSAL METHOD****E 1: Indicate the proposed loading method:**

	Black / Grey Water
Gravity Dose:	
Dosing Siphon:	
Pump:	D42A/B

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

Total Design Head (m):	12
Pump Chamber Volume (litres):	1600
Emergency Storage Volume (litres):	2120

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

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

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

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

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

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

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

Length (m):	16.7	No. Lines:	16	Hole Size:	N/A
Width (m):	16.0	Spacing (m):	1.0	Hole Spacing:	N/A
Notes:	267sqm of Surface laid PCDI dripline pinned at 1m centers and covered with a minimum covering of 100mm mulch. See schematic drawing attached.				



PART F: PROPOSED WASTEWATER TREATMENT SYSTEM

A Econotreat ET32P System, fed through surface laid PCDI dripline is suitable for this site. The ET32P System has enough capacity to accommodate 1600ltr per day, so will be well within its capacity. The land application system is designed to discharge a maximum volume of 800ltrs per day and if this is exceeded it could cause failure resulting in environmental and public harm.

PART G: OPERATION AND MAINTENANCE OF SYSTEM

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

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

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

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

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

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

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

PART H: SOIL LOG PROFILE



100mm topsoil over silty clay loam over clayClass 6, (as per AC TP-58, Table 5.1)

PART I: SITE IMAGES



DECLARATION

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

Prepared By:	
Name:	Xandir Fatialofa - Design Technician
Signature:	
Date:	18/02/2026

Designed By:	
Name:	Matt Riddell - PS Author '2384' Auckland Council, NZQA Onsite Wastewater Training/Opus, Approved Designer
Signature:	
Date:	18/02/2026

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

Comments/Summary:

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

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

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

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

results for 380B ...

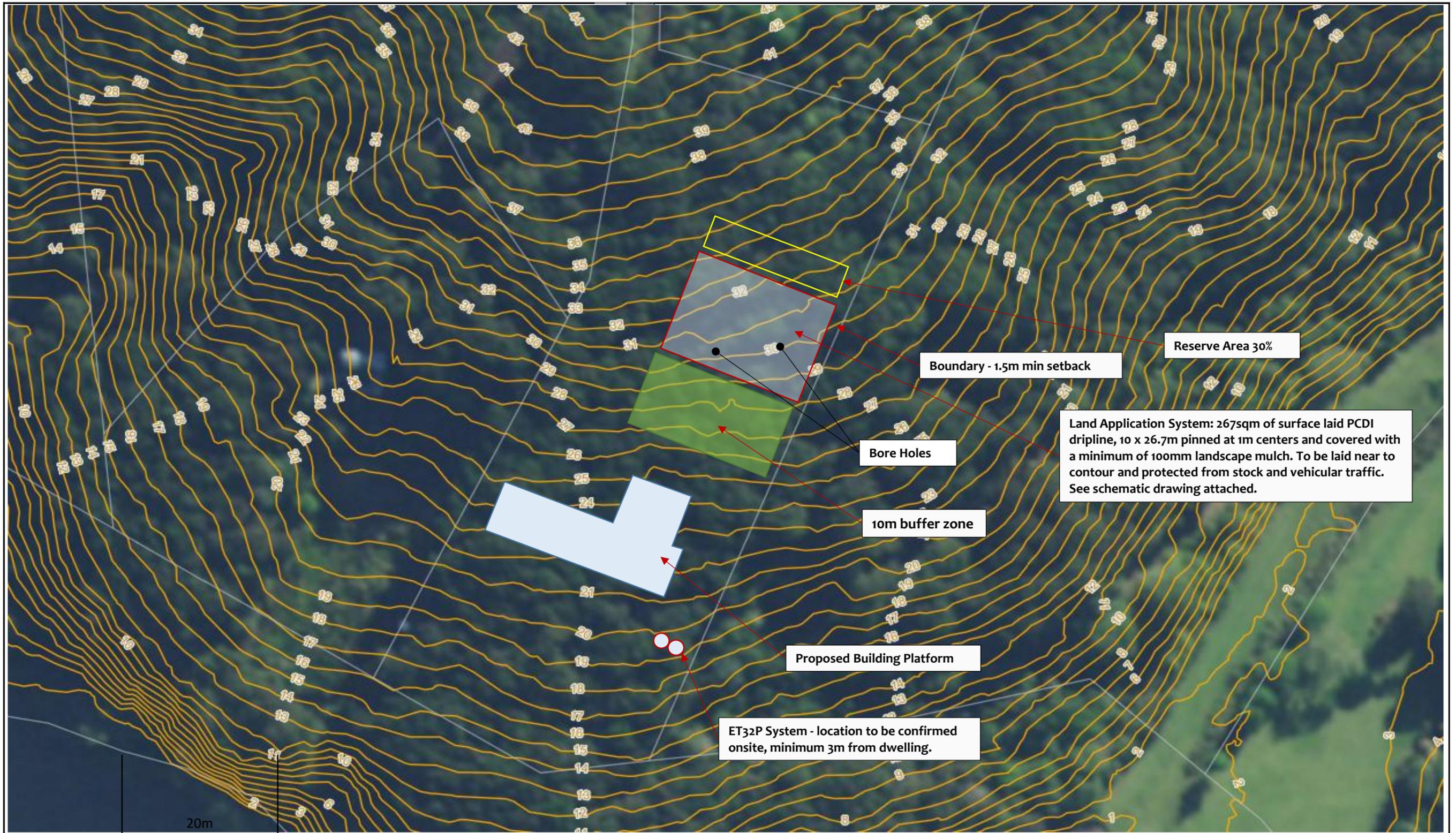


Enlargement on next page



SITE LOCATION PLAN:
 Smith
 380c Opito Bay Road
 Kerikeri
 Lot 8DP 89303
 0.3441HA

SCALE:
 1 : 38247
 @ A3



DATE DRAW: 18/02/2026
PREPARED BY: Xandir Fatialofa
REVISED: Matt Riddell

SITE LAYOUT PLAN:

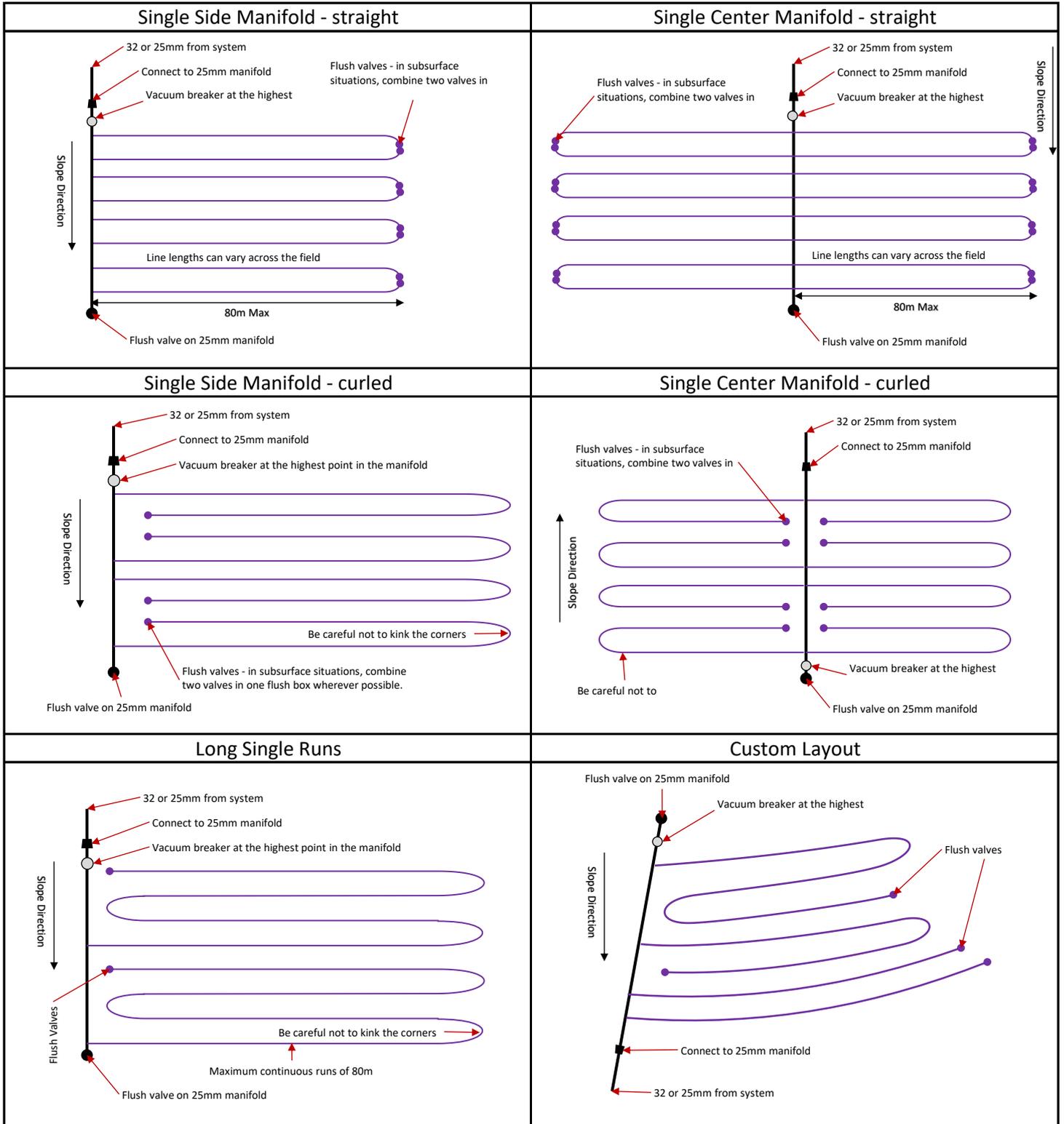
Smith
 380c Opito Bay Road
 Kerikeri
 Lot 8 DP 89303
 0.3441HA

SCALE:

1 : 488

@ A3

Common PCDI Layouts

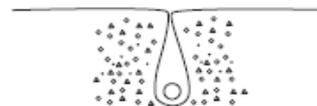


Cross Sections of PCDI installation

150mm Mulch or Leaf Litter



Subsoil Buried @ 100-150mm





METZERPLAS

ADI

Cylindrical PC
(Pressure
Compensated)
dripper.

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



ADI Dripline Technical Data:

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



METZERPLAS

ADI

Cylindrical PC (Pressure Compensated) dripper.

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

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

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

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

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

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

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

Packaging Data

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



APPLICATIONS

- > Non-potable rainwater applications
- > Lawn and garden irrigation
- > Sump emptying to higher heads
- > Treated effluent disposal
- > Water transfer from wells



D42A/B

D53A/B

Submersible Drainage Pumps

Model Numbers: D42A/B, D53A/B

Submersible sump pump with two and three impeller designs for higher pressure, up to 45m head.

WHY CHOOSE DAVEY SUBMERSIBLE DRAINAGE PUMPS?

Double mechanical seal, one in oil bath on motor and extra mechanical seal on pump

- Superior reliability
- Long service life

Corrosion resistant 304 stainless steel shaft, motor shell and fasteners

- Long service life

Cast 316 stainless steel motor caps and super tough engineered thermo plastic pump casing

- Outstanding corrosion resistance
- Long life

Centrifugal multistage 2 and 3 impeller designs

- Higher pressures and increased efficiency

Closed vane impellers with long engagement “D” drives

- Positive operation
- Long service life

Patented independently floating neck rings

- Outstanding pump performance
- Long pump life

Corrosion resistant hard wearing polycarbonate impellers

- Long service life

Corrosion resistant stainless steel fine mesh suction strainer with large surface area

- Prevents blockages of the pump by solids

In-built automatic thermal overload

- Protects the motor in the event of blockage or voltage supply problems

HO7RNF oil resistant leads, 10 metres long with 3 pin power plug

- Easy to connect to power supply
- Longer life in dirty water



OPERATING LIMITS

Type	D42A/B	D53A/B
Capacities to	120 lpm	130 lpm
Maximum total head	32m	45m
Maximum submergence	12m	
Maximum pumped water temperature	40°C	
Maximum soft solids	1.9mm O.D.	
Outlet size (BSP)	1" F	

SUITABLE FLUIDS

Clean water of neutral pH containing up to 1% small solids. Some wear should be expected while pumping hard solids in suspension.

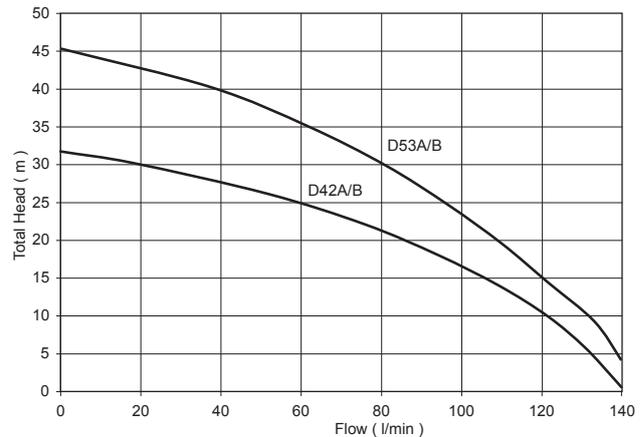
MATERIALS OF CONSTRUCTION

PART	MATERIAL
Impeller	Glass filled polycarbonate
Lock nut	304 stainless steel
Pump casing	Glass filled polycarbonate
Diffuser and blanking ring	Glass filled noryl
Mechanical seal – pump	Carbon / ceramic
Mechanical seal – motor	Silicon carbide / ceramic oil in bath
Shaft seal elastomer	Nitrile rubber
Pump shaft	304 stainless steel
O-rings	Nitrile rubber
Motor shell	304 stainless steel
Bottom bearing housing	Cast 316 stainless steel
Upper motor cover	Cast 316 stainless steel
Handle	304 stainless steel
Fasteners	304 stainless steel
Float and power supply leads	HO7RN-F oil resistant

ELECTRICAL DATA

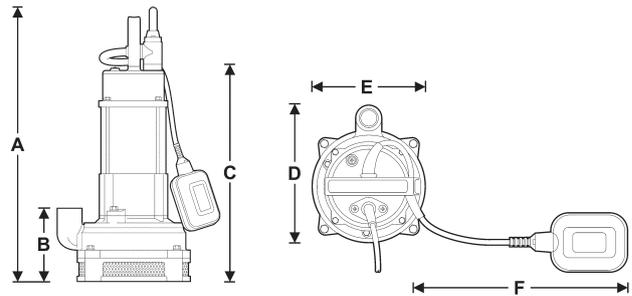
Type	D42A/B	D53A/B
Supply voltage	220-240V	
Supply frequency	50Hz single phase	
Speed	2 pole, 2850rpm	
Full load current (Run)	4.3A	5.7A
Locked rotor current (Start)	14A	
Input power (P ₁)	1.00kW	1.31kW
Output power (P ₂)	0.60kW	0.84kW
IP rating	X8	
Insulation class	Class F	
Starting	P.S.C.	
Lead	10m long	

HYDRAULIC PERFORMANCE



DIMENSIONS (MM)

Type	A	B	C	D	E	F	Outlet B.S.P.	Net Weight (kg)
D42A/B	475	130	370	235	195	330	1" F	10.8
D53A/B	535	170	430	235	195	330	1" F	16.5



INSTALLATION AND PRIMING

Use a rope to position and retrieve the pump. Do not lower or retrieve the pump using the power lead as this may damage the cable entry seals, causing water leaks and unsafe operation.

Do not use this product for recirculating or filtering swimming pools, spas, etc. While these pumps are built to high safety standards, they are not approved for installations where people will be in the water while they are operating.

Do not pump abrasive materials. Sand and grit in the water being pumped will accelerate wear, causing shortened pump life.

Keep your pump clean, particularly in situations where lint, hair or fibrous materials may get bound around the pump shaft. Regular inspection and cleaning will extend pump life.

Make room for the float switch to operate. Automatic models have a float switch to turn them on when the water level rises and turn them off again when it has been pumped down to the safe operating level of the pump. If the float switch is not free to rise and fall, correct pump operation may not be possible.

Do not run your pump dry. Non-automatic models must be switched off manually or by way of an external float/level switch when the water level is reduced to the top of the pump housing.

Assessment of Environmental Effects

Smith of 380c Opito Bay Road, Kerikeri Lot 8 DP 89303

1.1 Description of Proposal

The owners of this site propose the construction of a new 3 bedroom dwelling which will require a new onsite wastewater management system.

1.2 Site Description

380C Opito Bay Road is a rural property of 3441m² located on the southern side of Opito Bay Road about 8km northeast of Kerikeri. The property has a moderately sloping southerly aspect and is generally covered in titree bush. The owners propose a new three bedroom residential dwelling which will require an onsite wastewater management system. The land in the area of the wastewater management system is moderately sloped with a gradient of up to 15 degrees. There are no surface waters, overland flow paths or flood plains on the property in the area proposed for onsite wastewater management.

1.3 Wastewater Volume

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

1.4 Wastewater Volume

The ET₃₂P system that is proposed will treat the wastewater to a high standard prior to dispersal using a PCDI drip line, into a purpose-designed disposal field, where the removal of nutrient will continue, both in the receiving soils and by plant uptake.

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

1.5 Proposed Treatment System

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

- Septic Tank Module
- ET32P
- Land Application System

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

1.6 Land Application System

The proposed irrigation system uses pressure-compensating dripper lines ensuring an even delivery of moisture over the entire irrigation field and a conservative DLR of 3mm. We propose the use of Metzerplas unibioline ADI16/3.5 @ 0.6m/c with the Dripline laid out at 1m centres. This Dripline will then be covered by 100mm landscape mulch. Densely planting this area will greatly enhance evapo-transpiration and be very beneficial especially in the wetter months of the year. This irrigation can be installed in conjunction with existing or proposed landscaping.

1.7 Surface & Ground Water

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

1.8 Air Quality

The proposed ET32P system will produce no noticeable odour when functioning correctly. Any odour will be contained within the tanks. The PCDI irrigation system will load the soil at a rate that should not cause ponding, spraying or aerosol of the effluent that could potentially cause odours. Risk Minor to Nil.

1.9 Visual Impact

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

1.10 Environmental Risks

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

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

1.11 Maintenance Requirements

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

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

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



WaterFlow

Bringing Clarity to Wastewater

ECONOTREAT™

ET32P



**System Specifications &
Installation Instructions**

ET32P

System Specifications & Installation Instructions



Compliance Requirements

All Waterflow Septic Tanks and Treatment Modules meet the requirements of the New Zealand Building Code G13-VM4, Clause B1 - Structure, and Clause B2 Durability. As stated in the AS/NZS 1546.1:2008 Standard, 1.5.2.1, all septic tanks constructed to this Standard meet the requirements of the New Zealand Building Code for Clause B1 - Structure and Clause B2 Durability.

The design and specifications of the septic tank are fully compliant with the AS/NZS1546.1:2008 Standard, including but not limited to:

Structural Integrity: The tank is designed using Polymer suitable for the manufacturing method as per 9.4.1 AS/NZS1546.1:2008, with all exposed lids being UV protected, with appropriate foot anchors and reinforcement, ensuring it meets the structural requirements specified in the standard.

Material Specifications: All materials used, including the Polymer composition, comply with the necessary standards for durability and suitability in septic tank applications.

Capacity and Dimensions: The tank's dimensions and baffle placements align with the standard's guidelines, ensuring proper functionality and waste management.

Access and Maintenance Provisions: The design includes provisions for easy access, necessary for regular inspection, cleaning, and maintenance in accordance with the standard.

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

Treatment Process

SAFF is a cost-effective method of wastewater treatment and sewage sanitation that is primarily used in residential and commercial complexes particularly for small to medium sized treatment plants where available land is limited, and where full-time operational manning would be uneconomical. A well designed Submerged Aerobic Fixed Film (SAFF) plant has no moving parts within its process zones, any serviceable items will be positioned to access easily without disrupting the ongoing treatment.

Primary Septic Tank

Influent enters this chamber from the source whereby larger solids settle into the bottom of the primary tank and are removed periodically as sludge, and where other buoyant material (oils and fats) float upward to form a 'crust' that is essential to trap and retain septic odours. The primary tank is a simple settling and scum retention module in which the accumulating sludge in the base of the tank biodegrades and consolidates slowly under the action of facultative and anaerobic microorganisms. The primary tank module is fitted with an outlet filter which is a very effective and relatively low-cost filter that is fitted to the outlet of the primary tank and leads to a considerable improvement in the performance of the whole wastewater treatment system.

Aeration Module

Influent enters from the Primary Chamber where the excess biodegradable Organic Matter is degraded by the biomass on the SAFF media. Air is introduced into this chamber via an air blower to create an environment for aerobic bacteria to multiply and flourish. SAFF reactor is a type of aerobic attached growth treatment process with a small footprint area, stable process, lesser sludge production and modular installations which are the key features of the SAFF process. Essentially SAFF system is a hybrid reactor where attached growth and suspended growth activity takes place simultaneously.

Clarification Chamber

Is essentially a quiescent zone where the activated sludge is 'settled out' and returned to the primary tank via a sludge return system. These particles aid in further biological reduction, denitrification and provides a constant food supply rich in microbes supporting the system through periods of limited flows.

ET32P

System Specifications & Installation Instructions

Effluent Quality

The Econotreat ET32P Series wastewater treatment system generates advanced secondary treated effluent of the following quality provided that there are no inhibitory or toxic substances within the wastewater that will impair the biological performance of the system:

- 5-day Biochemical Oxygen Demand (BOD5) 15 mg/L
- Suspended solids 15 mg/L

Note: Please read Guidelines on how to care for your EconoTreat wastewater system which are to be adhered to at all times.

The treated wastewater will usually be disposed of via a land application system, designed according to AS/NZS 1547:2012 which describes various land application systems for primary treated effluent. Disposal systems must also comply with the relevant Regional Authority rules, and these should be consulted.

Loading Rates

- Total Daily Flow Rate 2000 L per day
- Organic loading as BOD5 700g per day
- Suspended solids loading 700g per day

Important: the actual maximum loading of an installed EconoTreat EP32P System is limited to the capacity of the land application system it discharges to. For example if the land application system is designed with a capacity of 800L per day, then the EP32P System must not be loaded at more than 800L per day.

Dual Chamber Septic Tank

3200L Nominal Capacity
2000mm Diameter
2038mm High

Aeration Tank

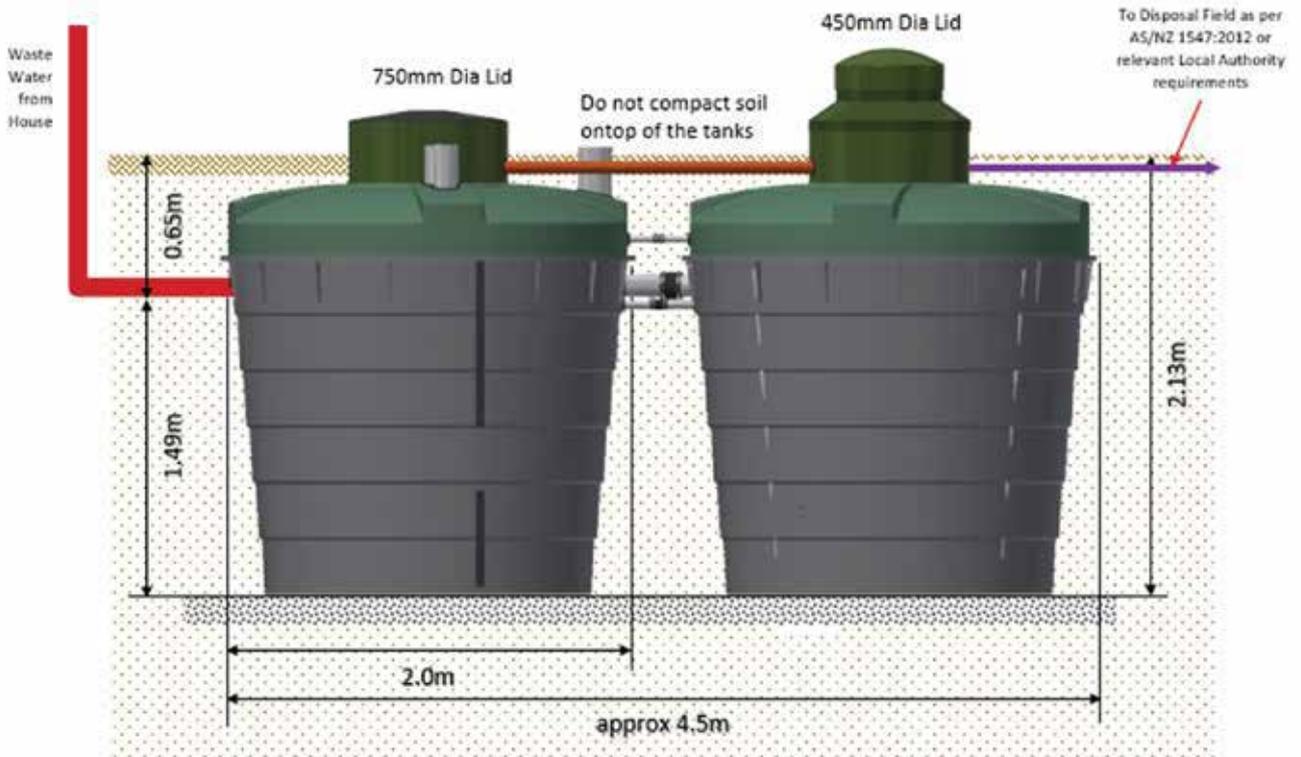
3200L Nominal Capacity
2000mm Diameter
2038mm High

Pump Chamber

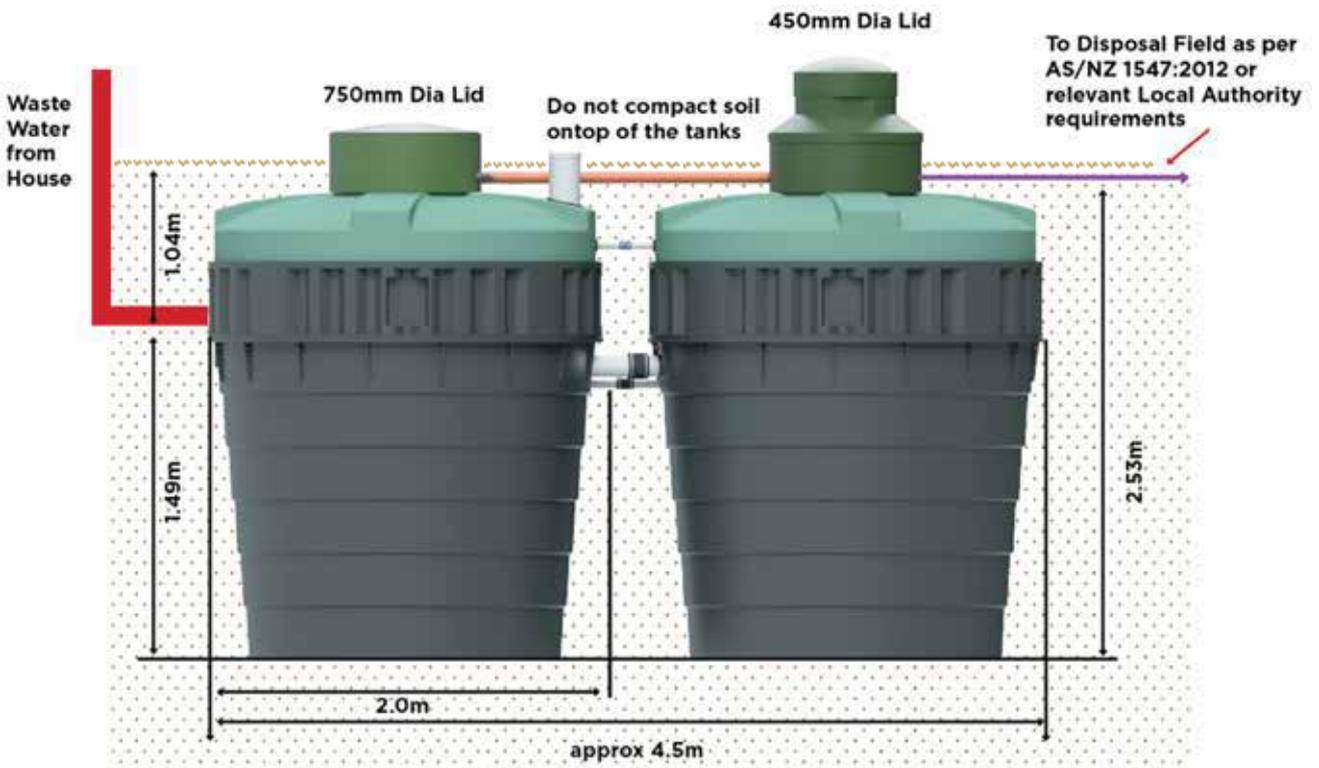
780mm Diameter
1200mm High
350L Nominal Capacity

(Located in the center of the Septic Tank)

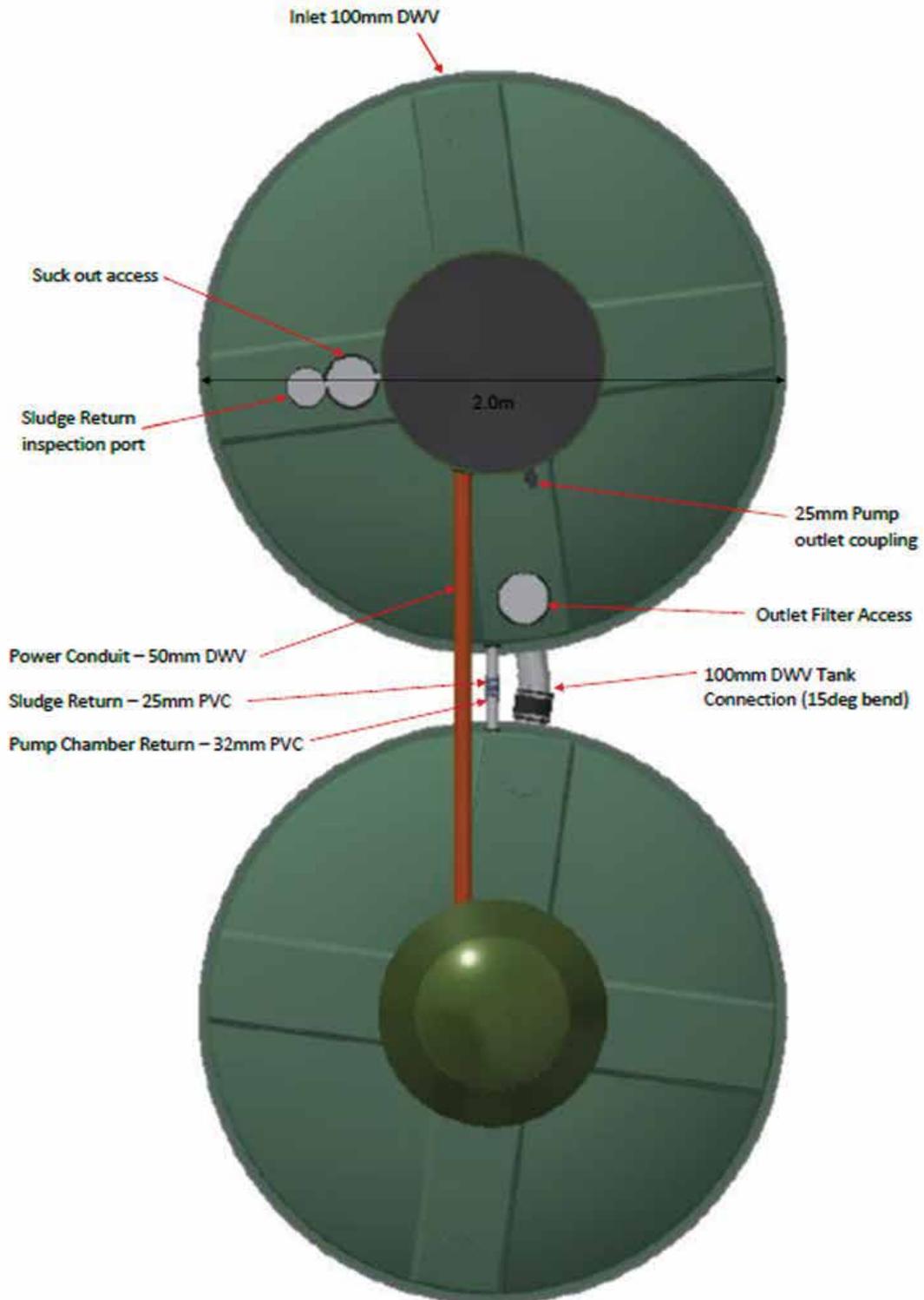
Schematic Drawings



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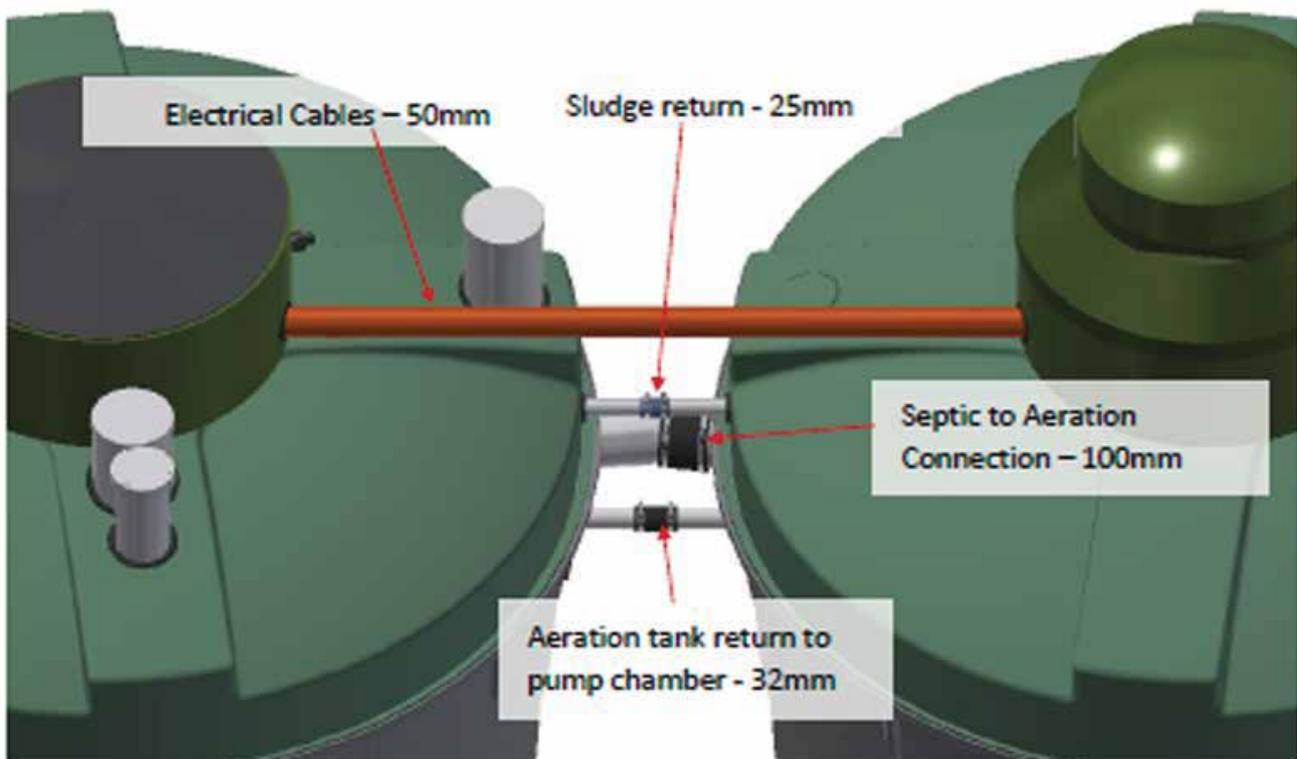
Top View



Instructions for Installation

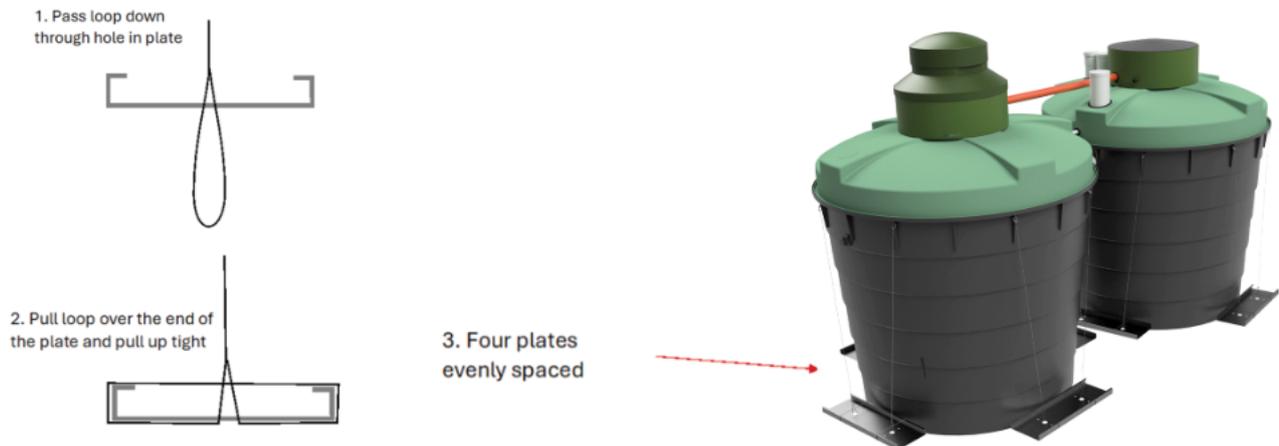
The EconoTreat system is to be installed or signed off by a registered Drain layer to the design specified by Waterflow NZ Ltd. The following installation instructions and procedures followed correctly will ensure System performance is not compromised in any way.

1. Excavate two 2.5m x 2.5m level platforms at an appropriate depth to ensure adequate fall for inlet pipe from the source or dwelling. This has to be installed on virgin ground. The two platforms need to be on the same level and close to each other.
2. Where possible excavate a trench away from the System and lay a drain coil and drainage metal at the base of the System to drain away any surface or ground water.
3. Move the tanks close together so all the pipes meet. Connect each pipe using the rubber couplings supplied and take a photo of them. See diagram below for identification of each pipe.



4. Install 4 anti-floatation plates to hold the modules securely in the ground. Wires should be hanging tight as they are designed to hold the plates 50 - 100mm above the bottom of the tank, as per below image. Take a photo of this before backfilling for Waterflow sign off.

Instructions for Installation



5. Connect the risers with 50mm DVW. There will be holes already drilled and uniseals supplied.

6. Draw the cables from the pump chamber through to 50mm DWV to the treatment tank. The cables are coiled inside the septic tank.

7. Trench from Dose Chamber outlet to disposal field and lay the 25mm alkathene feed line.

8. Backfill the excavation from the base of the tank with a GAP/PAP 20 metal, dry mixed with cement to form a solid mass, to a minimum of 400mm above the anchor plates. Then continue with metal, clean unsaturated soils or spoil from the excavation, (if suitable i.e. up to Class 4 as per AS/NZS 1547:2012) in approximately 200mm layers. Compact each layer evenly with a mechanical compactor to minimise subsidence and back fill to the level of the invert pipe.

9. Backfill around the pipe work with compacted clean sand/fines then complete back filling up to the maximum level of the backfill lines indicated on the shoulder of the tank or in the product specification sheet supplied.

10. Ensure the area around the tank is free draining and sloping away in all directions, to ensure that any rain or surface runoff will not pond on or near the tank.

11. Do not cover the top of the System with heavy soils but you can cover with a layer of topsoil, bark mulch or similar media material.

ET32P

System Specifications & Installation Instructions

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, cement can be added to fine metal to create a mass around the dead men anchors secured to the tanks (alternately concrete could be used). Waterflow must be made aware of this early on in view of supplying a tank that is fit for purpose.

Plumbing Pipes and Fittings

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

Alarm System

The VBB-P-2000 System is equipped with an AS/NZS 1546.3 compliant audible and visual alarm with a mutable alarm signal and alarm light. The alarm panel must be mounted in a location that is readily visible within the dwelling.

Alarm is triggered by a high-level float switch in the pump well.

ET32P

System Specifications & Installation Instructions



Backfill and Bedding

Backfill the excavation from the base of the tank with a GAP/PAP 20 metal, dry mixed with cement to form a solid mass, to a minimum of 400mm above the anchor plates. Then continue with metal, clean unsaturated soils or spoil from the excavation, (if suitable i.e. up to Class 4 as per AS/NZS 1547:2012) in approximately 200mm layers. Compact each layer evenly with a mechanical compactor to minimise subsidence and back fill to the level of the invert pipe.

Electrical

Where a pump is required to dose the Land Application System, all electrical connections must be installed according to AS/NZS 3000. The electrical connections are housed in an enclosure on the top of the tank. Please see separate Electrical Guide for more details.

ET32P

System Specifications & Installation Instructions



Warranty

WATERFLOW NZ LTD warrants that all Treatment Systems manufactured by WaterFlow NZ Ltd will be free from defects in materials and workmanship for the following periods from the date of installation, under the following conditions:

1. Plastic-Moulded tanks: 15 years
2. Concrete Tanks: 15 years
3. Filter Media: 5 years
4. Dosing float: 2 years
5. Electrical Components and Pump: 2 years

WATERFLOW NZ LTD will, at its discretion, repair or replace any defective components with the same or equivalent part at no charge to the consumer, in accordance with the following terms and conditions laid out in the WaterFlow NZ's Warranty Certificate. Full text warranty available on request.

1st June 2025
Dean Hoyle
Managing Director



WaterFlow

Bringing Clarity to Wastewater

Our team of wastewater experts are here to help.
Let's see if Econotreat could be right for your backyard.

*Smarter wastewater and sewage systems, for a
cleaner New Zealand.*

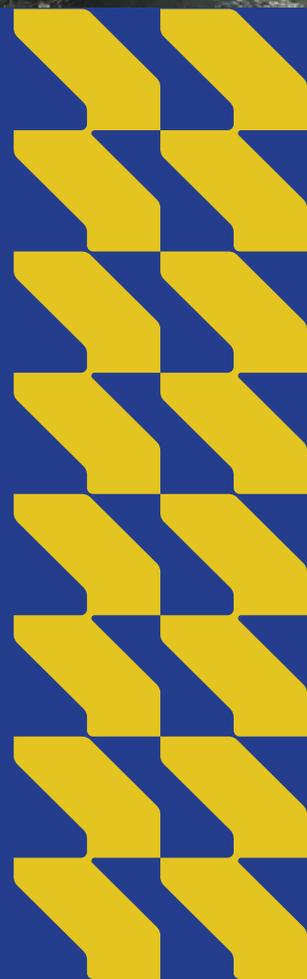
0800 628 356

www.waterflow.co.nz

sales@waterflow.co.nz

ET-32P-SpecInstall-250516

ECONOTREAT™





ECONOTREAT™

Advanced Secondary Treatment
Aerated Wastewater System



Owner's
Manual

EconoTreat Wastewater Systems

Owner's Manual

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EconoTreat Wastewater Systems

Owner's Manual

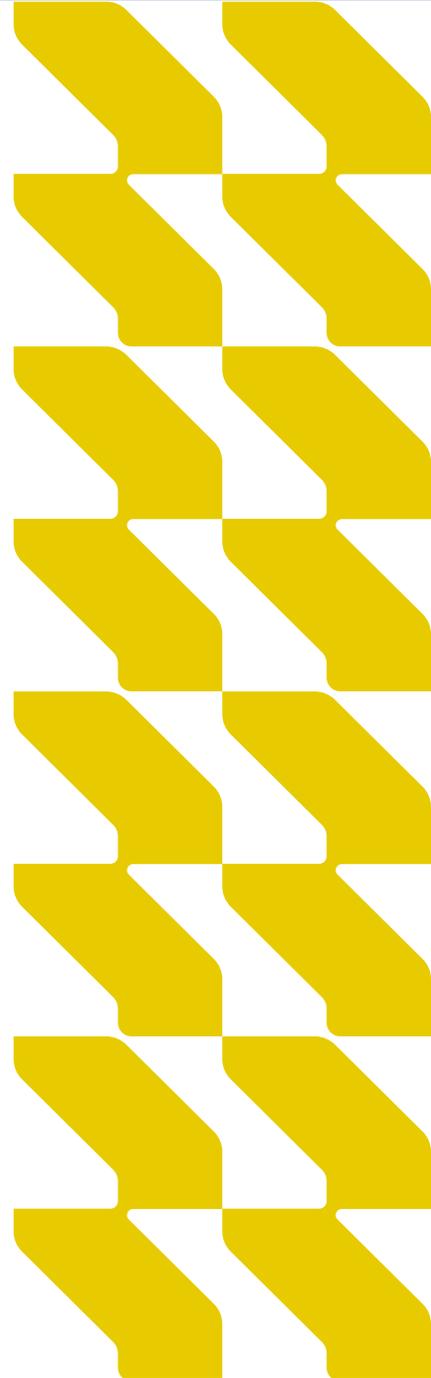
To the Owner

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 encourage you to monitor and care for your EconoTreat system with our backing and support. 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



EconoTreat Wastewater Systems

Owner's Manual

WaterFlow NZ Ltd Warranty

WATERFLOW NZ LTD warrants that the Waterflow NZ System will be free from defects in materials and workmanship for the following periods from the date of installation, under the following conditions:

1. Plastic-Moulded tanks: 15 years
2. Concrete Tanks: 15 years
3. Filter media: 5 years
4. Dosing float: 2 years
5. Electrical components and Pump: 2 years

WATERFLOW NZ LTD will, at its discretion, repair or replace any defective components with the same or equivalent part at no charge to the consumer, in accordance with the full terms.

Note: Full warranty document available at your request.

EconoTreat Wastewater Systems

Owner's Manual

Components of Your Wastewater Septic System

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.

Aeration Chamber

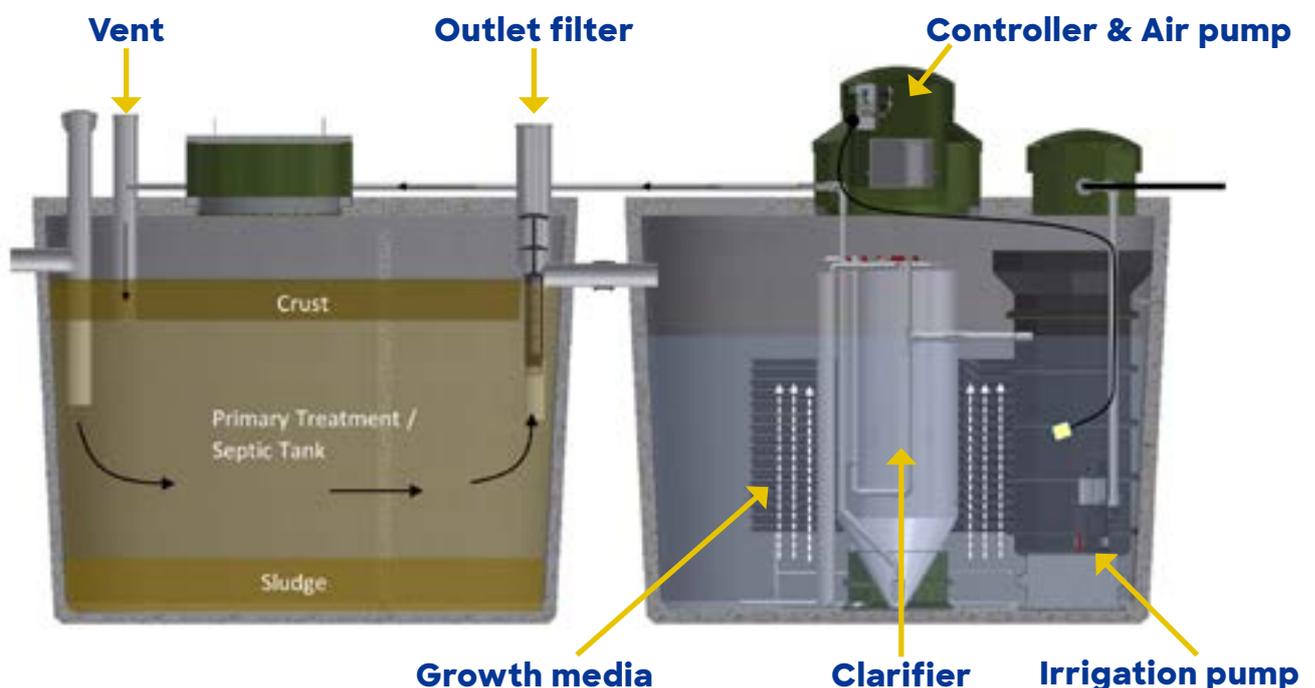
Water enters from the Primary Chamber. Air is introduced into this chamber via an air blower to create an environment for aerobic bacteria and other helpful organisms to consume the organic matter present. The aeration tank is designed in a manner to help prevent short circuiting of the wastewater to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

Primary (Septic) Chamber

Secondary (Aeration) Chamber



EconoTreat Wastewater Systems

Owner's Manual

Service Agent Role

Your EconoTreat System requires annual service and maintenance inspections unless otherwise specified by local 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. Servicing done by technicians who are not approved by WaterFlow will void your Warranty.

A record sheet (in duplicate) will be completed by our technician at the time of service. One copy is for you the customer and available upon payment, the other copy will be retained for our records.

Please call our office for the cost of servicing after the initial 12-month period.

Servicing includes:

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.

EconoTreat Wastewater Systems

Owner's Manual

Owner Care Role

Did you know...

...that as a homeowner you're responsible to make sure your wastewater system gets the required maintenance needed to protect the investment in your home? This guide will help you care for your wastewater system. It will help you understand how your system works and what steps you can take as a homeowner to ensure your system will work efficiently.

The owner is greatly encouraged to maintain a monthly visual check of the operation of their system and to make sure their land application systems are maintained in good condition.

1. Industry recommendation is to have a maintenance contract in place at all times
2. Visual check of treatment system
3. Visual check of land application system
4. Notify your approved service provider of any issues

Intermittent Use

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.

Efficient Water Use - it really 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.

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 Wastewater Systems

Owner's Manual



Inspection Checklist

When checking the system operation, take particular note of;

1. Remove and clean outlet filter every 3-4 months.
2. Field performance, particularly looking for any undue odours or effluent breakout (flush field lines 2-3 monthly).
3. All electrical parts (if applicable). Ensure all pump alarms are working.
4. Clean disc filter 2-3 monthly (if applicable)

EconoTreat Wastewater Systems

Owner's Manual

Care for your Land Application System (LAS / Disposal Field)

Your disposal field 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
- Mow your disposal field and maintain plantings regularly to ensure access to flushpoints etc.
- Plant only recommended wetland plants over and near your wastewater system. Roots from nearby trees or shrubs might clog and damage the disposal field
- Protect both the treatment system and the disposal field from vehicle traffic, including livestock to avoid damage to 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 disposal field. Flooding the disposal 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 field
- A soggy disposal field won't absorb and neutralise liquid waste. Plan landscaping, roof gutters and foundation drains so that excess water is diverted away from the disposal field



EconoTreat Wastewater Systems

Owner's Manual

Effects of Household Cleaning Chemicals

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 minimise 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 micro-organisms/bugs in a septic system.

EconoTreat Wastewater Systems

Owner's Manual

Substitutes For Household Cleaning Chemicals

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. Contact us for a new biological cleaner that will help you system.

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. Contact us for very effective, worm friendly, drain cleaning products.

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.

EconoTreat Wastewater Systems

Owner's Manual

Do's and don'ts

DO

- If your system requires power supply make sure this remains on continuously
- Wipe and bin your fats and frying oils rather than rinsing them down the drain
- 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
- Perform regular monthly visual checks of your system and field
- Keep records of all maintenance undertaken on the wastewater systems

DO NOT

- Switch off power unless servicing
- Use cleaners high in chlorine, phosphorous or ammonia in toilets or kitchen sink
- Pour any toxic/strong chemicals (paint, oil, grease, paint thinners or pesticides) down any drains
- Pour strong or large volumes of acid down any drains. These include: vinegar, brine, lemon juice.
- Flush down your toilet - Dental floss, feminine hygiene products, diapers, wipes, cotton swabs, cigarette butts, cat litter, dog poo, and other kitchen and bathroom items. 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.
- Discard any drugs down the sink or toilet
- Alter or add any part of your system without Waterflow NZ LTD's approval

EconoTreat Wastewater Systems

Owner's Manual

Troubleshooting

To ensure the most effective operation of your EconoTreat System you should familiarise yourself with the contents of this manual. The system has a high-water level and air failure alarm that can be muted as per AS/NZS 1546.3:2008. The mute function will automatically reset to audible in 24hrs. 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 odours persist, please call your service

Problem	Potential Cause(s)	Remedial Action(s)
Alarm sounds (will indicate air or water alarm)	Irrigation pump not working Air supply not working No power at the tank Blocked Septic filter	Check power source and wriggle pipe from pump to ensure float is not stuck Check water levels Listen for the air compressor Clean septic outlet filter Check your fuse board Open the taps on your drip field to assist water exiting faster High level float switch in the pump well may be triggered - the alarm will reset after the water level in the sump subsides If your system has a disc filter, remove and clean it If everything all looks to be ok, it may be a faulty alarm sensor (mute alarm and contact your service provider.
Water around tank	System overflowing Blocked outlet filter Storm/Surface water	Check there is power on at the system Remove and clean outlet filter Divert Storm/Surface water away from the system
Excessive foaming	Too much laundry detergent Too many washes	Use recommended quantities Spread wash loads over different days

EconoTreat Wastewater Systems

Owner's Manual

Problem	Potential Cause(s)	Remedial Action(s)
Persistent odours	<p>Too much water usage</p> <p>Excessive chemicals in use</p> <p>Gully traps dried out or non-existent (if the bathroom does not get used often, the water can evaporate out of a gully trap allowing odour to escape into the house).</p>	<p>Add biologic starter pack</p> <p>Install water saving devices</p> <p>Stop fats, oils, and grease going down the drain</p> <p>Reduce water usage or install water saving devices</p> <p>Avoid using nasty chemicals (Eco store, Earthwise, Ecobeings and Dishpod are great options)</p> <p>Run water down drain to ensure gully trap is blocking odour</p> <p>System will recover</p>
Irrigation system not working	<p>Irrigation pump not working</p> <p>Irrigation lines kinked or blocked</p> <p>Saturated areas at the end of the irrigation field</p>	<p>Check power source and wriggle pipe from pump to ensure float is not stuck</p> <p>Locate all flush valves, check if water is exiting</p> <p>Flush irrigation line and remove kinks or blockages</p> <p>Turn flush valves off to avoid further saturation</p> <p>Check if any large machinery has driven over / near it</p>
Water ponding on irrigation field	<p>Storm/Surface water</p> <p>Irrigation line blocked</p> <p>Excessive water use</p>	<p>Install water saving devices</p> <p>Repair irrigation pipe</p> <p>Redirect any surface water away from the irrigation field</p>
Household drains gurgling	<p>Blocked drain to the tank</p> <p>Check your main switchboard that the power to the system is on</p> <p>Check water levels, if flooded then a technician may be needed to investigate further</p>	<p>Check and make sure you can see the inlet into the tank. If you can you have a drainage issue.</p> <p>Send pictures of the inside of the tank to service@waterflow.co.nz to arrange an inspection</p> <p>Please limit water usage until we can come to site</p> <p>Stop and fats, oils, or grease going down the drain</p>

ECONOTREAT™

Need a hand? We're here to help.

0800 628 356

www.waterflow.co.nz

sales@waterflow.co.nz





WHAKARATONGA IWI

FIRE
EMERGENCY

NEW ZEALAND

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



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Section A - Firefighting Water Supplies and Vegetation Risk Reduction Waiver

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

Waiver Explanation Intent

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

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

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

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

Section B – Applicant Information

Applicants Information	
Name:	Paul and Jennifer Smith
Address:	380C Opito Bay Road, Kerikeri
Contact Details:	027 449 8813
Return Email Address:	info@northplanner.co.nz

Section C – Property Details

Property Details	
Address of Property:	380C Opito Bay Road
Lot Number/s:	Lot 8 DP 89303
Dwelling Size: (Area = Length & Width)	309m2
Number of levels: (Single / Multiple)	single

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

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

1 (a) Fire Appliance Access / Right of Way	
Is there at least 4 metres clearance overhead free from obstructions?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Is the access at least 4 metres wide?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Is the surface designed to support a 20-tonne truck?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Are the gradients less than 16%	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Fire Appliance parking distance from the proposed water supply is <90m metres	

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

1 (b) Restricted access to firefighting water supply, portable pumps required
Has suitable access been provided? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Comments: Fire fighting water supply includes one dedicated 25,000 litre water tank with rural connection

Internal FENZ Risk Reduction comments only:

Click or tap here to enter text.

2. Firefighting Water Supplies (FFWS)

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

2 (a) Water Supply Single Dwelling	
Tank	<input type="checkbox"/> Concrete Tank <input checked="" type="checkbox"/> Plastic Tank <input checked="" type="checkbox"/> Above Ground (Fire Service coupling is required - 100mm screw thread suction coupling) <input type="checkbox"/> Part Buried (max exposed 1.500 mm above ground) <input type="checkbox"/> Fully Buried (access through filler spout) Volume of dedicated firefighting water 25,000 litres

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

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

Internal FENZ Risk Reduction comments only:

[Click or tap here to enter text.](#)

3. Water Supply Location

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

3 (a) Water Supply Location	
Minimum Distance:	Is your water supply at least 6 metres from the building? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Maximum Distance	Is your water supply no more than 90 metres from the building? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

3 (b) Visibility
How will the water supply be readily identifiable to responding firefighters? E.g.: tank is visible to arriving firefighters or, there are signs / markers posts visible from the parking place directing them to the tank etc.
Comments: Fire-fighting water supply tank to be located 6m from northern side of dwelling.

3 (c) Security
How will the FFWS be reasonably protected from tampering? E.g.: light chain and padlock or, cable tie on the valve etc.
Explain how this will be achieved: Tank is within private property and accessed at the lower end of a private ROW.

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

4. Adequacy of Supply

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

4 (a) Adequacy of Water supply

Note: *The owner must maintain the firefighting water supply all year round. How will the usable capacity proposed be reliably maintained? E.g. automatically keep the tank topped up, drip feed, rain water, ballcock system, or manual refilling after use etc.*

Comments:

Tank will be kept topped up. Owners will also have two additional potable water tanks which will remain separate to the firefighting supply tank.

Internal FENZ Risk Reduction comments only:

Click or tap here to enter text.

5. Alternative Method using Appendix's H & J

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

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

5 (a) Alternative Method Appendix H & J

If an alternative method of determining the FFWS has been proposed, who proposed it?

Name: Click or tap here to enter text.

Contact Details: Click or tap here to enter text.

Proposed volume of storage?

Litres: Click or tap here to enter text.

Comments:

Click or tap here to enter text.

** Please provide a copy of the calculations for consideration.*

Internal FENZ Risk Reduction comments only:

Click or tap here to enter text.

6. Diagram

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



Internal FENZ Risk Reduction comments only:

Click or tap here to enter text.

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

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

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

I. Fire safe construction

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

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

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

II. Establish Safety Zones around your home.

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

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

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

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

IV. Choose Fire Resistant Plants

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

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

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

7 (a) Vegetation Risk Reduction Strategy

The site works will establish a curtilage area for the residential dwelling with the rest of the bush within the site being protected. The house building will be surrounded by low flammable planting and driveway paving to provide separation to bush areas.

Internal FENZ Risk Reduction comments only:

Click or tap here to enter text.

8. Applicant

Checklist	
<input checked="" type="checkbox"/>	Site plan (scale drawing) – including; where to park a fire appliance, water supply, any other relevant information.
<input type="checkbox"/>	Any other supporting documentation (diagrams, consent).

I submit this proposal for assessment.

Name: Rochelle Jacobs Dated: 13/08/2025

Contact No.: 027 449 8813

Email: info@northplanner.co.nz

Signature: Rochelle Jacobs

9. Approval

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

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

Name: [Click or tap here to enter text.](#)

Signature: [Click or tap here to enter text.](#)

P.P on behalf of the Area Manager

Fire and Emergency New Zealand Te Tai Tokerau / Northland District
APPROVED By GoffinJ at 11:46 am, Jan 21, 2026
Jason Goffin- Advisor Risk Reduction



geologix
consulting engineers

GEOTECHNICAL INVESTIGATION REPORT

380C-8 OPITO BAY ROAD, KERIKERI

PAUL SMITH

C0640N-G-01
SEPTEMBER 2025
REVISION 1





DOCUMENT MANAGEMENT

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Client Paul Smith

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Revision 01

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REVISION HISTORY

Date	Issue	Prepared	Reviewed	Approved
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1 INTRODUCTION

This Geotechnical Investigation Report has been prepared by Geologix Consulting Engineers Ltd (Geologix) for Paul Smith as our Client in accordance with our standard short form agreement and general terms and conditions of engagement.

The purpose of this report is to assist with Resource and Building Consent applications in relation to the proposed development at 380C-8 Opito Bay Road, Kerikeri, the 'site'. Specifically, this report provides interpretation of a site-specific ground investigation and geotechnical assessment to provide recommendations for the proposed development. This report may be used to assist with detailed design and future consent application.

1.1 Proposed Development

It is understood that the Client proposes to develop the site with a residential dwelling with deck, garage and retaining walls. Proposed piled foundations extend from the existing ground levels to elevate the finished level of the building platform.

This understanding has been established from the proposed concept development plans supplied to Geologix at the time of writing and reproduced within Appendix A.

It is recommended that this report is subject to review and necessary amendment once specific development plans of the proposed dwelling are available.

2 SITE DESCRIPTION

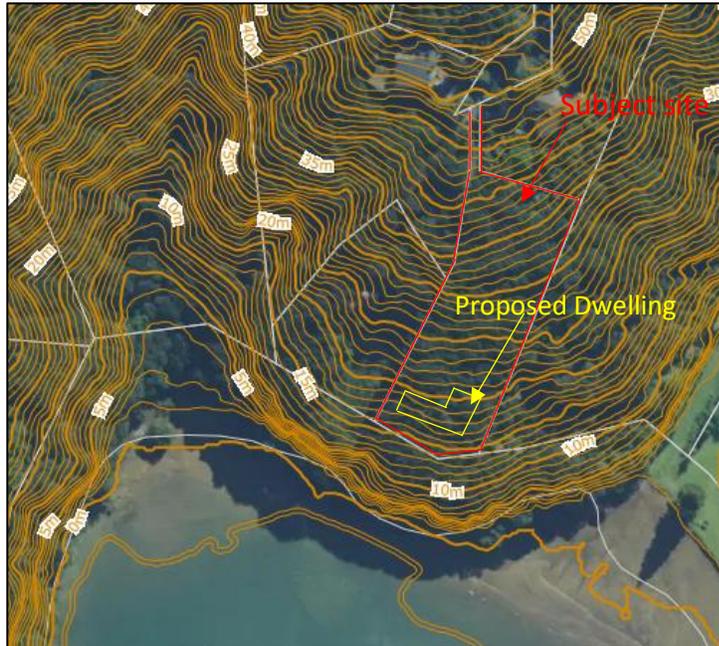
The site is presented to the south of Opito Bay Road. The property is legally described as Lot 8 DP 89303, and an irregular shaped parcel of land with a gross site area of approximately 3,440 m².

Future dwelling and shed are proposed to be to the south of the lot. The site setting is presented schematically as Figure 1 below.

Topographically the site is situated over moderately to steeply sloping land dipping to the south/southeast with a natural slope angle ranging approximately 15 to 21°. Furthermore, beyond the southern boundary, within the esplanade reserve, the ground becomes steep to very steep as a shallow cliff to the CMA.



Figure 1: Site Setting¹



3 DESKTOP APPRAISAL

To assist with our geotechnical appraisal, we have undertaken a detailed desktop review of available information with a specific focus upon geotechnical influences.

3.1 Infrastructure Review

Available infrastructure information is provided by Far North District Council (FNDC)'s Far North Maps GIS system. According to the available data, no existing Council infrastructure is present within the site boundaries, and it is presumed that the future dwellings will be serviced by on-site 3 water infrastructure.

Geotechnically, future building foundations will not be influenced by existing public pipelines according to available data.

3.2 Overland Flow Path and Flood Plains

In general, it is expected that surface water will move as sheet flow following the natural topography towards the south and southeastern boundary until it is intercepted by the sea.

It is considered that the risk of encountering weak alluvial deposits within the

¹ Source: <https://app.grip.co.nz>



proposed building sites are low based on the site setting.

3.3 Geology and Geomorphology

Available geological mapping² indicates the site to be underlain by Waipapa Group parent rock described as massive to thin bedded, lithic volcanoclastic metasediments and argillite, with tectonically enclosed basalt, chert and siliceous argillite. Generally, Waipapa rocks have had a long history of deformation, and their structure is complicated and poorly known so there is likely to be great deal of variation over relatively short distances. Weathering of Waipapa group rocks produces a soft, white to yellow-brown sandy clay, locally up to depths of 20m.

The presence of terraced, hummocky land is generally indicative of long-term soil creep which may occur at shallow slope angles from approximately 15 ° within the Waipapa strata. Typically, long term soil creep occurs where sensitive residual soils become saturated in the surface horizons triggering movement along a shear base typically at the interface of residual soil and underlying completely weathered rock. Site topography was measured at approximately 15 to 21 ° from available LiDAR data. Furthermore, the land steepens significantly beyond the southern and eastern boundary, exhibiting a very steep slope/ cliff leading down towards the CMA at an angle of approximately 28 to 47°.

3.4 Natural Hazards Information

The available natural hazards shown on the Northland Regional Council Map^{3a} indicate that the site is located within the blue zone of Tsunami Evacuation Zone.

According to the Far North District Council Section 32 Report, Natural Hazards (May 2022); land which is underlain by 'Low Hazard' geological units such as Waipapa and is sloping steeper than 1V:3H (18°) is considered "Land susceptible to instability". As such specific geotechnical stability analysis will be required at the time of Consent.

3.5 Existing Geotechnical Information

A review of available GIS databases, including the New Zealand Geotechnical Database³ (NZGD) have not been identified borehole records within 300m from our site.

² Edbrooke, S.E, 2001. *Geology of the Auckland area*. Institute of Geological & Nuclear Sciences 1:250 000 geological map 3.

³ <https://www.nzgd.org.nz/>



4 GROUND INVESTIGATION

A site-specific walkover survey and intrusive ground investigation was undertaken by Geologix on 8 August 2025. The ground investigation was scoped to confirm the findings of the above information and to provide site-specific parameters for this geotechnical assessment and ground model. The ground investigation comprised:

- Four hand auger boreholes designated HA01 to HA04, were formed across the site to a target depth of 5.0 m below ground level (bgl). All boreholes reached early refusal due to hard/ very dense stratum between 1.0 to 1.8 m bgl.
- In-situ field vane testing was carried out on cohesive soils at 0.3 m intervals.
- Four Scala tests were conducted at the base of the refused hand auger boreholes.

4.1 Site Walkover Survey

A visual walkover survey of the property confirmed:

- Topography is in general accordance with that outlined in Section 2 and the available GIS contours. The topographic profile comprises moderate to steep sloping coastal land.
- It was observed that the proposed site is mostly covered by trees and vegetation. However, a path had been cleared for access onto the site.
- No existing above ground structures have been observed.
- Minor earthworks formed to create a small platform with a 0.5m high cut was observed near the centre of the site.
- Some informal stormwater management had been implemented by cutting swales/gulleys into the ground in the south east corner of the site.
- No evidence of deep instability was recorded within the site during the walkover. However, some trees were tilted, suggesting there may be soil creep and/ or shallow land instability effects.

4.2 Ground Conditions

Subsurface conditions encountered during the site investigations were logged by a qualified geotechnical engineering professional in accordance with New Zealand Geotechnical Society guidelines⁴. Engineering borehole logs are presented as

⁴ *New Zealand Geotechnical Society, Field Description of Soil and Rock, 2005.*

Appendix B to this report and approximate borehole positions recorded on Drawing No. 200.

Strata identified during the ground investigation can be summarised as follows:

- **Topsoil encountered up to 0.3 m bgl.** Described as a topsoil containing organic clayey silt, dark brown and moist with low to high plasticity.
- **Waipapa Group Residual Soils to depths >1.8 m bgl.** This soil was encountered in all boreholes beneath the topsoil. The Waipapa Residual soils were generally described as silty clay or clayey silt. The soils were generally detailed as brown to orange brown and grey with mottled orange, moist with low to high plasticity. The soil was found to be very stiff to hard in consistency.

Very Stiff: Three in-situ field vane test strengths were measured within the very stiff ECBF, with the readings ranging between 190 kPa to 200 kPa, and the characteristic unit vane shear strength was determined to be 190 kPa at 95% confidence.

Hard: Sixteen in-situ field vane test strength was measured within the hard ECBF, with the reading of >200 kPa to UTP (Unable to Penetrate), and the characteristic unit vane shear strength was determined to be greater than 200 kPa at 95% confidence.

Conservatively, inferred hard/ dense layers have been taken from the depth where DCP blow counts returned values greater than 20 blows/ 100mm.

A summary of the above information is presented as Table 1 below.

Table 1: Summary of Ground Investigation

Hole ID	Hole Depth	Depth of Topsoil (mbgl)	Depth of Waipapa Group (mbgl)	Depth of Inferred Hard/ Dense (mbgl)	Groundwater
HA01	1.2 m	0.1 m	>1.2 m	>1.9	NE
HA02	1.0 m	0.3 m	>1.0 m	>3.2	NE
HA03	1.8 m	0.2 m	>1.8 m	>2.5	NE
HA04	1.8 m	0.2 m	>1.8 m	>2.2	NE

1. All depths recorded in m bgl unless stated.

2. Groundwater measurements taken on day of drilling.

3. NE – Not Encountered.

4.2.1 Groundwater

All groundwater levels in the hand augers were monitored utilising a groundwater dip meter on the day of completion. Groundwater was not encountered at the time

of our geotechnical investigation.

Groundwater levels commonly fluctuate according to the season and rainfall events. As such, groundwater levels may vary and be identified at higher levels/or may be present than what was observed during this ground investigation. It is recommended that during any earthworks should any water ingress be noted that further advice is sought from Geologix which may require amendments to the recommendations of this report.

5 GEOTECHNICAL ASSESSMENT

Based on the results of the desktop appraisal, a site walkover survey, and the ground investigation, Geologix have undertaken a site-specific geotechnical assessment relevant to the proposed development concept.

5.1 Geotechnical Design Parameters

Geotechnical design parameters are presented in Table 2 below. They have been developed based on our ground investigation and experience with similar materials.

Table 2: Geotechnical Effective Stress Parameters

Geological Unit	Unit Weight, kN/m ³	Effective Friction Angle, °	Effective Cohesion, kPa	Undrained Shear Strength, kPa
Waipapa Residual Soils	18	30	5	150*
Inferred Hard/ Dense Layer	20	38	15	200+

**Adopting Bjerrum correction factor of 0.8 from the average peak vane shear strength.*

5.2 Site Subsoil Class

The site has been designated as Site Subsoil Class C - shallow soil site according to the provisions of NZS1170:2004⁵

5.3 Seismic Hazard

New Zealand Standard NZS1170.5:2004 Clause 2.1.4 specifies that to meet the requirements of the New Zealand Building Code, design of structures is to allow for two earthquake scenarios:

1. *Ultimate Limit State (ULS) shall provide for... "avoidance of collapse of the structural system...or loss of support to parts... damage to non-structural systems necessary for emergency building evacuation that renders them inoperable".*

⁵ NZS1170.5:2004, *Structural Design Actions Part 5: Earthquake Actions Clause 3.1.3.*



2. *Serviceability Limit State (SLS) are to avoid damage to... “the structure and non-structural components that would prevent the structure from being used as originally intended without repair after the SLS earthquake...”.*

The seismic hazard in terms of Peak Ground Acceleration (PGA) has been assessed based on the NZGS Module 1⁶. Table 3 presents the return periods for earthquakes with ULS and SLS ‘unweighted’ PGAs and design earthquake loads for the corresponding magnitude. The PGAs were determined using building Importance Level (IL) 2, defined by NZS1170.5:2004. Reference should be made to the structural designer’s assessment for the final determination of building importance level.

Table 3: Summary of Seismic Hazard Parameters

Limit State	Effective Magnitude	Return Period (years)	Unweighted PGA
ULS	6.5	500	0.19 g
SLS	5.8	25	0.03 g

5.4 Site Stability

5.4.1 Stability of Proposed Building Site

At the time of writing, no obvious indications of major deep-seated instability were identified at the site, and the risk of such deep-seated instability developing as a result of the development proposal is moderate. Within the scope of this ground investigation Geologix have undertaken computer modelled slope stability analysis through two critical sections across the site topography and proposed development concept. The cross-section alignments are presented on Drawing No. 200 within Appendix A.

The slope was analysed within propriety software Slide 2 Version 9.037, developed by RocScience Inc. The purpose of the stability assessment was to:

- Provide a working, accurate ground model in relation to site stability refined according to observed conditions and the results of this ground investigation.
- Develop a development engineering solution with any specific geotechnical stability requirements.
- Inform the requirements of Consent, developed architectural design and further engineering works.

⁶ *New Zealand Geotechnical Society, Earthquake Geotechnical Engineering Practice, Module 1, November 2021, Appendix A, Table A1.*



The stability analysis process was undertaken by calibrating the model to observed conditions by refining the ground investigation data to develop the effective stress parameters presented in Table 2 and applying them to the proposed condition.

Limit equilibrium stability analysis was adopted in the analysis to express the results as a Factor of Safety (FS). When FS = 1.0, the represented mechanism is in equilibrium with the disturbing, active forces equal to the resisting, stabilising forces. A lower FS indicates that instability could occur under the modelled scenario whereas a higher FS demonstrates a margin of safety in respect of stability. Minimum FS criteria have been developed for use in residential development by Auckland Council⁷ which are widely adopted in the Far North region. Modelling three separate event scenarios the accepted minimum FS are summarised as follows:

- Minimum FS = 1.5 for static, normal groundwater conditions.
- Minimum FS = 1.3 for elevated groundwater conditions (storm events).
- Minimum FS = 1.0 for dynamic, seismic events.

5.4.2 Stability Analysis Results

Slope stability analysis results are presented in full as Appendix C and summarised below as Table 4.

Table 4: Summary of Stability Analysis Results

Profile	Scenario	Global Min.	Development Footprint (min FS)	Result
Existing condition- Section A	Static	1.16	>1.5	Ok
	Elevated GW	0.80	<1.3	Not Ok
	Seismic	0.95	>1.0	Ok
Existing condition – Section B	Static	1.28	>1.5	Ok
	Elevated GW	0.89	<1.3	Not Ok
	Seismic	0.99	>1.0	Ok

1. Static, normal groundwater minimum FS = 1.5
2. Static, elevated groundwater minimum FS = 1.3
3. Dynamic, seismic conditions minimum FS = 1.0

5.4.3 Stability Analysis Conclusions

The developed slope stability models are considered to be a reasonable

⁷ Auckland Council, Code of Practice for Land Development and Subdivision, Section 2 Earthworks and Geotechnical Requirements, Version 1.6, September 2013.



representation of the observed conditions on-site. The existing ground profiles reach Far Northland Council's required Factors of Safety at the proposed building platform other than the elevated groundwater condition. The proposed ground profile's adverse effects on existing stability are moderate. The proposed development is considered subject to natural hazards or instability.

The models meet the minimum requirements for residential development under static and seismic conditions. Under elevated groundwater condition potential failure planes enter the conceptual Building Site as outlined on Drawing No. 200 and as such require a Building Restriction Line (BRL) for safe development. Potential failure planes under this model are shallow, non-circular, extending through the steep slope to the south.

The preliminary BRL indicates that within Building Site, any residential development should be restricted to 21.7 m away from the southern boundary. It is however important to note that development may occur within the BRL zone. Development in this zone must be subject to further the recommendations provided in Section 6.1, as this land does not meet the minimum requirements for residential development to protect against instability potential and satisfy Far Northland Council. Any development within this zone must be protected by stabilising structures such as retaining walls and in-ground palisade walls.

5.5 Soil Expansivity

Clay soil may undergo appreciable volume change in response to changes in moisture content and be classed as expansive. The reactivity and the typical range of movement that can be expected from potentially expansive soils underlying any given building site depends on the amount of clay present, the clay mineral type, and the proportion, depth, and distribution of clay throughout the soil profile. Clay soils typically have a high porosity and low permeability causing moisture changes to occur slowly and produce swelling upon wetting and shrinkage upon drying. Apart from seasonal moisture changes (wet winters and dry summers) other factors that can influence soil moisture content include:

- Influence of garden watering and site drainage.
- The presence of mature vegetation.
- Initial soil moisture conditions at the time of construction.
- Accidental wetting from failed services such as leaking pipes.

Based on our experience and lab results of similar soils, for design of residential dwelling foundation, site subsoil shall design for minimum Highly Expansive, or

Expansive Soil Class H, as per New Zealand Building Code. In accordance with New Zealand Building Code⁸, Class H or Highly Expansive soils typically have a soil stability index (I_{ss}) range of 3.8 to 6.5% and a 500-year design characteristic surface movement return (y_s) of 78 mm. A quantification of the expansive soil class assumptions can be made by geotechnical laboratory analysis.

5.6 Liquefaction Potential

Liquefaction occurs when excess pore pressures are generated within loose, saturated, and generally cohesionless soils (typically sands and silty sands with <30 % fines content) during earthquake shaking. The resulting high pore pressures can cause the soils to undergo a partial to complete loss of strength. This can result in settlement and/ or horizontal movement (lateral spread) of the soil mass.

The Geologix ground investigation indicates the site to be predominantly underlain by fine grained, non-dilative and high plastic Waipapa Group soils. Based on the materials strength and consistency, and our experience with these materials, there is no liquefaction potential/ risk in a design level earthquake event.

6 GEOTECHNICAL RECOMMENDATIONS

The following geotechnical recommendations have been developed based on the plans and details supplied to us at the time of writing. Amendments or revisions to the plans detailed in this report may require a review of the following recommendations.

6.1 Foundations

It is understood from the concept development plans that the proposed dwelling platform is suspended on piles to reduce the requirement of earthworks to create level building platforms.

Where the building is entirely situated north of the BRL, ordinary piled foundations without stabilisation measure may be adopted.

All piles should be taken down through Waipapa Soil to terminate at a minimum of 3x pile diameters (3B) into Hard Waipapa stratum. It is recommended that the foundation solution is subject to further geotechnical investigation at the Building Consent stage and specific engineering design by a professional structural engineer.

⁸ *New Zealand Building Code, Structure B1/AS1 (Amendment 20, November 2021), Clause 7.5.13.1.2*



Table 5: Deep Piled Foundation Geotechnical Parameters

Strata	Geotechnical Design Parameters	
Waipapa Group	Ultimate end-bearing capacity	1350 kPa/m ²
Residual Soil	ULS design end-bearing capacity ¹	675 kPa/m ²
	SLS design end-bearing capacity	450 kPa/m ²
	Ultimate skin friction ²	60 kPa
	ULS design skin friction ¹	30 kPa
	SLS design skin friction	20 kPa

1. Adopting a geotechnical strength reduction factor of 0.5.
2. Adopting $S_u * \alpha$. With α determined from Figure 5 of NZBC B1/ VM4.

Alternatively, where a building is located south of the BRL identified on Drawing No. 200, specifically engineered foundations must address potential global instability, either by being positioned behind a specifically designed retaining wall or by incorporating deep end bearing leading edge piles around the southern perimeter. The retaining wall or leading edge piles should assume the loss of support from the upper residual soil layer up to 3.2m below ground level. If these measures are taken to mitigate global instability, then standard shallow foundation options such as shallow piles may be designed by a structural engineer.

In this scenario, provided the above parameters are met, shallow piled foundations may be designed by a structural engineer adopting an ultimate bearing capacity of 300 kPa, a geotechnical reduction factor of 0.5 and for a highly expansive soil type.

6.2 Earthworks and Methodology

No specific earthwork plans were provided.

All cut and fill earthworks proposed will require site specific slope stability analysis by a professional geotechnical engineer.

6.2.1 Temporary Works

To reduce the risk of temporary excavation instability, it is recommended that unsupported excavations have a maximum vertical height of 0.5 m. Temporary unsupported excavations above this height should not be adopted and shall be graded to permanent batter slopes immediately.

If proposed, conventional timber post and rail retaining walls are suitable for the site. Temporary excavations to form retaining walls should not be left unsupported for any length of time. Poles must be installed and backfilled against the excavated face immediately to ensure soils are not left unsupported.

Temporary batters should be covered with polythene sheets secured to the surface



with pins or batons to prevent saturation. All works within proximity to excavations should be undertaken in accordance with Occupational Health and Safety regulations. In addition, it is recommended that all earthworks are conducted in periods of fine weather within the typical October to April earthwork season. Consent conditions commonly prescribe working restrictions.

6.2.2 Fills

It is recommended that any proposed fills are kept to a minimum at the site to maintain stability of the shallow Residual Soil. It is also recommended that proposed fills are subject to a specific engineering specification including compaction standards and construction monitoring at regular lift intervals (maximum 0.5 m).

Certified engineered fill at the site may be graded at 1V:3H. Steeper batter slopes may be possible with specific engineering assessment at the Building Consent stage. A preliminary minimum standard for engineered earth fill has been determined as follows in accordance with NZS4431:2022⁹ Table A1:

- Lowest shear strength value of 150 kPa, calculated in accordance with NZGS Guideline for hand held shear vane test.
- Average air voids of <10 % and ≥ 95 % maximum dry density. Two tests required per 1000 m³ with no less than 2 tests per lift.
- Minimum 300 kPa ultimate bearing capacity and <25 mm settlement at 300 kPa.
- Tests undertaken at regular lift intervals, i.e., <500 mm.
- Maximum fill batter angle of 1V:3H.
- All fills placed on flat benches cut into slope.

The above should be achievable with standard compaction equipment including a sheep foot roller with vibration. It is recommended that fills within the proposed dwelling footprint are benched into the natural slope with benches not exceeding 1.0m in height.

Site-won soils may also be either cut to waste or placed within landscaped areas outside of the proposed dwelling footprint with a minimum offset of 1.0 m. Outside of the building footprints, fills shall be track rolled as a minimum to achieve a minimum average undrained shear strength of 100 kPa.

⁹ NZS4431, *Engineered fill construction for lightweight structures*, 2022.

In addition, all unsuitable materials such as organics, buried topsoil, non-engineered fill and locally weak materials ($S_u < 60$ kPa) should be stripped from the footprint of proposed fills and replaced with compacted GAP hard fill subject to a specific engineering specification and construction monitoring.

6.3 Retaining Walls

It is understood that retaining walls may be required to support the building if located south of the BRL.

It is recommended that all retaining walls are designed by a professional engineer familiar with the findings and geotechnical parameters of this report. Geotechnical design input may be required to consider boundary retaining wall deflection limits.

Based on the results of the ground investigation and for maximum of 20° backslopes above the retaining structure, earth pressure parameters for design are presented within Table 6 below.

Table 6: Earth Pressure Parameters

Strata	At Rest Pressure Coefficient, K_0	Active Pressure Coefficient, K_A	Passive Pressure Coefficient, K_P
Waipapa Residual Soils	0.5	0.473	1.88
Inferred Hard/ Very dense layer	0.384	0.331	3.12

- Adopts soil/ wall friction coefficient of 0.67 for timber according to NZBC B1/VM4 Table 2.*
- Considers 20° backslopes only. Parameters to be modified by design engineer for any sloping backfill/ ground or poles raked not more than 5 degrees.*

It is recommended that a 100 mm diameter perforated drain coil and cohesionless backfill (minimum 300 mm wide) is installed behind all retaining walls to control any temporary hydrostatic pressures.

6.3.1 Geotechnical Stability Control

Geotechnical retaining wall design parameters to address the slope stability requirements are presented below as **Error! Reference source not found.7**. However, these should be taken as absolute minimums, and the elements may have an additional requirement based on the retaining wall models developed in specific engineering design. Amendments to the proposed development plans may require an amendment to these parameters. It is recommended that these are reviewed once development concepts are finalised.

Table 7: Minimum Geotechnical Stability Parameters

Profile	Minimum Retaining Wall Embedment (m bgl)	Min. Stabilising Shear Force (kN/m)
Section A	6.0	25.5
Section B	6.0	120

It is important to note that the above parameters are minimum requirements to achieve global stability and do not represent the flexural strength and/ or internal design requirements for retaining wall design.

6.4 Driveways

Driveway is proposed between entrance and the dwelling at the site. It is recommended that all unsuitable and deleterious materials such as topsoil, vegetation, shallow fill, and any existing foundations/ concrete hardstanding is removed from the driveway area prior to filling. By doing so, it is expected that the shallow natural Waipapa deposits will achieve a typical subgrade CBR value of 4 % or greater according to Austroads Standards.

For driveway and parking areas it is recommended that carriageways include a minimum total thickness of 250 mm, comprising a minimum 150 mm sub-basecourse, typically AP65 or approved similar and minimum 100 mm basecourse, typically finer AP40 or approved similar.

6.5 Construction Monitoring

During site development works it is recommended that specific construction monitoring is undertaken by a professional engineer in accordance with the recommendations of this report and consent conditions. It is anticipated that a professional Geotechnical Engineer will be required to provide inspection of:

- Subgrade at the base of excavations within the footprint of buildings, driveways, and any other areas of structural or vehicle loading.
- Inspection of hard fill compaction where placed >300 mm in thickness and/ or within the footprint of imposed surcharges such as buildings and/ or driveways.
- Foundation inspection of future dwellings to confirm embedment and bearing capacity according to specific structural design.

The above items are considered to be capable under CM2 level construction monitoring accompanied by appropriate Producer Statements. Monitoring should be undertaken or supervised by a chartered professional engineer.

7 LIMITATIONS

This report has been prepared for Paul Smith 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 and accompanying plans.

The recommendations and opinions in this report are based on arisings extracted from exploratory boreholes at discrete locations and any available existing borehole records. The nature and continuity of subsurface conditions, interpretation of ground condition and models away from these specific ground investigation locations are inferred. It must be appreciated that the actual conditions may vary based on the assumed ground model. Difference from the encountered ground conditions during subdivision construction may require an amendment to the recommendations of this report.



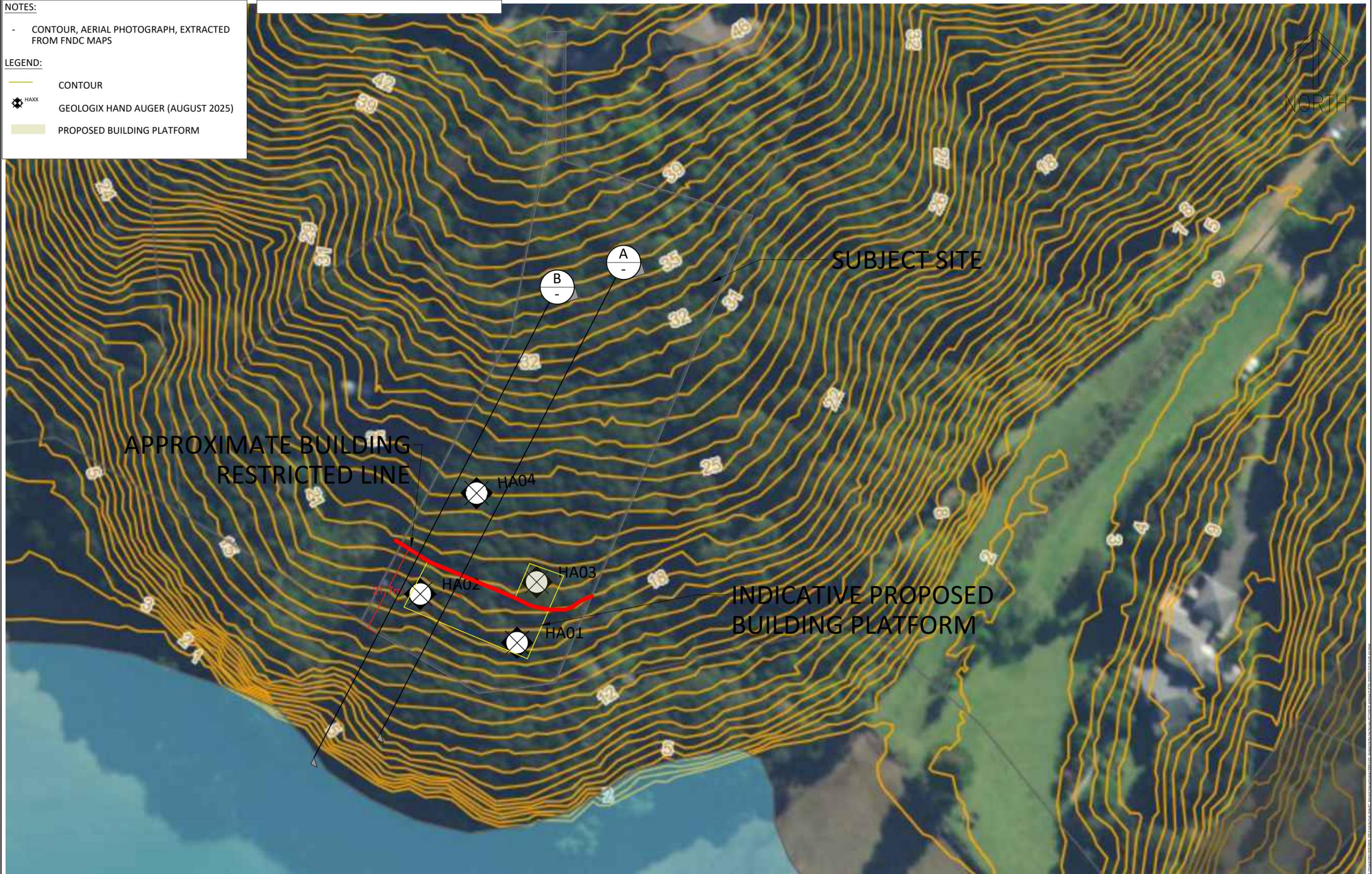
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APPENDIX A

Drawing

NOTES:
 - CONTOUR, AERIAL PHOTOGRAPH, EXTRACTED FROM FNDC MAPS

LEGEND:
 - CONTOUR
 - HAXX GEOLOGIX HAND AUGER (AUGUST 2025)
 - PROPOSED BUILDING PLATFORM



DRAWN	SIGNED	DATE	REV.	DATE	REVISION DETAILS	BY	APP.
JK	JK	20/08/25					
AW	AW	20/08/25					
EC	EC	20/08/25	A	20/08/25	FIRST ISSUE	JK	EC

CLIENT: PAUL SMITH

PROJECT: 380C OPITO BAY ROAD
 KERIKERI
 NORTHLAND
 LOT 8 DP 89303

DRAWING TITLE: SITE PLAN

STATUS: NOT FOR CONSTRUCTION				
SCALE: 1:750		SHEET SIZE: A3		
PROJECT NO.	TYPE	CLASS	SHEET NO.	REV.
C0640N	BC	G	200	A



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APPENDIX B

Exploratory Hole Records



INVESTIGATION LOG

HOLE NO.:
HA01

CLIENT: Paul Smith
PROJECT: 380C-8 Opito Bay Road, Kerikeri

JOB NO.:
C0640N

SITE LOCATION: 380C-8 Opito Bay Road, Kerikeri
CO-ORDINATES: 1694504mE, 6105130mN

START DATE: 08/08/2025
END DATE: 08/08/2025

CONTRACTOR: Internal RIG: 50 mm Auger & DCP

ELEVATION: Ground DRILLER: DBT/TW

LOGGED BY: LW

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 100mm)		VANE SHEAR STRENGTH (kPa) Vane:				WATER											
				2	4	6	8	10	12		14	16	18	50	100	150	200	Values			
TOPSOIL; dark brown. Moist.		0.0 - 0.2																			
Silty CLAY; brown. Very stiff; moist; high plasticity; [Waipapa Group - Residual Soil].		0.2 - 0.4																			200 94
Clayey SILT; grey mottled orange. Very stiff; moist; low plasticity.		0.4 - 0.6																			200+
0.4m - 0.6m: Hard to Auger.		0.6 - 0.8																			-
0.6m - 0.8m: Becoming brown.		0.8 - 1.0																			200+
0.7m - 0.9m: Becoming brown and grey mottled orange.		1.0 - 1.2																			-
1.0m: Grey mottled orange.		1.2 - 1.4																			UTP
End Of Hole: 1.90m		1.4 - 1.6																			-
		1.6 - 1.8																			-
		1.8 - 2.0																			-
		2.0 - 2.2																			-
		2.2 - 2.4																			-
		2.4 - 2.6																			-
		2.6 - 2.8																			-
		2.8 - 3.0																			-
		3.0 - 3.2																			-
		3.2 - 3.4																			-
		3.4 - 3.6																			-
		3.6 - 3.8																			-
		3.8 - 4.0																			-
		4.0 - 4.2																			-
		4.2 - 4.4																			-
		4.4 - 4.6																			-
		4.6 - 4.8																			-

PHOTO(S)



REMARKS

- Hand auger terminated at 1.2 m bgl due to dense strata encountered
- Continued with DCP from 1.2 m bgl until refusal at 1.8 m bgl
- No groundwater encountered

WATER

- ▼ Standing Water Level
- ▽ Out flow
- ↖ In flow

INVESTIGATION TYPE

- Hand Auger
- Test Pit



INVESTIGATION LOG

HOLE NO.:
HA02

CLIENT: Paul Smith
PROJECT: 380C-8 Opito Bay Road, Kerikeri

JOB NO.:
C0640N

SITE LOCATION: 380C-8 Opito Bay Road, Kerikeri
CO-ORDINATES: 1694491mE, 6105137mN

START DATE: 08/08/2025
END DATE: 08/08/2025

CONTRACTOR: Internal RIG: 50 mm Auger & DCP

ELEVATION: Ground
DRILLER: DBT/TW

LOGGED BY: DBT

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 100mm)	VANE SHEAR STRENGTH (kPa) Vane: 3282	WATER
				2 4 6 8 10 12 14 16 18	50 100 150 200 Values	
TOPSOIL; dark brown. Moist.		0.2	TS			
Clayey SILT; orangy brown mottled grey. Very stiff; moist; low plasticity; [Waipapa Group - Residual Soil].		0.4	TS			200+
		0.6	TS			200+
End Of Hole: 3.20m		1.0	TS			UTP
		1.2		6		
		1.3		8		
		1.4		9		
		1.5		11		
		1.6		13		
		1.7		14		
		1.8		11		
		1.9		10		
		2.0		7		
		2.1		9		
		2.2		13		
		2.3		14		
		2.4		14		
		2.5		10		
		2.6		15		
	2.7		16			
	2.8		12			
	2.9		17			
	3.0		15			
	3.1		16			
	3.2		18			
	3.2		20			

Groundwater Not Encountered

PHOTO(S)



REMARKS

- Hand auger terminated at 1.1 m bgl due to dense strata encountered
- Continued with DCP from 1.1 m bgl until refusal at 3.2 m bgl
- No groundwater encountered

WATER

- ▼ Standing Water Level
- ▽ Out flow
- ↖ In flow

INVESTIGATION TYPE

- Hand Auger
- Test Pit



INVESTIGATION LOG

HOLE NO.:
HA04

CLIENT: Paul Smith
PROJECT: 380C-8 Opito Bay Road, Kerikeri

JOB NO.:
C0640N

SITE LOCATION: 380C-8 Opito Bay Road, Kerikeri
CO-ORDINATES: 1694502mE, 6105161mN

START DATE: 08/08/2025
END DATE: 08/08/2025

CONTRACTOR: Internal RIG: 50 mm Auger & DCP

ELEVATION: Ground
DRILLER: DBT/TW

LOGGED BY: DBT

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 100mm)						VANE SHEAR STRENGTH (kPa) Vane: 3282				WATER		
				2	4	6	8	10	12	14	16	18	50		100	150
TOPSOIL; dark brown. Moist.		0.0 - 0.2	TS													
Silty CLAY; orangy brown mottled grey. Very stiff; moist; high plasticity; [Waipapa Group - Residual Soil].		0.2 - 1.8	CL													
1.3m - 1.8m: Clayey SILT, orange mottled grey.		1.3 - 1.8	CL													
End Of Hole: 2.20m		1.8 - 2.2							13							
		2.0 - 2.2							14							
		2.2 - 2.5														
		2.5 - 2.8														
		2.8 - 3.0														
		3.0 - 3.2														
		3.2 - 3.4														
		3.4 - 3.6														
		3.6 - 3.8														
		3.8 - 4.0														
		4.0 - 4.2														
		4.2 - 4.4														
		4.4 - 4.6														
		4.6 - 4.8														

PHOTO(S)



REMARKS

- Hand auger terminated at 1.8 m bgl due to dense strata encountered
- Continued with DCP from 1.8 m bgl until refusal at 2.5 m bgl
- No groundwater encountered

WATER

- ▼ Standing Water Level
- ▽ Out flow
- ↖ In flow

INVESTIGATION TYPE

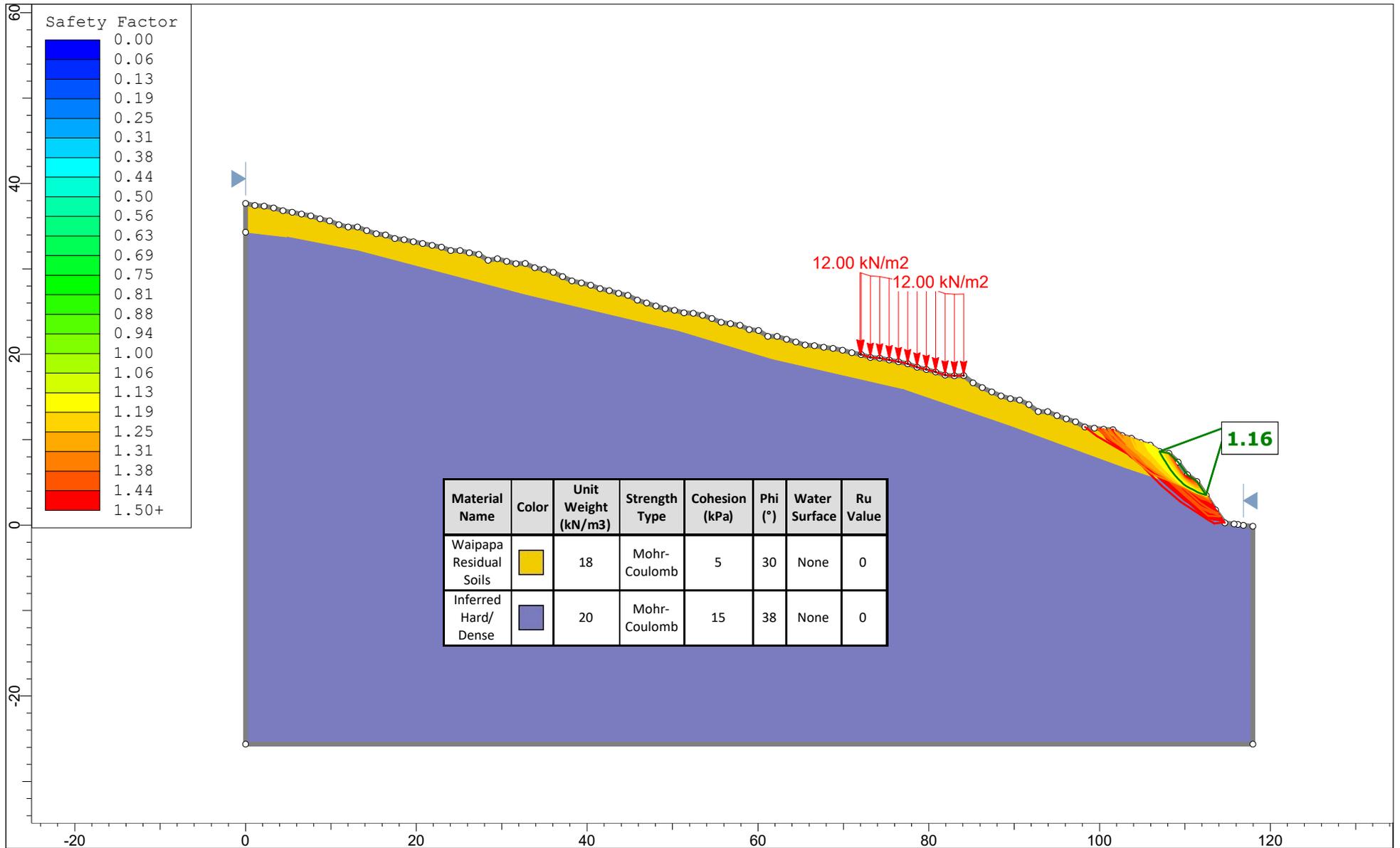
- Hand Auger
- Test Pit



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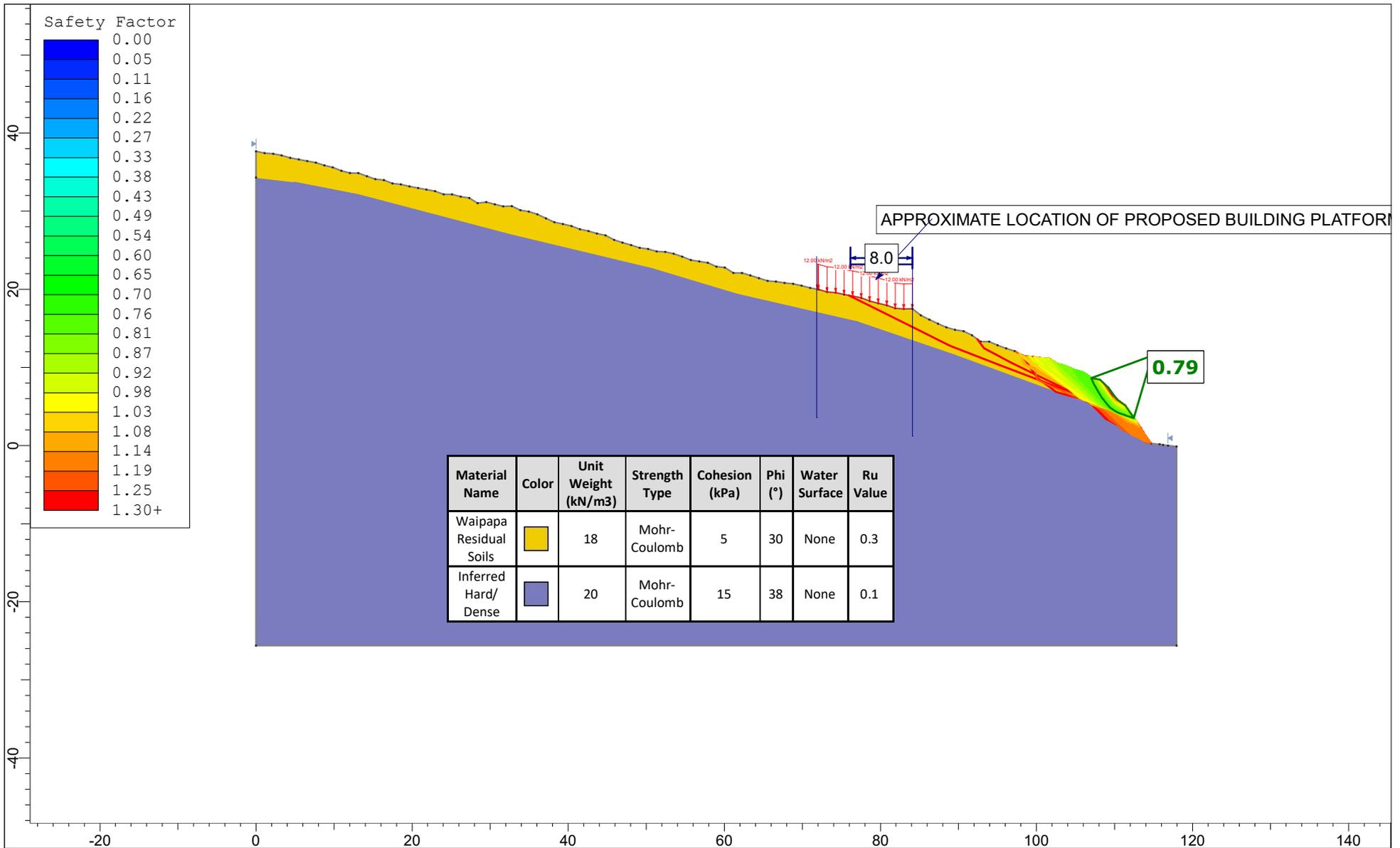
APPENDIX C

Stability Analysis



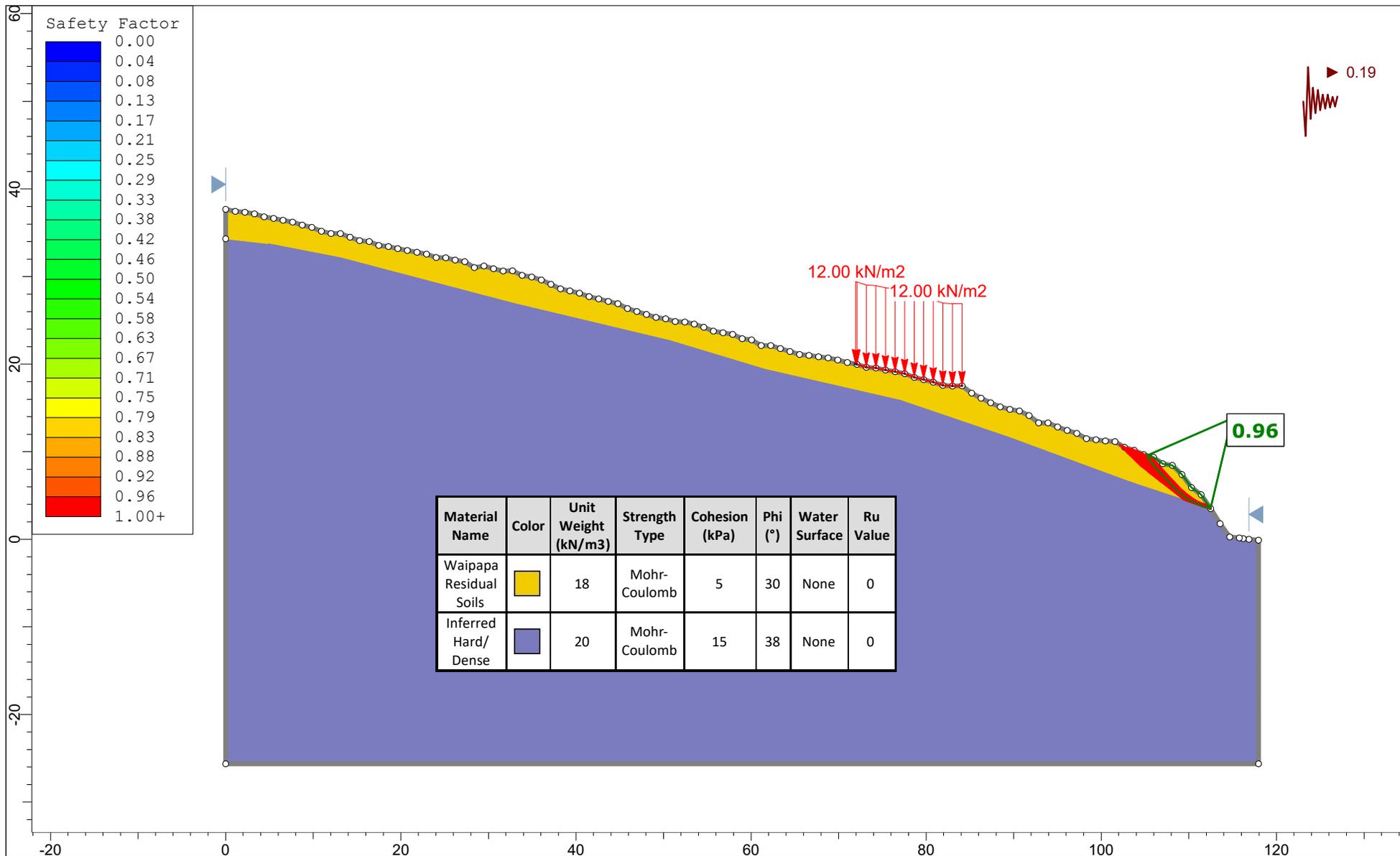
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Project	C0640		
Group	Section A	Scenario	Static
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	25/08/2025	File Name	C0640N.slmd



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Project	C0640		
Group	Section A	Scenario	Elevated GW
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	25/08/2025	File Name	C0640N.slmd

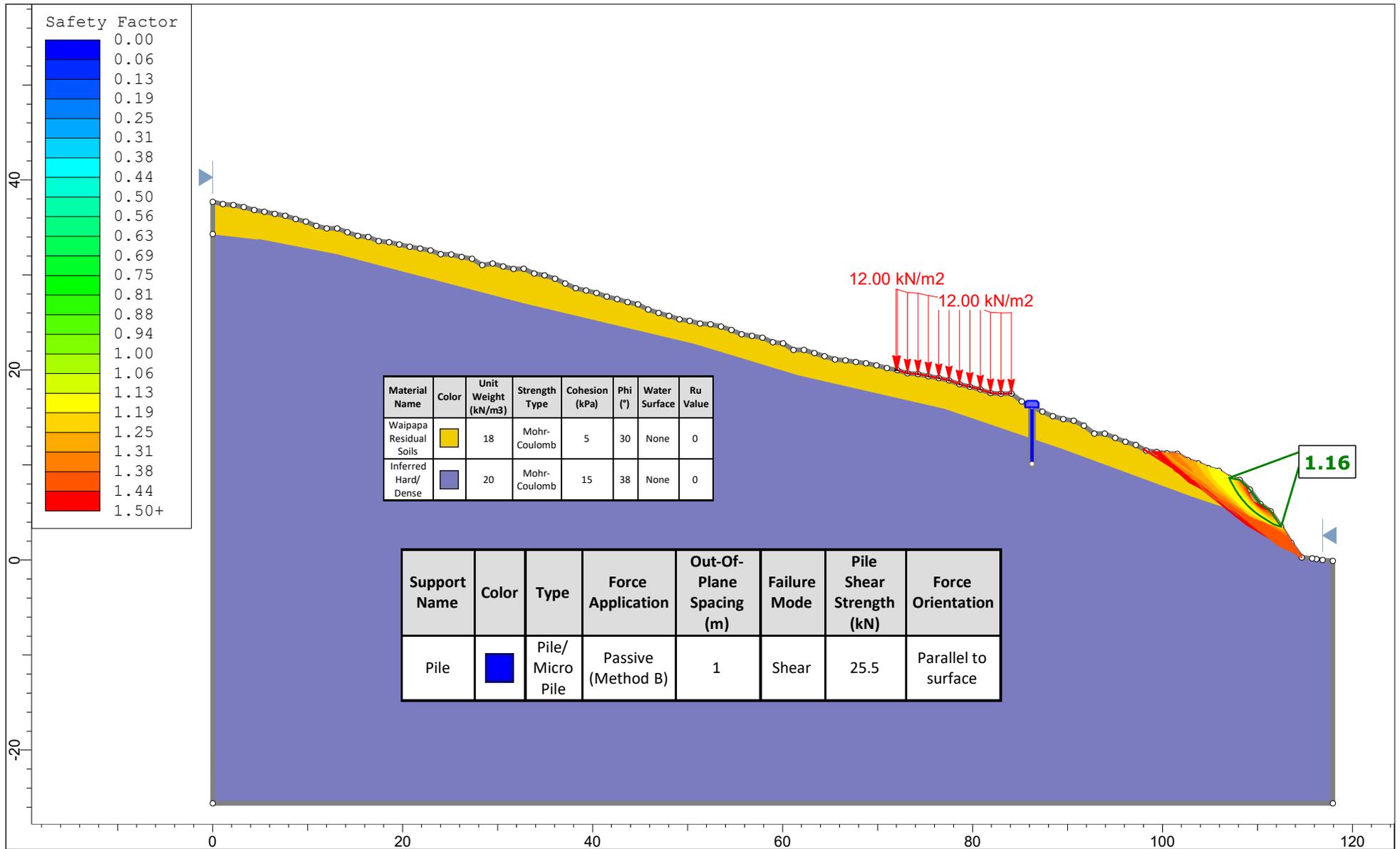


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Waipapa Residual Soils	Yellow	18	Mohr-Coulomb	5	30	None	0
Inferred Hard/Dense	Purple	20	Mohr-Coulomb	15	38	None	0



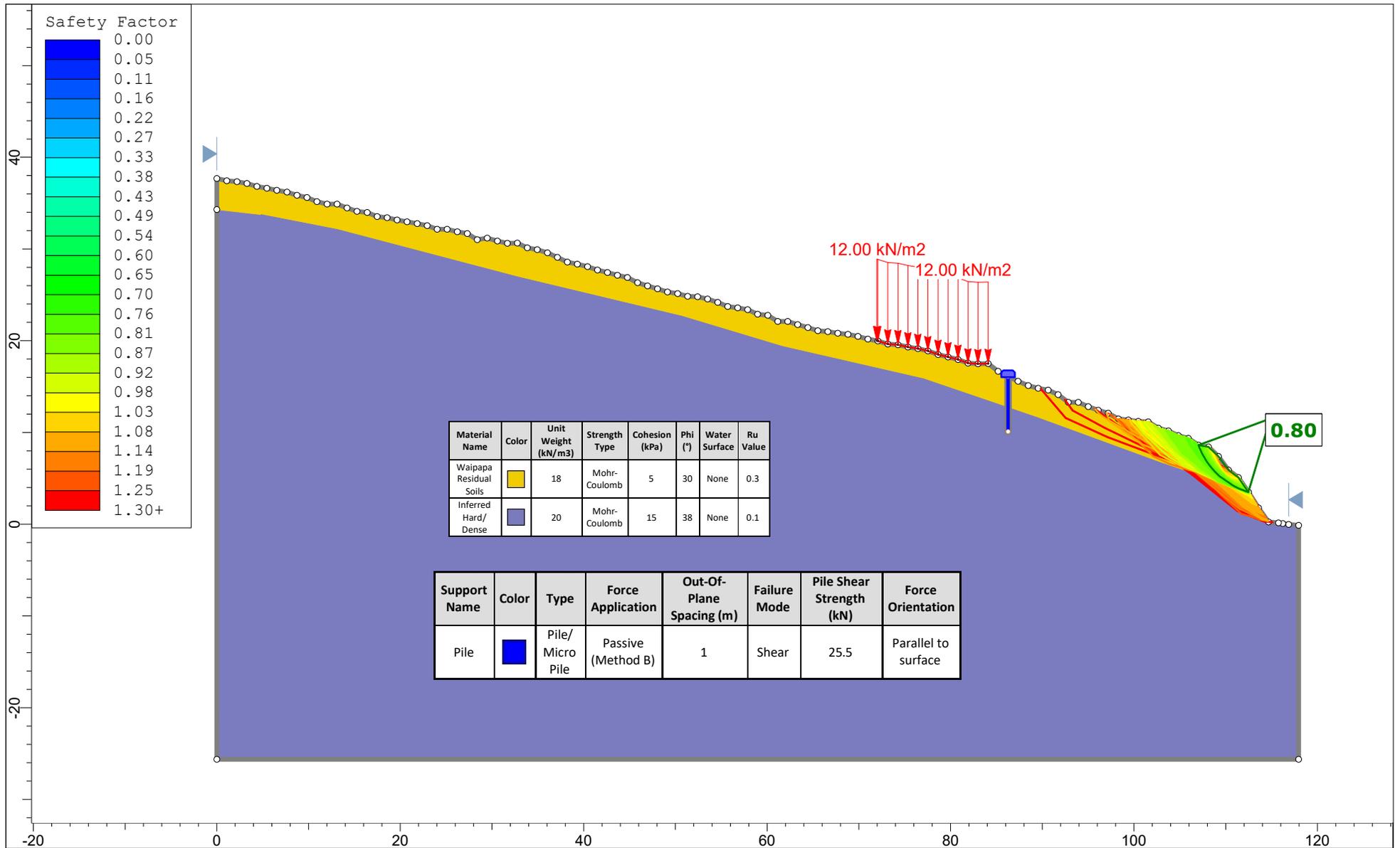
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Project	C0640		
Group	Section A	Scenario	Seismic-ULS
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	25/08/2025	File Name	C0640N.slmd



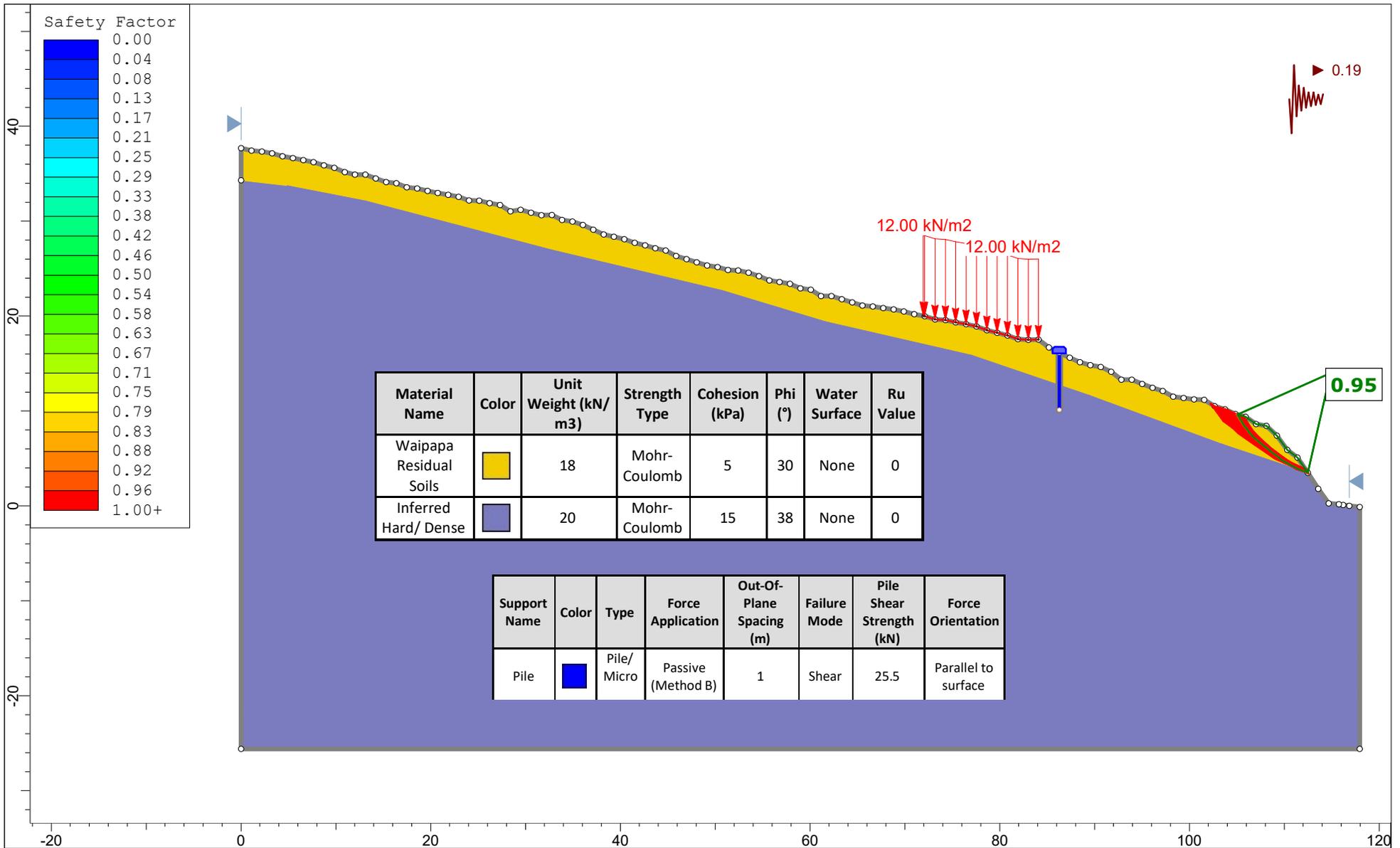
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consulting engineers

Project	C0640		
Group	Proposed RW	Scenario	Static
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	27/08/2025	File Name	C0640N.slmd



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consulting engineers

Project	C0640		
Group	Proposed RW	Scenario	Elevated GW
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	27/08/2025	File Name	C0640N.slmd



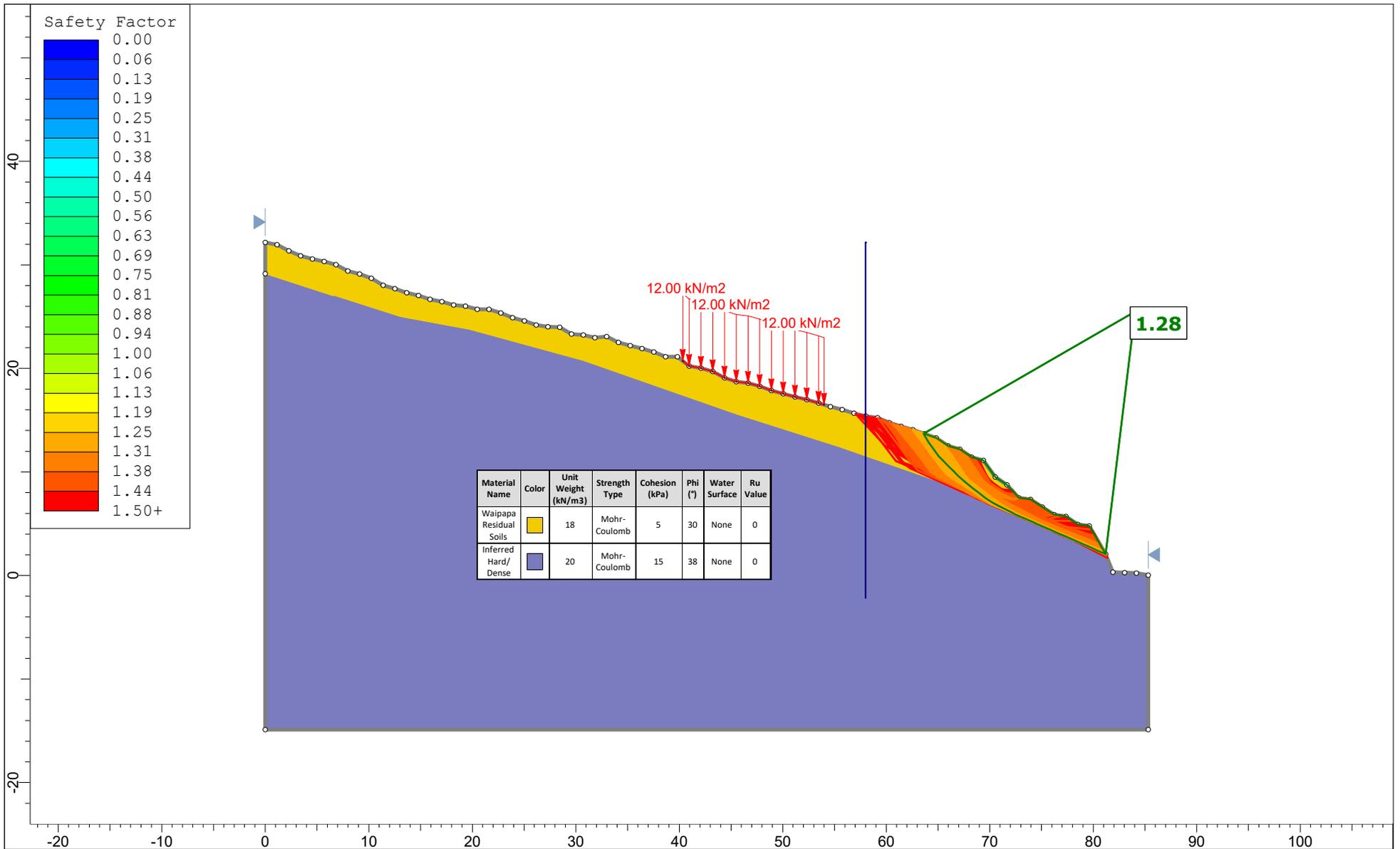
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Waipapa Residual Soils	Yellow	18	Mohr-Coulomb	5	30	None	0
Inferred Hard/ Dense	Blue	20	Mohr-Coulomb	15	38	None	0

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Failure Mode	Pile Shear Strength (kN)	Force Orientation
Pile	Blue	Pile/Micro	Passive (Method B)	1	Shear	25.5	Parallel to surface

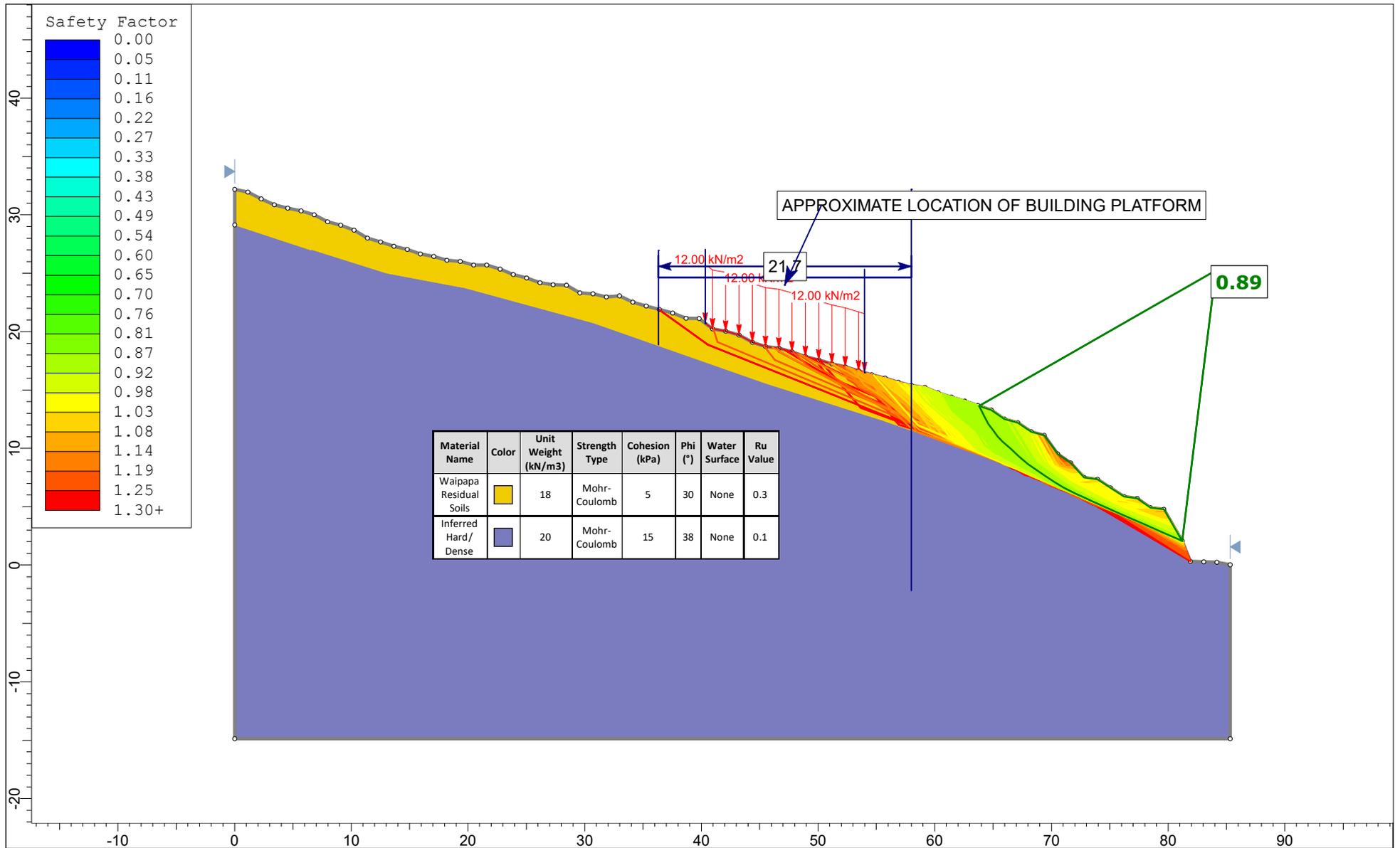


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consulting engineers

Project		C0640	
Group	Proposed RW	Scenario	Seismic-ULS
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	27/08/2025	File Name	C0640N.slmd

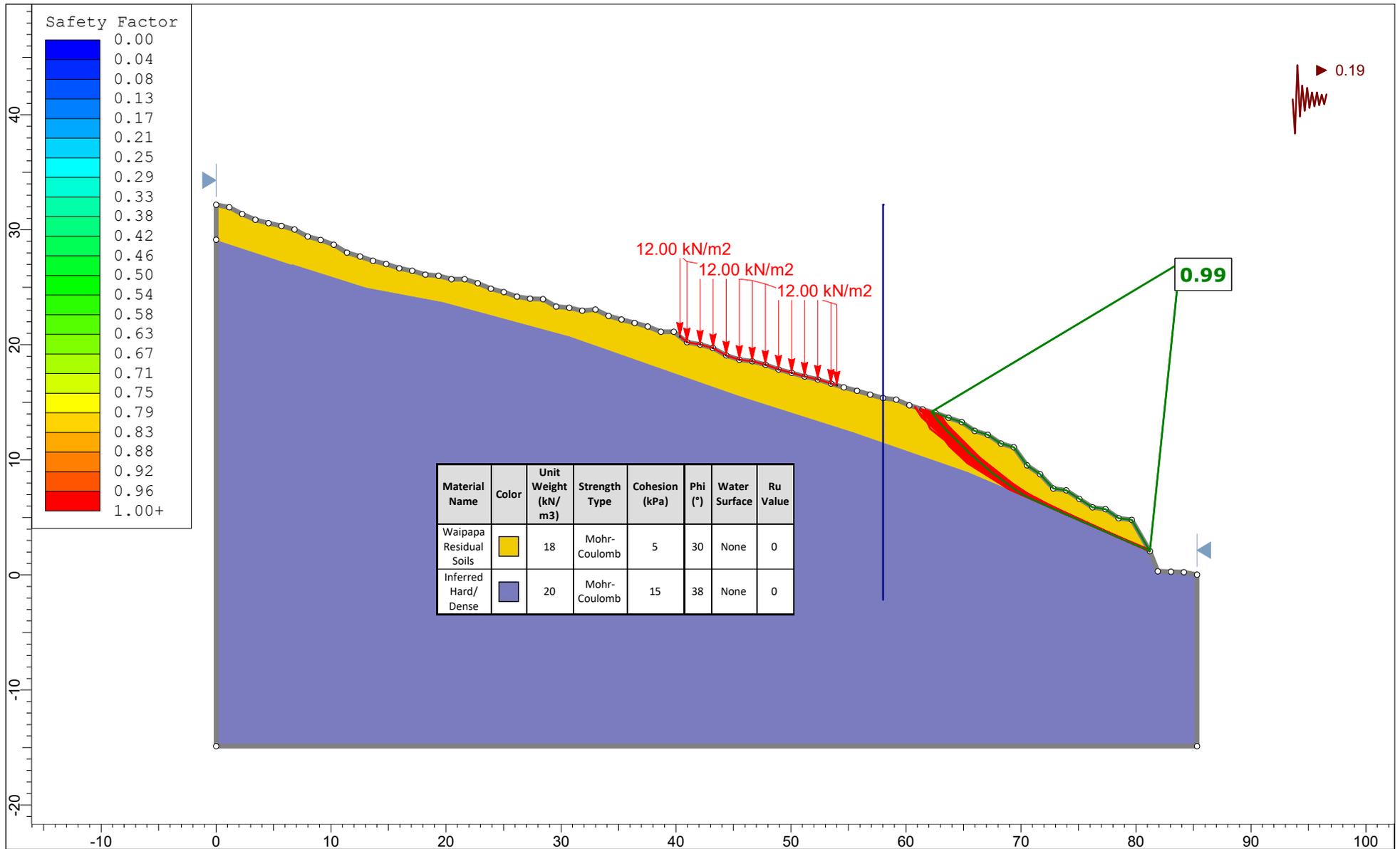


 geologix consulting engineers	Project		C0640		
	Group		Section B	Scenario	Static
	Drawn By		John Konsal	Company	Geologix Consulting Engineers Ltd
	Date		27/08/2025	File Name	C0640N-B.slmd



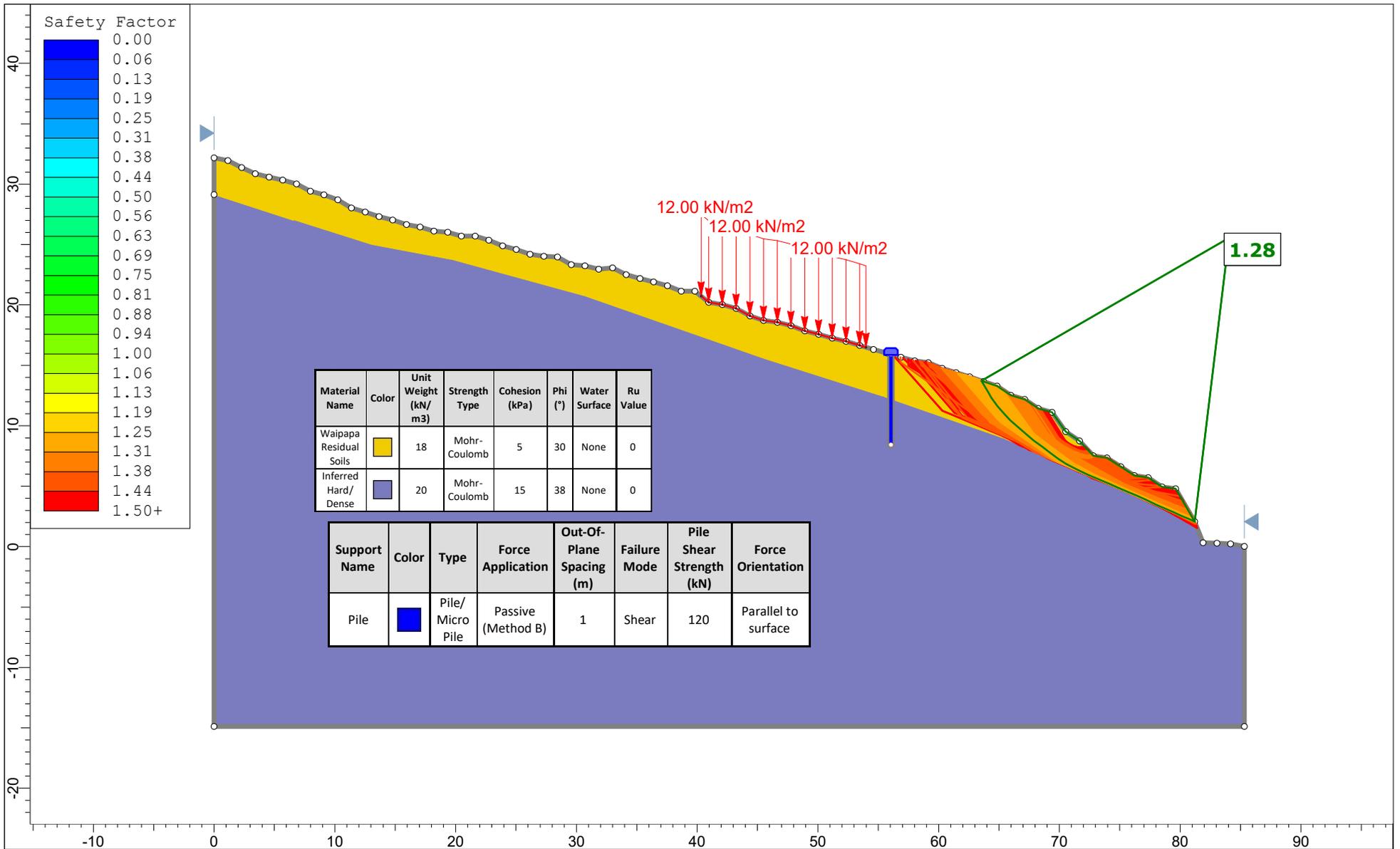
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Project	C0640		
Group	Section B	Scenario	Elevated GW
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	27/08/2025	File Name	C0640N-B.slmd



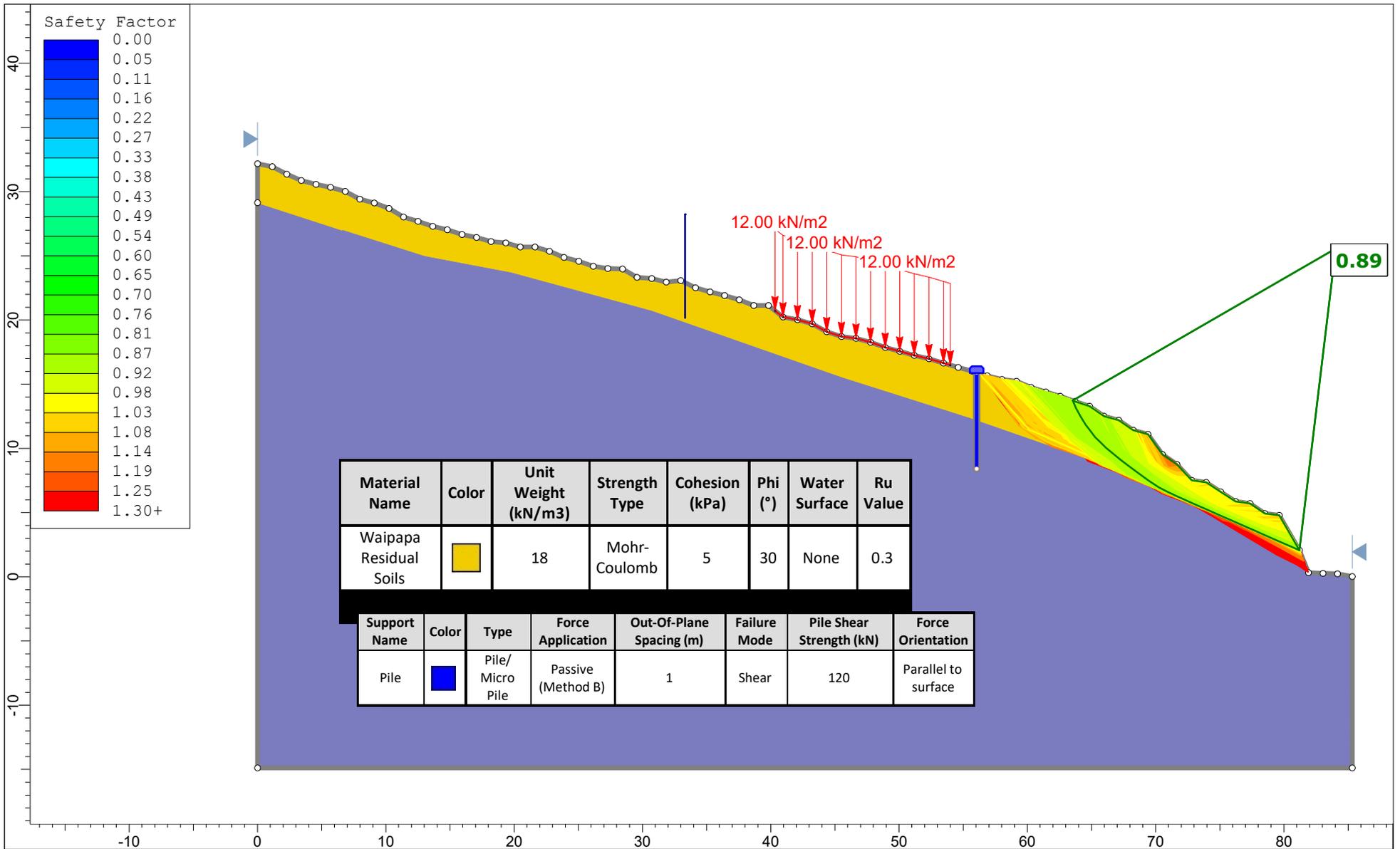
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consulting engineers

Project		C0640	
Group	Section B	Scenario	Seismic-ULS
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	27/08/2025	File Name	C0640N-B.slm



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Project	C0640		
Group	RW	Scenario	Static
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	27/08/2025	File Name	C0640N-B.slmd



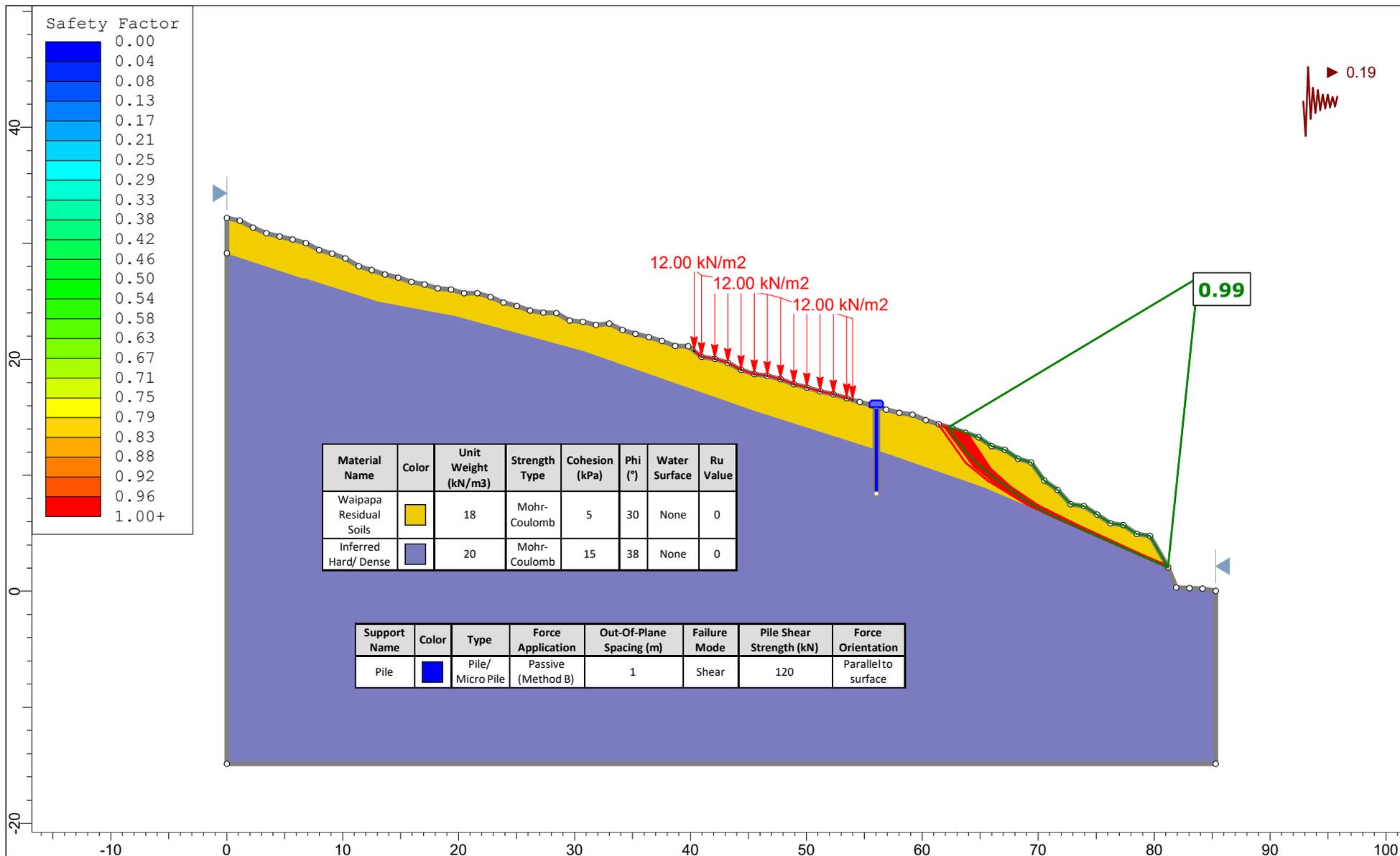
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Waipapa Residual Soils		18	Mohr-Coulomb	5	30	None	0.3

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Failure Mode	Pile Shear Strength (kN)	Force Orientation
Pile		Pile/Micro Pile	Passive (Method B)	1	Shear	120	Parallel to surface



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Project		C0640	
Group	RW	Scenario	Elevated GW
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	27/08/2025	File Name	C0640N-B.sldm



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consulting engineers

Project	C0640		
Group	RW	Scenario	Seismic-ULS
Drawn By	John Konsal	Company	Geologix Consulting Engineers Ltd
Date	27/08/2025	File Name	C0640N-B.slmd

Rochelle

From: Deanne Rogers
Sent: Tuesday, 10 March 2026 4:49 pm
To: taiao@ngatirehia.co.nz; mihakahone@gmail.com; joanne.civil.nz@gmail.com; riogreening@hotmail.com; wayne@kiatupato.co.nz; ricky.ashby@niss.org.nz; TeRau.Allen@northable.org.nz; edith.tahere@ngapuhi.org; veza@xtra.co.nz; leadett@gmail.com; Arama.reihana72@gmail.com; ngatikutahapu@gmail.com; leadett@gmail.com; honetiatoa@hotmail.com; tekauri1@xtra.co.nz; marisestuart@protonmail.com; arnoldm86@windowslive.com; arnoldm86@windowslive.com; arnoldm86@windowslive.com; moana.tuwhare@ngapuhi.org; b.p.king@xtra.co.nz; riharidaniellelucille@gmail.com; olemac@xtra.co.nz
Cc: Rochelle
Subject: Proposed dwelling - 380C Opito Bay Road, Kerikeri
Attachments: Appendix 3 - SMITH_PJ-RC SET-20-01-26.pdf; C0640N-G-01-R01-Final.pdf; C0640-SW-02-R01-Final.pdf

Tena koutou

Our client is proposing to construct a single dwelling on an existing site at 380C Opito Bay Road, Kerikeri. The site is zoned 'Coastal Living' under the operative Far North District Plan (ODP) and is subject to Proposed Plan (PDP) rules that have current legal effect. Currently, these rules include vegetation clearance that permits an area of up to 1,000m² and earthworks. A copy of the proposed plans and the accompanying geotechnical and stormwater reports are attached for your information.

The proposal includes associated vegetation clearance and earthworks. Resource consent is required for visual amenity (buildings in the coastal environment), vegetation clearance exceeding 500m² (permitted under the PDP), earthworks exceeding 300m² (total 353m³), stormwater management (impermeable surfaces) and fire risk to residential units. Under the ODP proposal is a Discretionary Activity overall. The activity is permitted under the PDP.

Far North District Council has advised us that the Iwi parties listed in the table below may have an interest in this area and development within it. If you are interested and wish to comment on the proposal, please reply to this email.

Group name	Group type	Contact name
Te Runanga o Ngāti Rehia	Hapu	Admin
Nga Hapu o Taiamai Waimate Kerikeri	Hapu	Hone Mihaka
Ngāti Hineira	Hapu	Joanne Civil
Ngāti Korohue	Hapu	Rio Greening and Arnold Mu
Te Ngare Hauata	Hapu	Wayne Stokes
Te Uri Taniwha	Hapu	Ricky and Ziandra Ashby
Te Whiu	Hapu	Te Rau Allen
Te Runanga a Iwi o Ngāpuhi	Iwi	Edith Tahere
Manukau Marae	Marae	Waimaria Veza
Pā te Aroha Marae	Marae	Tiwai Rāwiri
Private individual	Private individual	Arama Reihana
Ngāti Kuta Resource Management Unit	Resource management unit	Ngāti Kuta Admin
Ngāti Torehina ki Mataka Resource Management Unit	Resource management unit	Tiwai Rāwiri
Taiamai ki te Takutai Moana Resource Management Unit	Resource management unit	John Tiatoa
Kaire Edmonds Whanau Trust	Trust	Ian Mitchell
Lake Omapere Trust	Trust	Marise Stuart

Nga mihi nui



Deanne Rogers

Consultant Planner

Offices in Kaitaia & Kerikeri

☎ 09 408 1866 | 📠 027 449 8813

Northland Planning & Development 2020 Limited
(office days: Mon & Wed)

Rochelle

From: Lisa Ahn <LAhn@heritage.org.nz>
Sent: Tuesday, 17 March 2026 1:57 pm
To: Deanne Rogers
Cc: Stuart Bracey; Bill Edwards; James Robinson; Atareiria Heihei
Subject: RE: Proposed dwelling 380C Opito Bay Road, Kerikeri
Attachments: Heritage New Zealand Northland ADP modified 081018.pdf

Kia ora Deanne,

Thank you for the opportunity to comment on this proposal. I confirm that HNZPT has no further concerns. HNZPT recommends that the ADP procedures be followed should anything be uncovered during works. Please find attached ADP for your information.

Ngā mihi,
Lisa

Lisa Ahn | Planner/Kaiwhakamāhere – Northern Region

Heritage New Zealand Pouhere Taonga

L10 SAP Tower 151 Queen Street Auckland CBD | Private Box 105 291, Auckland City 1143 | DDI: (07) 577 4535 | Ph: 027 267 3197 | visit www.heritage.org.nz and learn more about NZ's heritage places.

Tairangahia a tua whakarere; Tatakihia nga reanga o amuri ake nei – Honouring the past; Inspiring the future

This communication may be a privileged communication. If you are not the intended recipient, then you are not authorised to retain, copy or distribute it. Please notify the sender and delete the message in its entirety.

From: Deanne Rogers <Deanne@northplanner.co.nz>
Sent: Monday, 16 March 2026 9:30 am
To: Stuart Bracey <SBracey@heritage.org.nz>
Cc: Rochelle <rochelle@northplanner.co.nz>
Subject: Proposed dwelling 380C Opito Bay Road, Kerikeri

Morena Stu

We have a client with a single dwelling house proposal at 380C Opito Bay Road, Kerikeri 0293. The FNDC heritage / arch maps below indicate a potential archaeological site/s in close proximity to the site.

I have attached a copy of the application plans for your information. Approximately 353m³ of excavation earthworks are proposed to form the driveway and the house foundation which is a combination of levelled paved slap and poles.

Could you please advise any interest Heritage NZ may have in this proposal and / or archaeological authority requirement.

We are in the process of consulting with Iwi but no response back yet.

Hazards Natural environment

380B Opito Bay Road, ... X

Search result

385

372 376 380A

358

Opito Bay Rd

440

3

Lot 8 DP 89303

Zoom to

ParcelID	474673
Legal description	Lot 8 D
Titles	NA46B
Statutory actions	
Affected surveys	DP 893
Parcel intent	DCDB
Survey area	3,441

Nga mihi,



Deanne Rogers

Consultant Planner

Offices in Kaitaia & Kerikeri

☎ 09 408 1866 | 📱 027 449 8813

Northland Planning & Development 2020 Limited
(office days: Mon & Wed)

Operative Far North District Plan – Objectives and Policies

Coastal Environment	
Objectives	
10.3.1	<i>To manage coastal areas in a manner that avoids adverse effects from subdivision, use and development. Where it is not practicable to avoid adverse effects from subdivision use or development, but it is appropriate for the development to proceed, adverse effects of subdivision use or development should be remedied or mitigated.</i>
10.3.2	<i>To preserve and, where appropriate in relation to other objectives, to restore, rehabilitate protect, or enhance:</i> <i>(a) the natural character of the coastline and coastal environment;</i> <i>(b) areas of significant indigenous vegetation and significant habitats of indigenous fauna;</i> <i>(c) outstanding landscapes and natural features;</i> <i>(d) the open space and amenity values of the coastal environment;</i> <i>(e) water quality and soil conservation (insofar as it is within the jurisdiction of the Council).</i>
10.3.3	<i>To engage effectively with Maori to ensure that their relationship with their culture and traditions and taonga is identified, recognised, and provided for.</i>
10.3.4	<i>To maintain and enhance public access to and along the coast whilst ensuring that such access does not adversely affect the natural and physical resources of the coastal environment, including Maori cultural values, and public health and safety.</i>
10.3.5	<i>To secure future public access to and along the coast, lakes and rivers (including access for Maori) through the development process and specifically in accordance with the Esplanade Priority Areas mapped in the District Plan.</i>
10.3.6	<i>To minimise adverse effects from activities in the coastal environment that cross the coastal marine area boundary.</i>
10.3.7	<i>To avoid, remedy or mitigate adverse effects on the environment through the provision of adequate land-based services for mooring areas, boat ramps and other marine facilities.</i>

10.3.8	<i>To ensure provision of sufficient water storage to meet the needs of coastal communities all year round.</i>
10.3.9	<i>To facilitate the sustainable management of natural and physical resources in an integrated way to achieve superior outcomes to more traditional forms of subdivision, use and development through management plans and integrated development.</i>
Policies	
10.4.1	<p><i>That the Council only allows appropriate subdivision, use and development in the coastal environment. Appropriate subdivision, use and development is that where the activity generally:</i></p> <ul style="list-style-type: none"> <i>(a) recognises and provides for those features and elements that contribute to the natural character of an area that may require preservation, restoration or enhancement; and</i> <i>(b) is in a location and of a scale and design that minimises adverse effects on the natural character of the coastal environment; and</i> <i>(c) has adequate services provided in a manner that minimises adverse effects on the coastal environment and does not adversely affect the safety and efficiency of the roading network; and</i> <i>(d) avoids, as far as is practicable, adverse effects which are more than minor on heritage features, outstanding landscapes, cultural values, significant indigenous vegetation and significant habitats of indigenous fauna, amenity values of public land and waters and the natural functions and systems of the coastal environment; and</i> <i>(e) promotes the protection, and where appropriate restoration and enhancement, of areas of significant indigenous vegetation and significant habitats of indigenous fauna; and</i> <i>(f) recognises and provides for the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga; and</i> <i>(g) where appropriate, provides for and, where possible, enhances public access to and along the coastal marine area; and</i>

	<i>(h) gives effect to the New Zealand Coastal Policy Statement and the Regional Policy Statement for Northland.</i>
10.4.2	<i>That sprawling or sporadic subdivision and development in the coastal environment be avoided through the consolidation of subdivision and development as far as practicable, within or adjoining built up areas, to the extent that this is consistent with the other objectives and policies of the Plan.</i>
10.4.3	<i>That the ecological values of significant coastal indigenous vegetation and significant habitats are maintained in any subdivision, use or development in the coastal environment.</i>
10.4.4	<i>That public access to and along the coast be provided, where it is compatible with the preservation of the natural character and amenity, cultural, heritage and spiritual values of the coastal environment, and avoids adverse effects in erosion prone areas.</i>
10.4.5	<i>That access by tangata whenua to ancestral lands, sites of significance to Maori, maahinga mataitai, taiapure and kaimoana areas in the coastal marine area be provided for in the development and ongoing management of subdivision and land use proposals and in the development and administration of the rules of the Plan and by non-regulatory methods. Refer Chapter 2, and in particular Section 2.5, and Council's "Tangata Whenua Values and Perspectives (2004)".</i>
10.4.6	<i>That activities and innovative development including subdivision, which provide superior outcomes and which permanently protect, rehabilitate and/or enhance the natural character of the coastal environment, particularly through the establishment and ongoing management of indigenous coastal vegetation and habitats, will be encouraged by the Council.</i>
10.4.7	<i>To ensure the adverse effects of land-based activities associated with maritime facilities including mooring areas and boat ramps are avoided, remedied or mitigated through the provision of adequate services, including where appropriate:</i> <ul style="list-style-type: none"> <i>(a) parking;</i> <i>(b) rubbish disposal;</i> <i>(c) waste disposal;</i> <i>(d) dinghy racks.</i>

10.4.8	That development avoids, remedies or mitigates adverse effects on the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga.
10.4.9	<i>That development avoids, where practicable, areas where natural hazards could adversely affect that development and/or could pose a risk to the health and safety of people.</i>
10.4.10	<i>To take into account the need for a year-round water supply, whether this involves reticulation or on-site storage, when considering applications for subdivision, use and development.</i>
10.4.11	<i>To promote land use practices that minimise erosion and sediment run-off, and storm water and waste water from catchments that have the potential to enter the coastal marine area.</i>
10.4.12	<p><i>That the adverse effects of development on the natural character and amenity values of the coastal environment will be minimised through:</i></p> <ul style="list-style-type: none"> <i>(a) the siting of buildings relative to the skyline, ridges, headlands and natural features;</i> <i>(b) the number of buildings and intensity of development;</i> <i>(c) the colour and reflectivity of buildings;</i> <i>(d) the landscaping (including planting) of the site;</i> <i>(e) the location and design of vehicle access, manoeuvring and parking areas</i>

Coastal Living Zone	
Objectives	
10.7.3.1	<i>To provide for the wellbeing of people by enabling low density residential development to locate in coastal areas where any adverse effects on the environment of such development are able to be avoided, remedied or mitigated.</i>
10.7.3.2	<i>To preserve the overall natural character of the coastal environment by providing for an appropriate level of subdivision and development in this zone.</i>
Policies	
10.7.4.1	<i>That the adverse effects of subdivision, use, and development on the coastal environment are avoided, remedied or mitigated.</i>
10.7.4.2	<i>That standards be set to ensure that subdivision, use or development provides adequate infrastructure and services and maintains and enhances amenity values and the quality of the environment.</i>
10.7.4.3	<p><i>Subdivision, use and development shall preserve and where possible enhance, restore and rehabilitate the character of the zone in regards to s6 matters, and shall avoid adverse effects as far as practicable by using techniques including:</i></p> <ul style="list-style-type: none"> <i>(a) clustering or grouping development within areas where there is the least impact on natural character and its elements such as indigenous vegetation, landforms, rivers, streams and wetlands, and coherent natural patterns;</i> <i>(b) minimising the visual impact of buildings, development, and associated vegetation clearance and earthworks, particularly as seen from public land and the coastal marine area;</i> <i>(c) providing for, through siting of buildings and development and design of subdivisions, legal public right of access to and use of the foreshore and any esplanade areas;</i> <i>(d) through siting of buildings and development, design of subdivisions, and provision of access that recognise and provide for the relationship of Maori with their culture, traditions and taonga including concepts of mauri, tapu, mana, wehi and karakia and the important contribution Maori culture makes to the character of the District (refer Chapter 2, and in particular Section 2.5, and Council’s “Tangata Whenua Values and Perspectives (2004)”);</i> <i>(e) providing planting of indigenous vegetation in a way that links existing habitats of indigenous fauna and provides the opportunity for the extension, enhancement or creation of habitats for indigenous fauna, including mechanisms to exclude pests;</i>

	<i>(f) protecting historic heritage through the siting of buildings and development and design of subdivisions.</i>
12.2 Indigenous Flora and Fauna	
Objectives	
12.2.3.1	<i>To maintain and enhance the life supporting capacity of ecosystems and the extent and representativeness of the District's indigenous biological diversity.</i>
12.2.3.2	<i>To provide for the protection of, and to promote the active management of areas of significant indigenous vegetation and significant habitats of indigenous fauna.</i>
12.2.3.3	<i>To recognise issues of wellbeing including equity for landowners in selecting methods of implementation.</i>
12.2.3.4	<i>To promote an ethic of stewardship.</i>
Policies	
12.2.4.1	<i>That areas of significant indigenous vegetation and significant habitats of indigenous fauna be protected for the purpose of promoting sustainable management with attention being given to:</i> <i>(a) maintaining ecological values;</i> <i>(b) maintaining quality and resilience;</i> <i>(c) maintaining the variety and range of indigenous species contributing to biodiversity;</i> <i>(d) maintaining ecological integrity; and</i> <i>(e) maintaining tikanga Maori in the context of the above. Note: In determining whether a subdivision, use or development is appropriate in areas containing significant indigenous vegetation and significant habitats of indigenous fauna, Council shall consider each application on a case by case basis, giving due weight to Part II of the Act as well as those matters listed above.</i>
12.2.4.2	<i>That the significance of areas of indigenous vegetation be evaluated by reference to the criteria listed in Appendix III of the Northland Regional Policy Statement (refer also to definition of "significant" in 12.2.5.6).</i>

12.2.4.3	<p><i>That adverse effects on areas of significant indigenous vegetation and significant habitats of indigenous fauna are avoided, remedied or mitigated by:</i></p> <ul style="list-style-type: none"> <i>(a) seeking alternatives to the disturbance of habitats where practicable;</i> <i>(b) managing the scale, intensity, type and location of subdivision, use and development in a way that avoids, remedies or mitigates adverse ecological effects;</i> <i>(c) ensuring that where any disturbance occurs it is undertaken in a way that, as far as practicable:</i> <ul style="list-style-type: none"> <i>(i) minimises any edge effects;</i> <i>(ii) avoids the removal of specimen trees;</i> <i>(iii) does not result in linkages with other areas being lost;</i> <i>(iv) avoids adverse effects on threatened species;</i> <i>(v) minimises disturbance of root systems of remaining vegetation;</i> <i>(vi) does not result in the introduction of exotic weed species or pest animals;</i> <i>(d) encouraging, and where appropriate, requiring active pest control and avoiding the grazing of such areas.</i>
12.2.4.4	<p><i>That clearance of limited areas of indigenous vegetation is provided for.</i></p>
12.2.4.5	<p><i>That the contribution of areas of indigenous vegetation and habitats of indigenous fauna to the overall biodiversity and amenity of the District be taken into account in evaluating applications for resource consents.</i></p>
12.2.4.6	<p><i>That support is given to programmes for weed and pest control, including support for community pest control areas established by the Northland Regional Council under the Regional Pest Management Strategies, in areas of significant indigenous vegetation and significant habitats of indigenous fauna and surrounding lands.</i></p>
12.2.4.7	<p><i>That community awareness of the need and reasons for protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna be promoted.</i></p>

12.2.4.8	<i>That restoration and enhancement of indigenous ecosystems is based on plants that would have occurred naturally in the locality and is sourced from local genetic stock where practicable.</i>
12.2.4.9	<i>That the Council will work with landowners and communities to ensure outcomes are achieved in an effective and equitable manner.</i>
12.2.4.10	<i>In order to protect areas of significant indigenous fauna: (a) that dogs (excluding working dogs), cats, possums, rats, mustelids and other pest species are not introduced into areas with populations of kiwi, dotterel and brown teal; (b) in areas where dogs, cats, possums, rats, mustelids and other pest species are having adverse effects on indigenous fauna their removal is promoted.</i>
12.2.4.11	<i>That when considering resource consent applications in areas identified as known high density kiwi habitat, the Council may impose conditions, in order to protect kiwi and their habitat.</i>
12.2.4.12	<i>That habitat restoration be promoted.</i>
12.2.4.13	<i>That the maintenance of riparian vegetation and habitats be recognised and provided for, and their restoration encouraged, for the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna, preservation of natural character and the maintenance of general ecosystem health and indigenous biodiversity.</i>
12.2.4.14	<i>That when considering an application to clear areas of significant indigenous vegetation or significant habitats of indigenous fauna, enabling Maori to provide for the sustainable management of their ancestral land will be recognised and provided for by Council.</i>
12.3 Soils and Minerals	
Objectives	
12.3.3.1	<i>To achieve an integrated approach to the responsibilities of the Northland Regional Council and Far North District Council in respect to the management of adverse effects arising from soil excavation and filling, and minerals extraction.</i>
12.3.3.2	<i>To maintain the life supporting capacity of the soils of the District.</i>

12.3.3.3	<i>To avoid, remedy or mitigate adverse effects associated with soil excavation or filling.</i>
12.3.3.4	<i>To enable the efficient extraction of minerals whilst avoiding, remedying or mitigating any adverse environmental effects that may arise from this activity.</i>
Policies	
12.3.4.1	<i>That the adverse effects of soil erosion are avoided, remedied or mitigated.</i>
12.3.4.2	<i>That the development of buildings or impermeable surfaces in rural areas be managed so as to minimise adverse effects on the life supporting capacity of the soil.</i>
12.3.4.3	<i>That where practicable, activities associated with soil and mineral extraction be located away from areas where that activity would pose a significant risk of adverse effects to the environment and/or to human health. Such areas may include those where:</i> <i>(a) there are people living in close proximity to the site or land in the vicinity of the site is zoned Residential, Rural Living, Coastal Residential or Coastal Living;</i> <i>(b) there are significant ecological, landscape, cultural, spiritual or heritage values;</i> <i>(c) there is a potential for adverse effects on lakes, rivers, wetlands and the coastline;</i> <i>(d) natural hazards may pose unacceptable risks.</i>
12.3.4.4	<i>That soil excavation and filling, and mineral extraction activities be designed, constructed and operated to avoid, remedy or mitigate adverse effects on people and the environment.</i>
12.3.4.5	<i>That soil conservation be promoted.</i>
12.3.4.6	<i>That mining tailings that contain toxic or bio-accumulative chemicals are contained in such a way that adverse effects on the environment are avoided.</i>

12.3.4.7	<i>That applications for discretionary activity consent involving mining and quarrying be accompanied by a Development Plan.</i>
12.3.4.8	<i>That as part of a Development Plan rehabilitation programmes for areas no longer capable of being actively mined or quarried may be required.</i>
12.3.4.9	<i>That soil excavation and filling in the National Grid Yard are managed to ensure the stability of National Grid support structures and the minimum ground to conductor clearances are maintained.</i>
12.3.4.10	<i>To ensure that soil excavation and filling are managed appropriately, normal rural practices as defined in Chapter 3 will not be exempt when determining compliance with rules relating to earthworks, except if the permitted standards in the National Grid Yard specify that activity is exempt.</i>
12.4 Natural Hazards	
Objectives	
12.4.3.1	<i>To reduce the threat of natural hazards to life, property and the environment, thereby to promote the well being of the community.</i>
12.4.3.2	<i>To ensure that development does not induce natural hazards or exacerbate the effects of natural hazards.</i>
12.4.3.3	<i>To ensure that natural hazard protection works do not have adverse effects on the environment.</i>
12.4.3.4	<i>To ensure that the role in hazard mitigation played by natural features is recognised and protected.</i>
12.4.3.5	<i>To improve public awareness of natural hazards as a means of helping people to avoid them.</i>
12.4.3.6	<i>To take into account reasonably foreseeable changes in the nature and location of natural hazards.</i>
Policies	
12.4.4.1	<i>That earthworks and the erection of structures not be undertaken in areas where there is a significant potential for natural hazards unless they can be carried out in such a way so as to avoid being adversely affected by the natural hazards, and can avoid exacerbating natural hazards.</i>

12.4.4.2	<i>That the natural character of features, such as beaches, sand dunes, mangrove areas, wetlands and vegetation, which have the capacity to protect land values and assets from natural coastal hazards, is protected and enhanced.</i>
12.4.4.3	<i>That protection works for existing development be allowed only where they are the best practicable option compatible with sustainable management of the environment.</i>
12.4.4.4	<i>That the sea level rise, as predicted by the Intergovernmental Panel of Climate Change or Royal Society of NZ, be taken into account when assessing development in areas potentially affected.</i>
12.4.4.5	<i>That information on known natural hazards be made available in order that the public can make informed resource management decisions.</i>
12.4.4.6	<i>That the adverse effects on people, property and the environment from coastal hazards in Coastal Hazard Areas, as identified by the Northland Regional Council, are avoided.</i>
12.4.4.7	<i>That the risk to adjoining vegetation and properties arising from fires be avoided.</i>
12.4.4.8	<i>That the location, intensity, design and type of new coastal subdivision, use and development be controlled so that the need for hazard protection works is avoided or minimised.</i>
12.4.4.9	<i>That the role of riparian margins in the mitigation of the effects of natural hazards is recognised and that the continuing ability of riparian margins to perform this role be assured.</i>

Proposed District Plan (as recommended to be changed by Council officers)

Part 3 – Rural Lifestyle Zone	
Objectives	
RLZ-O1	<i>The Rural Lifestyle zone is used predominantly for low density <u>residential activities</u> and small scale <u>farming activities</u> that are compatible with the rural character and amenity of the zone.</i>
RLZ-O2	<i>The predominant character and amenity of the Rural Lifestyle zone is characterised by:</i> <ul style="list-style-type: none"> <i>a. low density <u>residential activities</u>;</i> <i>b. small scale <u>farming activities</u> with limited <u>buildings</u> and <u>structures</u>;</i> <i>c. smaller <u>lot</u> sizes than anticipated in the Rural Production Zone;</i> <i>d. a general absence of urban <u>infrastructure</u>;</i> <i>e. rural <u>roads</u> with low traffic volumes;</i> <i>f. areas of vegetation, natural features and open space.</i>
RLZ-O3	<i>The role, function and predominant character and amenity of the Rural Lifestyle zone is not compromised by incompatible activities.</i>
RLZ-O4	<i>Land use and <u>subdivision</u> in the Rural Lifestyle zone does not compromise the effective and efficient operation of <u>primary production</u> activities in the adjacent Rural Production zones.</i>
Policies	
RLZ-P1	<i>Enable activities that will not compromise the role, function and predominant character and amenity of the Rural Lifestyle zone, while ensuring their design, scale and intensity is appropriate to manage adverse <u>effects</u> in the zone, including:</i> <ul style="list-style-type: none"> <i>a. low density <u>residential activities</u>;</i> <i>b. small scale <u>farming activities</u>;</i> <i>c. <u>home business activities</u>;</i> <i>d. <u>visitor accommodation</u>; and</i> <i>e. small scale education facilities.</i>
RLZ-P2	<i>Avoid activities that are incompatible with the role, function and predominant character and amenity of the Rural Lifestyle zone because they are:</i> <ul style="list-style-type: none"> <i>a. contrary to the density anticipated for the Rural Lifestyle zone;</i>

	<ul style="list-style-type: none"> b. <i>predominantly of an urban form or character;</i> c. <i><u>primary production</u> activities, such as <u>intensive indoor primary production</u>, that generate adverse amenity <u>effects</u> that are incompatible with rural lifestyle living; or</i> d. <i>commercial, <u>rural industry</u> or <u>industrial activities</u> that are more appropriately located in a Settlement zone or an urban zone.</i>
RLZ-P3	<i>Avoid where possible, or otherwise mitigate, reverse sensitivity <u>effects</u> from sensitive and other non-productive activities on <u>primary production</u> activities in the adjacent Rural Production zone.</i>
RLZ-P4	<p><i>Manage land use and <u>subdivision</u> to address the <u>effects</u> of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application:</i></p> <ul style="list-style-type: none"> a. <i>consistency with the scale and character of the rural lifestyle <u>environment</u>;</i> b. <i>location, scale and design of <u>buildings</u> or <u>structures</u>;</i> c. <i>at zone interfaces:</i> <ul style="list-style-type: none"> i. <i>any <u>setbacks</u>, <u>fencing</u>, <u>screening</u> or <u>landscaping</u> required to address potential conflicts;</i> ii. <i>the extent to which adverse <u>effects</u> on adjoining or surrounding <u>sites</u> are mitigated and internalised within the <u>site</u> as far as practicable;</i> d. <i>the capacity of the <u>site</u> to cater for on-site <u>infrastructure</u> associated with the proposed activity;</i> e. <i>the adequacy of roading <u>infrastructure</u> to service the proposed activity;</i> f. <i>managing <u>natural hazards</u>;</i> g. <i>any adverse <u>effects</u> on <u>historic heritage</u> and cultural values, natural features and landscapes or indigenous biodiversity; and</i> h. <i>any historical, spiritual, or cultural association held by <u>tangata whenua</u>, with regard to the matters set out in Policy TW-P6.</i>
Part 2 – Natural Environment Values – Ecosystems and indigenous biodiversity	
Objectives	
IB-O1	<i>Areas of significant indigenous vegetation and significant habitats of indigenous fauna (Significant Natural Areas) are identified and protected for current and future generations.</i>
IB-O2	<i>Indigenous biodiversity is managed to maintain its extent and diversity in a way that provides for the social, economic and cultural well-being of people and communities.</i>

IB-O3	<i>The relationship between <u>tangata whenua</u> and indigenous biodiversity, including <u>taonga species and habitats</u>, is recognised and provided for.</i>
IB-O4	<i>The role of <u>tangata whenua</u> as kaitiaki and landowners as stewards in protecting, maintaining and restoring areas of significant <u>indigenous vegetation and significant habitats of indigenous fauna natural areas</u> and indigenous biodiversity is provided for.</i>
IB-O6	<i>Restoration and enhancement of indigenous biodiversity is promoted and enabled.</i>
Policies	
IB-P1	<p><i>Identify Significant Natural Areas by:</i></p> <ul style="list-style-type: none"> <i>a. using the ecological significance criteria in Appendix 5 of the RPS or in any more recent National Policy Statement on indigenous biodiversity;</i> <i>b. including areas that meet the ecological significance criteria as Significant Natural Areas in Schedule 4 of the District Plan and on the planning maps where this is agreed with the landowner and verified by physical inspection where practicable;</i> <i>c. encouraging landowners to include identified Significant Natural Areas in Schedule 4 of the District Plan at the time of subdivision and development;</i> <i>d. providing assistance to landowners to add Significant Natural Areas to Schedule 4 of the District Plan; and</i> <i>e. requiring an assessment of the ecological significance for indigenous vegetation clearance to establish permitted activity thresholds in Rule IB R2 R4.</i> <p><i>Ensure that the protection, maintenance and restoration of indigenous biodiversity is done in a way that:</i></p> <ul style="list-style-type: none"> <i>a. <u>recognises and values the mana of tangata whenua as kaitiaki; and</u></i> <i>b. <u>provides specific opportunities for tangata whenua to exercise kaitiakitanga in accordance with tikanga Māori.</u></i>
IB-P2	<p><i>Within the coastal environment:</i></p> <p><i>a. avoid adverse effects of land use and subdivision on:</i></p> <ul style="list-style-type: none"> <i>i. <u>Threatened and At-Risk indigenous species;</u></i> <i>ii. <u>areas of significant indigenous vegetation and significant habitat of indigenous fauna Significant Natural Areas;</u></i> <i>iii. <u>areas of indigenous biodiversity protected under other legislation.</u></i>

	<p><i>b. avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of land use and subdivision on:</i></p> <ul style="list-style-type: none"> <i>i. <u>areas of predominately indigenous vegetation; and</u></i> <i>ii. <u>areas of important and vulnerable indigenous species vegetation, habitats and ecosystems that are particularly vulnerable to modification.</u></i>
IB-P3	<p><i>Outside the coastal environment:</i></p> <p><i>a. avoid, remedy or mitigate adverse effects of land use and subdivision on Significant Natural Areas to ensure adverse effects are no more than minor on;</i></p> <ul style="list-style-type: none"> <i>i. <u>Threatened and At-Risk indigenous species;</u></i> <i>ii. <u>areas of significant indigenous vegetation and significant habitat of indigenous fauna;</u></i> <i>iii. <u>areas of indigenous biodiversity protected under other legislation; and</u></i> <p><i>b. avoid, remedy, or mitigate, <u>offset or compensate</u> adverse effects of land use and subdivision on areas of important and vulnerable indigenous vegetation, habitats and ecosystems to ensure there are no significant adverse effects on:</i></p> <ul style="list-style-type: none"> <i>i. <u>areas of predominately indigenous vegetation; and</u></i> <i>ii. <u>indigenous species, habitats and ecosystems that are particularly vulnerable to modification.</u></i>
IB-P4	<p><i>If adverse effects on indigenous species, habitats and ecosystems located outside of the coastal environment cannot be avoided, remedied or mitigated in accordance with IB-P3, consider whether it is appropriate to apply the following steps as an effects management hierarchy:</i></p> <ul style="list-style-type: none"> <i>a. biodiversity offsetting to address more than minor residual adverse effects to achieve a no net loss and preferably net gain in indigenous biodiversity; and</i> <i>b. environmental biodiversity compensation to address more than minor residual adverse effects where it is not practicable to achieve biodiversity offsetting.</i> <p><i><u>Where adverse effects are not otherwise avoided, remedied, mitigated, offset or compensated under IB-P2 and IB-P3 do not apply, significant adverse effects on maintain indigenous biodiversity by:</u></i></p> <ul style="list-style-type: none"> <i>a. must be managed by <u>applying the effects management hierarchy to any significant adverse effects; and</u></i> <i>b. <u>managing any other adverse effects on indigenous biodiversity to maintain indigenous biodiversity across the district.</u></i>

	<p>Ensure that the management of land use and subdivision to protect areas of significant indigenous vegetation and significant habitat of indigenous fauna Significant Natural Areas and maintain indigenous biodiversity is done in a way that:</p> <ul style="list-style-type: none"> a. does not impose unreasonably restrictions on existing primary production activities, particularly on highly <u>productive land versatile soils</u>; b. recognises the operational need and functional need of some activities, including regionally significant infrastructure, to be located within <u>areas of significant indigenous vegetation and significant habitat of indigenous fauna Significant Natural Areas</u> in some circumstances; c. allows for maintenance, use and operation of existing structures, including <u>upgrading of regionally significant infrastructure</u>; and d. enables Māori land to be used and developed to support the social, economic and cultural wellbeing of tangata whenua, including the provision of papakāinga, marae and associated residential units and infrastructure.
IB-PX	<p><u>Promote the restoration of indigenous biodiversity, with priority given to:</u></p> <ul style="list-style-type: none"> a. <u>areas of significant indigenous vegetation and significant habitat of indigenous fauna whose ecological integrity is degraded;</u> b. <u>threatened and rare ecosystems representative of naturally occurring and formerly present ecosystems;</u> c. <u>areas that provide important connectivity or buffering functions;</u> d. <u>natural inland wetlands where ecological integrity is degraded or these no longer retain their indigenous vegetation or habitat for indigenous fauna;</u> e. <u>areas of indigenous biodiversity on specified Māori land where restoration is advanced by the Māori landowners; and</u> f. <u>any other priorities specified in regional biodiversity strategies or any national priorities for indigenous biodiversity restoration.</u>
IB-P6	<p>Encourage the protection, maintenance and restoration of indigenous biodiversity, with priority given to Significant Natural Areas, through non-regulatory methods including consideration of:</p> <ul style="list-style-type: none"> a. assisting landowners with physical assessments by suitably qualified ecologists to determine whether an area is a Significant Natural Area; b. reducing or waiving resource consent application fees; c. providing, or assisting in obtaining funding from other agencies and trusts; d. sharing and helping to improve information on indigenous biodiversity; and

	<p>e. working directly with iwi and hapū, landowners and community groups on ecological protection and enhancement projects.</p>
IB-PX	<p>Enable Subdivision and associated land use is:</p> <p>a. <u>enabled where this results in the restoration, enhancement and legal protection and/or restoration of areas of significant of indigenous biodiversity vegetation or significant habitat of indigenous fauna in accordance with SUB-R6 or SUB-R7; or</u></p> <p>b. <u>considered where this will achieve positive, secure and long-term benefits for indigenous biodiversity through active and ongoing restoration and enhancement activities.</u></p>
IB-P7	<p>Encourage and support active management control of pests <u>and enable a timely and efficient response to biosecurity incursions of unwanted organisms.</u> plants and pest animals.</p>
IB-P8	<p>Promote Assist with the protection of species that are endemic to Northland <u>by promoting, supporting and using eco-sourced eco-sourcing plants from within the ecological district.</u></p>
IB-P9	<p>Require landowners to manage pets and pests <u>species within their property through consent conditions, including dogs, cats, possums, rats and mustelids, where necessary to avoid risks to Threatened and At-Risk indigenous fauna</u> threatened indigenous species, including avoiding the introduction of pets and pests species into kiwi present or high-density kiwi areas where appropriate.</p>
IB-P10	<p>Manage land use and subdivision to address the effects of the activity requiring resource consent for <u>Consider the following matters where relevant when assessing and managing the effects of indigenous vegetation clearance and associated land disturbance, including (but not limited to) consideration of the following matters where relevant to the application:</u></p> <p>a. the temporary or permanent nature of any adverse effects;</p> <p>b. cumulative effects of activities that may result in loss or degradation of habitats, species populations and ecosystems;</p> <p>c. the extent of any vegetation removal and associated land disturbance;</p> <p>d. the effects of fragmentation; e. linkages between indigenous ecosystems and habitats of indigenous species;</p> <p>f. the potential for increased threats from pests plants and animals;</p> <p>g. any downstream adverse effects on waterbodies and the coastal marine area;</p>