Far North District Council

Office Use Only
Application Number:

Private Bag 752, Memorial Ave
Kaikohe 0440, New Zealand
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APPLICATION FOR RESOURCE CONSENT OR FAST-TRACK RESOURCE CONSENT

(Or Associated Consent Pursuant to the Resource Management Act 1991 (RMA))
(If applying for a Resource Consent pursuant to Section 87AAC or 88 of the RMA, this form can be used to satisfy the requirements of Form 9)

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

1. Pre-Lodgement Meeting

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

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

Ø Land Use O Fast Track Land Use* O Subdivision O Discharge

O Extension of time (s.125) O Change of conditions (s.127) O Change of Consent Notice (s.221(3))

O Consent under National Environmental Standard (e.g. Assessing and Managing Contaminants in Soil)

O Other (please specify) _____

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

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

Yes / ~~No~~

4. Applicant Details:

Name/s: Carl and Melanie Laurie

Electronic Address for Service (E-mail): [redacted]

Phone Numbers:

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

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

Name/s: Rochelle Jacobs

Electronic Address for Service (E-mail): [redacted]

Phone Numbers:

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.

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

Name/s: Carl and Melanie Laurie

Property Address/: Location 16 MacMurray Road, Paihia

7. Application Site Details:

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

Site Address/ Location: 16 MacMurray Road, Paihia

Legal Description: Lot 43 DP 11041 Val Number:

Certificate of Title: NA615/261

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.

8. Description of the Proposal:

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

Proposed shed and extension to existing dwelling

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

9. Would you like to request Public Notification

~~Yes~~/No

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

Ø Building Consent (BC ref # if known)

O Regional Council Consent (ref # if known)

O National Environmental Standard consent

O Other (please specify)

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

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

Is the piece of land currently being used or has it historically ever been used for an activity or industry on the Hazardous Industries and Activities List (HAIL)

O yes Ø no O don't know

Is the proposed activity an activity covered by the NES? (If the activity is any of the activities listed below, then you need to tick the 'yes' circle).

O yes Ø no O don't know

O Subdividing land

O Changing the use of a piece of land

Ø Disturbing, removing or sampling soil

O Removing or replacing a fuel storage system

12. Assessment of Environmental Effects:

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

Please attach your AEE to this application.

13. Billing Details:

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

Name/s: (please write all names in full) Carl and Melanie Laurie

Email: [redacted]

Postal Address: [redacted]

Phone Numbers: [redacted]

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

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

Name: Carl and Melanie Laurie (please print)

Signature: [redacted] (signature of bill payer – **mandatory**) Date: 21/8/2024

14. Important Information:

Note to applicant
You must include all information required by this form. The information must be specified in sufficient detail to satisfy the purpose for which it is required.
You may apply for 2 or more resource consents that are needed for the same activity on the same form.
You must pay the charge payable to the consent authority for the resource consent application under the Resource Management Act 1991.

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

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

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

Name: Rochelle Jacobs (please print)

Signat[redacted] (signature) Date: 21/8/24

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

Checklist (please tick if information is provided)

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

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

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

UNBOUND **SINGLE SIDED** **NO LARGER THAN A3 in SIZE**

Land-Use Consent for

Carl and Melanie Laurie

16 MacMurray Road, Paihia

Date: 21 August 2024

To whom it may concern

Please find attached:

- an application form for a land-use Resource Consent to construct a new shed and additions to an existing relocated dwelling;
- an application for an earthworks permit; and
- an Assessment of Environmental Effects of the potential and actual effects of the proposal on the environment.

The site is within the Operative District Plan Paihia Commercial Zone A2 and the Proposed District Plan Mixed Use Zone and Pahia Heritage Area – Part B. The proposal has been assessed as a **Restricted Discretionary** Activity under the Far North Operative District Plan and a **Permitted Activity** under the Proposed Far North District Plan.

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

Regards,

Deanne Rogers
Consultant Planner

Reviewed by:

Rochelle Jacobs
Director/Senior Planner

NORTHLAND PLANNING & DEVELOPMENT 2020 LIMITED

Contents

Attachments:

1. **FNDC Application Form**
2. **Record of Title –** *LINZ*
3. **Application Plans –** *Absolute Build*
4. **Noise Insulation Assessment –** *Marshall Day*
5. **Stormwater Attenuation Report –** *Wilton Joubert*
6. **Retaining Wall Plan –** *Wilton Joubert*

Assessment of Environment Effects Report

1. Description of the Proposed Activity

1.1. The Applicant is seeking resource consent to construct a new standalone shed building and to undertake additions to an existing relocated dwelling at 16 MacMurray Road, Paihia. A copy of the application site and building elevation plans prepared by Absolute Build are attached at **Attachment 3**.

1.2. The proposed additions to the house comprise a lower-level extension that would include two additional bedrooms, a rumpus room, bathroom and laundry. A new deck would extend over the addition from the first floor living room area. The additions also include acoustic insulation to the residential standard required in the Operative District Plan (ODP) Commercial Zone. The recommendations of Marshall Day will supersede the EarCon Acoustics Limited recommendations that accompanied the earlier building consent EBC-2020-529/0. A copy of the Marshall Day acoustic report and building modification recommendations is attached at **Attachment 4**.

1.3. The proposed shed will be located in front of the house and within 3.0 metres of the road reserve boundary (excluding the proposed wingwalls). The shed dimensions are approximately 21m long by 8m wide (168m2) and 6m high at the roof apex. The main purpose of the shed is to accommodate the applicant's boat. A separate enclosed mezzanine entertainment area and bathroom will be constructed in the rear part of the shed.

1.4. The proposed shed colour scheme is Resene 'Ebony' (Black), which has been colour matched to the Resene colour "All Black N25-001-264". This is designed to match the consented dwelling colour scheme and proposed extension to be in accordance with the Proposed Far North District Plan (PDP) Paihia Heritage Area – Part B Rule HA-S2 Heritage Colour standards.

1.5. A second 6m wide vehicle crossing is proposed to be constructed to provide separate access to the shed. The vehicle crossings and house driveway will be constructed in concrete. There is provision on-site for two residential carparks and a vehicle turning area adjacent to the dwelling.

1.6. Approximately 398m^3 of excavation earthworks are required to construct the foundation areas for the proposed house extension, a raised outdoor barbecue area and the main shed and paved driveway areas. Earthworks will be undertaken in accordance with the Auckland Region GD-005(2016) erosion and sediment control measures indicated on the application site plan (refer **Appendix 3**). Excess soil will be removed to an existing approved facility or permitted clean fill location. An earthworks permit is required under the FNDC Control of Earthworks Bylaw and forms part of this application.

1.7. 536.4m^2 of impermeable surface is proposed. This includes the following:

- Relocated dwelling – 83.5m^2
- House extension – 69m^2
- Shed – 168m^2
- Paved areas – 183m^2
- Barbecue area – 33m^2

1.8. Stormwater attenuation has been designed for the 50% and 20% AEP events back to 80% of pre-development and for the 10% AEP event back to pre-development impermeable surfaces in accordance with Council Engineering Standards 2023. This is based on historical rainfall data with no adjustment for climate change. Runoff from the developed surfaces catchment area, including a portion of the parking area and upslope grass will be piped into a dedicated attenuation tank, with the overflow discharged to the existing kerb outlet.

1.9. A 29.7m2 (or 54%) landscaped area within the 3m wide front yard setback (clear of driveways and vehicle crossings) is proposed.

2. Description of the Site and Surrounds

2.1. The application site is located at 16 MacMurray Road, Pahia and is legally described as Lot 43 DP 11041. A copy of the record of title is attached at **Attachment 2**.

2.2. There are no instruments (other than a fencing agreement) attached to the land title.

2.3. The site area comprises 837m^2. It has a northerly aspect and views over Pahia township and the Bay of Islands from the upper, rear part of the property. The site is located at the periphery of Paihia's commercial area. The site contains a recently located dwelling situated at the rear of the property that has a building consent EBC-2024-529/0 that was approved to be renovated in accordance with the stated exterior colour scheme and noise insulation recommendations set out in the Earcon Acoustics Limited Report recommendations dated 19th December 2023. While currently painted white, the approved colour scheme for the relocated dwelling is Resene Whites and Neutrals 'All Black'.

2.4. There is a single vehicle crossing located at the western end of the site frontage and a single mature Pohutukawa tree that overhangs the neighbouring property at 18 MacMurray Road.

Figure 1 – 16 MacMurray Road, Paihia

2.5. Surface water on the site currently follows the natural ground slope to the MacMurray Road stormwater system. The nearest Council stormwater connections points are cesspits located 45m east and 37m west on MacMurray Road.

2.6. The immediately surrounding area is characterised by a mix of commercial resort and motel type accommodation facilities, the Paihia Tennis Club and residential dwellings. There are no restaurants or bar activities in the immediate vicinity. The adjacent road reserve grass verge is relatively wide, being approximately 5.6 metres. There is no footpath on the southern (site) side of MacMurray Road. The adjacent sites to the west and east contain single residential dwellings.

Figure 2 - Aerial view of the site and the surrounding properties - Source: Prover

3. Reasons for Consent

Operative Far North District Plan (ODP)

3.1. The site is zoned Paihia Commercial Zone A2 in the ODP. The site is not within a mapped 'Pedestrian Frontage' that is the focus of the Council's discretion with respect to building location in the Commercial zone. The site is not adjacent to a public esplanade reserve, strip or the coastal marine area.

3.2. The Paihia commercial area is divided into sub-zones that are intended to reflect the character of their location. Development control standards differ throughout the commercial zone and include varying rules relating to building height and setback from boundaries.

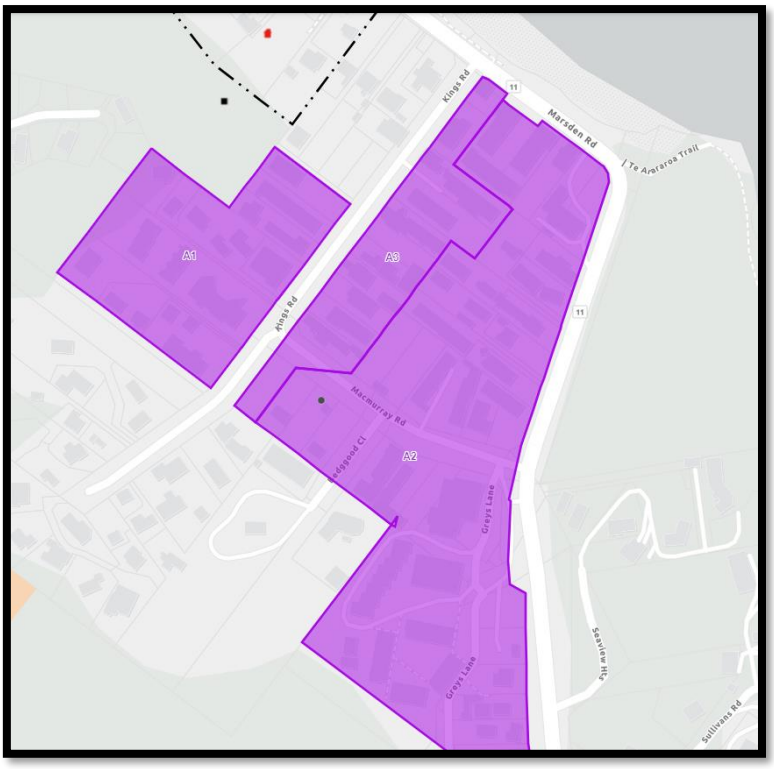


Figure 3 - Operative District Plan Zone – Paihia Commercial Zone A2

3.3. An assessment of the relevant District Plan rule standards is set out in **Table 1** and **Table 2** below:

ODP Commercial Zone Standards

Table 1 - Assessment against the Commercial Zone rule standards		
Plan Reference	**Rule**	**Performance of Proposal**
7.7.5.1.1	**Max Building Height (Paihia A2 = 10m)**	**Permitted.** The maximum proposed shed height above the existing ground level is 6m.
7.7.5.1.2	**Sunlight**	**Permitted.**
7.7.5.1.3	**Visual Amenity & Environmental Protection**	**Permitted** (a) Not applicable – the site is adjacent to Commercial zoned land. (b) The total area of proposed 3m yard (55m^2) occupied by driveway and vehicle crossing is 25.3m2 or 46%. The remaining 29.7m^2 area (54%) would be grassed landscaping.
7.7.5.1.4	**Setback from Boundaries**	**Restricted Discretionary Activity**

	(a) Applies to sites with a mapped 'Pedestrian Frontage' (b) A2 area – minimum setback is 6m from the road boundary.	(a) Not applicable (b) The proposed shed frontage (excluding wing walls) would be located 3m metres from the front road boundary.
7.7.5.1.5	**Noise Mitigation for Residential Activities**	**Permitted** The existing dwelling and its extension would be insulated against noise in accordance with this standard and the recommended changes set out in the Marshall Day sound insulation assessment dated 25 July 2024. **Refer Attachment 4 – Acoustic Report**
7.7.5.1.6	**Transportation**	**See below**
	Keeping of Animals	**Not applicable.**
7.7.5.1.10	**Roof Pitch**	**Permitted.**
7.7.5.1.11	**Stormwater**	The site is within the consented Pahia urban stormwater catchment.
7.7.5.1.12	**Helicopter Landing Area**	**Not applicable.**

Applicable ODP District Wide Standards

Table 2 – Assessment against the relevant District Wide rule standards		
Plan Reference	**Rule**	**Performance of Proposal**
Chapter 12 – Natural and Physical Resources		
12.1	**Landscapes and Natural Features**	Not applicable
12.3.6.1.2	**Soil and Minerals (Excavation / filling)**	**Permitted** Not applicable in the Commercial zone Total excavation volume = 398m^3 comprising the following:

		Excavation Area 1 (house extension) = 17m^3 Excavation Area 2 (bbq area) = 49m^3 Excavation Area 3 (shed foundation) = 315m^3 Excavation Area 4 (driveway) = 17m^3 **Earthworks permit is required.**
Chapter 15 – Transportation		
15.1.6A	**Traffic Intensity**	**Permitted (Residential Use)**
15.1.6B	**Parking**	**Permitted (Residential Use)**
15.1.6C	**Access**	
15.1.6C.1.1	**Private Accessway in All Zones**	**Permitted** (a) Designed in accordance with Appendix 3B-1 'Standards for Private Access' (b) Compliant gradient (c) Serving no more than 1 household unit. (d) Single site served (e) Access is onto a local road and is not near an intersection with an arterial or collector road.
15.1.6C.1.1	**Private Accessways in Urban Zones**	**Permitted** (a) Not applicable (b) Single entry and exit residential use that is designed to comply with the 3m width standard. (c) The proposed vehicle crossing and driveway will be sealed in concrete.
15.1.6C.1.3	**Passings Bays on Private Accessways in all Zones**	**Not applicable**
15.1.C.1.4	**Access over Footpaths**	**Not applicable** There is no footpath on the southern side of MacMurray Road.
15.1.6C.1.6	**Vehicle Crossing Standards in Urban Zones**	**Permitted** The second proposed vehicle crossing would be constructed in accordance with Council Engineering Standards and Guidelines.

15.1.6C.1.7	**General Access Standards**	**Permitted** Access(s) to serve a single residential dwelling and boat shed.
15.1.6C.1.8	**Frontage to Existing Roads**	**Not applicable**
15.1.6C.1.9	**New Roads**	**Not applicable**
15.1.6C.1.10	**Service Lanes, Cycle and Pedestrian Accessways**	**Not applicable**
15.1.C.1.11	**Road Designations**	**Not applicable**

ODP Activity Status

3.4. The assessment against the relevant ODP permitted standards above has identified the following rule breaches:

- Permitted Activity Rule 7.7.5.1.4 – Setback from boundaries

3.5. The proposal is a **Restricted Discretionary** Activity under Rule 7.7.5.3.4 of the ODP.

3.6. Based on proposed compliance with the Marshall Day noise insulation requirements for the building development that includes the house addition, the proposal is assessed to be a permitted activity under the Commercial Zone Rule 7.7.5.1.5.

Proposed District Plan (PDP)

3.7. The proposed activities are subject to the provisions of the PDP that have legal effect. The PDP was publicly notified on the 27th of July 2022. The submission and further submission periods have closed. PDP hearings commenced in May 2024. As no decisions on submissions have been made, no weight is attributed to the proposed provisions.

3.8. The proposed site zone is 'Mixed Use'. The site is within the Coastal Environment overlay and the Paihia Heritage Area – Part B. Heritage Rules have immediate legal effect.

3.9. Paihia Heritage Area Overlay – Part B is described as follows:

> *"Covers the Sites of Significance to Maori along the foreshore and within scenic reserves, and the important historic sites located near the Horotutu Creek, which is itself an important historical landscape feature. The archaeological potential for sites within the former low lying field systems, from numerous historical images and currently recorded archaeological sites. The forested high ground to the Southwest of MacMurray Road is included as an area of archaeological potential associated with the recorded location of Te Koke's Pa."*

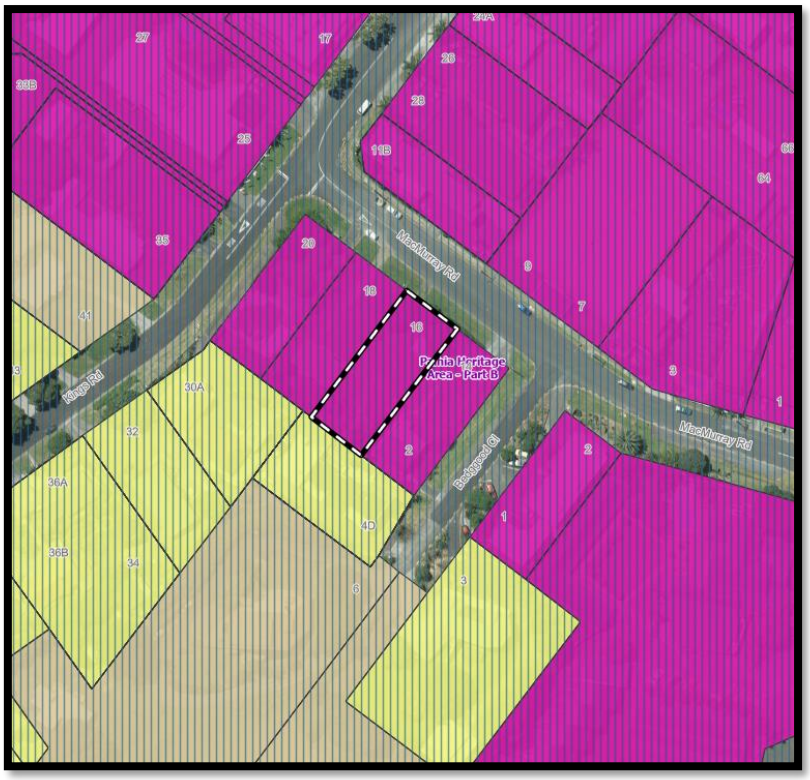


Figure 4 – Proposed District Plan Zone – Mixed Use

3.10. An assessment of the proposed activities against the PDP rules that have immediate legal effect, is set out in **Table 3** below:

Table 3 – Assessment against the PDP rule standards that have immediate legal effect

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.** The site does not contain any hazardous substances nor are any proposed.
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)	**Permitted** The site is within the Paihia Heritage Area Overlay. There is no scheduled heritage resource on the site. The proposal is subject to the following rules:

		HA-R2 Additions and Alterations to existing buildings or structures PER-1- N/A PER-2-N/A PER-3 – HA-S1 – N/A PER-3 – colour scheme complies with Resene 'Whites and Neutrals' (or equivalent) PER-4- N/A PER-5- N/A PER-6- N/A PER-7- N/A **HA-R4 New buildings and structures** PER-1- N/A - the site does not contain a scheduled Heritage Resource PER-2- N/A **HA-R5 Earthworks** PER-1 – complies PER-2 – N/A – PER-3 – N/A
Historic Heritage	All rules have immediate legal effect (HH-R1 to HH-R10). Schedule 2 has immediate legal effect.	Not applicable. The site is within the Paihia Heritage Area – Part B These rules apply to activities that are outside of Heritage Area Overlays.
Notable Trees	All rules have immediate legal effect (NT-R1 to NT-R9) All standards have legal effect (NT-S1 to NT-S2) Schedule 1 has immediate legal effect	**Not applicable.** The site does not contain any notable trees.
Sites and Areas of Significance to Maori	All rules have immediate legal effect (SASM-R1 to SASM-R7) Schedule 3 has immediate legal effect	**Not applicable.** The site does not contain any sites or areas of significance to Maori.
Ecosystems and Indigenous Biodiversity	All rules have immediate legal effect (IB-R1 to IB-R5)	**Not applicable.** The site does not contain any known ecosystems or indigenous biodiversity to which these rules would apply.
Subdivision	The following rules have immediate legal effect: SUB-R6, SUB-R13, SUB-R14, SUB-R15, SUB-R17	**Not applicable.** The proposal is not a subdivision.
Activities on the	All rules have immediate legal effect (ASW-R1 to ASW-R4)	**Not applicable.**

Surface of Water		The proposal does not involve activities on the surface of water.
Earthworks	The following rules have immediate legal effect: EW-R12, EW-R13 The following standards have immediate legal effect: EW-S3, EW-S5	**Permitted.** All earthworks in all zones are subject to Accidental Discovery Protocol standards EW-S3 and sediment control standards EW-S5 The proposed earthworks will be undertaken in accordance with the Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region 2016 (GD2016/005) – (**refer Site Plan at Appendix 3**).
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.**

PDP Activity Status

3.11. The proposed activity is assessed to be permitted under the PDP rules that have current legal effect.

National Environmental Standards

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

3.12. The site is not a HAIL site as recorded by Council or any other known historical record. There are no activities that would require resource consent under the NESCS.

National Environment Standard for Freshwater Regulations 2020 (NES-F)

3.13. The site does not contain any freshwater wetlands and would not affect any wetland that is protected by the NES-F.

Control of Earthworks Bylaw

3.14. As per the assessment above, no resource consents are required for earthworks within the Commercial Zone. An earthworks permit is required for the volume that exceeds 50m^3 and in relation to the proximity of works to the site boundaries.

ASSESSMENT OF THE APPLICABLE CONTROL OF EARTHWORKS RULES:		
PERFORMANCE STANDARDS		
Bylaw Reference	**Rule**	**Performance of Proposal**
7.1	**(a)**	**Permit Required** Earthworks will be undertaken within 3m of the eastern MacMurray Road boundary, and within 3m of the northern and southern boundaries.
	(b)	**Permit Required** The works being undertaken will exceed 500mm in depth over an area that exceeds 50m^2 and a volume of 50m^3
	(c)	**Complies** The site is not located within the Rural Production Zone.
	(d)	**Complies** The earthworks area is outside of any resource features.
	(e)	**Complies** Stormwater runoff will not be affected to the extent that it will adversely affect any adjoining property.

3.15. Section 12.1 of the Control of Earthworks Bylaw stipulates that *'The Council may, in its absolute discretion, exempt an owner or occupier from a requirement to obtain a permit under clause 7.1, provided that an application for an exemption is made in writing and accompanied by the payment of any required application and processing fees in accordance with Council's Fees and Charges Schedule. No exemption will be valid unless it is given to the applicant by the Council in writing.'*

3.16. The applicant is seeking that the earthworks component of this application be assessed as part of this resource consent application. Earthworks activities are integral to the proposed development of the site, and in the absence of a resource consent trigger in the Commercial Zone, it will enable simultaneous consideration of the potential effects that are normally managed under the Council bylaw. Costs associated with providing for the exemption will be covered by the resource consent process and keeping all the consent conditions together in one document ensures transparency in terms of future compliance. In this instance an

exemption makes sense. We ask that this be conveyed by way of advice note on the resource consent decision.

4. Statutory Assessment under the Resource Management Act (RMA)

Section 104C of the RMA

4.1. Section 104C governs the determination of applications for Restricted Discretionary Activities. A consent authority must consider only those matters over which –

(a) a discretion is restricted in national environmental standards or other regulations:
(b) it has restricted the exercise of its discretion in its plan or proposed plan.

4.2. ODP Rule 7.7.5.3.4 states that when assessing an application, the Council has limited its discretion to:

(a) Where a pedestrian frontage is required, the extent to which the proposal is in keeping with the existing character and form of the street or road, in particular with the external scale, proportions and buildings on the site and on adjacent sites;
(b) The extent to which the buildings and their use will impact on the public use and enjoyment of adjoining esplanade reserves and strips and adjacent coastal marine areas.

4.3. The site is not within a mapped 'Pedestrian Frontage' and is not therefore within the area of the Paihia Commercial zone where discretion has been applied as stipulated in part (a) of the above rule. Similarly, the site is not adjacent to any esplanade reserve, strip or the coastal marine area. For this reason, development of the site in the manner proposed will have no adverse effect on the public use and enjoyment of these areas and no further assessment of adverse effects on the environment is required.

Section 104 of the RMA

4.4. While the application proposal remains generally subject to the matters for consideration listed in Section 104, these are limited by the directives set out in Section 104C above. No further assessment of this proposal under the ODP is required and no assessment of potential adverse effects on the environment is provided. The proposed activities are permitted under the PDP rules that have immediate legal effect.

4.5. Actual and potential effects arising from the proposed activity as described in 104(1)(a) can be both positive and adverse (as described in Section 3 of the Act). Positive effects arising from this development are the additions and alterations to the existing dwelling that will enable a more functional living arrangement for the resident owners of the property and the addition of a new shed to safely house a large boat.

4.6. Section 104(1)(b) requires that the consent authority consider the relevant provisions of national environmental standards, regulations, national policy statements, regional policy statements or plans, including proposed plans. There are no national standards, regulations or national policy statements that are directly relevant to the proposed activities and / or that are not adequately managed within the framework hierarchy of the ODP.

4.7. The application site is within the ODP Commercial Zone. Objective 7.7.3.1 for the Commercial Zone is:

> *"To achieve the development of commercial areas in the District accommodating a wide range of activities that avoid, remedy or mitigate the adverse effects of activities on other activities within the Commercial Zone and on the natural and physical resources of the District."*

4.8. The Commercial Zone applies to traditional commercial centres such as Paihia. Policy 7.7.4.2 states that the range of activities provided for in the commercial zone is limited only '*by the needs for the effects generated by the particular activity to be consistent with other activities in the zone.'* This includes residential activities that are provided for in the zone subject to acoustic insulation requirements.

4.9. General Urban Environment Policy 7.4.1 states that the 'amenity values of existing and newly developed areas be maintained or enhanced'. Furthermore, Policy 7.4.7 states that 'urban areas with distinctive characteristics be managed to maintain and enhance the level of amenity derived from those characteristics.' Commercial Zone Policy 7.7.4.3 states that standards are applied to protect the visual and environmental amenity within the Commercial Zone, and the amenity of adjacent zones.

4.10. The Paihia commercial zone is divided into sub areas. The application site is within the Commercial A2 sub-zone area. Within this sub-zone, restricted discretionary rule 7.7.5.3.4 focuses the management of amenity effects associated with building height and location relative to external boundaries to areas with an identified 'Pedestrian Frontage' or where a building location will impact public use and enjoyment of adjoining esplanade reserves and strips or coastal marine areas. The application site is not located within an identified Pedestrian Frontage, nor is it adjacent to an esplanade reserve, strip or the coastal marine area. For this reason, the amenity and character effects of the shed building location would not be contrary to the ODP Commercial Zone objectives and policies and is consistent with the matters over which the Council has limited its discretion.

4.11. As with the ODP, the PDP Mixed-Use zone would limit building setback controls to those areas with identified Pedestrian Frontages and where land is adjacent to MHWS, wetlands, rivers or lakes. The application site is within the Pahia Heritage Area – Part B. The proposed policy focus of this overlay is the heritage landscape context that includes the existing topography, foreshore and scenic reserves in this location. Within the overlay Part B area, buildings are controlled in terms of setbacks from identified scheduled heritage resources and the use of heritage colours. The proposed residential building extension and separate shed have been designed to comply with the specified heritage colours. Overall, the proposed activity would

not be contrary to the objectives and policies of the Mixed-Use Zone or the proposed heritage overlay.

4.12. Section 104(1)(c) states that consideration must be given to 'any other matters that the consent authority considers relevant and reasonable, necessary to determine the application.' There are no other matters relevant to this application.

4.13. In accordance with Section 104(6), adequate information is provided to determine this application.

4.14. The proposal is to be assessed as a Restricted Discretionary Activity under ODP Rule 7.7.5.3.4. The Council may grant consent to the application, and it may impose conditions.

5. Conclusion

5.1. The Applicant seeks resource consent to construct additions and alterations to an existing house, and a standalone shed that is required to accommodate a boat at 16 MacMurray Road, Paihia. A restricted discretionary activity resource consent is required to reduce the minimum building setback from the road boundary frontage. All other OPD and PDP rules are complied with. No other resource consents are required. An earthworks permit under the FNDC Earthworks bylaw is required.

5.2. When considering minimum building setback rule breaches, the Council has restricted its discretion to sites within mapped pedestrian frontages and those that are adjacent to esplanade reserves and the coastal marine area. The application site is not within any of these areas and is therefore not subject to Council's discretion or any other assessment criteria that could be applied to the proposal. The proposed activity would not be contrary to the objectives and policies of the ODP or the PDP.

5.3. The proposed activity will enable the residential wellbeing of the Applicant. This is consistent with Section 5 of the RMA.

6. Limitations

6.1. 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.

6.2. 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.

6.3. Where other parties may wish to rely on it, whether for the same or different proposals, this permission may be extended, subject to our satisfactory review of their interpretation of the report.

6.4. 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	**NA615/261**
Land Registration District	**North Auckland**
Date Issued	01 August 1930

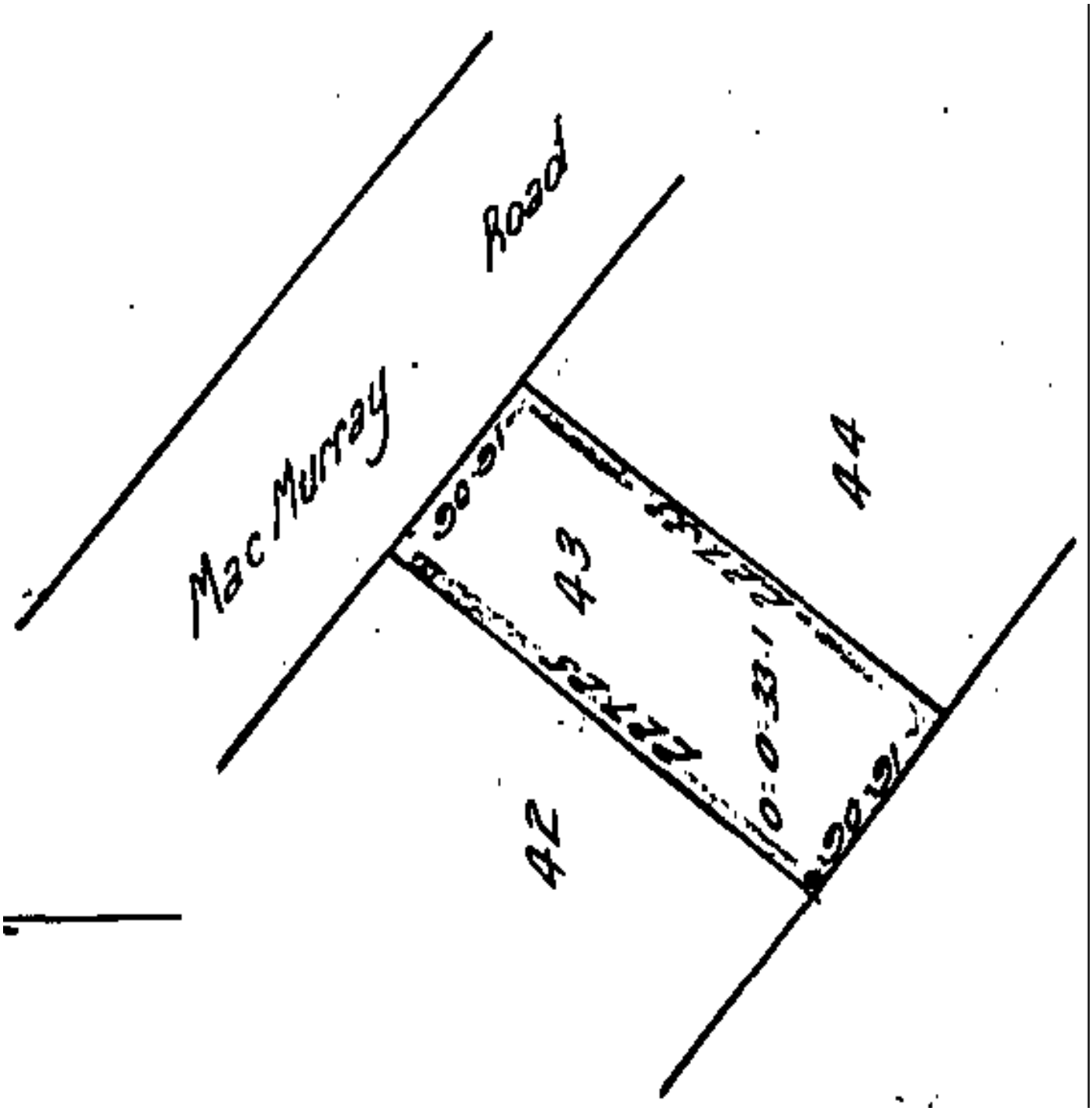
Prior References
NA332/233

Estate	Fee Simple
Area	837 square metres more or less
Legal Description	Lot 43 Deposited Plan 11041
Registered Owners	

Carl Leigh Laurie and Melanie Anne Laurie

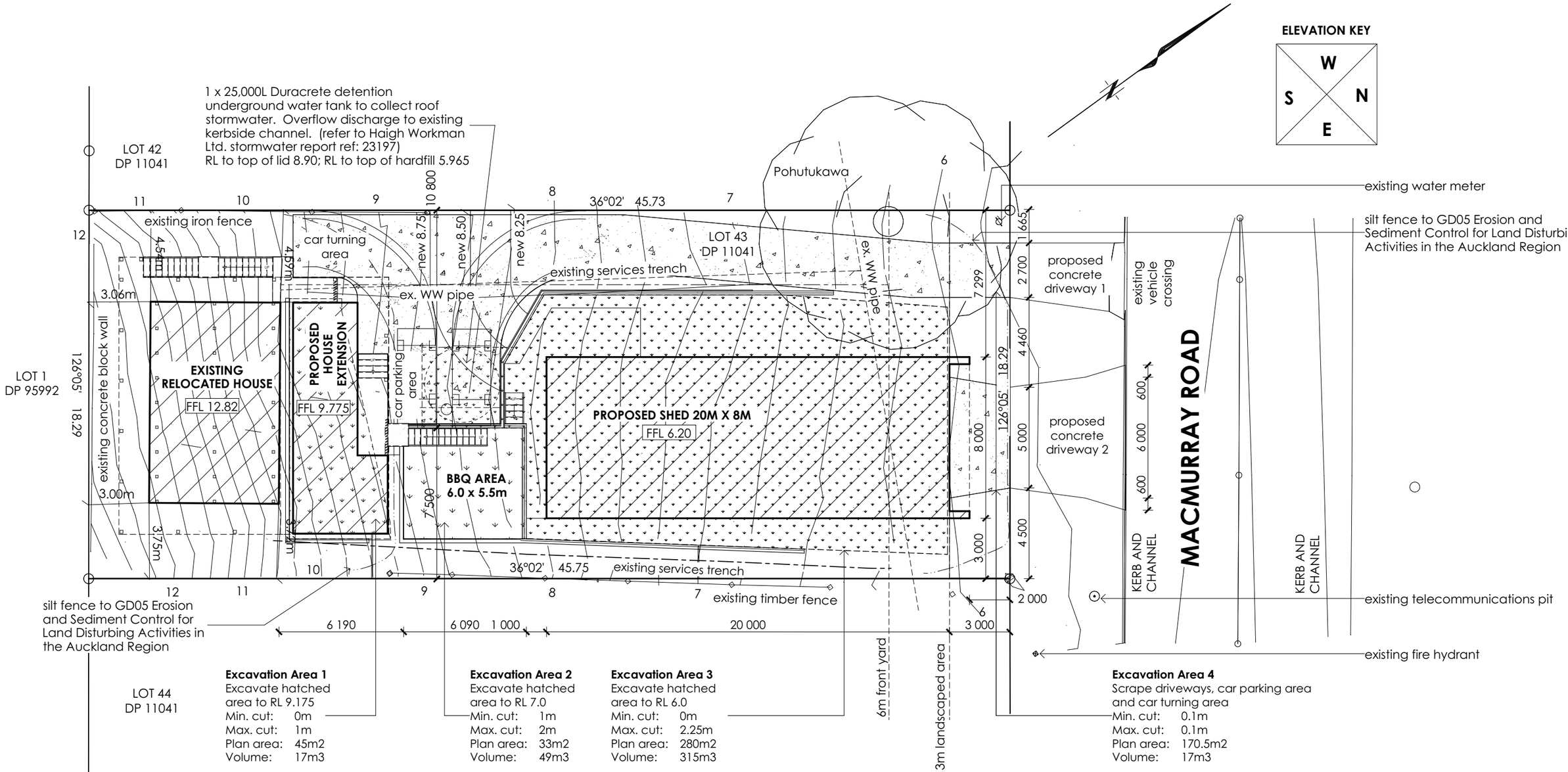
Interests

Fencing Agreement in Transfer 242119 - 1.8.1930


Mac Murray
Road
43
44
42

PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA

SITE PLAN
SCALE 1:200



Excavation Area 1
Excavate hatched area to RL 9.175
Min. cut: 0m
Max. cut: 1m
Plan area: 45m2
Volume: 17m3

Excavation Area 2
Excavate hatched area to RL 7.0
Min. cut: 1m
Max. cut: 2m
Plan area: 33m2
Volume: 49m3

Excavation Area 3
Excavate hatched area to RL 6.0
Min. cut: 0m
Max. cut: 2.25m
Plan area: 280m2
Volume: 315m3

Excavation Area 4
Scrape driveways, car parking area and car turning area
Min. cut: 0.1m
Max. cut: 0.1m
Plan area: 170.5m2
Volume: 17m3

TOTAL EXCAVATION

Excavation Area 1	17m3
Excavation Area 2	49m3
Excavation Area 3	315m3
Excavation Area 4	17m3
Total	**398m3**

LANDSCAPED AREA

Total area of front 3m yard: 55m2

Proposed concrete driveway 1:	8.1m2
Proposed concrete driveway 2:	16.5m2
Proposed building wing walls:	0.7m2
Total	**25.3m2**

Total landscaped area: 29.7m2 (54%)

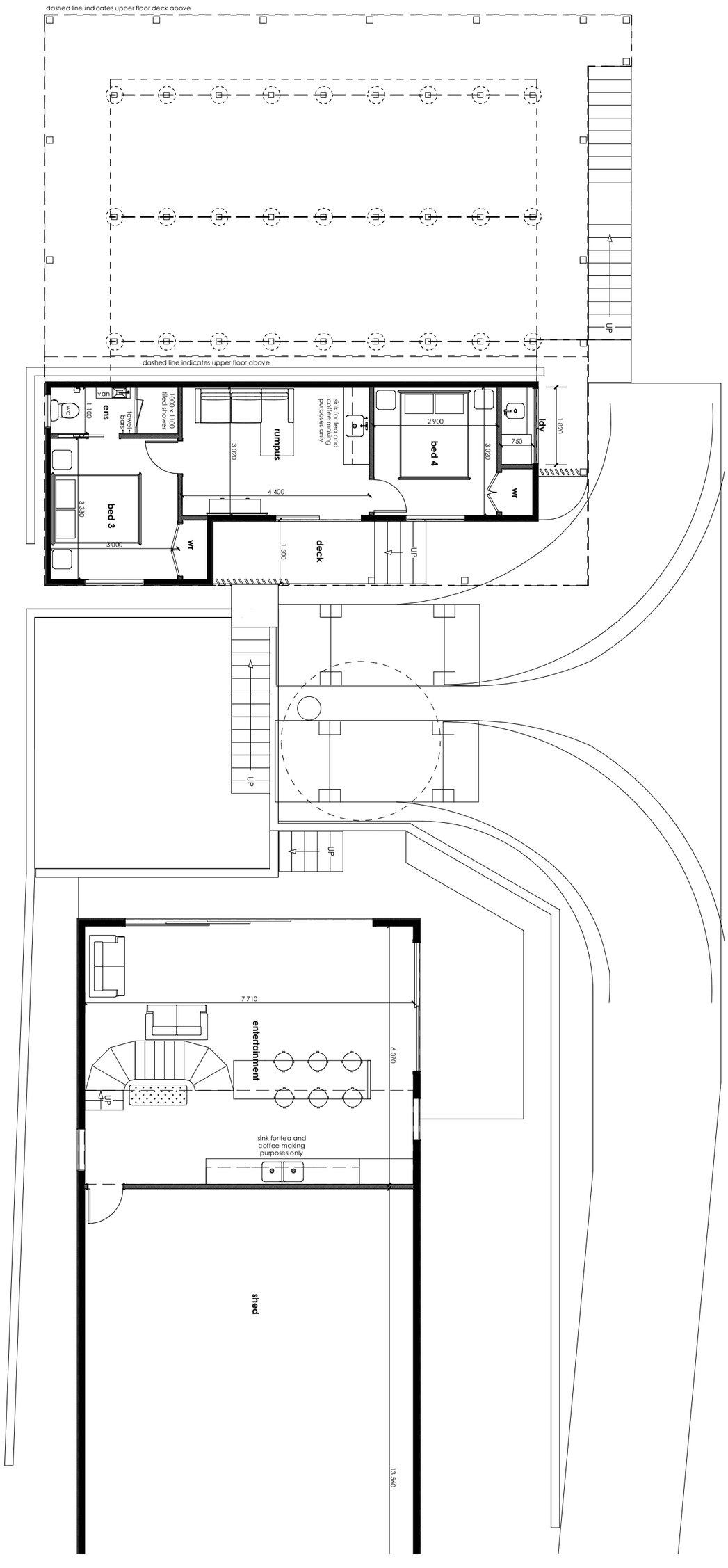
IMPERMEABLE SURFACES

Site Area: 837m2

Existing Relocated House to eaves:	83.5m2
Proposed House extension to eaves:	69.0m2
Proposed Shed to eaves:	168.0m2
Proposed concrete driveway 1:	148.0m2
Proposed concrete driveway 2:	11.0m2
Proposed path:	24.0m2
Proposed BBQ area	33.0m2
Total	**536.50m2 (64%)**

absolute build
p 09 407 4227 m 027 227 7543
PO Box 875, Kerikeri 0245 I absolutebuild.co.nz

PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA
GROUND FLOOR PLAN
SCALE 1:100@A3



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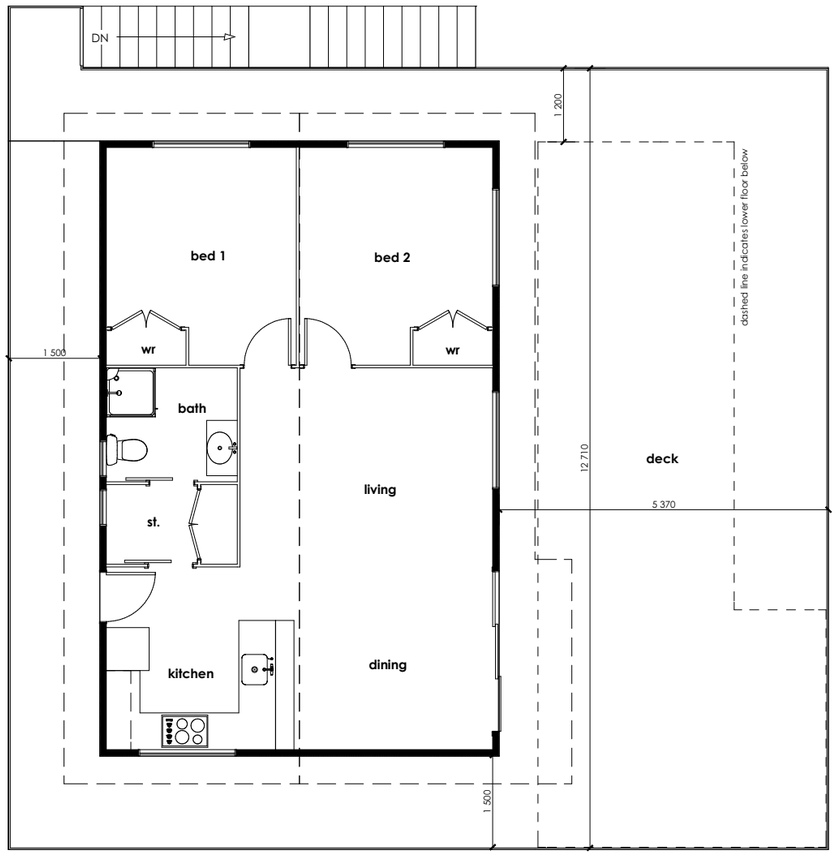
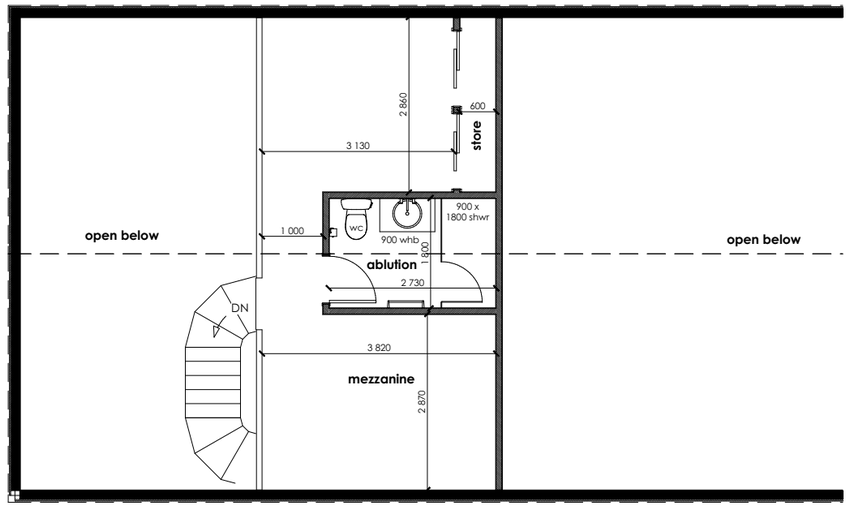
PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA

UPPER FLOOR PLAN

SCALE 1:100@A3





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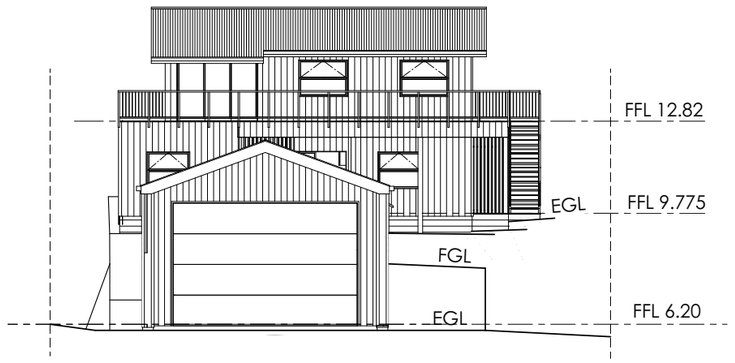
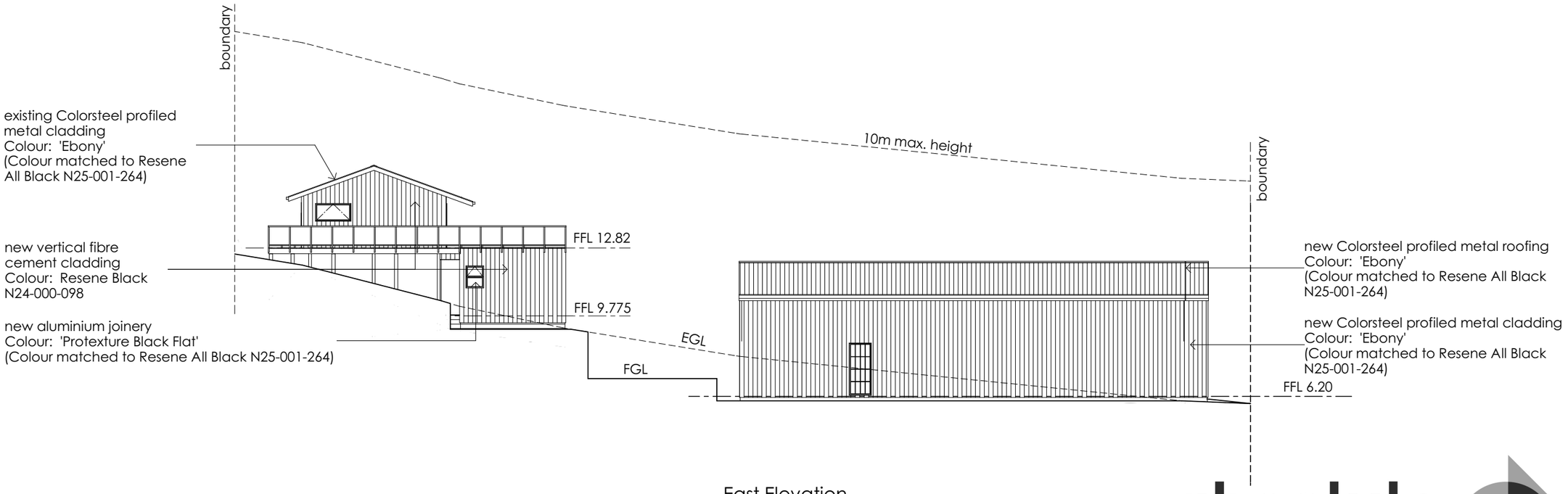
PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA
NORTH AND EAST ELEVATIONS
SCALE 1:200@A3



North Elevation

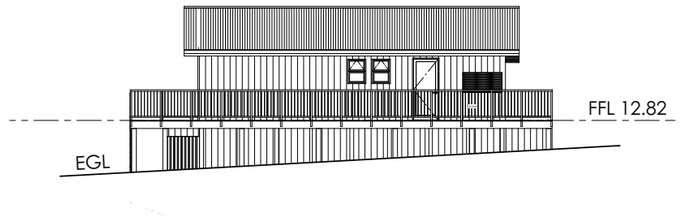


East Elevation

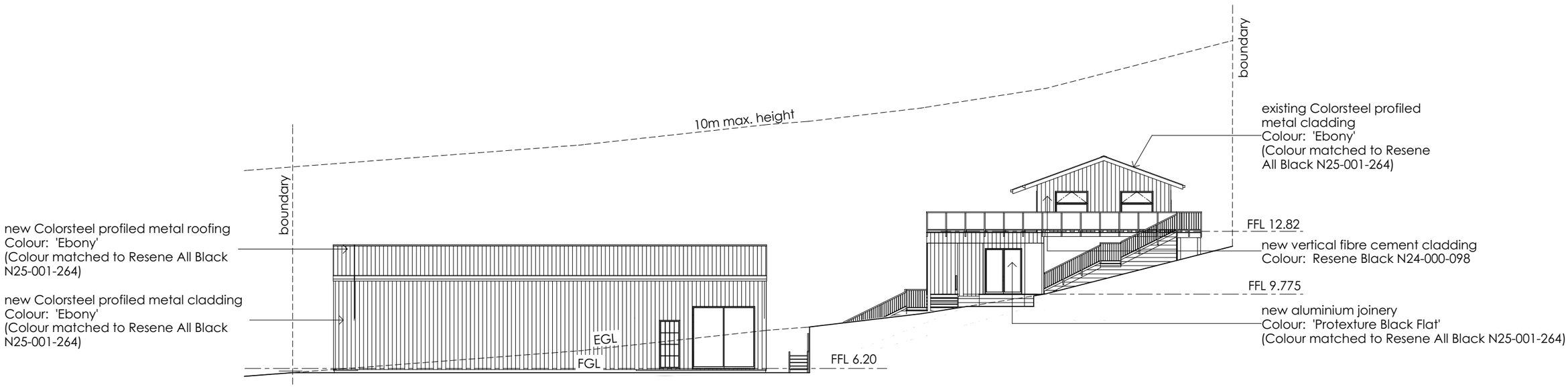
absolute build

p 09 407 4227 m 027 227 7543
PO Box 875, Kerikeri 0245 I absolutebuild.co.nz

PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA
SOUTH AND WEST ELEVATIONS
SCALE 1:200@A3



South Elevation



West Elevation

absolute build

p 09 407 4227 m 027 227 7543
PO Box 875, Kerikeri 0245 I absolutebuild.co.nz

North Elevation

MARSHALL DAY Acoustics

16 MACMURRAY ROAD PAIHIA
SOUND INSULATION CERTIFICATE
Rp 001 20240684 | 26 Aug 2024

84 Symonds Street
PO Box 5811 Wellesley Street
Auckland 1141 New Zealand
T: +64 9 379 7822 F: +64 9 309 3540
www.marshallday.com

Project: **16 MACMURRAY ROAD PAIHIA**

SOUND INSULATION CERTIFICATE

Prepared for: **Carl Laurie**
c/- Absolute Build
PO Box 875
Kerikeri 0245

Attention: **Natalie Todd**

Report No.: **Rp 001 20240684**

Document Control

Status:	Rev:	Comments	Date:	Author:	Reviewer:
Approved	-	-	25 July 2024	Peter Ibbotson	Raditya Putra
Approved	1	Minor changes	23 Aug 2024	Peter Ibbotson	External
Approved	2	Minor changes	26 Aug 2024	Peter Ibbotson	External

Cover Photo: Absolute Build Plans

TABLE OF CONTENTS

1.0 INTRODUCTION

Carl Laurie c/- Absolute Build has requested that Marshall Day Acoustics provide an assessment of sound insulation in accordance with Rule 7.7.5.1.5 of the Far North District Plan for the proposed new dwelling at MacMurray Road, Paihia.

2.0 PROPOSED WORKS

Carl Laurie proposes to relocate and extend a dwelling to 16 MacMurray Road, Paihia. The existing dwelling would be reclad and would form the upper level of the overall dwelling. A new building would form a lower level. An entertainment area would form part of a proposed shed elsewhere on the property – that has not been included in our analysis as it is not considered a living room or room for sleeping.

We have reviewed the following documents as part of this project:

- Architectural drawing set by Absolute Build (undated) titled: *Proposed House Extension and New Shed At 16 MacMurray Road, Paihia*
- Draft Construction Plans, July 2024, *Proposed House Extension and Shed at 16 MacMurray Road, Paihia*

3.0 DISTRICT PLAN REQUIREMENTS

The site is located at 16 MacMurray Road, Paihia which is zoned *Commercial*[1]. Rule 7.7.5.1.5 of the Far North District Plan requires permanent and non-permanent accommodation to comply with the following clause:

7.7.5.1.5 NOISE MITIGATION FOR RESIDENTIAL ACTIVITIES

> *"Any new residential activity involving permanent and non-permanent accommodation shall be developed in such a way that the attenuation of noise between any boundary and living room is no less than 20 dB, and between any boundary and any room used for sleeping is no less than 30 dB. In the absence of forced ventilation or air-conditioning, these reductions shall be achieved with any exterior windows open.*
>
> *The Council will require an acoustic design report prepared by a suitably qualified and experienced person demonstrating compliance with this requirement prior to issuing any Certificate of Compliance under s139 of the Act."*

As the above rules applies *"…between any boundary and any room used for sleeping…"* the attenuation between the site boundary and the dwelling location should be taken into account. This would mean that a dwelling located close to a boundary would generally require a greater amount of sound insulation than a dwelling located some distance from a boundary. However, the Plan rule does not state where the noise source should be assumed to be located with respect to the boundary, which makes the calculation of this attenuation difficult. For this reason, the attenuation between the boundary and the building façade has not been taken into account for design; rather a conservative method has been used whereby the noise level difference between the level near the façade and the internal reverberant level has been considered.

[1] The site also falls within the *Paihia Commercial Zone* overlay.

4.0 PROPOSED CONSTRUCTION

The following table summarises the proposed construction of the units.

Table 1: Proposed Dwelling Construction

Building Element	Construction
Windows	Sliding, awning and fixed glazing. Likely double glazed units with 24mm total thickness. **Bed 1** Windows (replaced): 1.8 m^2 **Bed 2** Windows (replaced): 3.1m^2 **Living/Dining** Windows (replaced): 3 m^2, Sliding Doors: 5 m^2 **Bed 3** Windows (new): 1.7m^2 **Bed 4** Windows (new): 1.7m2 **Rumpus** Sliding door entry (new): 4m^2
Walls	**Existing lightweight walls on the relocated dwelling are to be reclad with vertical cladding (fibre cement). It is proposed to use a large batten (around 90mm) to form an insulated cavity.** The existing cladding appears to be a relatively thin shiplapped weatherboard (possibly fibre cement), but this will be removed. It is understood from Absolute Build that the interior wall lining is a Lockwood-type lining at around 52mm thickness. **Walls on the proposed new buildings are proposed to be vertical fibre cement cladding. No cross sections have been provided, but it is expected that the walls will be standard 90mm thick stud constructions with plasterboard internal linings.** **Bed 1** Existing walls (new external cladding with existing Lockwood internal cladding): 16m^2 **Bed 2** Existing walls (new external cladding with existing Lockwood internal cladding): 14m^2 **Living/Dining** Existing walls (new external cladding with existing Lockwood internal cladding): 27m^2 **Bed 3** New walls with internal plasterboard lining: 19m^2 **Bed 4** New walls with internal plasterboard lining: 14m^2 **Rumpus** New walls with internal plasterboard lining: 4m^2

Roof / Ceiling	**Profiled metal (Colorsteel) roof cladding with horizontal tiled ceilings. The existing tiles are understood to be a softboard type (Michelangelo tile).** **Roof on the new build portion will consist of membrane on 19mm thick ply (no thickness given). Internal ceiling linings will be plasterboard** **Bed 1** Existing roof (Colorsteel lining with ceiling below): 12m^2 **Bed 2** Existing roof (Colorsteel lining with ceiling below): 13m^2 **Living/Dining** Existing roof (Colorsteel lining with ceiling below): 36m^2 **Bed 3** New membrane/ply roof with plasterboard ceiling on purlins: 9m^2 **Bed 4** New membrane/ply roof with plasterboard ceiling on purlins: 10m^2 **Rumpus** New membrane / ply roof with plasterboard ceiling on purlins: 13m^2
Floor	**Existing floor is likely to be strandboard or similar. Polystyrene insulation is insitu underfloor[2]. The existing dwelling is raised high above the existing ground level.** **The new floor is proposed to be 19mm thick plywood flooring on joists. A relatively small gap between ground and floor height is proposed.** **Bed 1** Timber floor: 11m^2 **Bed 2** Timber floor: 12m^2 **Living/Dining** Timber floor: 33m^2 **Bed 3** Plywood floor: 10m^2 **Bed 4** Plywood floor: 10m^2 **Rumpus** Plywood floor: 14m^2
Entry door	**There is an entry door to the living / dining area.**

[2] Polystyrene is a poor acoustic material. In this case, the insulation can remain provided the

5.0 RECOMMENDED CONSTRUCTION

To achieve the District Plan requirement the following building construction modifications are required:

BEDROOM 1 AND BEDROOM 2

- **Window glazing:**
  - New glazing should consist of 6mm/14mm/4mm double glazed units (thicker glass and airgaps are acceptable). All joinery should have fully compressible seals that ensure a complete seal when windows are closed.
- **Walls:**
  - Walls should be reclad with 6mm to 14mm thick fibre cement material (1150 to 1400 kg/m^3 density) on a 90mm batten at 600mm centres with fibreglass or polyester thermal insulation(12kg/m^3) in the cavity. The internal wall linings may remain as the Lockwood material (consent holder should confirm thickness of Lockwood panels is greater than 40mm during construction).

    Alternative external cladding options such as 9.5mm thick Weathertex cladding could be substituted for the fibre cement, if required.
- **Roof**
  - Existing Colorsteel roofing (0.4mm thick steel has been assumed) to remain. Ceiling tiles to be replaced with 13mm thick standard density (8.4kg/m^2) plasterboard ceiling linings, or denser plasterboard (e.g. 13mm Gib Noiseline (12.5 kg/m^2) if consistency with other areas preferred)
- **Floor**
  - Due to the height of the floor, a single layer floor (e.g. Strandboard or ply) will not be sufficient. The perimeter of the building must be clad below floor level (to ground level) with external baseboards so that there is a continuous perimeter. This baseboard material does not need to have appreciable mass, and could consist of a 12mm thick ply, Weathertex, 6mm fibre cement, or alternative material with similar mass. We recommend confirming the existing floor construction material during construction and seeking advice in the event that the existing material is very thin.
  - Any ventilation openings or gaps in the base boards must be less than 0.5m^2 in total and located below the non-bedroom areas.

    An alternative to the above may be to fully clad the underside of the floor joists on battens. However this is typically problematic and is not recommended here. Contact us if this solution requires further consideration due to issues with the base board solution.

KITCHEN / LIVING / DINING

- **Window glazing:**
  - New glazing should consist of minimum 3mm/14mm/3mm double glazed units (thicker glass and airgaps are acceptable as required for thermal performance). All joinery should have fully compressible seals that ensure a complete seal when windows are closed.
- **Walls:**
  - Walls should be clad with 6 to 14mm thick fibre cement material (1150 to 1400 kg/m^3 density) on a 90mm batten at 600mm centres with fibreglass or polyester thermal insulation (12 kg/m^2) in the cavity. The internal wall linings may remain as the Lockwood

material (consent holder should confirm thickness of Lockwood panels is greater than 40mm during construction).

Alternative external cladding options such as 9.5mm thick Weathertex cladding could be substituted for the fibre cement, if required.

- **Roof**
  - Existing Coloursteel roofing (0.4mm thick steel has been assumed) to remain. Ceiling tiles to be replaced with 13mm thick standard density (8.4 kg/m^2) plasterboard ceiling linings, or denser plasterboard (e.g. 13mm Gib Noiseline or similar if consistency with other areas preferred)
- **Floor**
  - Due to the height of the floor, a single layer floor (e.g. Strandboard) will not be sufficient. The perimeter of the building must be clad below floor level with external baseboards so that there is a continuous perimeter. This baseboard material does not need to have appreciable mass, and could consist of a 12mm thick ply, Weathertex, 6mm fibre cement, or alternative material with similar mass. We recommend confirming the existing floor construction material during construction and seeking advice in the event that the existing material is very thin.
  - Any ventilation openings or gaps in the base boards must be less than 0.5m^2 in total and located below the non-bedroom areas.

    An alternative to the above may be to fully clad the underside of the floor joists on battens. However this is typically problematic and is not recommended here. Contact us if this solution requires further consideration due to issues with the base board solution.
- **Door**
  - Solid core entry door with compressible perimeter seals or double glazed aluminium joinery door with compressible perimeter seals.. A door bottom seal is not required acoustically.

BEDROOM 3 AND BEDROOM 4

- **Window glazing:**
  - New glazing should consist of 6mm/14mm/4mm double glazed units (thicker glass and airgaps are acceptable). All joinery should have fully compressible seals that ensure a complete seal when windows are closed.
- **Walls:**
  - Walls should be clad with 6mm to 14mm thick fibre cement material (1150 to 1400 kg/m^3 density) on a minimum of 90mm stud with full thermal insulation (consisting of fibreglass or polyester batts, not polystyrene). Internal wall linings should be two layers of 10mm thick dense plasterboard (e.g. Gib Noiseline or plasterboard with equivalent mass, min. density (8.6 kg/m^2) and stiffness).
  - Alternative external cladding options such as 9.5mm thick Weathertex cladding could be substituted for the fibre cement, if required.
- **Roof**
  - Roof should be 19mm plywood with membrane on minimum 250mm deep purlins. Internal ceiling linings should be 13mm thick dense plasterboard (e.g. Gib Noiseline or plasterboard with equivalent mass, min. density (12 kg/m^2) and stiffness.

- **Floor**
    - Due to the raised floor, a single layer floor (e.g. ply) will not be sufficient. The perimeter of the building must be clad below floor level with external baseboards so that there is a continuous perimeter. This baseboard material does not need to have appreciable mass, and could consist of a 12mm thick ply, Weathertex, 6mm fibre cement, or alternative material with similar mass.

      Any ventilation openings or gaps in the base boards must be less than 0.5m^2 in total and ideally as minimal as possible.

RUMPUS ROOM

- **Window glazing:**
    - Glazing shall be minimum of 3mm/14mm/3mm double glazing (thicker glass and airgaps are acceptable as required for thermal performance). All shall be modern aluminium glazed joinery units with fully compressible rubber seals forming a complete seal when closed.
- **Walls:**
    - Walls should be clad with the same cladding as used in Bedroom 3 and 4 on a minimum of 90mm stud with full thermal insulation (consisting of fibreglass or polyester batts, not polystyrene). Internal wall linings should be minimum 10mm thick standard density (6.4 kg/m^2) plasterboard.
- **Roof**
    - Roof should be 19mm plywood with membrane on minimum 250mm deep purlins. Internal ceiling linings should be minimum 10mm thick standard density (6.4 kg/m^2) plasterboard.
- **Floor**
    - Due to the raised floor, a single layer floor (e.g. ply) will not be sufficient. The perimeter of the building must be clad below floor level with external baseboards so that there is a continuous perimeter. This baseboard material does not need to have appreciable mass, and could consist of a 12mm thick ply, Weathertex, 6mm fibre cement, or alternative material with similar mass.
    - Any ventilation openings or gaps in the base boards must be less than 0.5m^2 in total and ideally as minimal as possible.

Note: *glazing or thermal break thickness can be increased for safety, thermal and wind requirements in this area if required. The specification given is the minimum acoustic requirement and does not imply that any other requirement beyond our expertise (e.g. fire, thermal, etc) will be achieved.*

GENERAL (ALL AREAS)

- **Aluminium joinery and framing** must include compressible seals that provide a complete perimeter seal to doors and windows. This is required to glazing in all areas.
- **Mechanical ventilation** shall be as per the rule that states:

  …In the absence of forced ventilation or air-conditioning, these reductions shall be achieved with any exterior windows open…

  Mechanical ventilation **or** air-conditioning is required for this project as the criteria cannot be achieved unless windows are closed.

It is noted that the rule states forced ventilation ***or*** air-conditioning is required, suggesting that ***either*** can be used to fulfil the criteria. In our view the rule would be fulfilled by any solution that is in accordance with the NZBC ventilation requirements irrespective of whether air-conditioning is provided, however we note that ventilation solutions alone may not necessarily ensure that the temperature of the apartments can be maintained in summer to avoid windows needing to be open for passive cooling[3].

We expect that the provision of highwall air-conditioning systems would allow windows to be closed while maintaining a suitable temperature for sleeping / living, however these are not typically connected to ventilation systems. Windows may therefore need to be open at times to ventilate the units with fresh air and to reduce condensation[4].

Both of the above solutions may comply with the way the FNDC rule is drafted. However, we generally consider a superior solution in critical sound insulation cases would be to provide ventilation and air-conditioning. However, this does not appear to be required by the rule.

We recommend that noise from any ventilation and air-conditioning is designed to achieve noise levels that would not cause sleep disturbance. A level of NC 25 to 30 is normally recommended in bedrooms, although this can be challenging to achieve with high-wall units. Most good quality domestic high-wall units have a "quiet mode" which generates acceptable noise to most people, especially when the heat pump is located in a living area. The plan rule does not specify a maximum noise level from services.

6.0 CONCLUSION

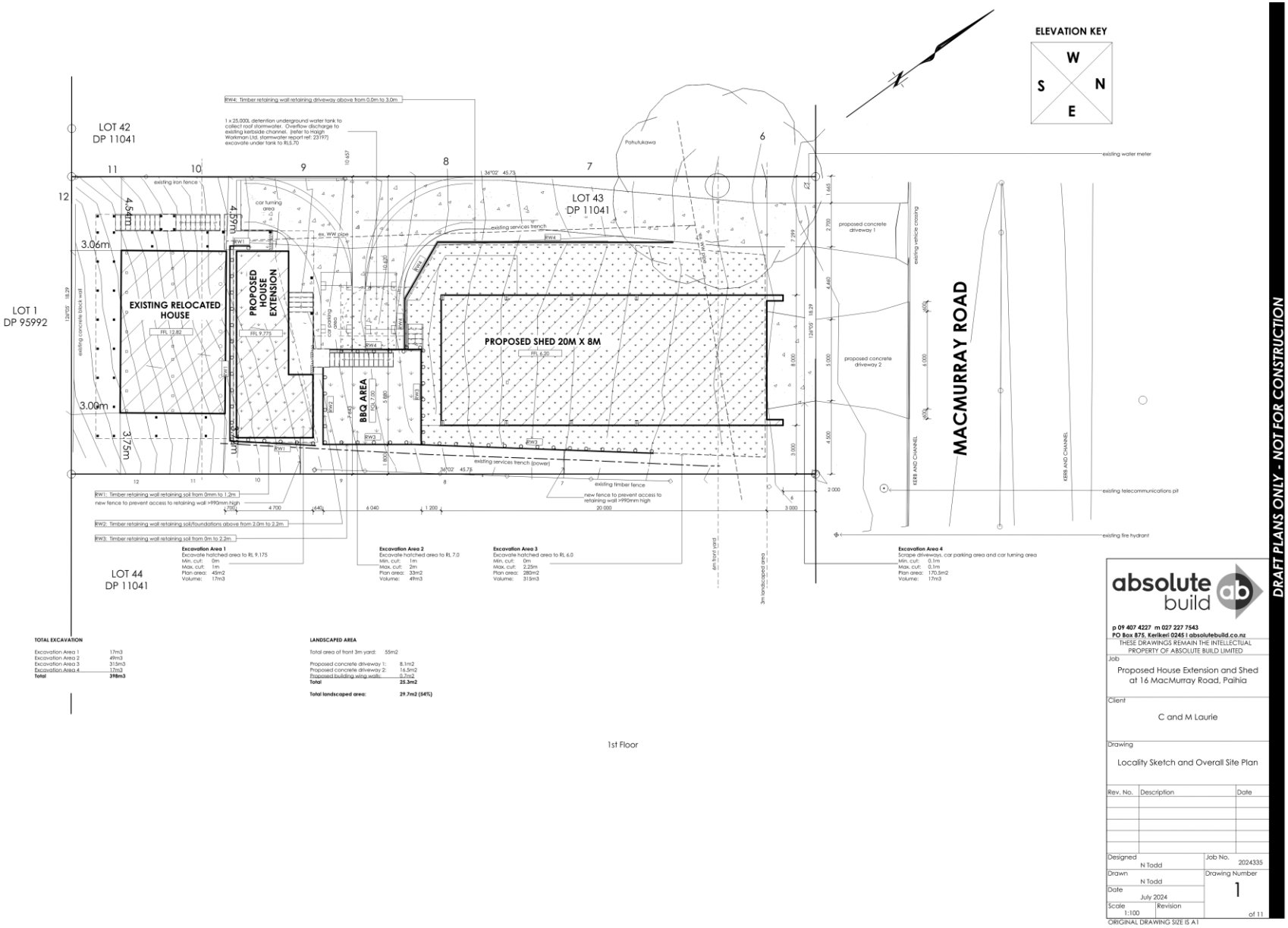
Marshall Day Acoustics has been engaged to provide an opinion on the sound insulation of the proposed dwellings at 16 MacMurray Road, Paihia in accordance with 7.7.5.1.5 of the Far North District Council District Plan.

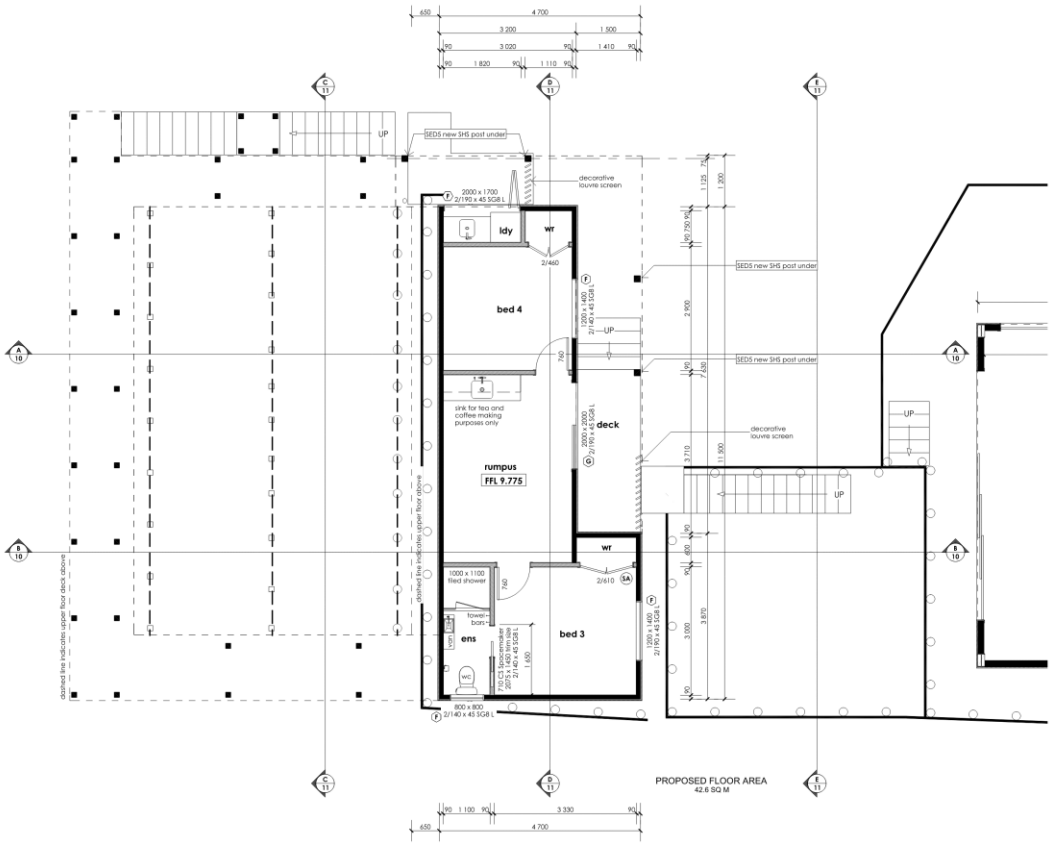
Calculations have shown that the building can achieve compliance with the District Plan rule subject to the recommendations contained in Section 5.0 of this report.

[3] This may require the consideration of a mechanical engineer specialising in HVAC.

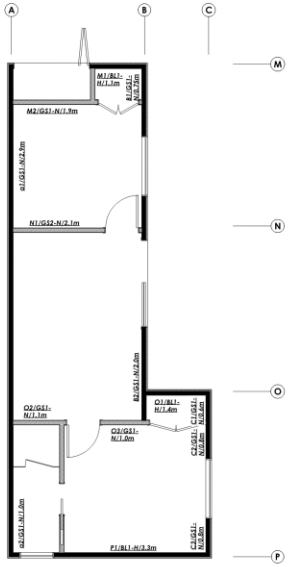
[4] This also may require the consideration of a mechanical engineer specialising in HVAC

APPENDIX A SCREENSHOTS OF DRAFT DRAWINGS – NOT TO SCALE





Floor Plan



Ground Floor Bracing Plan

FLOOR PLAN NOTES

1. All windows and doors shall be site measured prior to fabrication. The designer will not be held responsible for any joinery that does not fit.
2. Floor in ensuite shall have Mapei Mapegum WPS liquid membrane applied to 20mm fibre cement sheet prior to tiling over. Install strictly as per manufacturers specification, copy in Building Consent pack.
3. Walls in ensuite shower shall have Mapei Mapegum WPS liquid membrane applied to 9mm fibre cement sheet prior to tiling over. Install strictly as per manufacturers specification, copy in Building Consent pack
4. Wet areas prone to water splash as described in E3 of the NZBC shall be fixed as per Winstone Wallboards Ltd. GIB Aqualine Wet Areas System recommendations or similar approved. If walls are to be tiled then studs shall be at 400c/c
5. All walls shall have double top plates
6. All bottom plates shall be fixed down to floor with 2/90 x Ø3.15 nails at 600c/c
7. Underside of all lintel framing shall be 2025mm
8. FFL (Finished Floor Level) to FGL (Finished Ground Level) shall not exceed 190mm to comply with D1/AS1.

FLOOR PLAN KEY

Loadbearing wall <2.4m high - 90 x 45 studs at 400c/c

Non-loadbearing wall <2.4m high - 90 x 45 studs at 600c/c (unless filed)

(E) Lintel fixing as per Lumberlok Lintel Fixing Schedule - see details on drawing sheet 9

(5A) New domestic smoke alarms to be installed in accordance with NZBC F7/AS1. Smoke Alarms may be battery powered are not required to be interconnected. In addition they shall be provided with a hush facility having a minimum duration of 60 seconds. Smoke Alarms shall have a test facility located on the smoke alarms (readily accessible to building occupants). Smoke Alarms shall be listed or approved by a recognized authority as complying with at least one of: UL 217 ULC S531, AS 3786, BS 5446 PORT 1. Smoke Alarms shall be located on the escape routes on all levels within the household unit. On levels containing the sleeping spaces, the smoke alarms shall be located either:
a) In every sleeping space, or:
b) Within 3.0m of every sleeping space door. In this case the smoke alarms must be audible to sleeping occupants on the other side of the closed doors.

BRACING PLAN KEY

brace length
brace type
brace number

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Job
Proposed House Extension and Shed at 16 MacMurray Road, Paihia

Client
C and M Laurie

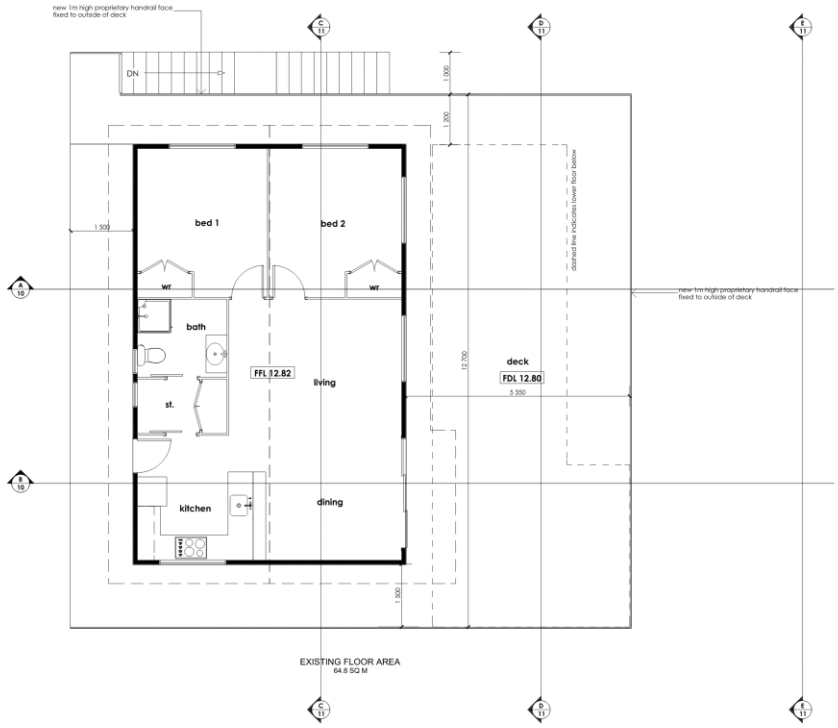
Drawing
Proposed Ground Floor Plan and Ground Floor Bracing Plan

Rev. No.	Description	Date

Designed	N Todd	Job No.	2024335
Drawn	N Todd	Drawing Number	2
Date	July 2024		
Scale	1:50	Revision	of 11

ORIGINAL DRAWING SIZE IS A1

DRAFT PLANS ONLY - NOT FOR CONSTRUCTION



DRAFT PLANS ONLY - NOT FOR CONSTRUCTION

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Job
Proposed House Extension and Shed at 16 MacMurray Road, Paihia

Client
C and M Laurie

Drawing
Proposed Upper Floor Plan

Rev. No.	Description	Date

Designed N Todd	Job No. 2024335
Drawn N Todd	Drawing Number 3
Date July 2024	
Scale 1:50	Revision
	of 11

ORIGINAL DRAWING SIZE IS A1

23 197

26 July 2024

Carl Laurie
16 MacMurray Road
Paihia

Dear Carl,

Stormwater Neutrality Plan for Proposed Development at 16 MacMurray Road, Paihia, Lot 43 DP 11041 – (Revision B)

Introduction
This report presents how stormwater at the subject site can be managed to minimise nuisance and environmental damage.

It is proposed to construct a new dwelling, a shed, a bbq area and associated driveway and parking area. Resource consent is not required as the proposed development is within permitted activity under the District Plan.

It is proposed to attenuate total stormwater run-off from proposed development to the predevelopment runoff by detaining runoff from developed surfaces in a stormwater detention tank for the 2-yr, 5-yr and 10-yr event using current rainfall data.

This report concludes that for the proposed development;

- Peak runoff from the site will be attenuated back to the 80% predevelopment runoff for the 20 and 50% Annual Exceedance Probability rainfall events
- Peak runoff from the site will be attenuated back to the predevelopment runoff for the 10% Annual Exceedance Probability rainfall event
- Attenuation will be achieved by way of detention of water from the proposed developed surfaces
- Overflow from the detention tank will discharge to the existing road kerb outlet on MacMurray Road.

The Site
The site is located in the southern portion of Paihia Township and is 837m^2 in area. The site is bounded by MacMurray Road to the northeast and residential/commercial lots in all other directions. The property is currently an undeveloped section, with the foundation remains of the previous development. The site is covered in grass.

The site slopes in the northeastern direction towards the MacMurray Road with an average slope of 14 degrees in the southern portion reducing to 5 degrees in the northern portion. LiDAR data indicates that the elevation ranges 6-13m relative to NZVD 2016 vertical datum.

Council GIS records show water and wastewater reticulation systems in the vicinity of the site. The nearest stormwater reticulation is approximately 30-40m from the site as shown in Figure 1. The site has an existing kerb outlet in the most northern corner of the property.

The site is zoned Commercial. Land use consent for stormwater is not required as the proposed development is within the permitted activity under the Operative District Plan.

The site location is shown in Figure 1 below. Enclosed Drawing SWP01 shows the stormwater management plan outlined in this report.

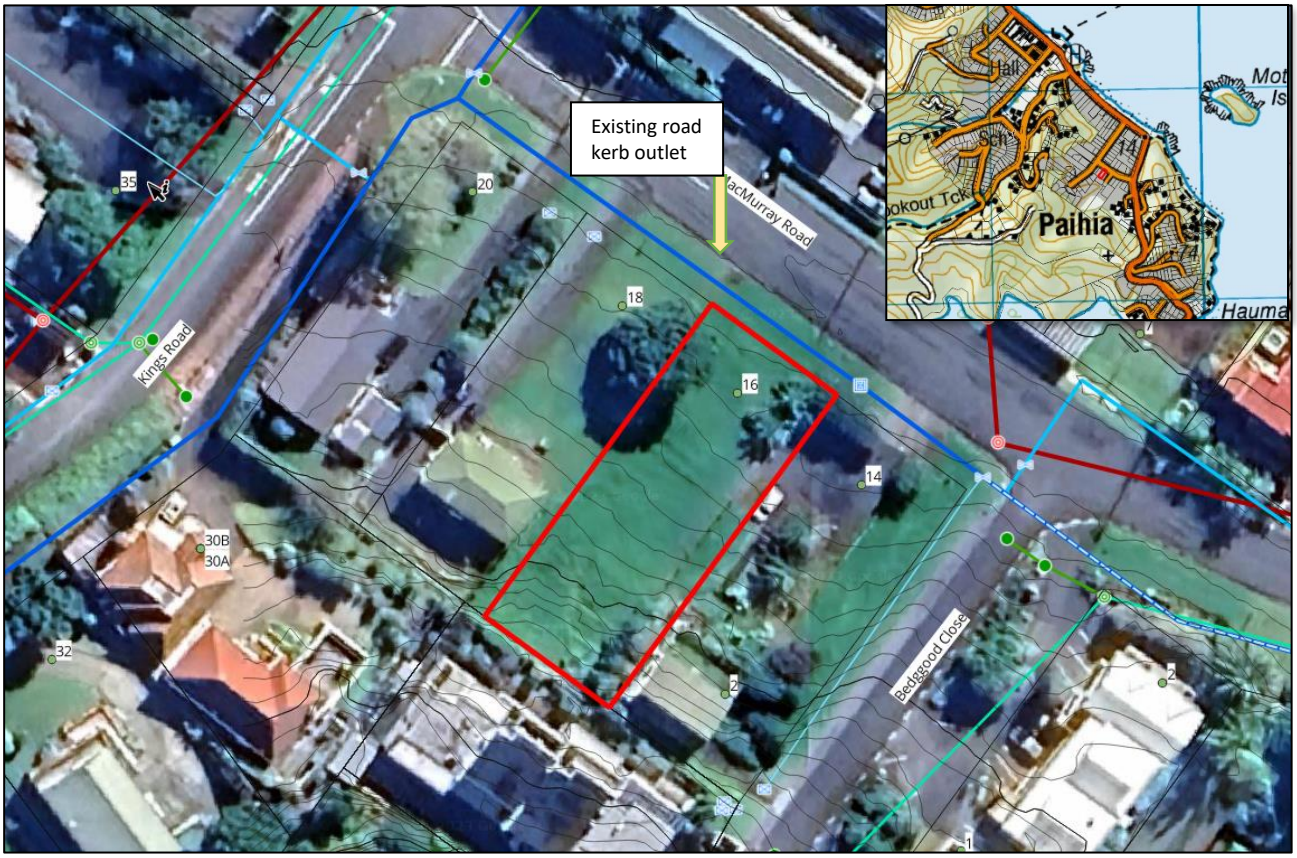

Figure 1: Site Plan. Blue lines indicate water supply, red lines wastewater reticulation and green lines stormwater reticulation (source FNDC Maps)

The proposed development includes a relocated dwelling 83.5m^2, house extension 69 m^2, a shed 168m^2, concrete driveway (1) 148m^2, concrete driveway (2) 11m^2, path 24m^2 and a barbeque area 33m^2 as per the enclosed development plan. All previously built impervious areas have been removed. The impermeable area onsite will be 536.4m^2 in total (64%).

The soils at the site have not been specifically mapped by Landcare Research. Based on an assessment of the soils surrounding the town of Paihia, it is inferred that the soils at the site are likely to be Marua clay loam of the hilly land, typically described as moderately well drained.

The primary objective at this site is discharging stormwater from the proposed buildings and driveway in a safe manner such that does not result in nuisance or damage downstream. This site is not suitable for disposing the stormwater to ground.

Existing Stormwater Patterns

The property is currently in an undeveloped state. Surface runoff follows the natural ground slope to the Murray Road stormwater system. The nearest Council stormwater connection points are cesspits 45m east and 37m west on Murray Road. Stormwater for previous development at the site was discharged via the existing kerb outlet on Murray Road in the most northern corner.

Proposed Stormwater Management

We have been provided with a proposed development plan of the site from the client. It is proposed to construct a relocated dwelling 83.5m^2, a house extension 69 m^2, a shed 168m^2, a concrete driveway (1) 148m^2, a concrete driveway (2) 11m^2, path 24m^2 and a bbq area 33m^2 as per the enclosed development plan.

Runoff from the developed surfaces catchment area, including a portion of the parking area and upslope grass will be piped into a dedicated attenuation the tank and discharged to the existing kerb outlet.

Hydraulic Neutrality

Stormwater attenuation has been design using HydroCAD modelling software. The rainfall events were modelled using Type 1A – 24 hour storm (SCS method) as per Council Engineering Standards 2023 Section 4.3.9.5.

Stormwater attenuation has been designed for the 50% and 20% AEP events back to 80% of pre-development and for the 10% AEP event back to pre-development impermeable surfaces as per Council Engineering Standards 2023 using historical rainfall data with no adjustment for climate change. Runoff coefficients are those given in 2023 FNDC Engineering Standards Table 4.3 for soil Type C.

Calculations and output graphs from the program are enclosed.

Our calculations show stormwater quantity objectives can be met for the 2, 5 and 10-year ARI storms by using a single 25,000L tank with the entire volume used for attenuation. A 10mm diameter outlet located at the base of the tank and a 46mm diameter outlet located 240mm below outlet pipe will reduce runoff in the design storms to pre-development. Results are shown below:

	Predevelopment Runoff (L/s)	80% Predevelopment (from Pervious to be developed) Runoff (L/s)	Post-development Runoff (unattenuated) (L/s)	**Post-development Runoff (attenuated) (L/s)**
2-year (50% AEP)	1.51	1.23	3.82	**1.25**
5-year (20% AEP)	2.65	2.16	5.12	**1.89**
10-year (10% AEP))	3.56	-	6.08	**3.52**

Conclusion

With installation of the recommended controls, stormwater runoff from the site for the proposed 536.5m^2 of impermeable surfaces will not result in peak flows greater than predevelopment for the 2, 5 and 10-year ARI design rainfall events.

Recommendations

- Drainage be arranged as shown on the enclosed Stormwater Management Plan ref. 23 197 - SWP01 and Attenuation Tank Details ref. 23 197 - SWP02.

Disclaimer

This letter has been prepared for the sole use of our client, Carl Laurie, for the particular brief and on the terms and conditions agreed with our client. It may not be used or relied on (in whole or part) by anyone else, or for any other purpose or in any other contexts, without our prior written agreement. This letter may only be read or reproduced in its entirety.

Yours faithfully,

Prepared by	Approved by	Approved by
		
Lidija Plantev	**Tom Adcock**	**John Papesch**
Civil Engineer	Senior Civil Engineer BEng Civil, MEngNZ	Senior Civil Engineer BE (Civil Engineering), CMEngNZ CPEng

Revision №	Issued By	Description	Date
A	Lidija Plantev	First issue	27 November 2023
B	Lidija Plantev	Second issue	24 July 2024

Enclosures

1. SWP01 – Stormwater Management Plan, Rev. B by Haigh Workman Ltd
2. SWP02 - Detention Tank Details, Rev. B by Haigh Workman Ltd
3. Site Plan by Absolute Build
4. Calculations (Hydrocad) pages 1 to 27 and 1 to 15

GENERAL NOTES:

1. All features are taken from sketch by the client, dated 02/11/2023.
2. Levels in terms of Mean Sea Level (NZVD 2016)
3. Coordinates in terms of NZGD 2000 (Mt Eden Circuit)
4. Aerial image courtesy of Linz.

LEGEND

- Lot Boundaries
- Boundaries
- Proposed stormwater pipe
- Existing wastewater connection

SITE INFORMATION:

Legal Description: Lot 43 DP 11041
Area: 3,020m²
Zone: Rural Living (20% or 3300m² - permitted activity)

Existing relocated house: 83.5
Proposed house extension: 69m²
Proposed shed: 168m²
Proposed concrete driveway 1: 148m²
Proposed concrete driveway 2: 11m²
Proposed path:24m²
Proposed BBQ area: 33m²

Impermeable surfaces in total: 536.5m² (64%)

AREAS		
ROOF AREA TO TANK	320.5	
GRASS TO TANK	44	
PAVED AREA TO TANK	70	
OTHER IMPERMEABLE SURFACES	146	

For Consent

Rev	Date	Description	By	Checked
-	10/11/2023	Issued for Information	LP	JP
A	10/11/2023	First Issue	LP	JP
B	23/07/2024	Changed impermeable surfaces	LP	TMA

DWG STORMWATER MANAGEMENT PLAN

A3 Scale 1: 250 (0 5 12) Date 10/11/2023

Drawn LP Checked TA Approved JP

File T:\CLIENTS\CARL LAURIE\JOBS\23 197 - 16 MACMURRAY ROAD, PAIHIA (LOT 43 DP 11041)\ENGINEERING\STORMWATER\DRAWINGS\23 197_20231031_SW PLAN.DWG

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E: info@haighworkman.co.nz

Project STORMWATER MANAGEMENT
16 MacMurray Road, Lot 43 DP11041, Paihia

Client CARL LAURIE

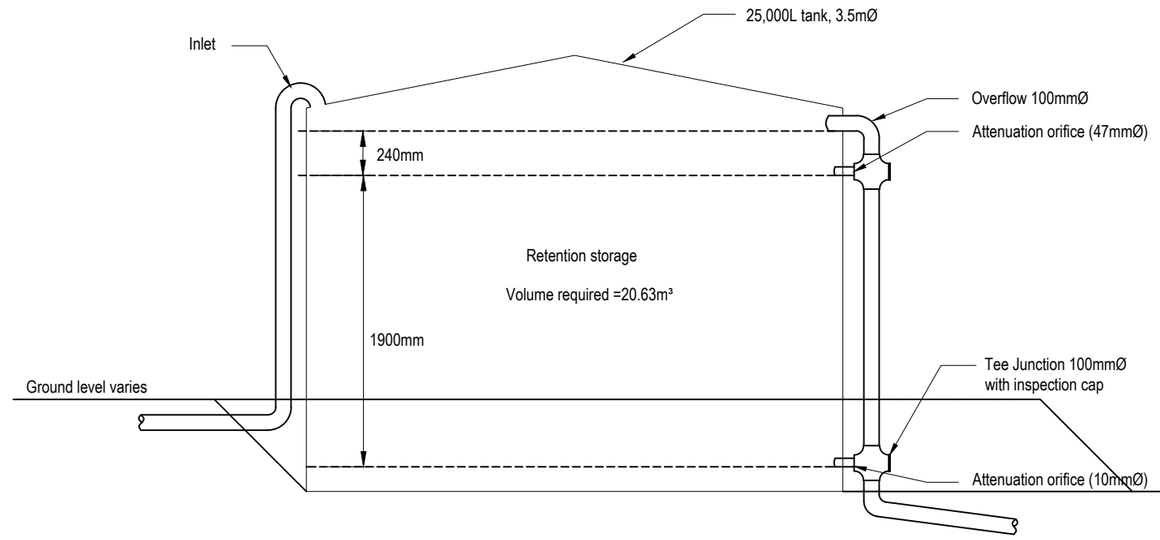
Project No. 23 197

RC no.

Stage 00

Dwg No. SWD01

Sheet No. 1 of 1



NOTE

- Maximun orifice pipe length is 150mm. Allow 75mm clearance from end of pipe to outside tank wall
- Fix orifice pipe to tee junction using reducer fittings

For Consent

Rev	Date	Description	By	Checked
A	10/11/2023	First Issue	LP	TMA
B	23/07/2024	Changed the orifice	LP	TMA

DWG ATTENUATION TANK DETAILS

A3 SCALE NTS | Date 23/07/2024

Drawn LP | Checked TA | Approved JP

File T:\CLIENTS\CARL LAURIE\JOBS\23 197 - 16 MACMURRAY ROAD, PAIHIA (LOT 43 DP 11041)\ENGINEERING\STORMWATER\DRAWINGS\23 197_20240723 TANK DETAILS.DWG

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Project STORMWATER MANAGEMENT
16 MacMurray Road, Lot 43 DP11041, Paihia

Client CARL LAURIE

Project No. 23 197 | RC no.

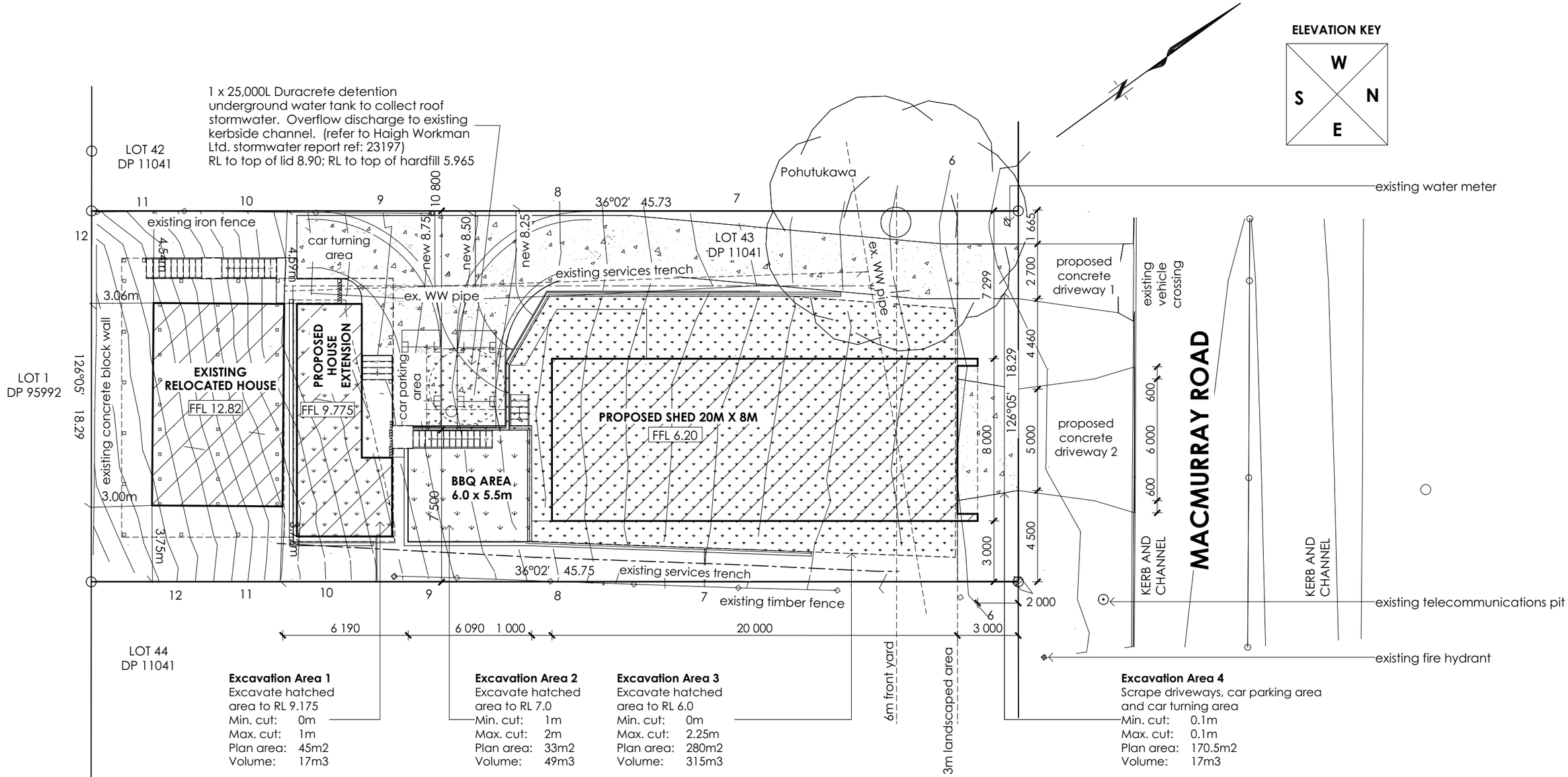
Stage 00

Dwg No. SWP02

Sheet No. 2 of 2

PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA

SITE PLAN
SCALE 1:200



Excavation Area 1
Excavate hatched area to RL 9.175
Min. cut: 0m
Max. cut: 1m
Plan area: 45m2
Volume: 17m3

Excavation Area 2
Excavate hatched area to RL 7.0
Min. cut: 1m
Max. cut: 2m
Plan area: 33m2
Volume: 49m3

Excavation Area 3
Excavate hatched area to RL 6.0
Min. cut: 0m
Max. cut: 2.25m
Plan area: 280m2
Volume: 315m3

Excavation Area 4
Scrape driveways, car parking area and car turning area
Min. cut: 0.1m
Max. cut: 0.1m
Plan area: 170.5m2
Volume: 17m3

TOTAL EXCAVATION

Excavation Area 1	17m3
Excavation Area 2	49m3
Excavation Area 3	315m3
Excavation Area 4	17m3
Total	**398m3**

LANDSCAPED AREA

Total area of front 3m yard: 55m2

Proposed concrete driveway 1:	8.1m2
Proposed concrete driveway 2:	16.5m2
Proposed building wing walls:	0.7m2
Total	**25.3m2**
Total landscaped area:	**29.7m2 (54%)**

IMPERMEABLE SURFACES

Site Area:	**837m2**
Existing Relocated House to eaves:	83.5m2
Proposed House extension to eaves:	69.0m2
Proposed Shed to eaves:	168.0m2
Proposed concrete driveway 1:	148.0m2
Proposed concrete driveway 2:	11.0m2
Proposed path:	24.0m2
Proposed BBQ area	33.0m2
Total	**536.50m2 (64%)**

absolute build
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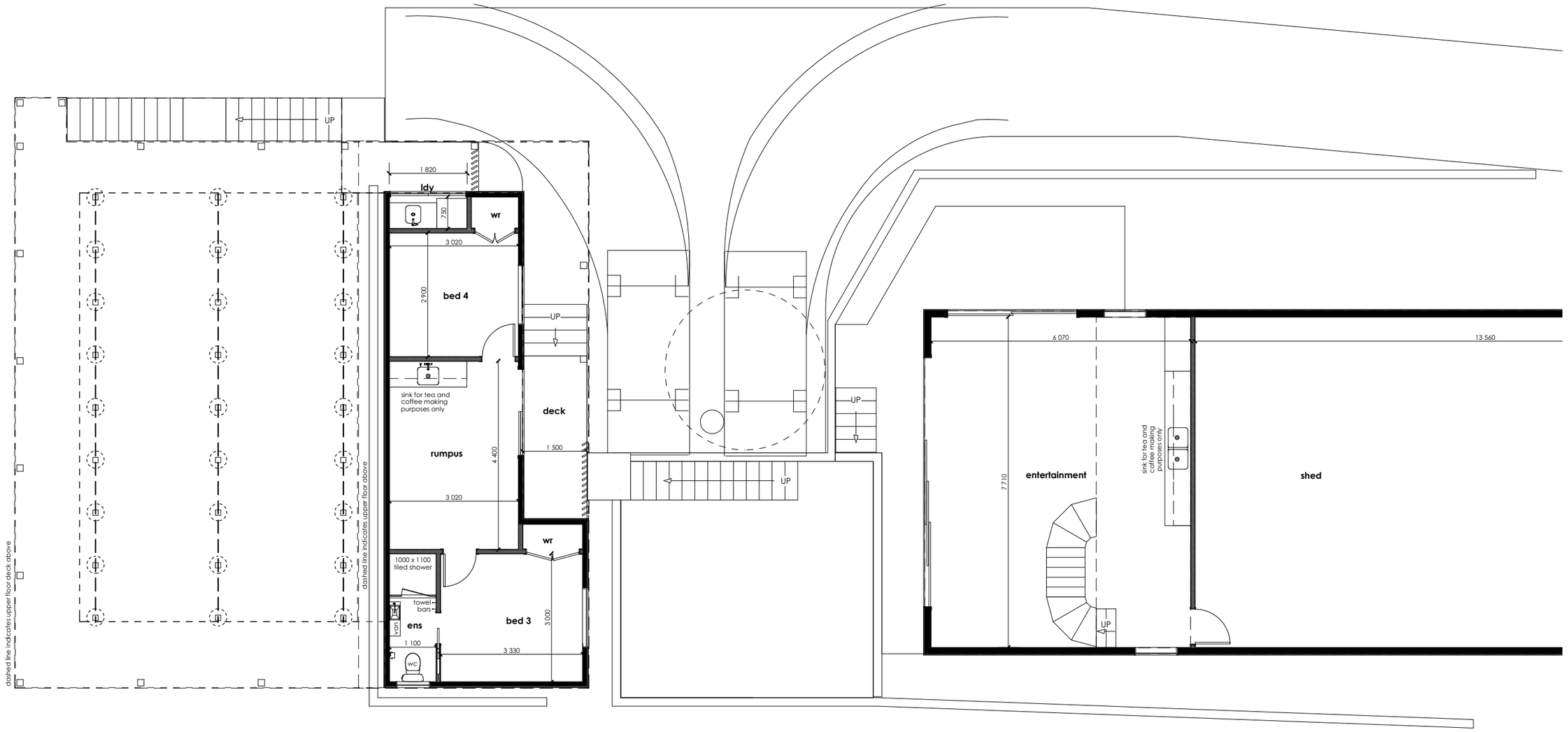
PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA

GROUND FLOOR PLAN

SCALE 1:100@A3



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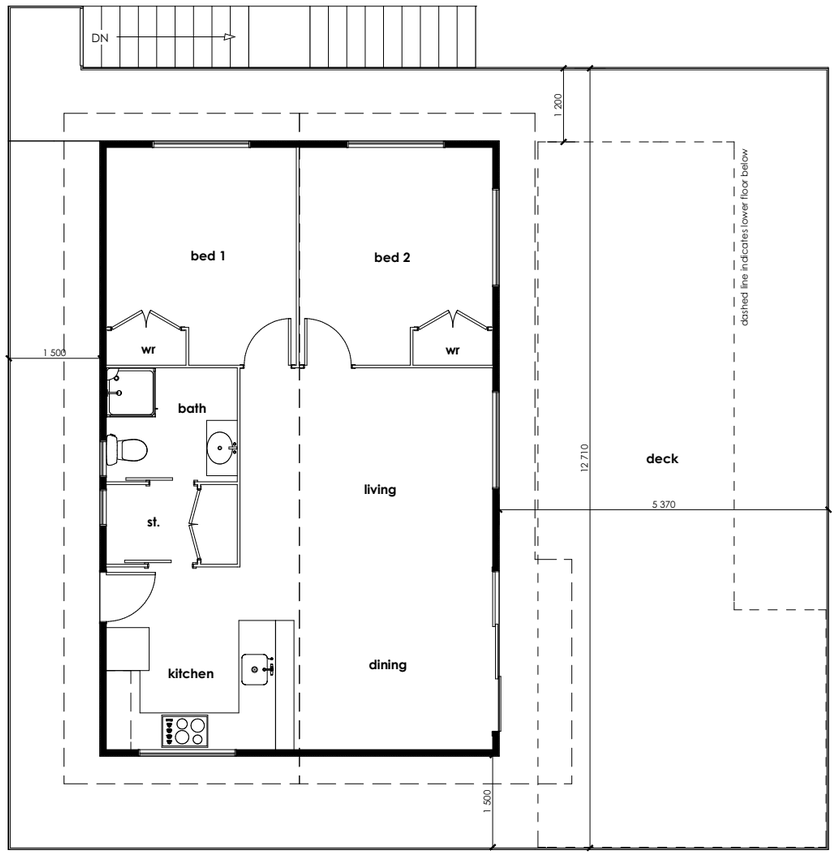
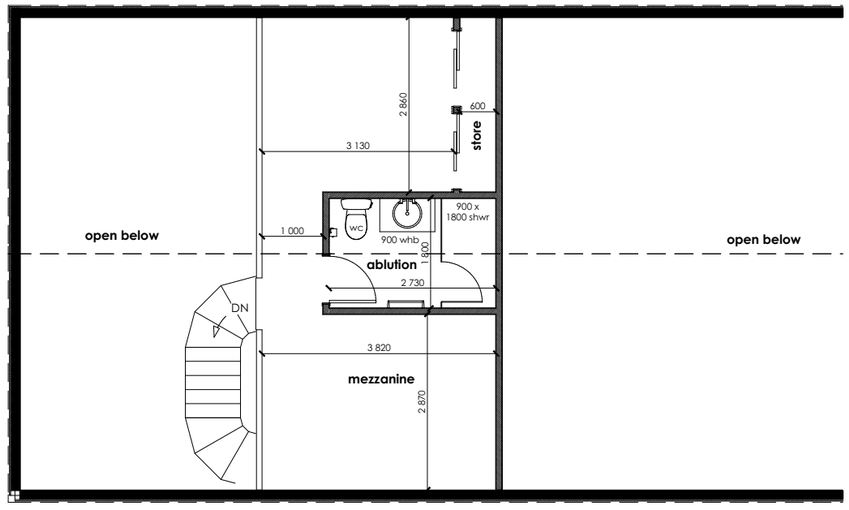
PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA

UPPER FLOOR PLAN

SCALE 1:100@A3





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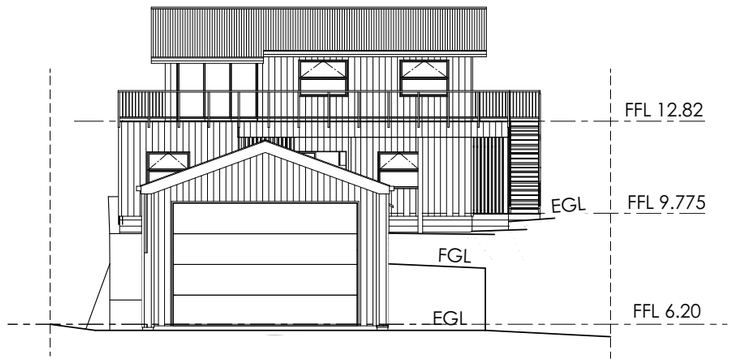
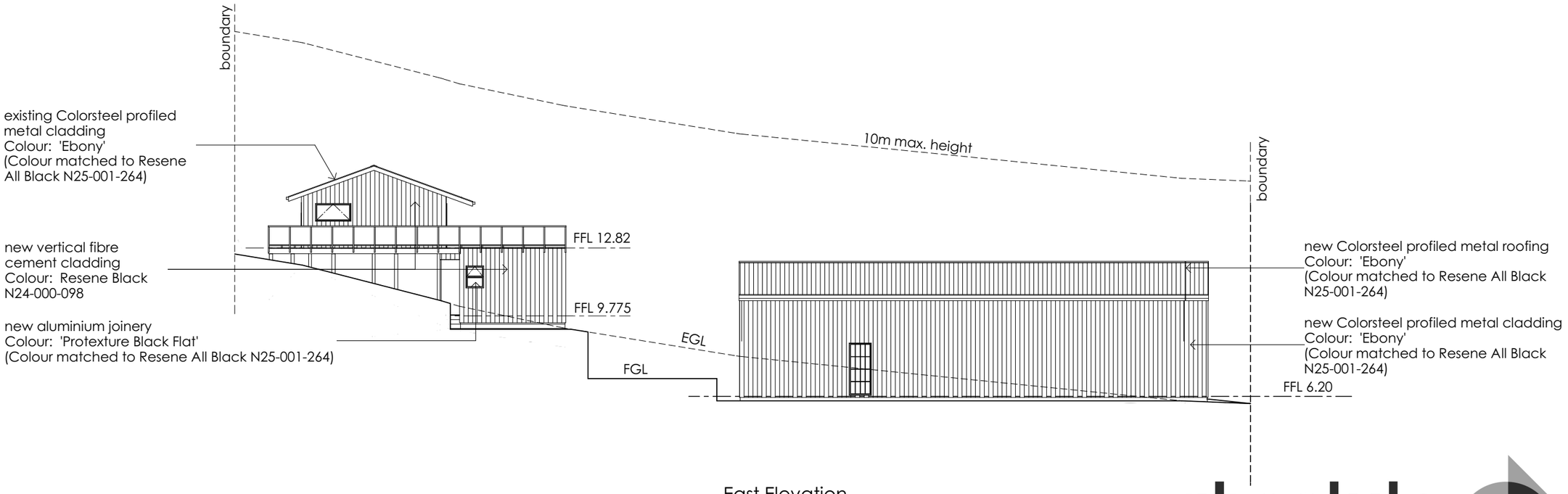
PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA
NORTH AND EAST ELEVATIONS
SCALE 1:200@A3



North Elevation



East Elevation

absolute build

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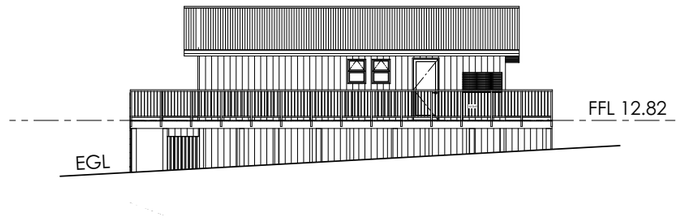
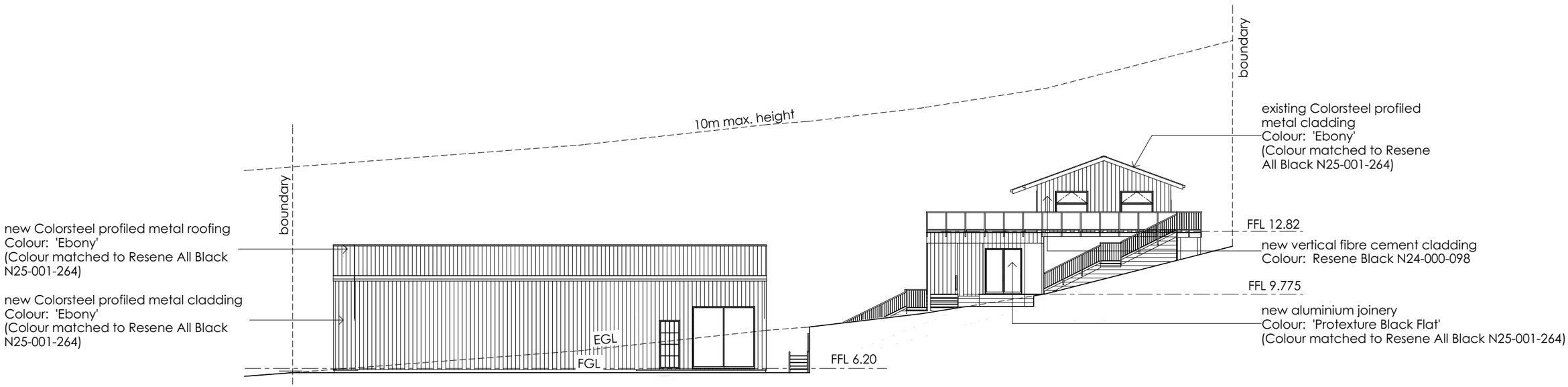
PROPOSED HOUSE EXTENSION AND NEW SHED AT 16 MACMURRAY ROAD, PAIHIA
SOUTH AND WEST ELEVATIONS
SCALE 1:200@A3



South Elevation



West Elevation

absolute build

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PO Box 875, Kerikeri 0245 I absolutebuild.co.nz

HAIGH WORKMAN LTD
Civil & Structural Engineers

Stormwater Runoff Calculation
Haigh Workman Ltd

Project:	Proposed development at
Location:	16 Mc Murray Road, Paihia (Lot 3 DP 11041
Client:	Carl Laurie
Designer:	LP
Date:	26/07/24
REF:	23 197
Soil type:	C

Table 4.3 Council Engineering Standards 2023

Post-development surfaces

	Area m2	CN	
Existing relocated house	83.5	98	
Proposed house extension	69.0	98	
Proposed shed	168.0	98	
Proposed concrete driveway 1	148.0	98	
Proposed concrete driveway 2	11.0	98	
Proposed path	24.0	98	
Proposed BBQ area	33.0	98	
Grass	300.5	74	
Impermeable surfaces (Total)	536.5	coverage	64.1%
Lot area	837		

Pre-development surfaces

	Area m2	CN
Grass	837.0	74
Total	837.0	

Proposed development - catchment to tank

	Area m2	CN
Roof areas to tank	320.5	98
Portion of parking area to tank	70.0	74
Grass to tank (undeveloped)	44.0	74
Other impermeable surfaces (not to tank)	146.0	98
Total	580.5	

Pre development - catchment to tank

	Area m2	CN
Grass to tank (undeveloped)	44.0	74
Pervious (to be developed)	580.5	74
Surfaces for the model	625	

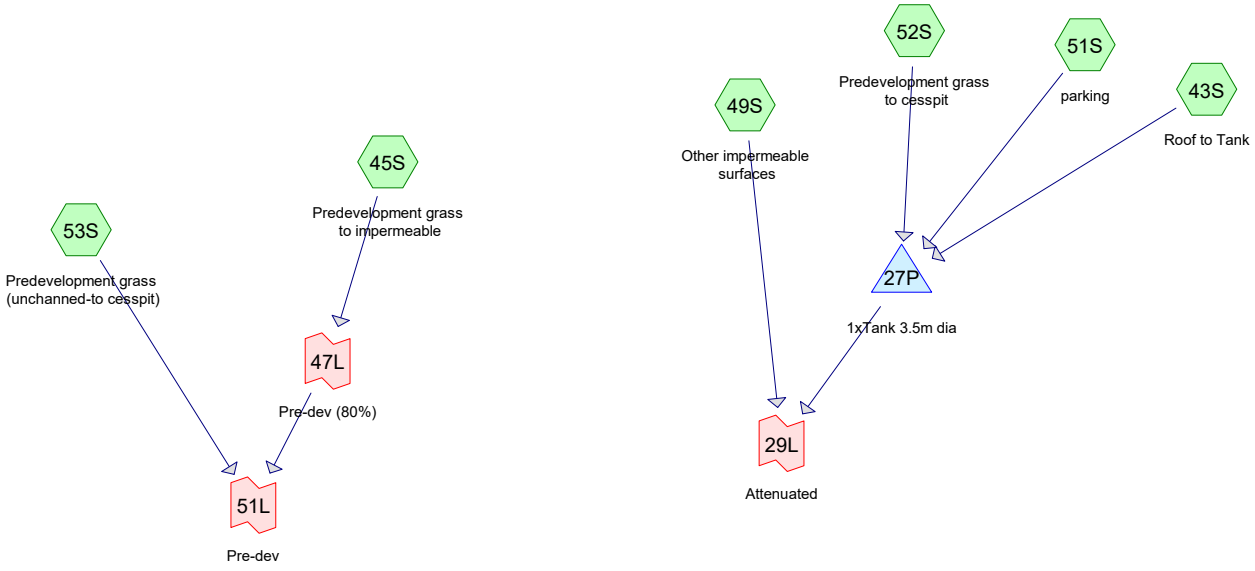
HAIGH WORKMAN LTD
Civil & Structural Engineers

Hydrocad Results

	Predevelopment Runoff (L/s)	80% Predevelopment (from Pervious to be developed) Runoff (L/s)	Post-development Runoff (unattenuated) (L/s)	**Post-development Runoff (attenuated) (L/s)**
2-year (50% AEP)	1.51	1.23	3.82	**1.25**
5-year (20% AEP)	2.65	2.16	5.12	**1.89**
10-year (10% AEP))	3.56	-	6.08	**3.52**

Tank Details

Detention tank details	
Tanks	proposed 25,000L tank 1x3.5m dia tank
Orifice	1x10mm diameter orifice located at least 2140m below the overflow outlet IL 1x46mm diameter orifice located at least 240mm below the overflow outlet IL Storage Volume: 20.63m^3



Subcat Reach Pond Link

Routing Diagram for 23 197_20240723_Tank 01 (Type 1A)_No CC
Prepared by Haigh Workman Limited, Printed 24/07/2024

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (mm)	AMC
1	Type 1A-2yr	Type IA 24-hr		Default	24.00	1	106	2
2	Type 1A-5yr	Type IA 24-hr		Default	24.00	1	140	2

Area Listing (selected nodes)

Area (sq-meters)	CN	Description (subcatchment-numbers)
83.5	98	Existing relocated house (43S)
78.0	98	Proposed concrete driveway 1 (49S)
11.0	98	Proposed concrete driveway 2 (49S)
69.0	98	Proposed house extension (43S)
24.0	98	Proposed path (49S)
168.0	98	Proposed shed (43S)
25.9	74	area of Consented garage (45S)
33.0	98	bbq (49S)
510.6	74	grass (eng standards (45S)
88.0	74	grass to cesspit (52S, 53S)
70.0	98	parking (51S)
1,161.0	**85**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-meters)	Soil Group	Subcatchment Numbers
0.0	HSG A	
0.0	HSG B	
0.0	HSG C	
0.0	HSG D	
1,161.0	Other	43S, 45S, 49S, 51S, 52S, 53S
1,161.0		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-meters)	HSG-B (sq-meters)	HSG-C (sq-meters)	HSG-D (sq-meters)	Other (sq-meters)	Total (sq-meters)	Ground Cover
0.0	0.0	0.0	0.0	83.5	83.5	Existing relocated house
0.0	0.0	0.0	0.0	78.0	78.0	Proposed concrete driveway 1
0.0	0.0	0.0	0.0	11.0	11.0	Proposed concrete driveway 2
0.0	0.0	0.0	0.0	69.0	69.0	Proposed house extension
0.0	0.0	0.0	0.0	24.0	24.0	Proposed path
0.0	0.0	0.0	0.0	168.0	168.0	Proposed shed
0.0	0.0	0.0	0.0	25.9	25.9	area of Consented garage
0.0	0.0	0.0	0.0	33.0	33.0	bbq
0.0	0.0	0.0	0.0	510.6	510.6	grass (eng standards
0.0	0.0	0.0	0.0	88.0	88.0	grass to cesspit
0.0	0.0	0.0	0.0	70.0	70.0	parking
0.0	**0.0**	**0.0**	**0.0**	**1,161.0**	**1,161.0**	**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 43S: Roof to Tank Runoff Area=320.5 m² 100.00% Impervious Runoff Depth=100 mm
Tc=10.0 min CN=98 Runoff=2.21 L/s 32.06 m³

Subcatchment 45S: Predevelopment Runoff Area=536.5 m² 0.00% Impervious Runoff Depth=44 mm
Tc=10.0 min CN=74 Runoff=1.40 L/s 23.50 m³

Subcatchment 49S: Other Runoff Area=146.0 m² 100.00% Impervious Runoff Depth=100 mm
Tc=10.0 min CN=98 Runoff=1.01 L/s 14.60 m³

Subcatchment 51S: parking Runoff Area=70.0 m² 100.00% Impervious Runoff Depth=100 mm
Tc=10.0 min CN=98 Runoff=0.48 L/s 7.00 m³

Subcatchment 52S: Predevelopment Runoff Area=44.0 m² 0.00% Impervious Runoff Depth=44 mm
Tc=10.0 min CN=74 Runoff=0.11 L/s 1.93 m³

Subcatchment 53S: Predevelopment Runoff Area=44.0 m² 0.00% Impervious Runoff Depth=44 mm
Tc=10.0 min CN=74 Runoff=0.11 L/s 1.93 m³

Pond 27P: 1xTank 3.5m dia Peak Elev=1.92 m Storage=18.44 m³ Inflow=2.81 L/s 40.99 m³
Outflow=0.46 L/s 33.92 m³

Link 29L: Attenuated Inflow=1.25 L/s 48.52 m³
Primary=1.25 L/s 48.52 m³

Link 47L: Pre-dev (80%) x 0.80 Inflow=1.40 L/s 23.50 m³
Primary=1.12 L/s 18.80 m³ Secondary=0.28 L/s 4.70 m³

Link 51L: Pre-dev Inflow=1.23 L/s 20.73 m³
Primary=1.23 L/s 20.73 m³

Total Runoff Area = 1,161.0 m² Runoff Volume = 81.02 m³ Average Runoff Depth = 70 mm
53.79% Pervious = 624.5 m² 46.21% Impervious = 536.5 m²

Summary for Subcatchment 43S: Roof to Tank

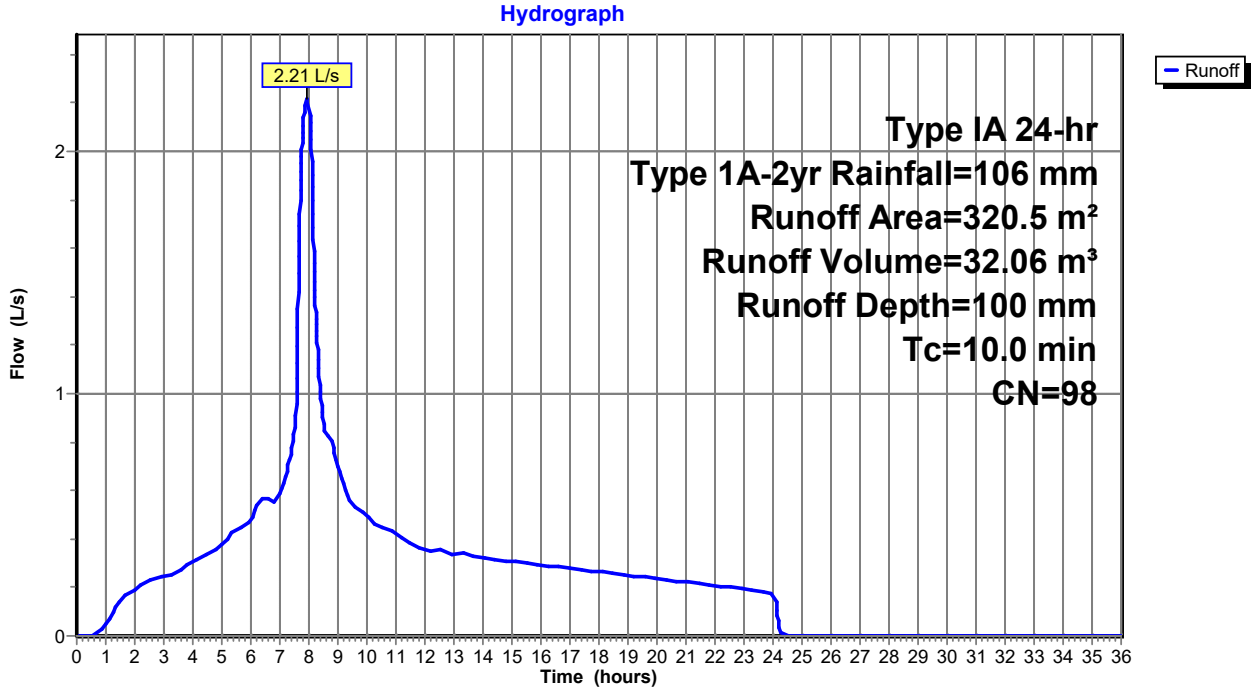
Runoff = 2.21 L/s @ 7.94 hrs, Volume= 32.06 m³, Depth= 100 mm
Routed to Pond 27P : 1xTank 3.5m dia

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-2yr Rainfall=106 mm

	Area (m²)	CN	Description
*	83.5	98	Existing relocated house
*	69.0	98	Proposed house extension
*	168.0	98	Proposed shed
	320.5	98	Weighted Average
	320.5		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 43S: Roof to Tank



Summary for Subcatchment 45S: Predevelopment grass to impermeable

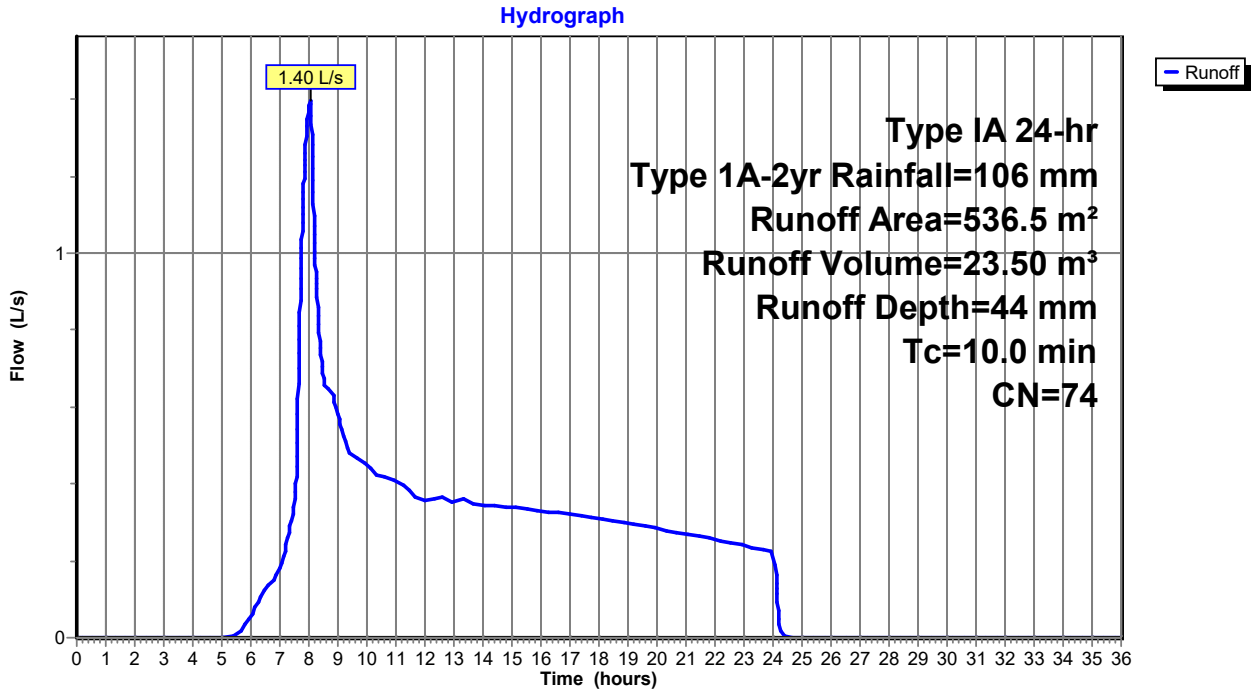
Runoff = 1.40 L/s @ 8.03 hrs, Volume= 23.50 m³, Depth= 44 mm
Routed to Link 47L : Pre-dev (80%)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-2yr Rainfall=106 mm

	Area (m²)	CN	Description
*	510.6	74	grass (eng standards
*	25.9	74	area of Consented garage
	536.5	74	Weighted Average
	536.5		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 45S: Predevelopment grass to impermeable



Summary for Subcatchment 49S: Other impermeable surfaces

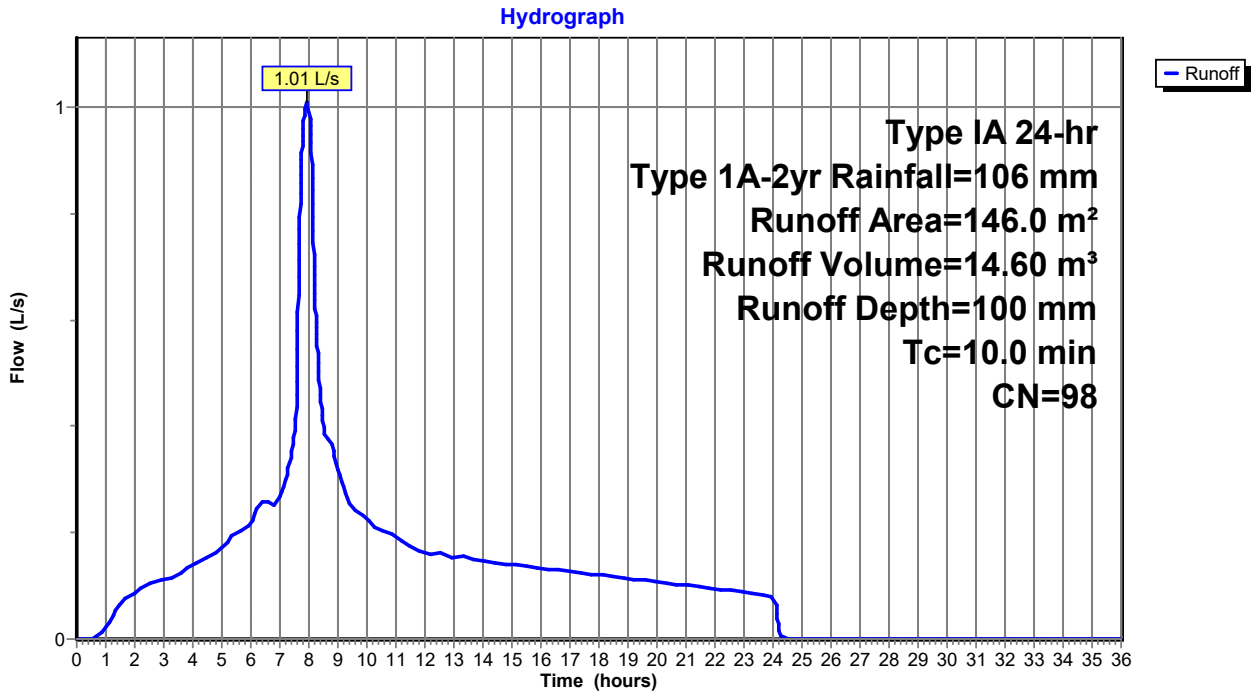
Runoff = 1.01 L/s @ 7.94 hrs, Volume= 14.60 m³, Depth= 100 mm
Routed to Link 29L : Attenuated

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-2yr Rainfall=106 mm

	Area (m²)	CN	Description
*	78.0	98	Proposed concrete driveway 1
*	11.0	98	Proposed concrete driveway 2
*	24.0	98	Proposed path
*	33.0	98	bbq
	146.0	98	Weighted Average
	146.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 49S: Other impermeable surfaces



Summary for Subcatchment 51S: parking

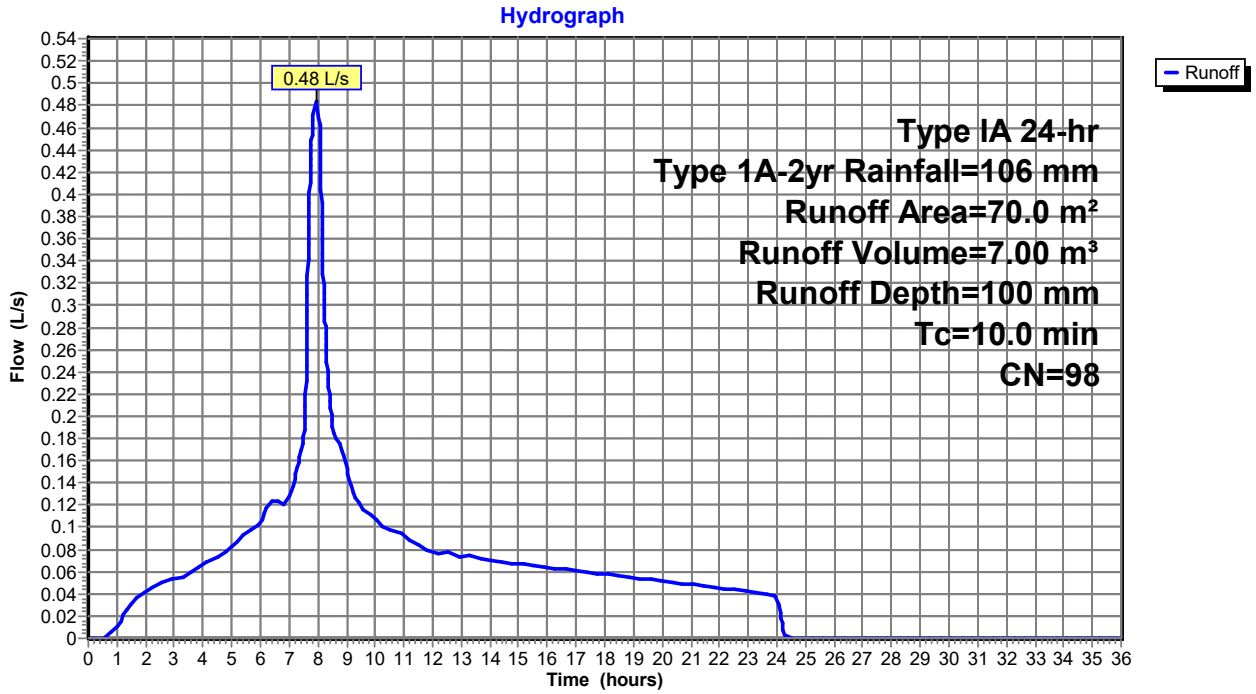
Runoff = 0.48 L/s @ 7.94 hrs, Volume= 7.00 m³, Depth= 100 mm
Routed to Pond 27P : 1xTank 3.5m dia

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-2yr Rainfall=106 mm

	Area (m²)	CN	Description
*	70.0	98	parking
	70.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 51S: parking



Summary for Subcatchment 52S: Predevelopment grass to cesspit

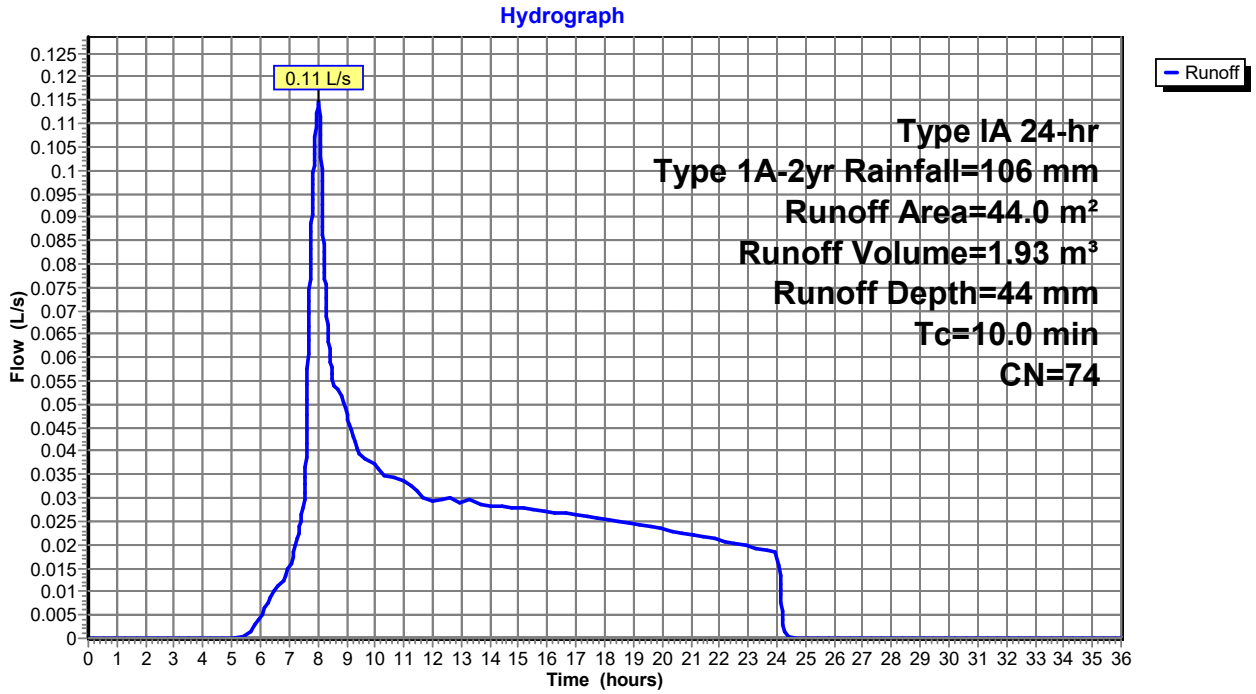
Runoff = 0.11 L/s @ 8.03 hrs, Volume= 1.93 m³, Depth= 44 mm
Routed to Pond 27P : 1xTank 3.5m dia

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-2yr Rainfall=106 mm

	Area (m²)	CN	Description
*	44.0	74	grass to cesspit
	44.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 52S: Predevelopment grass to cesspit



Summary for Subcatchment 53S: Predevelopment grass (unchanned-to cesspit)

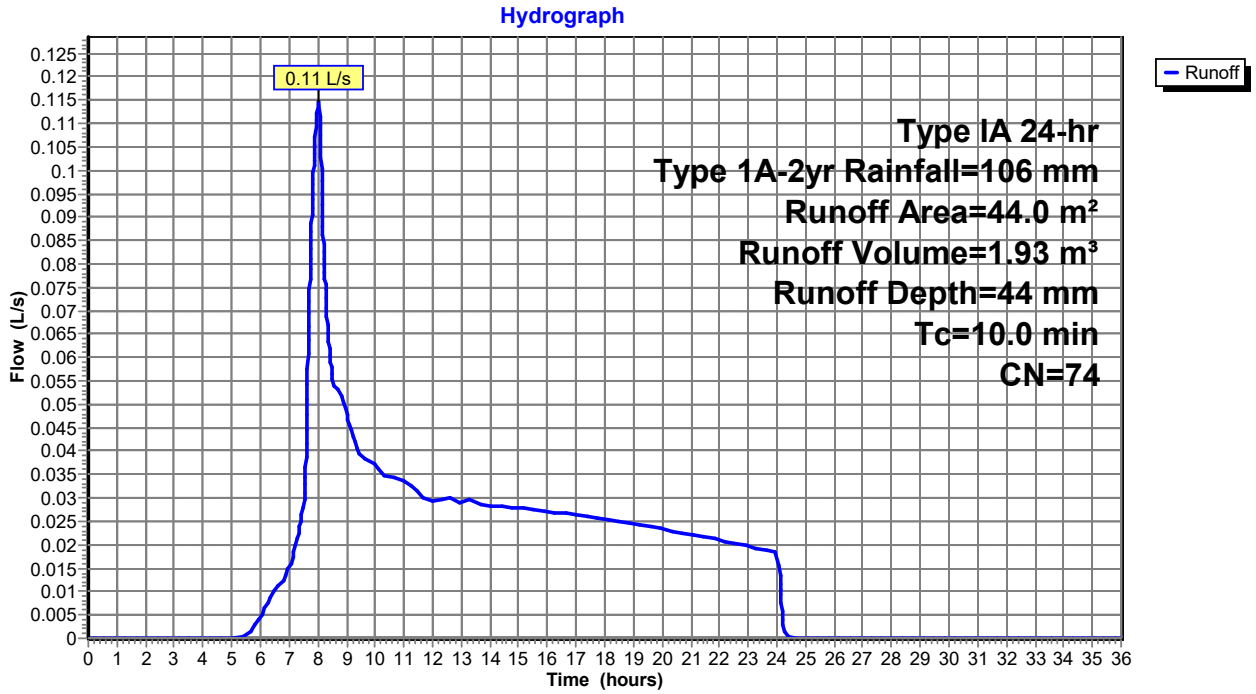
Runoff = 0.11 L/s @ 8.03 hrs, Volume= 1.93 m³, Depth= 44 mm
Routed to Link 51L : Pre-dev

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-2yr Rainfall=106 mm

	Area (m²)	CN	Description
*	44.0	74	grass to cesspit
	44.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 53S: Predevelopment grass (unchanned-to cesspit)



Summary for Pond 27P: 1xTank 3.5m dia

Inflow Area = 434.5 m², 89.87% Impervious, Inflow Depth = 94 mm for Type 1A-2yr event
Inflow = 2.81 L/s @ 7.94 hrs, Volume= 40.99 m³
Outflow = 0.46 L/s @ 12.64 hrs, Volume= 33.92 m³, Atten= 84%, Lag= 281.5 min
Primary = 0.46 L/s @ 12.64 hrs, Volume= 33.92 m³
Routed to Link 29L : Attenuated

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1.92 m @ 12.64 hrs Surf.Area= 9.6 m² Storage= 18.44 m³

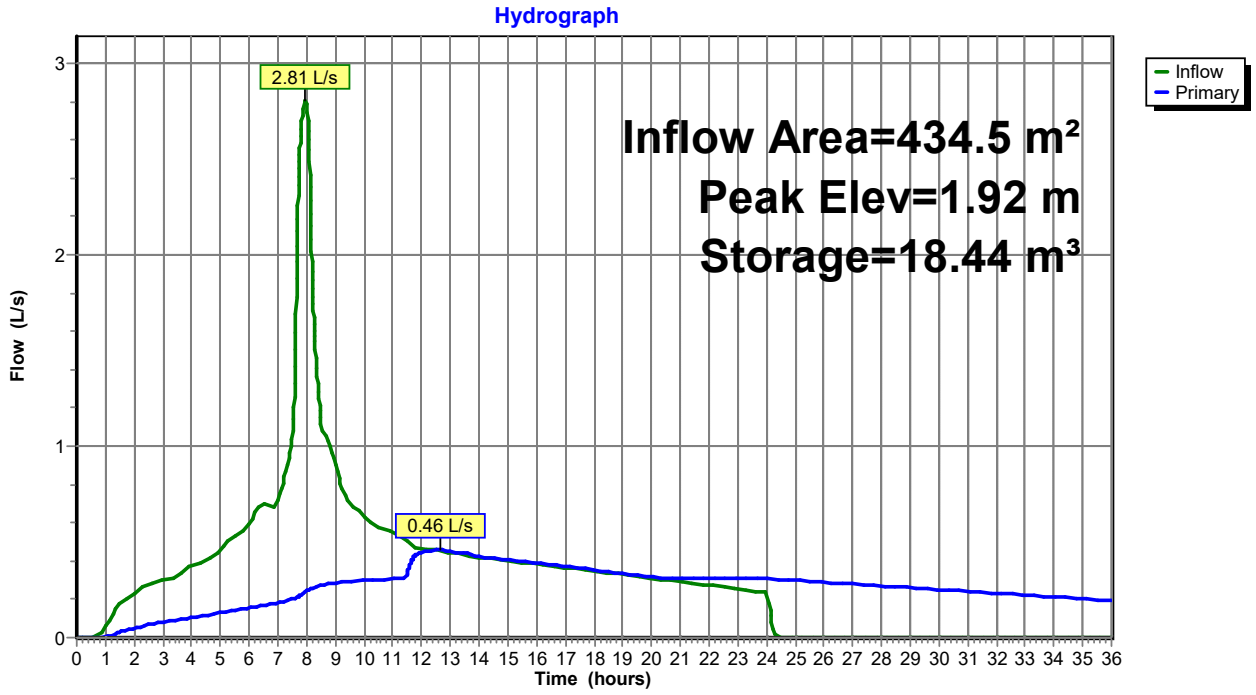
Plug-Flow detention time= 608.1 min calculated for 33.91 m³ (83% of inflow)
Center-of-Mass det. time= 490.3 min (1,160.9 - 670.6)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00 m	23.09 m³	**3.50 mD x 2.40 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00 m	**10 mm Vert. 10mm DIA Orifice/Grate** C= 0.650 Limited to weir flow at low heads
#2	Primary	1.90 m	**46 mm Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.44 L/s @ 12.64 hrs HW=1.92 m (Free Discharge)
└**1=10mm DIA Orifice/Grate** (Orifice Controls 0.31 L/s @ 3.98 m/s)
└**2=Orifice/Grate** (Orifice Controls 0.13 L/s @ 0.24 m/s)

Pond 27P: 1xTank 3.5m dia

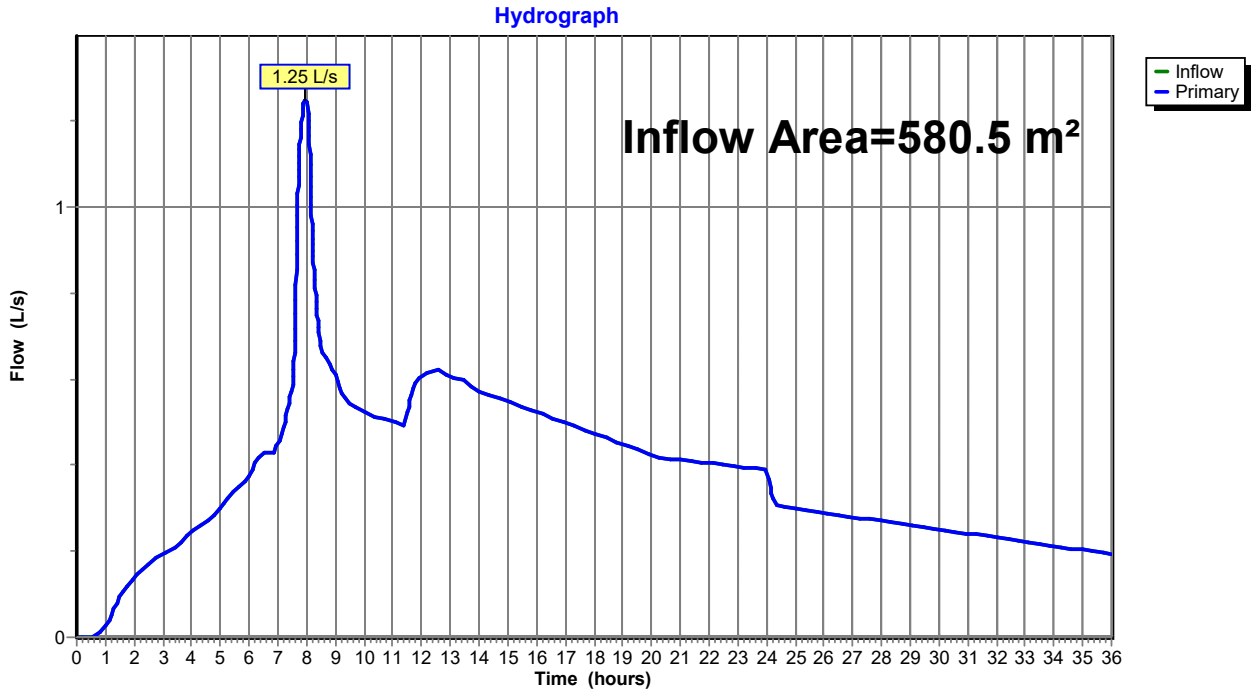


Summary for Link 29L: Attenuated

Inflow Area = 580.5 m², 92.42% Impervious, Inflow Depth > 84 mm for Type 1A-2yr event
Inflow = 1.25 L/s @ 7.97 hrs, Volume= 48.52 m³
Primary = 1.25 L/s @ 7.97 hrs, Volume= 48.52 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 29L: Attenuated

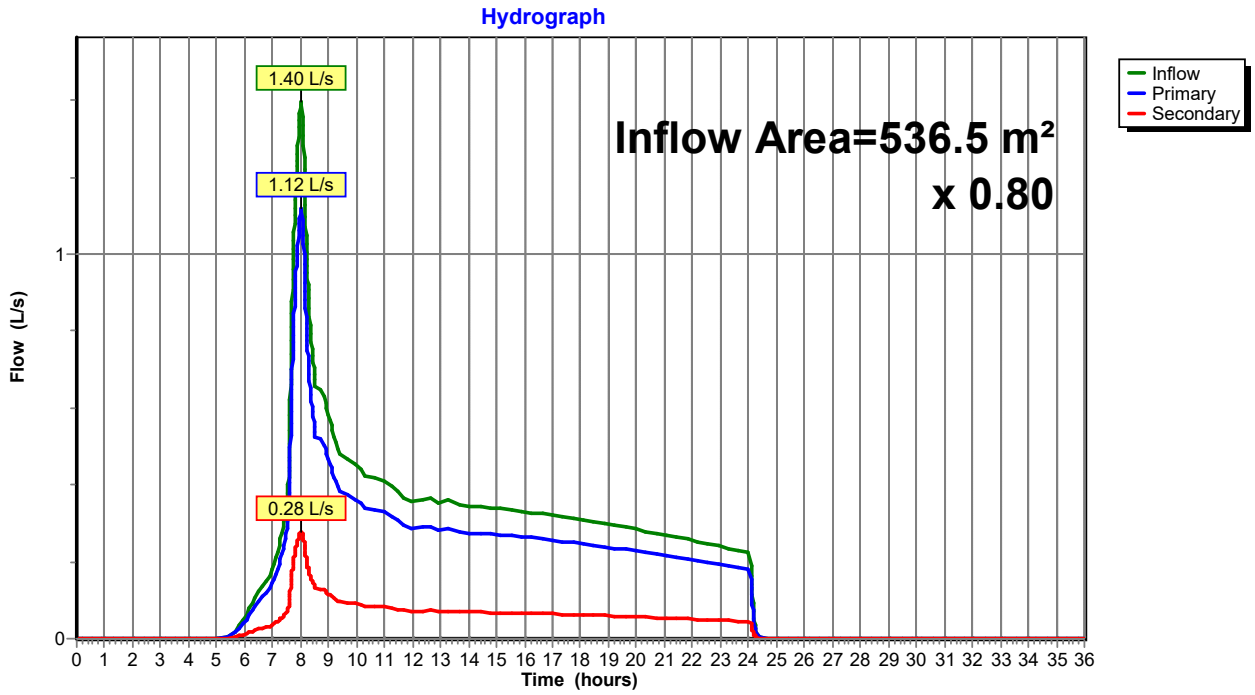


Summary for Link 47L: Pre-dev (80%)

Inflow Area = 536.5 m², 0.00% Impervious, Inflow Depth = 44 mm for Type 1A-2yr event
Inflow = 1.40 L/s @ 8.03 hrs, Volume= 23.50 m³
Primary = 1.12 L/s @ 8.03 hrs, Volume= 18.80 m³, Atten= 20%, Lag= 0.0 min
Routed to Link 51L : Pre-dev
Secondary = 0.28 L/s @ 8.03 hrs, Volume= 4.70 m³

Primary outflow = Inflow x 0.80, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 47L: Pre-dev (80%)

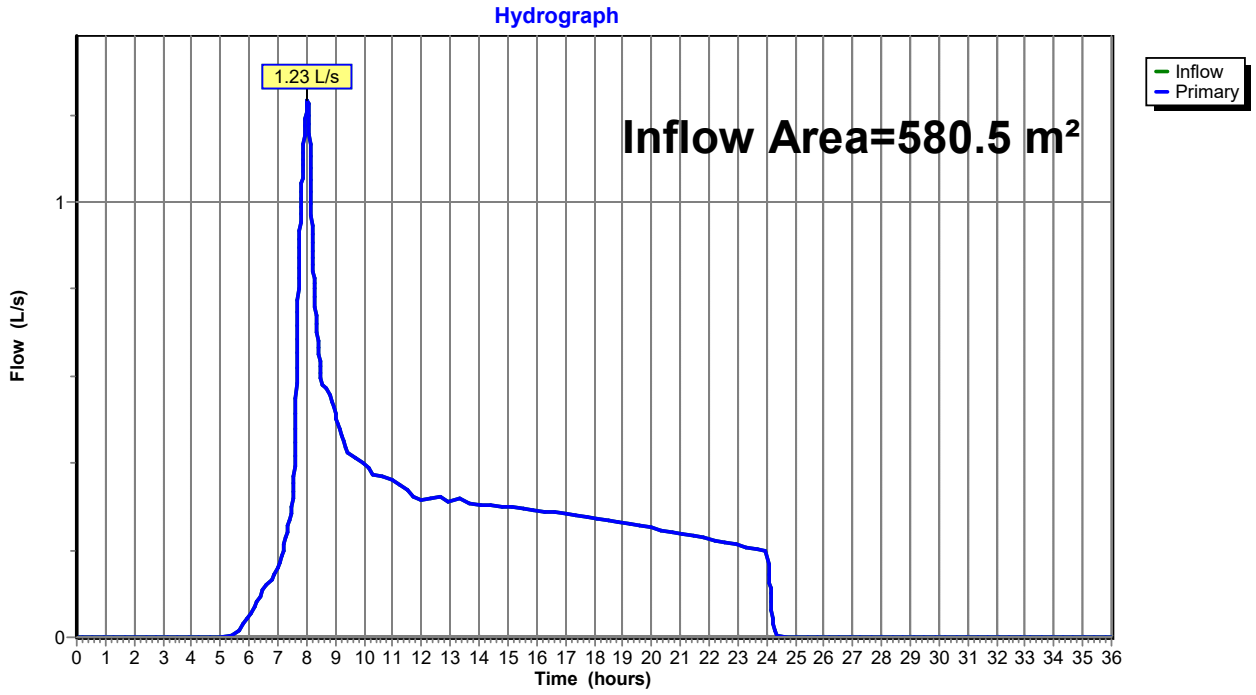


Summary for Link 51L: Pre-dev

Inflow Area = 580.5 m², 0.00% Impervious, Inflow Depth = 36 mm for Type 1A-2yr event
Inflow = 1.23 L/s @ 8.03 hrs, Volume= 20.73 m³
Primary = 1.23 L/s @ 8.03 hrs, Volume= 20.73 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 51L: Pre-dev



Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 43S: Roof to Tank Runoff Area=320.5 m² 100.00% Impervious Runoff Depth=134 mm
Tc=10.0 min CN=98 Runoff=2.94 L/s 42.94 m³

Subcatchment 45S: Predevelopment Runoff Area=536.5 m² 0.00% Impervious Runoff Depth=71 mm
Tc=10.0 min CN=74 Runoff=2.45 L/s 37.87 m³

Subcatchment 49S: Other Runoff Area=146.0 m² 100.00% Impervious Runoff Depth=134 mm
Tc=10.0 min CN=98 Runoff=1.34 L/s 19.56 m³

Subcatchment 51S: parking Runoff Area=70.0 m² 100.00% Impervious Runoff Depth=134 mm
Tc=10.0 min CN=98 Runoff=0.64 L/s 9.38 m³

Subcatchment 52S: Predevelopment Runoff Area=44.0 m² 0.00% Impervious Runoff Depth=71 mm
Tc=10.0 min CN=74 Runoff=0.20 L/s 3.11 m³

Subcatchment 53S: Predevelopment Runoff Area=44.0 m² 0.00% Impervious Runoff Depth=71 mm
Tc=10.0 min CN=74 Runoff=0.20 L/s 3.11 m³

Pond 27P: 1xTank 3.5m dia Peak Elev=1.98 m Storage=19.08 m³ Inflow=3.78 L/s 55.42 m³
Outflow=1.40 L/s 47.99 m³

Link 29L: Attenuated Inflow=1.89 L/s 67.55 m³
Primary=1.89 L/s 67.55 m³

Link 47L: Pre-dev (80%) x 0.80 Inflow=2.45 L/s 37.87 m³
Primary=1.96 L/s 30.29 m³ Secondary=0.49 L/s 7.57 m³

Link 51L: Pre-dev Inflow=2.16 L/s 33.40 m³
Primary=2.16 L/s 33.40 m³

Total Runoff Area = 1,161.0 m² Runoff Volume = 115.95 m³ Average Runoff Depth = 100 mm
53.79% Pervious = 624.5 m² 46.21% Impervious = 536.5 m²

Summary for Subcatchment 43S: Roof to Tank

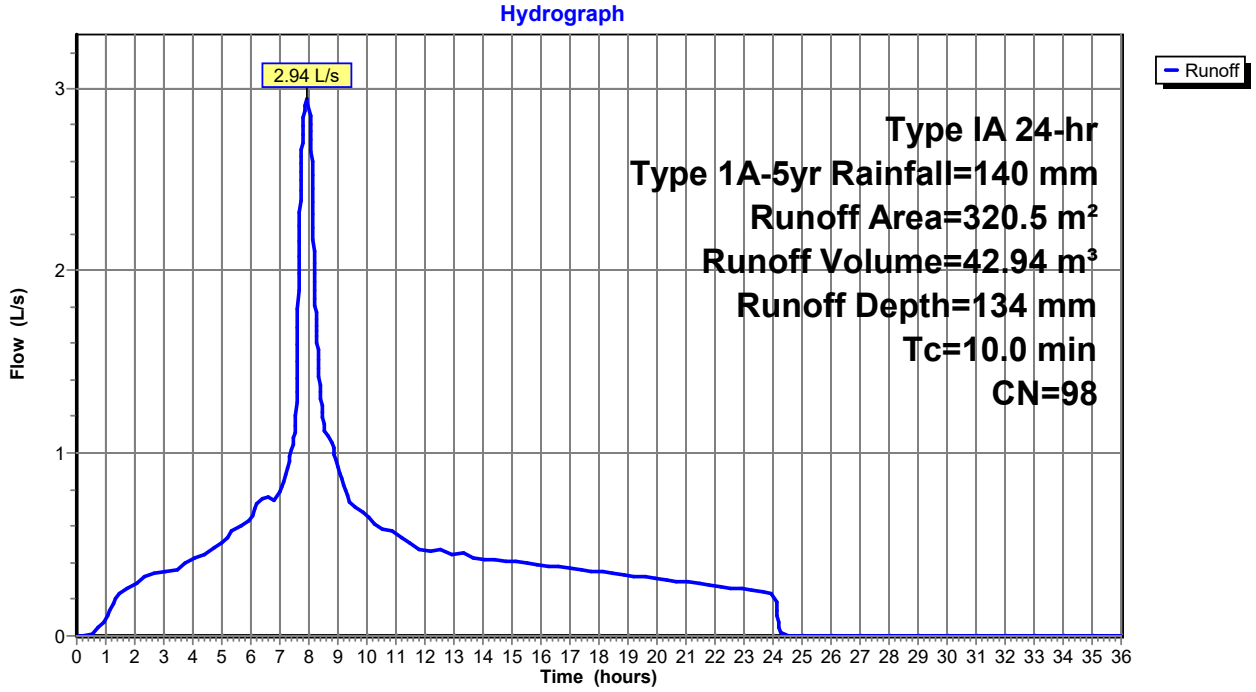
Runoff = 2.94 L/s @ 7.94 hrs, Volume= 42.94 m³, Depth= 134 mm
Routed to Pond 27P : 1xTank 3.5m dia

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-5yr Rainfall=140 mm

	Area (m²)	CN	Description
*	83.5	98	Existing relocated house
*	69.0	98	Proposed house extension
*	168.0	98	Proposed shed
	320.5	98	Weighted Average
	320.5		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 43S: Roof to Tank



Summary for Subcatchment 45S: Predevelopment grass to impermeable

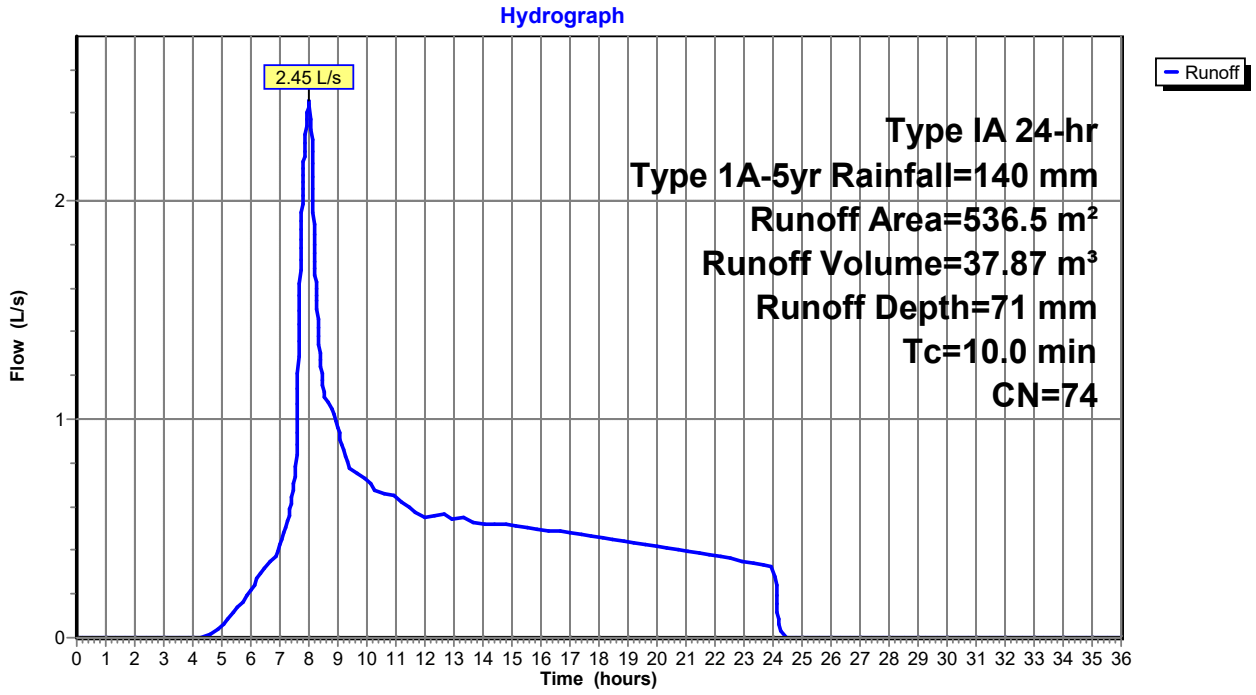
Runoff = 2.45 L/s @ 8.03 hrs, Volume= 37.87 m³, Depth= 71 mm
Routed to Link 47L : Pre-dev (80%)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-5yr Rainfall=140 mm

	Area (m²)	CN	Description
*	510.6	74	grass (eng standards
*	25.9	74	area of Consented garage
	536.5	74	Weighted Average
	536.5		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 45S: Predevelopment grass to impermeable



Summary for Subcatchment 49S: Other impermeable surfaces

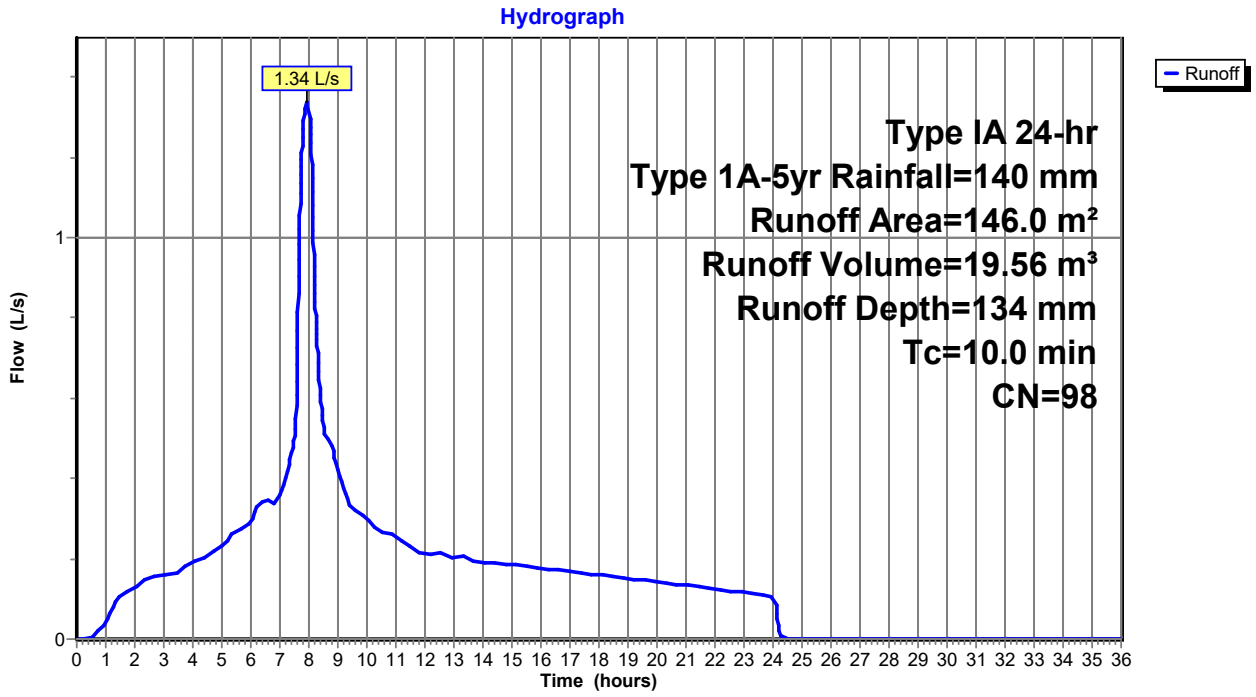
Runoff = 1.34 L/s @ 7.94 hrs, Volume= 19.56 m³, Depth= 134 mm
Routed to Link 29L : Attenuated

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-5yr Rainfall=140 mm

	Area (m²)	CN	Description
*	78.0	98	Proposed concrete driveway 1
*	11.0	98	Proposed concrete driveway 2
*	24.0	98	Proposed path
*	33.0	98	bbq
	146.0	98	Weighted Average
	146.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 49S: Other impermeable surfaces



Summary for Subcatchment 51S: parking

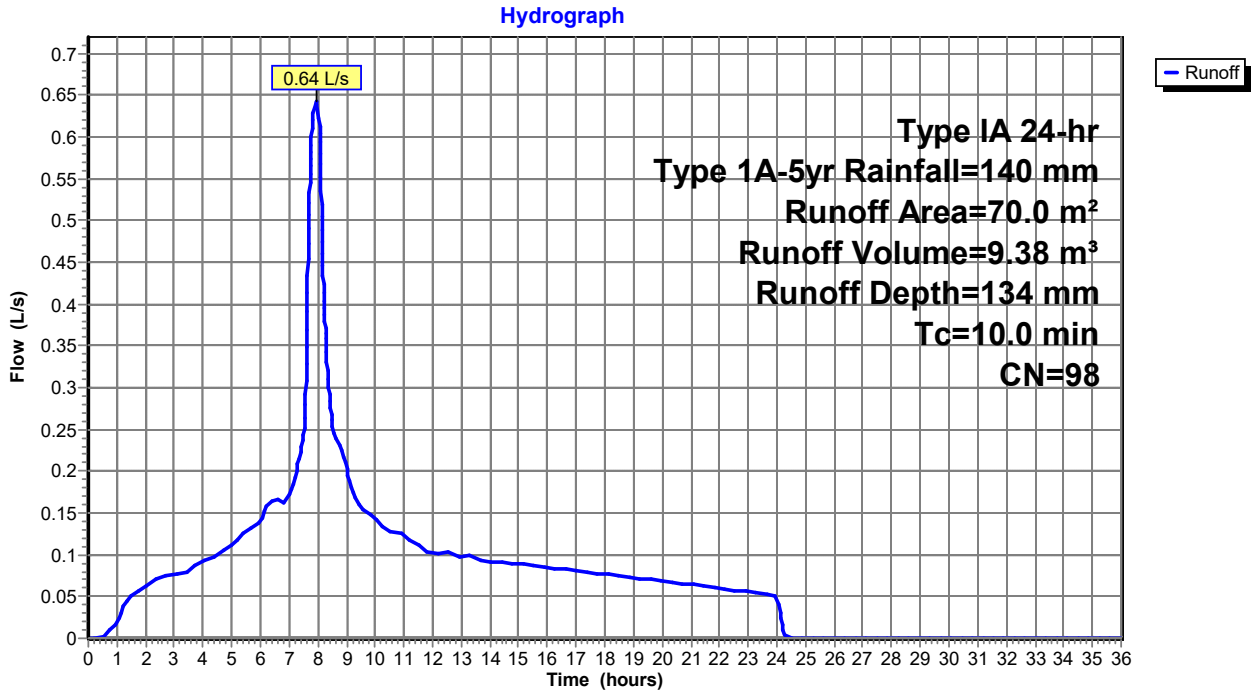
Runoff = 0.64 L/s @ 7.94 hrs, Volume= 9.38 m³, Depth= 134 mm
Routed to Pond 27P : 1xTank 3.5m dia

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-5yr Rainfall=140 mm

	Area (m²)	CN	Description
*	70.0	98	parking
	70.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 51S: parking



Summary for Subcatchment 52S: Predevelopment grass to cesspit

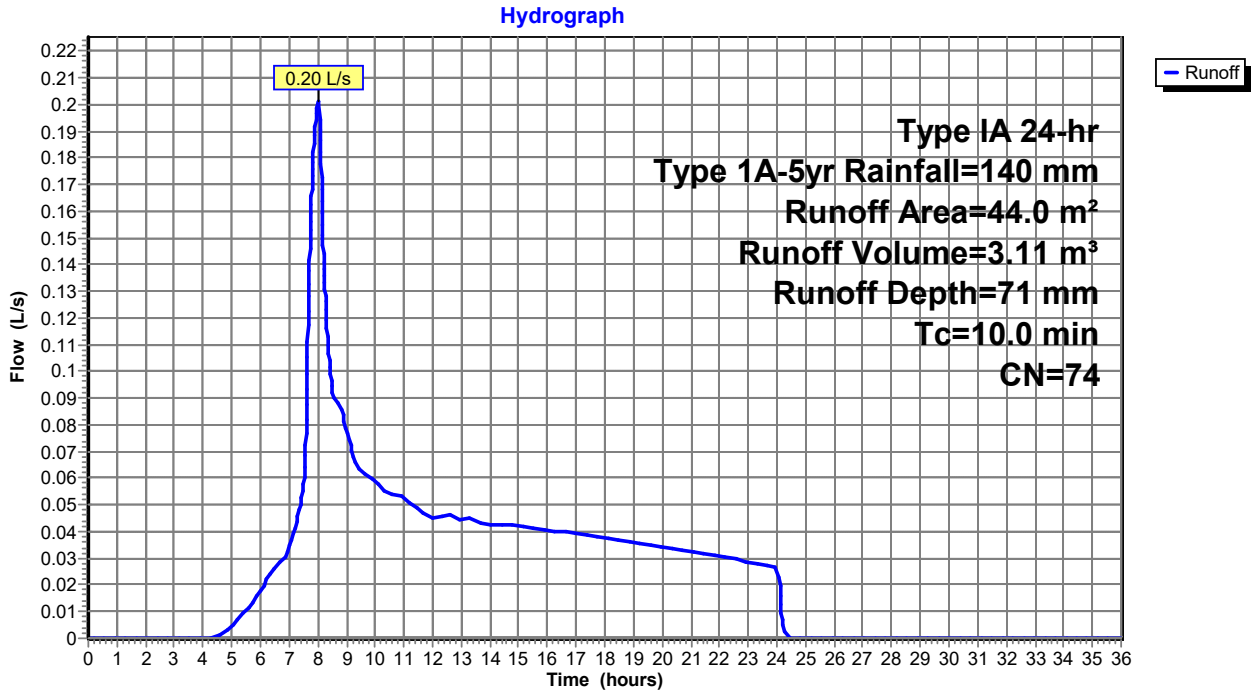
Runoff = 0.20 L/s @ 8.03 hrs, Volume= 3.11 m³, Depth= 71 mm
Routed to Pond 27P : 1xTank 3.5m dia

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-5yr Rainfall=140 mm

	Area (m²)	CN	Description
*	44.0	74	grass to cesspit
	44.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 52S: Predevelopment grass to cesspit



Summary for Subcatchment 53S: Predevelopment grass (unchanned-to cesspit)

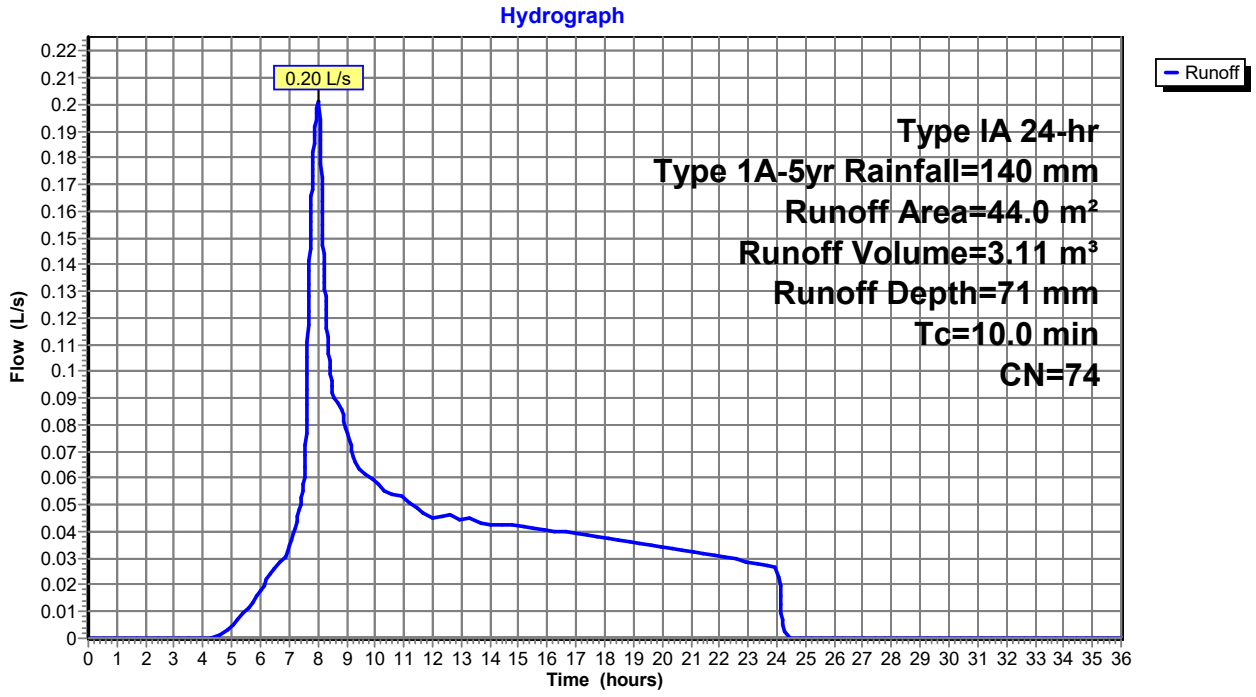
Runoff = 0.20 L/s @ 8.03 hrs, Volume= 3.11 m³, Depth= 71 mm
Routed to Link 51L : Pre-dev

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-5yr Rainfall=140 mm

	Area (m²)	CN	Description
*	44.0	74	grass to cesspit
	44.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 53S: Predevelopment grass (unchanned-to cesspit)



Summary for Pond 27P: 1xTank 3.5m dia

Inflow Area = 434.5 m², 89.87% Impervious, Inflow Depth = 128 mm for Type 1A-5yr event
Inflow = 3.78 L/s @ 7.94 hrs, Volume= 55.42 m³
Outflow = 1.40 L/s @ 8.75 hrs, Volume= 47.99 m³, Atten= 63%, Lag= 48.3 min
Primary = 1.40 L/s @ 8.75 hrs, Volume= 47.99 m³
Routed to Link 29L : Attenuated

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1.98 m @ 8.75 hrs Surf.Area= 9.6 m² Storage= 19.08 m³

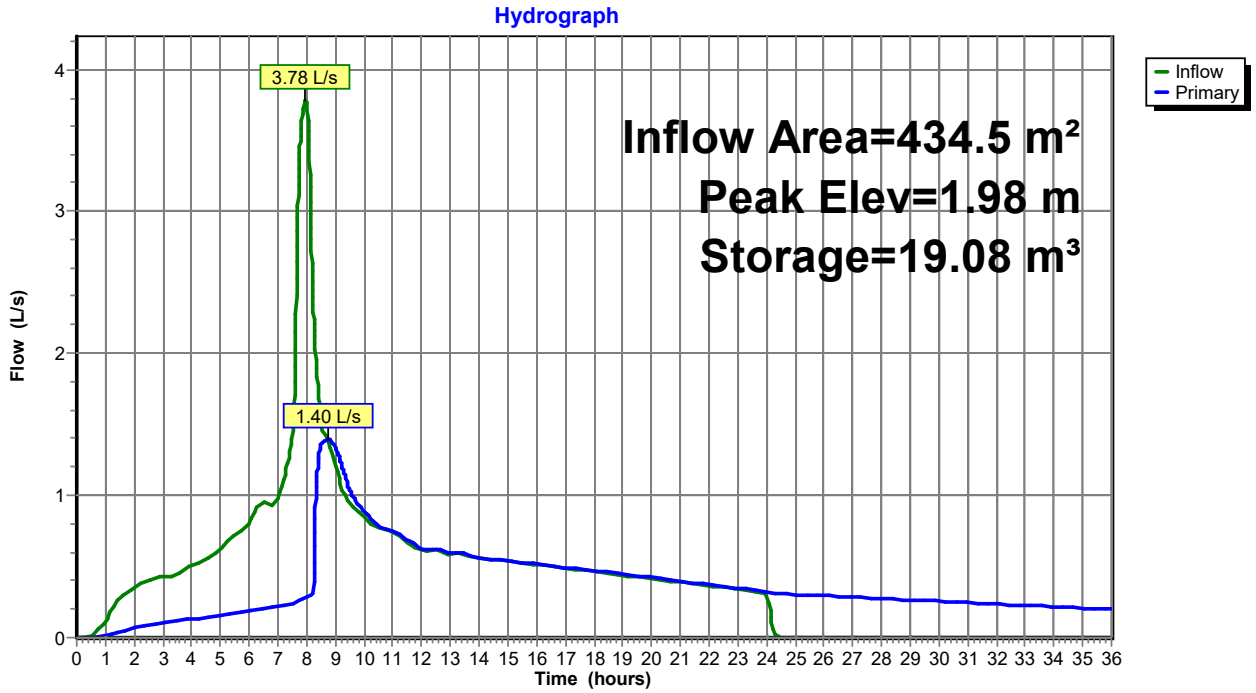
Plug-Flow detention time= 463.0 min calculated for 47.98 m³ (87% of inflow)
Center-of-Mass det. time= 368.6 min (1,033.6 - 665.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00 m	23.09 m³	**3.50 mD x 2.40 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00 m	**10 mm Vert. 10mm DIA Orifice/Grate** C= 0.650 Limited to weir flow at low heads
#2	Primary	1.90 m	**46 mm Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.40 L/s @ 8.75 hrs HW=1.98 m (Free Discharge)
└**1=10mm DIA Orifice/Grate** (Orifice Controls 0.32 L/s @ 4.05 m/s)
└**2=Orifice/Grate** (Orifice Controls 1.09 L/s @ 0.65 m/s)

Pond 27P: 1xTank 3.5m dia

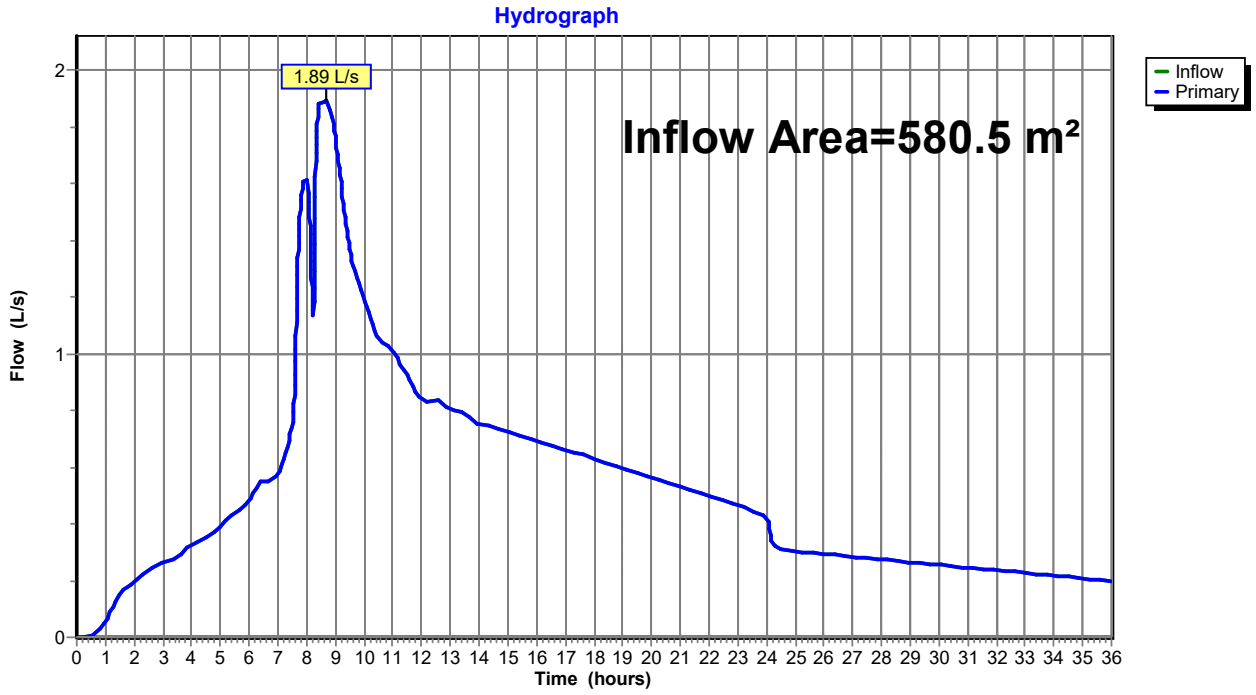


Summary for Link 29L: Attenuated

Inflow Area = 580.5 m², 92.42% Impervious, Inflow Depth > 116 mm for Type 1A-5yr event
Inflow = 1.89 L/s @ 8.70 hrs, Volume= 67.55 m³
Primary = 1.89 L/s @ 8.70 hrs, Volume= 67.55 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 29L: Attenuated

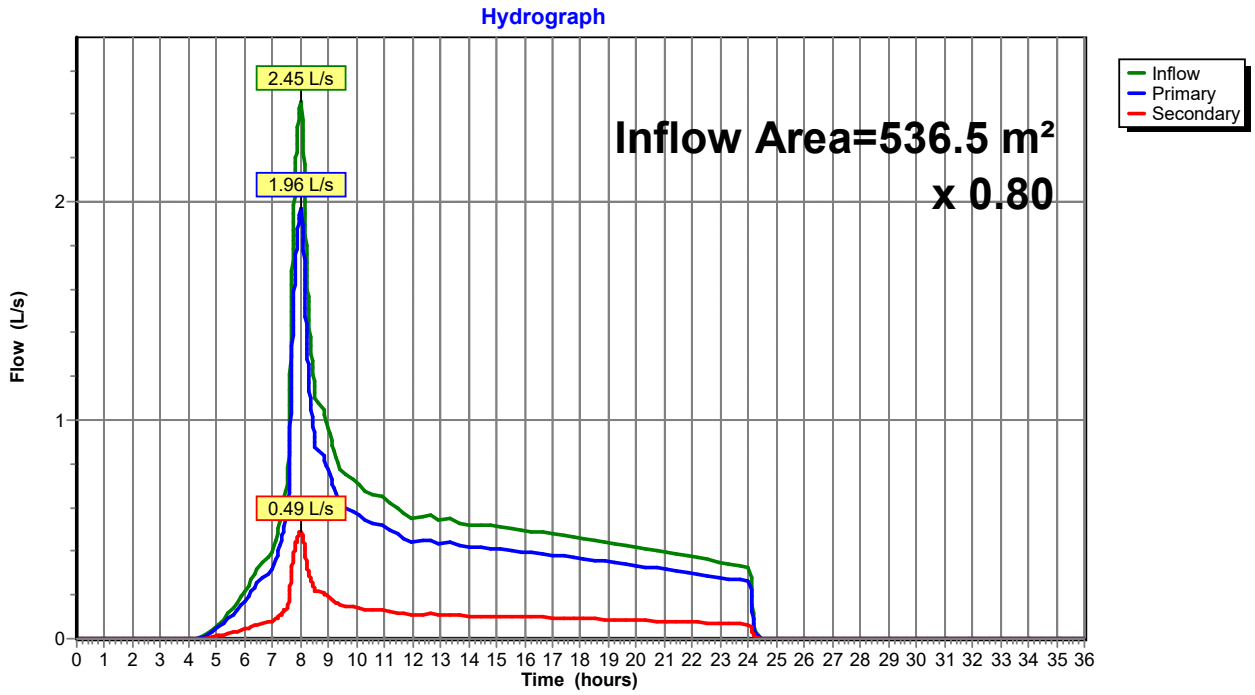


Summary for Link 47L: Pre-dev (80%)

Inflow Area = 536.5 m², 0.00% Impervious, Inflow Depth = 71 mm for Type 1A-5yr event
Inflow = 2.45 L/s @ 8.03 hrs, Volume= 37.87 m³
Primary = 1.96 L/s @ 8.03 hrs, Volume= 30.29 m³, Atten= 20%, Lag= 0.0 min
Routed to Link 51L : Pre-dev
Secondary = 0.49 L/s @ 8.03 hrs, Volume= 7.57 m³

Primary outflow = Inflow x 0.80, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 47L: Pre-dev (80%)

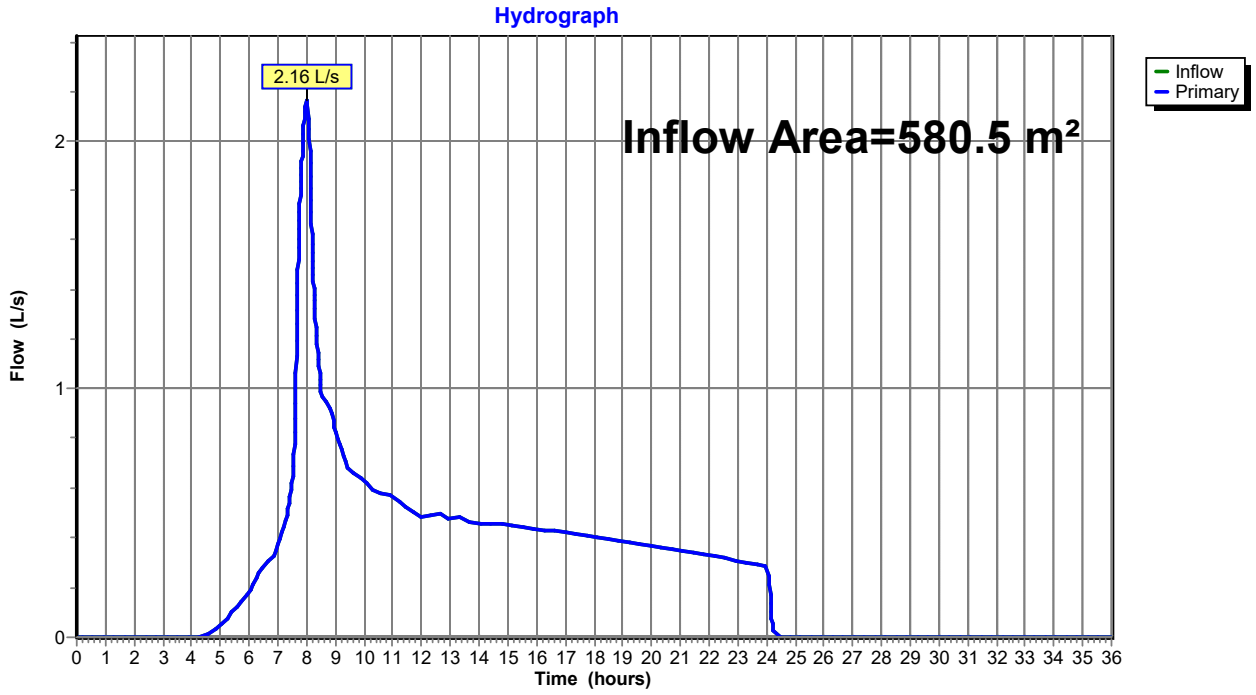


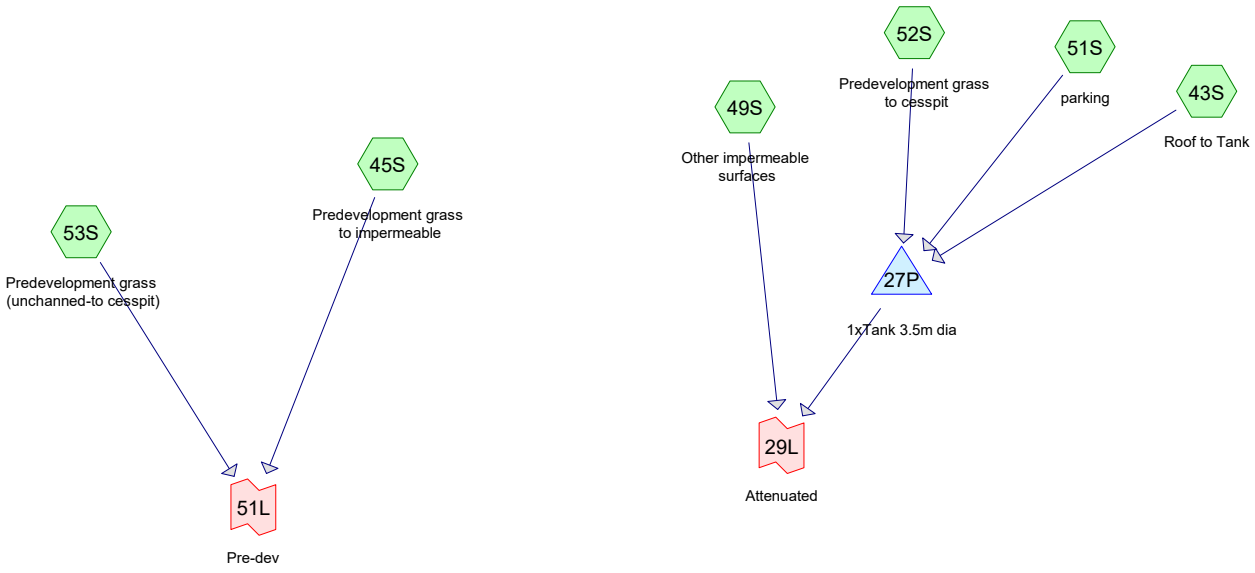
Summary for Link 51L: Pre-dev

Inflow Area = 580.5 m², 0.00% Impervious, Inflow Depth = 58 mm for Type 1A-5yr event
Inflow = 2.16 L/s @ 8.03 hrs, Volume= 33.40 m³
Primary = 2.16 L/s @ 8.03 hrs, Volume= 33.40 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 51L: Pre-dev





Subcat Reach Pond Link

Routing Diagram for 23 197_20240723_Tank 01 (Type 1A)_No CC
Prepared by Haigh Workman Limited, Printed 24/07/2024

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (mm)	AMC
1	Type 1A-10yr	Type IA 24-hr		Default	24.00	1	165	2

Area Listing (selected nodes)

Area (sq-meters)	CN	Description (subcatchment-numbers)
83.5	98	Existing relocated house (43S)
78.0	98	Proposed concrete driveway 1 (49S)
11.0	98	Proposed concrete driveway 2 (49S)
69.0	98	Proposed house extension (43S)
24.0	98	Proposed path (49S)
168.0	98	Proposed shed (43S)
25.9	74	area of Consented garage (45S)
33.0	98	bbq (49S)
510.6	74	grass (eng standards (45S)
88.0	74	grass to cesspit (52S, 53S)
70.0	98	parking (51S)
1,161.0	**85**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-meters)	Soil Group	Subcatchment Numbers
0.0	HSG A	
0.0	HSG B	
0.0	HSG C	
0.0	HSG D	
1,161.0	Other	43S, 45S, 49S, 51S, 52S, 53S
1,161.0		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-meters)	HSG-B (sq-meters)	HSG-C (sq-meters)	HSG-D (sq-meters)	Other (sq-meters)	Total (sq-meters)	Ground Cover
0.0	0.0	0.0	0.0	83.5	83.5	Existing relocated house
0.0	0.0	0.0	0.0	78.0	78.0	Proposed concrete driveway 1
0.0	0.0	0.0	0.0	11.0	11.0	Proposed concrete driveway 2
0.0	0.0	0.0	0.0	69.0	69.0	Proposed house extension
0.0	0.0	0.0	0.0	24.0	24.0	Proposed path
0.0	0.0	0.0	0.0	168.0	168.0	Proposed shed
0.0	0.0	0.0	0.0	25.9	25.9	area of Consented garage
0.0	0.0	0.0	0.0	33.0	33.0	bbq
0.0	0.0	0.0	0.0	510.6	510.6	grass (eng standards
0.0	0.0	0.0	0.0	88.0	88.0	grass to cesspit
0.0	0.0	0.0	0.0	70.0	70.0	parking
0.0	**0.0**	**0.0**	**0.0**	**1,161.0**	**1,161.0**	**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 43S: Roof to Tank Runoff Area=320.5 m² 100.00% Impervious Runoff Depth=159 mm
Tc=10.0 min CN=98 Runoff=3.47 L/s 50.94 m³

Subcatchment 45S: Predevelopment Runoff Area=536.5 m² 0.00% Impervious Runoff Depth=92 mm
Tc=10.0 min CN=74 Runoff=3.29 L/s 49.14 m³

Subcatchment 49S: Other Runoff Area=146.0 m² 100.00% Impervious Runoff Depth=159 mm
Tc=10.0 min CN=98 Runoff=1.58 L/s 23.21 m³

Subcatchment 51S: parking Runoff Area=70.0 m² 100.00% Impervious Runoff Depth=159 mm
Tc=10.0 min CN=98 Runoff=0.76 L/s 11.13 m³

Subcatchment 52S: Predevelopment Runoff Area=44.0 m² 0.00% Impervious Runoff Depth=92 mm
Tc=10.0 min CN=74 Runoff=0.27 L/s 4.03 m³

Subcatchment 53S: Predevelopment Runoff Area=44.0 m² 0.00% Impervious Runoff Depth=92 mm
Tc=10.0 min CN=74 Runoff=0.27 L/s 4.03 m³

Pond 27P: 1xTank 3.5m dia Peak Elev=2.14 m Storage=20.63 m³ Inflow=4.50 L/s 66.10 m³
Outflow=2.41 L/s 58.63 m³

Link 29L: Attenuated Inflow=3.52 L/s 81.84 m³
Primary=3.52 L/s 81.84 m³

Link 51L: Pre-dev Inflow=3.56 L/s 53.17 m³
Primary=3.56 L/s 53.17 m³

Total Runoff Area = 1,161.0 m² Runoff Volume = 142.47 m³ Average Runoff Depth = 123 mm
53.79% Pervious = 624.5 m² 46.21% Impervious = 536.5 m²

Summary for Subcatchment 43S: Roof to Tank

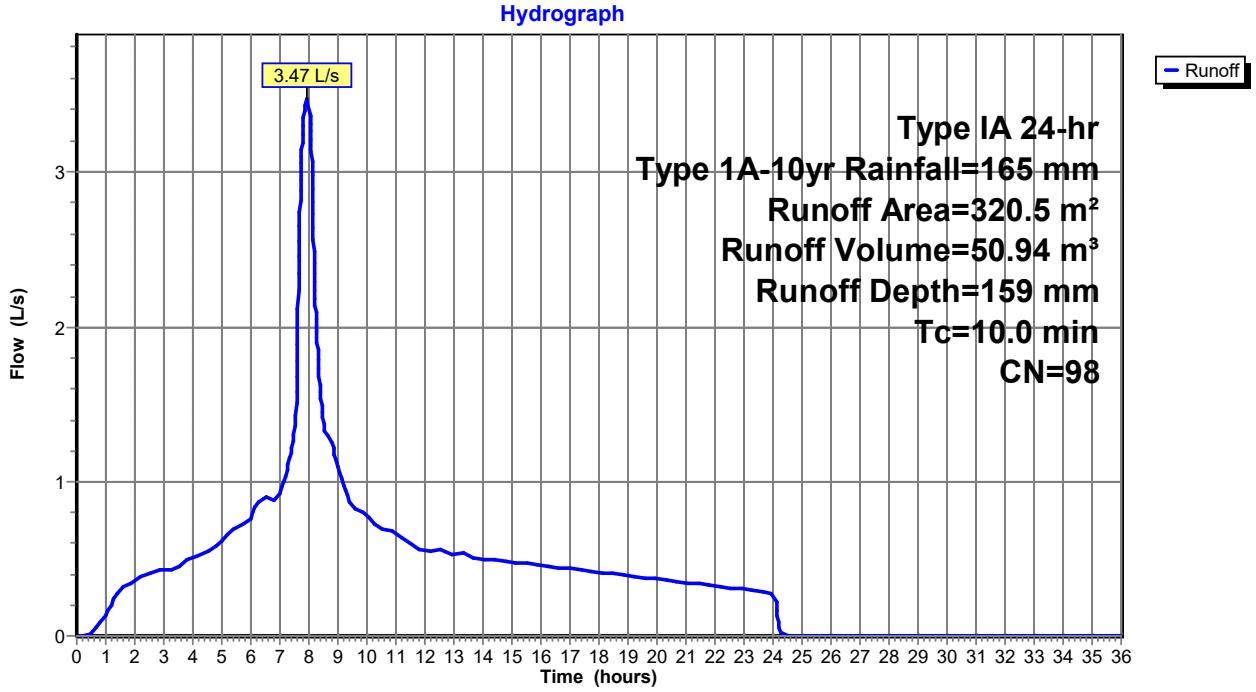
Runoff = 3.47 L/s @ 7.94 hrs, Volume= 50.94 m³, Depth= 159 mm
Routed to Pond 27P : 1xTank 3.5m dia

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-10yr Rainfall=165 mm

	Area (m²)	CN	Description
*	83.5	98	Existing relocated house
*	69.0	98	Proposed house extension
*	168.0	98	Proposed shed
	320.5	98	Weighted Average
	320.5		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 43S: Roof to Tank



Summary for Subcatchment 45S: Predevelopment grass to impermeable

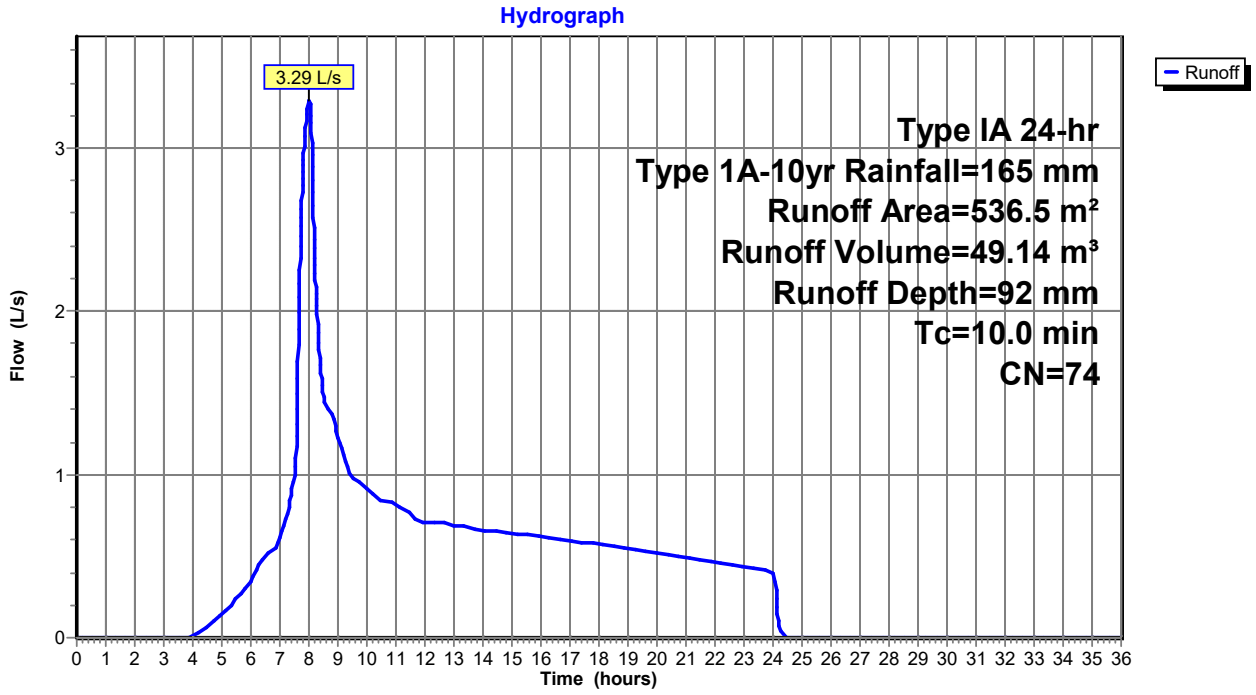
Runoff = 3.29 L/s @ 8.01 hrs, Volume= 49.14 m³, Depth= 92 mm
Routed to Link 51L : Pre-dev

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-10yr Rainfall=165 mm

	Area (m²)	CN	Description
*	510.6	74	grass (eng standards
*	25.9	74	area of Consented garage
	536.5	74	Weighted Average
	536.5		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 45S: Predevelopment grass to impermeable



Summary for Subcatchment 49S: Other impermeable surfaces

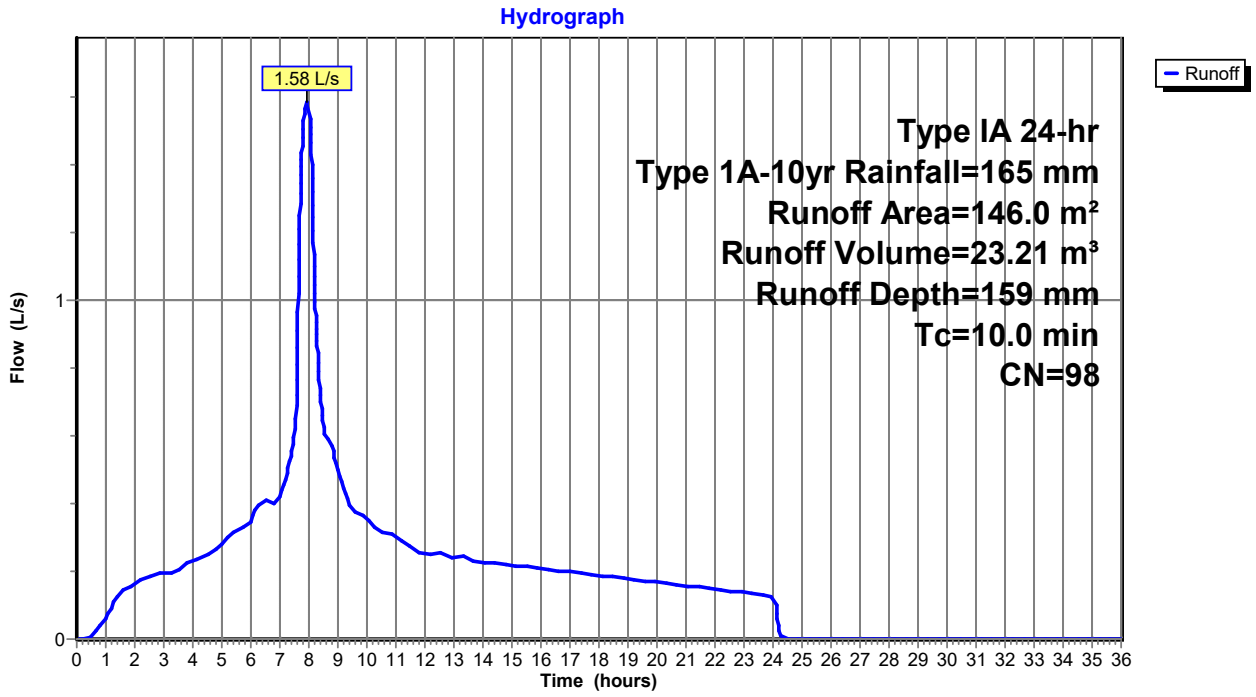
Runoff = 1.58 L/s @ 7.94 hrs, Volume= 23.21 m³, Depth= 159 mm
Routed to Link 29L : Attenuated

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-10yr Rainfall=165 mm

	Area (m²)	CN	Description
*	78.0	98	Proposed concrete driveway 1
*	11.0	98	Proposed concrete driveway 2
*	24.0	98	Proposed path
*	33.0	98	bbq
	146.0	98	Weighted Average
	146.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 49S: Other impermeable surfaces



Summary for Subcatchment 51S: parking

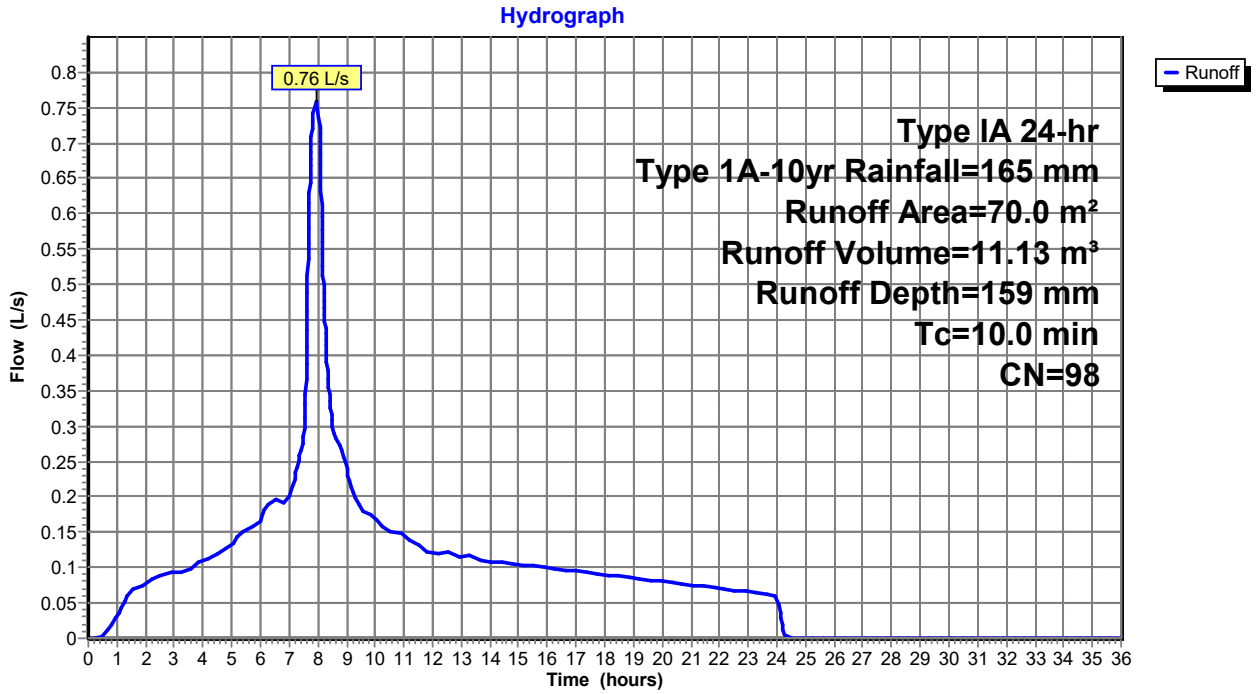
Runoff = 0.76 L/s @ 7.94 hrs, Volume= 11.13 m³, Depth= 159 mm
Routed to Pond 27P : 1xTank 3.5m dia

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-10yr Rainfall=165 mm

	Area (m²)	CN	Description
*	70.0	98	parking
	70.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 51S: parking



Summary for Subcatchment 52S: Predevelopment grass to cesspit

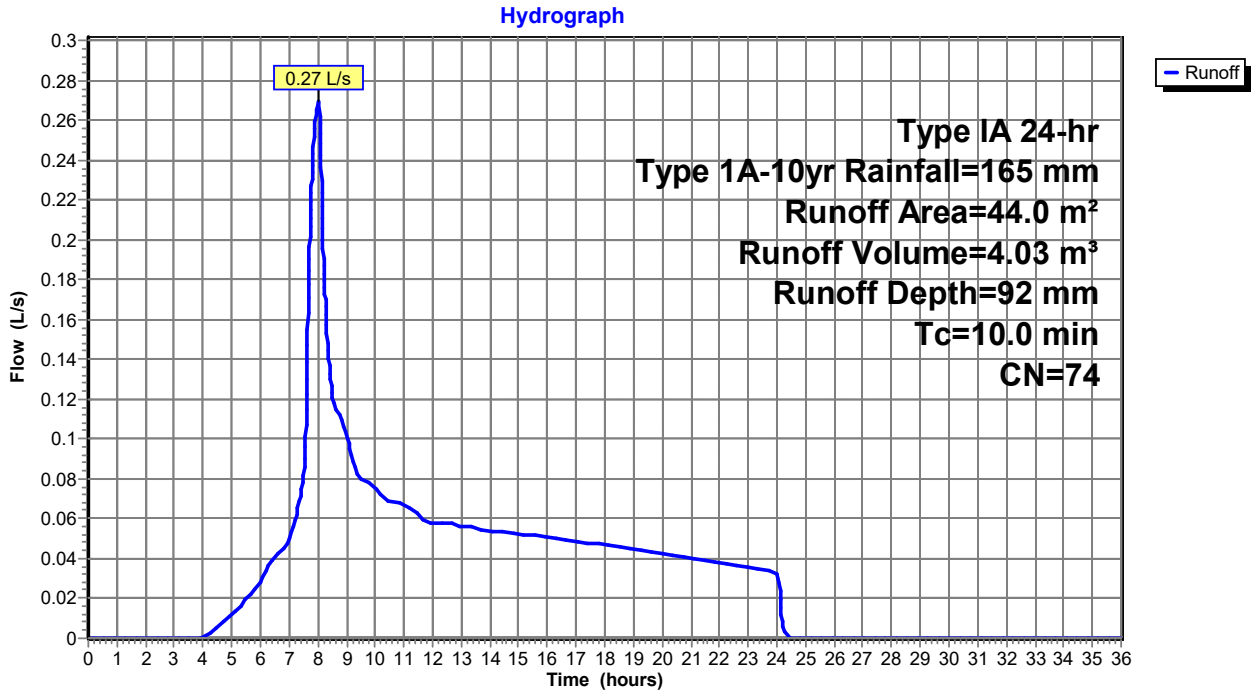
Runoff = 0.27 L/s @ 8.01 hrs, Volume= 4.03 m³, Depth= 92 mm
Routed to Pond 27P : 1xTank 3.5m dia

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-10yr Rainfall=165 mm

	Area (m²)	CN	Description
*	44.0	74	grass to cesspit
	44.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 52S: Predevelopment grass to cesspit



Summary for Subcatchment 53S: Predevelopment grass (unchanned-to cesspit)

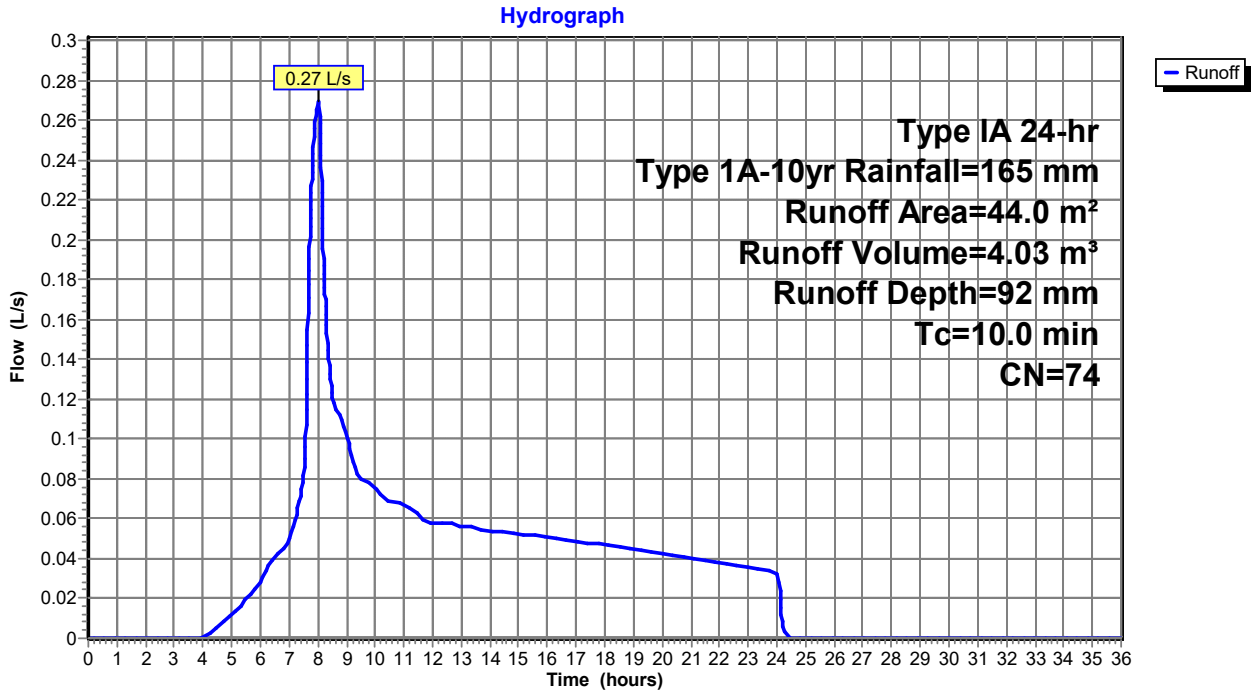
Runoff = 0.27 L/s @ 8.01 hrs, Volume= 4.03 m³, Depth= 92 mm
Routed to Link 51L : Pre-dev

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type IA 24-hr Type 1A-10yr Rainfall=165 mm

	Area (m²)	CN	Description
*	44.0	74	grass to cesspit
	44.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 53S: Predevelopment grass (unchanned-to cesspit)



Summary for Pond 27P: 1xTank 3.5m dia

Inflow Area = 434.5 m², 89.87% Impervious, Inflow Depth = 152 mm for Type 1A-10yr event
Inflow = 4.50 L/s @ 7.94 hrs, Volume= 66.10 m³
Outflow = 2.41 L/s @ 8.31 hrs, Volume= 58.63 m³, Atten= 46%, Lag= 21.7 min
Primary = 2.41 L/s @ 8.31 hrs, Volume= 58.63 m³
Routed to Link 29L : Attenuated

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 2.14 m @ 8.31 hrs Surf.Area= 9.6 m² Storage= 20.63 m³

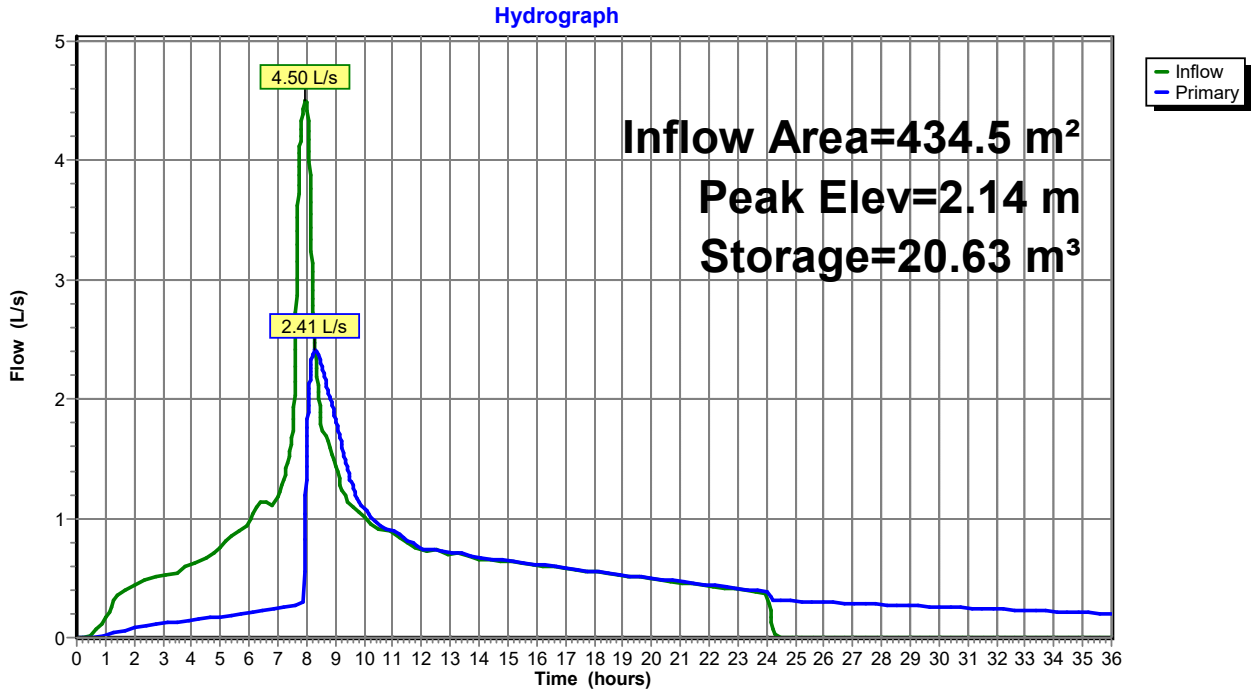
Plug-Flow detention time= 393.6 min calculated for 58.63 m³ (89% of inflow)
Center-of-Mass det. time= 312.4 min (974.5 - 662.1)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00 m	23.09 m³	**3.50 mD x 2.40 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00 m	**10 mm Vert. 10mm DIA Orifice/Grate** C= 0.650 Limited to weir flow at low heads
#2	Primary	1.90 m	**46 mm Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.41 L/s @ 8.31 hrs HW=2.14 m (Free Discharge)
└**1=10mm DIA Orifice/Grate** (Orifice Controls 0.33 L/s @ 4.21 m/s)
└**2=Orifice/Grate** (Orifice Controls 2.08 L/s @ 1.25 m/s)

Pond 27P: 1xTank 3.5m dia

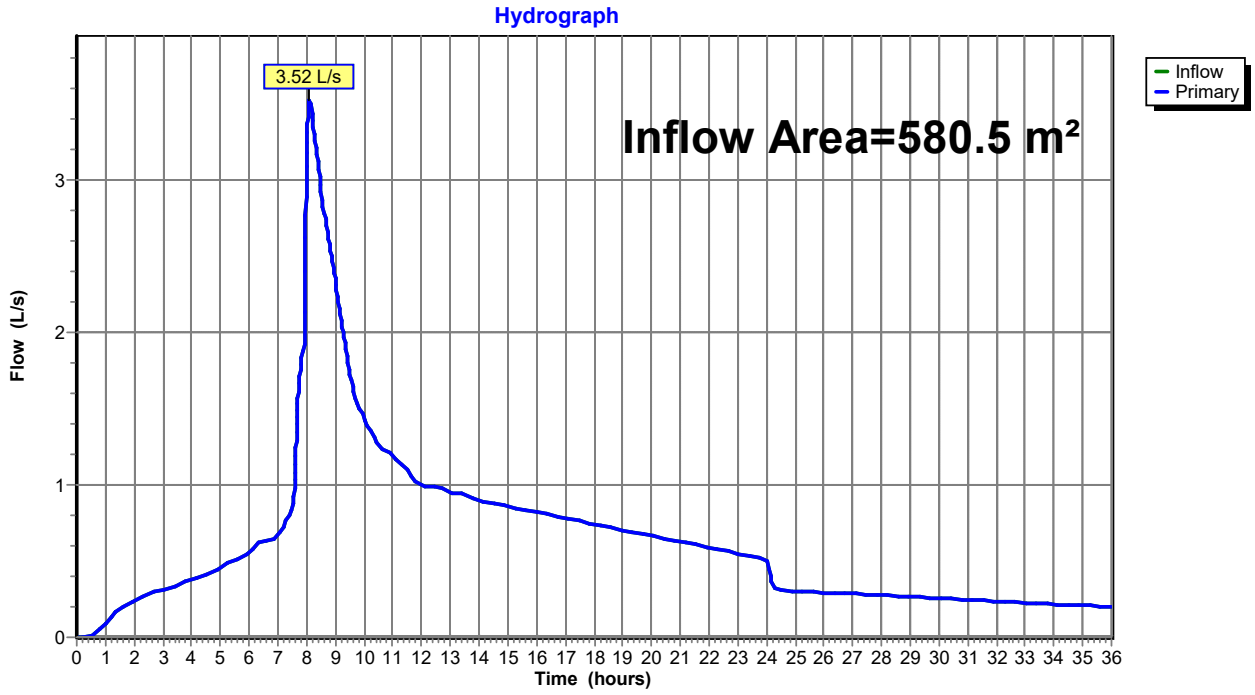


Summary for Link 29L: Attenuated

Inflow Area = 580.5 m², 92.42% Impervious, Inflow Depth > 141 mm for Type 1A-10yr event
Inflow = 3.52 L/s @ 8.10 hrs, Volume= 81.84 m³
Primary = 3.52 L/s @ 8.10 hrs, Volume= 81.84 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 29L: Attenuated

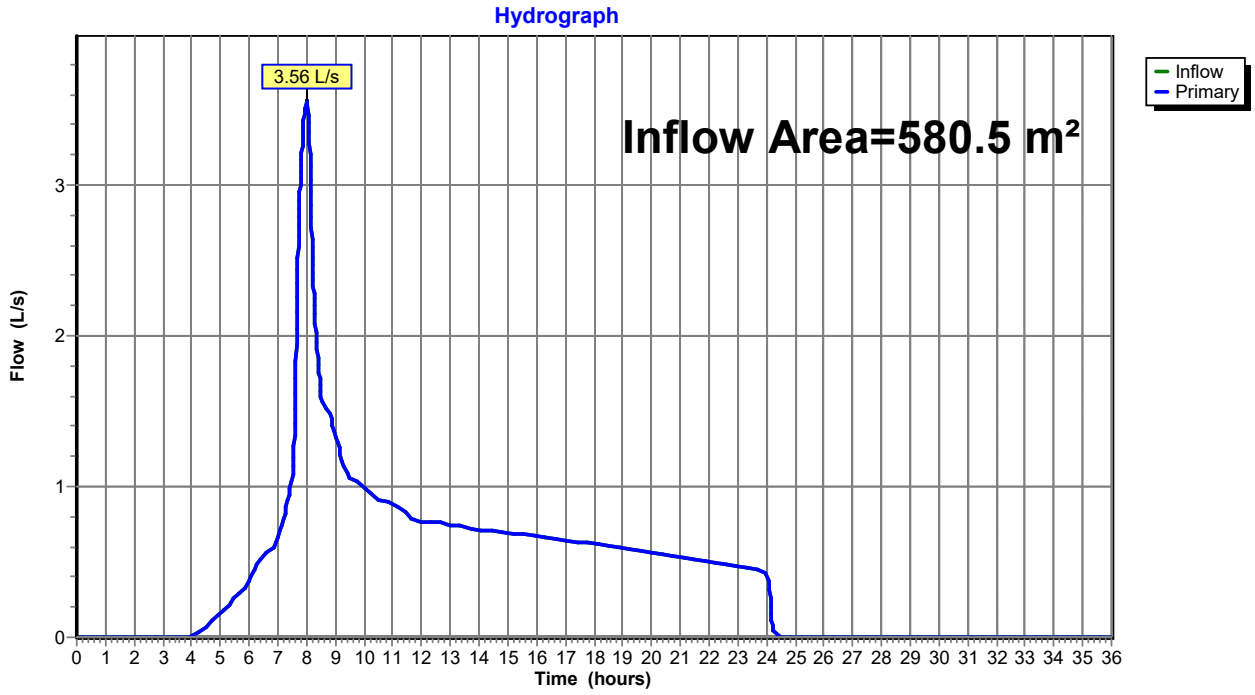


Summary for Link 51L: Pre-dev

Inflow Area = 580.5 m², 0.00% Impervious, Inflow Depth = 92 mm for Type 1A-10yr event
Inflow = 3.56 L/s @ 8.01 hrs, Volume= 53.17 m³
Primary = 3.56 L/s @ 8.01 hrs, Volume= 53.17 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 51L: Pre-dev



Retaining wall markup
WJL #: 135137

16 MacMurray Road,
Paihia

Retaining Wall #1

Max. Height: 1.2m
Max. Back slope: 14 degrees
Max. Front slope: 0 degrees
Max. Surcharge: 0 kPa

Refer detail and construction methodology on W1

Retaining Wall #4

Max. Height: 3.0m
Max. Back slope: 0 degrees
Max. Front slope: 0 degrees
Max. Surcharge: 5 kPa

Refer detail on W4

Retaining Wall #2

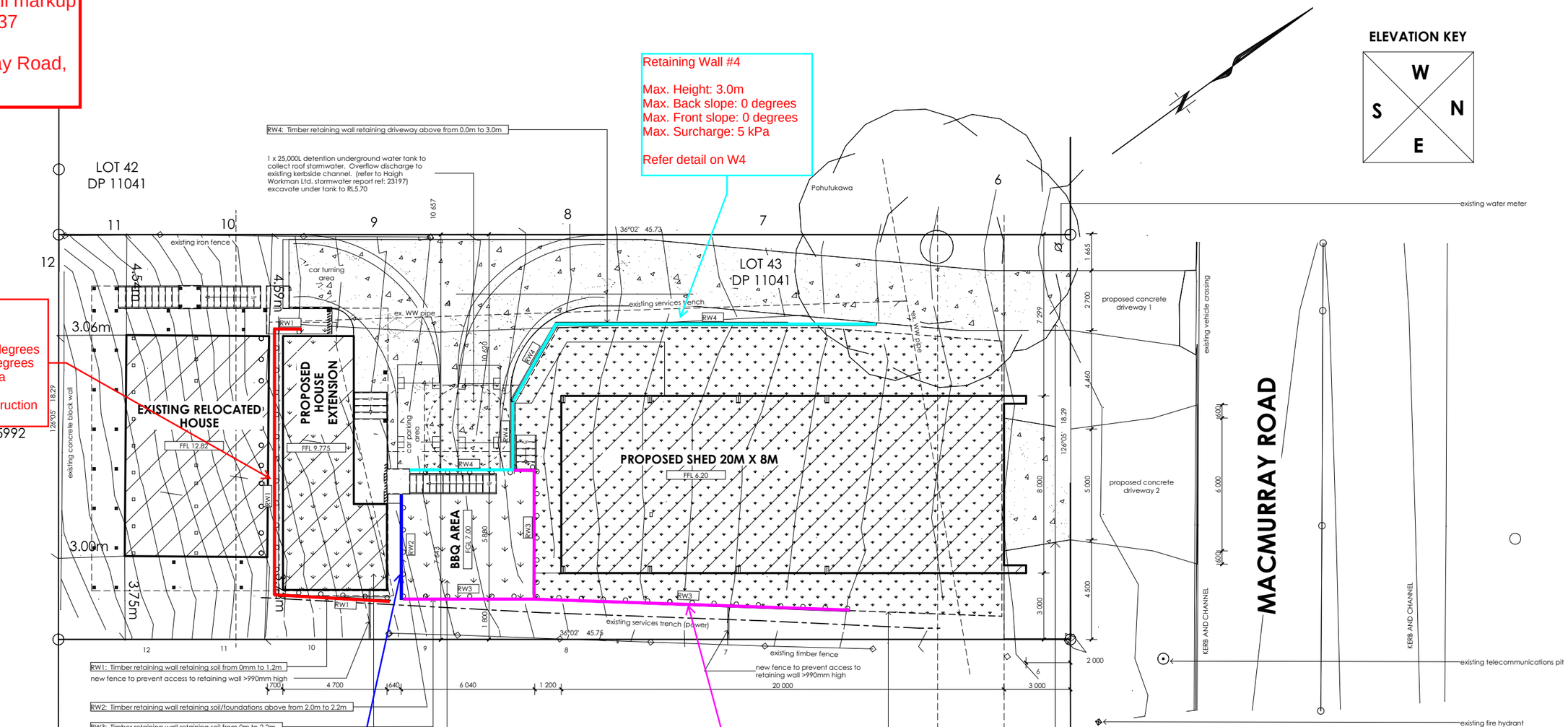
Max. Height: 2.2m
Max. Back slope: 0 degrees
Max. Front slope: 0 degrees
Max. Surcharge: 0 kPa

Refer detail on W2

Retaining Wall #3

Max. Height: 2.2m
Max. Back slope: 0 degrees
Max. Front slope: 0 degrees
Max. Surcharge: 0 kPa

Refer detail on W3



Excavation Area 1
Excavate hatched area to RL 9.175
Min. cut: 0m
Max. cut: 1m
Plan area: 45m2
Volume: 17m3

Excavation Area 2
Excavate hatched area to RL 7.0
Min. cut: 1m
Max. cut: 2m
Plan area: 33m2
Volume: 49m3

Excavation Area 3
Excavate hatched area to RL 6.0
Min. cut: 0m
Max. cut: 2.25m
Plan area: 280m2
Volume: 315m3

Excavation Area 4
Scrape driveways, car parking area and car turning area
Min. cut: 0.1m
Max. cut: 0.1m
Plan area: 170.5m2

TOTAL EXCAVATION

Excavation Area 1	17m3
Excavation Area 2	49m3
Excavation Area 3	315m3
Excavation Area 4	17m3
Total	**398m3**

LANDSCAPED AREA

Total area of front 3m yard: 55m2

Proposed concrete driveway 1:	8.1m2
Proposed concrete driveway 2:	16.5m2
Proposed building wing walls:	0.7m2
Total	**25.3m2**
Total landscaped area:	**29.7m2 (54%)**

1st Floor

NOTE:
1. Check the BUILDING CONSENT CONDITIONS for any inspections that are required by the Building Consent Authority (BCA).

2. It is increasingly common for building consent authorities to require a "PS4" for specifically designed structures. For Wilton Joubert Ltd. to issue this, we need to carry out inspections as per the building consent requirements. Ring Wilton Joubert Ltd. local office to arrange a booking.
NO INSPECTION EQUALS NO PS4 ISSUED.

3. Design based on report
By: Wilton Joubert Ltd Ref: 135218 Date: 24/07/2024
Ultimate bearing capacity: 300kPa
Undrained shear strength: 50kPa

4. Location and depth of all public pipes shall be confirmed on site prior to construction. Auger holes shall be outside pipe influence line.

5. No existing structure is to be within the 30 degree influence line (1 vertical in 1.8 horizontal) from the base of the retaining walls. It is essential this is checked prior to cut. If this is the case, please contact WJL to review the design, further site investigation may be required to assess the situation and safety measures.

6. Highly recommended NOT to carry out earthworks during wet conditions or with impending wet weather.

7. All retaining wall loading conditions (eg. retained heights, boundary conditions, surcharges, backslope, frontslope, etc.) shall be check prior to any construction. Wilton Joubert Ltd. shall be contacted if there are any discrepancies/ deviations from the design.

absolute build
p 09 407 4227 m 027 227 7543
PO Box 875, Kerikeri 0245 I absolutebuild.co.nz

Job
Proposed House Extension and Shed at 16 MacMurray Road, Paihia

Client
C and M Laurie

Drawing
Locality Sketch and Overall Site Plan

Rev. No.	Description	Date

Designed: N Todd	Job No.: 2024335
Drawn: N Todd	Drawing Number: 1 of 11
Date: July 2024	
Scale: 1:100	Revision:

ORIGINAL DRAWING SIZE IS A1

DRAFT PLANS ONLY - NOT FOR CONSTRUCTION

Timber Retaining Wall #1

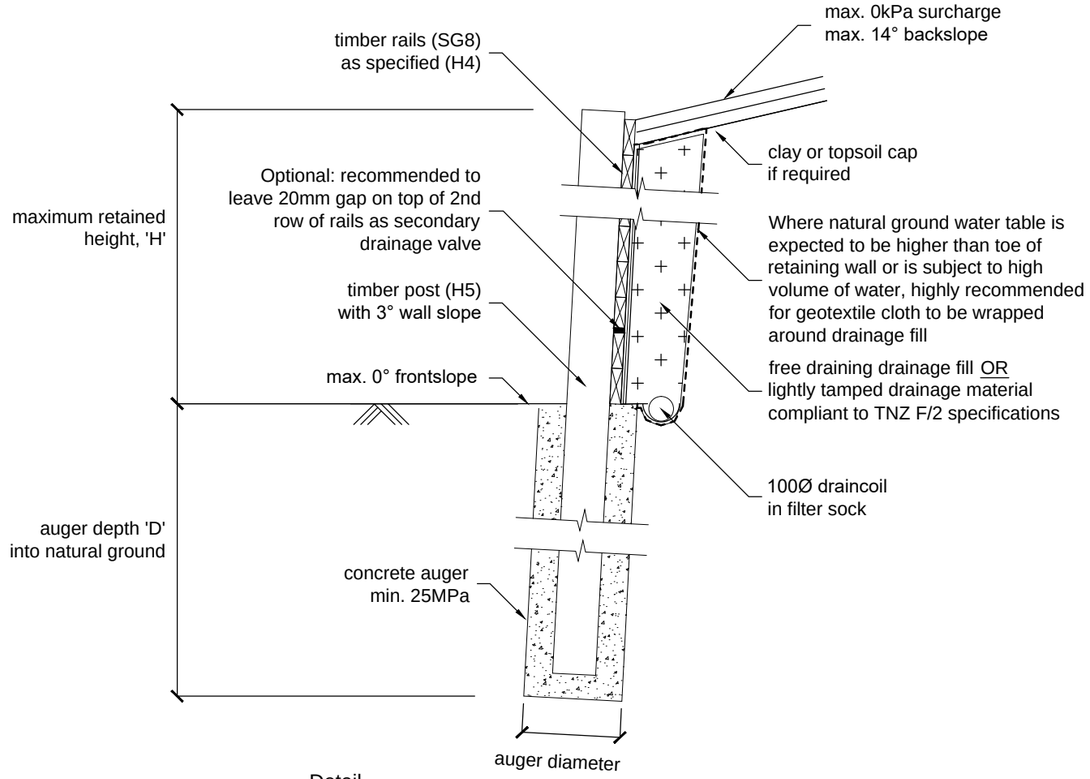
Notes:
Quality of poles shall conform to the requirements of NZS3605.
'ND' Poles are normal density with min. outer zone density of 350kg/m3.
'HD' Poles are high density with min. outer zone density of 450kg/m3.

Confirm site conditions matches design details prior to construction.

H, max. retained height (m)	Post spacing (mm)	SED Post diameter (mm)	D, auger depth (m)	auger diameter (mm)	Rails
1.2	1000	150ND	1250	300	150x50 SG8

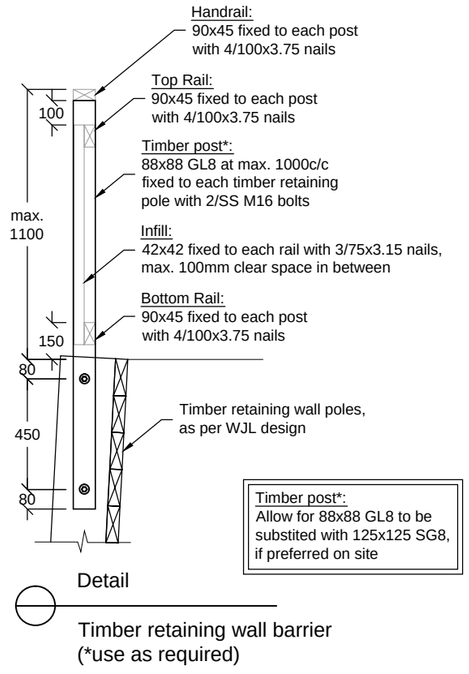
Important notes:

Wall construction must be fast-tracked and staged so that segments are less than 5m horizontal exposure at any time.



Detail

Typical timber retaining wall



Detail

Timber retaining wall barrier
(*use as required)

NOTES:
1. Contact the architect/engineer if any discrepancies are found.
2. Check the BUILDING CONSENT CONDITIONS for any inspections that are required by the Building Consent Authority (BCA).
3. It is increasingly common for building consent authorities to require a "PS4" for specifically designed structures. For Wilton Joubert to issue this, we need to carry out inspections as per the building consent requirements. Ring Wilton Joubert local office to arrange a booking. NO INSPECTION EQUALS NO PS4 ISSUED. Where Wilton Joubert is unable to conduct inspection due to geographical reason, a local engineer may be engaged to carry out such inspections and issue a PS4 accordingly.
4. Location of all public pipes shall be confirmed on site.
5. All retaining wall loading conditions (eg. retained heights, boundary conditions, surcharges, backslope, frontslope, etc.) shall be check prior to any construction. Wilton Joubert shall be contacted if there are any discrepancies/deviations from the design.

No.	DESCRIPTION	DATE

REVISION

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

SITE ADDRESS:

**Proposed Residence:
16 MacMurray Road
Paihia**

SHEET TITLE:

Retaining Wall

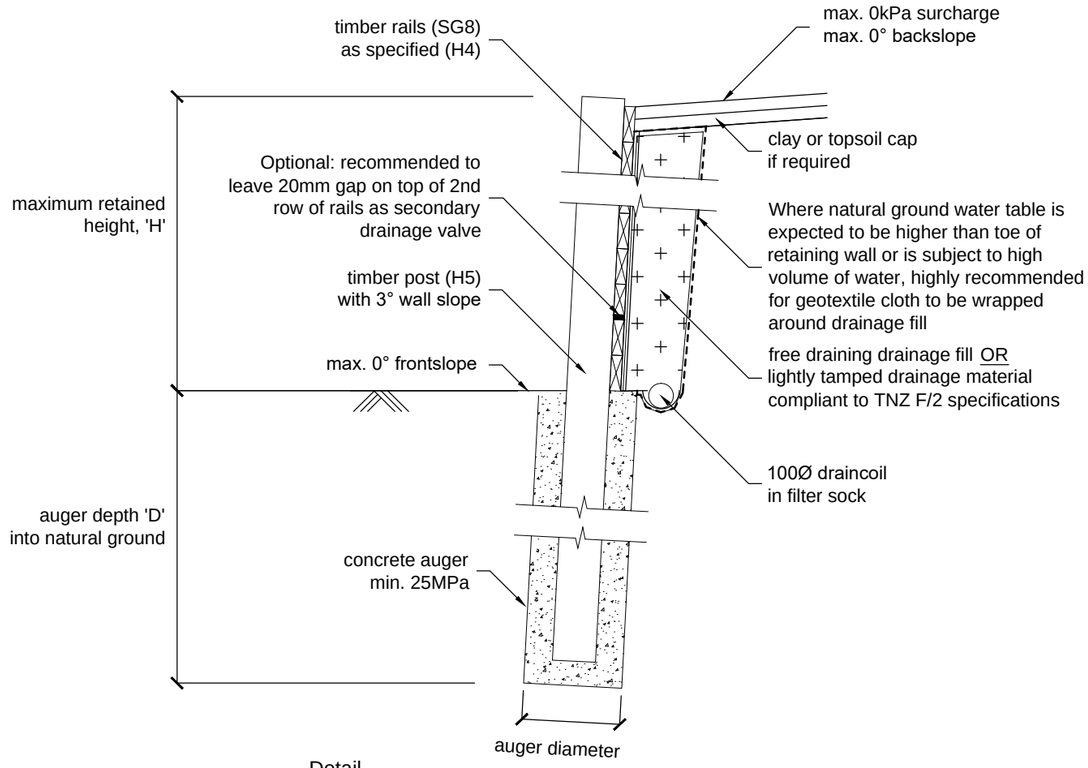
DESIGNED BY: BL	DRAWN BY: BL
CHECKED BY: DL	APPROVED BY: Wilton Joubert Ltd
DATE: 30-07-2024	OFFICE: Lunn Avenue
DRAWING SCALE: N.T.S	ORIGINAL DRAWING SIZE: A3
Original Job #: **Job # 135137**	Sheet #: **W1**
Revision Job #:	

Timber Retaining Wall #2

Notes:
Quality of poles shall conform to the requirements of NZS3605.
'ND' Poles are normal density with min. outer zone density of 350kg/m3.
'HD' Poles are high density with min. outer zone density of 450kg/m3.

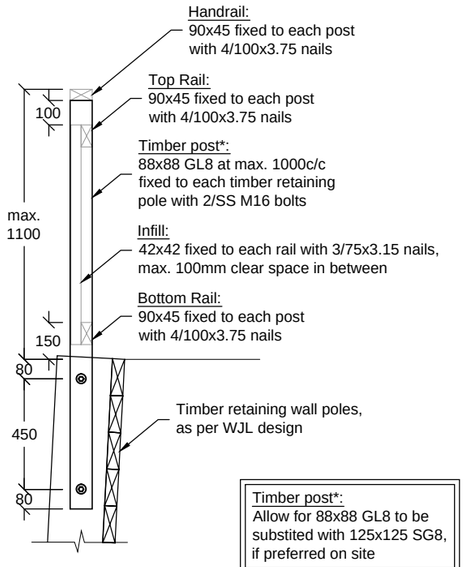
Confirm site conditions matches design details prior to construction.

H, max. retained height (m)	Post spacing (mm)	SED Post diameter (mm)	D, auger depth (m)	auger diameter (mm)	Rails
2.2	1000	200HD	2300	350	150x50 SG8



Detail

Typical timber retaining wall



Timber post*:
Allow for 88x88 GL8 to be substited with 125x125 SG8, if preferred on site

Detail

Timber retaining wall barrier
(*use as required)

NOTES:
1. Contact the architect/engineer if any discrepancies are found.
2. Check the BUILDING CONSENT CONDITIONS for any inspections that are required by the Building Consent Authority (BCA).
3. It is increasingly common for building consent authorities to require a "PS4" for specifically designed structures. For Wilton Joubert to issue this, we need to carry out inspections as per the building consent requirements. Ring Wilton Joubert local office to arrange a booking. NO INSPECTION EQUALS NO PS4 ISSUED. Where Wilton Joubert is unable to conduct inspection due to geographical reason, a local engineer may be engaged to carry out such inspections and issue a PS4 accordingly.
4. Location of all public pipes shall be confirmed on site.
5. All retaining wall loading conditions (eg. retained heights, boundary conditions, surcharges, backslope, frontslope, etc.) shall be check prior to any construction. Wilton Joubert shall be contacted if there are any discrepancies/deviations from the design.

No.	DESCRIPTION	DATE

REVISION

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

SITE ADDRESS:

Proposed Residence:
16 MacMurray Road
Paihia

SHEET TITLE:

Retaining Wall

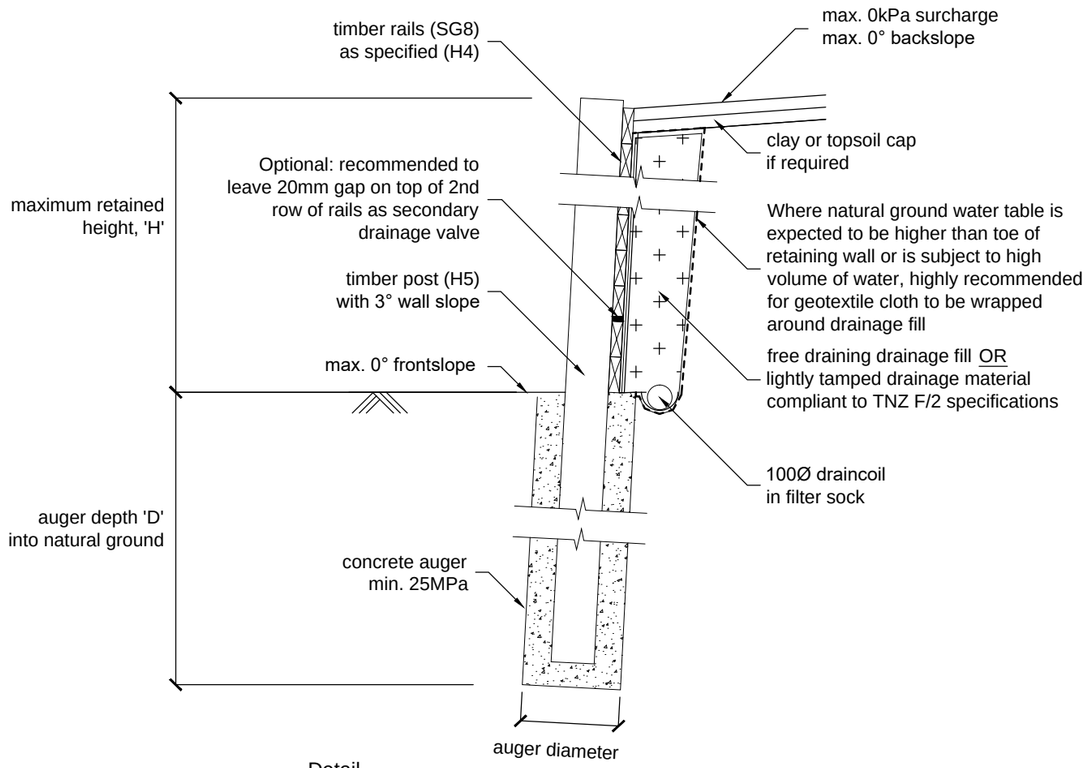
DESIGNED BY: BL	DRAWN BY: BL
CHECKED BY: DL	APPROVED BY: Wilton Joubert Ltd
DATE: 30-07-2024	OFFICE: Lunn Avenue
DRAWING SCALE: N.T.S	ORIGINAL DRAWING SIZE: A3
Original Job #: **Job # 135137**	Sheet #: **W2**
Revision Job #:	

Timber Retaining Wall #3

Notes:
Quality of poles shall conform to the requirements of NZS3605.
'ND' Poles are normal density with min. outer zone density of 350kg/m3.
'HD' Poles are high density with min. outer zone density of 450kg/m3.

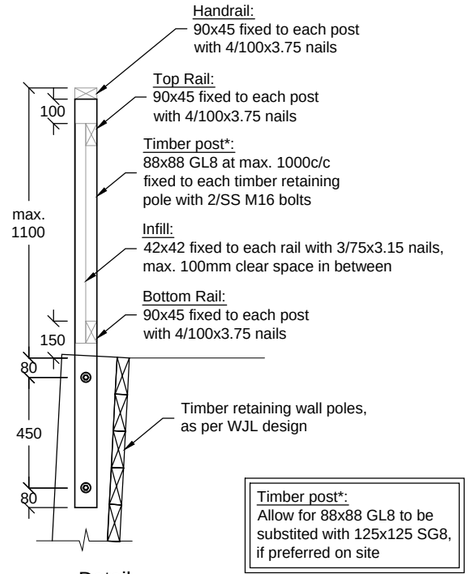
Confirm site conditions matches design details prior to construction.

H, max. retained height (m)	Post spacing (mm)	SED Post diameter (mm)	D, auger depth (m)	auger diameter (mm)	Rails
1.2	1000	150ND	1200	300	150x50 SG8
1.5	1000	175ND	1550	350	150x50 SG8
1.8	1000	200**HD**	1850	350	150x50 SG8
2.1	1000	200**HD**	2200	350	150x50 SG8
2.2	1000	200**HD**	2400	400	150x50 SG8



Detail

Typical timber retaining wall



Timber post*:
Allow for 88x88 GL8 to be substited with 125x125 SG8, if preferred on site

Detail

Timber retaining wall barrier
(*use as required)

NOTES:
1. Contact the architect/engineer if any discrepancies are found.
2. Check the BUILDING CONSENT CONDITIONS for any inspections that are required by the Building Consent Authority (BCA).
3. It is increasingly common for building consent authorities to require a "PS4" for specifically designed structures. For Wilton Joubert to issue this, we need to carry out inspections as per the building consent requirements. Ring Wilton Joubert local office to arrange a booking. NO INSPECTION EQUALS NO PS4 ISSUED. Where Wilton Joubert is unable to conduct inspection due to geographical reason, a local engineer may be engaged to carry out such inspections and issue a PS4 accordingly.
4. Location of all public pipes shall be confirmed on site.
5. All retaining wall loading conditions (eg. retained heights, boundary conditions, surcharges, backslope, frontslope, etc.) shall be check prior to any construction. Wilton Joubert shall be contacted if there are any discrepancies/deviations from the design.

No.	DESCRIPTION	DATE

REVISION

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

SITE ADDRESS:

Proposed Residence:
16 MacMurray Road
Paihia

SHEET TITLE:

Retaining Wall

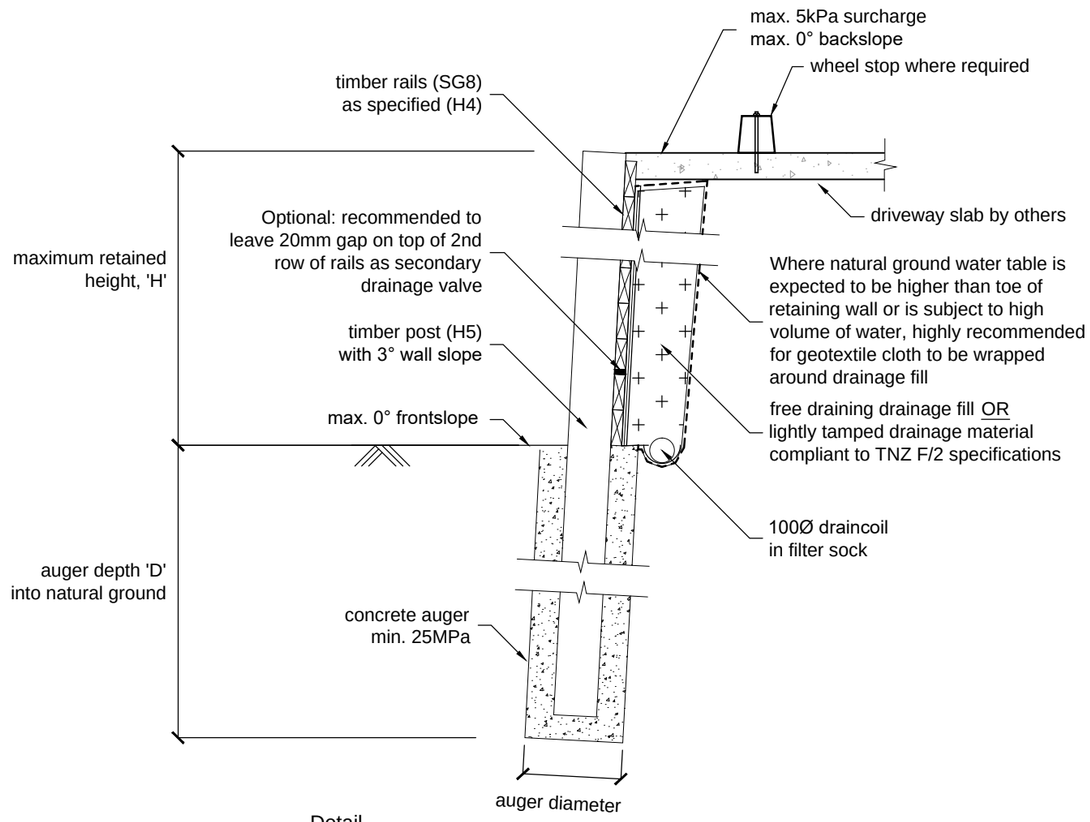
DESIGNED BY: BL	DRAWN BY: BL
CHECKED BY: DL	APPROVED BY: Wilton Joubert Ltd
DATE: 30-07-2024	OFFICE: Lunn Avenue
DRAWING SCALE: N.T.S	ORIGINAL DRAWING SIZE: A3
Original Job #: **Job # 135137**	Sheet #: **W3**
Revision Job #:	

Timber Retaining Wall #4

Notes:
Quality of poles shall conform to the requirements of NZS3605.
'ND' Poles are normal density with min. outer zone density of 350kg/m3.
'HD' Poles are high density with min. outer zone density of 450kg/m3.

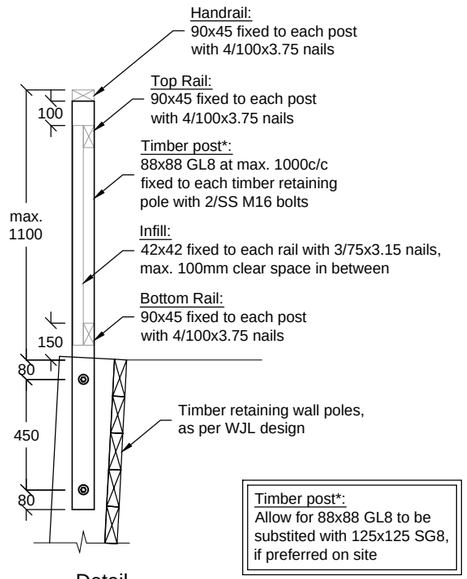
Confirm site conditions matches design details prior to construction.

H, max. retained height (m)	Post spacing (mm)	SED Post diameter (mm)	D, auger depth (m)	auger diameter (mm)	Rails
0.9	1000	150ND	1200	300	150x50 SG8
1.2	1000	150ND	1400	300	150x50 SG8
1.5	1000	200**HD**	1800	350	150x50 SG8
1.8	1000	200**HD**	2100	350	150x50 SG8
2.1	1000	225**HD**	2600	400	150x50 SG8
2.4	1000	250**HD**	3000	400	2/150x50 SG8 below top 2.1m
2.7	1000	275**HD**	3550	450	2/150x50 SG8 below top 2.1m
3.0	1000	300**HD**	4100	500	2/150x50 SG8 below top 2.1m



Detail

Typical timber retaining wall



Timber post*:
Allow for 88x88 GL8 to be substited with 125x125 SG8, if preferred on site

Detail

Timber retaining wall barrier
(*use as required, not for vehicle loading)

NOTES:
1. Contact the architect/engineer if any discrepancies are found.
2. Check the BUILDING CONSENT CONDITIONS for any inspections that are required by the Building Consent Authority (BCA).
3. It is increasingly common for building consent authorities to require a "PS4" for specifically designed structures. For Wilton Joubert to issue this, we need to carry out inspections as per the building consent requirements. Ring Wilton Joubert local office to arrange a booking. NO INSPECTION EQUALS NO PS4 ISSUED. Where Wilton Joubert is unable to conduct inspection due to geographical reason, a local engineer may be engaged to carry out such inspections and issue a PS4 accordingly.
4. Location of all public pipes shall be confirmed on site.
5. All retaining wall loading conditions (eg. retained heights, boundary conditions, surcharges, backslope, frontslope, etc.) shall be check prior to any construction. Wilton Joubert shall be contacted if there are any discrepancies/deviations from the design.

No.	DESCRIPTION	DATE

REVISION

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SITE ADDRESS:

Proposed Residence:
16 MacMurray Road
Paihia

SHEET TITLE:

Retaining Wall

DESIGNED BY: BL	DRAWN BY: BL
CHECKED BY: DL	APPROVED BY: Wilton Joubert Ltd
DATE: 30-07-2024	OFFICE: Lunn Avenue
DRAWING SCALE: N.T.S	ORIGINAL DRAWING SIZE: A3
Original Job #: **Job # 135137**	Sheet #: **W4**
Revision Job #:	