Te Kaunihera o Te Hiku o te Ika
Far North District Council

Office Use Only
Application Number:

Application for resource consent or fast-track resource consent

(Or Associated Consent Pursuant to the Resource Management Act 1991 (RMA)) (If applying for a Resource Consent pursuant to Section 87AAC or 88 of the RMA, this form can be used to satisfy the requirements of Schedule 4). Prior to, and during, completion of this application form, please refer to Resource Consent Guidance Notes and Schedule of Fees and Charges — both available on the Council's web page.

1. Pre-Lodgement Meeting

Have you met with a council Resource Consent representative to discuss this application prior to lodgement? ◯ **Yes** ✔ **No**

2. Type of Consent being applied for

(more than one circle can be ticked):

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

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

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

✔ **Yes** ◯ **No**

4. Consultation

Have you consulted with Iwi/Hapū? ✔ **Yes** ◯ **No**

If yes, which groups have you consulted with?	Ngati Rehia
Who else have you consulted with?	Department of Conservation & Heritage New Zealand

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

5. Applicant Details

Name/s: Shearwater Investments Limited

Email: [redacted]

Phone number:

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

6. Address for Correspondence

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

Name/s: Bay of Islands Planning

Email: [redacted]

Phone number:

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

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

7. Details of Property Owner/s and Occupier/s

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

Name/s: Philippa Elizabeth McCann and William ShaunFaris McCann

Property Address/ Location: 79 Kemp Rd
Kerikeri
Postcode

8. Application Site Details

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

Name/s: Shearwater Investments Limited

Site Address/ Location: 1a James Jemp Place
Kerikeri
Postcode

Legal Description: Lot DP 594558 **Val Number:**

Certificate of title: 1146018

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

Site visit requirements:

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

Is there a dog on the property? ◯ **Yes** ✔ **No**

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

9. Description of the Proposal:

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

6 lot subdivision

If this is an application for a Change or Cancellation of Consent Notice conditions (s.221(3)), please quote relevant existing Resource Consents and Consent Notice identifiers and provide details of the change(s), with reasons for requesting them.

10. Would you like to request Public Notification?

◯ **Yes** ✔ **No**

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

(more than one circle can be ticked):

- ◯ **Building Consent** Enter BC ref # here (if known)
- ◯ **Regional Council Consent (ref # if known)** Ref # here (if known)
- ◯ **National Environmental Standard consent** Consent here (if known)
- ◯ **Other (please specify)** Specify 'other' here

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

The site and proposal may be subject to the above NES. In order to determine whether regard needs to be had to the NES please answer the following:

Is the piece of land currently being used or has it historically ever been used for an activity or industry on the Hazardous Industries and Activities List (HAIL) ◯ **Yes** ✔ **No** ◯ **Don't know**

Is the proposed activity an activity covered by the NES? Please tick if any of the following apply to your proposal, as the NESCS may apply as a result. ◯ **Yes** ◯ **No** ◯ **Don't know**

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

13. Assessment of Environmental Effects:

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

Your AEE is attached to this application ✔ **Yes**

13. Draft Conditions:

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

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

14. Billing Details:

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

Name/s: (please write in full)

Email:

Phone number:

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

[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: (please write in full)

Signature:
(signature of bill payer

[redacted]

MANDATORY

15. Important Information:

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

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

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

15. Important information continued...

Declaration

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

Name: (please write in full) Andrew McPhee

Signature: [redacted] Date 23-Oct-2024

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

Checklist (please tick if information is provided)

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

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

BAY OF ISLANDS PLANNING (2022) LIMITED

Kerikeri House
Suite 3, 88 Kerikeri Road, Kerikeri
Email – office@bayplan.co.nz Website - www.bayplan.co.nz

24 October 2024

Far North District Council
John Butler Centre
Kerikeri

Application seeking consent for a six-lot subdivision on Lot 1 DP 594558 in the Rural Living zone at 1a James Kemp Place, Kerikeri.

Please find attached an application for a six-lot subdivision at 1a James Kemp Place, Kerikeri. The site is legally described as Lot 1 DP 594558.

Shearwater Investments Limited seek consent to subdivide a 1.2183ha site creating six lots as a Non-Complying activity in the Rural Living zone within the operative Far North District Plan (ODP). Under the Proposed Far North District Plan (PDP) the application would be assessed as a Discretionary activity.

Land use consent is also sought in terms of frontage to existing roads and in terms of subdivision within a heritage area under the PDP. The proposed subdivision will create the following lots:

Lot 1 – 2,007m^2	Lot 2 – 2,002m^2	Lot 3 – 2,001m^2
Lot 4 – 2,009m^2	Lot 5 – 2,155m^2	Lot 6 – 2,005m^2

The application is supported by the following information –

- **Appendix A - Certificate of Title**
- **Appendix B - Scheme Plan prepared by BOI Survey Ltd**
- **Appendix C – Site Suitability Report prepared by Wilton Joubert**
- **Appendix D – Geotechnical Report prepared by Wilton Joubert**
- **Appendix E – Landscape Assessment and Plan prepared by Simon Cocker Landscape Architects.**
- **Appendix F – Record of consultation**
- **Appendix G – Top Energy and Chorus consultation**

Regards,

Andrew McPhee
Consultant Planner

APPLICANT & PROPERTY DETAILS

Applicant	Shearwater Investments Limited
Address for Service	Bay of Islands Planning [2022] Limited Kerikeri House Suite 3 88 Kerikeri Road Kerikeri C/O – Andrew McPhee andrew@bayplan.co.nz 021-784-331
Legal Description	Lot 1 DP 594558
Certificate Of Title	1146018
Physical Address	1a James Kemp Place, Kerikeri
Site Area	1.2183 hectares
Owner of the Site	Shearwater Investments Limited
Operative District Plan Zone / Features	Rural Living Zone [ODP]
Proposed District Plan	Rural Residential Zone [PDP], Kerikeri Heritage Area Part B
Archaeology	Nil
NRC Overlays	Nil
Soils	2s1
Protected Natural Area	Nil
HAIL	Nil

Schedule 1

SUMMARY OF PROPOSAL

Proposal	A six-lot subdivision in the Rural Living zone at 1a James Kemp Place, Kerikeri.
Reason for Application	The lot sizes proposed are not provided for within the ODP making the application for subdivision a Non-Complying activity. Land use consent is also required due to frontage to existing roads. Consent is also required under the PDP for subdivision within a heritage area. [The lot sizes proposed are provided for within the PDP and would be assessed as a Discretionary activity.]
Appendices	Appendix A - Certificate of Title Appendix B - Scheme Plan prepared by BOI Survey Ltd Appendix C – Site Suitability Report prepared by Wilton Joubert Appendix D – Geotechnical Report prepared by Wilton Joubert Appendix E – Landscape Assessment and Plan prepared by Simon Cocker Landscape Architects. Appendix F – Record of consultation. Appendix G – Top Energy and Chorus consultation
Consultation	Consultation was undertaken with the Department of Conservation, Heritage New Zealand and Ngati Rehia. A record of consultation is provided in Appendix F.
Pre Application Consultation	Not applicable

1.0 INTRODUCTION

The applicant, Shearwater Investments Limited, seek resource consent to undertake a six-lot subdivision on their property located on the corner of Kemp Road and James Kemp Place in Kerikeri, legally described as Lot 1 DP 594558. The title is provided in **Appendix A**.

2.0 DESCRIPTION OF THE SITES AND SURROUNDS

The site is identified as 1a James Kemp Place and is situated on the corner of Kemp Road and James Kemp Place, approximately 650m west of the intersection of Landing Road. The site and surrounding area is zoned Rural Living in the ODP. The area is well developed and can be best described as 'large lot' residential living. There is no evidence in the immediate surrounds of rural production activities being undertaken.

Figure 1: Site Aerial (Source: Far North Maps)

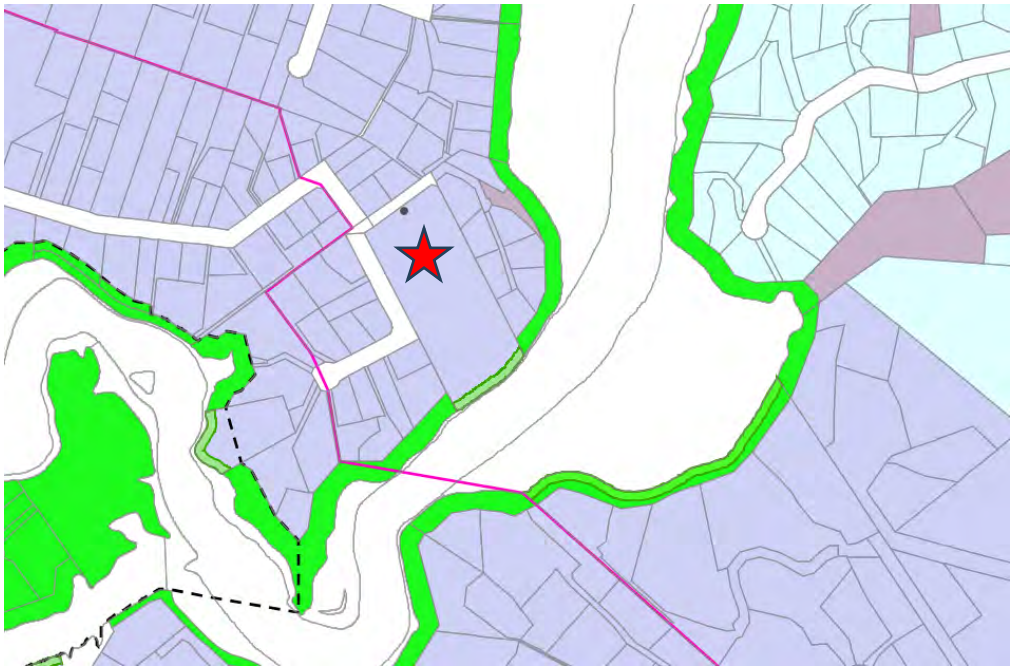


Figure 2: Zoning (Source: Far North Maps)

The site is currently vacant, grass covered and is bordered by shelter belts on the northern and western boundaries. The Eastern and southern boundaries have had the shelter belts removed (refer Figures 3 and 4).

Figure 3: Photo of shelter belt planting on the northern and western boundaries

Figure 4: Photo of shelter belt planting removed on the southern and eastern boundaries

As is evidenced from the from the zoning map (refer Figure 2), the subject site is much larger than the surrounding sites, and is one of the few left to develop in the area. The subject site is surrounded by small sites ranging in size between 850m^2 and 1,817m^2, with the exception of the two sites to the south (refer Figures 5 and 6).

Figure 5: Land use pattern of surrounding properties (Source: Prover)

Address	Suburb	Town	Capital Value	Last Sale Date	Last Sale Price	Land Area	Floor Area
78 Kemp Road	Kerikeri	Far North	760000	27 Nov 2008	317750	850 m²	101 m²
91F Kemp Road	Kerikeri	Far North	1360000	19 Apr 2004	610000	1,310 m²	240 m²
118 Kemp Road	Kerikeri	Far North	1880000	13 Feb 2014	1030000	1,285 m²	434 m²
91D Kemp Road	Kerikeri	Far North	1330000	28 Sep 2012	372000	1,375 m²	280 m²
91C Kemp Road	Kerikeri	Far North	1440000	14 Sep 2001	510000	1,325 m²	285 m²
91G Kemp Road	Kerikeri	Far North	1200000	02 May 2013	579500	1,259 m²	265 m²
91J Kemp Road	Kerikeri	Far North	810000	26 Mar 2022	835000		157 m²
91K Kemp Road	Kerikeri	Far North	900000	28 Feb 2000	360000	1,757 m²	150 m²
91B Kemp Road	Kerikeri	Far North	315000	01 Jan 1900	57000	1,083 m²	
91A Kemp Road	Kerikeri	Far North	1470000	13 Jan 2018	1220000	1,384 m²	295 m²
104 Kemp Road	Kerikeri	Far North	1360000	20 Apr 2004	595000	1,209 m²	270 m²
102 Kemp Road	Kerikeri	Far North	1310000	01 Jan 1900	355000	1,201 m²	200 m²
96 Kemp Road	Kerikeri	Far North	770000	21 Jun 2019	587000	1,295 m²	130 m²
94 Kemp Road	Kerikeri	Far North	1230000	15 Aug 2015	630000	1,817 m²	250 m²
98 Kemp Road	Kerikeri	Far North	700000	12 Oct 2005	328000	1,330 m²	115 m²
84 Kemp Road	Kerikeri	Far North	970000	21 Jul 2017	580000	1,470 m²	130 m²
88 Kemp Road	Kerikeri	Far North	920000	26 Mar 2001	238000	1,251 m²	140 m²
86 Kemp Road	Kerikeri	Far North	690000	01 Jan 1900	165000	1,248 m²	110 m²
55 Kemp Road	Kerikeri	Far North	780000	29 May 2013	370000	916 m²	120 m²
53 Kemp Road	Kerikeri	Far North	760000	19 Sep 2008	380000	932 m²	130 m²
51 Kemp Road	Kerikeri	Far North	720000	23 Nov 2020	547000	932 m²	140 m²
49 Kemp Road	Kerikeri	Far North	820000	01 Jan 1900	270000	1,636 m²	200 m²
57 Kemp Road	Kerikeri	Far North	700000	22 Apr 2022	720000	1,012 m²	130 m²
2 James Kemp Place	Kerikeri	Far North	455000	16 Feb 2022	500000	1,495 m²	
8 James Kemp Place	Kerikeri	Far North	710000	06 Dec 2023	795000	1,268 m²	130 m²
10 James Kemp Place	Kerikeri	Far North	840000	08 Jun 2017	570000	1,251 m²	200 m²
12 James Kemp Place	Kerikeri	Far North	970000	19 Feb 2022	1020000	1,302 m²	238 m²
1 James Kemp Place	Kerikeri	Far North	920000	09 Jun 2023	800000	1,250 m²	210 m²
14A-B James Kemp Place	Kerikeri	Far North	1000000	27 Jun 2019	721000	1,814 m²	210 m²
17 James Kemp Place	Kerikeri	Far North	820000	19 May 2019	620000	1,268 m²	160 m²
15 James Kemp Place	Kerikeri	Far North	1030000	10 Apr 2003	90000	1,251 m²	205 m²
7 James Kemp Place	Kerikeri	Far North	520000	12 Aug 2020	410000	1,752 m²	
19 James Kemp Place	Kerikeri	Far North	850000	01 Oct 2010	390000	1,650 m²	140 m²
13 James Kemp Place	Kerikeri	Far North	1150000	22 May 2019	900000	1,696 m²	167 m²

Figure 6: Land use pattern of surrounding properties (Source: Prover)

The site is not subject to any known hazards.

The site is currently accessed from a double width crossing on James Kemp Place.

Figure 7: Photograph of current access on to 1a James Kemp Place

The topography can best be described as generally flat with a slight fall from the northeast to the southwest.

Figure 8: Site topography (Source: NRC Maps)

The landholding is identified as being Class 2 soils and considered to be highly productive in accordance with the National Policy Statement for Highly Productive Land (NPS-HPL) (refer Figure 9 below).

Figure 9: Land Use Classification (Source: Far North Maps)

3.0 RECORD OF TITLE, CONSENT NOTICES AND LAND COVENANTS

The Record of Titles are attached at **Appendix A**. The following consent notices apply:
12985116.2

Lot 1 DP 594558

(i). Provide, at the time of lodging a building consent application for the Lot, a site-specific Stormwater Report to address stormwater controls to attenuate impermeable surfaces for rainfall events up to 10% AEP (including allowance for climate change) prepared by a suitably qualified Chartered Professional Engineer. The reports will detail the proposed attenuation method (e.g soak trenches and or detention-attenuation tank) and any drains. These are to include Engineering Plans, to be submitted for approval.

Lots 1 and 2 DP 594558

(ii). In conjunction with the construction of any dwelling, firefighting water supplies shall be provided in accordance with the FNDC Engineering Standards and the NZ Firefighting Water Supplies Code of Practice NZS PAS 4509:2008 and shall be approved by Fire and Emergency NZ prior to works commencing.

(iii). The lot owner shall ensure that the wastewater treatment and disposal system is constructed generally in accordance with the recommendations contained within the Stormwater and Wastewater Suitability Report prepared by Haigh Workman dated December 2022, referenced 22043, revision C. As a minimum, all wastewater shall receive secondary treatment prior to being disposed of via pressure compensating driplines.

(iv). In conjunction with a building consent, provide for the approval of the Council's duly delegated officer a landscape plan prepared by a suitably qualified and experienced person incorporating plantings that are in keeping with the amenity and character of the surrounding environment. The purpose of the landscaping is to provide screening of future development on the site when viewed from Kemp Road, James Kemp Place and neighbouring properties.

The landscaping, once implemented, must be maintained by the Consent holder in perpetuity unless approval is provided by Council otherwise. Where the plants die, or are required to be removed due to damage, the Consent Holder shall replant replacement vegetation of the same species within the next planting season.

It is strongly encouraged that the opportunity is provided for Ngāti Rēhia to supply native plants from their native nursery for landscaping as this is the express request of Ngāti Rēhia.

All Lots DP 594558

(v). This lot is within an area where the current archaeological inventory is considered under representative. Archaeological discovery is considered possible on site and landowners and contractors should be cautious when conducting earthworks on site. Archaeological sites are protected pursuant to the Heritage New Zealand Pouhere Taonga Act 2014. It is an offence, pursuant to the Act, to modify, damage or destroy an archaeological site without an archaeological authority issued pursuant to that Act. Should any site be inadvertently uncovered, the procedure is that work should cease, with Heritage New Zealand Pouhere Taonga, FNDC and tangata whenua consulted immediately. The New Zealand Police should also be consulted if the discovery includes koiwi (human remains). A copy of Heritage New Zealand's Archaeological Discovery Protocol (ADP) is attached for your information. This must be made available to all person(s) working on site.

The consent notices generally apply at the time of building consent or the introduction of a dwelling. No dwellings are proposed at this juncture.

Conditions [i], [ii], and [v] are relevant to the proposed subdivision and can be brought down onto the new title. Conditions [iii] and [iv] should be deleted as the relate to the application site and replaced where relevant to refer to the relevant wastewater and landscape reports / plans provided as part of this application.

4.0 DESCRIPTION OF PROPOSAL

The applicant proposes to undertake a subdivision at 1a James Kemp Place, Kerikeri, legally described as Lot 1 DP 594558.

The proposal seeks to subdivide a 1.2183ha site creating six lots as a non-complying activity in the Rural Living zone within the ODP. Land use consent is also required to due to frontage to existing roads. Noting that the same application is provided for under the PDP as a Discretionary activity.

The proposed subdivision will create the following lots:

- Lot 1 – 2,007m^2
- Lot 2 – 2,002m^2
- Lot 3 – 2,001m^2
- Lot 4 – 2,009m^2
- Lot 5 – 2,155m^2
- Lot 6 – 2,005m^2

The proposal will be in accordance with the scheme plan provided in **Appendix B**.

Figure 10: Proposed scheme plan (Prepared by BOI Survey)

Access, power, telecommunications and potentially water (subject to Council approval) will be provided to Lots 2, 3, 4 and 5 by easements 'A' and 'B' shown on the scheme plan in **Appendix B**. For Lots 1 and 6 access, power, telecommunications and potentially water (subject to Council approval) will be provided from Kemp Road. Connection details have been provided by Top Energy and Chorus and are attached at **Appendix G**.

The subdivision is considered to be a **Non-complying** under the ODP. Consent is also required under the PDP as a Restricted Discretionary activity due to subdivision within a heritage area overlay.

Based on the assessment of environmental effects provided below, it is concluded than any potential adverse effects arising from the subdivision would be less than minor and can be mitigated through appropriate conditions of resource consent.

5.0 DISTRICT PLAN ASSESSMENT [OPERATIVE AND PROPOSED]

The Far North District Council (FNDC) zones the sites Rural Living in the ODP and Rural Residential in the PDP. There are no identified Resource features in the ODP. The PDP identifies the site as being within the Kerikeri Heritage Area – Part B.

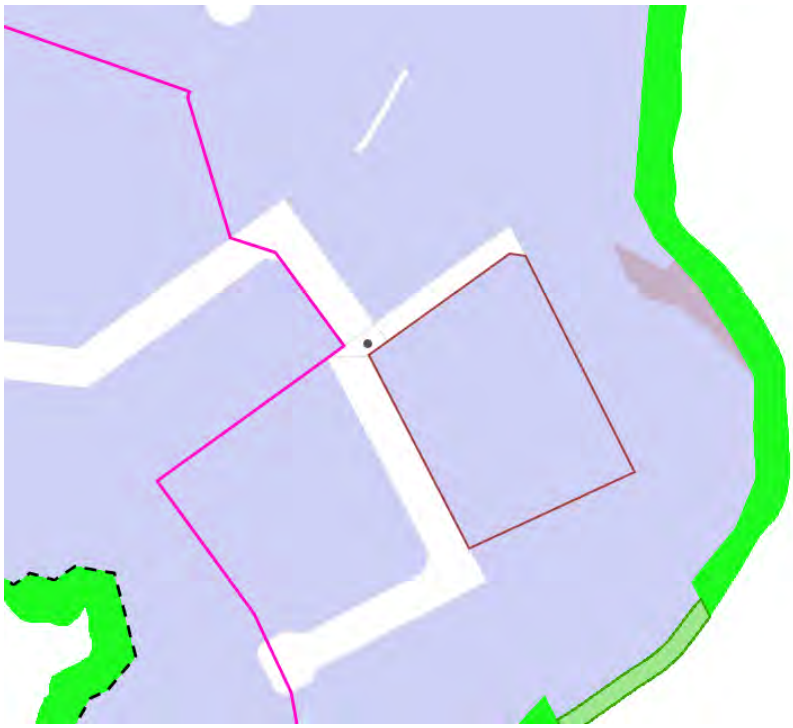


Figure 11: ODP zone – Rural Living (Source: Far North Maps)

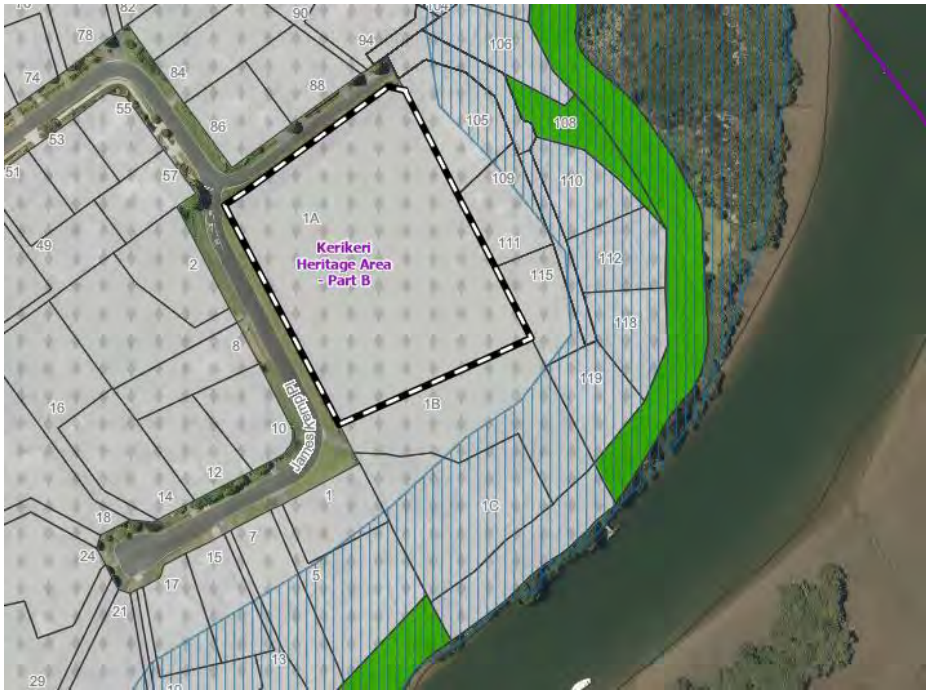


Figure 12: PDP zone – Rural Residential (Source: PDP Maps)

The subdivision is subject to performance standards as set out in Table 1 below:

Table 1 - Subdivision Performance Standards

Subdivision Performance Standard	**Comment**
Rule 13.6.1 Definition of Subdivision of Land	The application meets the definition of subdivision as defined in the Resource Management Act 1991 (**RMA**).
Rule 13.6.2 Relevant Sections of Act	These are applied to the application.
Rule 13.6.3 Relevant Sections of the District Plan	These are applied to the application.
Rule 13.6.4 Other Legislation	There are no other pieces of legislation which are triggered by the proposal.
Rule 13.6.5 Legal Road Frontage	The site is currently accessed on James Kemp Place.
Rule 13.6.6 Bonds	Not applicable
Rule 13.6.7 Consent Notices	Consent notices that apply to the site are identified in section 3 of this report. It is anticipated that these will be partially applied to new titles, and cancelled and replaced where relevant to refer to updated reports attached to this application.
Rule 13.6.8 Subdivision consent before work commences	Minimal physical works will be required to complete the subdivision (if any). The removal of the existing shelter belt on the northern and western boundaries does not require resource consent and may have been removed at the time this application

Subdivision Performance Standard	Comment
	is assessed. The landscape plan consent notice applies at the time of building consent.
Rule 13.6.9 Assessing Resource Consents	The application is non-complying so Council may impose conditions to address effects of the proposal.
Rule 13.6.10 Joint Applications	Not applicable
Rule 13.6.11 Joint Hearings	Not applicable
Rule 13.6.12 Suitability for Proposed Land Use	The application does not create significant risk form natural hazards and has made sufficient provision for legal and physical access to each of the allotments proposed.
Rule 13.7.2 Allotment Sizes, Dimensions and Other Standards	
Performance Standard	**Comment**
Rule 13.7.2.1 – Minimum Lot Sizes	The proposed six lot subdivision creates lots that are all around 2,000m^2 in size (all over 2,000m^2). Minimum lot size for a discretionary subdivision is 3,000m^2. ***Non-complying***
Rule 13.7.2.2 – Allotment dimensions	All new allotments can contain a 30m x 30m allotment dimension. An indicative site plan demonstrating building sites and disposal areas is provided within the Site Suitability Report in **Appendix C**.
Rule 13.7.2.3 - Amalgamation of land in a rural zone with land in an urban or coastal zone	Not applicable.
Rule 13.7.2.4 – Lots divided by zone boundaries	Not applicable.
Rule 13.7.2.5 - Sites divided by an outstanding landscape, outstanding landscape feature or outstanding natural feature	Not applicable
Rule 13.7.2.6 – Activities, Utilities, Roads and Reserves	Not applicable
Rule 13.7.2.7 – Savings as to previous approvals	Not applicable

Subdivision Performance Standard	Comment
Rule 13.7.2.8 – Proximity to Top Energy transmission lines	Not applicable
Rule 13.7.2.9 – Proximity to National Grid	Not applicable

Table 2 - Natural and Physical Resources - Performance Standards

Chapter 12 – Natural and Physical Resources	
12.1 Landscapes and Natural Features	Not applicable
12.2 Indigenous Flora and Fauna	The sites do not contain any significant areas of indigenous vegetation. No vegetation clearance is proposed as part of the subdivision. Removal of the shelter belt may be undertaken prior to a decision on this consent, however consent is not required to do so. The site does not contain any habitats of indigenous fauna.
12.3 Soils and Minerals	Minor earthworks may be required to form access onto the proposed Lots. Earthworks will not exceed 300m^3 or a cut or filled face exceeding 1.5m.
12.4 Natural Hazards	Not applicable
12.5 Heritage	Not applicable
12.6 Air	Not applicable
12.7 Lakes, Rivers Wetlands and the Coastline	Not applicable
12.8 Hazardous Substances	Not applicable
12.9 Renewable Energy and Energy Efficiency	Not applicable

Table 3 - Transportation Performance Standards

Chapter 15 - Transportation	
15.1.6A.2 Traffic Intensity	The proposed staged subdivision will only generate six additional lots. While no development is proposed at this juncture, standard residential units generate 10 one-way vehicle movements per unit in accordance with Appendix 3A – Traffic Intensity Factors. One dwelling can be reasonably expected per site and would be exempt. **Complies**
15.1.6B.1 Parking	No development is proposed at this juncture, however the proposed sites are of sufficient size to provide parking and manoeuvring for two vehicles. **Complies**

15.1.6C Access	As shown on the scheme plan, a ROW easement will be created providing access to proposed Lots 2, 3, 4 and 5. Proposed Lots 1 and 6 will gain access off Kemp Road and can be formed to Councils engineering standards when development is proposed. **Complies**
15.1.6C.1.8 Frontage to Existing Roads	Lots 2, 3, 4 and 5 will be accessed off James Kemp Place. Lots 1and 6 will be accessed of Kemp Road. James Kemp Road does not meet current engineering standards and it is not proposed to widen this to meet the current standards. ***Discretionary Activity***

An assessment of the proposal against the relevant land-use rules of the ODP is provided where it relates to potential built development:

Table 4 – Land-Use Performance Standards

Rural Living Zone	
Rule 8.7.5.1.1 Residential Intensity	No development is proposed at this juncture, however it is anticipated that these sites will accommodate a dwelling. The Site Suitability Report in **Appendix C** shows an indicative site plan demonstrating that all proposed lots can accommodate a dwelling. **Complies**
Rule 8.7.5.1.2 Scale of Activities	Not applicable at this stage as no land use is proposed. It is envisaged that the sites will be used in a residential capacity. **Complies**
Rule 8.7.5.1.3 Building Height	9m is permitted on each site. No development is proposed at this juncture. **Complies**
Rule 8.7.5.1.4 Sunlight	No development is proposed at this juncture. **Complies**
Rule 8.7.5.1.5 Stormwater Management	12.5% is permitted on each site. 20% is a controlled activity status. While no development is proposed at this juncture an indicative allowance is provided within the Site Suitability Report in **Appendix C** which demonstrates that all sites should be able to fall within the thresholds of a permitted or controlled activity. **Complies**

Rural Living Zone	
Rule 8.7.5.1.6 Setback from Boundaries	No development is proposed at this juncture, however it is anticipated that these sites will accommodate a dwelling. The Site Suitability Report in **Appendix C** shows an indicative site plan demonstrating that all proposed lots can accommodate the setback requirements for the Rural Living zone. **Complies**
Rule 8.7.5.1.7 Screening for Neighbours – Non-Residential Activities	Not applicable at this stage as no land use is proposed. It is envisaged that the sites will be used in a residential capacity. **Complies**
Rule 8.7.5.1.8 Transportation	Refer to Chapter 15 – Transportation for Traffic, Parking and Access above.
Rule 8.7.5.1.9 Hours of Operation – Non-Residential Activities	Not applicable at this stage as no land use is proposed. It is envisaged that the sites will be used in a residential capacity. **Complies**
Rule 8.7.5.1.10 Keeping of Animals	Not applicable at this stage as no land use is proposed. **Complies**
Rule 8.7.5.1.11 Noise	Not applicable at this stage as no land use is proposed. It is envisaged that the sites will be used in a residential capacity. **Complies**
Rule 8.7.5.1.12 Helicopter Landing Area	Not applicable at this stage as no land use is proposed. It is envisaged that the sites will be used in a residential capacity. **Complies**
Rule 8.7.5.1.13 Building Coverage	10% is permitted on each site. 20% is a Restricted Discretionary activity. No development is proposed at this juncture. However, the permitted standard will allow building coverage between 200m^2 and 250m^2. **Complies**

Overall, this subdivision application falls to be considered as a **Non-complying** activity**.**

In terms of the PDP, the following rules are assessed in Table 4 below.

Table 5 – PDP Standards

Proposed District Plan				
Matter	**Rule/Std Ref**	**Relevance**	**Compliance**	**Evidence**
Hazardous Substances Majority of rules relates to development within a site that has heritage or cultural items scheduled and mapped however Rule HS-R6 applies to any development within an SNA – which is not mapped	Rule HS-R2 has immediate legal effect but only for a new significant hazardous facility located within a scheduled site and area of significance to Māori, significant natural area or a scheduled heritage resource HS-R5, HS-R6, HS-R9	N/A	Yes	Not proposed **Permitted Activity**
Heritage Area Overlays (Property specific) This chapter applies only to properties within identified heritage area overlays (e.g. in the operative plan they are called precincts for example)	All rules have immediate legal effect (HA-R1 to HA-R14) All standards have immediate legal effect (HA-S1 to HA-S3)	Yes	Yes	Identified within the Kerikeri Heritage Area – Part B. No land use is proposed. Not within 20m of a scheduled heritage resource. **Permitted Activity**
Historic Heritage (Property specific and applies to adjoining sites (if the boundary is within 20m of an identified heritage item)). Rule HH-R5 Earthworks within 20m of a scheduled heritage resource. Heritage resources are shown as a historic item on the maps) This chapter applies to scheduled heritage resources – which are called heritage items in the map legend	All rules have immediate legal effect (HH-R1 to HH-R10) Schedule 2 has immediate legal effect	N/A	Yes	Not indicated on Far North Proposed District Plan. Not within 20m of a scheduled heritage resource **Permitted Activity**
Notable Trees (Property specific) Applied when a property is showing a scheduled notable tree in the map	All rules have immediate legal effect (NT-R1 to NT-R9) All standards have legal effect (NT-S1 to NT-S2) Schedule 1 has immediate legal effect	N/A		Not indicated on Far North Proposed District Plan **Permitted Activity**

Sites and Areas of Significance to Māori (Property specific) Applied when a property is showing a site / area of significance to Maori in the map or within the Te Oneroa-a Tohe Beach Management Area (in the operative plan they are called site of cultural significance to Maori)	All rules have immediate legal effect (SASM-R1 to SASM-R7) Schedule 3 has immediate legal effect	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Ecosystems and Indigenous Biodiversity SNA are not mapped – will need to determine if indigenous vegetation on the site for example	All rules have immediate legal effect (IB-R1 to IB-R5)	N/A	Yes	No proposed vegetation clearance. **Permitted Activity**
Activities on the Surface of Water	All rules have immediate legal effect (ASW-R1 to ASW-R4)	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Earthworks all earthworks (refer to new definition) need to comply with this	The following rules have immediate legal effect: EW-R12, EW-R13 The following standards have immediate legal effect: EW-S3, EW-S5	Yes	Yes	With respect of EW-R12, this requires that the proposed earthworks comply with EW-S3. In effect, EW-S3 triggers the need for an ADP to be applied. It is confirmed that the proposed earthworks will comply with an ADP and this is volunteered as a condition of consent. EW-R13 links to EW-S5. EW-S5 requires earthworks to be controlled in accordance with GD-05. Generally no earthworks is

				required for the subdivision with the exception of forming access. **Permitted Activity**
Signs (Property specific) as rules only relate to situations where a sign is on a scheduled heritage resource (heritage item), or within the Kororareka Russell or Kerikeri Heritage Areas	The following rules have immediate legal effect: SIGN-R9, SIGN-R10 All standards have immediate legal effect but only for signs on or attached to a scheduled heritage resource or heritage area	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Orongo Bay Zone (Property specific as rule relates to a zone only)	Rule OBZ-R14 has partial immediate legal effect because RD-1(5) relates to water	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Subdivision	SUB-R6, R13-R15, and R17	Yes		Identified within the Kerikeri Heritage Area – Part B. SUB-R13 – Consultation has been undertaken with Heritage NZ, The Department of Conservation and Ngati Rehia (See **Appendix G**) ***Restricted discretionary Activity***
Comments:				
Consent is triggered under SUB-R13 (Subdivision of a site within a heritage area overlay) under the PDP. An assessment of the matters of discretion is made later in this report. ***Restricted Discretionary***				

6.0 STATUTORY CONSIDERATIONS

Section 104B of the RMA governs the determination of applications for Non-complying activities:

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

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

(a) may grant or refuse the application; and

(b) if it grants the application, may impose conditions under section 108.

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

Section 104 of the RMA states that when considering an application for a resource consent, "the consent authority must, subject to Part II, have regard to –

(i) any actual and potential effects on the environment of allowing the activity; and
(ii) any relevant provisions of –
(iii) a national environment standard:
(iv) other regulations:
(v) a national policy statement: and
(vi) a New Zealand Coastal Policy Statement:
(vii) a regional policy statement or proposed regional policy statement:
(viii) a plan or proposed plan; and
(ix) any other matter the consent authority considers relevant and reasonably necessary to determine the application."

The matters to be addressed under s104 are discussed below which has been guided, where relevant, by the assessment criteria in section 13.10 of the ODP.

No Regional Plan matter is considered to be pertinent to the considerations as no consents are required in this respect.

Those relevant s104 considerations are addressed and followed by an assessment of Part II matters as they apply to the application.

Section 104 (1)(a) Assessment of Effects on the Environment

Visual character and amenity effects

The proposed lots are smaller than the minimum area required for controlled activity subdivision in the Rural Living zone, therefore regard should be had to the effects of the development upon visual character and amenity of the wider environment.

As identified earlier in the report, the landholding is located in a Rural Living environment, surrounded by large lot residential development. While the lot sizes proposed are smaller than that provided for in the ODP, they are commensurate with the lot sizes in the surrounding environs (refer Figure 5 and 5 above).

The lot sizes proposed are provided for within the PDP as a discretionary activity in the Rural Residential zone. Councils position, as notified in SUB-S1, is to provide for minimum allotment sizes of 2,000m^2 as a discretionary activity in the Rural Residential zone. There do not appear to be any submissions in opposition to the minimum allotment sizes in the Rural Residential zone for the PDP.

It is noted that the subject site is one of the last remaining larger lots in the area left to develop. While no development is proposed as part of this subdivision, the lots are being created to accommodate a dwelling at a later juncture, commensurate with the surrounding environs.

The site currently is bordered by a shelter belt on the northern and western boundaries. The eastern and southern boundaries are bordered by a mix of older vegetation and well as wooden and post and wire fences in places. The existing shelter belt will be removed as it is not considered an appropriate form of boundary treatment for a large lot residential environment and serves no purpose in a non-horticultural environment.

A landscape assessment and comprehensive planting plan has been prepared by Simon Cocker Landscape Architects (refer **Appendix E**), which comments on the site within the context of its surrounds, including the connections to the Kororipo-Kerikeri Basin and the Kororipo Pa site. In that respect the report concludes that the subject site is visually separated from the Basin and the Kororipo Pa site being screened by landform, vegetation and buildings. Consultation was also undertaken with Heritage New Zealand, and they did not foresee any visual amenity issues with Kororipo (refer email correspondence in **Appendix F**).

The landscape report recommends landscaping and amenity treatments for the landholding in this location (see **Appendix E**). The planting strategy has been informed by the existing vegetation patterns in the surrounding area, which has been describes as a mix of deciduous exotic tree species and amenity garden plantings on road frontages.

The report recommends that a design control relating to fencing be included as a consent notice on the title of the proposed lots. This will require that the road boundaries of Lots 1, 2, 3 and 6 be either retained as open (with the proposed vegetation delineating the boundary), or fenced with a visually permeable fence with a height no greater than 900mm (such as post and rail). This requirement is to ensure that the development retains an open frontage which is in keeping with the existing character of the area.

An assessment of landscape effects is also undertaken in the report and concludes that any landscape effects would be limited to an existing area that has been previously modified and within a wider area that displays a residential but vegetated character. Further, the proposal will result a very limited localised change in the abiotic and biotic attributes of the site, but the landform character of the Site will be maintained and the

proposal will reflect the land use and built character of the surrounding area. The report considers that the social, cultural and associative attributes of the site will not be affected and that overall the potential adverse landscape effects will be low.

It is therefore considered that any visual character and amenity effects will be less than minor as a result of the proposed subdivision where the recommendations in the landscape report are followed.

Allotment sizes and dimensions

The land is being subdivided with the intent of providing for large lot residential development. An indicative site plan has been provided as part of the Site Suitability Report (**Appendix C**) which demonstrates that each proposed lot can accommodate a 30m x 30m dimension as well as indicative disposal areas, including reserve areas. Consideration was also given to access, stormwater, wastewater and potable water provision, which is further addressed later in this report.

It is considered that that the proposed allotment sizes and dimensions are sufficient to accommodate future land use or the intended use of the land in the Rural Living zone (Rural Residential zone in the PDP).

Natural Hazards

Regard has been had to the hazard information held by both FNDC and the Regional Council, which revealed there are no identified natural hazards, contaminated sites or other hazards associated with the landholding.

Water Supply

The FNDC on-line GIS Water Services Map indicates that public potable water services are available to service the parent property.

Figure 13: FNDC services (Source: Far North Maps)

No development is proposed at this juncture and FNDC has not been approached to ascertain whether reticulated water supply can/will be provided to proposed lots 1 to 6. As such, it is considered that two options for water supply may be available to the proposed lots, being either reticulated water supply by FNDC or rainwater tanks. The Site Suitability Report (**Appendix C**) has considered both options and concludes that either option is acceptable, and recommends if no reticulated services are available that each lot should have a minimum of 2 x 25,000L rainwater tanks.

It is considered that that the proposal can accommodate appropriate potable water supply for Lots 1 – 6, either through reticulated supply from Council (upon approval) or from onsite collection to rainwater tanks.

Stormwater disposal

A comprehensive analysis of stormwater options has been undertaken within the Site Suitability Report (**Appendix C**). The report discusses approaches and recommends managing stormwater runoff generated from impermeable hardstands via soakage. Soakage tests were undertaken, and the most conservative results of the soakage rates used in the design solutions.

As no development is proposed at this juncture indicative roof areas were modelled to simulate a developed outcome for the sites to understand reasonable feasibility of the design options. Modelling included roof areas between 200m^2 and 350m^2 for both reticulated potable water supply and non-reticulated potable water supply (roof collection). All of the options include recommending a detention tank to mitigate stormwater runoff, difference being that the option of non-reticulated potable water supply recommends the use of 2 x 25,000l water tanks. Swales are recommended to address discharge and overflow, with an easement for the right to drain water, which will be required for each of the proposed swales. Easements will be required as per drawing

136071_C001 of the Wilton Joubert Plans outlining the swales to service stormwater. These can be formalised once the approach is known in terms of gravel / concrete access at time of s223.

The surface treatment of the ROW has not been confirmed at this time, so the Site Suitability Report has considered and recommended options for both concrete and metal ROW options to mitigate the effects of stormwater disposal.

Section 8.4 of the Site Suitability Reports undertakes a comprehensive assessment of the matters in 13.10.4 of the ODP, as such there is no need to repeat the assessment in this report. It is considered that the effects of the proposal in terms of stormwater disposal will be less than minor provided that the solutions are designed in general accordance with the Site Suitability Report.

Sanitary sewage disposal

As no development is proposed at this time it is appropriate that any new site specific wastewater management system is designed in accordance with the ASNZS: 1547 / TP58 design manual. Furthermore, at the time of building the system has to be constructed in general accordance with the consent notice (CN 12985116.2 (iii)) that applies to the landholding. Recommendations have been provided within the Site Suitability Report (**Appendix C**) based on a moderate size dwelling containing four bedrooms. Similarly to the consent notice the report recommends secondary treatment or higher for any new wastewater treatment system within the proposed lots.

The Site Suitability Report also demonstrates and assesses disposal and disposal reserve areas against future development of the six proposed lots, concluding that any future system should meet the compliance points stipulated within section C6.1.3 of the Proposed Regional Plan for Northland.

While no development is proposed at this time it considered that any future development, in terms of wastewater disposal, will incur effects that are less than minor provided that the recommendations in the Site Suitability Report and the consent notice are followed.

Energy supply and transmission lines

Contact has been made with Top Energy in respect of the application (see **Appendix G**) and confirms that the proposed six lot subdivision can be accommodated. Their requirements are stated as nil.

Telecommunications

Contact has been made with Chorus in respect of the application (see **Appendix G**) and confirms that the proposed six lot subdivision can be accommodated and outlines the total contribution necessary.

Easements

The Scheme Plan in **Appendix B** identifies a memorandum of easements for the proposal. Areas 'A' and 'B' have been identified for a ROW, electricity, communications and water. As above, further easements for drainage will be required at time of s223.

Provision of access

Provision of access for proposed Lots 2, 3, 4 and 5 are demonstrated on the Scheme Plan (**Appendix B**) in the form of two ROW easements from a recently constructed vehicle crossing off James Kemp Place. These easements are 8m in width, so meet relevant legal width requirements. Access to Lots 1 and 6 is proposed to be by way of a new Vehicle crossing directly off Kemp Road.

The Site Suitability Report in **Appendix C** recommends that the new vehicle crossing providing access to Lots 1 and 6 is constructed in compliance with the Far North District Council Engineering Standards (May 2023) Sheet 21 – Type 1A. Further, the ROW is recommended to be constructed in accordance with the Far North District Council Engineering Standards (May 2023) – Table 3-16 Category D.

Provision of access for all lots is able to comply with the FNDC Engineering Standards' sight distance requirements of >45m.

It is noted that the formed width of Kemp Road does not currently comply with the Standards for Roads to Vest (Public Roads) in Appendix 3B-2 of the ODP. It appears that 17 properties currently gain access from Kemp Road.

Figure 14: Sites gaining access of Kemp Rd (Source: Prover)

The properties that currently gain access off Kemp Road Access are all of a size where further subdivision is unlikely. All properties are smaller than 2,500m^2, with most under 1,500m^2. In other words, most of the properties that gain access off Kemp Road are smaller than the discretionary level of subdivision provided for in the more enabling PDP subdivision standard of 2,000m^2. The proposal creates six sites that all meet the discretionary level of subdivision within the PDP.

In light of the above, it is considered that Lots 1 and 6 will likely represent the extent to which Kemp Road will provide access to properties. The proposal will add an additional two properties (or 20 one-way movements) for Lots 1 and 6 taking the total to 19 Lots gaining access from Kemp Road. It is not considered fanciful that two future properties on the subject site would anticipate access from Kemp Rd.

It is not considered necessary or equitable to require the upgrading of Kemp Road to accommodate a further two lots, in light of the remaining development potential on Kemp Road. It is considered that the location of the proposed access for Lots 1 and 6, near the beginning of the road, lessens any potential effect on other users of Kemp Road.

It is considered that the location of the proposed access for the additional lots (1 and 6), near the beginning of Kemp Road, will incur no more than minor effects on other users of Kemp Road. The sight lines from the proposed access point are in accordance with the FNDC Engineering Standards and the access itself can be conditioned to be formed in accordance with the Engineering Standards.

Effect of Earthworks and Utilities

The reports prepared by Wilton Joubert in **Appendix C and D** address servicing for the site. It is considered that the subdivision will incur less than minor effects on the environment provided that the recommendations are followed.

Building locations

While no development is proposed at this juncture the Site Suitability Report in **Appendix C** has demonstrated that a 30m x 30m allotment can be provided on all proposed lots as well as demonstrating that on site services can be accommodated.

Heritage resources, vegetation, fauna and landscape

While the site is not located within any identified heritage overlays in the ODP, it is identified within the Kerikeri Heritage Area – Part B in the PDP. Consultation has been undertaken with the Department of Conservation, Heritage New Zealand and Ngati Rehia in respect of the proposed subdivision (refer the record of consultation in **Appendix F**). No issues have been raised by any party.

The landscape assessment undertaken by Simon Cocker Landscape Architects in **Appendix E** makes recommendations, along with providing a planting plan for the site in cognisance of the surrounding character and environs.

There is no identified vegetation or habitats of indigenous fauna affected by the proposed subdivision.

It is considered that there will be less than minor effects on heritage and landscape character where the application adopts the recommendations in the landscape plan.

Soil

While the landholding contains Class 2 soils and is considered to be highly productive in accordance with the NPS-HPL, the site is not subject to the NPS-HPL as it is not zoned General Rural or Rural Production. The site is zoned for 'large lot residential' through the ODP zoning of Rural Living and the PDP zoning of Rural Residential. The purpose of these two zones is to accommodate a large lot residential property.

Nonetheless, the size of the site and the surrounding land use have rendered the ability of the site to be used in a productive manner fanciful. It is therefore considered that the life supporting capability of the soil is a redundant consideration in this locale, which can be best described as a well-established large lot residential community.

Access to waterbodies

The landholding does not abut any waterbodies, nor does it prevent public access to and along the coastal marine area or to and along the banks of lakes or rivers.

Land use incompatibility

The proposed subdivision is considered to be compatible with the receiving zone and surrounding land use, which can be best described as large lot residential properties.

Proximity to airports

The site is approximate 7km northeast of the Kerikeri Airport, as such there is not considered to be any adverse effects from being in proximity to the airport.

Natural character of the coastal environment

The site is not located within a coastal zone in the ODP, nor is it identified as being within the coastal environment within the Regional Policy Statement for Northland. As such there are not considered to be any effects on the natural character of the coastal environment.

Energy efficiency and renewable energy

No development is proposed at this juncture. The subdivision is not of a scale where the consideration of energy efficiency and renewable energy are relevant to the application.

National grid corridor

The nation grid does not apply in Kerikeri. Transpower New Zealand Limited assets are confined to Kaikohe south. Consultation has been undertaken with Top Energy (see **Appendix G**), who confirm that the proposed subdivision can be accommodated.

Subdivision of a site within a heritage area overlay

Subdivision of a site within a heritage area overlay is restricted discretionary activity under the PDP (SUB-R13) and has been identified as having immediate legal effect. The land holding is identified as being within the Kerikeri Heritage Area – Part B. The following is an assessment of the matters of discretion identified in the PDP:

a. *the heritage values of the Heritage Area Overlay;*

   The PDP identifies that the Kerikeri Heritage Area overlay derives its historic significance as one of the first areas in New Zealand characterised by contact between Māori and European colonial settlement. Part B covers the archaeology

surrounding Kororipo Pā and the Church Missionary Settlement. The north and east ridge line also provide the sight lines from Kororipo Pā. Consultation was undertaken with Heritage New Zealand, The Department of Conservation and Ngati Rehia in respect to of the application and no issues were raised (see **Appendix F**). It is considered that the current consent notice referring to the accidental discovery protocol can be applied to any future lots.

b. *whether the allotments are of a size that will ensure sufficient land is provided around any scheduled Heritage Resource to provide a suitable heritage setting and protect associated heritage values;*

There are no scheduled heritage resources identified in the vicinity of the site.

c. *whether there are measures to minimise obstruction of views of any scheduled Heritage Resource from adjoining public spaces that may result from any future land use or development;*

The Landscape Assessment (**Appendix E**) and the feedback from Heritage New Zealand suggest that the landholding will not obstruct views of a scheduled heritage resource from adjoining public spaces.

d. *any consultation with Heritage New Zealand Pouhere Taonga, Department of Conservation and tangata whenua; and*

A record of consultation is contained in **Appendix F**. No issues with the proposal have been identified.

e. *provision of legal and physical access to any scheduled Heritage Resource within the subdivision if appropriate to maintain, protect, or enhance it.*

There are no scheduled heritage resources located on the site.

It is concluded that the effects of the proposed subdivision will incur effects on the environment that are less than minor.

Section 104 (1)(ab) Any measures to achieve positive effects

Positive effects arising from the subdivision include enabling the efficient use of land in the Rural Living zone and providing sections for much needed housing in the Kerikeri. The Rural Living zone is described in the ODP as an area of transition between town and country and the large lot residential land use pattern in the area is commensurate with the lot sizes proposed in the application.

Section 104 (b)(i) and (ii) National Environmental Standards & Other Regulations

The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS). A review of Council records has revealed no evidence to suggest that a HAIL activity has previously been undertaken on site and is described in the Landcover database as 'Built-up Settlement'. Further, historic photography of the site suggests that the land has not previously been used for horticultural purposes (see Figures 15 and 16 below).

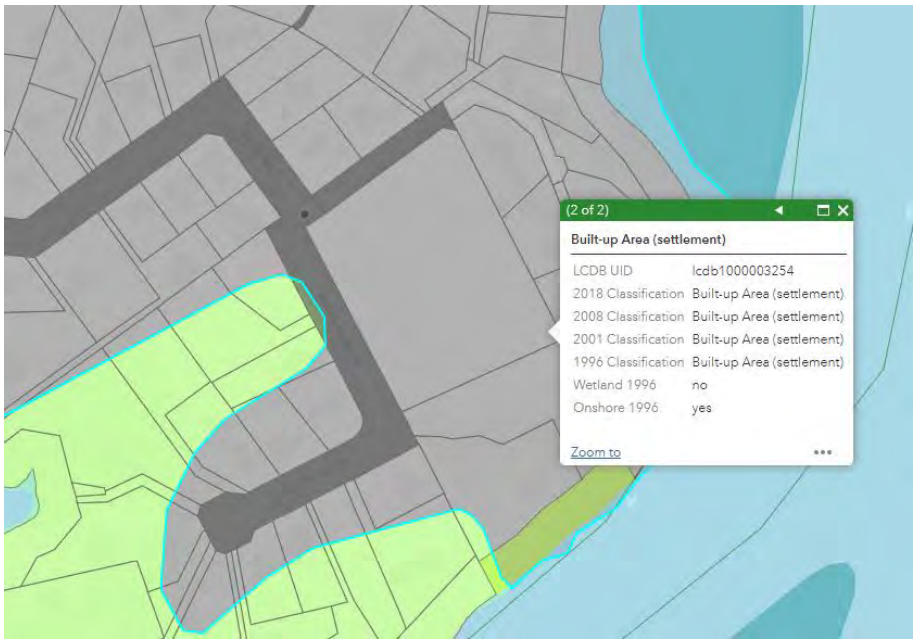


Figure 15: Land Cover Database (Source: Far North Maps)

Figure 16: Historic aerial photographs 1951 (left), 1979 (right) (Source: Retrolens)

It is considered that the NESCS is not applicable to this application.

The NES for Freshwater (NESFW). A review of aerial images, including NRC's wetland maps, reveal no evidence to suggest that there are any wet areas that may be subject to the NESFW provisions. Therefore, no further assessment is required under the NESFW.

Section 104 (b)(iii) National Policy Statement(s)

The NPS-HPL is considered to be relevant insofar as the Class 2 soils are presented on the site, as per Figure 9 above. While the NPSHPL is relevant in terms of the underlying soil, the proposal is not on land zoned General Rural or Rural Production zone. The site is zoned Rural Living in the ODP and Rural Residential in the PDP. The purpose of these two zones is to accommodate a large lot residential property. Therefore, the NES-HPL does not apply.

Section 104 (b)(iv) New Zealand Coastal Policy Statement

The New Zealand Coastal Policy Statement is not relevant to this application.

Section 104 (b)(v) Regional Policy Statement or Proposed Regional Policy Statement

The Northland Regional Policy Statement is the applicable regional statutory document that applies to the Northland region. Jurisdiction for subdivision is governed by the FNDC and the policy framework for establishing an appropriate land use pattern across the district is set out in the ODP. This Plan is subject to the governing regional policy framework set out in the Northland Regional Policy Statement.

Table 6 – NRC Regional Policy Statement Review Assessment

Regional Policy Statement for Northland	
Objective / Policy	**Assessment**
Integrated Catchment Management	Not relevant.
Region Wide Water Quality	Not relevant.
Ecological Flows and Water Quality	Not relevant.
Enabling Economic Wellbeing	The proposal will increase economic wellbeing for the applicants, local building and construction suppliers at a later juncture when land use is undertaken.
Economic Activities – Reverse Sensitivity and	The purpose of the subdivision is to provide large lot residential sections commensurate with the surrounding land use pattern.

Sterilisation.	There are no reverse sensitivity or sterilisation effects from the proposal as it is being development in accordance the zones intent.
Regionally Significant Infrastructure	Not relevant.
Efficient and Effective Infrastructure	Council reticulated services are available at the boundary of the site for stormwater and potable water supply. The subdivision has been designed so it can utilise these services if acceptable to Council, otherwise infrastructure can be accommodated on site (see the Site Suitability Report in **Appendix C**).
Security of Energy Supply	Top Energy have confirmed that the proposed six lots can be connected (see **Appendix G**).
Use and Allocation of Common Resources	Not relevant.
Regional Form	The proposal does not result in any reverse sensitivity or change in character. The subdivision will provide for large lot residential lots, which is the intent of the zone in which it sits.
Tangata Whenua Role in Decision Making	A meeting with Ngati Rehia took place on the site on 10 October 2024. A record of support is supplied in **Appendix F**.
Natural Hazard Risk	Natural Hazards are not considered to be a factor for this application.
Natural Character, Outstanding Natural Features, Outstanding Natural Landscapes and Historic Heritage	While the site is not located within any identified heritage overlays in the ODP, it is identified within the Kerikeri Heritage Area – Part B in the PDP. Consultation has been undertaken with the Department of Conservation, Heritage New Zealand and Ngati Rehia in respect of the proposed subdivision (see the record of consultation in **Appendix F**). No issues have been raised by any party.

Section 104 (b)(vi) Plans or Proposed Plans

This staged subdivision application is subject to the provisions of the ODP and is subject to consideration (limited weight) of the PDP objectives and policies. The site is zoned Rural Living in the ODP and Rural Residential in the PDP. In terms of the ODP it is to be assessed in terms of the objectives and policies for the Rural Environment and Rural Living Zone and the district-wide subdivision provisions.

The following objectives and policies are relevant to the assessment of this application:

Rural Environment

Table 7 – ODP - Rural Environment Objectives and Policies

OBJECTIVE OR POLICY		Assessment
OBJECTIVES		
8.3.1	To promote the sustainable management of natural and physical resources of the rural environment while enabling activities to establish in the rural environment.	The rural environment includes provision for both rural production and rural-lifestyle activities where reverse sensitivity effects are avoided. Sustainable management of the rural environment would include both forms of rural activity where adverse effects can be avoided, remedied or mitigated.
8.3.2	To ensure that the life supporting capacity of soils is not compromised by inappropriate subdivision, use or development.	The site is zoned Rural Living so the NPS-HPL is not relevant. The subdivision of land in the Rural Living zone for the purpose of large lot residential section is considered appropriate use of land in this zone and is commensurate with the surrounding land use.
8.3.3	To avoid, remedy or mitigate adverse effects of activities on the rural environment.	The assessment of effects concludes that any effects would be less than minor on the rural environment.
8.3.4	To protect areas of significant indigenous vegetation and significant habitats of indigenous fauna.	The site does not contain any areas of significant indigenous vegetation or habitats of indigenous fauna.
8.3.5	To protect outstanding natural features and landscapes.	The area does not contain any outstanding landscapes or outstanding natural features.
8.3.6	To avoid actual and potential conflicts between land use activities in the rural environment.	The proposed subdivision is considered to be compatible with the receiving zone and surrounding land use, which can be best described as large lot residential properties.
8.3.7	To promote the amenity values of the rural environment.	The landholding is situated within a land use environment that is best described as large lot residential. This land use pattern will remain. The proposed lot sizes in their locations are compatible with those surrounding the subject sites.

OBJECTIVE OR POLICY		Assessment
8.3.8	To facilitate the sustainable management of natural and physical resources in an integrated way to achieve superior outcomes to more traditional forms of subdivision, use and development through management plans and integrated development.	This objective is not relevant to the size and scale of this proposed subdivision.
POLICIES		
8.4.1	That activities which will contribute to the sustainable management of the natural and physical resources of the rural environment are enabled to locate in that environment.	Refer to 8.3.1 above.
8.4.2	That activities be allowed to establish within the rural environment to the extent that any adverse effects of these activities are able to be avoided, remedied or mitigated and as a result the life supporting capacity of soils and ecosystems is safeguarded.	The proposed subdivision will not generate adverse effects on local productive soil or ecosystem values. While the site does contain Class 2 soils, the site zoned Rural Living and is not subject to the NPS-HPL. There are no highly valued eco-systems as mapped by FNDC.
8.4.3	That any new infrastructure for development in rural areas be designed and operated in a way that safeguards the life supporting capacity of air, water, soil and ecosystems while protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna, outstanding natural features and landscapes.	All necessary infrastructure is existing. The proposal does not include any new infrastructure.
8.4.4	That development which will maintain or enhance the amenity value of the rural environment and outstanding natural features and outstanding landscapes be enabled to locate in the rural environment.	There are no outstanding landscapes or outstanding natural features present on the site or in the vicinity. The amenity values of the local environment will not be affected by the proposal.

OBJECTIVE OR POLICY		Assessment
8.4.5	That plan provisions encourage the avoidance of adverse effects from incompatible land uses, particularly new developments adversely affecting existing land-uses (including by constraining the existing land-uses on account of sensitivity by the new use to adverse effects from the existing use – i.e., reverse sensitivity).	The purpose of the subdivision is to provide large lot residential sections commensurate with the surrounding land use pattern. There are no reverse sensitivity or sterilisation effects from the proposal as it is being development in accordance the zones intent. It is considered compatible with the surrounding land use pattern and would not generate adverse reverse sensitivity effects, nor in context is it considered to incur any precedent effect.
8.4.6	That areas of significant indigenous vegetation and significant habitats of indigenous fauna habitat be protected as an integral part of managing the use, development and protection of the natural and physical resources of the rural environment.	The site does not contain any areas of significant indigenous vegetation or habitats of indigenous fauna.
8.4.7	That Plan provisions encourage the efficient use and development of natural and physical resources.	The proposed subdivision would enable efficient use of Rural Living land in this location, commensurate with the surrounding land use pattern.
8.4.8	That, when considering subdivision, use and development in the rural environment, the Council will have particular regard to ensuring that its intensity, scale and type is controlled to ensure that adverse effects on habitats (including freshwater habitats), outstanding natural features and landscapes, on the amenity value of the rural environment, and where appropriate on natural character of the coastal environment, are avoided, remedied or mitigated.	The proposed subdivision is considered appropriate in this location and would avoid or mitigate adverse effects on the amenity of the local rural environment. There are no outstanding landscapes, outstanding natural features or habitats that would be affected by the proposal.

Rural Living Zone

The Rural Living zone is described in the ODP as an area of transition between town and country and is generally applied to land on the periphery of urban zoning.

The relevant expected outcomes listed within the ODP for the Rural Living zone are:

8.7.2.1 A Rural Living Zone where residential living on small rural lots is compatible with those other rural activities that have an emphasis on production rather than lifestyle.

8.7.2.2 A Rural Living Zone where the controls on the activities ensure a high standard of privacy and amenity for residential activities.

8.7.2.3 A Rural Living Zone where activities are self sufficient in terms of water supply, sewerage and drainage, while not causing adverse effects on the environment.

The ODP recognises that the Rural Living zone is a transitional zone between town and country and that the character of the zone may vary in different locations. In this particular location, the subject site is one of the last larger sites in the vicinity yet to be subdivided, where rural activities are no longer present.

The relevant objectives and policies for the Rural Living Zone are discussed in Table 8 below:

Table 8 - Rural Living Zone Objectives and Policies

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
OBJECTIVES		
8.7.3.1	To achieve a style of development on the urban periphery where the effects of the different types of development are compatible.	The purpose of the subdivision is to provide large lot residential sections commensurate with the surrounding land use pattern and type of development.
8.7.3.2	To provide for low density residential development on the urban periphery, where more intense development would result in adverse effects on the rural and natural environment.	The proposed subdivision will create large lot residential sections commensurate with the surrounding land use pattern. A landscape plan has been prepared in cognisance of the vegetation typically found in the surrounds.
8.7.3.3	To protect the special amenity values of the frontage to Kerikeri Road between SH10 and the urban edge of Kerikeri.	The site is not located on the frontage of Kerikeri Road.
POLICIES		
8.7.4.1	That a transition between residential and rural zones is achieved where the effects of activities in the different areas are managed to ensure compatibility.	Refer to 8.7.3.1 above.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
8.7.4.2	That the Rural Living Zone be applied to areas where existing subdivision patterns have led to a semi-urban character but where more intensive subdivision would result in adverse effects on the rural and natural environment.	The proposed subdivision is similar to the surrounding subdivision pattern, which can be described as large lot residential (refer to Figures 5 and 6 above).
8.7.4.3	That residential activities have sufficient land associated with each household unit to provide for outdoor space, and where a reticulated sewerage system is not provided, sufficient land for onsite effluent disposal.	The Site Suitability Report in **Appendix C** has demonstrated that all of the proposed sites can accommodate the required allotment and areas for disposal fields.
8.7.4.4	That no limits be placed on the types of housing and forms of accommodation in the Rural Living Zone, in recognition of the diverse needs of the community.	No development is proposed at this juncture. The Site Suitability Report in **Appendix C** has demonstrated that all of the proposed sites can accommodate the required allotment.
8.7.4.5	That non-residential activities can be established within the Rural Living Zone subject to compatibility with the existing character of the environment.	No land use is proposed at this time.
8.7.4.6	That home-based employment opportunities be allowed in the Rural Living Zone.	No land use is proposed at this time.
8.7.4.7	That provision be made for ensuring that sites, and the buildings and activities which may locate on those sites, have adequate access to sunlight and daylight.	No land use is proposed at this time. This can be demonstrated at a time when development is proposed.
8.7.4.8	That the scale and intensity of activities other than a single residential unit be commensurate with that which could be expected of a single residential unit.	No land use is proposed at this time.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
8.7.4.9	That activities with effects on amenity values greater than a single residential unit could be expected to have, be controlled so as to avoid, remedy or mitigate those adverse effects on adjacent activities.	No land use is proposed at this time.
8.7.4.10	That provision be made to ensure a reasonable level of privacy for inhabitants of buildings on adjoining sites.	No land use is proposed at this time.
8.7.4.11	That the built form of development allowed on sites with frontage to Kerikeri Road between its intersection with SH10 and Cannon Drive be maintained as small in scale, set back from the road, relatively inconspicuous and in harmony with landscape plantings and shelter belts.	The site is not located on the frontage of Kerikeri Road.
8.7.4.12	That the Council maintains discretion over new connections to a sewerage system to ensure treatment plant discharge quality standards are not compromised (refer to Rule 13.7.3.5).	Connection to Councils reticulated sewerage system is not available in this location.

In summary, it is considered that the proposal would achieve the outcomes sought by the objectives and policies for the Rural Living zone, particularly in this location where the surrounding land use pattern is similar. It is considered that the proposal would create no adverse effects on amenity or visual aspects where the recommendations in the planting plan are followed (see **Appendix E**)

Subdivision

The objectives and policies for subdivision are assessed in Table 9 below.

Table 9 – Subdivision Objectives and Policies

OBJECTIVE OR POLICY	PERFORMANCE OF PROPOSAL
OBJECTIVES	

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
13.3.1	To provide for the subdivision of land in such a way as will be consistent with the purpose of the various zones in the Plan and will promote the sustainable management of the natural and physical resources of the District, including airports and the social, economic and cultural wellbeing of people and communities.	The assessments above demonstrate that sustainable management of the physical land resource would be achieved. The subdivision pattern is consistent with the surrounding sections. It is considered that the proposal is appropriate within the zone and will not generate adverse effects in this location.
13.3.2	To ensure that subdivision of land is appropriate and is carried out in a manner that does not compromise the life-supporting capacity of air, water, soil or ecosystems, and that any actual or potential adverse effects on the environment which result directly or indirectly from subdivision, including reverse sensitivity effects, are avoided, remedied or mitigated.	As per the assessment of effects, the proposed subdivision will not result in adverse effects on the life-supporting capacity of air, water, soil or ecosystems, nor will the proposal give rise to reverse sensitivity effects.
13.3.3	To ensure that the subdivision of land does not jeopardise the protection of outstanding landscapes or natural features in the coastal environment.	The sites do not possess such values or features and is not part of the coastal environment.
13.3.4	To ensure that subdivision does not adversely affect scheduled heritage resources through alienation of the resource from its immediate setting/context.	While the site is not located within any identified heritage overlays in the ODP, it is identified within the Kerikeri Heritage Area – Part B in the PDP. Consultation has been undertaken with the Department of Conservation, Heritage New Zealand and Ngati Rehia in respect of the proposed subdivision (see the record of consultation in **Appendix F**). No issues have been raised by any party.
13.3.5	To ensure that all new subdivisions provide a reticulated water supply and/or on-site water storage sufficient to meet the needs of the activities that will establish all year round.	Either option can be provided at time of development for the vacant lots. Reticulated supply will require agreement from Council.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
13.3.6	To encourage innovative development and integrated management of effects between subdivision and land use which results in superior outcomes to more traditional forms of subdivision, use and development, for example the protection, enhancement and restoration of areas and features which have particular value or may have been compromised by past land management practices.	As the sites do not possess any significant values or characteristics, special forms of subdivision are not necessary.
13.3.7	To ensure the relationship between Maori and their ancestral lands, water, sites, wahi tapu and other taonga is recognised and provided for.	No sites of significance to Māori have been identified in the District Plan on the land or in the vicinity of the properties. However, a meeting to discuss the proposed development took place on the site with Ngati Rehia on 10 October 2024. A record of support is supplied in **Appendix F**.
POLICIES		
13.4.1	That the sizes, dimensions and distribution of allotments created through the subdivision process be determined with regard to the potential effects including cumulative effects, of the use of those allotments on: (a) natural character, particularly of the coastal environment; (b) ecological values; (c) landscape values; (d) amenity values; (e) cultural values; (f) heritage values; and (g) existing land uses.	The relevant items are the landscape/amenity and heritage values of the locality and surrounds. The AEE did not identify any adverse effects on these identified values.
13.4.2	That standards be imposed upon the subdivision of land to require safe and effective vehicular and pedestrian access to new properties.	Appropriate access arrangements can be attained to achieve both safe and effective vehicular movement.
13.4.3	That natural and other hazards be taken into account in the design and location of any subdivision.	The site is not affected by hazards.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
13.4.4	That in any subdivision where provision is made for connection to utility services, the potential adverse visual impacts of these services are avoided.	Utilities can be provided on site. Power and telecommunications delivery can be provided in accordance with the consultation with Top Energy and Chorus (see **Appendix G**).
13.4.5	That access to, and servicing of, the new allotments be provided for in such a way as will avoid, remedy or mitigate any adverse effects on neighbouring property, public roads, and the natural and physical resources of the site caused by silt runoff, traffic, excavation and filling and removal of vegetation.	Work on the sites will be managed to avoid effects of this nature however it considered that these would be minimal as most infrastructure is existing.
13.4.6	That any subdivision proposal provides for the protection, restoration and enhancement of heritage resources, areas of significant indigenous vegetation and significant habitats of indigenous fauna, threatened species, the natural character of the coastal environment and riparian margins, and outstanding landscapes and natural features where appropriate.	Consultation has been undertaken with The Department of Conservation, Heritage New Zealand and Ngati Rehia. It is considered that a standard accidental discovery protocol can be applied to the sites to ensure the protection of heritage resources should they be uncovered at a time when development is proposed. Consultation with said agencies have not raised any issues with the proposal.
13.4.7	That the need for a financial contribution be considered only where the subdivision would: (a) result in increased demands on car parking associated with non-residential activities; or (b) result in increased demand for esplanade areas; or (c) involve adverse effects on riparian areas; or (d) depend on the assimilative capacity of the environment external to the site.	Not applicable
13.4.8	That the provision of water storage be taken into account in the design of any subdivision.	See Objective 13.3.5 above.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
13.4.9	That bonus development donor and recipient areas be provided for so as to minimise the adverse effects of subdivision on Outstanding Landscapes and areas of significant indigenous flora and significant habitats of fauna.	N/A
13.4.10	The Council will recognise that subdivision within the Conservation Zone that results in a net conservation gain is generally appropriate.	N/A
13.4.11	That subdivision recognises and provides for the relationship of Maori and their culture and traditions, with their ancestral lands, water, sites, waahi tapu and other taonga and shall take into account the principles of the Treaty of Waitangi.	See Objective 13.3.7 above.
13.4.12	That more intensive, innovative development and subdivision which recognises specific site characteristics is provided for through the management plan rule where this will result in superior environmental outcomes.	N/A
13.4.13	Subdivision, use and development shall preserve and where possible enhance, restore and rehabilitate the character of the applicable zone in regard to s6 matters, and shall avoid adverse effects as far as practicable by using techniques including: (a) clustering or grouping development within areas where there is the least impact on natural character and its elements such as indigenous vegetation, landforms, rivers, streams and wetlands, and coherent natural patterns; (b) minimising the visual impact of buildings, development, and associated vegetation clearance and	This report has demonstrated that the proposal does not generate any adverse effects that are more than minor. The techniques described in the policies have either been addressed earlier in the report or are not necessary as this juncture, as land use is not proposed. The proposed subdivision is located within a land use pattern the mirrors what is being proposed.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
	earthworks, particularly as seen from public land and the coastal marine area; (c) providing for, through siting of buildings and development and design of subdivisions, legal public right of access to and use of the foreshore and any esplanade areas; (d) through siting of buildings and development, design of subdivisions, and provision of access that recognise and provide for the relationship of Maori with their culture, traditions and taonga including concepts of mauri, tapu, mana, wehi and karakia and the important contribution Maori culture makes to the character of the District (refer ***Chapter 2*** and in particular ***Section 2.5*** and Council's *"Tangata Whenua Values and Perspectives" (2004)*; (e) providing planting of indigenous vegetation in a way that links existing habitats of indigenous fauna and provides the opportunity for the extension, enhancement or creation of habitats for indigenous fauna, including mechanisms to exclude pests; (f) protecting historic heritage through the siting of buildings and development and design of subdivisions.	
13.4.14	That the objectives and policies of the applicable environment and zone and relevant parts of ***Part 3*** of the Plan will be taken into account when considering the intensity, design and layout of any subdivision.	These have been taken into account as described in the assessments above**.**

Overall, it is considered that the proposal is consistent with the ODP objective or policy framework.

Table 10 – PDP Rural Residential Zone

OBJECTIVES	
RRZ-O1	The Rural Residential zone is used predominantly for rural residential activities and small scale farming activities that are compatible with the rural character and amenity of the zone.
RRZ-O2	The predominant character and amenity of the Rural Residential zone is maintained and enhanced, which includes: a. peri-urban scale residential activities; b. small-scale farming activities with limited buildings and structures; c. smaller lot sizes than anticipated in the Rural Production or Rural Lifestyle zones; and d. a diverse range of rural residential environments reflecting the character and amenity of the adjacent urban area.
RRZ-O3	The Rural Residential zone helps meet the demand for growth around urban centres while ensuring the ability of the land to be rezoned for urban development in the future is not compromised.
RRZ-O4	Land use and subdivision in the Rural Residential zone: a. maintains rural residential character and amenity values; b. supports a range of rural residential and small-scale farming activities; and c. is managed to control any reverse sensitivity issues that may occur within the zone or at the zone interface.
POLICIES	
RRZ-P1	Enable activities that will not compromise the role, function and predominant character and amenity of the Rural Residential zone, while ensuring their design, scale and intensity is appropriate, including: a. rural residential activities; b. small-scale farming activities; c. home business activities; d. visitor accommodation; and e. small-scale education facilities.
RRZ-P2	Avoid activities that are incompatible with the role, function and predominant character and amenity of the Rural Residential zone including: a. activities that are contrary to the density anticipated for the Rural Residential zone; b. primary production activities, such as intensive indoor primary production or rural industry, that generate adverse amenity effects that are incompatible with rural residential activities; and c. commercial or industrial activities that are more appropriately located in an urban zone or a Settlement zone.
RRZ-P3	Avoid where possible, or otherwise mitigate, reverse sensitivity effects from sensitive and other non-productive activities on primary production activities in adjacent Rural Production zones and Horticulture zones.

RRZ-P4	Require all subdivision in the Rural Residential zone to provide the following reticulated services to the boundary: a. telecommunications: i. fibre where it is available; ii. copper where fibre is not available; iii. copper where the area is identified for future fibre deployment. b. local electricity distribution network.
RRZ-P5	Manage land use and subdivision to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application: a. consistency with the scale and character of the rural residential environment; b. location, scale and design of buildings or structures; c. at zone interfaces: i. any setbacks, fencing, screening or landscaping required to address potential conflicts; ii. the extent to which adverse effects on adjoining or surrounding sites are mitigated and internalised within the site as far as practicable; d. the capacity of the site to cater for on-site infrastructure associated with the proposed activity; e. the adequacy of roading infrastructure to service the proposed activity; f. managing natural hazards; g. any adverse effects on historic heritage and cultural values, natural features and landscapes or indigenous biodiversity; and h. any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.

The application is for a six-lot subdivision that will cater for rural residential activities at a scale commensurate with the surrounding land use pattern. A Landscape Assessment and Plan (see **Appendix E**) have been prepared to support the application to ensure that the subdivision will be compatible with the surrounding rural character and amenity.

The density proposed through the application is provided for within the zoning framework as a discretionary activity and is commensurate with the surrounding land use pattern (refer Figures 5 and 6 earlier in the report).

No primary production activities are being undertaken in the vicinity of the site. The surrounding land use is best described as large lot residential, which this application for subdivision supports. As such it is considered that there will be no reverse sensitivity effects resulting from the application.

Top Energy and Chorus have confirmed that electricity and telecommunications can be provided for the proposed 6 sites (see **Appendix G**).

No development is proposed at this juncture, however the Site Suitability Report (**Appendix C**) has demonstrated that indicative allotments and disposal fields can be provided on each proposed site. Further, each site is capable of providing on site infrastructure (reticulated potable water is available at the boundary, however connection will need to be agreed with Council). A Landscape Assessment has been prepared recommending a planting plan for the landholding using species commonly found in the surrounding locale.

As mentioned, the size of the sites is commensurate with surrounding landholdings and any perceived heritage effects have been addressed in consultation with Heritage New Zealand, The Department of Conservation and Ngati Rehia.

Overall, it is considered that the proposal is consistent with the PDP Rural Residential objective and policy framework.

Table 11 – PDP Subdivision Chapter

OBJECTIVES	
SUB-O1	Subdivision results in the efficient use of land, which: a. achieves the objectives of each relevant zone, overlays and district wide provisions; b. contributes to the local character and sense of place; c. avoids reverse sensitivity issues that would prevent or adversely affect activities already established on land from continuing to operate; d. avoids land use patterns which would prevent land from achieving the objectives and policies of the zone in which it is located; e. does not increase risk from natural hazards or risks are mitigates and existing risks reduced; an f. manages adverse effects on the environment.
SUB-O2	Subdivision provides for the: a. Protection of highly productive land; and b. Protection, restoration or enhancement of Outstanding Natural Features, Outstanding Natural Landscapes, Natural Character of the Coastal Environment, Areas of High Natural Character, Outstanding Natural Character, wetland, lake and river margins, Significant Natural Areas, Sites and Areas of Significance to Māori, and Historic Heritage.
SUB-O3	Infrastructure is planned to service the proposed subdivision and development where: a. there is existing infrastructure connection, infrastructure should provided in an integrated, efficient, coordinated and future-proofed manner at the time of subdivision; and b. where no existing connection is available infrastructure should be planned and consideration be given to connections with the wider infrastructure network.

SUB-O4	Subdivision is accessible, connected, and integrated with the surrounding environment and provides for: a. public open spaces; b. esplanade where land adjoins the coastal marine area; and c. esplanade where land adjoins other qualifying waterbodies.
POLICIES	
SUB-P1	Enable boundary adjustments that: a. do not alter: b. the degree of non compliance with District Plan rules and standards; c. the number and location of any access; and d. the number of certificates of title; and e. are in accordance with the minimum lot sizes of the zone and comply with access, infrastructure and esplanade provisions.
SUB-P2	Enable subdivision for the purpose of public works, infrastructure, reserves or access.
SUB-P3	Provide for subdivision where it results in allotments that: a. are consistent with the purpose, characteristics and qualities of the zone; b. comply with the minimum allotment sizes for each zone; c. have an adequate size and appropriate shape to contain a building platform; and d. have legal and physical access.
SUB-P4	Manage subdivision of land as detailed in the district wide, natural environment values, historical an cultural values and hazard and risks sections of the plan.
SUB-P5	Manage subdivision design and layout in the General Residential, Mixed Use and Settlement zone to provide for safe, connected and accessible environments by a. minimising vehicle crossings that could affect the safety and efficiency of the current and future transport network; b. avoid cul-de-sac development unless the site or the topography prevents future public access and connections; c. providing for development that encourages social interaction, neighbourhood cohesion, a sense of place and is well connected to public spaces; d. contributing to a well connected transport network that safeguards future roading connections; and e. maximising accessibility, connectivity by creating walkways, cycleways and an interconnected transport network.
SUB-P6	Require infrastructure to be provided in an integrated and comprehensive manner by: a. demonstrating that the subdivision will be appropriately serviced and integrated with existing and planned infrastructure if available; and b. ensuring that the infrastructure is provided is in accordance the purpose, characteristics and qualities of the zone.
SUB- P7	Require the vesting of esplanade reserves when subdividing land adjoining the coast or other qualifying waterbodies.

SUB-P8	Avoid rural lifestyle subdivision in the Rural Production zone unless the subdivision: a. will protect a qualifying SNA in perpetuity and result in the SNA being added to the District Plan SNA schedule; and b. will not result in the loss of versatile soils for primary production activities.
SUB-P9	Avoid subdivision rural lifestyle subdivision in the Rural Production zone and Rural residential subdivision in the Rural Lifestyle zone unless the development achieves the environmental outcomes required in the management plan subdivision rule.
SUB-P10	To protect amenity and character by avoiding the subdivision of minor residential units from principal residential units where resultant allotments do not comply with minimum allotment size and residential density.
SUB-P11	Manage subdivision to address the effects of the activity requiring resource consent including (but not limited to) consideration of the following matters where relevant to the application: a. consistency with the scale, density, design and character of the environment and purpose of the zone; b. the location, scale and design of buildings and structures; c. the adequacy and capacity of available or programmed development infrastructure to accommodate the proposed activity; or the capacity of the site to cater for on-site infrastructure associated with the proposed activity; d. managing natural hazards; e. Any adverse effects on areas with historic heritage and cultural values, natural features and landscapes, natural character or indigenous biodiversity values; and f. any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.

For the reasons already provided through this report, the proposal is considered to be consistent with the objectives and policies for subdivision under the PDP.

In terms of the heritage area matters under the PDP, these are not formally provided for and tabulated, however they have been assessed on the basis that there are no concerns with the proposal from Heritage New Zealand or local tangata whenua. On this basis, the effects resulting are likely to align with the outcomes sought for the chapter within the PDP.

Overall, the proposal is consistent with higher order documents.

Section 104 (c) Other Matters

There are no other matters that are considered relevant.

7.0 NOTIFICATION (S95A-95D)

S95A of the RMA determines circumstances when public or limited notification of an application may be appropriate. Section 95A sets out a series of steps for determining public notification. These include:

- *Step 1* – Mandatory public notification in certain circumstances. In respect of this application, the applicant is not seeking public notification, nor is it subject to a mandatory notification requirement.

- *Step 2* – Public notification precluded in certain circumstances. Overall the application is for a non-complying subdivision, so none of the circumstances in this step apply.

- *Step 3* – Public notification required in certain circumstances. In respect of clause 8(a) the application is not subject to a rule or national environmental standard that requires public notification. In respect of clause 8(b), this assessment of effects on the environment concludes that any adverse effects would be less than minor. For these reasons, it is considered that the application can be processed without public notification.

- *Step 4* – Public notification in special circumstances. 'Special circumstances' are those that are unusual or exceptional, but they may be less than extraordinary or unique. (Peninsula Watchdog Group Inc v Minister of Energy [1996] 2NZLR 5290). It is considered that there are no unusual or exceptional circumstances that would warrant notification of this application.

Section 95B sets out a series of steps for determining limited notification. These include:

- *Step 1* – certain affected groups and affected persons must be notified. These include affected customary rights groups or marine title groups (of which there are none relating to this application). Affected groups and persons may also include owners of adjacent land subject to statutory acknowledgement if that person is affected in accordance with s95E. There are no groups or affected persons that must be notified with this application.

- *Step 2* – limited notification precluded in certain circumstances. These include any rule or national environmental standard that precludes limited notification, or the activity is solely for a controlled activity or a prescribed activity. These circumstances do not apply to this application.

- *Step 3* – certain other persons must be notified. An affected person is determined in accordance with s95E. A person is affected if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (but are

not less than minor). Adverse effects on a person may be disregarded if a rule or a national environmental standard permits an activity with that effect or is a controlled or RDA with an adverse effect that does not relate to a matter over which a rule or standard reserves control or discretion. Those circumstances do not apply to this application. S95E(3) states that a person is not affected if the person has given, and not withdrawn their written approval for a proposed activity or a consent authority is satisfied that it is unreasonable in the circumstances for an applicant to seek a person's written approval.

The assessment of effects above has concluded that the effects on the environment will be less then minor. The proposed subdivision density is commensurate with surrounding land use (see Figures 5 and 6 above) so is consistent within the built development in this locale. It is therefore reasonable to conclude that any future development at a density and scale commensurate with the existing environment is consistent with the character and amenity of the surrounding area, and the proposed six lot subdivision would incur less than minor effects on the adjacent landowners.

Section 95C relates to the public notification after a request for further information which does not apply to this application. Section 95D provides the basis for determining notification under Section 95A(8)(b) if adverse effects are likely to be more than minor. This assessment concludes that potential adverse effects arising from this subdivision proposal would be less than minor.

8.0 PART II – RMA

Purpose of the RMA

The proposal can promote the sustainable management of natural and physical resources on site, as current and future owners and users of the land are able to provide for their social, cultural and economic wellbeing and their health and safety. The proposed subdivision will support the provision of housing in the Kerikeri area.

Matters of National Importance

Consultation has been undertaken in respect of heritage, the result of which concludes that there are no foreseen issues with the application. Ngati Rehia have been consulted and are in support of the proposed subdivision.

Other Matters

The development will enable the landowner to subdivide their property, releasing land for large lot residential development zoned for that purpose.

9.0 'Gateway' Assessment

Section 104D – Particular Restrictions for Non-Complying Activities

When dealing with non-complying activities, before granting an application Council must be satisfied that either the adverse effects of the activity on the environment will be minor (s104D(1)(a)), or the proposed activity will not be contrary to the objectives and policies of a proposed plan and/or plan (s104D(1)(b)).

This consideration for non-complying activities is commonly known as the 'threshold test' or the 'gateway test '. If either of the limbs of the test can be passed, then the application is eligible for approval, but the proposed activity must still be considered under s104. There is no primacy given to either of the two limbs, so if one limb can be passed then the 'test ' can be considered to be passed.

In this instance it has been demonstrated that both the effects of the proposal are less than minor and that there is positive consistency with all objective and policies of relevance to the proposal. Therefore, FNDC in this instance has both 'limbs' to appropriately decide in favour of this application.

10.0OVERALL CONCLUSION

This application seeks resource consent to undertake a six-lot subdivision in the Rural Living zone as a non-complying activity in the ODP. The application triggers a subdivision rule with immediate legal effect in the PDP for 'subdivision of a site within a heritage overlay area' (Restricted Discretionary activity). Consent is also required in terms of land use for frontage to existing roads.

Based on the assessment of effects above, it is concluded that any potential adverse effects on the existing environment would be less than minor and can be managed in terms of appropriate conditions of consent. Adverse effects on adjacent neighbours would be less than minor as the proposed subdivision is commensurate with existing development density in this location.

The proposal is consistent with the relevant objectives of policies of the ODP and the PDP. An assessment of Part II of the RMA has also been completed with the proposal generally able to satisfy this higher order document also.

On this basis, it is considered that the application is able to be processed on a non-notified basis.

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

Kind regards,

Andrew McPhee
Consultant Planner

Reviewed by

Steven Sanson
Consultant Planner

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

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

R.W. Muir
Registrar-General
of Land

Identifier **1146018**

Land Registration District **North Auckland**

Date Issued 22 May 2024

Prior References
NA108D/310

Estate Fee Simple

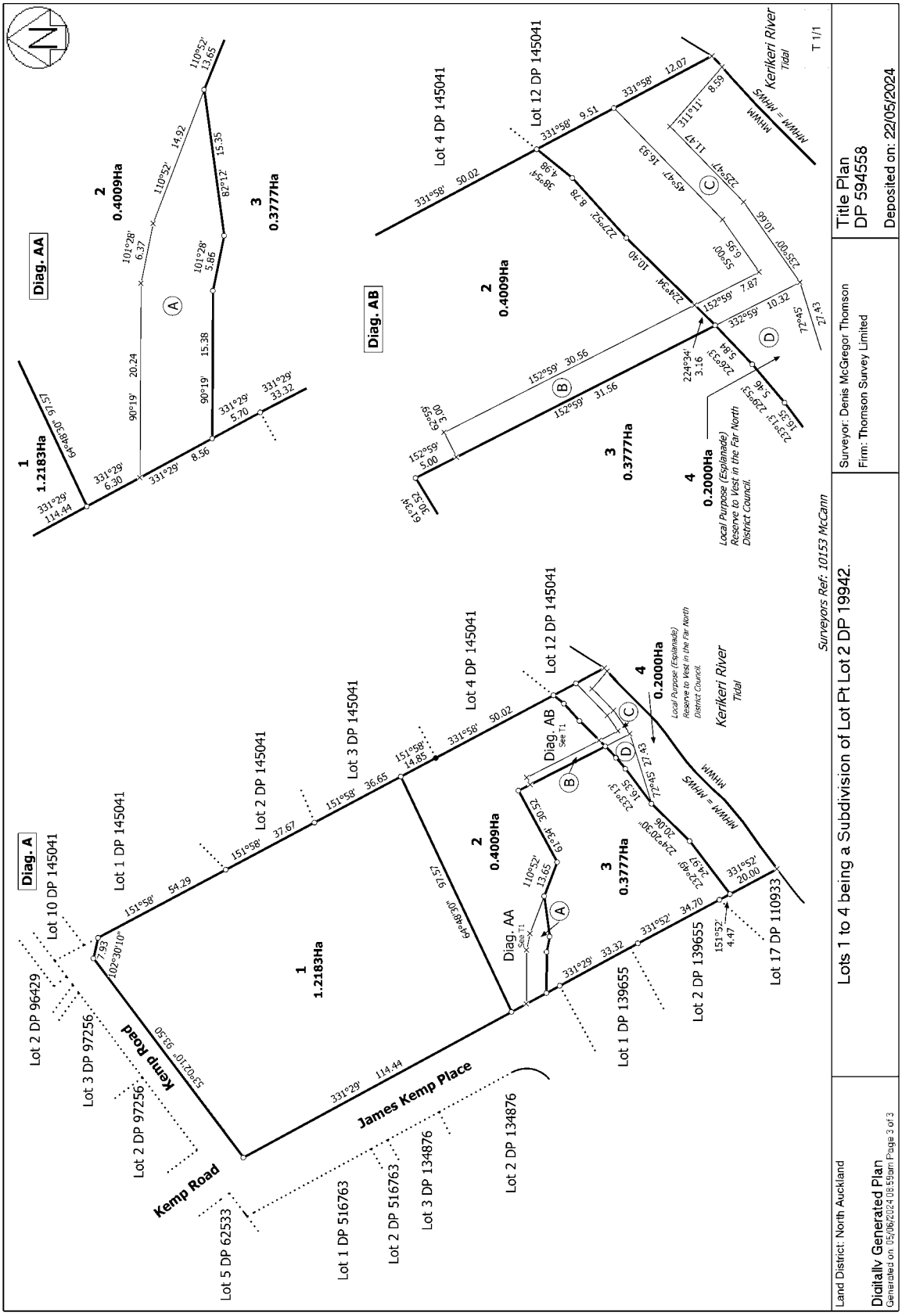
Area 1.2183 hectares more or less

Legal Description Lot 1 Deposited Plan 594558

Registered Owners
Shearwater Investments Limited

Interests

12985116.2 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 22.5.2024 at 3:32 pm


Diag. A
Diag. AA
Diag. AB
Lot 1 DP 145041
Lot 2 DP 145041
Lot 3 DP 145041
Lot 4 DP 145041
Lot 12 DP 145041
Lot 10 DP 145041
Lot 2 DP 96429
Lot 3 DP 97256
Lot 2 DP 97256
Lot 5 DP 62533
Lot 1 DP 516763
Lot 2 DP 516763
Lot 3 DP 134876
Lot 2 DP 134876
Lot 1 DP 139655
Lot 2 DP 139655
Lot 17 DP 110933
Kemp Road
James Kemp Place
Kerikeri River
Tidal
MHWM = MHWS
1 1.2183Ha
2 0.4009Ha
3 0.3777Ha
4 0.2000Ha
Local Purpose (Esplanade)
Reserve to Vest in the Far North District Council.
Surveyors Ref: 10153 McCann
Lots 1 to 4 being a Subdivision of Lot Pt Lot 2 DP 19942.
Land District: North Auckland
Digitally Generated Plan
Generated on 05/06/2024 08:59am Page 3 of 3
Surveyor: Denis McGregor Thomson
Firm: Thomson Survey Limited
Title Plan
DP 594558
Deposited on: 22/05/2024
T 1/1

View Instrument Details

Instrument No	12985116.2
Status	Registered
Date & Time Lodged	22 May 2024 15:32
Lodged By	Kemps, Michael Peter
Instrument Type	Consent Notice under s221(4)(a) Resource Management Act 1991

Affected Records of Title	Land District
1146018	North Auckland
1146019	North Auckland
1146020	North Auckland
1181883	North Auckland

Annexure Schedule Contains 3 Pages.

Signature

Signed by Michael Peter Kemps as Territorial Authority Representative on 22/05/2024 03:31 PM

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

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Far North District Council

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0800 920 029
fndc.govt.nz

THE RESOURCE MANAGEMENT ACT 1991

SECTION 221: CONSENT NOTICE

REGARDING **RC-2220780-RMASUB**
Being the Subdivision of Pt Lot 2 DP 19942
North Auckland Registry

PURSUANT to Section 221 and for the purpose of Section 224 (c) (ii) of the Resource Management Act 1991, this Consent Notice is issued by the **FAR NORTH DISTRICT COUNCIL** to the effect that conditions described in the schedule below are to be complied with on a continuing basis by the subdividing owner and the subsequent owners after the deposit of the survey plan, and these are to be registered on the titles of the allotments specified below.

SCHEDULE

Lot 1 DP 594558

(i). Provide, at the time of lodging a building consent application for the Lot, a site-specific Stormwater Report to address stormwater controls to attenuate impermeable surfaces for rainfall events up to 10% AEP (including allowance for climate change) prepared by a suitably qualified Chartered Professional Engineer. The reports will detail the proposed attenuation method (e.g soak trenches and or detention-attenuation tank) and any drains. These are to include Engineering Plans, to be submitted for approval.

Lots 1 and 2 DP 594558

(ii). In conjunction with the construction of any dwelling, firefighting water supplies shall be provided in accordance with the FNDC Engineering Standards and the NZ Firefighting Water Supplies Code of Practice NZS PAS 4509:2008 and shall be approved by Fire and Emergency NZ prior to works commencing.

(iii). The lot owner shall ensure that the wastewater treatment and disposal system is constructed generally in accordance with the recommendations contained within the Stormwater and Wastewater Suitability Report prepared by Haigh Workman dated December 2022, referenced 22043, revision C. As a minimum, all wastewater shall receive secondary treatment prior to being disposed of via pressure compensating driplines.

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(iv). In conjunction with a building consent, provide for the approval of the Council's duly delegated officer a landscape plan prepared by a suitably qualified and experienced person incorporating plantings that are in keeping with the amenity and character of the surrounding environment. The purpose of the landscaping is to provide screening of future development on the site when viewed from Kemp Road, James Kemp Place and neighbouring properties.

The landscaping, once implemented, must be maintained by the Consent holder in perpetuity unless approval is provided by Council otherwise. Where the plants die, or are required to be removed due to damage, the Consent Holder shall replant replacement vegetation of the same species within the next planting season.

It is strongly encouraged that the opportunity is provided for Ngāti Rēhia to supply native plants from their native nursery for landscaping as this is the express request of Ngāti Rēhia.

All Lots DP 594558

(v). This lot is within an area where the current archaeological inventory is considered under representative. Archaeological discovery is considered possible on site and landowners and contractors should be cautious when conducting earthworks on site. Archaeological sites are protected pursuant to the Heritage New Zealand Pouhere Taonga Act 2014. It is an offence, pursuant to the Act, to modify, damage or destroy an archaeological site without an archaeological authority issued pursuant to that Act. Should any site be inadvertently uncovered, the procedure is that work should cease, with Heritage New Zealand Pouhere Taonga, FNDC and tangata whenua consulted immediately. The New Zealand Police should also be consulted if the discovery includes koiwi (human remains). A copy of Heritage New Zealand's Archaeological Discovery Protocol (ADP) is attached for your information. This must be made available to all person(s) working on site.

Lot 3 DP 594558

(vi). Lot 4 is not to be subject to any form of wastewater discharge from this lot. Wastewater discharge is to wholly be contained on this lot.

Lot 4 DP 594558

(vii). This lot contains NZAA archaeological site P05/452. Any future development on the lot will require an archaeological report to assess effects. Consultation with local iwi is also strongly recommended.

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Private Bag 752, Kaikohe 0440, New Zealand
0800 920 029
fndc.govt.nz

SIGNED:

Ms Patricia (Trish) Routley - Authorised Officer
By the FAR NORTH DISTRICT COUNCIL
Under delegated authority:
MANAGER – RESOURCE CONSENTS

DATED at **KERIKERI** this 21st day of March 2024.

N

MEMORANDUM OF EASEMENTS				
PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT	
RIGHT OF WAY ELECTRICITY TELECOMMUNI-CATIONS WATER	Ⓐ	LOT 5 HEREON	LOTS 2-4 HEREON	
	Ⓑ	LOT 4 HEREON	LOTS 2, 3 & 5 HEREON	

NOTES

Local Authority - Far North District Council.
Comprised in - RT 1146018
Total Area - 1.21Ha

This drawing has been prepared solely for the use intended by the client ststed on the plan, and must nt be used for any other purpose. BOI Survey Ltd accepts no responsibility for this plan, or any data contained on this plan, to be used for any other purpose

Rev.	Reason For Issue or Amendment	Date	Drawn	Checked	Surveyed
A	Scheme Plan 1A JAMES KEMP PLACE, KERIKERI	16/09/24	TW	DC	TW

BOI SURVEY

BOI SURVEY LTD
55B Shepherd Road
Kerikeri 0230

e: Tony@boisurvey.co.nz

PROPOSED SUBDIVISION OF LOT 1 DP 594558

1A JAMES KEMP PLACE, KERIKERI

CLIENT: SHEARWATER LTD

JOB NO:		Scale:
5042		1:500 @ A3
Level Datum: NZVD 2016	Origin: -	Co-ord System: NZGD 2000
Drawing Number: 5042-002	Revision: A	Sheet: 1 of 1

Wilton Joubert Limited
09 527 0196
196 Centreway Road,
Orewa, Auckland, 0931

SITE	**79 Kemp Road, Kerikeri**
LEGAL DESCRIPTION	**Lot 1 DP 594558**
PROJECT	**Proposed 6-Lot Subdivision**
CLIENT	**Shearwater Ltd.**
REFERENCE NO.	**136071**
DOCUMENT	**Civil Site Suitability Report**
STATUS/REVISION NO.	**B – Resource Consent**
DATE OF ISSUE	**01 October 2024**

Report Prepared For	Email
Shearwater Ltd.	shaunmccann31@gmail.com

Authored by	**G.M. Brant** *(Be (Hons) Civil)*	Civil Engineer	gustavo@wjl.co.nz	
Reviewed by	**P. McSweeney** *(BE(Hons) Civil)*	Civil Engineer	Patrick@wjl.co.nz	
Approved by	**B. Steenkamp** *(CPEng, BEng Civil, CMEngNZ, BSc (Geology))*	Senior Civil Engineer	bens@wjl.co.nz	

1 EXECUTIVE SUMMARY

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

Legal Description:	Lot 1 DP 594558
Lot Sizes:	Proposed Lot 1 – 2,007m² Proposed Lot 2 – 2,002m² Proposed Lot 3 – 2,001m² Proposed Lot 4 – 2,009m² Proposed Lot 5 – 2,155m² Proposed Lot 6 – 2,005m²
Development Type:	Subdividing 1 lot into 6.
Scope:	Civil Site Suitability Investigation: - Wastewater Assessment - Stormwater Assessment - Access Assessment
Development Proposals Supplied:	Subdivision Scheme Plan, supplied by Boi Survey (Ref No: 5042, dated: 16.09.2024).
Associated Documents:	WJL Geotechnical Site Suitability Report Ref. 136070
District Plan Zone:	Rural Living Zone
Wastewater:	The following is an indicative PCDI wastewater design for a 4-bedroom dwelling – given the subsoils encountered we recommend Secondary Level Treatment or higher:

	Reticulated Water Supply	Non-Reticulated Water Supply
Daily Wastewater Production:	1,200L/day	1,080L/day
Daily Application Rate:	3mm/day	3mm/day
Disposal Area:	400m²	360m²
Reserve Area:	120m² (30%)	108m² (30%)

Further wastewater recommendations provided in Section 7.

Stormwater Management – District Plan Rules:	**Permitted Activity:** 8.7.5.1.5 STORMWATER MANAGEMENT – The maximum proportion or amount of the gross site area covered by buildings and other impermeable surfaces shall be 12.5% or 3,000m², whichever is the lesser. **Controlled Activity:** 8.7.5.2.2 STORMWATER MANAGEMENT – The maximum proportion or amount of the gross site area covered by buildings and other Impermeable Surfaces shall be 20% or 3300m², whichever is the lesser.

Stormwater Management:

As per the existing consent conditions pertaining to the parent lot, runoff resulting from future proposed impermeable areas within the proposed lots is to be attenuated back to pre-development flow rates for the 10% AEP storm event, adjusted for climate change. A site-specific attenuation report will be required for each lot at Building Consent stage showing compliance with the existing Consent Conditions.

A site-specific district plan assessment in accordance with Section 8.7.5.2.2 of the FNDC District Plan will be required for any lot that exceeds 12.5% impermeable area coverage or Section 11.3 for any lot that exceeds 20% impermeable area coverage. This should be included in the site-specific attenuation report required for each lot where necessary.

Further stormwater recommendations are provided in Section 8.

Access:

- Vehicle Crossing sight distances compliant for currently proposed layout,
- Lots 1 & 6: New vehicle crossings and private access to be constructed for each lot,
- Lots 2 – 5: Utilise existing vehicle crossing from James Kemp Place and construct new ROW.

Further access recommendations are provided in Section 9.

---

2 INTRODUCTION

2.1 SCOPE OF WORK

Wilton Joubert Limited (WJL) was engaged by **Shearwater Ltd.** to undertake a civil site suitability assessment (wastewater, stormwater & access assessment) to support a 1-into-6 lot subdivision of Lot 1 DP 594558, as depicted to us on the supplied Subdivision Scheme Plan, supplied by Boi Survey (Ref No: 5042, dated: 16.09.2024).

At the time of report writing, no development plans have been supplied to WJL for the future development of the proposed lots.

A Geotechnical Site Suitability Report (WJL Ref. 136070) has been prepared by WJL for the proposed subdivision which should be read in conjunction with this report.

Figure 1: Subdivision Scheme Plan supplied by Boi Survey Ltd.

Any revision of the supplied drawings and/or development proposals with wastewater, stormwater and/or access implications should be referred back to us for review. This report is not intended to support Building Consent applications for the future proposed lots, and any revision of supplied drawings and/or development proposals including those for Building Consent, which might rely on wastewater, stormwater and/or access assessments herein, should be referred to us for review.

3 SITE DESCRIPTION

The subject ~1.21ha property proposed for subdivision is located within a 'Rural Living Zone' on the north-eastern outskirts of the Kerikeri township. The property and partial sub allotments are bordered by James Kemp Place to the west and Kemp Road to the north, approximately 800m southeast of the Waipapa Road – Landing Road intersection roundabout. Apart from the 'Coastal Marine Zone' environment confined to the Kerikeri River which is offset approximately 100m southeast of the property, surrounding properties are generally zoned 'Rural Living'.

Topographically speaking, the site is situated atop a broad crest, falling south due west at gentle grades averaging less than 5°. Existing ground levels across the site generally range between 18m (northeast) and 14m (southwest) New Zealand Vertical Datum.

No existing built development is present on-site. However, it is noted that two grass swale drains have been formed traversing northwest to southeast through the property and subsequent proposed allotments. Ground cover across the property comprises lawn, with both the northern and western boundaries generally planted in shelterbelt trees. The eastern boundary is primarily bordered by neighboring smaller residential properties whilst the southern boundary is bordered by a vacant allotment.

At the time of preparing this report, we note that the Far North District Council (FNDC) on-line GIS Water Services Map indicates that:

- A public 100mmØ AC water main trends along the northern side of Kemp Road, as well as the western side of James Kemp Place,
- A public 40mmØ uPVC rider main connects to the northern water main line and trends along the southern side of Kemp Road,
- Multiple water meters are located along the parent lot's boundary parallel to Kemp Road,
- Public stormwater services are present at the north-western and south-western boundary corners,
- There are no public wastewater services in proximity to the site.

Figure 2: Screenshot Aerial View of the Site from FNDC GIS Water Services Map Showing Site Boundaries (cyan), Public Stormwater (green), Public Potable Water (blue) and 1m Contours (yellow).

4 SUBDIVISIONAL PROPOSALS

In reviewing the supplied Subdivision Scheme Plan (see Figure 1), it is our understanding that the client intends to subdivide the property into six individual allotments with similar lot sizes as per the following:

Proposed Lot Sizes	
Lot 1	2,007m²
Lot 2	2,002m²
Lot 3	2,001m²
Lot 4	2,009m²
Lot 5	2,155m²
Lot 6	2,005m²

Proposed Lots 1 & 6 – Northern Allotments

Proposed Lots 1 and 6 are the northernmost lots bordered by Kemp Road to the north and will encompass areas of 2,007m² and 2,005m², respectively. Access to the lots will be directly off Kemp Road.

Figure 3: Site Photograph Overlooking Proposed Lots 1 & 6 (Northwest Direction). Orange Cones are Indicative of Field-Testing Locations.

Proposed Lots 2 & 5 – Central Allotments

Proposed Lots 2 and 5 are to be situated centrally within the parent property and will encompass areas of 2,002m² and 2,155m², respectively. Access to these lots will be via a shared Right of Way (ROW) directly off James Kemp Place, which will also service Lots 3 & 4.

Figure 4: Site Photograph Overlooking Proposed Lots 2 & 5 (Northwest Direction). Orange Cones are Indicative of Field-Testing Locations.

Proposed Lots 3 & 4 – Southern Allotments

Proposed Lots 3 and 4, located at the southernmost end of the property will encompass areas of 2,001m² and 2,009m², respectively. Access to these lots will be via the aforementioned ROW.

Figure 5: Site Photograph Overlooking Proposed Lots 3 & 4 (Western Direction). Orange Cones are Indicative of Field-Testing Locations.

All designated building platforms (DBPs) appear to be positioned on near level to gently sloping terrain with no formed access at the time of our investigation.

5 PUBLISHED GEOLOGY

Local geology across the site and wider surrounding area is noted on the GNS Science New Zealand Geology Web Map, Scale 1:250,000, as; Kerikeri Volcanic Group Pleistocene Basalt of Kaikohe – Bay of Islands Volcanic Fields. These deposits are up to approximately 1.4 million years in age and described as; "*Basalt lava and volcanic plugs*" (ref: GNS Science Website).

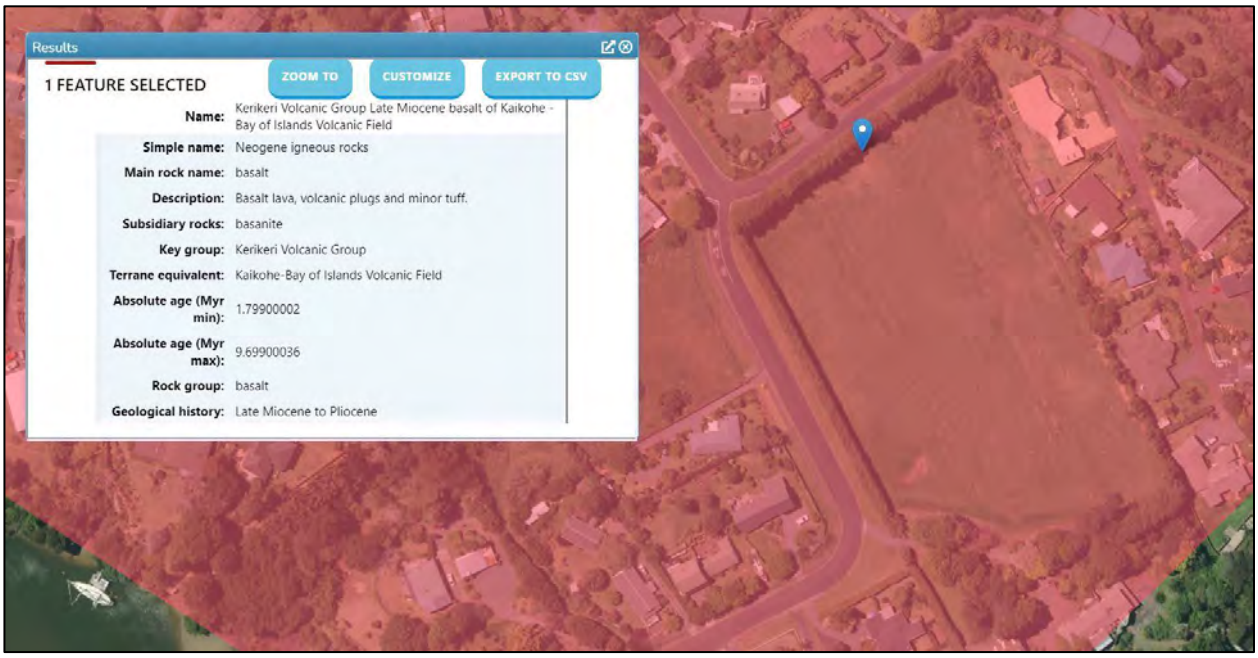


Figure 6: Screenshot from New Zealand Geology Web Map hosted by GNS Science.

In addition to the above, geotechnical testing was conducted by WJL within the subject site in September 2024.

In general terms, the subsoils encountered consisted predominantly of Clayey SILT and Gravelly SILT. Approximately 200mm-300mm of TOPSOIL was overlying the investigated area. Refer to the appended 'BH Logs'. Given the above, the site's soils have been classified Category 5 in accordance with the TP58 design manual.

6 POTABLE WATER

The FNDC on-line GIS Water Services Map indicates that public potable water services are available to service the parent property.

At the time of report writing, it has not been confirmed by the client if it is proposed to provide the proposed lots with a reticulated water supply or on-site rainwater tank water supply. Either option is acceptable, however, consultation with FNDC will be required to ensure sufficient capacity within the reticulated network.

If it is proposed to utilise on-site rainwater potable water supply, each lot should have a minimum of 2 x 25,000L rainwater tanks. Provision should be made by the homeowner for top-up of the tanks via water tankers in periods of low rainfall.

7 WASTEWATER

No existing wastewater management system is present within the proposed lots. As such, a new site-specific design in accordance with the ASNZS: 1547 / TP58 design manual will be required by FNDC for any future development within the proposed lots. This should be conditioned as part of the Resource Consent process.

7.1 DESIGN PARAMETERS

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

As no development proposals are available at this stage for the eventual residential development within the proposed lots, our recommendations have been based on a moderate size dwelling containing 4 bedrooms.

Given the subsoils encountered during WJL's fieldwork investigation, we recommend secondary treatment or higher for any new wastewater treatment system within the proposed lots.

7.1.1 Summary of Preliminary Design Parameters for a PCDI Secondary Treatment System

Development Type:	Residential Dwellings
Effluent Treatment Level:	Secondary (<BOD5 20 mg/L, TSS 30 mg/L)
Fill Encountered in Disposal Areas:	No
Water Source:	Option 1 - Reticulated Water Supply Option 2 - Rainwater Collection Tanks
Site Soil Category (TP58):	Category 5 –Clayey SILT – Moderate to Slow Drainage
Estimate House Occupancy:	6 Persons
Loading Rate:	PCDI System – 3mm/day
Estimated Total Daily Wastewater Production per Lot:	Option 1 – 1,200L/day Option 2- 1,080L/day
Typical Wastewater Design Flow Per Person:	Option 1 - 200L/person/day Option 2 - 180L/person/day
Application Method:	Surface Laid PCDI Lines
Loading Method:	Dosed
Minimum Tank size:	Option 1 - >1,200L Option 2 - >1,080L
Emergency Storage:	24 hours
Estimated Min. Disposal Area Requirement:	Option 1 - 400m^2 (Refer to Site Plan 136071-C001) Option 2 - 360m^2
Required Min. Reserve Area:	30%

Buffer Zone:	Not Required
Cut-off Drain:	Not Required

7.2 REQUIRED SETBACK DISTANCES

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

Feature	Primary treated domestic type wastewater	Secondary and tertiary treated domestic type wastewater	Greywater
Exclusion areas			
Floodplain	5 percent annual exceedance probability	5 percent annual exceedance probability	5 percent annual exceedance probability
Horizontal setback distances			
Identified stormwater flow path (including a formed road with kerb and channel, and water-table drain) that is down-slope of the disposal area	5 metres	5 metres	5 metres
River, lake, stream, pond, dam or natural wetland	20 metres	15 metres	15 metres
Coastal marine area	20 metres	15 metres	15 metres
Existing water supply bore	20 metres	20 metres	20 metres
Property boundary	1.5 metres	1.5 metres	1.5 metres
Vertical setback distances			
Winter groundwater table	1.2 metres	0.6 metres	0.6 metres

Figure 7: Table 9 of the PRPN (Proposed Regional Plan for Northland).

7.3 NORTHLAND REGIONAL PLAN ASSESSMENT

Any future wastewater disposal system should meet the compliance points below, stipulated within Section C.6.1.3 of the Proposed Regional Plan for Northland:

C.6.1.3 Other on-site treated domestic wastewater discharge– permitted activity	
The discharge of domestic type wastewater into or onto land from an on-site system and the associated discharge of odour into air from the on-site system are permitted activities, provided:	
#	Rule
1	The on-site system is designed and constructed in accordance with the Australian/New Zealand Standard. On-site Domestic Wastewater Management (AS/NZS 1547:2012), and
2	The volume of wastewater discharged does not exceed two cubic metres per day, and

3	The discharge is not via a spray irrigation system or deep soakage system, and
4	The slope of the disposal area is not greater than 25 degrees, and
5	The wastewater has received secondary or tertiary treatment and is discharged via a trench or bed in soil categories 3 to 5 that is designed in accordance with Appendix L of Australian/New Zealand Standard. On-site Domestic Wastewater Management (AS/NZS 1547:2012); or is via an irrigation line system that is:
	a) dose loaded, and
	b) covered by a minimum of 50 millimetres of topsoil, mulch, or bark, and
6	For the discharge of wastewater onto the surface of slopes greater than 10 degrees:
	a) the wastewater, excluding greywater, has received at least secondary treatment, and
	b) the irrigation lines are firmly attached to the disposal area, and
	c) where there is an up-slope catchment that generates stormwater runoff, a diversion system is installed and maintained to divert surface water runoff from the up-slope catchment away from the disposal area, and
	d) a minimum 10 metre buffer area down-slope of the lowest irrigation line is included as part of the disposal area, and
	e) the disposal area is located within existing established vegetation that has at least 80 percent canopy cover, or
	f) the irrigation lines are covered by a minimum of 100 millimetres of topsoil, mulch, or bark, and
7	the disposal area and reserve disposal area are situated outside the relevant exclusion areas and setbacks in Table 9: Exclusion areas and setback distances for on-site domestic wastewater systems, and
8	for septic tank treatment systems, a filter that retains solids greater than 3.5 millimetres in size is fitted on the outlet, and
9	the following reserve disposal areas are available at all times:
	a) 100 percent of the existing effluent disposal area where the wastewater has received primary treatment or is only comprised of greywater, or
	b) 30 percent of the existing effluent disposal area where the wastewater has received secondary treatment or tertiary treatment, and
10	the on-site system is maintained so that it operates effectively at all times and maintenance is undertaken in accordance with the manufacturer's specifications, and
11	the discharge does not contaminate any groundwater water supply or surface water, and
12	there is no surface runoff or ponding of wastewater, and
13	there is no offensive or objectionable odour beyond the property boundary.

We envision that there will be no issue meeting the Permitted Activity Status requirements as outlined above.

8 STORMWATER MANAGEMENT

8.1 ASSESSMENT CRITERIA

Consent Conditions

The site lies within the Far North District. The stormwater assessment has been completed in accordance with the recommendations and requirements contained within the Far North District Engineering Standards, the Far North District Council District Plan and the Consent Conditions pertaining to RC-2220780-RMASUB, which states the following:

Lot 1 DP 594558

(i). Provide, at the time of lodging a building consent application for the Lot, a site-specific Stormwater Report to address stormwater controls to attenuate impermeable surfaces for rainfall events up to 10% AEP (including allowance for climate change) prepared by a suitably qualified Chartered Professional Engineer. The reports will detail the proposed attenuation method (e.g soak trenches and or detention-attenuation tank) and any drains. These are to include Engineering Plans, to be submitted for approval.

Figure 8: Snip of Consent Condition Pertaining to RC-2220780-RMASUB.

As per the above, runoff resulting from future proposed impermeable areas within the proposed lots is to be attenuated back to pre-development flow rates for the 10% AEP storm event, adjusted for climate change. A site-specific attenuation report will be required for each lot at Building Consent stage showing compliance with the above Consent Conditions.

District Plan Requirements

As below, the site resides in a Rural Living Zone.

Figure 9: Snip of FNDC Maps Showing Site in Rural Living Zone.

As per the Far North District Council District Plan, following Stormwater Management Rules Apply:

Permitted Activity: 8.7.5.1.5 STORMWATER MANAGEMENT – The maximum proportion or amount of the gross site area covered by buildings and other impermeable surfaces shall be 12.5% or 3,000m², whichever is the lesser.

Controlled Activity: 8.7.5.2.2 STORMWATER MANAGEMENT – The maximum proportion or amount of the gross site area covered by buildings and other Impermeable Surfaces shall be 20% or 3300m², whichever is the lesser.

To comply with the parameters of the Permitted Activity Rule (8.7.5.1.5), Lots 1 – 6 must not exceed an impermeable area of 12.5%. The maximum permitted impermeable area and anticipated activity status for Lots 1 – 6 are as follows:

Lot	Maximum Permitted Impermeable Area (12.5%)	Anticipated Activity Status
1	250.9 m²	Permitted / Controlled
2	250.3 m²	Controlled
3	250.1 m²	Controlled
4	251.1 m²	Permitted / Controlled
5	269.4 m²	Permitted / Controlled
6	250.6 m²	Permitted / Controlled

A site-specific district plan assessment in accordance with Section 8.7.5.2.2 of the FNDC District Plan will be required for any lot that exceeds 12.5% impermeable area coverage or Section 11.3 for any lot that exceeds 20% impermeable area coverage. This should be included in the site-specific attenuation report required for each lot where necessary.

Stormwater Management Approach

It is recommended to manage stormwater runoff generated from impermeable hardstand areas including the proposed ROW via soakage. A soakage design for the proposed ROW is provided in Section 8.2 below, while an indicative soakage design is also provided in Section 8.2 below for other hardstand areas.

Four soakage tests were conducted at the subject site in September 2024, with the corresponding Percolation Test Graph used in calculations appended to this report. Soakage rates of 120mm/hr, 100mm/hr, 60mm/hr and 60mm/hr have been calculated using methodology adopted from E1 Building Code. The most conservative of the four soakage rates (60mm/hr) has been used for soakpit sizing calculations.

The below stormwater soakage designs have been completed in accordance with the Far North District Council Engineering Standards (May 2023) – Section 4.3.20. To satisfy the above consent conditions, a 10% AEP storm event of a 60-minute duration was used. Rainfall data was obtained from HIRDS, with a climate change factor of 20% added. The above soakage rate received a 0.25 reduction factor as per Council's design guidelines.

It is recommended to provide stormwater attenuation for future proposed roof areas via a detention volume, soakage or a combination of the two. This detention volume can be provided in a detention tank (s), or via a detention volume in any proposed potable water tanks. Indicative stormwater attenuation designs for future proposed roof areas are provided in Section 8.2 below.

The Type IA storm profile was utilised for the attenuation calculations in accordance with TR-55. HydroCAD® software has been utilised in design for a 10% AEP rainfall value of 201mm with a 24-hour duration. Rainfall data was obtained from HIRDS and increased by 20% to account for climate change.

In addition, to appropriately mitigate stormwater runoff from the future proposed impermeable areas, we recommend utilising Low Impact Design Methods as a means of stormwater management. Design guidance should be taken from 'The Countryside Living Toolbox' design document, and where necessary, 'Technical Publication 10, Stormwater Management Devices – Design Guidelines Manual' Auckland Regional Council (2003).

8.2 PRIMARY STORMWATER

8.2.1 Stormwater Runoff from Roof Areas

At the time of report writing, no development proposals have been supplied for the eventual development of the proposed lots. As such, the below indicative stormwater attenuation designs are based off a range of anticipated roof areas per lot to show feasibility. In addition, as it has not yet been confirmed whether potable water will be supplied by the reticulated network or via on-site rainwater tanks, the below indicative stormwater designs will cover both scenarios.

Reticulated Potable Water Supply

Stormwater runoff from the roof of future proposed buildings must be captured by a proprietary guttering system and conveyed to a detention tank(s).

The recommended detention tank, peak post-development flow, detention volume and orifice configurations for a range of roof areas for the 10% AEP storm event adjusted for climate change are as follows:

Roof Area	Recommended Tank	Peak Post-Development Flow (10% AEP)	Detention Volume	Orifice Configuration
200m²	1 x 5,000L Promax Enduro Low Profile Rainwater Tank	< 1.69L/s	3.0m³	30mmØ orifice; located >790mm below the overflow outlet
250m²	1 x 5,000L Promax Enduro Low Profile Rainwater Tank	< 2.12L/s	3.7m³	32mmØ orifice; located >970mm below the overflow outlet
300m²	1 x 5,000L Promax Enduro Low Profile Rainwater Tank	< 2.54 L/s	4.3m³	34mmØ orifice; located >1130mm below the overflow outlet
350m²	1 x 10,000L Promax Rainwater Tank	< 2.96 L/s	5.0m³	35mmØ orifice; located >1360mm below the overflow outlet

Note: Stormwater attenuation recommendations are indicative only. Alternative designs are also acceptable.

Discharge from the detention tank(s) must be transported via sealed pipes to an outlet within each lot as specified below.

Non-Reticulated Potable Water Supply

Stormwater runoff from the roof of future proposed buildings must be captured by a proprietary guttering system and conveyed to potable water tanks.

The peak post-development flow, detention volume and orifice configurations for a range of roof areas for the 10% AEP storm event adjusted for climate change are as follows:

Roof Area	Peak Post-Development Flow (10% AEP)	Detention Volume	Orifice Configuration
200m²	< 1.69L/s	3.4m³	46mmØ orifice; located >170mm below the overflow outlet
250m²	< 2.12L/s	4.1m³	49mmØ orifice; located >200mm below the overflow outlet
300m²	< 2.54 L/s	4.8m³	51mmØ orifice; located >240mm below the overflow outlet
350m²	< 2.96 L/s	5.6m³	53mmØ orifice; located >280mm below the overflow outlet

Note: Stormwater attenuation recommendations are indicative only. Alternative designs are also acceptable. Estimations are based off 2 x 25,000L potable water/detention tanks with dimensions of 3600mmØ (or greater) x 2600mm high (or greater). Due to water quality concerns, runoff from hardstand areas is not to be directed to potable water/detention tanks.

Discharge and overflow from the potable water / detention tanks must be transported via sealed pipes to an outlet within each lot as specified below.

Stormwater Discharge Point

It is recommended that discharge and overflow from the detention tank(s) or potable water / detention tanks be directed via sealed pipes to an appropriate outlet in one of the proposed swales. The lots serviced by each swale, minimum swale size and lining for each swale is as follows:

Swale	Service Lots	Minimum Size	Lining
1	Lot 1 Lot 6	250mm deep x 1000mm wide v-channel	Grade < 7° - Grassed Grade > 7° - Minimum 6-inch riprap
2	Lot 2 Lot 5		
3	Lot 3 Lot 4		

The proposed swales are to have a scruffy dome or grated inlet with a silt trap at the downstream end of each swale. The scruffy dome / silt trap is to be fitted with 2 x 90mmØ outlet pipes (1 x 90mmØ kerb outlet per lot) discharging to the kerb along the western side of James Kemp Place. Refer to the appended Site Plan (136071-C001).

An easement for the right to drain water will be required for each of the three proposed swales. Permission from Council should be sought for any works outside the property boundaries.

8.2.2 Stormwater Runoff from ROW

At the time of report writing, it has not been confirmed if the proposed ROW will be concrete or metal. As such, an indicative soakage design for each case is provided below. The indicative soakage design is based on an estimated ROW impermeable area of 253m².

Concrete ROW

It is recommended to shape the proposed concrete ROW to shed runoff to catchpits. The catchpits are required to direct runoff via sealed pipes to the proposed soakpit's settling chamber with a minimum 300mm sump. The settling chamber is required to be fitted with a 100mmØ outlet pipe draining to the proposed soakpit and a 90mmØ overflow pipe above the soakpit soffit level directing overflow to a kerb discharge along the eastern side of James Kemp Road. Refer to the appended Site Plan (136071-C001) and calculation set for clarification.

Stormwater catchpits and drainage piping should be in accordance with E1 Surface Water of the NZBC. The catchpits must have a suitable sump to serve as a pre-treatment device prior to discharging to the soakpit.

The soakpit is recommended to be installed under the ROW and is recommended to be constructed out of Cirtex Rainsmart Modules or similar approved alternative. The soakpit must be lined with geotextile filter cloth. Minimum cover and pavement layerworks should comply with the supplier's specifications.

The proposed soakpit is recommended to be constructed out of 56 Double Critex Rainsmart Modules with recommended dimensions of 5.72m long x 2.80m wide x 0.86m deep (8 modules long x 7 modules wide x double module deep). The soakpit must be constructed in accordance with the manufacturer's specifications.

Metal ROW

It is recommended to shape the proposed metal ROW to shed runoff to a minimum 150mm deep x 500mm wide grassed v-channel swale along the southern side of the proposed ROW. The proposed swale is to have a scruffy dome or grated inlet with a silt trap at its lowest point which is to act as the proposed soakpit's settling chamber. The settling chamber is required to be fitted with a 100mmØ outlet pipe draining to the proposed soakpit and a 90mmØ overflow pipe above the soakpit soffit level directing overflow to a kerb discharge along the eastern side of James Kemp Road. Refer to the appended Site Plan (136071-C001) and calculation set for clarification.

The silt trap and drainage piping should be in accordance with E1 Surface Water of the NZBC. The silt trap must have a suitable sump to serve as a pre-treatment device prior to discharging to the soakpit.

The soakpit is recommended to be installed under the ROW and is recommended to be constructed out of Cirtex Rainsmart Modules or similar approved alternative. The soakpit must be lined with geotextile filter cloth. Minimum cover and pavement layerworks should comply with the supplier's specifications.

The proposed soakpit is recommended to be constructed out of 49 Double Critex Rainsmart Modules with recommended dimensions of 5.01m long x 2.80m wide x 0.86m deep (7 modules long x 7 modules wide x double module deep). The soakpit must be constructed in accordance with the manufacturer's specifications.

8.2.3 Stormwater Runoff from Hardstand Areas

Stormwater runoff from future proposed hardstand is recommended to be managed in a similar manner detailed in Section 8.2.2, where concrete driveways are recommended to be shaped to shed runoff to catchpits, and metal driveways are recommended to be shaped to shed runoff to swales, runoff is then recommended to be directed to a soakage system within each lot.

Alternatively, runoff resulting from future proposed hardstand may be directed to each lot's stormwater discharge point via sealed pipes where runoff resulting from future proposed driveways / hardstand areas has been 'over-mitigated' via an additional detention volume in the roof detention tank(s) or potable water / detention tanks.

8.3 SECONDARY STORMWATER

Where required, overland flows and similar runoff from higher ground should be intercepted by means of shallow surface drains and/or small bunds near structures to protect these from both saturation and erosion, as well as any localised slope instability. Water collected in interceptor drains should be diverted away from building sites to stable disposal points.

8.4 DISTRICT PLAN ASSESSMENT

This section has been prepared to demonstrate the likely effects of the activity on stormwater runoff and the means of mitigating runoff.

In assessing an application under this provision, the Council will exercise discretion to review the following matters below, (a) through (r). In respect of matters (a) through (r), we provide the following comments:

13.10.4 – Stormwater Disposal

(a) Whether the application complies with any regional rules relating to any water or discharge permits required under the Act, and with any resource consent issued to the District Council in relation to any urban drainage area stormwater management plan or similar plan.	Stormwater attenuation / management recommendations / indicative designs are included in this report to ensure that future proposed development is compliant with existing Resource Consent requirements pertaining to RC-2220780-RMASUB.
(b) Whether the application complies with the provisions of the Council's "Engineering Standards and Guidelines" (2004) - Revised March 2009 (to be used in conjunction with NZS 4404:2004).	The application is deemed compliant with the provisions of the Council's "Engineering Standards and Guidelines" (2004) - Revised March 2009
(c) Whether the application complies with the Far North District Council Strategic Plan - Drainage.	The application is deemed compliant with the Far North District Council Strategic Plan - Drainage
(d) The degree to which Low Impact Design principles have been used to reduce site impermeability and to retain natural permeable areas.	Stormwater management should be provided for the subject lot by utilising Low Impact Design Methods. Guidance for design should be taken from 'The Countryside Living Toolbox' design document, and where necessary, *"Technical Publication 10, Stormwater Management Devices – Design Guidelines Manual" Auckland Regional Council (2003).* All roof runoff will be collected by rainwater tanks for conveyance to a safe outlet point. Hardstand areas are to be shaped to shed runoff to swales / catchpits for runoff conveyance to soakage devices or to each lot's discharge point without causing scour or erosion.
(e) The adequacy of the proposed means of disposing of collected stormwater from the roof of all potential or existing buildings and from all impervious surfaces.	As above. Runoff from new roof areas will be collected, directed to rainwater tanks and discharged in a controlled manner to a discharge outlet, reducing scour and erosion. Hardstand areas are to be shaped to shed runoff to swales / catchpits for runoff conveyance to soakage devices or to each lot's discharge point without causing scour or erosion.
(f) The adequacy of any proposed means for screening out litter, the capture of chemical spillages, the containment of contamination from roads and paved areas, and of siltation.	Runoff from roof areas is free of litter, chemical spillages, or contaminants from roads. Hardstand areas are to be shaped to shed runoff to swales / catchpits for runoff conveyance to soakage devices or to each lot's discharge point without causing scour or

	erosion. Catchpits are to have a suitable sump to serve as a pre-treatment device prior to discharging to any soakage devices or to the lot's discharge point. Grassed swales act as a bio-filter strip to filter out entrained pollutants.
(g) The practicality of retaining open natural waterway systems for stormwater disposal in preference to piped or canal systems and adverse effects on existing waterways.	No alteration to waterways is proposed.
(h) Whether there is sufficient capacity available in the Council's outfall stormwater system to cater for increased run-off from the proposed allotments.	Not applicable.
(i) Where an existing outfall is not capable of accepting increased run-off, the adequacy of proposals and solutions for disposing of run-off.	Not applicable.
(j) The necessity to provide on-site retention basins to contain surface run-off where the capacity of the outfall is incapable of accepting flows, and where the outfall has limited capacity, any need to restrict the rate of discharge from the subdivision to the same rate of discharge that existed on the land before the subdivision takes place.	Not applicable.
(k) Any adverse effects of the proposed subdivision on drainage to, or from, adjoining properties and mitigation measures proposed to control any adverse effects.	Outlet locations are to be determined during detailed design, and are to be located such that there are no adverse effects on adjacent properties.
(l) In accordance with sustainable management practices, the importance of disposing of stormwater by way of gravity pipe lines. However, where topography dictates that this is not possible, the adequacy of proposed pumping stations put forward as a satisfactory alternative.	Not applicable.
(m) The extent to which it is proposed to fill contrary to the natural fall of the country to obtain gravity outfall; the practicality of obtaining easements through adjoining owners' land to other outfall systems; and whether filling or pumping may constitute a satisfactory alternative.	Not applicable.
(n) For stormwater pipes and open waterway systems, the provision of appropriate easements in favour of either the registered user or in the case of the Council, easements in gross, to be shown on the survey plan for the subdivision, including private connections passing over other land protected by easements in favour of the user.	Right to drain water easements will be required for the 3 proposed swales. These are to be shown on all proposed Scheme Plans.
(o) Where an easement is defined as a line, being the centre line of a pipe already laid, the effect of any alteration of its size and the need to create a new easement.	Not applicable.

(p) For any stormwater outfall pipeline through a reserve, the prior consent of the Council, and the need for an appropriate easement.	Not applicable.
(q) The need for and extent of any financial contributions to achieve the above matters.	Not applicable.
(r) The need for a local purpose reserve to be set aside and vested in the Council as a site for any public utility required to be provided.	Not applicable.

9 ACCESS AND VEHICLE CROSSING

9.1 GENERAL

A basic access and vehicle crossing assessment for the proposed lots has been completed with recommendations provided in this section.

It is proposed to construct a new vehicle crossing directly off Kemp Road to service Lots 1 & 6.

Lots 2 – 5 are recommended to utilise the recently constructed vehicle crossing off James Kemp Place.

New vehicle crossings and accessways are to be designed and constructed in accordance with Council's Engineering Standards and Guidelines.

Figure 10: Proposed Vehicle Access Locations (Base Plan by Boi Survey Ltd).

9.2 VEHICLE CROSSINGS

It is recommended to construct the new vehicle crossing servicing Lots 1 & 6 to be in compliance with the Far North District Council Engineering Standards (May 2023) Sheet 21 – Type 1A. The vehicle crossing is recommended to have a width of 6m at the boundary so that two separate driveways to Lots 1 & 6 can be constructed off the proposed vehicle crossing.

The crossings shall not obstruct any drainage facilities within the berm. Where the drain is shallow and only carries low rain flow, the crossing must pass through the drain and not obstruct flows.

9.3 VEHICLE ACCESS

The Far North District Plan Section 15.1.6C.1.5 notes that "*All bends and corners on the private accessway are to be constructed to allow for the passage of a Heavy Rigid Vehicle" and "Runoff from impermeable surfaces shall, wherever practicable, be directed to grass swales and/or shall be managed in such a way as will reduce the volume and rate of stormwater runoff and contaminant loads*.".

The proposed ROW is recommended to be constructed in accordance with the Far North District Council Engineering Standards (May 2023) – Table 3-16 Category D.

Table 3-16: Minimum Width Requirements – Private Accessways

Category	Criteria (Household Units)	Minimum Legal Width (m)	Minimum Carriageway Width (m)				Footpath Width (m)	Minimum Surfacing Requirement
			Unsealed Shoulder	Surfacing Width[17]	Total			
	Urban							
A	2 - 4	4.0	-	1 x 3.0	3.0		-	Seal or Concrete
A(Alt)[1]	2 - 4	5.0	-	1 x 4.0	4.0		-	Seal or Concrete
B	5 - 8	6.0	-	1 x 4.5	4.5		1 x 0.95	Seal or Concrete
	Rural							
C	2	4.0	2 x 0.25	1 x 3.0	3.5		-	Aggregate[18]
C(Alt)[16]	2	5.0	2 x 0.25	1 x 4.0	4.5		-	Aggregate[18]
D	3 - 5	6.0	2 x 0.25	1 x 4.0	4.5		-	Aggregate[18]
E	6 - 8	10.0	2 x 0.25	2 x 2.75	6.0		-	Seal

Figure 11: Snip of Table 3-16 from FNDC Engineering Standards.

In accordance with the Far North District Council Engineering Standards (May 2023) – Section 3.2.28.3 the proposed ROW does not require any passing bays as the ROW's length is less than 200m and the carriageway width is not less than 4.5m.

9.4 SIGHT DISTANCES

Kemp Road and James Kemp Place have general operating speeds of 40km/hr (NZTA National Speed Limits Register). The Far North District Council Engineering Standards (May 2023) – Sheet 4 notes that, the minimum required sight distance is 45m from access roads with low volume traffic.

Lots 1 & 6

In compliance with the FNDC Engineering Standards' sight distance requirements, the proposed access point to service Lots 1 & 6 allows for >45m of sight distance to the southwest and to the northeast.

Figure 12: Proposed Access Point on Kemp Road Facing Northeast, >45m Sight Distance Available.

Figure 13: Proposed Access Point on Kemp Road Facing Southwest, >45m Sight Distance Available.

Lots 2 - 5

In compliance with the FNDC Engineering Standards' sight distance requirements, the recently constructed vehicle crossing to service Lots 2 - 5 allows for >45m of sight distance to the northwest and southeast.

Figure 14: Site Photo Showing Recently Constructed Vehicle Crossing off James Kemp Place.

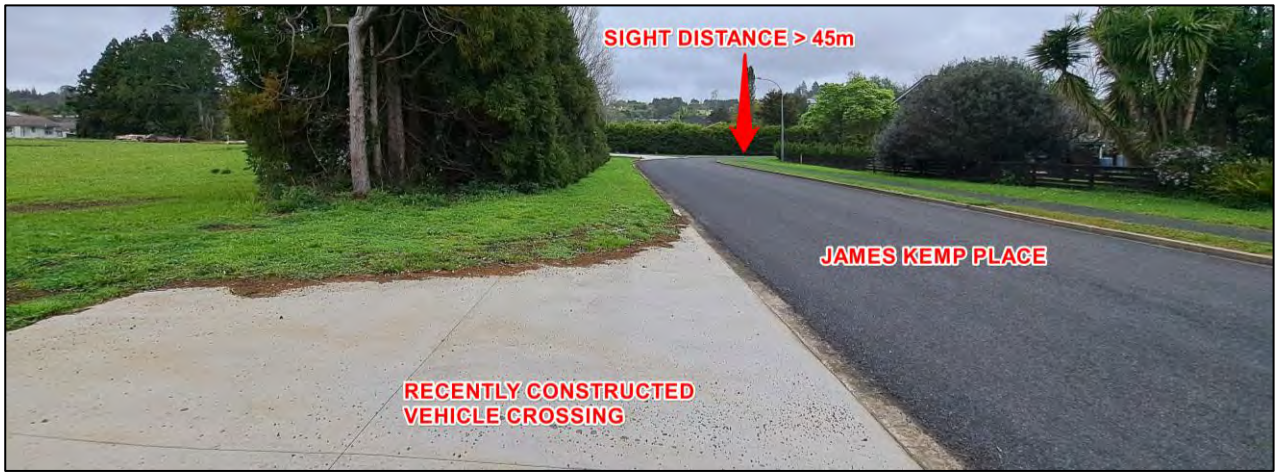


Figure 15: Recently Constructed Access Point on James Kemp Place Facing Southeast, >45m Sight Distance Available.

Figure 16: Recently Constructed Access Point on James Kemp Place Facing Northwest, >45m Sight Distance Available.

10 LIMITATIONS

We anticipate that this report is to be submitted to Council in support of a Resource Consent application.

This report has been commissioned solely for the benefit of our client, **Shearwater Ltd.**, in relation to the project as described herein, and to the limits of our engagement, with the exception that the local Territorial Authority may rely on it to the extent of its appropriateness, conditions, and limitations, when issuing the subject consent.

Any variations from the development proposals as described herein as forming the basis of our appraisal should be referred back to us for further evaluation. Copyright of Intellectual Property remains with Wilton Joubert 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 other civil aspects of this site, nor for its use by any other person or entity, and any other person or entity who relies upon any information contained herein does so entirely at their own risk. 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.

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 and does not remove the necessity for the normal inspection of site conditions and the design of foundations as would be made under all normal circumstances.

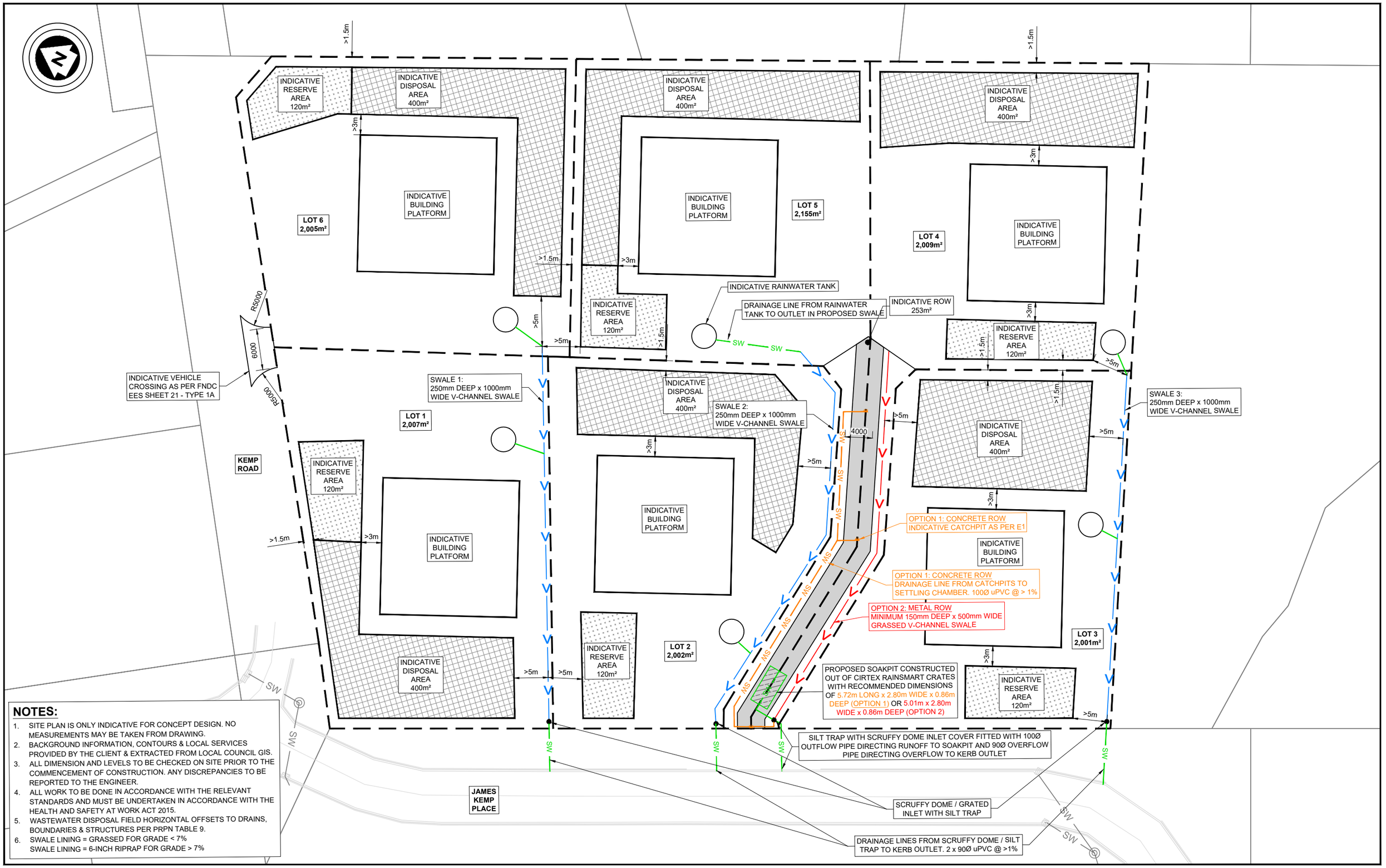
Thank you for the opportunity to provide our service on this project, and if we can be of further assistance, please do not hesitate to contact us.

Yours faithfully,

WILTON JOUBERT LIMITED

Enclosures:

- Site Plan – C001 (1 sheet)
- Soakpit Detail – C201 (1 sheet)
- Hand Auger Borehole Records (12 sheets)
- Calculation Set



NOTES:

1. SITE PLAN IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. BACKGROUND INFORMATION, CONTOURS & LOCAL SERVICES PROVIDED BY THE CLIENT & EXTRACTED FROM LOCAL COUNCIL GIS.
3. ALL DIMENSION AND LEVELS TO BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN IN ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.
5. WASTEWATER DISPOSAL FIELD HORIZONTAL OFFSETS TO DRAINS, BOUNDARIES & STRUCTURES PER PRPN TABLE 9.
6. SWALE LINING = GRASSED FOR GRADE < 7%
   SWALE LINING = 6-INCH RIPRAP FOR GRADE > 7%

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ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
A	SEP '24	GMB	CIVIL SITE SUITABILITY REPORT REVA
B	OCT '24	BGS	CIVIL SITE SUITABILITY REPORT REVB

DESIGNED BY: GMB
DRAWN BY: GMB
CHECKED BY: BGS
SURVEYED BY: OTHER

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

RESOURCE CONSENT
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **SITE PLAN**

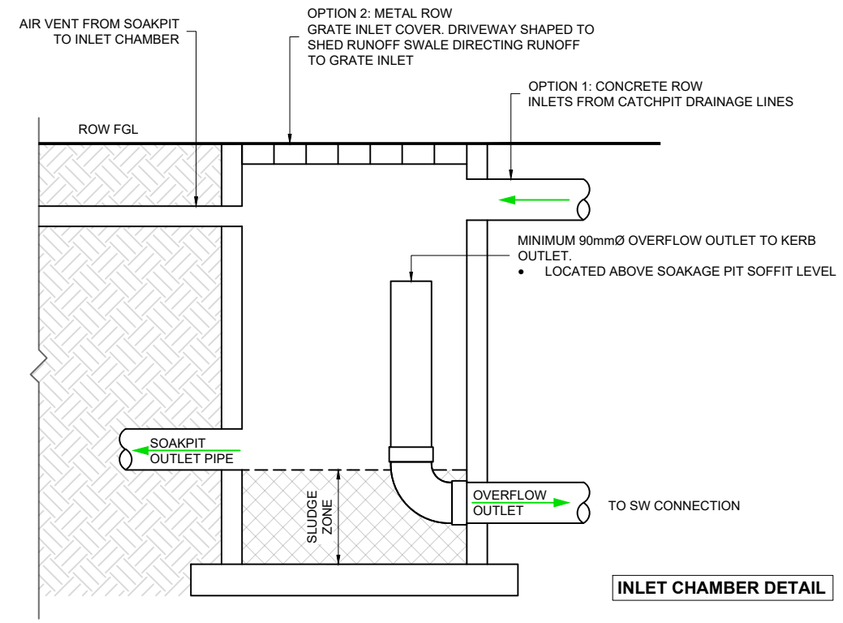
PROJECT DESCRIPTION: **CIVIL SITE SUITABILITY REPORT**

PROJECT TITLE: **PROPOSED SUBDIVISION OF LOT 1 DP 594558 79 KEMP ROAD KERIKERI NORTHLAND**

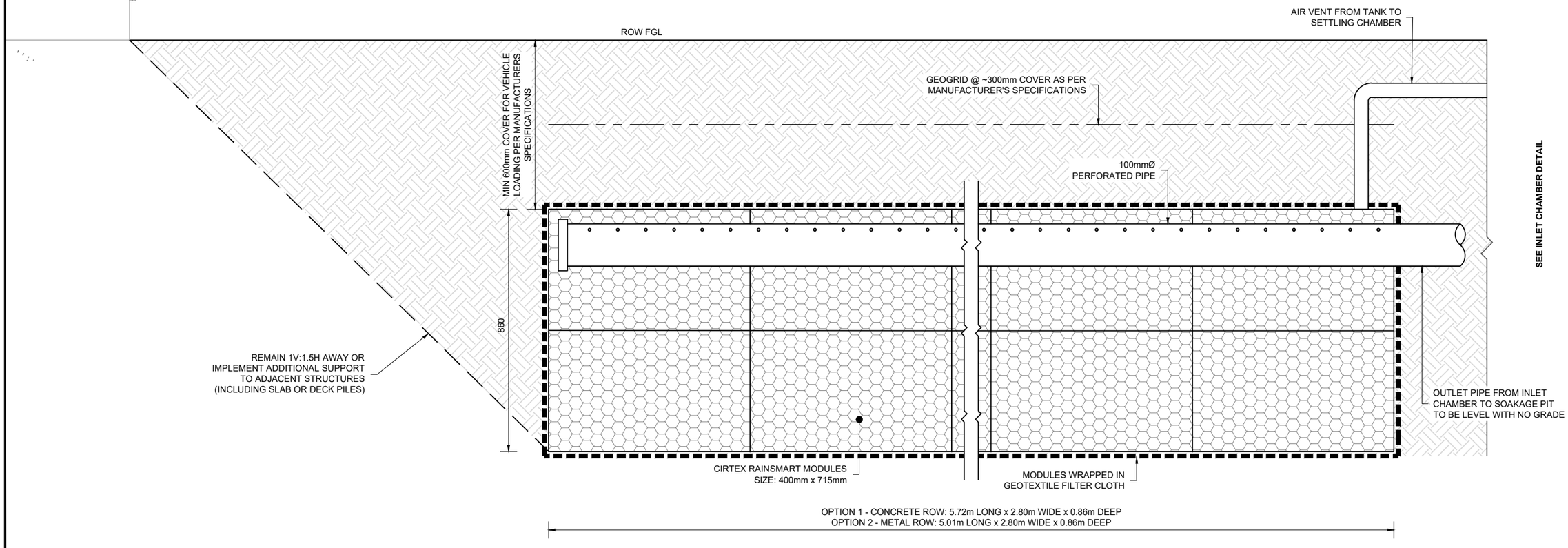
ORIGINAL DRAWING SIZE: A3
OFFICE: OREWA
DRAWING SCALE: 1:500
CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 136071-C001
ISSUE: B

NOTES:

1. DRAWN INDICATIVELY ONLY. NOT TO SCALE. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
3. SITE ENGINEER TO INSPECT PIT EXCAVATION PRIOR TO COMMENCEMENT OF SOAKAGE & DETENTION TANK SYSTEM CONSTRUCTION.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN IN ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.



INLET CHAMBER DETAIL



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ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
A	SEP '24	GMB	CIVIL SITE SUITABILITY REPORT REVA
B	OCT '24	BGS	CIVIL SITE SUITABILITY REPORT REVB

DESIGNED BY: GMB
DRAWN BY: GMB
CHECKED BY: BGS
SURVEYED BY: OTHER

SERVICES NOTE

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RESOURCE CONSENT

DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **SOAKPIT DETAIL**

PROJECT DESCRIPTION: **CIVIL SITE SUITABILITY REPORT**

PROJECT TITLE: **PROPOSED SUBDIVISION OF LOT 1 DP 594558 79 KEMP ROAD KERIKERI NORTHLAND**

ORIGINAL DRAWING SIZE:	OFFICE:
A3	OREWA
DRAWING SCALE:	CO-ORDINATE SYSTEM:
N.T.S	NOT COORDINATED

DRAWING NUMBER: **136071-C201** ISSUE: **B**

HAND AUGER : HA01

JOB NO.: 136070 **SHEET:** 1 OF 1

START DATE: 02/09/2024 **NORTHING:** **GRID:**

CLIENT: Shearwater Ltd **DIAMETER:** 50mm **EASTING:**

PROJECT: Geotechnical Investigation for 6 Lot Subdivision **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: 79 Kemp Road, Kerikeri **FACTOR:** 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, dry to moist, low plasticity, frequent weakly and strongly fused clast inclusions.		0.4		197+	-	-		
			0.6						
			0.8		197+	-	-		
			1.0						
			1.2		161	76	2.1		
			1.4						
			1.6		152	87	1.7		
	Fine to Coarse Gravelly SILT, greyish brown, very stiff to hard, dry to moist, no plasticity.		1.8						
	EOH: 2.00m - Too Hard To Auger		2.0		UTP	-	-		
			2.2						
			2.4						

REMARKS

End of borehole @ 2.00m (Target Depth: 3.00m)

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

LOGGED BY: JEM

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA02

JOB NO.: 136070 **SHEET:** 1 OF 1

START DATE: 02/09/2024 **NORTHING:** **GRID:**

CLIENT: Shearwater Ltd **DIAMETER:** 50mm **EASTING:**

PROJECT: Geotechnical Investigation for 6 Lot Subdivision **SV DIAL:** 772 **ELEVATION:** Ground

SITE LOCATION: 79 Kemp Road, Kerikeri **FACTOR:** 1.6 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brown, very stiff, dry to moist, low plasticity.		0.4		173	77	2.2		
	0.6m: Frequent orange and light yellow strongly and weakly fused clast inclusions.		0.6						
	0.7m: Frequent grey strongly nd weakly fused clast inclusions.		0.8		224+	-	-		
	Fine to Coarse Gravelly SILT, brown with grey, orange, light yellow and white gravels, very stiff to hard, dry to moist, no plasticity.		1.0						
			1.2		UTP	-	-		
			1.4						
	EOH: 1.40m - Too Hard To Auger		1.6		UTP	-	-		
			1.8						
			2.0						
			2.2						
			2.4						

REMARKS

End of borehole @ 1.40m (Target Depth: 3.00m)

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

LOGGED BY: SJP

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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Website: www.wiltonjoubert.co.nz

HAND AUGER : HA03

JOB NO.:	136070	**SHEET:**	1 OF 1
START DATE:	02/09/2024	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	1994	**ELEVATION:**	Ground
FACTOR:	1.41	**DATUM:**	

CLIENT: Shearwater Ltd

PROJECT: Geotechnical Investigation for 6 Lot Subdivision

SITE LOCATION: 79 Kemp Road, Kerikeri

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, dry to moist, low plasticity, frequent white and yellow strongly and fused clast inclusions.		0.4		197+	-	-		
			0.6						
			0.8		197+	-	-		
			1.0						
	EOH: 1.20m - Too Hard To Auger		1.2		UTP	-	-		
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

TOPSOIL | CLAY | SAND | PEAT | FILL | SILT | GRAVEL | ROCK

REMARKS

End of borehole @ 1.20m (Target Depth: 3.00m)

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

LOGGED BY: JEM

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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Website: www.wiltonjoubert.co.nz

HAND AUGER : HA04

JOB NO.:	136070	**SHEET:**	1 OF 1
START DATE:	02/09/2024	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	772	**ELEVATION:**	Ground
FACTOR:	1.6	**DATUM:**	

CLIENT: Shearwater Ltd

PROJECT: Geotechnical Investigation for 6 Lot Subdivision

SITE LOCATION: 79 Kemp Road, Kerikeri

SOIL DESCRIPTION

TOPSOIL | CLAY | SAND | PEAT | FILL | SILT | GRAVEL | ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brown, very stiff, dry to moist, low plasticity.		0.4		UTP	-	-		
	0.4m: Frequent orange and light yellow strongly and weakly fused clast inclusions.		0.6						
	Fine to Coarse Gravelly SILT, brown with orange gravel inclusions, very stiff to hard, dry to moist, no plasticity.		0.8		UTP	-	-		
			1.0						
	EOH: 1.20m - Too Hard To Auger		1.2		UTP	-	-		
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

REMARKS

End of borehole @ 1.20m (Target Depth: 3.00m)

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

LOGGED BY: SJP

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA05

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 1994 **ELEVATION:** Ground
FACTOR: 1.41 **DATUM:**

SOIL DESCRIPTION

TOPSOIL | CLAY | SAND | PEAT | FILL | SILT | GRAVEL | ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, dry to moist, low plasticity, frequent strongly and weakly fused clast inclusions.		0.4		197+	-	-		
			0.6						
	0.9m: Frequent light grey fine to coarse gravel inclusions.		0.8		197+	-	-		
	EOH: 1.00m - Too Hard To Auger		1.0		UTP	-	-		
			1.2						
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

REMARKS
End of borehole @ 1.00m (Target Depth: 3.00m)

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

LOGGED BY: JEM
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA06

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 772 **ELEVATION:** Ground
FACTOR: 1.6 **DATUM:**

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

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brown, very stiff, dry to moist, low plasticity.		0.4						
	0.4m: Frequent orange and light yellow strongly and weakly fused clast inclusions.				224+	-	-		
			0.6						
	0.8m: Occasional grey strongly and weakly fused clast inclusions.		0.8		224+	-	-		
			1.0						
			1.2		224+	-	-		
			1.4						
	1.6m: Occasional black specks.		1.6		224+	-	-		
	Fine to Coarse Gravelly SILT, brown with grey, orange and black gravels, very stiff to hard, dry to moist, no plasticity.		1.8						
	EOH: 1.90m - Too Hard To Auger		2.0		UTP	-	-		
			2.2						
			2.4						

REMARKS
End of borehole @ 1.90m (Target Depth: 3.00m)

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

LOGGED BY: SJP
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA07

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 1994 **ELEVATION:** Ground
FACTOR: 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, dry to moist, low plasticity, frequent strongly and weakly fused clast inclusions.		0.4		197+	-	-		
	0.7m: Pockets of grey fine to coarse gravel inclusions.		0.6						
			0.8		197+	-	-		
	0.9m: Becoming no to low plasticity.		1.0						
			1.2		197+	-	-		
			1.4						
	EOH: 1.40m - Too Hard To Auger				UTP	-	-		
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

SOIL DESCRIPTION
TOPSOIL CLAY SAND PEAT
FILL SILT GRAVEL ROCK

REMARKS
End of borehole @ 1.40m (Target Depth: 3.00m)

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

LOGGED BY: JEM
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA08

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 1994 **ELEVATION:** Ground
FACTOR: 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, moist, low plasticity, frequent strongly and weakly fused clast inclusions.		0.4		197+	-	-		
			0.6						
			0.8		197+	-	-		
			1.0						
	EOH: 1.10m - Too Hard To Auger		1.2		UTP	-	-		
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

TOPSOIL FILL CLAY SILT SAND GRAVEL PEAT ROCK

REMARKS
End of borehole @ 1.10m (Target Depth: 3.00m)

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

LOGGED BY: JEM
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA09

JOB NO.: 136070 **SHEET:** 1 OF 1

START DATE: 02/09/2024 **NORTHING:** **GRID:**

CLIENT: Shearwater Ltd **DIAMETER:** 50mm **EASTING:**

PROJECT: Geotechnical Investigation for 6 Lot Subdivision **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: 79 Kemp Road, Kerikeri **FACTOR:** 1.57 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brownish orange, very stiff, dry to moist, low plasticity.		0.4		220+	-	-		
	0.5m: Some weakly cemented clast (<10mmø) inclusions, occasional white specks.		0.6						
	0.8m: Becoming orange with occasional brown streaks.		0.8		220+	-	-		
	SILT, orange with brown streaks, very stiff to hard, dry to moist, no plasticity.		1.0						
			1.2		UTP	-	-		
			1.4						
	1.6m: Becoming orange brown with black specks.		1.6		UTP	-	-		
			1.8						
	EOH: 2.00m - Too Hard To Auger		2.0		UTP	-	-		
			2.2						
			2.4						

REMARKS

End of borehole @ 2.00m (Target Depth: 3.00m)

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

LOGGED BY: NPN

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA10

JOB NO.: 136070 **SHEET:** 1 OF 1

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: DR4802 **ELEVATION:** Ground
FACTOR: 1.57 **DATUM:**

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

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brown with orange streaks, very stiff, dry to moist, low plasticity.		0.4		220+	-	-		
			0.6						
	0.8m: Becoming orangey brown with white specks.		0.8		220+	-	-		
			1.0						
			1.2		204	110	1.9		
	Slightly Fine to Coarse Gravelly SILT, orange and grey with black specks, very tiff to hard, dry to moist, no plasticity.		1.4						
			1.6		UTP	-	-		
	1.8m: 200mm lense of SILT, orangey brown, very stiff, moist, no plasticity.		1.8						
			2.0						
	EOH: 2.00m - Too Hard To Auger		2.2		UTP	-	-		
			2.4						

REMARKS
End of borehole @ 2.00m (Target Depth: 3.00m)

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

LOGGED BY: NPN
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA11

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: DR4802 **ELEVATION:** Ground
FACTOR: 1.57 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brownish orange, very stiff, dry to moist, low plasticity.		0.4		220+	-	-		
	0.5m: Becoming brown with orange and occasional white specks.		0.6						
	0.6m: Frequent weakly fused clast (<15mmø) inclusions.		0.8		220+	-	-		
	Fine to Coarse Gravelly SILT, brownish orange, very stiff to hard, dry to moist, no plasticity.		1.0						
			1.2		UTP	-	-		
			1.4						
	EOH: 1.50m - Too Hard To Auger		1.6		UTP	-	-		
			1.8						
			2.0						
			2.2						
			2.4						

REMARKS
End of borehole @ 1.50m (Target Depth: 3.00m)

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

LOGGED BY: NPN
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA12

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: DR4802 **ELEVATION:** Ground
FACTOR: 1.57 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brownish orange, very stiff, dry to moist, low plasticity.		0.4		220+	-	-		
	0.5m: Some weakly fused clast (<15mmø) inclusions.		0.6						
	0.8m: Pockets of purplish grey silt inclusions, no plasticity.		0.8		UTP	-	-		
			1.0						
	EOH: 1.20m - Too Hard To Auger		1.2		UTP	-	-		
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

TOPSOIL CLAY SAND PEAT
FILL SILT GRAVEL ROCK

REMARKS
End of borehole @ 1.20m (Target Depth: 3.00m)

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

LOGGED BY: NPN
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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Stormwater Soakage Assessment Per E1/VM1
Job No: 136071
79 Kemp Road, Kerikeri

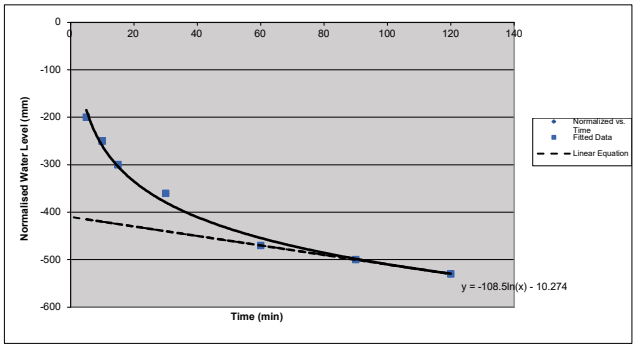
Percolation Test 1

Water Level (mm)			
Time (min)	Measured	Normalised	Difference
5	-330	-200	0
10	-280	-250	50
15	-230	-300	50
30	-170	-360	60
60	-60	-470	110
90	-30	-500	30
120	0	-530	30

Point from linear fit equation	
5	-415
10	-420
15	-425
30	-440
60	-470
90	-500
120	-530

The linear equation between 105min and 120min
y= -1x -410

Calculated Percolation Rate: 60mm/hr



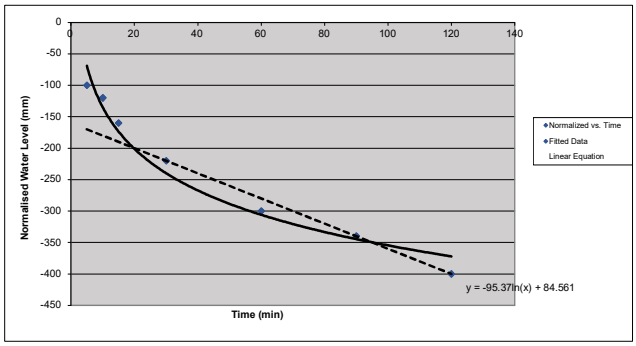
Percolation Test 2

Water Level (mm)			
Time (min)	Measured	Normalised	Difference
5	-300	-100	0
10	-280	-120	20
15	-240	-160	40
30	-180	-220	60
60	-100	-300	80
90	-60	-340	40
120	0	-400	60

Point from linear fit equation	
5	-170
10	-180
15	-190
30	-220
60	-280
90	-340
120	-400

The linear equation between 40min and 50min
y= -2x -160

Calculated Percolation Rate: 120mm/hr



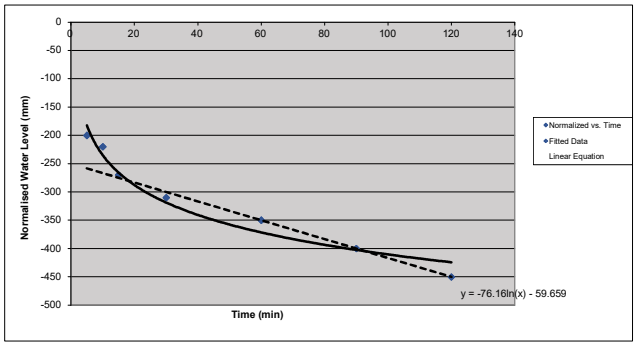
Percolation Test 3

Water Level (mm)			
Time (min)	Measured	Normalised	Difference
5	-250	-200	0
10	-230	-220	20
15	-180	-270	50
30	-140	-310	40
60	-100	-350	40
90	-50	-400	50
120	0	-450	50

Point from linear fit equation	
5	-258
10	-267
15	-275
30	-300
60	-350
90	-400
120	-450

The linear equation between 40min and 50min
y= -2x -250

Calculated Percolation Rate: 100mm/hr



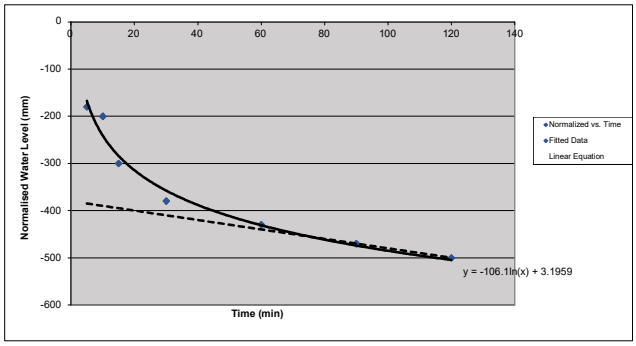
Percolation Test 4

Water Level (mm)			
Time (min)	Measured	Normalised	Difference
5	-320	-180	0
10	-300	-200	20
15	-200	-300	100
30	-120	-380	80
60	-70	-430	50
90	-30	-470	40
120	0	-500	30

Point from linear fit equation	
5	-385
10	-390
15	-395
30	-410
60	-440
90	-470
120	-500

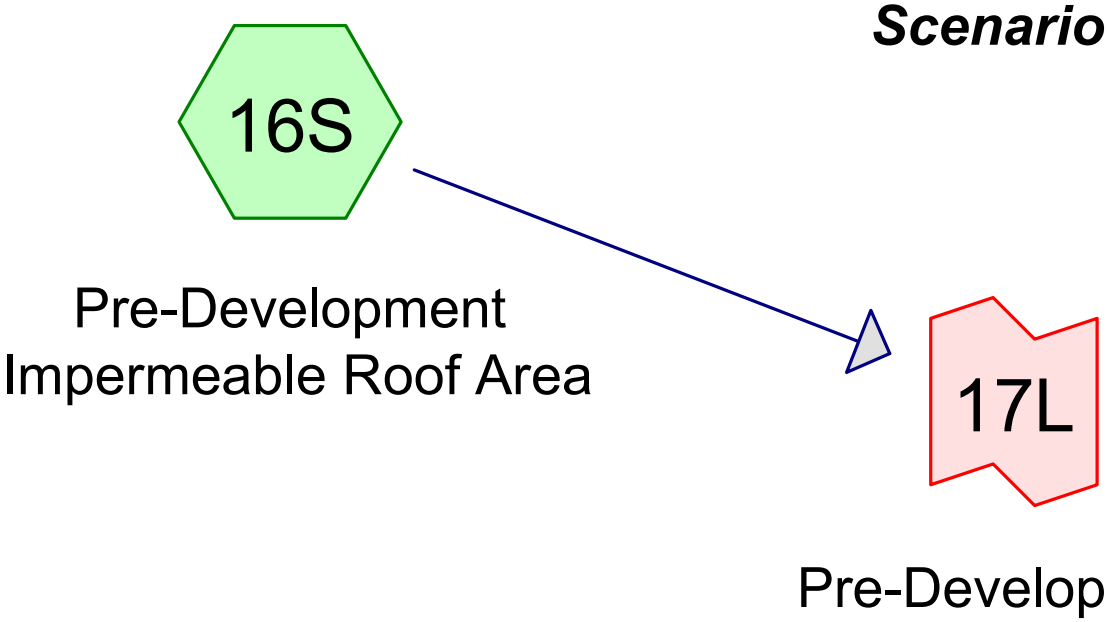
The linear equation between 40min and 50min
y= -1x -380

Calculated Percolation Rate: 60mm/hr



200m²

Pre-Development Scenario



Subcat Reach Pond Link

Routing Diagram for 136071 - Non Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 16S: Pre-Development Runoff Area=200.0 m² 0.00% Impervious Runoff Depth>123 mm
Tc=10.0 min CN=74 Runoff=1.69 L/s 24.5 m³

Link 17L: Pre-Development Inflow=1.69 L/s 24.5 m³
Primary=1.69 L/s 24.5 m³

Summary for Subcatchment 16S: Pre-Development Impermeable Roof Area

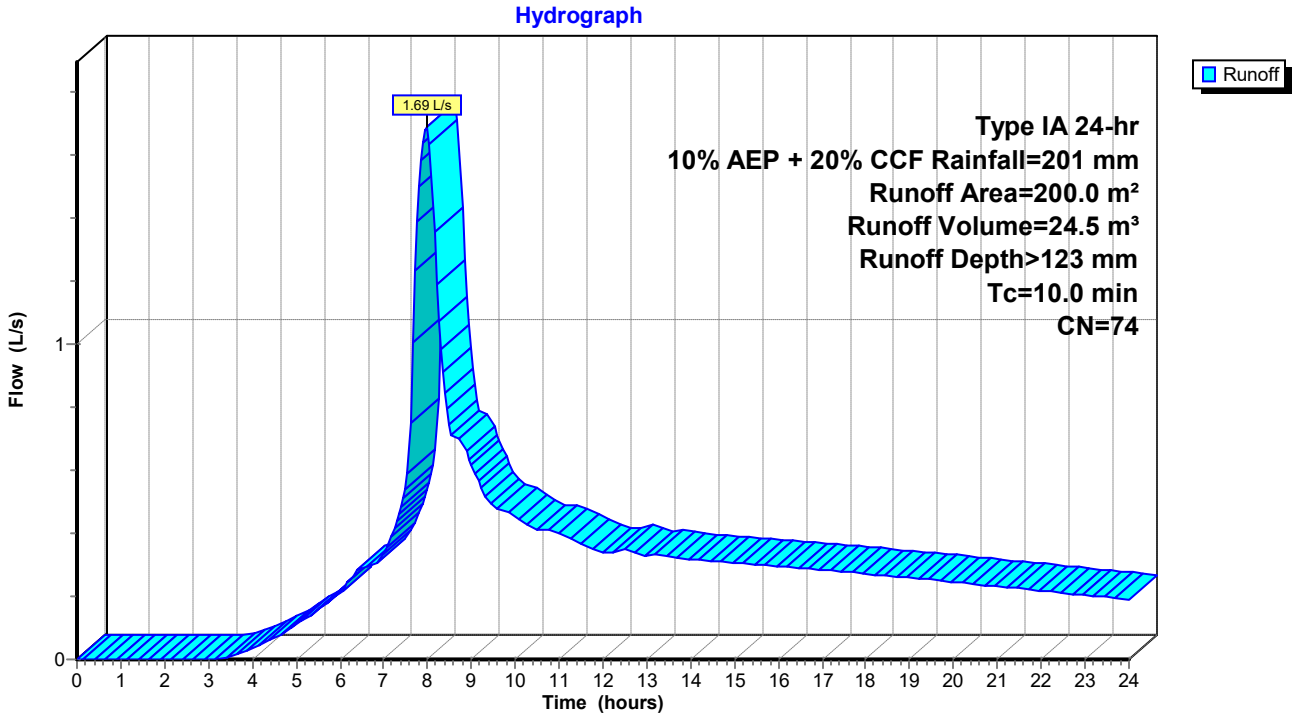
Runoff = 1.69 L/s @ 7.99 hrs, Volume= 24.5 m³, Depth> 123 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
200.0	74	>75% Grass cover, Good, HSG C
200.0		100.00% Pervious Area

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

Subcatchment 16S: Pre-Development Impermeable Roof Area

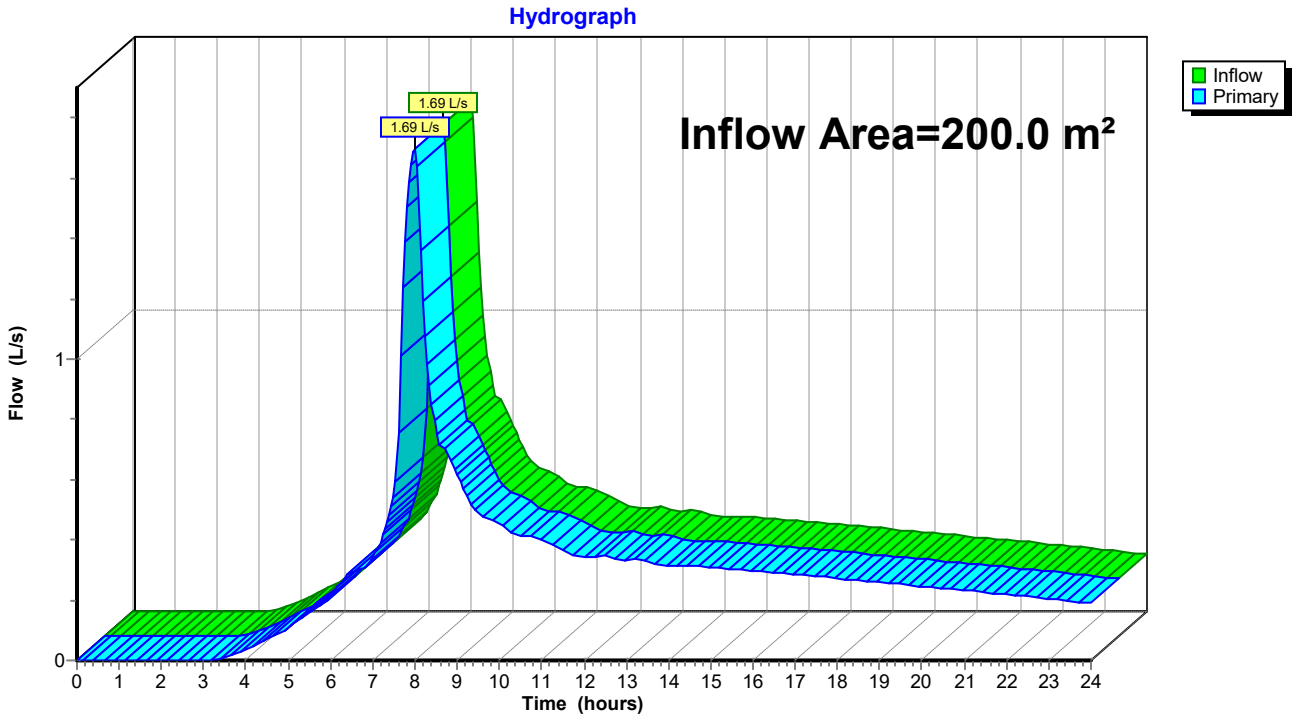


Summary for Link 17L: Pre-Development

Inflow Area = 200.0 m², 0.00% Impervious, Inflow Depth > 123 mm for 10% AEP + 20% CCF event
Inflow = 1.69 L/s @ 7.99 hrs, Volume= 24.5 m³
Primary = 1.69 L/s @ 7.99 hrs, Volume= 24.5 m³, Atten= 0%, Lag= 0.0 min

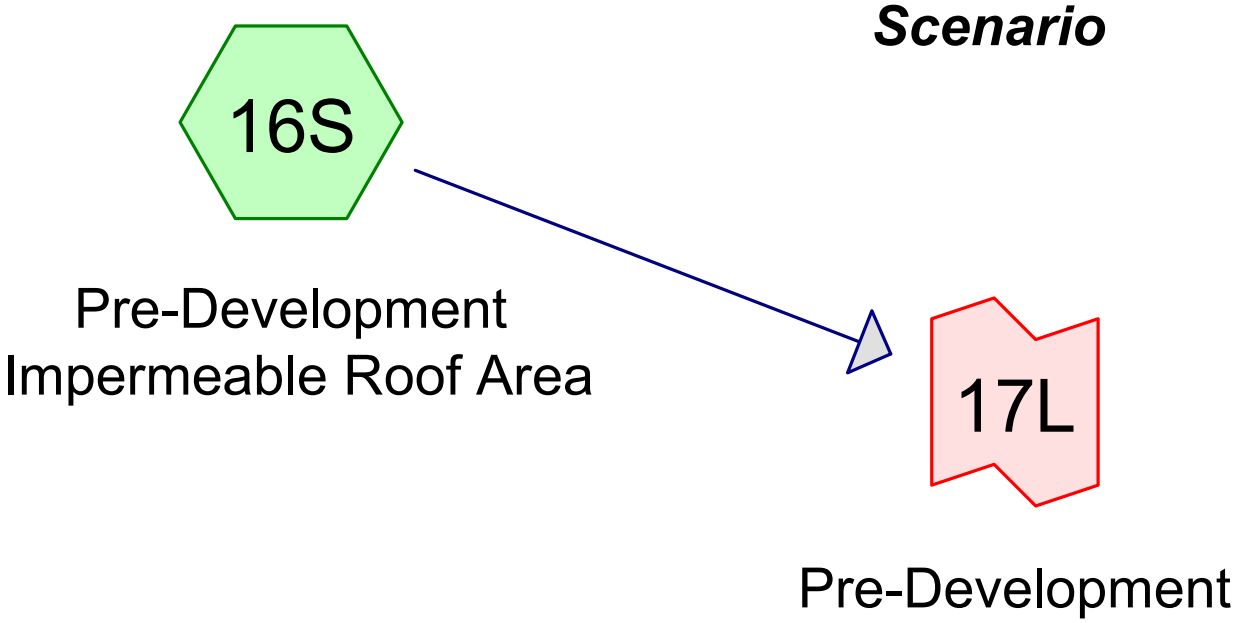
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 17L: Pre-Development



250m²

Pre-Development Scenario



Subcat Reach Pond Link

Routing Diagram for 136071 - Non Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 16S: Pre-Development Runoff Area=250.0 m² 0.00% Impervious Runoff Depth>123 mm
Tc=10.0 min CN=74 Runoff=2.12 L/s 30.7 m³

Link 17L: Pre-Development Inflow=2.12 L/s 30.7 m³
Primary=2.12 L/s 30.7 m³

Summary for Subcatchment 16S: Pre-Development Impermeable Roof Area

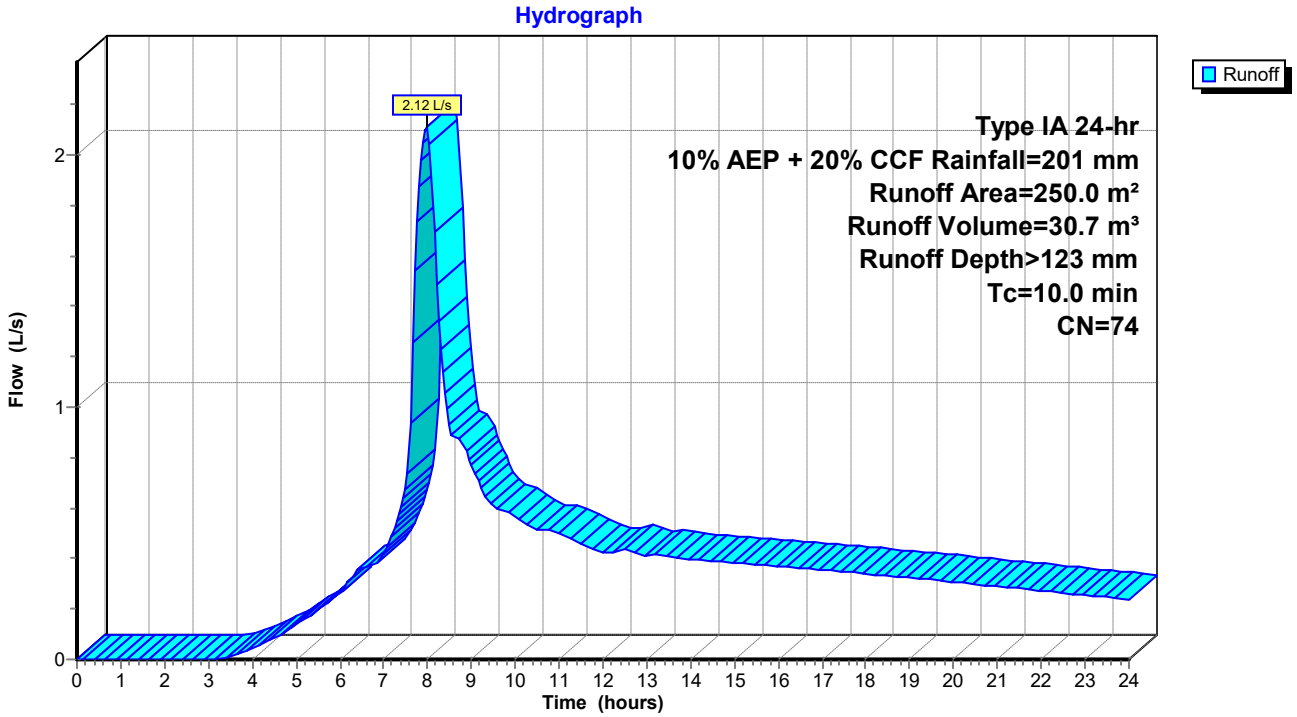
Runoff = 2.12 L/s @ 7.99 hrs, Volume= 30.7 m³, Depth> 123 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
250.0	74	>75% Grass cover, Good, HSG C
250.0		100.00% Pervious Area

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

Subcatchment 16S: Pre-Development Impermeable Roof Area

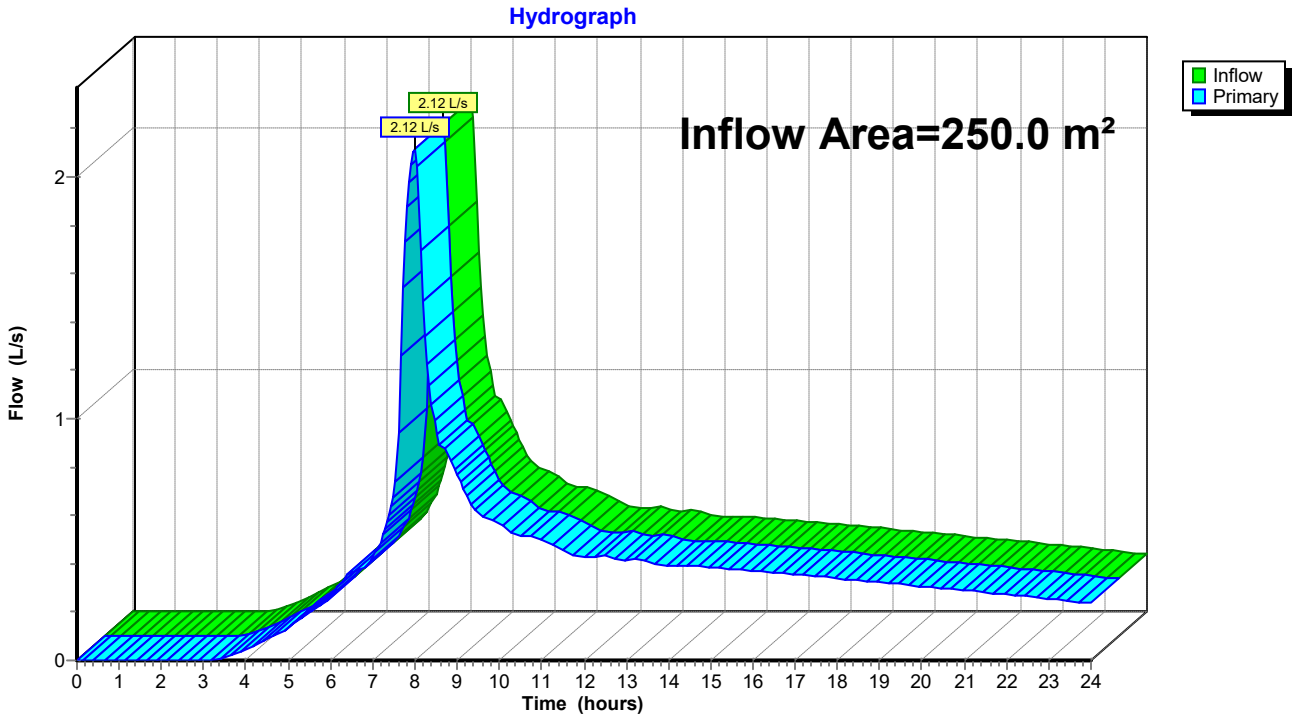


Summary for Link 17L: Pre-Development

Inflow Area = 250.0 m², 0.00% Impervious, Inflow Depth > 123 mm for 10% AEP + 20% CCF event
Inflow = 2.12 L/s @ 7.99 hrs, Volume= 30.7 m³
Primary = 2.12 L/s @ 7.99 hrs, Volume= 30.7 m³, Atten= 0%, Lag= 0.0 min

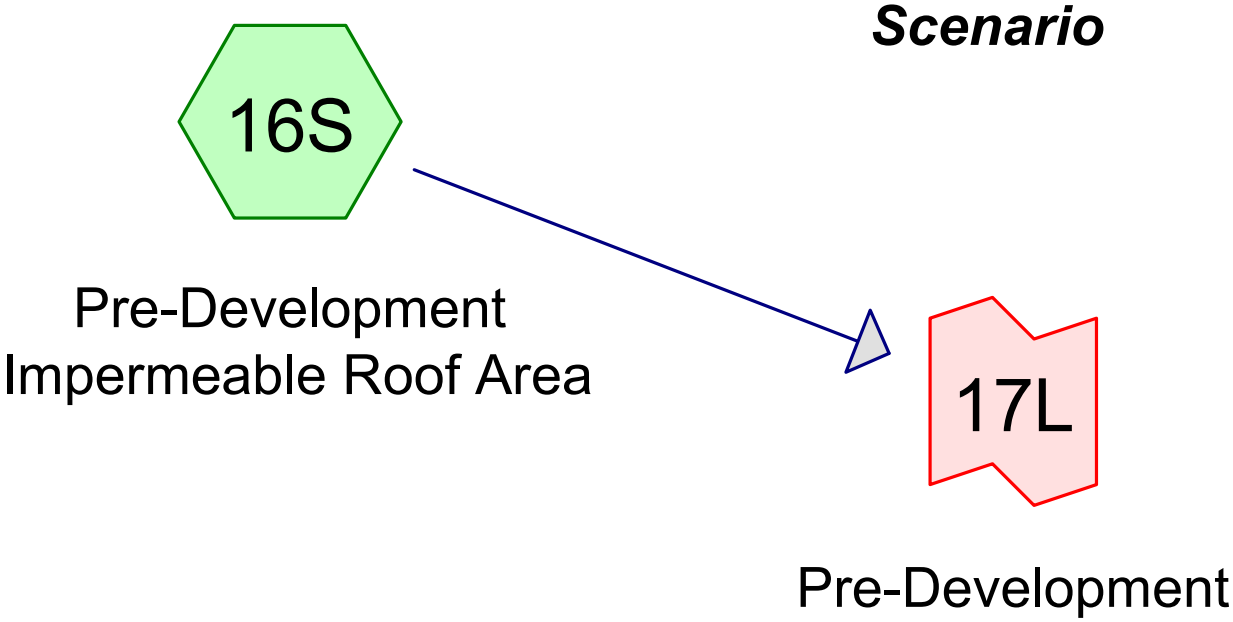
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 17L: Pre-Development



300m²

Pre-Development Scenario



Subcat Reach Pond Link

Routing Diagram for 136071 - Non Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 16S: Pre-Development Runoff Area=300.0 m² 0.00% Impervious Runoff Depth>123 mm
Tc=10.0 min CN=74 Runoff=2.54 L/s 36.8 m³

Link 17L: Pre-Development Inflow=2.54 L/s 36.8 m³
Primary=2.54 L/s 36.8 m³

Summary for Subcatchment 16S: Pre-Development Impermeable Roof Area

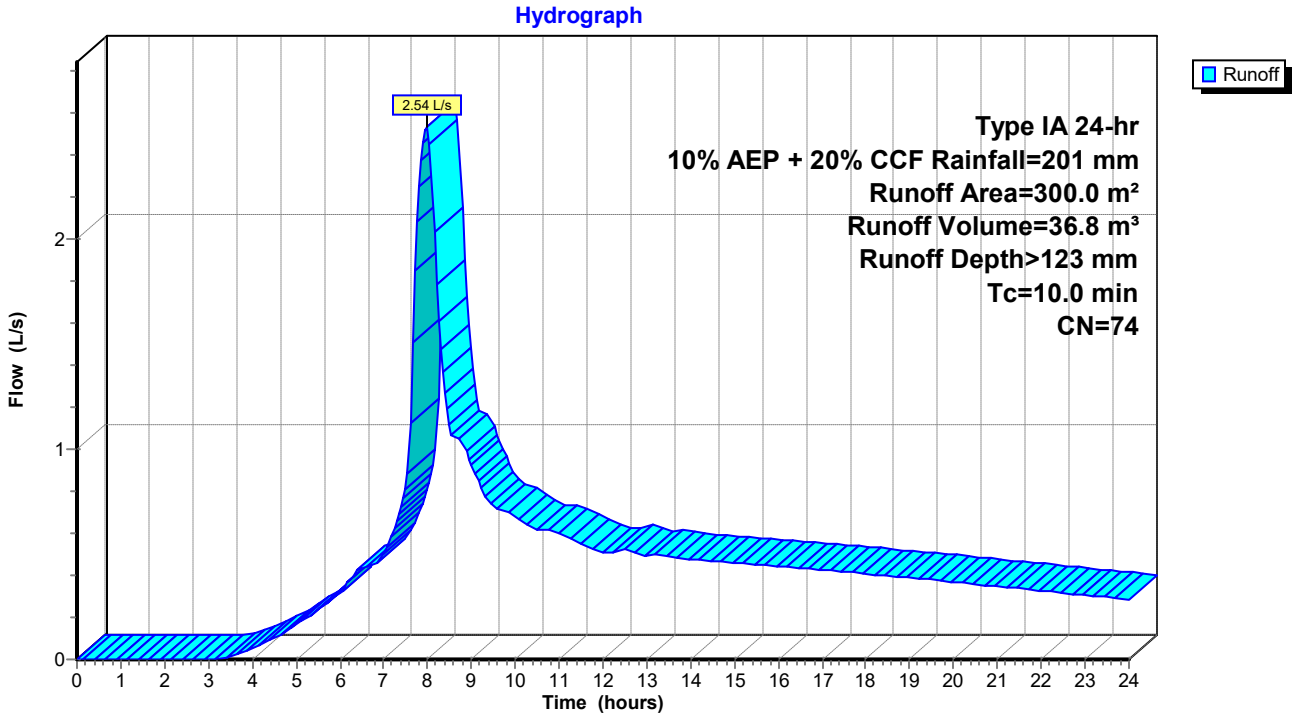
Runoff = 2.54 L/s @ 7.99 hrs, Volume= 36.8 m³, Depth> 123 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
300.0	74	>75% Grass cover, Good, HSG C
300.0		100.00% Pervious Area

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

Subcatchment 16S: Pre-Development Impermeable Roof Area

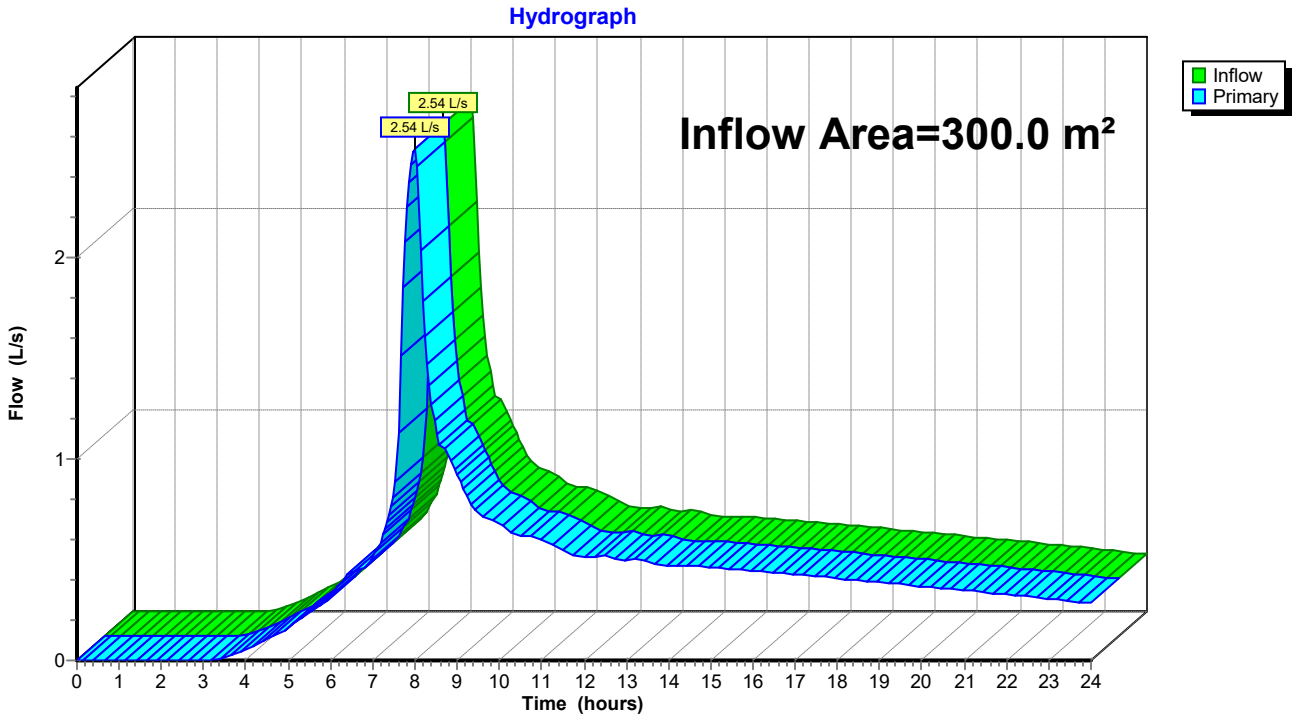


Summary for Link 17L: Pre-Development

Inflow Area = 300.0 m², 0.00% Impervious, Inflow Depth > 123 mm for 10% AEP + 20% CCF event
Inflow = 2.54 L/s @ 7.99 hrs, Volume= 36.8 m³
Primary = 2.54 L/s @ 7.99 hrs, Volume= 36.8 m³, Atten= 0%, Lag= 0.0 min

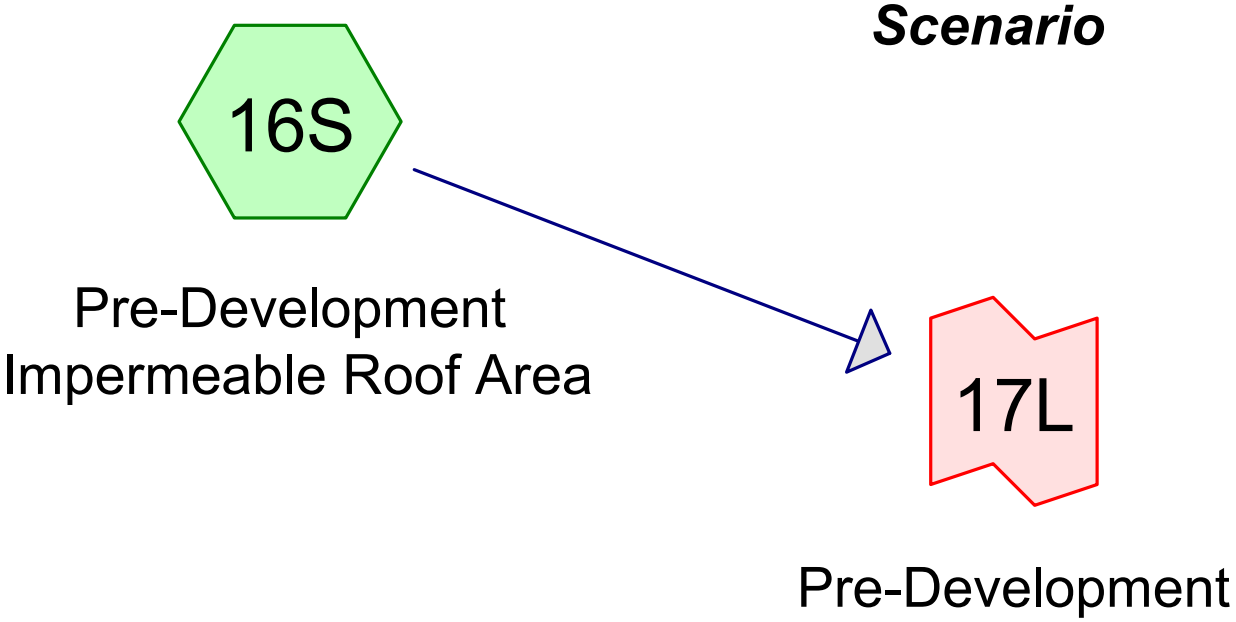
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 17L: Pre-Development



350m²

Pre-Development Scenario



Subcat Reach Pond Link

Routing Diagram for 136071 - Non Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 16S: Pre-Development Runoff Area=350.0 m² 0.00% Impervious Runoff Depth>123 mm
Tc=10.0 min CN=74 Runoff=2.96 L/s 42.9 m³

Link 17L: Pre-Development Inflow=2.96 L/s 42.9 m³
Primary=2.96 L/s 42.9 m³

Summary for Subcatchment 16S: Pre-Development Impermeable Roof Area

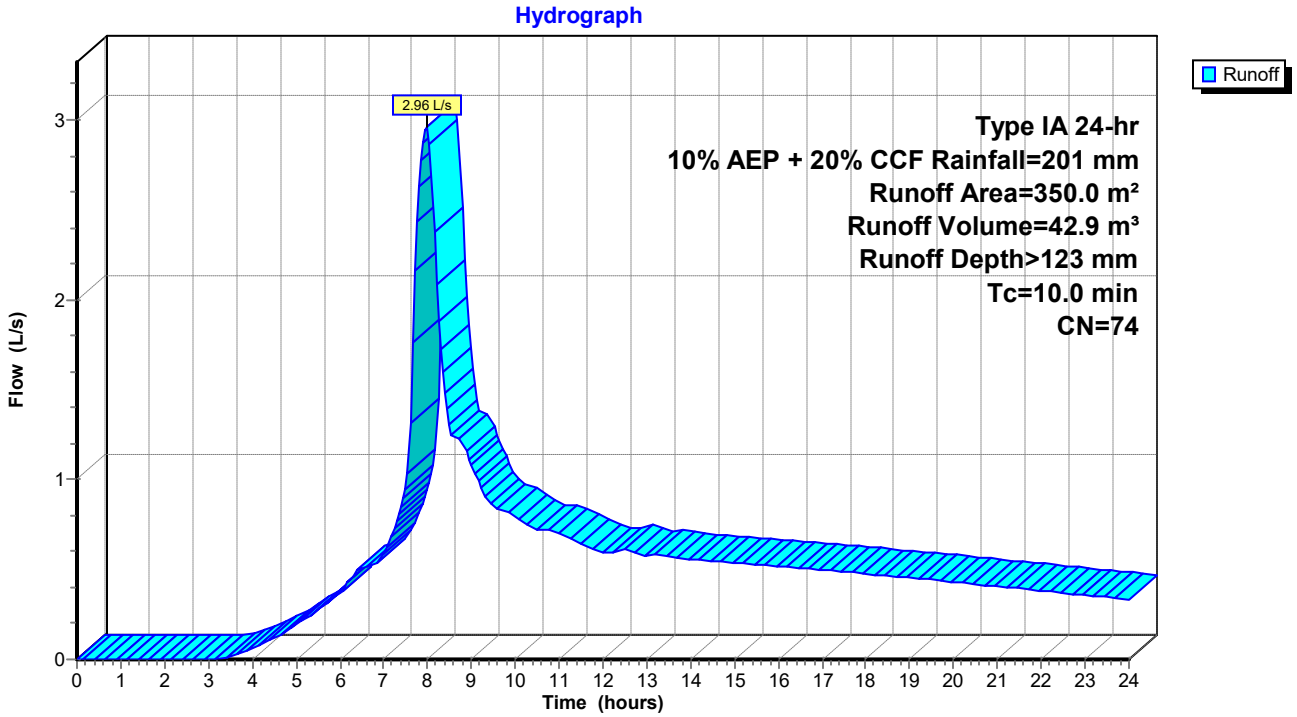
Runoff = 2.96 L/s @ 7.99 hrs, Volume= 42.9 m³, Depth> 123 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
350.0	74	>75% Grass cover, Good, HSG C
350.0		100.00% Pervious Area

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

Subcatchment 16S: Pre-Development Impermeable Roof Area

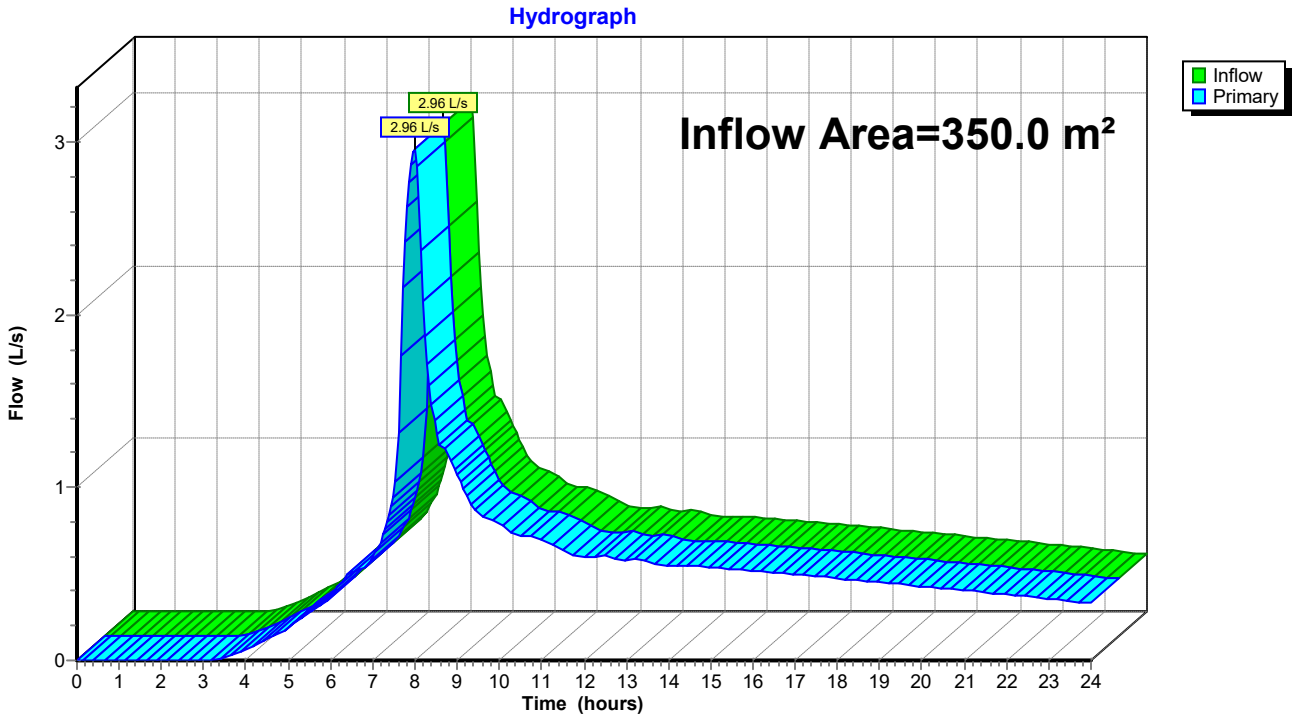


Summary for Link 17L: Pre-Development

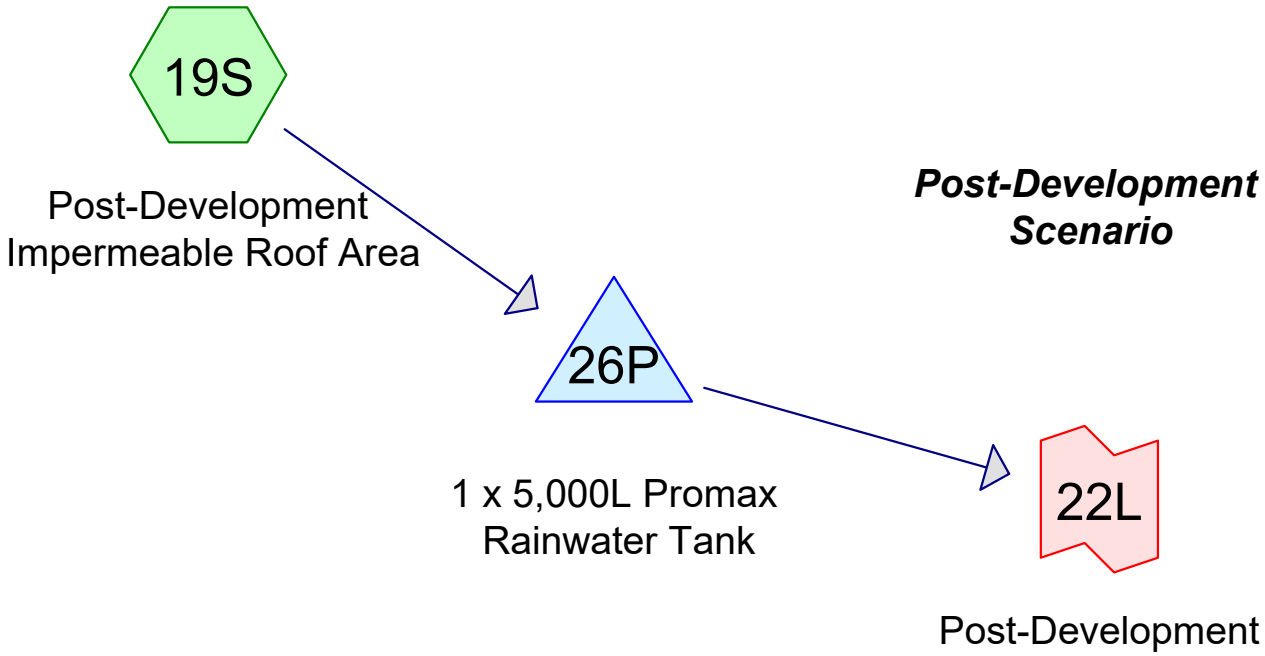
Inflow Area = 350.0 m², 0.00% Impervious, Inflow Depth > 123 mm for 10% AEP + 20% CCF event
Inflow = 2.96 L/s @ 7.99 hrs, Volume= 42.9 m³
Primary = 2.96 L/s @ 7.99 hrs, Volume= 42.9 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 17L: Pre-Development



200m² Reticulated



Post-Development Scenario

Subcat Reach Pond Link

Routing Diagram for 136071 - Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 19S: Post-Development Runoff Area=200.0 m² 100.00% Impervious Runoff Depth>194 mm
Tc=10.0 min CN=98 Runoff=2.64 L/s 38.9 m³

Pond 26P: 1 x 5,000L Promax Rainwater Tank Peak Elev=0.786 m Storage=3.0 m³ Inflow=2.64 L/s 38.9 m³
Outflow=1.65 L/s 38.8 m³

Link 22L: Post-Development Inflow=1.65 L/s 38.8 m³
Primary=1.65 L/s 38.8 m³

Summary for Subcatchment 19S: Post-Development Impermeable Roof Area

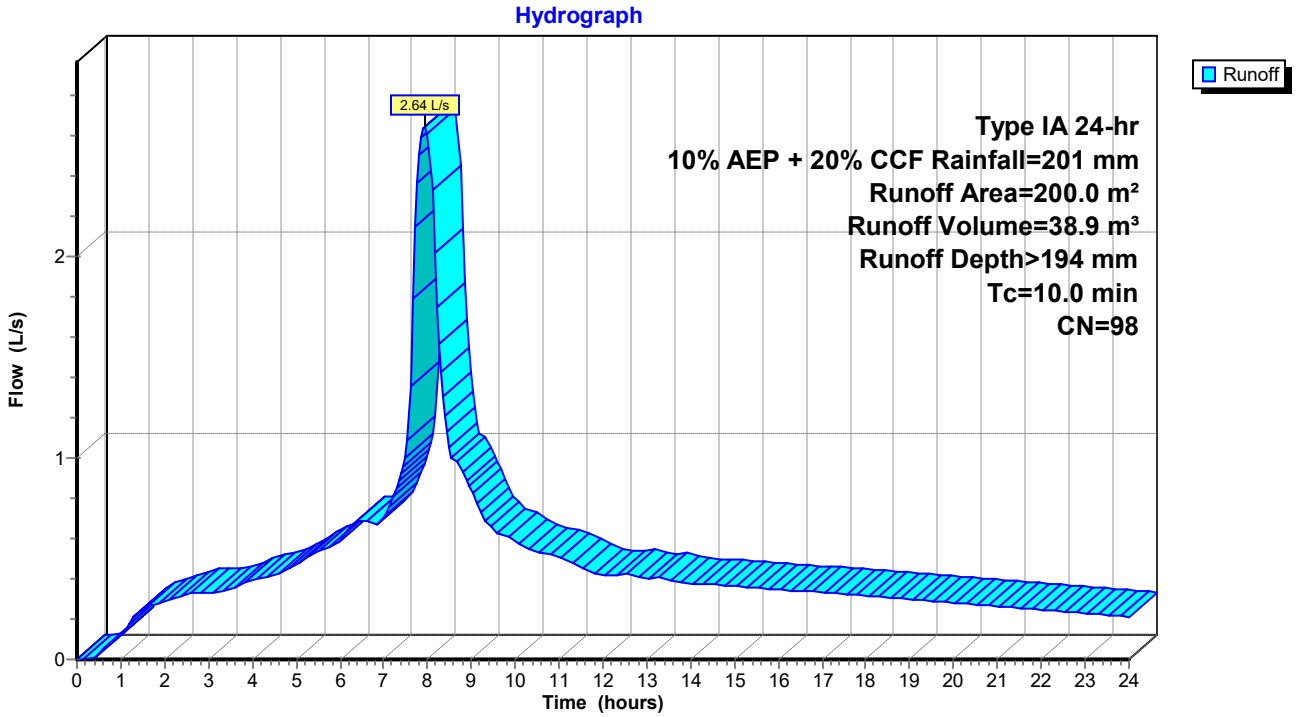
Runoff = 2.64 L/s @ 7.94 hrs, Volume= 38.9 m³, Depth> 194 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
200.0	98	Roofs, HSG C
200.0		100.00% Impervious Area

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

Subcatchment 19S: Post-Development Impermeable Roof Area



Summary for Pond 26P: 1 x 5,000L Promax Rainwater Tank

Inflow Area = 200.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 2.64 L/s @ 7.94 hrs, Volume= 38.9 m³
Outflow = 1.65 L/s @ 8.23 hrs, Volume= 38.8 m³, Atten= 38%, Lag= 17.3 min
Primary = 1.65 L/s @ 8.23 hrs, Volume= 38.8 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.786 m @ 8.23 hrs Surf.Area= 3.8 m² Storage= 3.0 m³

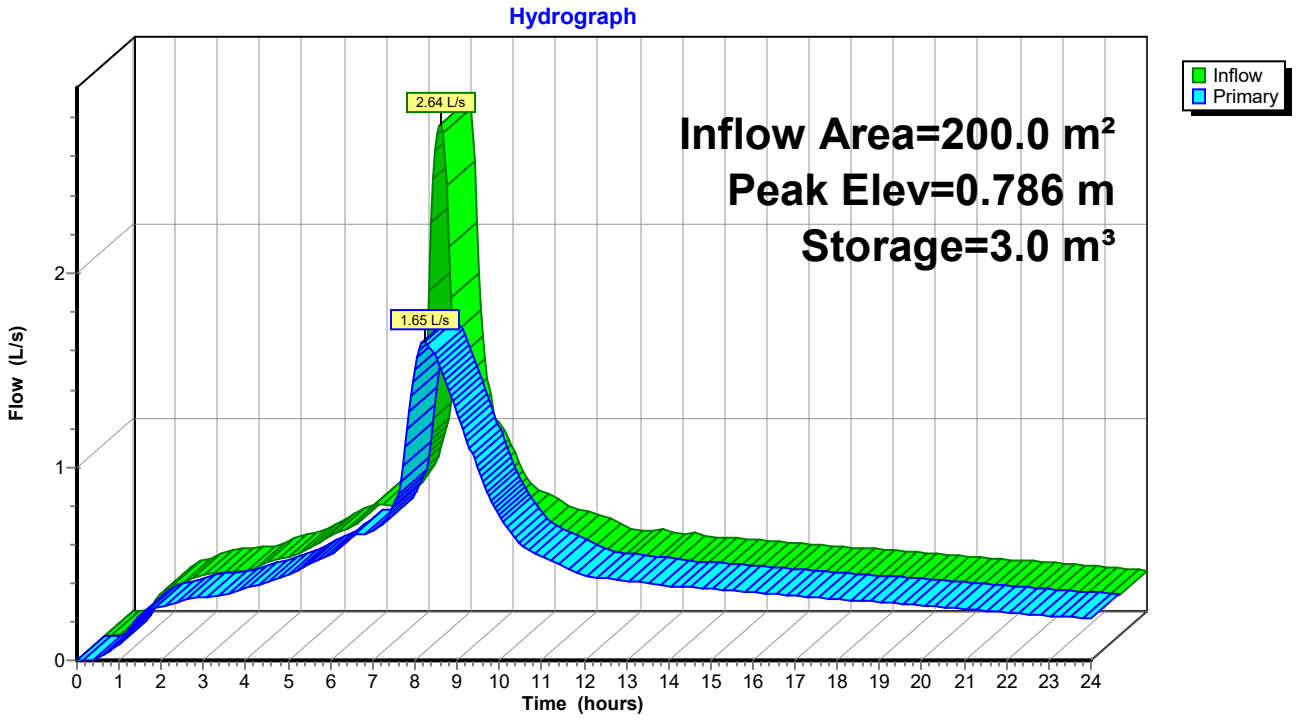
Plug-Flow detention time= 14.1 min calculated for 38.7 m³ (100% of inflow)
Center-of-Mass det. time= 11.8 min (660.8 - 649.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	6.7 m³	**2.20 mD x 1.75 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**30 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.65 L/s @ 8.23 hrs HW=0.785 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.65 L/s @ 2.33 m/s)

Pond 26P: 1 x 5,000L Promax Rainwater Tank

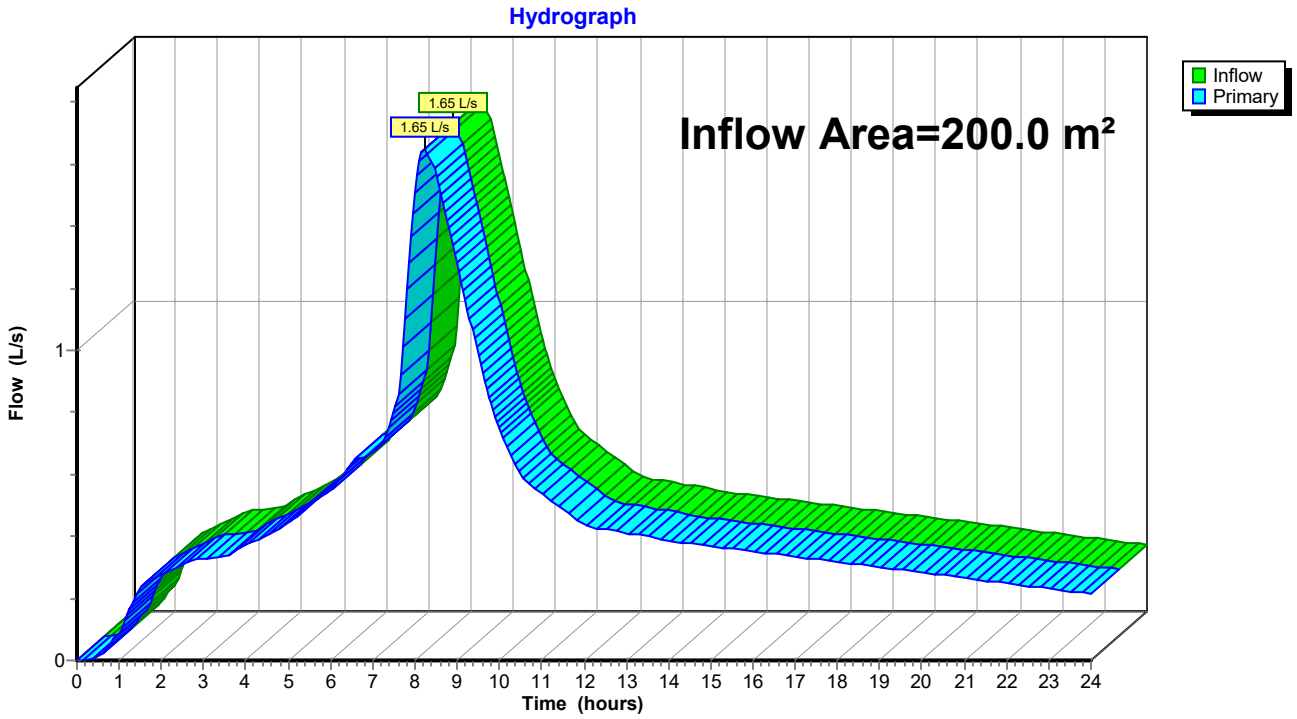


Summary for Link 22L: Post-Development

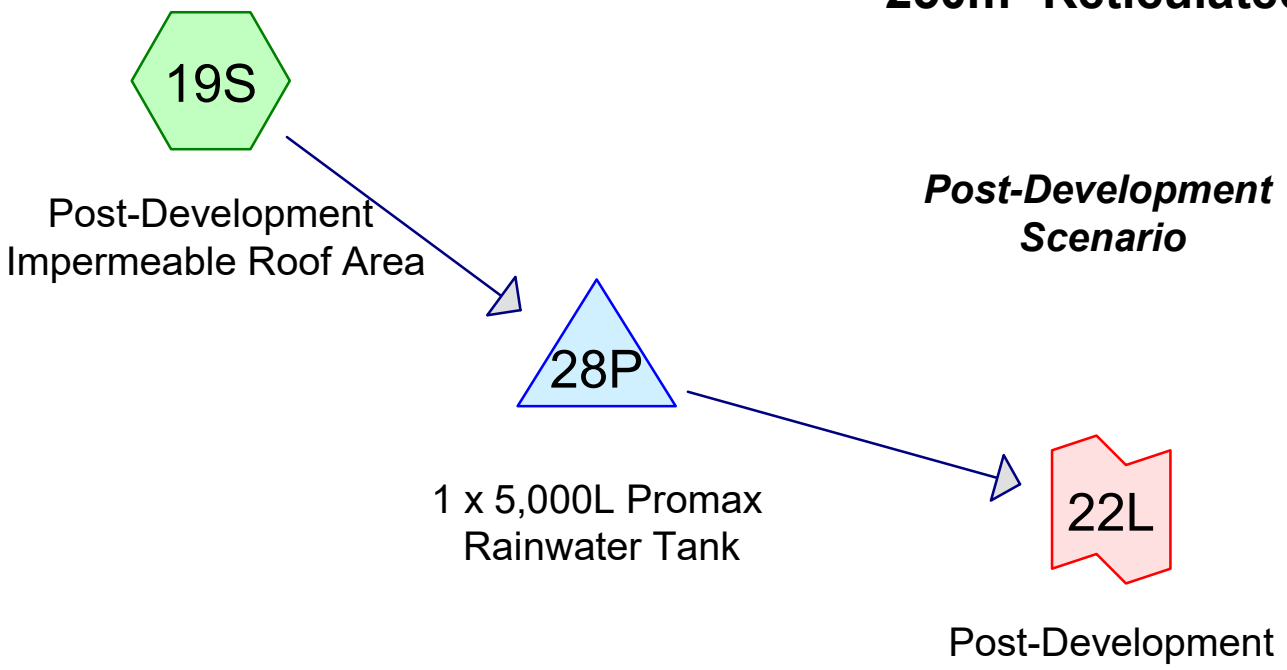
Inflow Area = 200.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 1.65 L/s @ 8.23 hrs, Volume= 38.8 m³
Primary = 1.65 L/s @ 8.23 hrs, Volume= 38.8 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 22L: Post-Development



250m² Reticulated



Post-Development Scenario

Subcat Reach Pond Link

Routing Diagram for 136071 - Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 19S: Post-Development Runoff Area=250.0 m² 100.00% Impervious Runoff Depth>194 mm
Tc=10.0 min CN=98 Runoff=3.31 L/s 48.6 m³

Pond 28P: 1 x 5,000L Promax Rainwater Tank Peak Elev=0.964 m Storage=3.7 m³ Inflow=3.31 L/s 48.6 m³
Outflow=2.08 L/s 48.5 m³

Link 22L: Post-Development Inflow=2.08 L/s 48.5 m³
Primary=2.08 L/s 48.5 m³

Summary for Subcatchment 19S: Post-Development Impermeable Roof Area

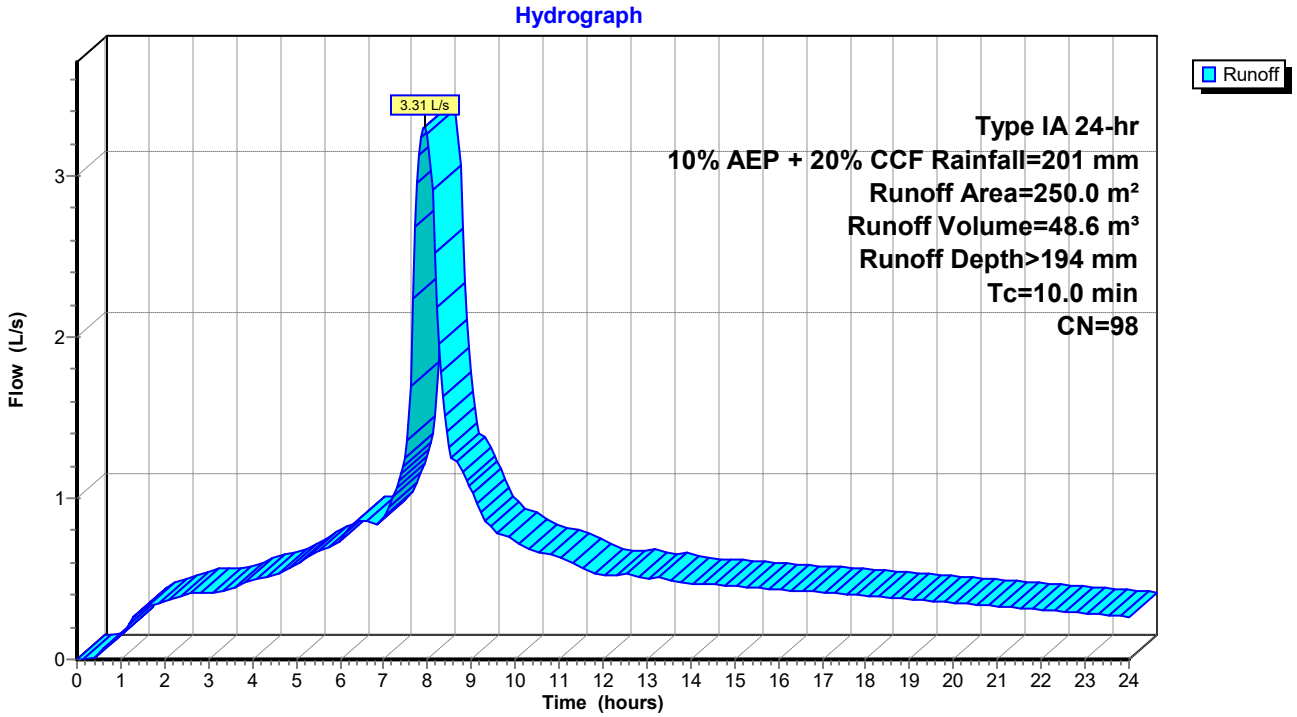
Runoff = 3.31 L/s @ 7.94 hrs, Volume= 48.6 m³, Depth> 194 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
250.0	98	Roofs, HSG C
250.0		100.00% Impervious Area

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

Subcatchment 19S: Post-Development Impermeable Roof Area



Summary for Pond 28P: 1 x 5,000L Promax Rainwater Tank

Inflow Area = 250.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 3.31 L/s @ 7.94 hrs, Volume= 48.6 m³
Outflow = 2.08 L/s @ 8.22 hrs, Volume= 48.5 m³, Atten= 37%, Lag= 17.1 min
Primary = 2.08 L/s @ 8.22 hrs, Volume= 48.5 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.964 m @ 8.22 hrs Surf.Area= 3.8 m² Storage= 3.7 m³

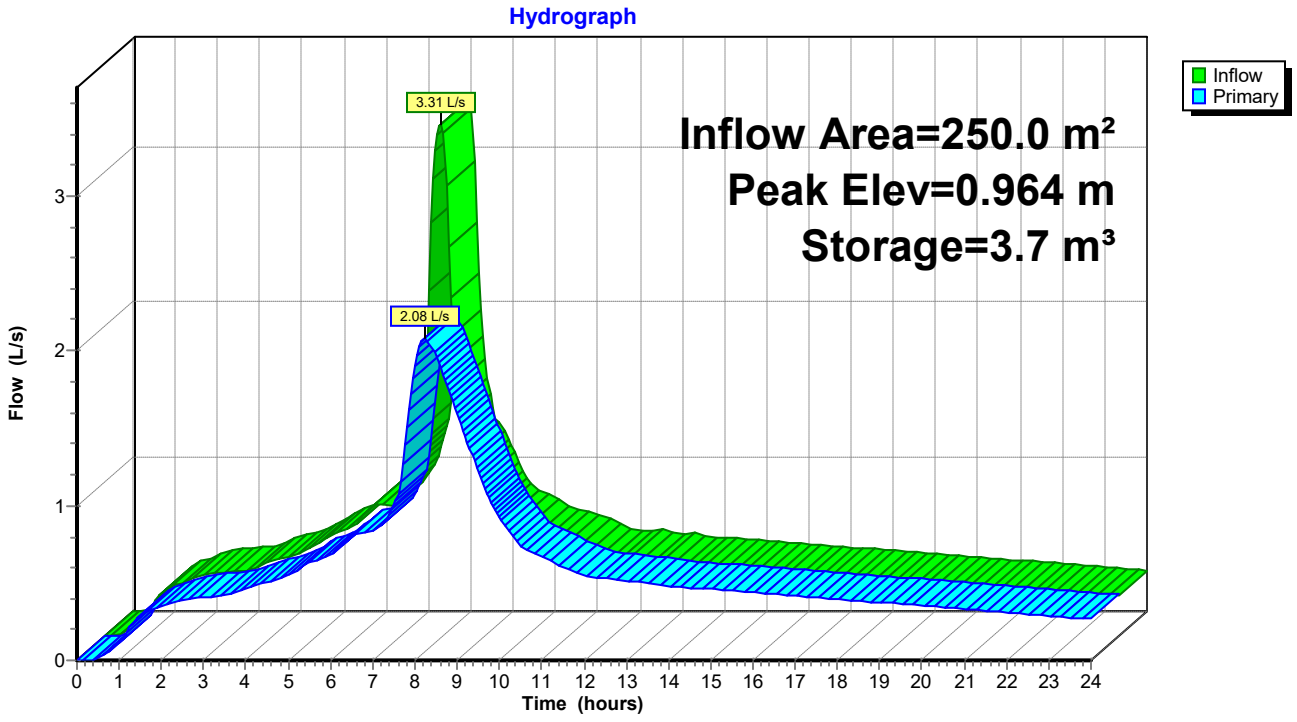
Plug-Flow detention time= 13.4 min calculated for 48.5 m³ (100% of inflow)
Center-of-Mass det. time= 11.4 min (660.3 - 649.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	6.7 m³	**2.20 mD x 1.75 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**32 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.08 L/s @ 8.22 hrs HW=0.962 m (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.08 L/s @ 2.59 m/s)

Pond 28P: 1 x 5,000L Promax Rainwater Tank

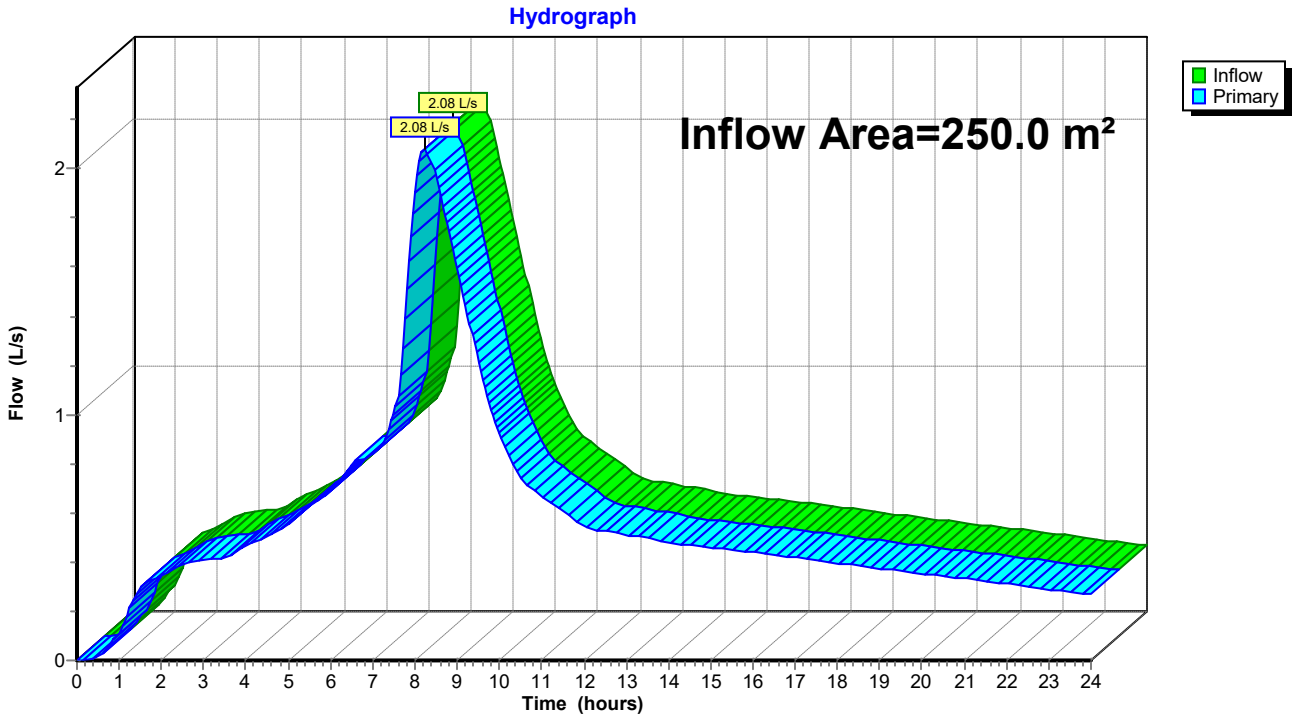


Summary for Link 22L: Post-Development

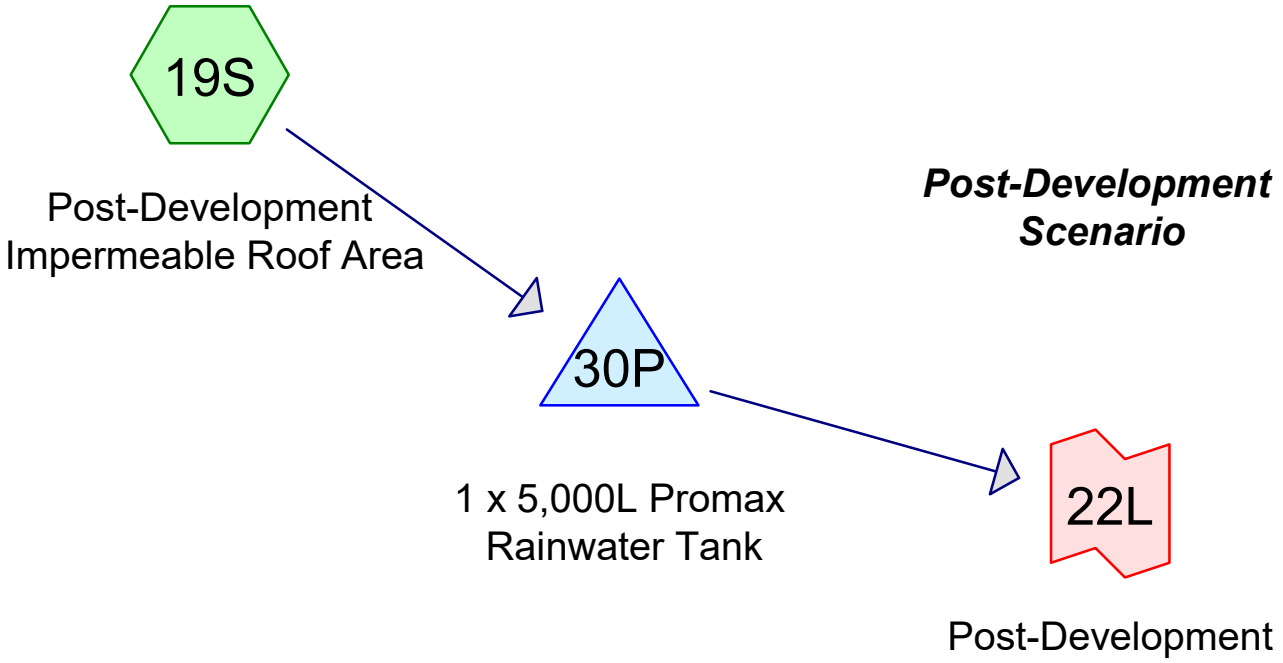
Inflow Area = 250.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 2.08 L/s @ 8.22 hrs, Volume= 48.5 m³
Primary = 2.08 L/s @ 8.22 hrs, Volume= 48.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 22L: Post-Development



300m² Reticulated



Post-Development Scenario

Subcat Reach Pond Link

Routing Diagram for 136071 - Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 19S: Post-Development Runoff Area=300.0 m² 100.00% Impervious Runoff Depth>194 mm
Tc=10.0 min CN=98 Runoff=3.97 L/s 58.3 m³

Pond 30P: 1 x 5,000L Promax Rainwater Tank Peak Elev=1.122 m Storage=4.3 m³ Inflow=3.97 L/s 58.3 m³
Outflow=2.54 L/s 58.2 m³

Link 22L: Post-Development Inflow=2.54 L/s 58.2 m³
Primary=2.54 L/s 58.2 m³

Summary for Subcatchment 19S: Post-Development Impermeable Roof Area

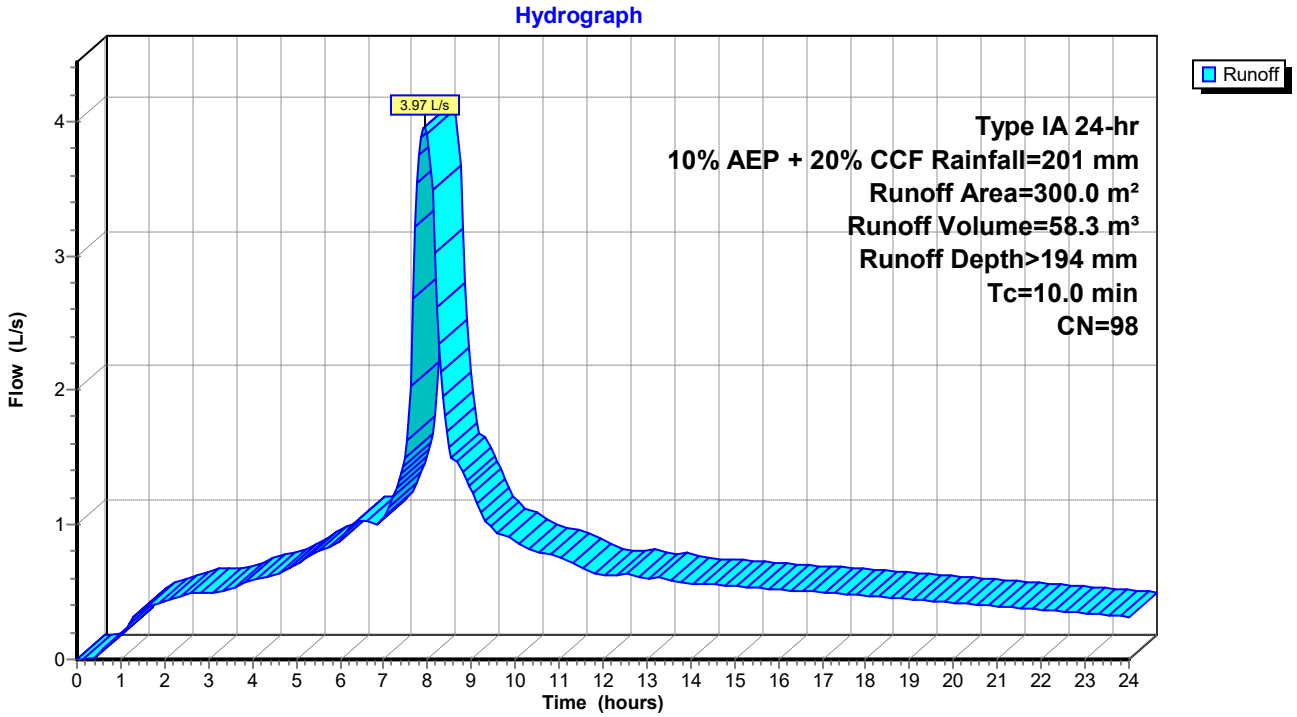
Runoff = 3.97 L/s @ 7.94 hrs, Volume= 58.3 m³, Depth> 194 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
300.0	98	Roofs, HSG C
300.0		100.00% Impervious Area

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

Subcatchment 19S: Post-Development Impermeable Roof Area



Summary for Pond 30P: 1 x 5,000L Promax Rainwater Tank

Inflow Area = 300.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 3.97 L/s @ 7.94 hrs, Volume= 58.3 m³
Outflow = 2.54 L/s @ 8.22 hrs, Volume= 58.2 m³, Atten= 36%, Lag= 16.8 min
Primary = 2.54 L/s @ 8.22 hrs, Volume= 58.2 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 1.122 m @ 8.22 hrs Surf.Area= 3.8 m² Storage= 4.3 m³

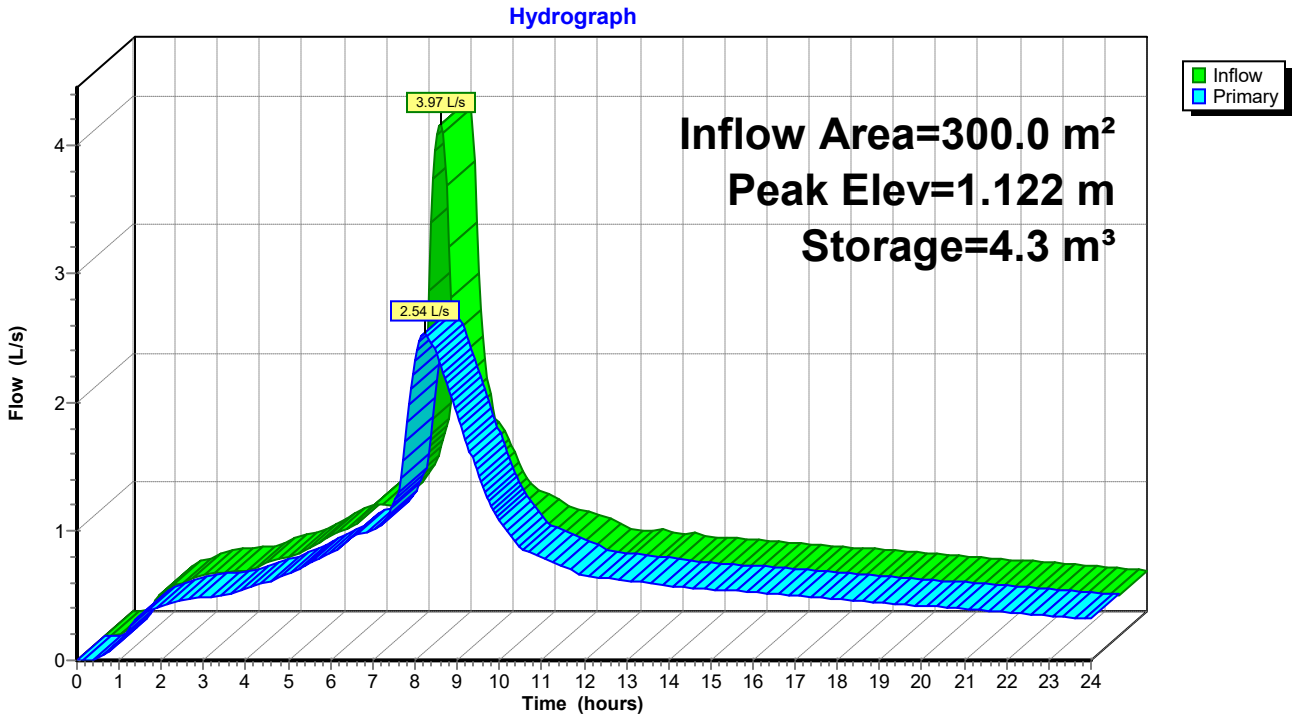
Plug-Flow detention time= 12.5 min calculated for 58.2 m³ (100% of inflow)
Center-of-Mass det. time= 10.7 min (659.7 - 649.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	6.7 m³	**2.20 mD x 1.75 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**34 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.53 L/s @ 8.22 hrs HW=1.121 m (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.53 L/s @ 2.79 m/s)

Pond 30P: 1 x 5,000L Promax Rainwater Tank

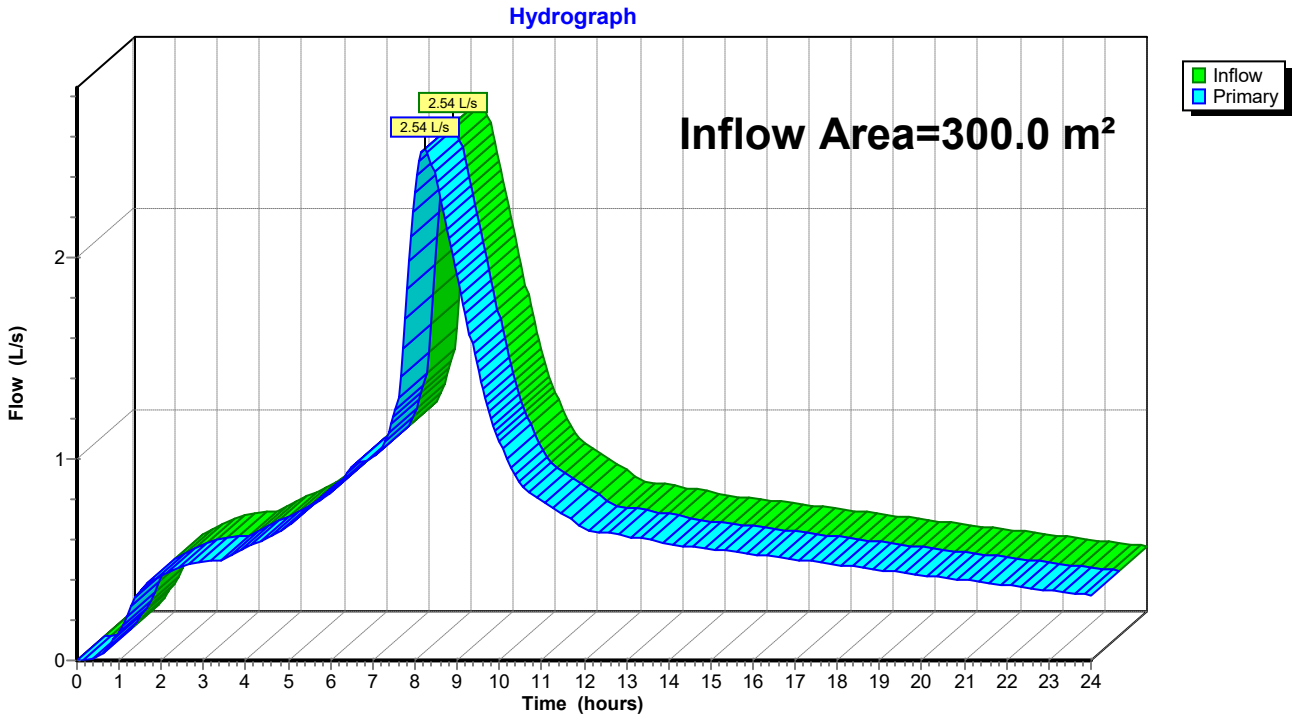


Summary for Link 22L: Post-Development

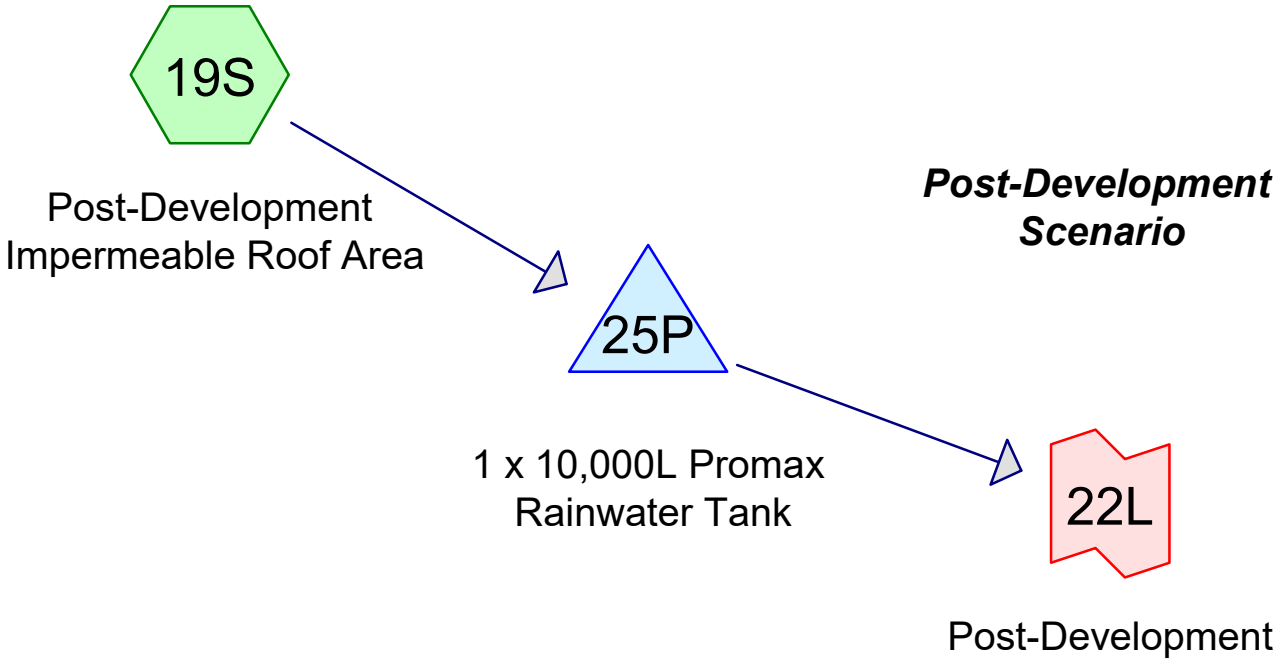
Inflow Area = 300.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 2.54 L/s @ 8.22 hrs, Volume= 58.2 m³
Primary = 2.54 L/s @ 8.22 hrs, Volume= 58.2 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 22L: Post-Development



350m² Reticulated



Post-Development Scenario

Subcat Reach Pond Link

Routing Diagram for 136071 - Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 19S: Post-Development Runoff Area=350.0 m² 100.00% Impervious Runoff Depth>194 mm
Tc=10.0 min CN=98 Runoff=4.63 L/s 68.0 m³

Pond 25P: 1 x 10,000L Promax Rainwater Peak Elev=1.356 m Storage=5.0 m³ Inflow=4.63 L/s 68.0 m³
Outflow=2.96 L/s 67.9 m³

Link 22L: Post-Development Inflow=2.96 L/s 67.9 m³
Primary=2.96 L/s 67.9 m³

Summary for Subcatchment 19S: Post-Development Impermeable Roof Area

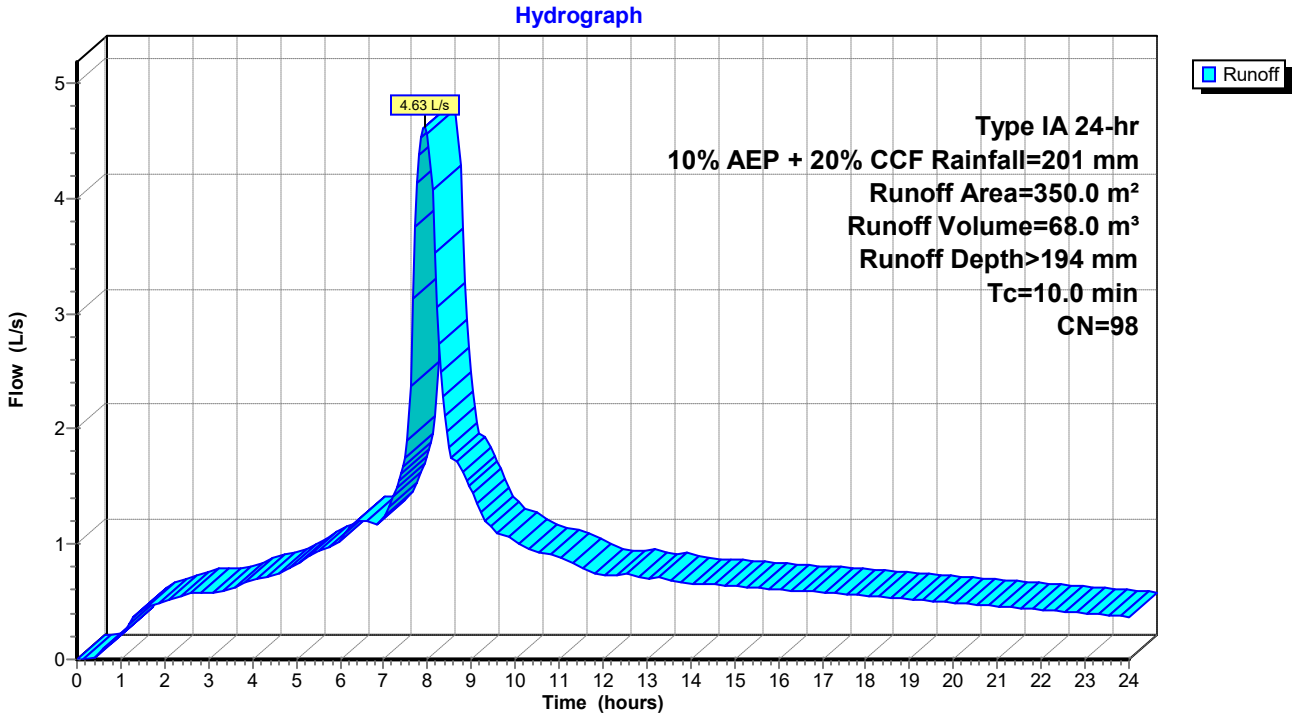
Runoff = 4.63 L/s @ 7.94 hrs, Volume= 68.0 m³, Depth> 194 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
350.0	98	Roofs, HSG C
350.0		100.00% Impervious Area

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

Subcatchment 19S: Post-Development Impermeable Roof Area



Summary for Pond 25P: 1 x 10,000L Promax Rainwater Tank

Inflow Area = 350.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 4.63 L/s @ 7.94 hrs, Volume= 68.0 m³
Outflow = 2.96 L/s @ 8.22 hrs, Volume= 67.9 m³, Atten= 36%, Lag= 16.8 min
Primary = 2.96 L/s @ 8.22 hrs, Volume= 67.9 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 1.356 m @ 8.22 hrs Surf.Area= 3.7 m² Storage= 5.0 m³

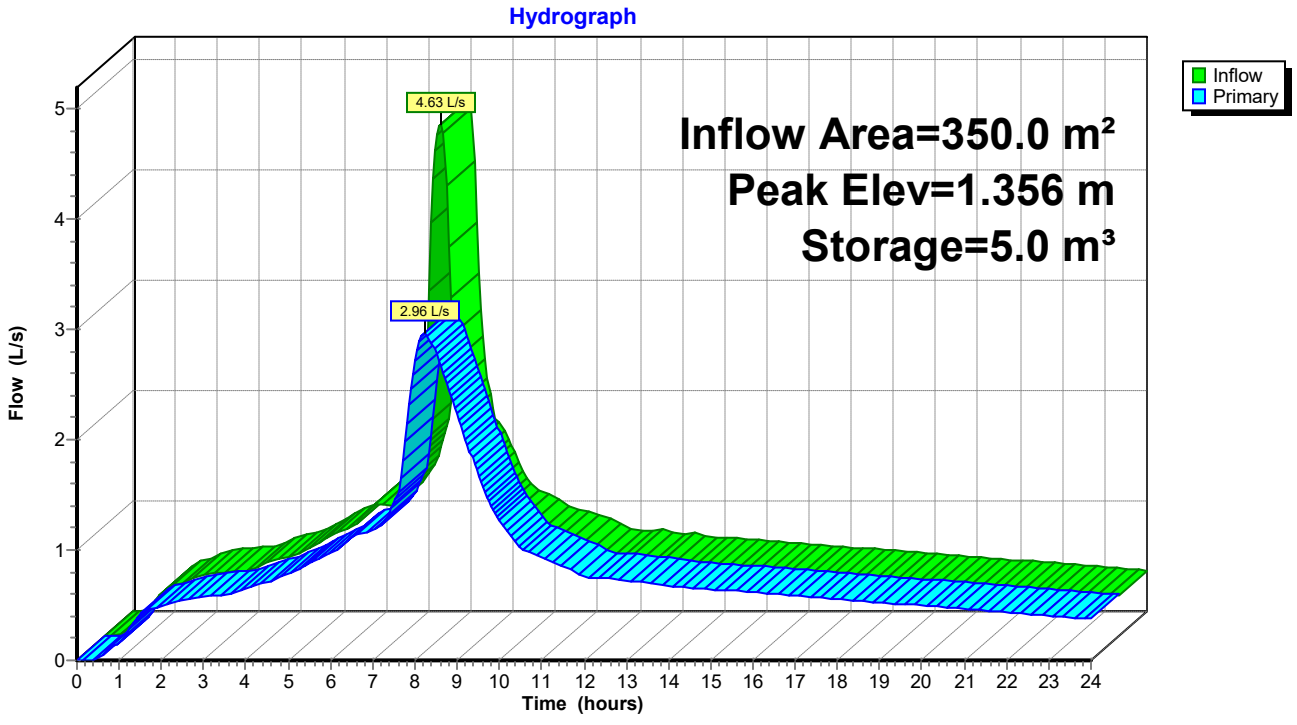
Plug-Flow detention time= 12.3 min calculated for 67.9 m³ (100% of inflow)
Center-of-Mass det. time= 10.6 min (659.5 - 649.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	9.1 m³	**2.16 mD x 2.47 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**35 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.96 L/s @ 8.22 hrs HW=1.354 m (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.96 L/s @ 3.07 m/s)

Pond 25P: 1 x 10,000L Promax Rainwater Tank

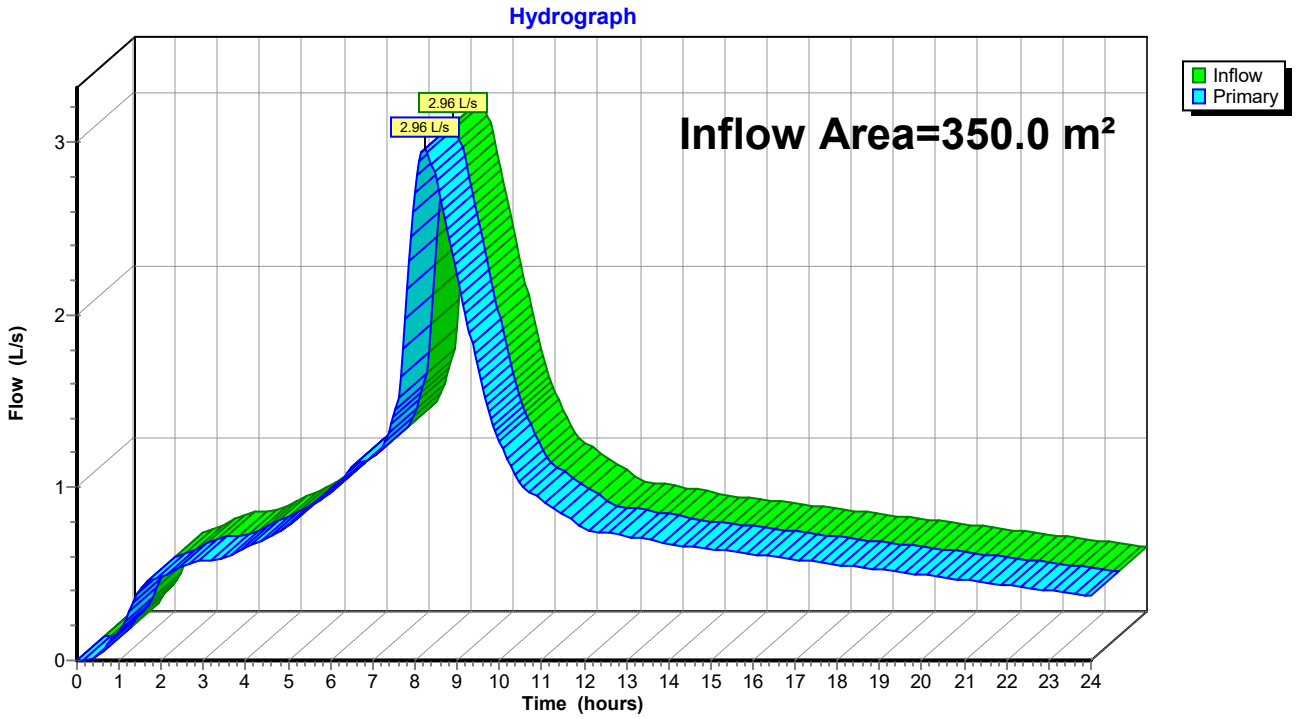


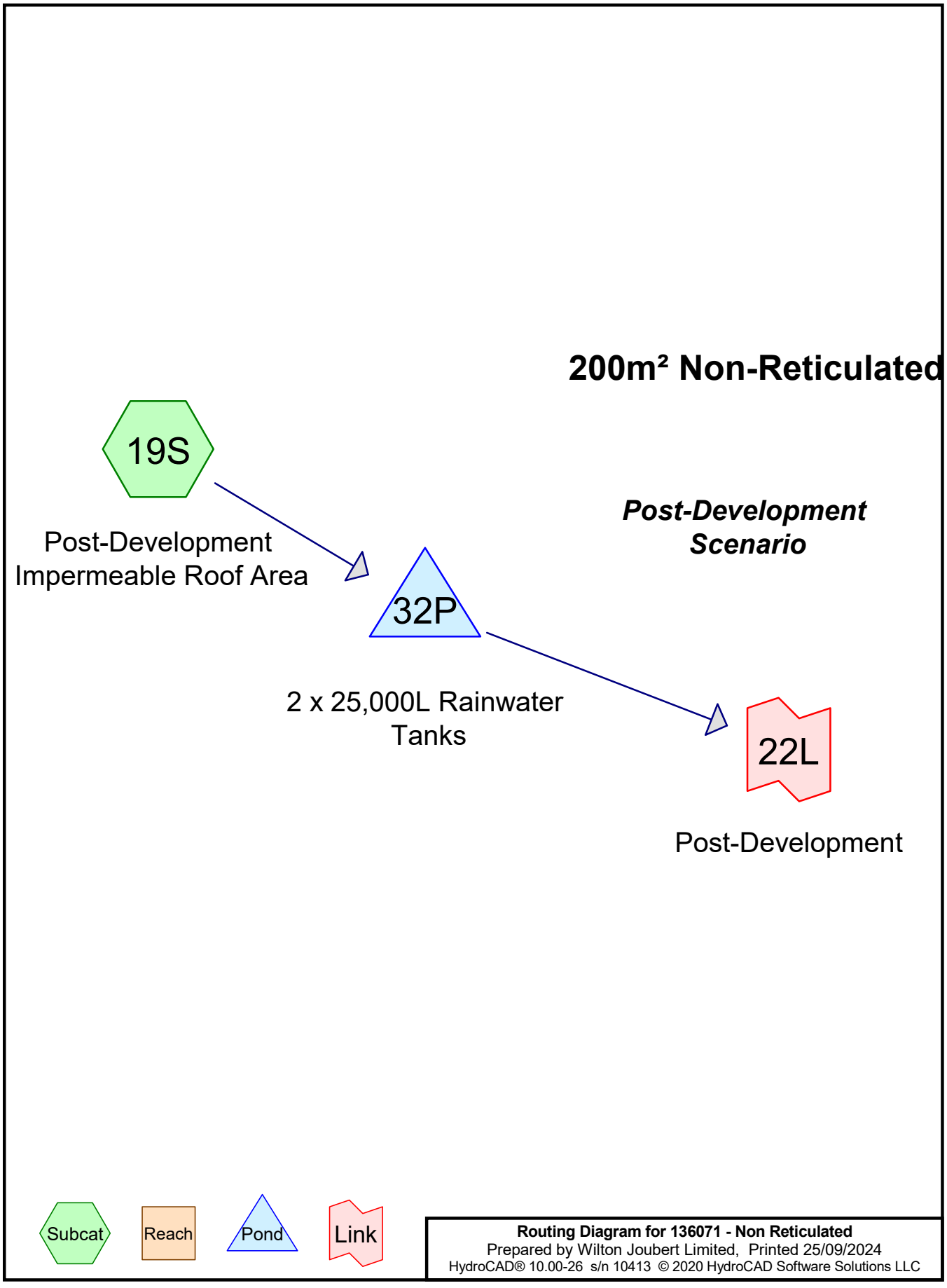
Summary for Link 22L: Post-Development

Inflow Area = 350.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 2.96 L/s @ 8.22 hrs, Volume= 67.9 m³
Primary = 2.96 L/s @ 8.22 hrs, Volume= 67.9 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 22L: Post-Development




200m² Non-Reticulated
19S
Post-Development
Impermeable Roof Area
Post-Development
Scenario
32P
2 x 25,000L Rainwater
Tanks
22L
Post-Development
Subcat
Reach
Pond
Link
Routing Diagram for 136071 - Non Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024
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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 19S: Post-Development Runoff Area=200.0 m² 100.00% Impervious Runoff Depth>194 mm
Tc=10.0 min CN=98 Runoff=2.64 L/s 38.9 m³

Pond 32P: 2 x 25,000L Rainwater Tanks Peak Elev=0.165 m Storage=3.4 m³ Inflow=2.64 L/s 38.9 m³
Outflow=1.67 L/s 38.5 m³

Link 22L: Post-Development Inflow=1.67 L/s 38.5 m³
Primary=1.67 L/s 38.5 m³

Summary for Subcatchment 19S: Post-Development Impermeable Roof Area

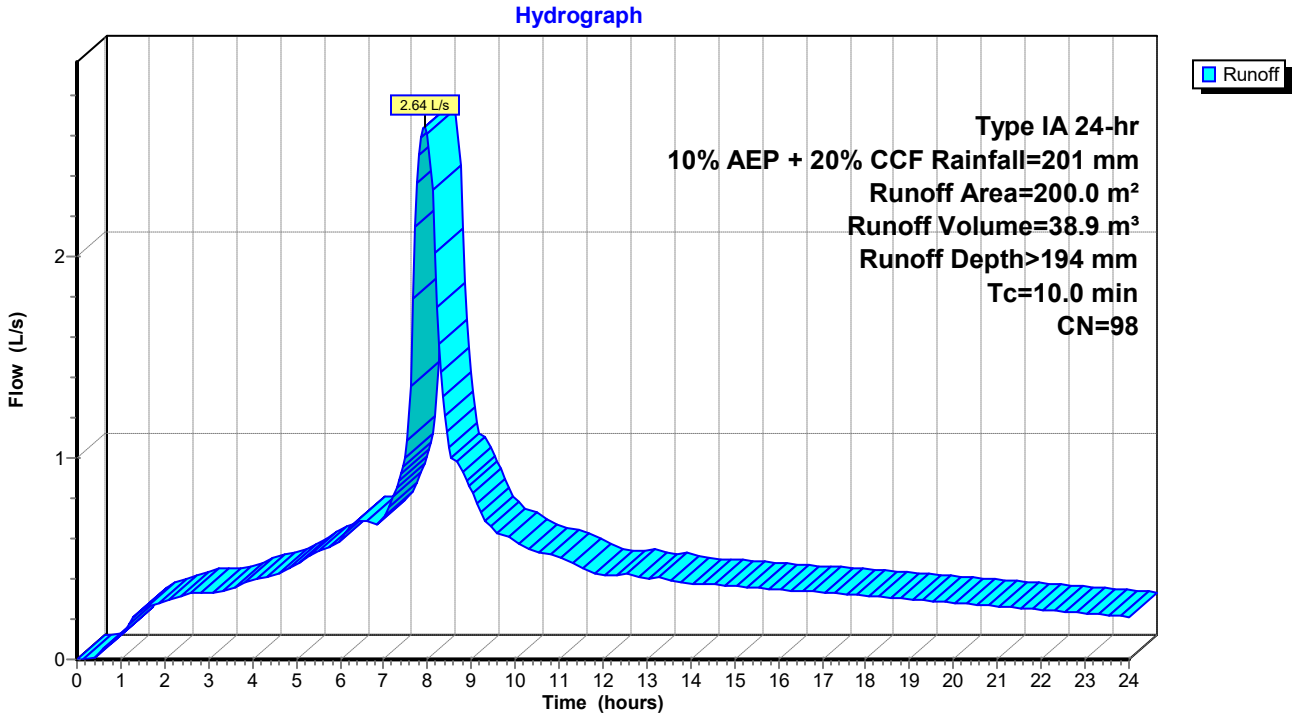
Runoff = 2.64 L/s @ 7.94 hrs, Volume= 38.9 m³, Depth> 194 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
200.0	98	Roofs, HSG C
200.0		100.00% Impervious Area

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

Subcatchment 19S: Post-Development Impermeable Roof Area



Summary for Pond 32P: 2 x 25,000L Rainwater Tanks

Inflow Area = 200.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 2.64 L/s @ 7.94 hrs, Volume= 38.9 m³
Outflow = 1.67 L/s @ 8.22 hrs, Volume= 38.5 m³, Atten= 37%, Lag= 17.1 min
Primary = 1.67 L/s @ 8.22 hrs, Volume= 38.5 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.165 m @ 8.22 hrs Surf.Area= 20.4 m² Storage= 3.4 m³

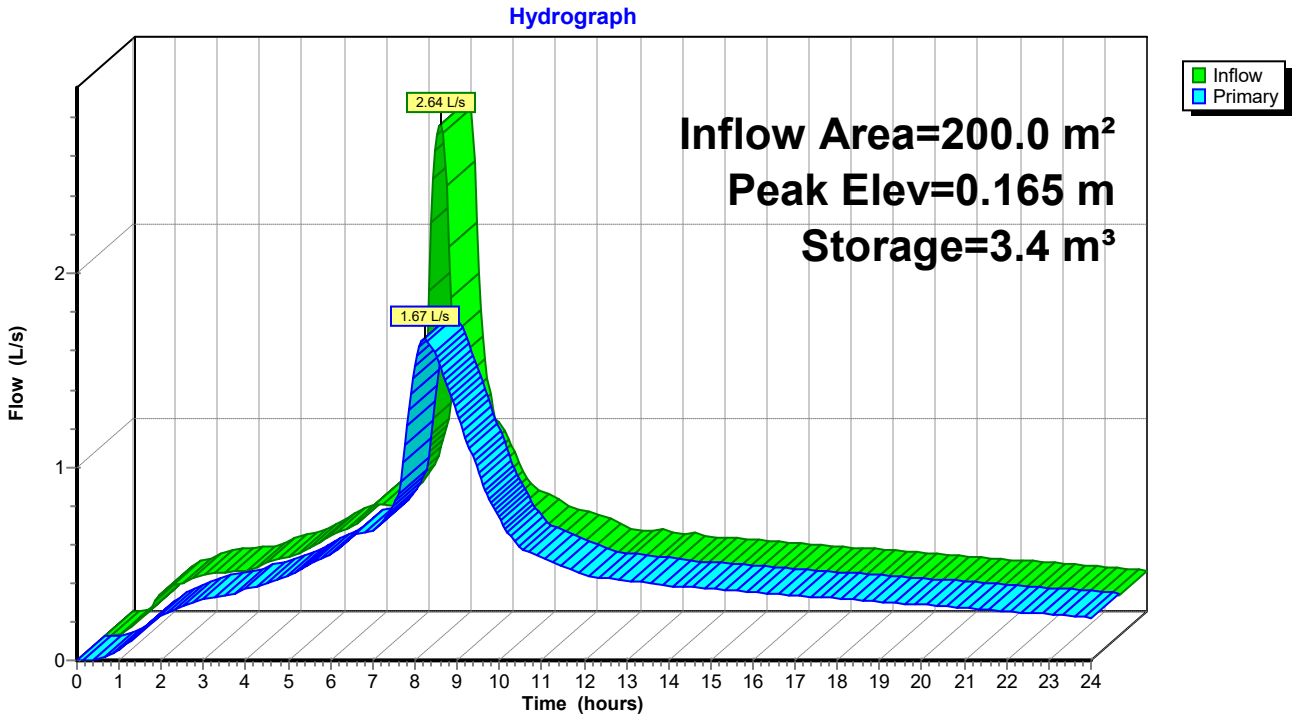
Plug-Flow detention time= 27.7 min calculated for 38.4 m³ (99% of inflow)
Center-of-Mass det. time= 19.7 min (668.6 - 649.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	52.9 m³	**3.60 mD x 2.60 mH Vertical Cone/Cylinder** x 2

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**46 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.67 L/s @ 8.22 hrs HW=0.165 m (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.67 L/s @ 1.00 m/s)

Pond 32P: 2 x 25,000L Rainwater Tanks

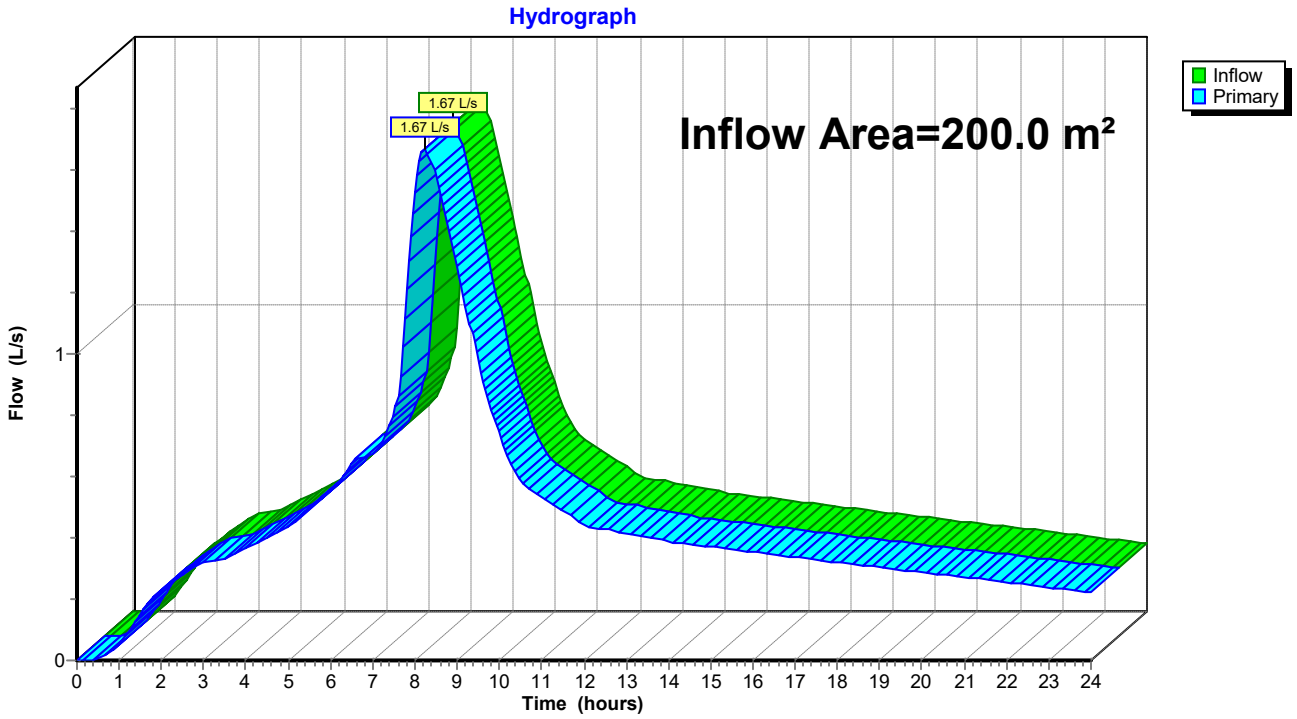


Summary for Link 22L: Post-Development

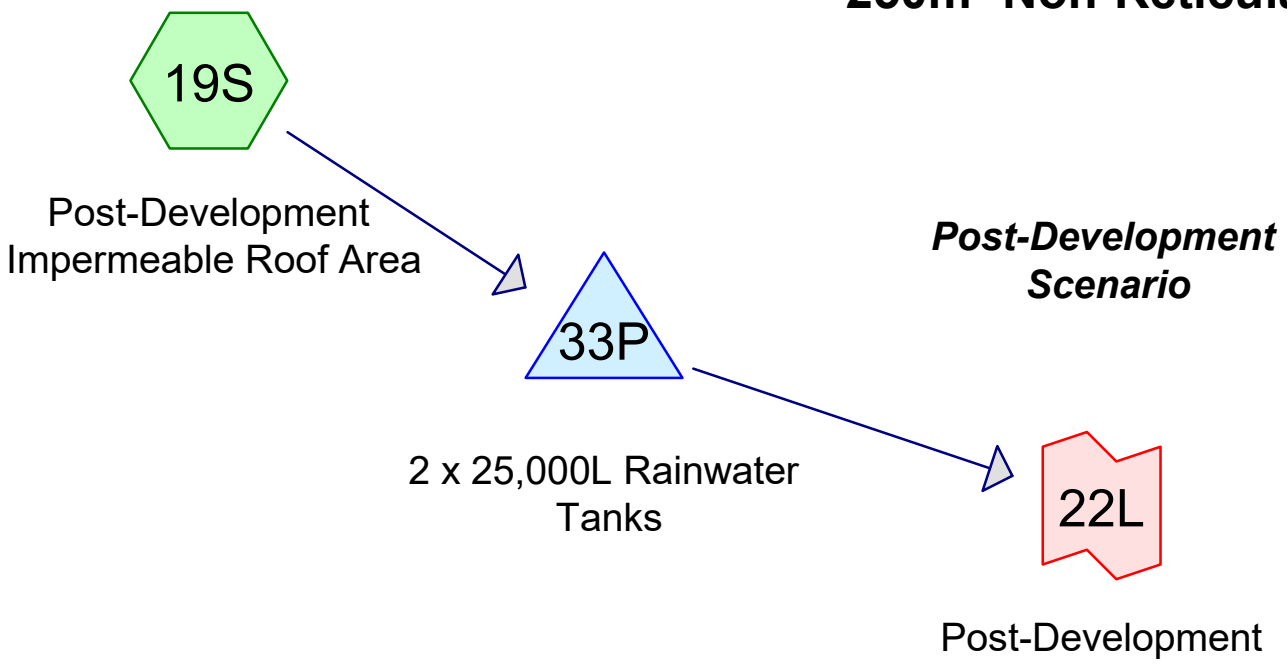
Inflow Area = 200.0 m²,100.00% Impervious, Inflow Depth > 192 mm for 10% AEP + 20% CCF event
Inflow = 1.67 L/s @ 8.22 hrs, Volume= 38.5 m³
Primary = 1.67 L/s @ 8.22 hrs, Volume= 38.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 22L: Post-Development



250m² Non-Reticulated



Post-Development Scenario

Subcat Reach Pond Link

Routing Diagram for 136071 - Non Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Soil Listing (selected nodes)

Area (sq-meters)	Soil Group	Subcatchment Numbers
0.0	HSG A	
0.0	HSG B	
250.0	HSG C	19S
0.0	HSG D	
0.0	Other	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 19S: Post-Development Runoff Area=250.0 m² 100.00% Impervious Runoff Depth>194 mm
Tc=10.0 min CN=98 Runoff=3.31 L/s 48.6 m³

Pond 33P: 2 x 25,000L Rainwater Tanks Peak Elev=0.200 m Storage=4.1 m³ Inflow=3.31 L/s 48.6 m³
Outflow=2.10 L/s 48.1 m³

Link 22L: Post-Development Inflow=2.10 L/s 48.1 m³
Primary=2.10 L/s 48.1 m³

Summary for Subcatchment 19S: Post-Development Impermeable Roof Area

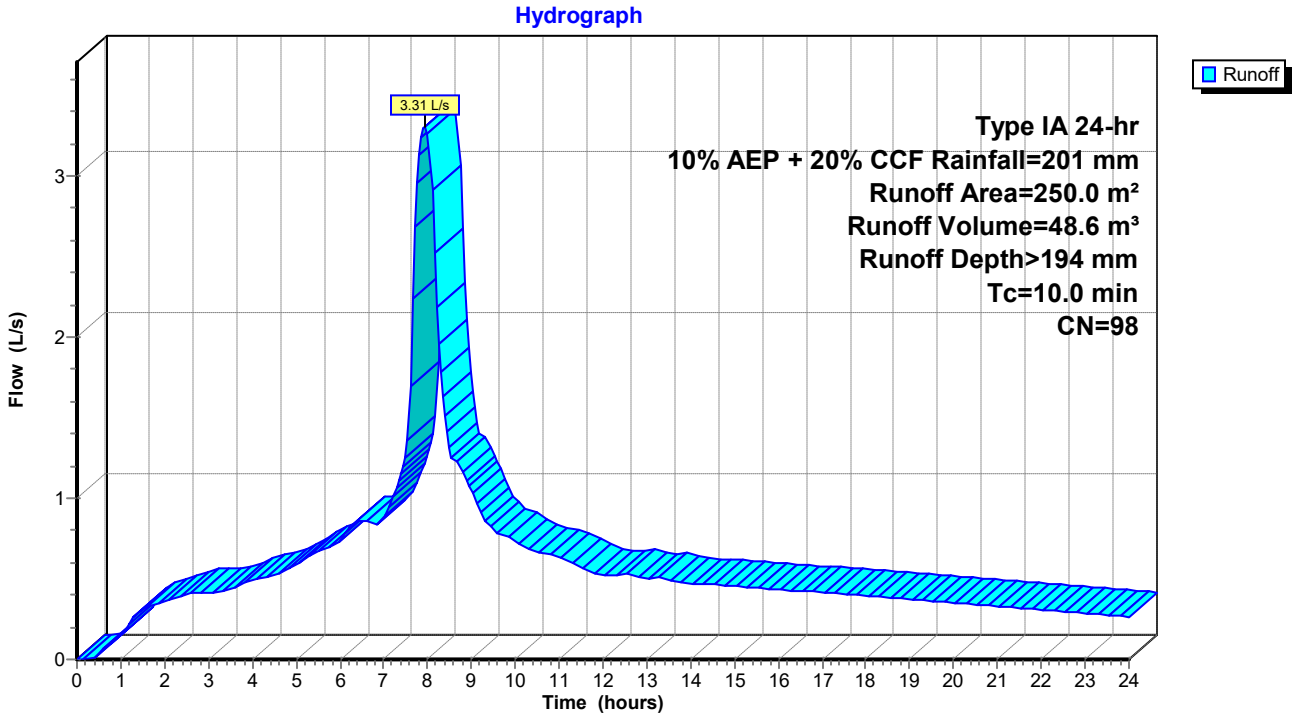
Runoff = 3.31 L/s @ 7.94 hrs, Volume= 48.6 m³, Depth> 194 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
250.0	98	Roofs, HSG C
250.0		100.00% Impervious Area

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

Subcatchment 19S: Post-Development Impermeable Roof Area



Summary for Pond 33P: 2 x 25,000L Rainwater Tanks

Inflow Area = 250.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 3.31 L/s @ 7.94 hrs, Volume= 48.6 m³
Outflow = 2.10 L/s @ 8.22 hrs, Volume= 48.1 m³, Atten= 37%, Lag= 16.9 min
Primary = 2.10 L/s @ 8.22 hrs, Volume= 48.1 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.200 m @ 8.22 hrs Surf.Area= 20.4 m² Storage= 4.1 m³

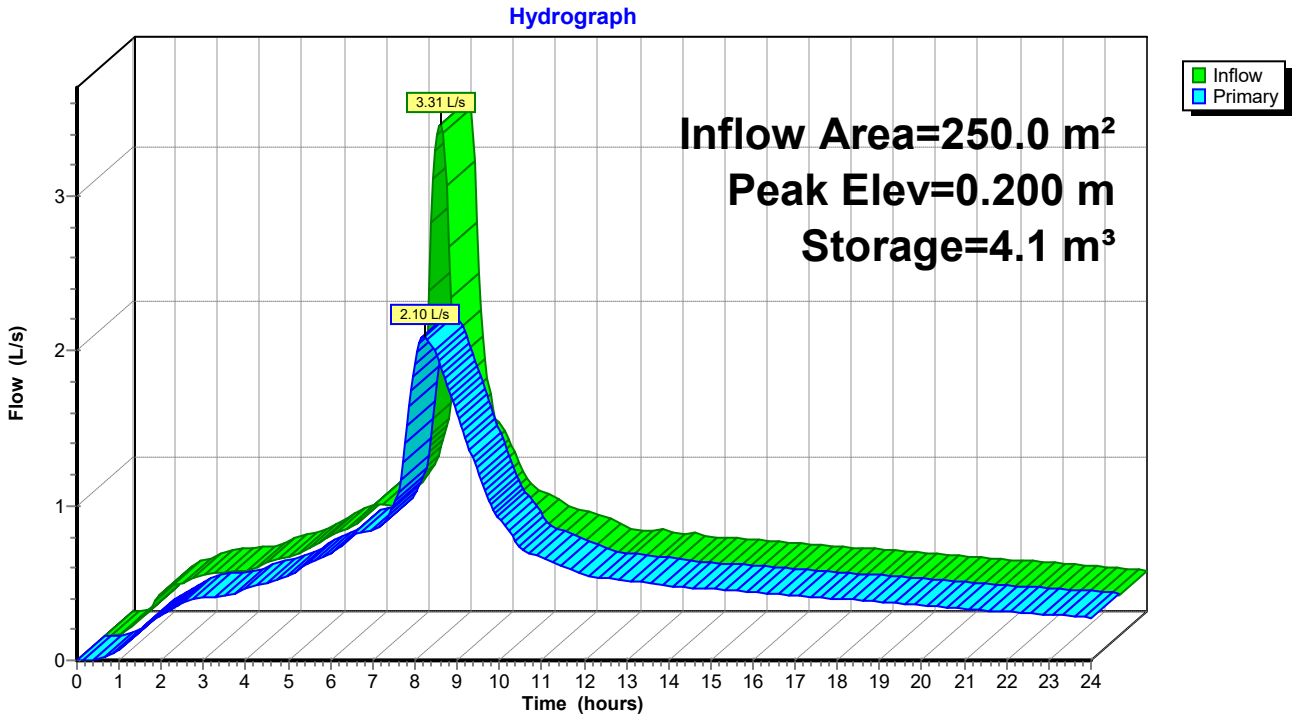
Plug-Flow detention time= 25.3 min calculated for 48.1 m³ (99% of inflow)
Center-of-Mass det. time= 17.6 min (666.6 - 649.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	52.9 m³	**3.60 mD x 2.60 mH Vertical Cone/Cylinder** x 2

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**49 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.10 L/s @ 8.22 hrs HW=0.199 m (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.10 L/s @ 1.11 m/s)

Pond 33P: 2 x 25,000L Rainwater Tanks

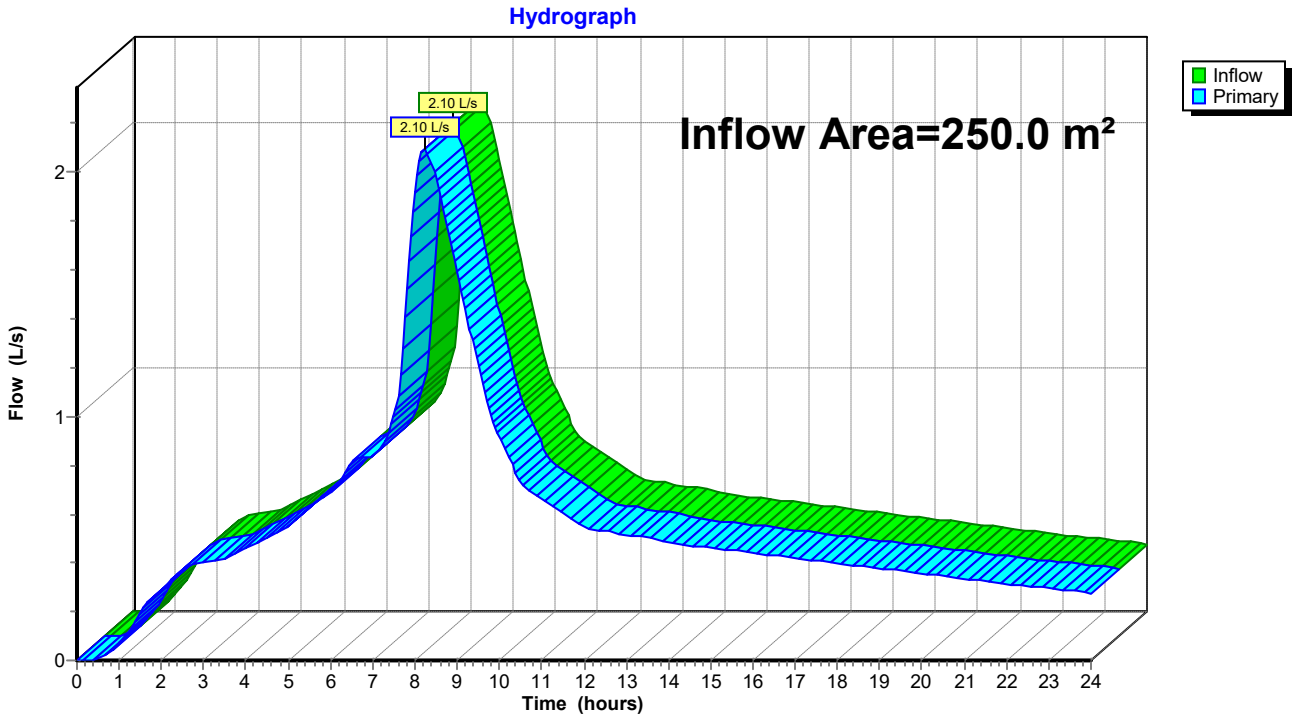


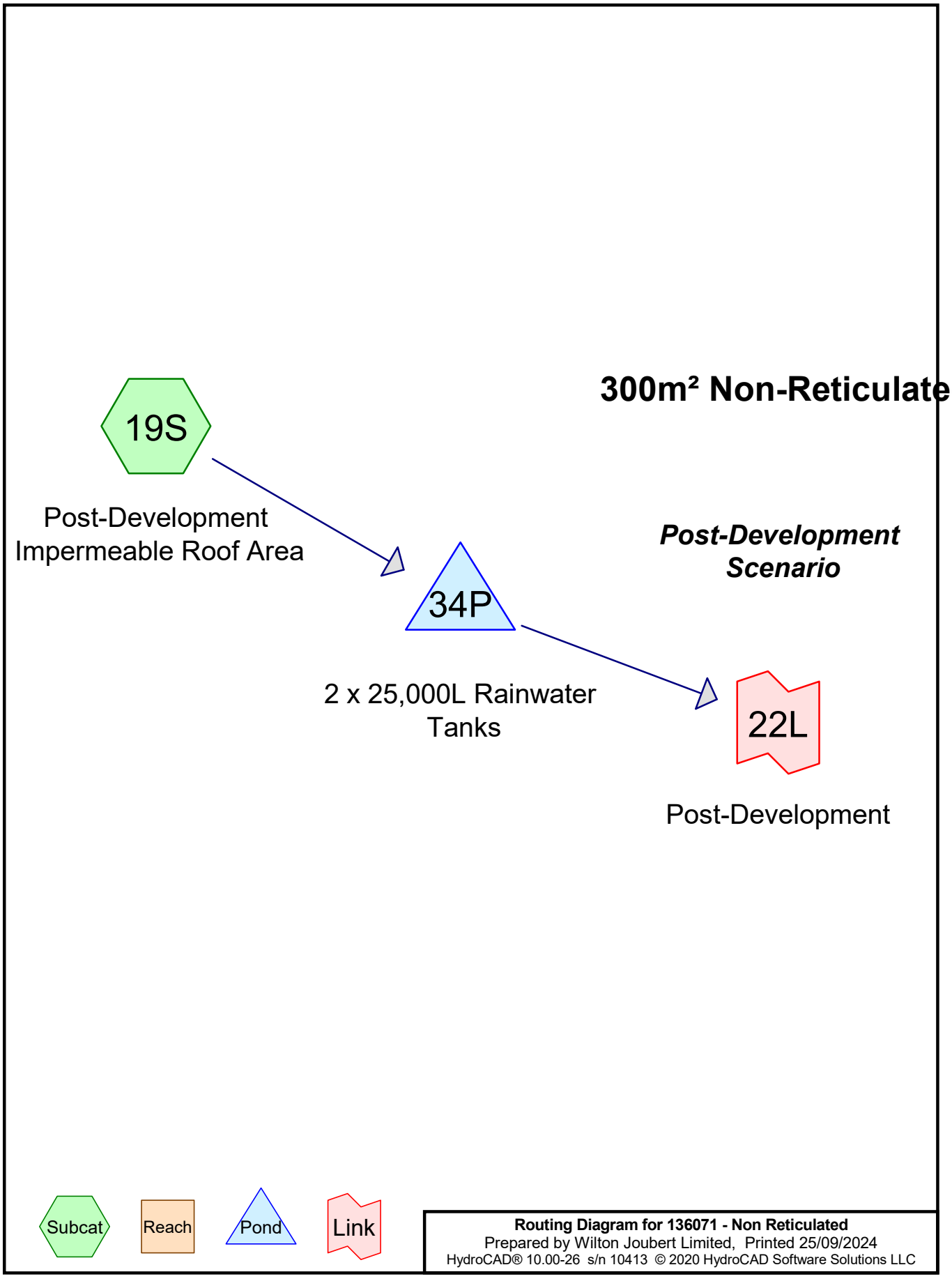
Summary for Link 22L: Post-Development

Inflow Area = 250.0 m²,100.00% Impervious, Inflow Depth > 193 mm for 10% AEP + 20% CCF event
Inflow = 2.10 L/s @ 8.22 hrs, Volume= 48.1 m³
Primary = 2.10 L/s @ 8.22 hrs, Volume= 48.1 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 22L: Post-Development




300m² Non-Reticulated
19S
Post-Development
Impermeable Roof Area
Post-Development
Scenario
34P
2 x 25,000L Rainwater
Tanks
22L
Post-Development
Subcat
Reach
Pond
Link
Routing Diagram for 136071 - Non Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024
HydroCAD® 10.00-26 s/n 10413 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 19S: Post-Development Runoff Area=300.0 m² 100.00% Impervious Runoff Depth>194 mm
Tc=10.0 min CN=98 Runoff=3.97 L/s 58.3 m³

Pond 34P: 2 x 25,000L Rainwater Tanks Peak Elev=0.238 m Storage=4.8 m³ Inflow=3.97 L/s 58.3 m³
Outflow=2.50 L/s 57.8 m³

Link 22L: Post-Development Inflow=2.50 L/s 57.8 m³
Primary=2.50 L/s 57.8 m³

Summary for Subcatchment 19S: Post-Development Impermeable Roof Area

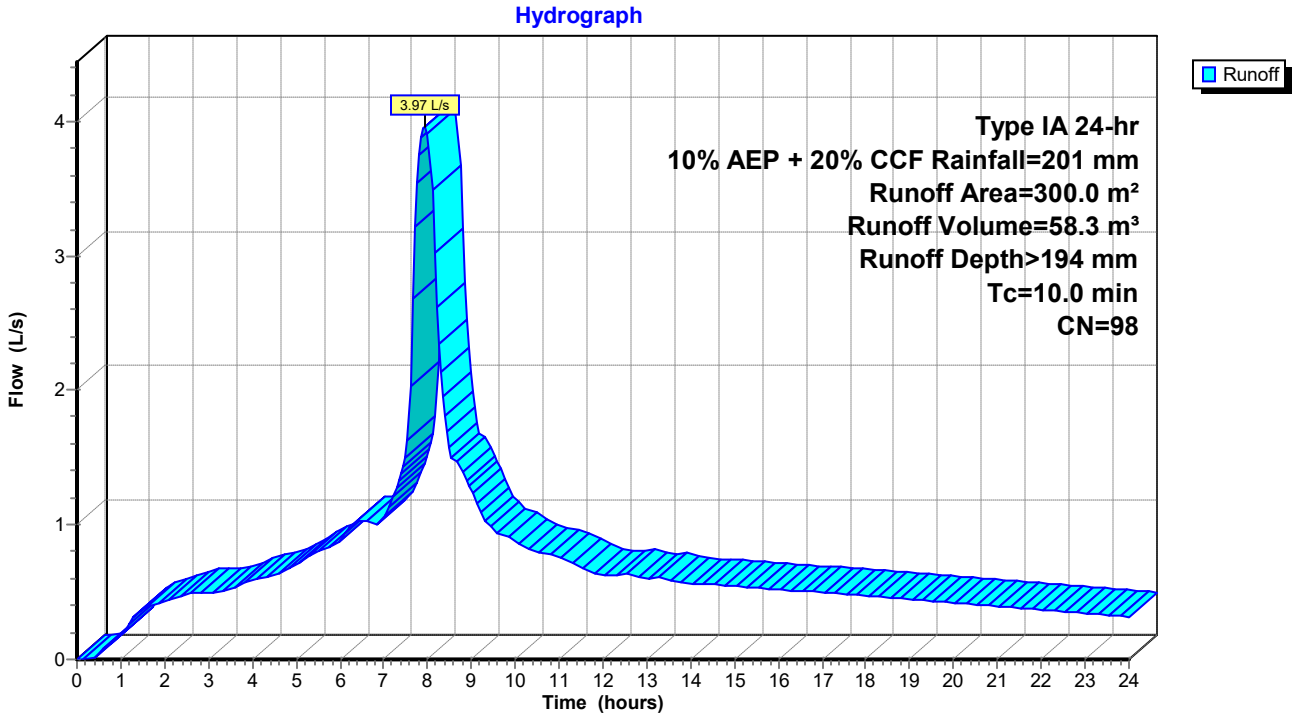
Runoff = 3.97 L/s @ 7.94 hrs, Volume= 58.3 m³, Depth> 194 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
300.0	98	Roofs, HSG C
300.0		100.00% Impervious Area

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

Subcatchment 19S: Post-Development Impermeable Roof Area



Summary for Pond 34P: 2 x 25,000L Rainwater Tanks

Inflow Area = 300.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 3.97 L/s @ 7.94 hrs, Volume= 58.3 m³
Outflow = 2.50 L/s @ 8.22 hrs, Volume= 57.8 m³, Atten= 37%, Lag= 17.1 min
Primary = 2.50 L/s @ 8.22 hrs, Volume= 57.8 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.238 m @ 8.22 hrs Surf.Area= 20.4 m² Storage= 4.8 m³

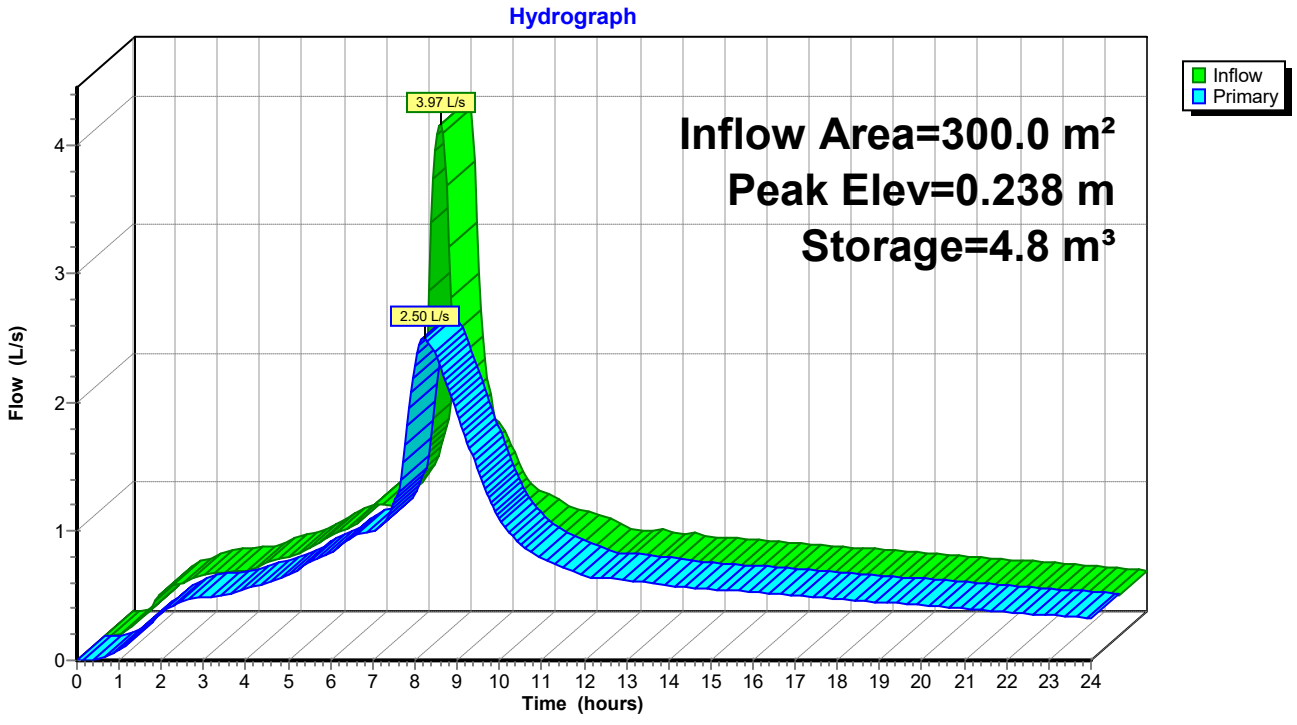
Plug-Flow detention time= 23.8 min calculated for 57.8 m³ (99% of inflow)
Center-of-Mass det. time= 16.6 min (665.5 - 649.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	52.9 m³	**3.60 mD x 2.60 mH Vertical Cone/Cylinder** x 2

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**51 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.50 L/s @ 8.22 hrs HW=0.238 m (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.50 L/s @ 1.22 m/s)

Pond 34P: 2 x 25,000L Rainwater Tanks

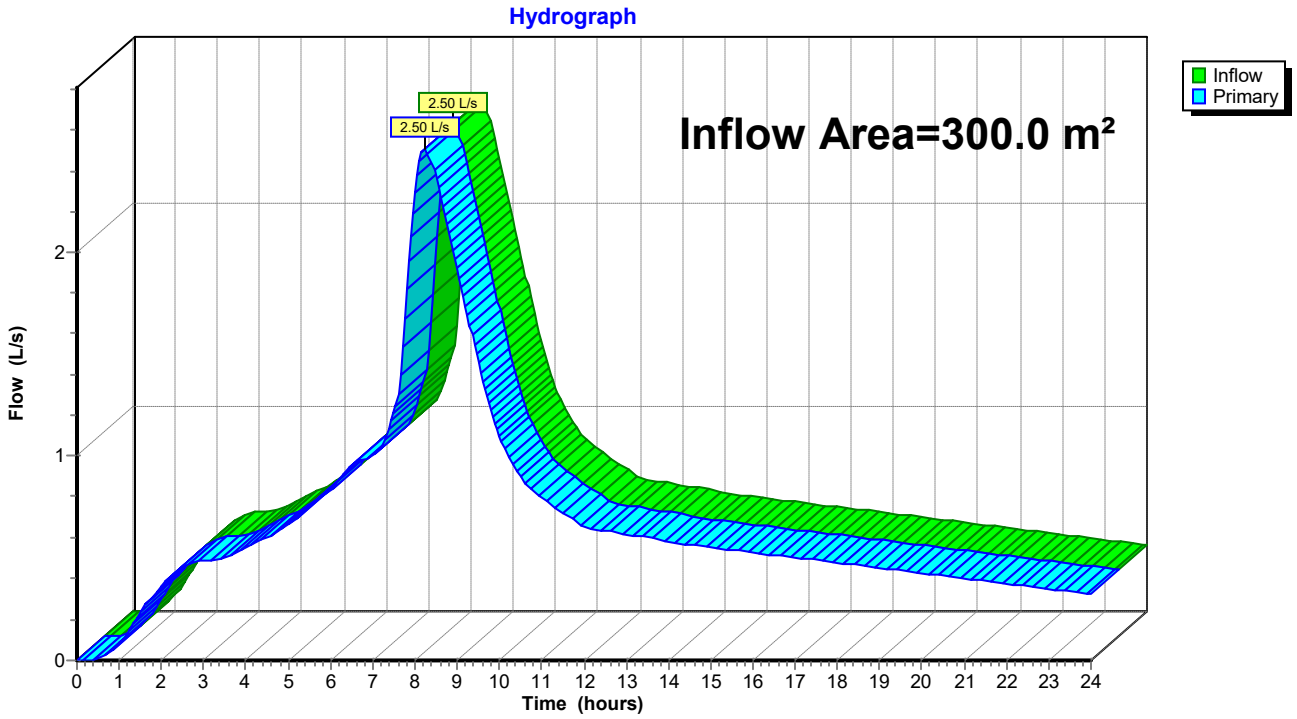


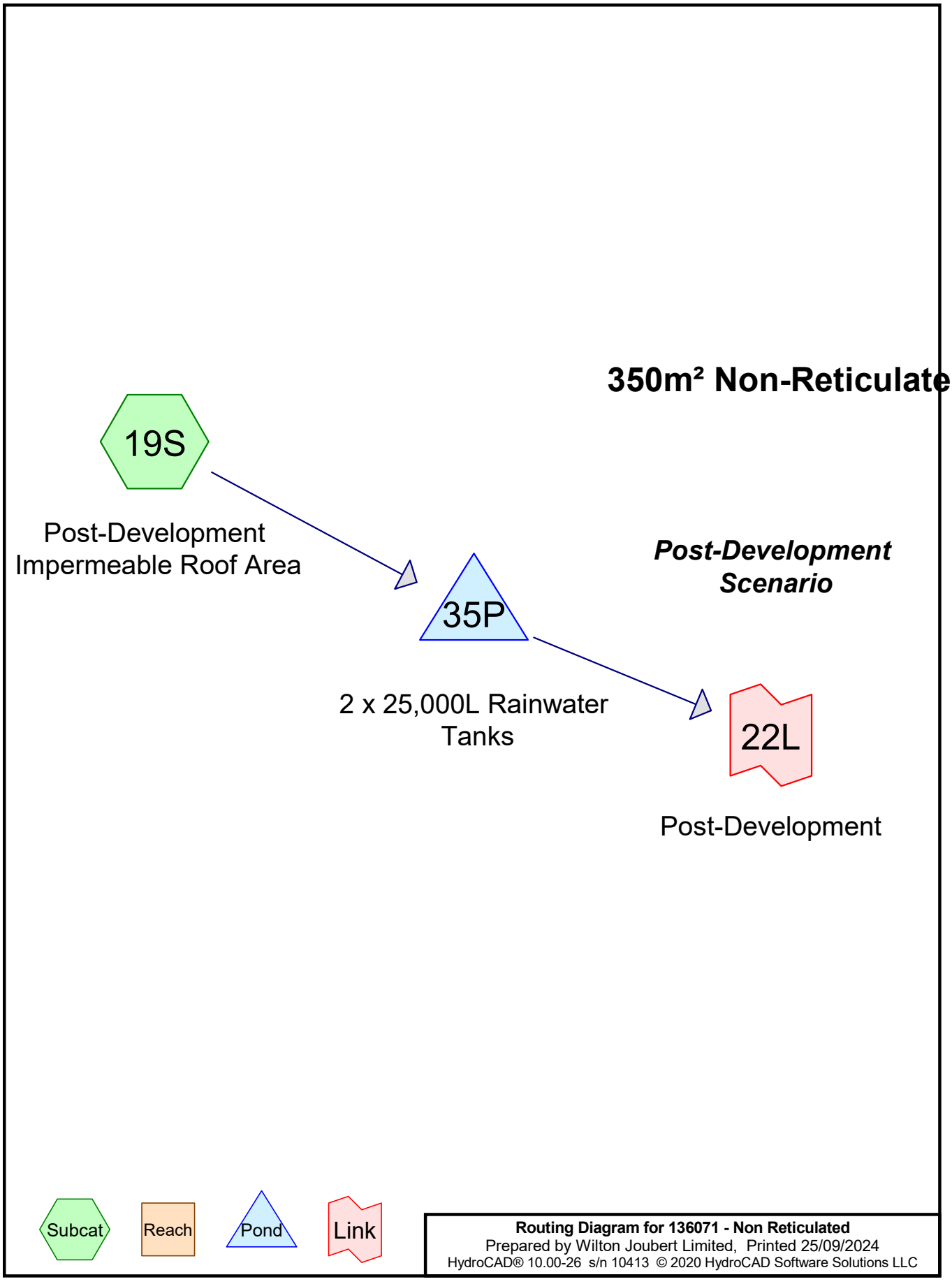
Summary for Link 22L: Post-Development

Inflow Area = 300.0 m²,100.00% Impervious, Inflow Depth > 193 mm for 10% AEP + 20% CCF event
Inflow = 2.50 L/s @ 8.22 hrs, Volume= 57.8 m³
Primary = 2.50 L/s @ 8.22 hrs, Volume= 57.8 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 22L: Post-Development




350m² Non-Reticulated
19S
Post-Development
Impermeable Roof Area
Post-Development
Scenario
35P
2 x 25,000L Rainwater
Tanks
22L
Post-Development
Subcat
Reach
Pond
Link
Routing Diagram for 136071 - Non Reticulated
Prepared by Wilton Joubert Limited, Printed 25/09/2024
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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 19S: Post-Development Runoff Area=350.0 m² 100.00% Impervious Runoff Depth>194 mm
Tc=10.0 min CN=98 Runoff=4.63 L/s 68.0 m³

Pond 35P: 2 x 25,000L Rainwater Tanks Peak Elev=0.274 m Storage=5.6 m³ Inflow=4.63 L/s 68.0 m³
Outflow=2.92 L/s 67.5 m³

Link 22L: Post-Development Inflow=2.92 L/s 67.5 m³
Primary=2.92 L/s 67.5 m³

Summary for Subcatchment 19S: Post-Development Impermeable Roof Area

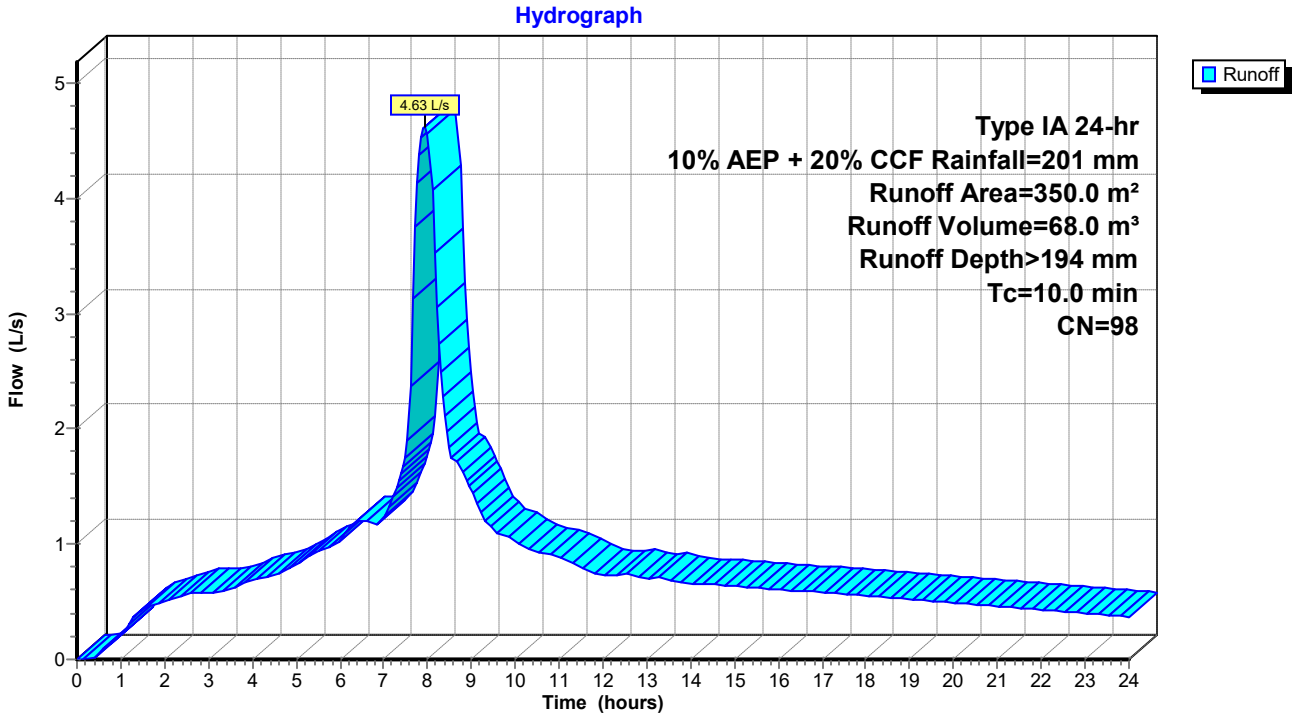
Runoff = 4.63 L/s @ 7.94 hrs, Volume= 68.0 m³, Depth> 194 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
350.0	98	Roofs, HSG C
350.0		100.00% Impervious Area

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

Subcatchment 19S: Post-Development Impermeable Roof Area



Summary for Pond 35P: 2 x 25,000L Rainwater Tanks

Inflow Area = 350.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 4.63 L/s @ 7.94 hrs, Volume= 68.0 m³
Outflow = 2.92 L/s @ 8.22 hrs, Volume= 67.5 m³, Atten= 37%, Lag= 17.1 min
Primary = 2.92 L/s @ 8.22 hrs, Volume= 67.5 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.274 m @ 8.22 hrs Surf.Area= 20.4 m² Storage= 5.6 m³

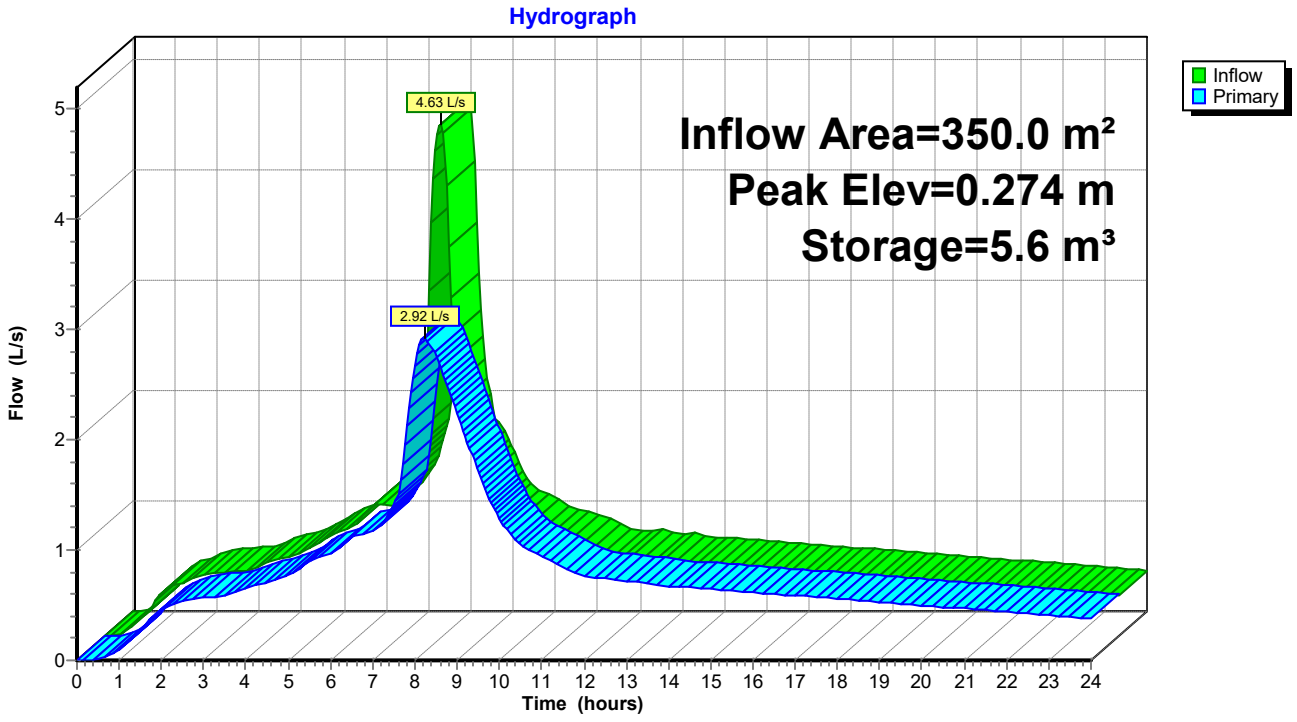
Plug-Flow detention time= 22.5 min calculated for 67.5 m³ (99% of inflow)
Center-of-Mass det. time= 15.8 min (664.8 - 649.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	52.9 m³	**3.60 mD x 2.60 mH Vertical Cone/Cylinder** x 2

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**53 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.92 L/s @ 8.22 hrs HW=0.274 m (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.92 L/s @ 1.32 m/s)

Pond 35P: 2 x 25,000L Rainwater Tanks

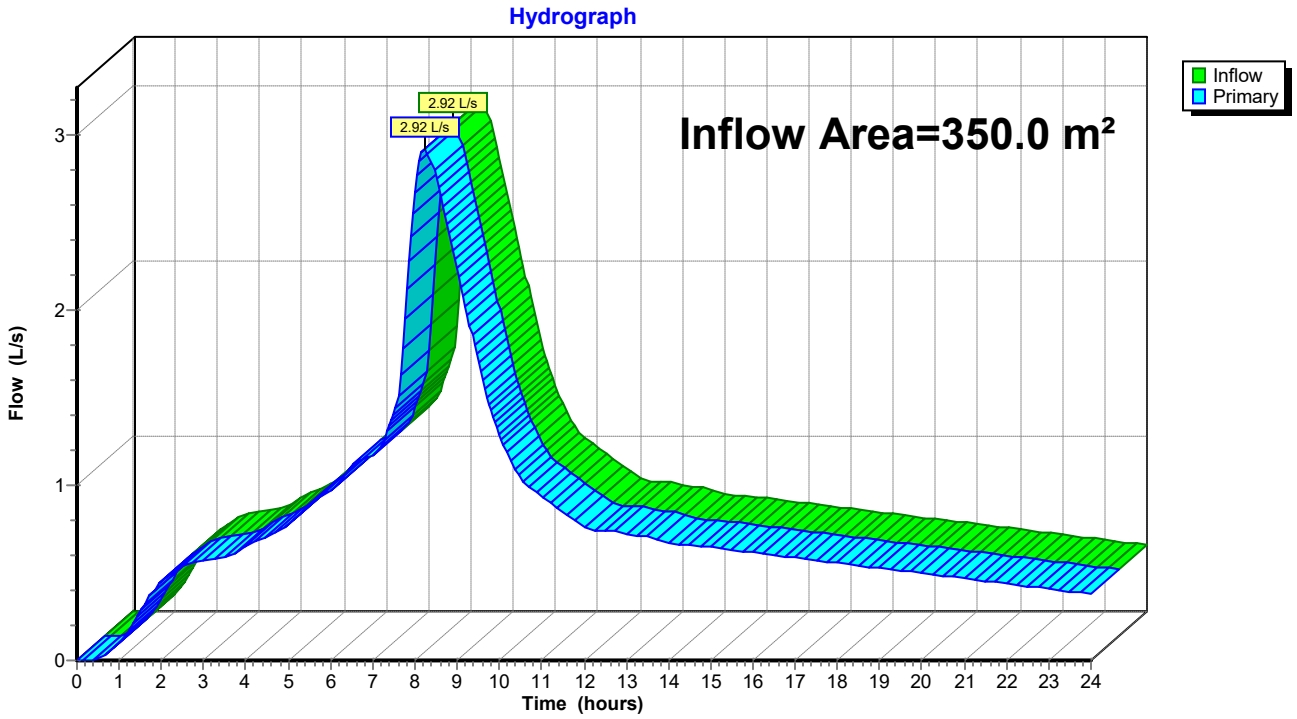


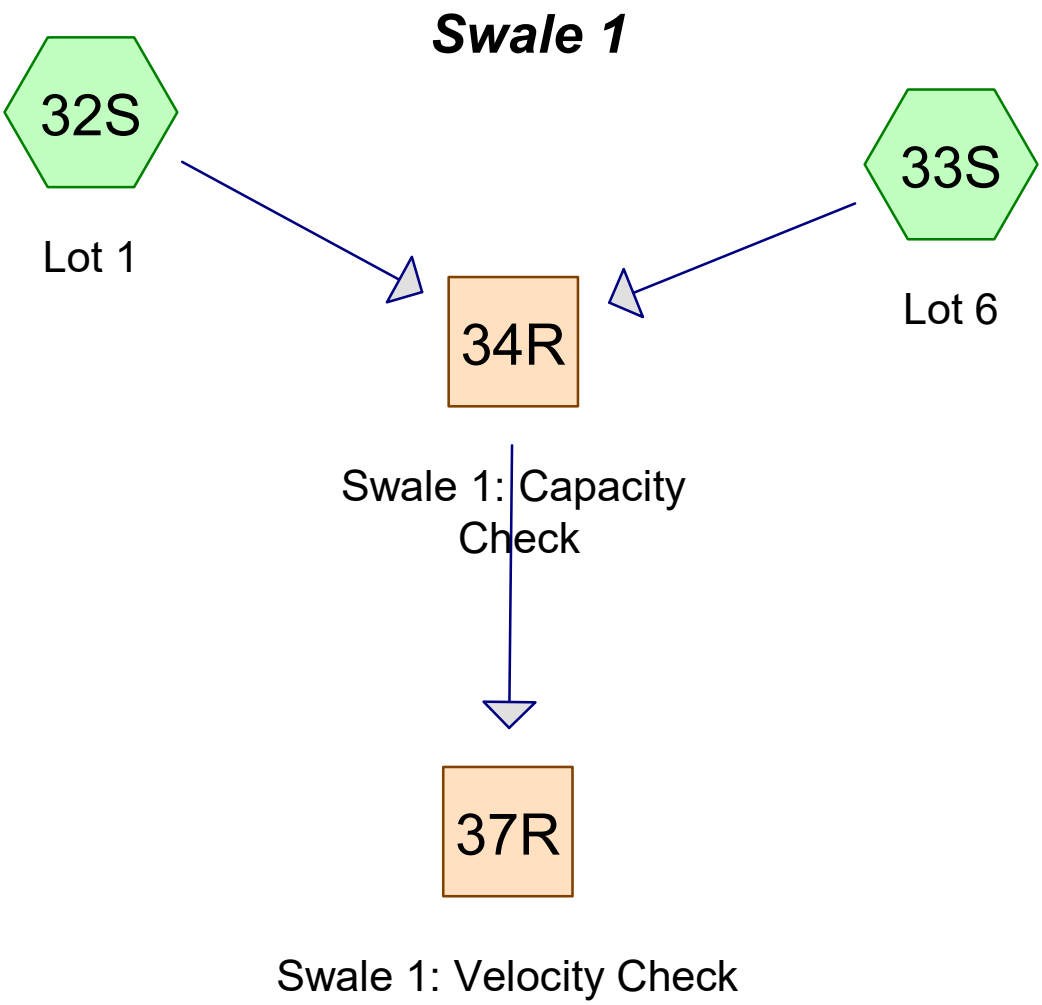
Summary for Link 22L: Post-Development

Inflow Area = 350.0 m²,100.00% Impervious, Inflow Depth > 193 mm for 10% AEP + 20% CCF event
Inflow = 2.92 L/s @ 8.22 hrs, Volume= 67.5 m³
Primary = 2.92 L/s @ 8.22 hrs, Volume= 67.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 22L: Post-Development





Subcat Reach Pond Link

Routing Diagram for 136071 - Swales
Prepared by Wilton Joubert Limited, Printed 1/10/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 32S: Lot 1 Runoff Area=2,007.0 m² 12.50% Impervious Runoff Depth>132 mm
Tc=10.0 min CN=77 Runoff=18.52 L/s 263.9 m³

Subcatchment 33S: Lot 6 Runoff Area=2,005.0 m² 12.50% Impervious Runoff Depth>132 mm
Tc=10.0 min CN=77 Runoff=18.51 L/s 263.7 m³

Reach 34R: Swale 1: Capacity Avg. Flow Depth=0.16 m Max Vel=0.70 m/s Inflow=37.03 L/s 527.6 m³
n=0.025 L=10.00 m S=0.0100 m/m Capacity=116.04 L/s Outflow=37.02 L/s 527.5 m³

Reach 37R: Swale 1: Velocity Check Avg. Flow Depth=0.11 m Max Vel=1.45 m/s Inflow=37.02 L/s 527.5 m³
n=0.025 L=10.00 m S=0.0700 m/m Capacity=307.01 L/s Outflow=37.02 L/s 527.4 m³

Total Runoff Area = 4,012.0 m² Runoff Volume = 527.6 m³ Average Runoff Depth = 132 mm
87.50% Pervious = 3,510.5 m² 12.50% Impervious = 501.5 m²

Summary for Subcatchment 32S: Lot 1

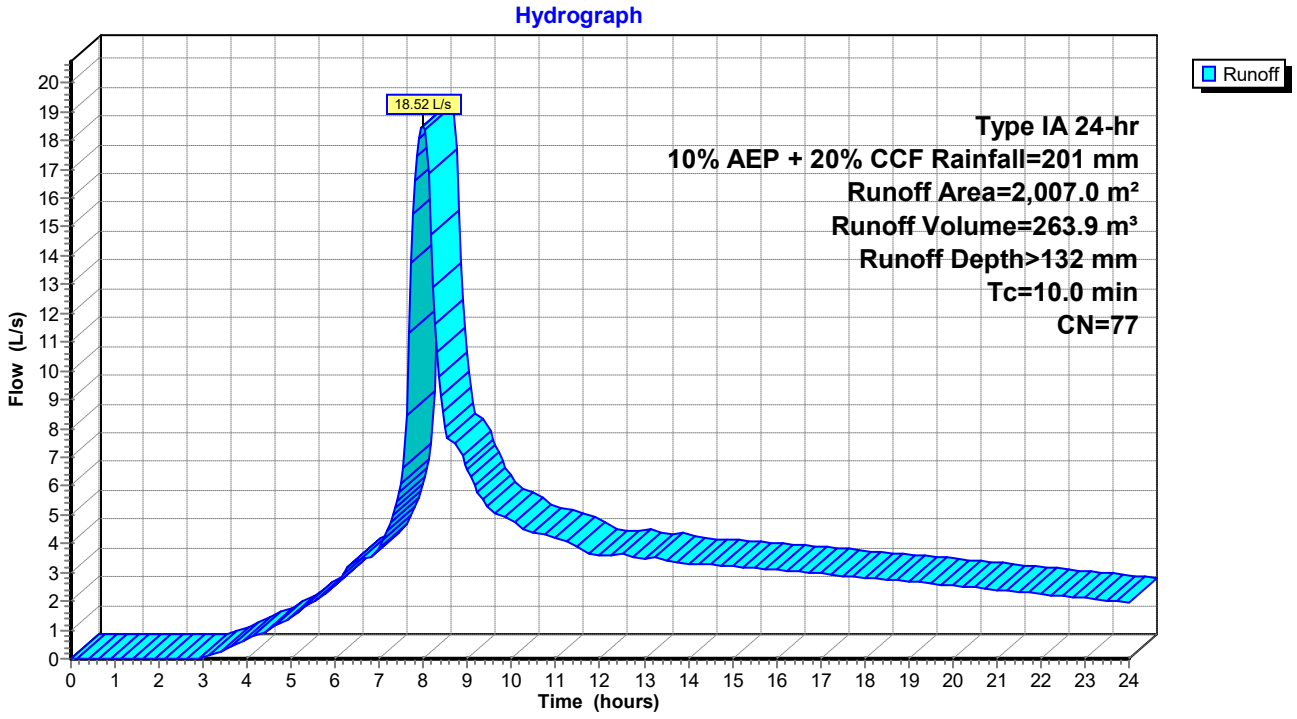
Runoff = 18.52 L/s @ 7.99 hrs, Volume= 263.9 m³, Depth> 132 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

	Area (m²)	CN	Description
*	250.9	98	Impermeable 12.5%
	1,756.1	74	>75% Grass cover, Good, HSG C
	2,007.0	77	Weighted Average
	1,756.1		87.50% Pervious Area
	250.9		12.50% Impervious Area

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

Subcatchment 32S: Lot 1



Summary for Subcatchment 33S: Lot 6

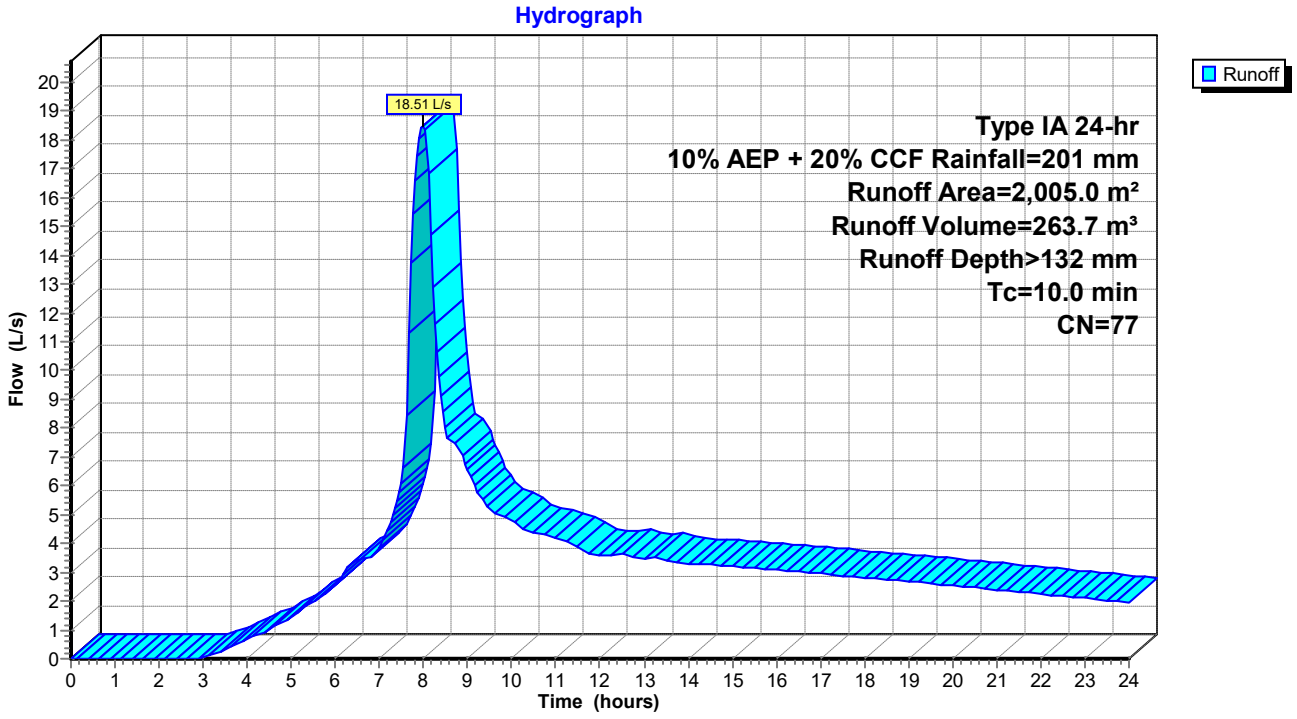
Runoff = 18.51 L/s @ 7.99 hrs, Volume= 263.7 m³, Depth> 132 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

	Area (m²)	CN	Description
*	250.6	98	Impermeable 12.5%
	1,754.4	74	>75% Grass cover, Good, HSG C
	2,005.0	77	Weighted Average
	1,754.4		87.50% Pervious Area
	250.6		12.50% Impervious Area

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

Subcatchment 33S: Lot 6



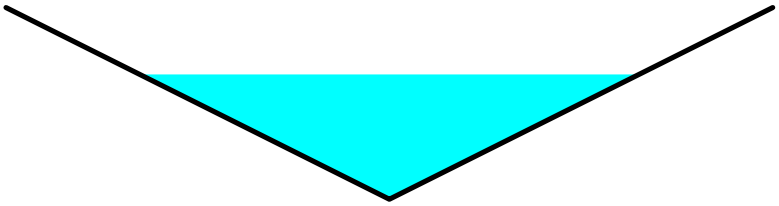
Summary for Reach 34R: Swale 1: Capacity Check

Inflow Area = 4,012.0 m², 12.50% Impervious, Inflow Depth > 132 mm for 10% AEP + 20% CCF event
Inflow = 37.03 L/s @ 7.99 hrs, Volume= 527.6 m³
Outflow = 37.02 L/s @ 7.99 hrs, Volume= 527.5 m³, Atten= 0%, Lag= 0.1 min

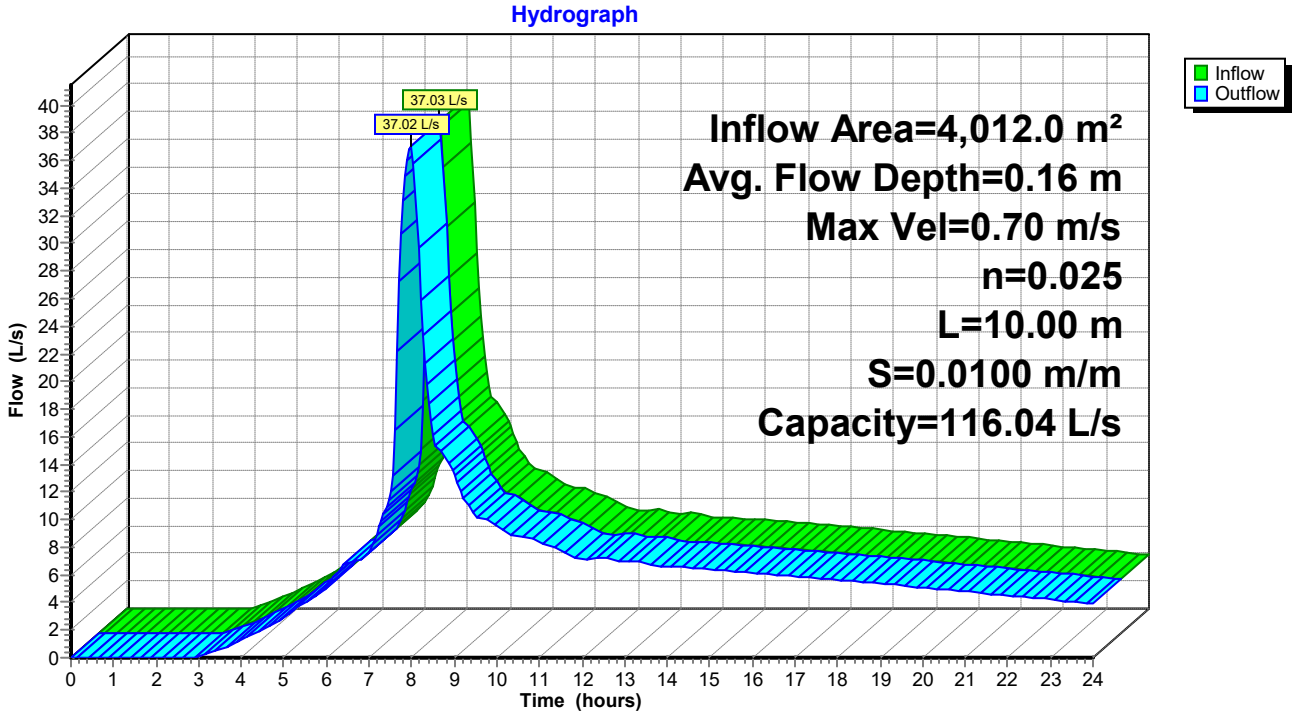
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.70 m/s, Min. Travel Time= 0.2 min
Avg. Velocity = 0.44 m/s, Avg. Travel Time= 0.4 min

Peak Storage= 0.5 m³ @ 7.99 hrs
Average Depth at Peak Storage= 0.16 m
Bank-Full Depth= 0.25 m Flow Area= 0.13 m², Capacity= 116.04 L/s

0.00 m x 0.25 m deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 m/m Top Width= 1.00 m
Length= 10.00 m Slope= 0.0100 m/m
Inlet Invert= 0.000 m, Outlet Invert= -0.100 m



Reach 34R: Swale 1: Capacity Check



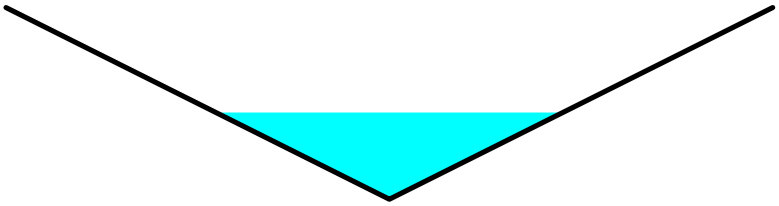
Summary for Reach 37R: Swale 1: Velocity Check

Inflow Area = 4,012.0 m², 12.50% Impervious, Inflow Depth > 131 mm for 10% AEP + 20% CCF event
Inflow = 37.02 L/s @ 7.99 hrs, Volume= 527.5 m³
Outflow = 37.02 L/s @ 7.99 hrs, Volume= 527.4 m³, Atten= 0%, Lag= 0.1 min

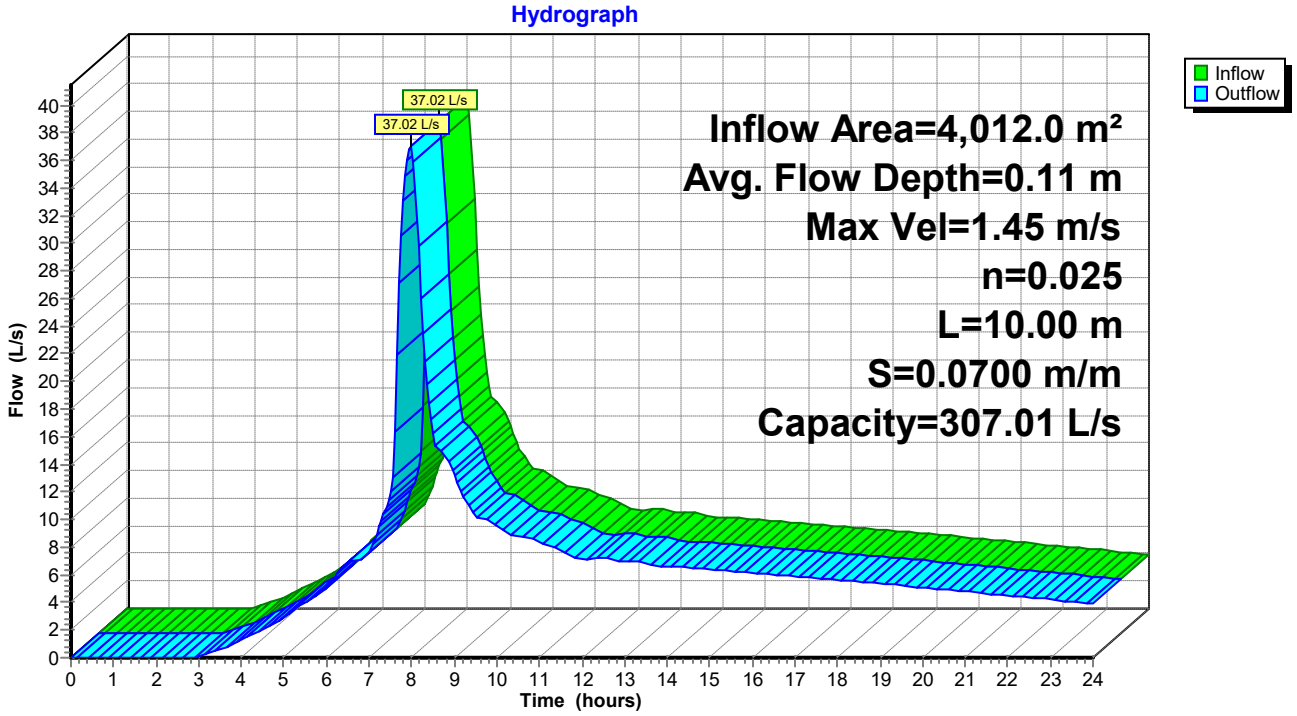
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.45 m/s, Min. Travel Time= 0.1 min
Avg. Velocity = 0.92 m/s, Avg. Travel Time= 0.2 min

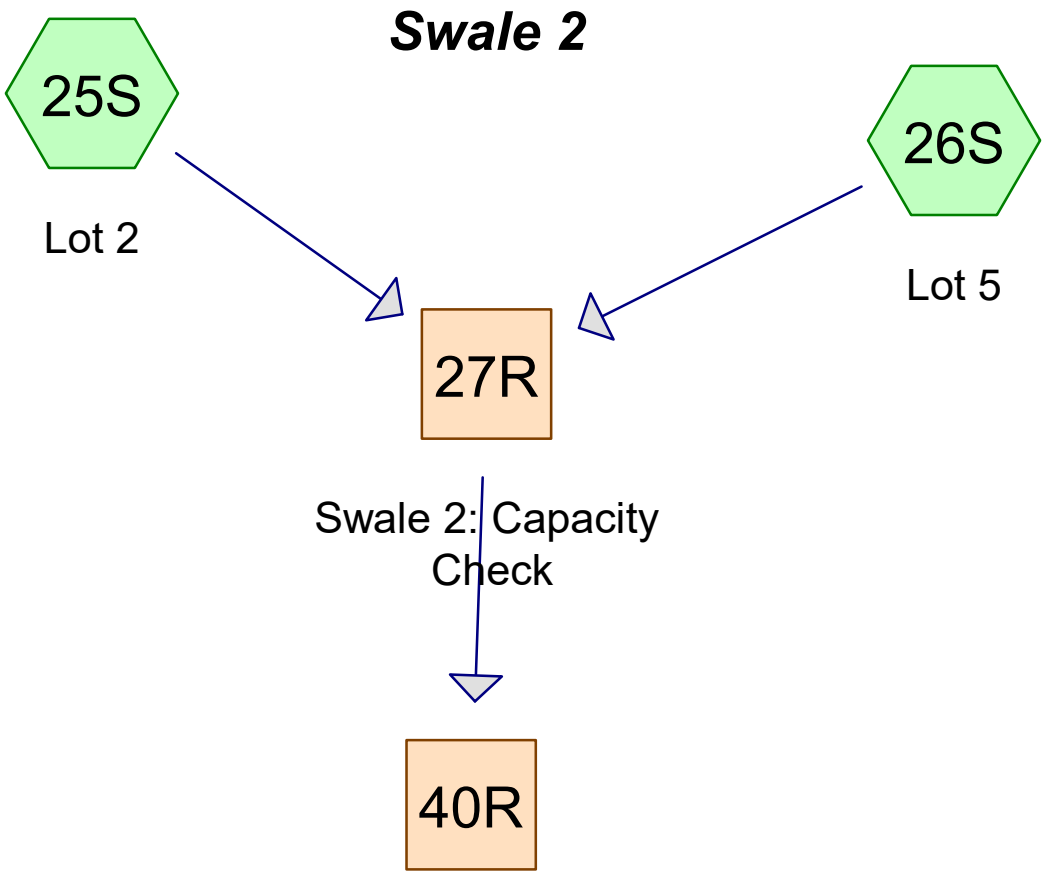
Peak Storage= 0.3 m³ @ 7.99 hrs
Average Depth at Peak Storage= 0.11 m
Bank-Full Depth= 0.25 m Flow Area= 0.13 m², Capacity= 307.01 L/s

0.00 m x 0.25 m deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 m/m Top Width= 1.00 m
Length= 10.00 m Slope= 0.0700 m/m
Inlet Invert= -0.100 m, Outlet Invert= -0.800 m



Reach 37R: Swale 1: Velocity Check





Swale 2: Velocity Check

Subcat Reach Pond Link

Routing Diagram for 136071 - Swales
Prepared by Wilton Joubert Limited, Printed 1/10/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 25S: Lot 2 Runoff Area=2,002.0 m² 12.50% Impervious Runoff Depth>132 mm
Tc=10.0 min CN=77 Runoff=18.48 L/s 263.3 m³

Subcatchment 26S: Lot 5 Runoff Area=2,155.0 m² 12.50% Impervious Runoff Depth>132 mm
Tc=10.0 min CN=77 Runoff=19.89 L/s 283.4 m³

Reach 27R: Swale 2: Capacity Avg. Flow Depth=0.17 m Max Vel=0.70 m/s Inflow=38.37 L/s 546.6 m³
n=0.025 L=10.00 m S=0.0100 m/m Capacity=116.04 L/s Outflow=38.36 L/s 546.5 m³

Reach 40R: Swale 2: Velocity Check Avg. Flow Depth=0.11 m Max Vel=1.46 m/s Inflow=38.36 L/s 546.5 m³
n=0.025 L=10.00 m S=0.0700 m/m Capacity=307.01 L/s Outflow=38.36 L/s 546.5 m³

Total Runoff Area = 4,157.0 m² Runoff Volume = 546.6 m³ Average Runoff Depth = 132 mm
87.50% Pervious = 3,637.3 m² 12.50% Impervious = 519.7 m²

Summary for Subcatchment 25S: Lot 2

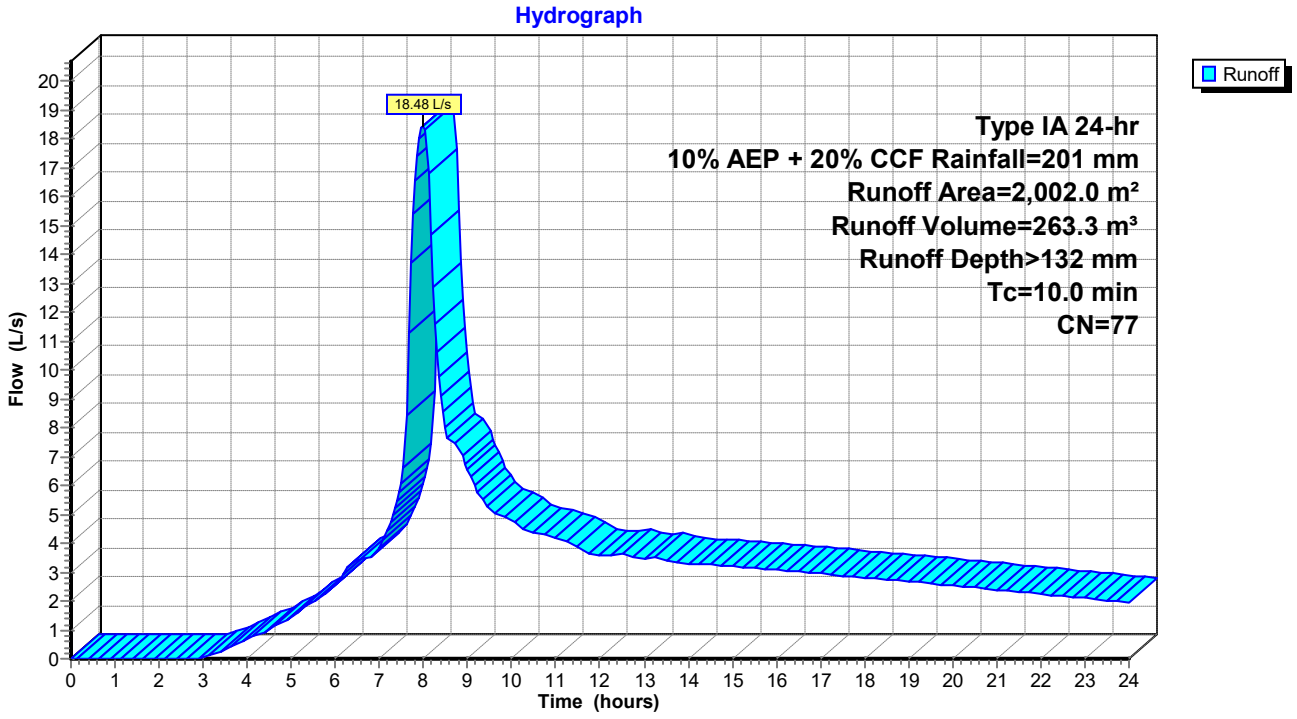
Runoff = 18.48 L/s @ 7.99 hrs, Volume= 263.3 m³, Depth> 132 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

	Area (m²)	CN	Description
*	250.3	98	Impermeable 12.5%
	1,751.7	74	>75% Grass cover, Good, HSG C
	2,002.0	77	Weighted Average
	1,751.7		87.50% Pervious Area
	250.3		12.50% Impervious Area

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

Subcatchment 25S: Lot 2



Summary for Subcatchment 26S: Lot 5

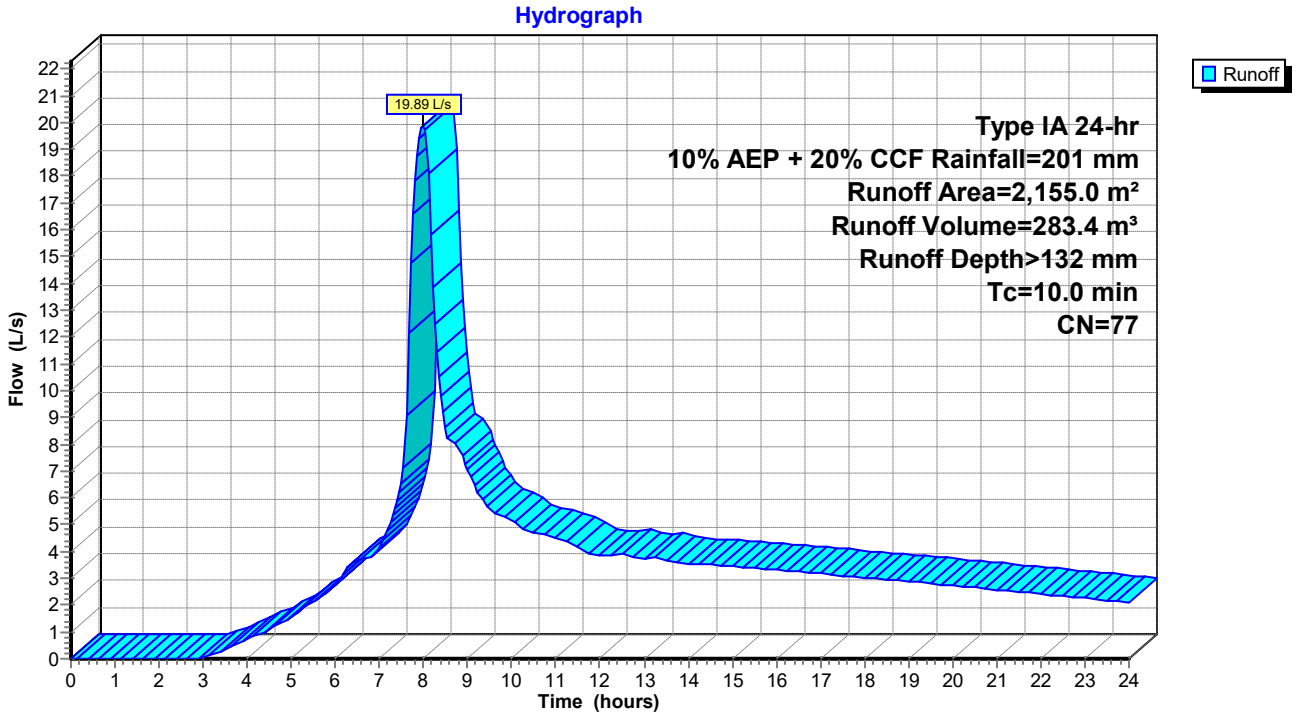
Runoff = 19.89 L/s @ 7.99 hrs, Volume= 283.4 m³, Depth> 132 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

	Area (m²)	CN	Description
*	269.4	98	Impermeable 12.5%
	1,885.6	74	>75% Grass cover, Good, HSG C
	2,155.0	77	Weighted Average
	1,885.6		87.50% Pervious Area
	269.4		12.50% Impervious Area

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

Subcatchment 26S: Lot 5



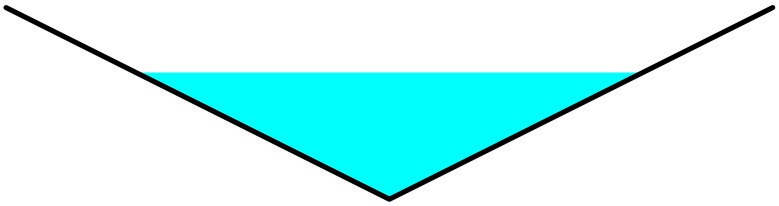
Summary for Reach 27R: Swale 2: Capacity Check

Inflow Area = 4,157.0 m², 12.50% Impervious, Inflow Depth > 132 mm for 10% AEP + 20% CCF event
Inflow = 38.37 L/s @ 7.99 hrs, Volume= 546.6 m³
Outflow = 38.36 L/s @ 7.99 hrs, Volume= 546.5 m³, Atten= 0%, Lag= 0.1 min

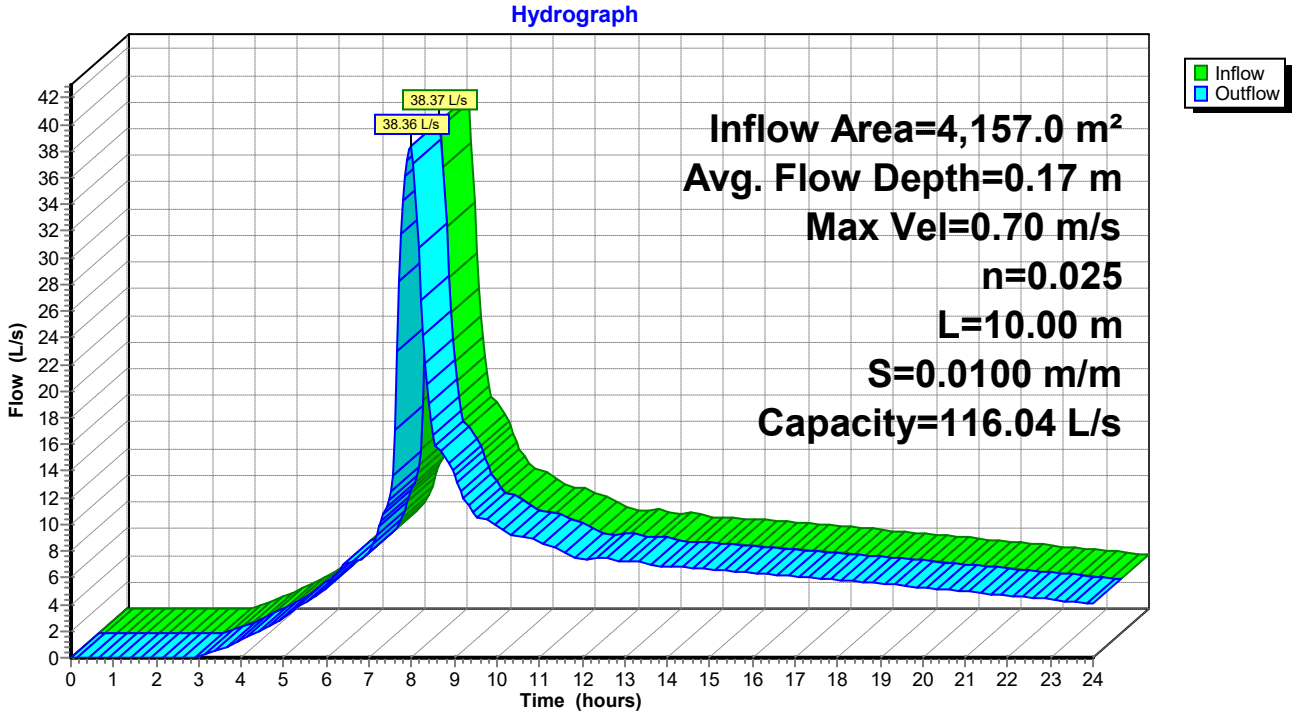
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.70 m/s, Min. Travel Time= 0.2 min
Avg. Velocity = 0.44 m/s, Avg. Travel Time= 0.4 min

Peak Storage= 0.5 m³ @ 7.99 hrs
Average Depth at Peak Storage= 0.17 m
Bank-Full Depth= 0.25 m Flow Area= 0.13 m², Capacity= 116.04 L/s

0.00 m x 0.25 m deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 m/m Top Width= 1.00 m
Length= 10.00 m Slope= 0.0100 m/m
Inlet Invert= 0.000 m, Outlet Invert= -0.100 m



Reach 27R: Swale 2: Capacity Check



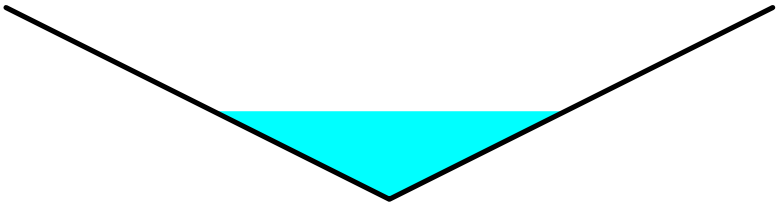
Summary for Reach 40R: Swale 2: Velocity Check

Inflow Area = 4,157.0 m², 12.50% Impervious, Inflow Depth > 131 mm for 10% AEP + 20% CCF event
Inflow = 38.36 L/s @ 7.99 hrs, Volume= 546.5 m³
Outflow = 38.36 L/s @ 7.99 hrs, Volume= 546.5 m³, Atten= 0%, Lag= 0.1 min

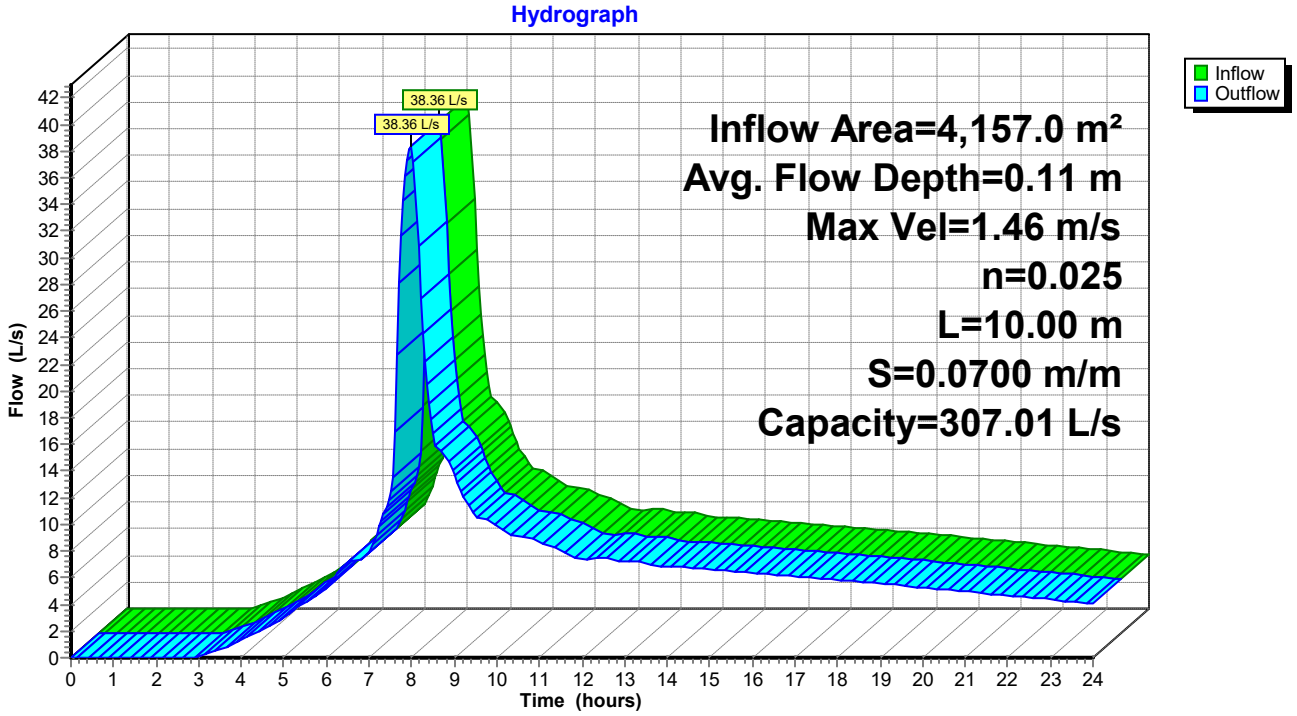
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.46 m/s, Min. Travel Time= 0.1 min
Avg. Velocity = 0.92 m/s, Avg. Travel Time= 0.2 min

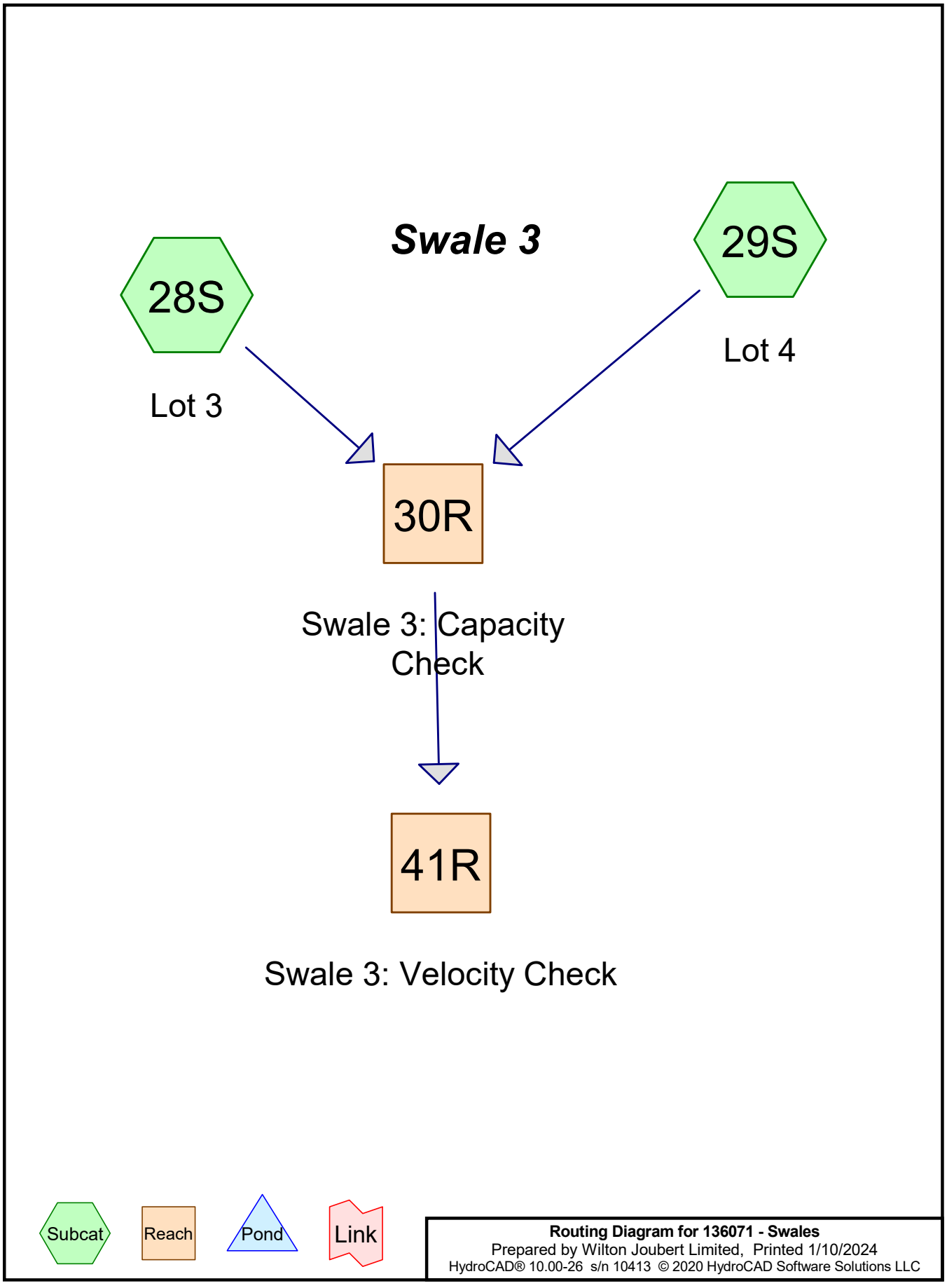
Peak Storage= 0.3 m³ @ 7.99 hrs
Average Depth at Peak Storage= 0.11 m
Bank-Full Depth= 0.25 m Flow Area= 0.13 m², Capacity= 307.01 L/s

0.00 m x 0.25 m deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 m/m Top Width= 1.00 m
Length= 10.00 m Slope= 0.0700 m/m
Inlet Invert= -0.100 m, Outlet Invert= -0.800 m



Reach 40R: Swale 2: Velocity Check




Swale 3
28S
Lot 3
29S
Lot 4
30R
Swale 3: Capacity Check
41R
Swale 3: Velocity Check
Subcat
Reach
Pond
Link
Routing Diagram for 136071 - Swales
Prepared by Wilton Joubert Limited, Printed 1/10/2024
HydroCAD® 10.00-26 s/n 10413 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 28S: Lot 3 Runoff Area=2,001.0 m² 12.50% Impervious Runoff Depth>132 mm
Tc=10.0 min CN=77 Runoff=18.47 L/s 263.1 m³

Subcatchment 29S: Lot 4 Runoff Area=2,009.0 m² 12.50% Impervious Runoff Depth>132 mm
Tc=10.0 min CN=77 Runoff=18.54 L/s 264.2 m³

Reach 30R: Swale 3: Capacity Avg. Flow Depth=0.16 m Max Vel=0.70 m/s Inflow=37.01 L/s 527.3 m³
n=0.025 L=10.00 m S=0.0100 m/m Capacity=116.04 L/s Outflow=37.00 L/s 527.2 m³

Reach 41R: Swale 3: Velocity Check Avg. Flow Depth=0.11 m Max Vel=1.45 m/s Inflow=37.00 L/s 527.2 m³
n=0.025 L=10.00 m S=0.0700 m/m Capacity=307.01 L/s Outflow=37.00 L/s 527.2 m³

Total Runoff Area = 4,010.0 m² Runoff Volume = 527.3 m³ Average Runoff Depth = 132 mm
87.50% Pervious = 3,508.8 m² 12.50% Impervious = 501.2 m²

Summary for Subcatchment 28S: Lot 3

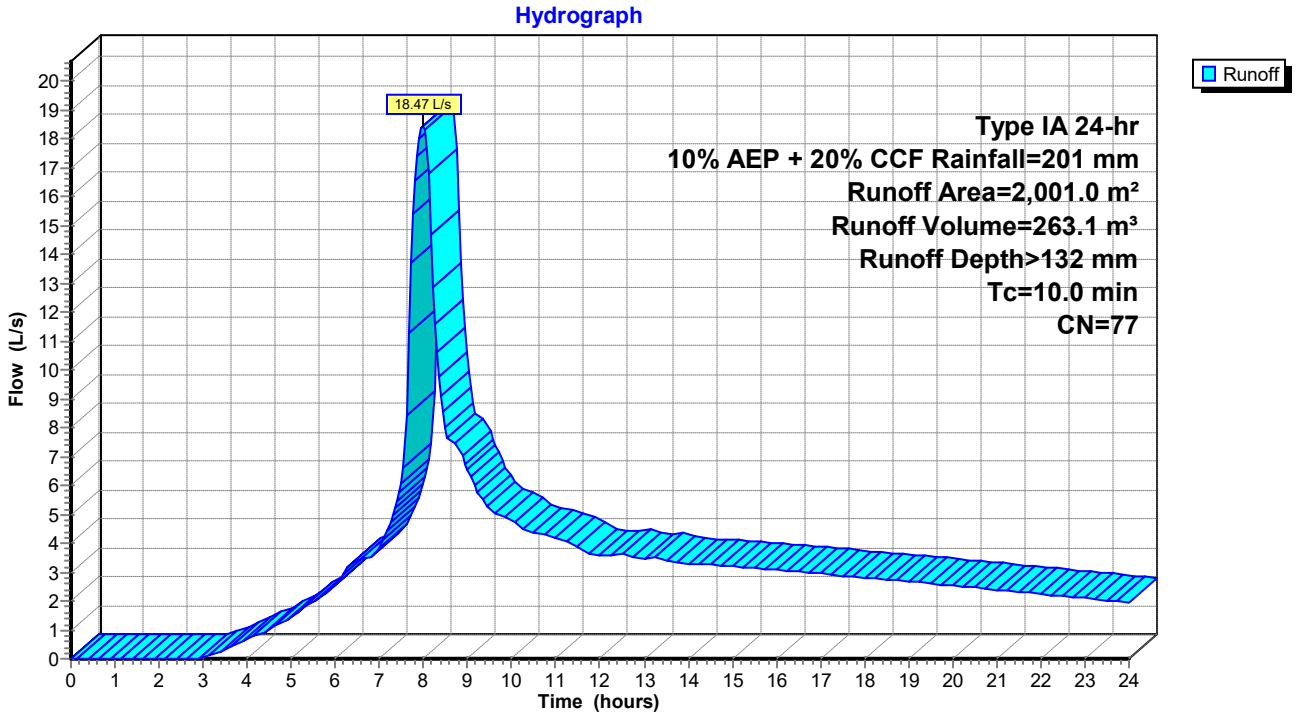
Runoff = 18.47 L/s @ 7.99 hrs, Volume= 263.1 m³, Depth> 132 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

	Area (m²)	CN	Description
*	250.1	98	Impermeable 12.5%
	1,750.9	74	>75% Grass cover, Good, HSG C
	2,001.0	77	Weighted Average
	1,750.9		87.50% Pervious Area
	250.1		12.50% Impervious Area

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

Subcatchment 28S: Lot 3



Summary for Subcatchment 29S: Lot 4

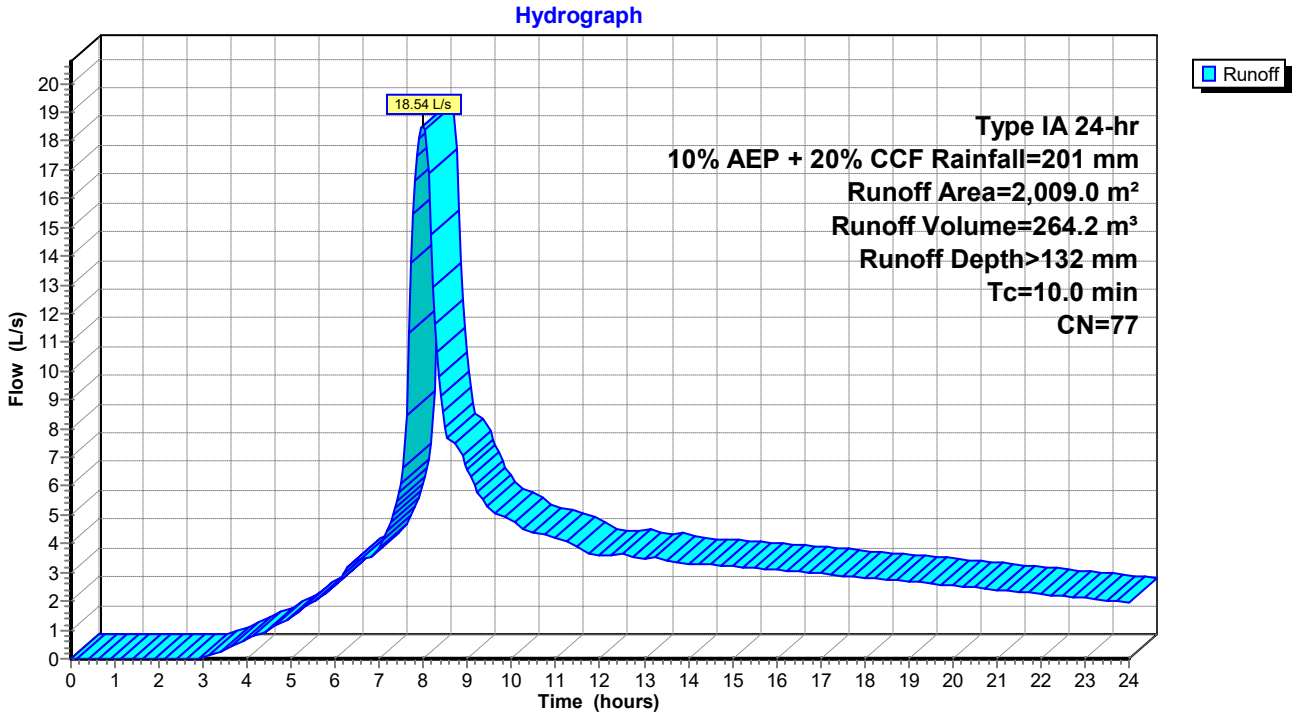
Runoff = 18.54 L/s @ 7.99 hrs, Volume= 264.2 m³, Depth> 132 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

	Area (m²)	CN	Description
*	251.1	98	Impermeable 12.5%
	1,757.9	74	>75% Grass cover, Good, HSG C
	2,009.0	77	Weighted Average
	1,757.9		87.50% Pervious Area
	251.1		12.50% Impervious Area

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

Subcatchment 29S: Lot 4



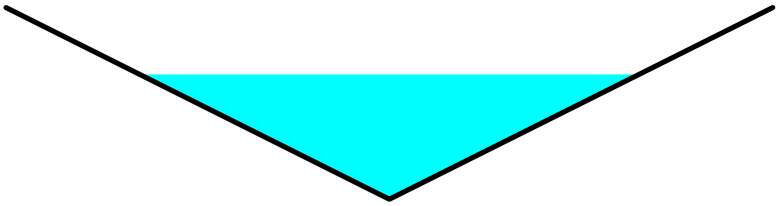
Summary for Reach 30R: Swale 3: Capacity Check

Inflow Area = 4,010.0 m², 12.50% Impervious, Inflow Depth > 132 mm for 10% AEP + 20% CCF event
Inflow = 37.01 L/s @ 7.99 hrs, Volume= 527.3 m³
Outflow = 37.00 L/s @ 7.99 hrs, Volume= 527.2 m³, Atten= 0%, Lag= 0.1 min

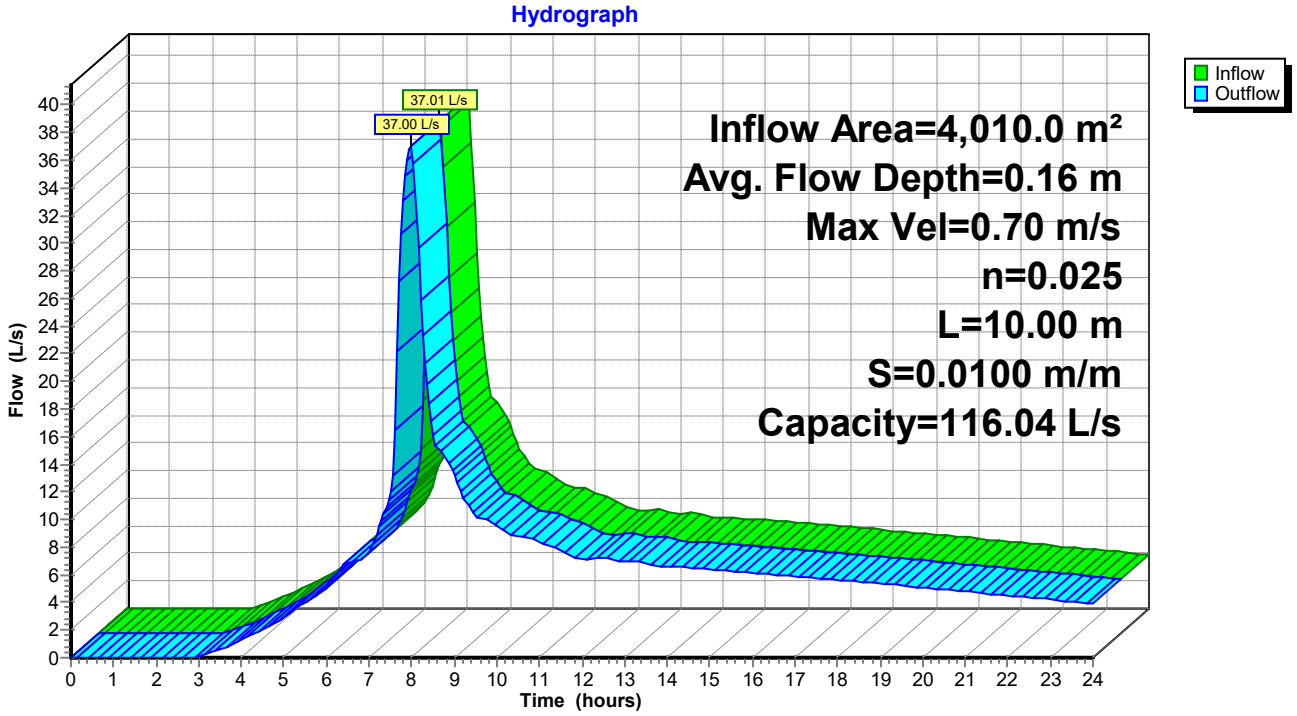
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.70 m/s, Min. Travel Time= 0.2 min
Avg. Velocity = 0.44 m/s, Avg. Travel Time= 0.4 min

Peak Storage= 0.5 m³ @ 7.99 hrs
Average Depth at Peak Storage= 0.16 m
Bank-Full Depth= 0.25 m Flow Area= 0.13 m², Capacity= 116.04 L/s

0.00 m x 0.25 m deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 m/m Top Width= 1.00 m
Length= 10.00 m Slope= 0.0100 m/m
Inlet Invert= 0.000 m, Outlet Invert= -0.100 m



Reach 30R: Swale 3: Capacity Check



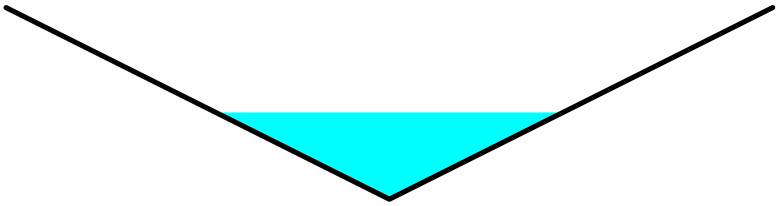
Summary for Reach 41R: Swale 3: Velocity Check

Inflow Area = 4,010.0 m², 12.50% Impervious, Inflow Depth > 131 mm for 10% AEP + 20% CCF event
Inflow = 37.00 L/s @ 7.99 hrs, Volume= 527.2 m³
Outflow = 37.00 L/s @ 7.99 hrs, Volume= 527.2 m³, Atten= 0%, Lag= 0.1 min

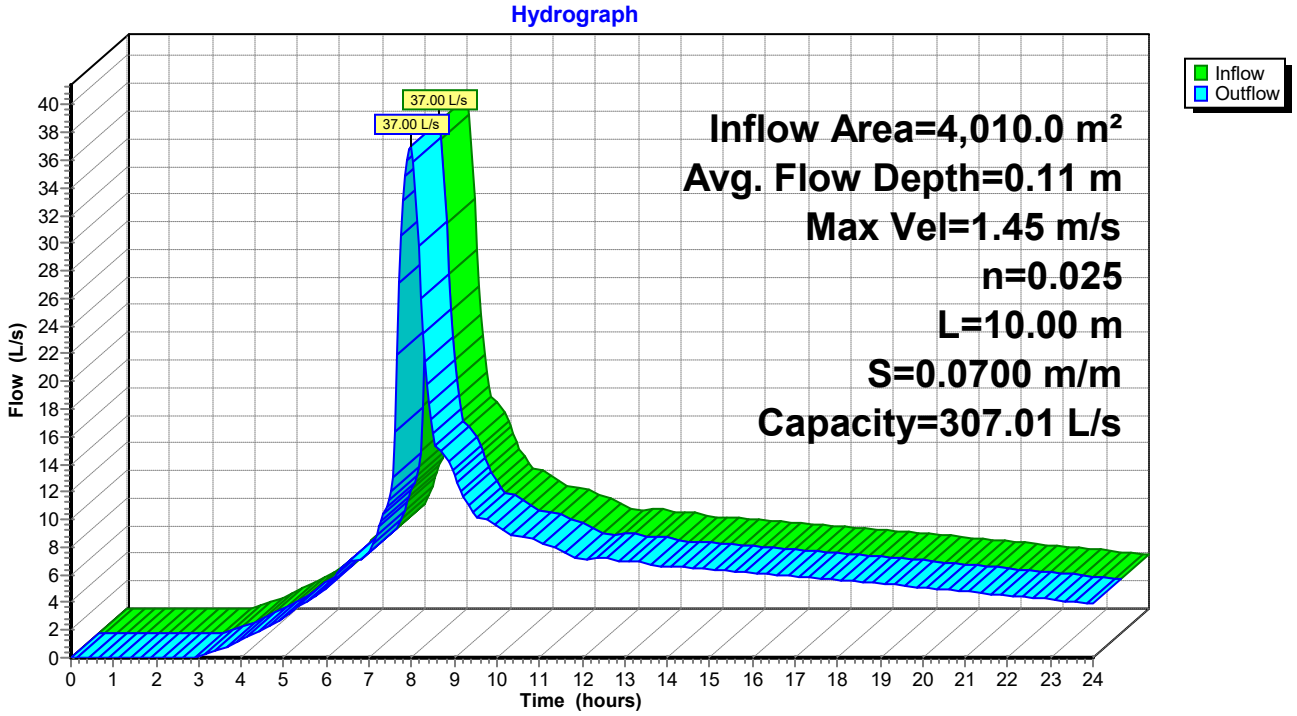
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.45 m/s, Min. Travel Time= 0.1 min
Avg. Velocity = 0.92 m/s, Avg. Travel Time= 0.2 min

Peak Storage= 0.3 m³ @ 7.99 hrs
Average Depth at Peak Storage= 0.11 m
Bank-Full Depth= 0.25 m Flow Area= 0.13 m², Capacity= 307.01 L/s

0.00 m x 0.25 m deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 m/m Top Width= 1.00 m
Length= 10.00 m Slope= 0.0700 m/m
Inlet Invert= -0.100 m, Outlet Invert= -0.800 m



Reach 41R: Swale 3: Velocity Check



Stormwater Soakage Assessment Per E1/VM1
Job No: 136071
79 Kemp Road - Concrete ROW Cirtex Crates

Driveway Soakpit Calculations

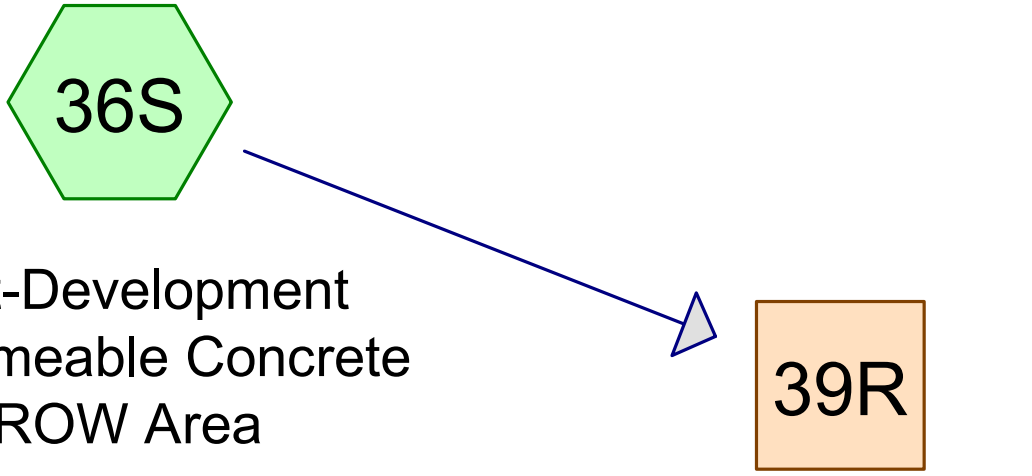
253	Area draining to Soakpit, A
0.96	Runoff Coefficient, C
51.36	Rainfall Intensity, I
2.8	Width of Soakpit
5.72	Length of Soakpit
16.016	Basal area of Soakpit, Asp
0.86	Depth of Soakpit
15	Soakage Rate, Sr mm/hr (s
12.47	Runoff, Rc =10CIA
0.24	Soakage volume,Vsoak =Asp*Sr/1000
12.23	Storage Volume,Vstor=Rc - Vsoak
12.88	Pit Size required for Cirtex Crates= Vstor/0.95
13.77	Pit Size Calculated
ok	Pit size check

Results

Soakpit Dimensions

Width	2.8	m
Length	5.72	m
Depth	0.86	m
Volume	13.77	m^3
Storage Vol.	13.09	m^3

ROW Swale Sizing



Subcat Reach Pond Link

Routing Diagram for 136071 - Swales
Prepared by Wilton Joubert Limited, Printed 25/09/2024

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 36S: Post-Development Runoff Area=253.0 m² 100.00% Impervious Runoff Depth>194 mm
Tc=10.0 min CN=98 Runoff=3.35 L/s 49.2 m³

Reach 39R: Grassed Swale Avg. Flow Depth=0.07 m Max Vel=0.39 m/s Inflow=3.35 L/s 49.2 m³
n=0.025 L=10.00 m S=0.0100 m/m Capacity=22.94 L/s Outflow=3.35 L/s 49.2 m³

Summary for Subcatchment 36S: Post-Development Impermeable Concrete ROW Area

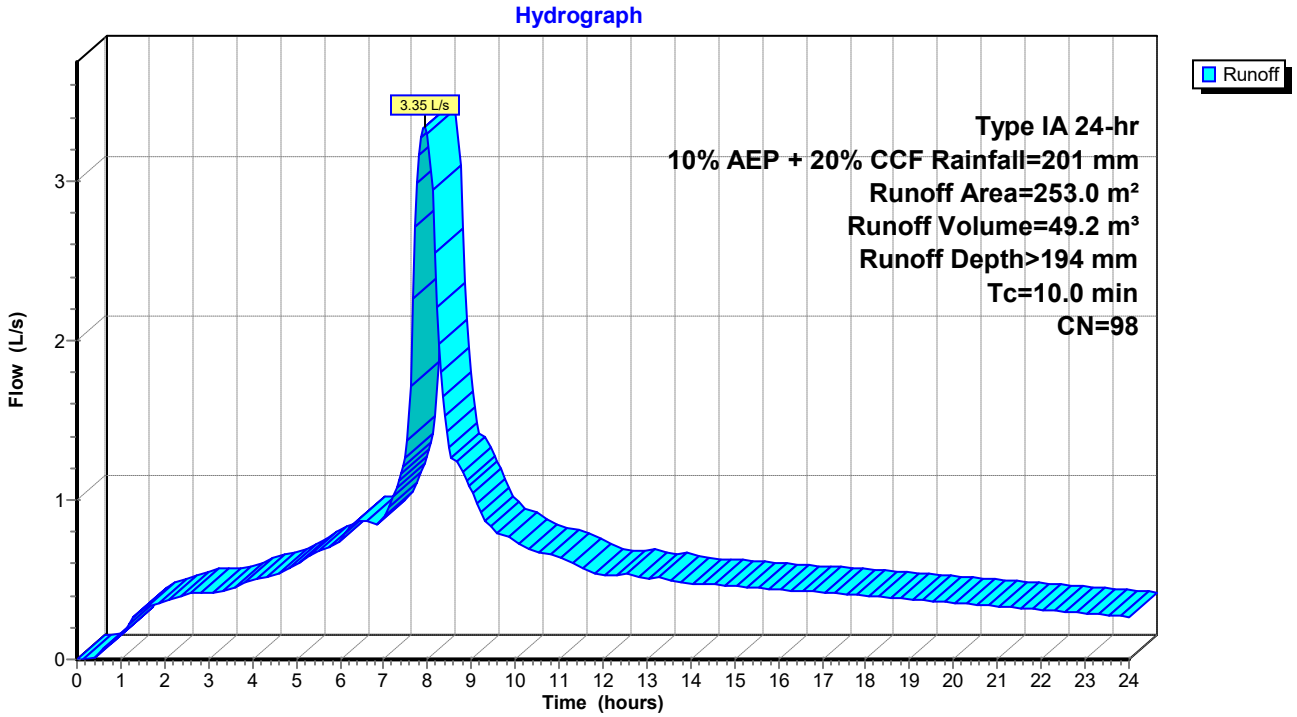
Runoff = 3.35 L/s @ 7.94 hrs, Volume= 49.2 m³, Depth> 194 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10% AEP + 20% CCF Rainfall=201 mm

Area (m²)	CN	Description
253.0	98	Paved parking, HSG C
253.0		100.00% Impervious Area

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

Subcatchment 36S: Post-Development Impermeable Concrete ROW Area



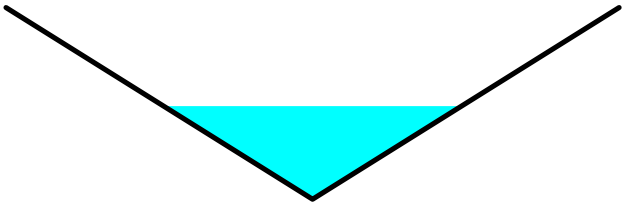
Summary for Reach 39R: Grassed Swale

Inflow Area = 253.0 m²,100.00% Impervious, Inflow Depth > 194 mm for 10% AEP + 20% CCF event
Inflow = 3.35 L/s @ 7.94 hrs, Volume= 49.2 m³
Outflow = 3.35 L/s @ 7.94 hrs, Volume= 49.2 m³, Atten= 0%, Lag= 0.3 min

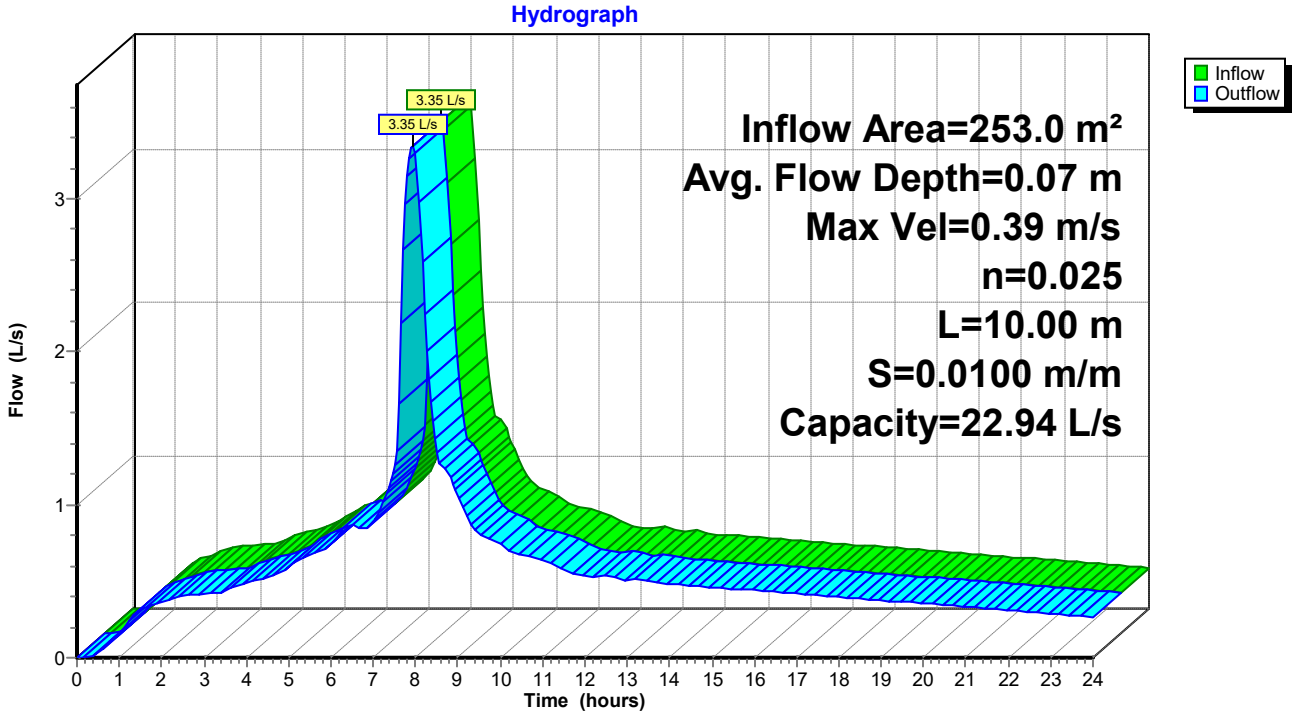
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.39 m/s, Min. Travel Time= 0.4 min
Avg. Velocity = 0.25 m/s, Avg. Travel Time= 0.7 min

Peak Storage= 0.1 m³ @ 7.94 hrs
Average Depth at Peak Storage= 0.07 m
Bank-Full Depth= 0.15 m Flow Area= 0.04 m², Capacity= 22.94 L/s

0.00 m x 0.15 m deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 1.6 m/m Top Width= 0.48 m
Length= 10.00 m Slope= 0.0100 m/m
Inlet Invert= 0.000 m, Outlet Invert= -0.100 m



Reach 39R: Grassed Swale



Stormwater Soakage Assessment Per E1/VM1
Job No: 136071
79 Kemp Road - Metal ROW Cirtex Crates

Driveway Soakpit Calculations

253	Area draining to Soakpit, A
0.8	Runoff Coefficient, C
51.36	Rainfall Intensity, I
2.8	Width of Soakpit
5.01	Length of Soakpit
14.028	Basal area of Soakpit, Asp
0.86	Depth of Soakpit
15	Soakage Rate, Sr mm/hr (s
10.40	Runoff, Rc =10CIA
0.21	Soakage volume,Vsoak =Asp*Sr/1000
10.18	Storage Volume,Vstor=Rc - Vsoak
10.72	Pit Size required for Cirtex Crates= Vstor/0.95
12.06	Pit Size Calculated
ok	Pit size check

Results

Soakpit Dimensions

Width	2.8	m
Length	5.01	m
Depth	0.86	m
Volume	12.06	m^3
Storage Vol.	11.46	m^3

Wilton Joubert Limited
09 527 0196
185 Waipapa Road
Kerikeri 0295

SITE	Lot 1 DP 594558 – 79 Kemp Road, Kerikeri
PROJECT	6-Lot Rural Living Subdivision
CLIENT	Shearwater Limited
REFERENCE NO.	136070 (Rev 1)
DOCUMENT	Geotechnical Site Suitability Report
STATUS/REVISION NO.	Revision 1 – Scheme Plan Change.
DATE OF ISSUE	15 October 2024

Report Prepared For	Email
Shearwater Ltd	Shaunmccann31@gmail.com

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1 EXECUTIVE SUMMARY

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

Development Type:	6-Lot Subdivision
District Plan Zone:	Rural Living.
Development Proposals Supplied:	Yes – Subdivision Scheme Plan (appended).
Proposed Lot Sizes:	Lot 1 – 2,007m² Lot 2 – 2,002m² Lot 3 – 2,001m² Lot 4 – 2,009m² Lot 5 – 2,155m² Lot 6 – 2,005m²
Geology Encountered:	Kerikeri Volcanic Group deposits
Fill Encountered:	No.
Overall Site Gradient:	Gentle (averages less than 5°).
Natural Hazards:	Slope Stability: Overall, no perceived risk of Global Instability affecting Building Platforms, provided recommendations made in this report are followed. Liquefaction: The soils at the building sites have no apparent risk of liquefaction as outlined in Section 8.2.
Suitable Shallow Foundation Type(s):	Bored, concrete-encased, tanalised timber piles likely needing specially designed bracing, supporting a suspended timber subfloor, or Reinforced, concrete stiffened raft slab foundation system, or Conventional reinforced, concrete slab-on-grade with deepened perimeter footings and/or masonry block foundation walls.
Shallow Soil Bearing Capacity:	Yes – Natural Soils & Engineered Fill Only. Geotechnical Ultimate Bearing Capacity = 300 kPa.
NZBC B1 Expansive Soil Classification :	We envisage a Class M – Moderately Expansive (ys = 44mm) expansive soil classification to account for differential effects of ash and rock subject to specific assessment at building consent stage.
NZS1170.5:2004 Site Subsoil Classification:	Class C – Shallow Soil stratigraphy
Earthworks:	No specific development proposals have been supplied for future allotments. We envisage minor cut/fill earthwork operations in the total order of less than 1.0m will be required to create level platforms at all proposed lots. Additionally, footing excavations may be anticipated to accommodate any proposed pile foundations. Please refer to text of report for further detail.
Further Geotechnical Review:	For all future building construction within subject Lots 1-6, site-specific Geotechnical assessment is required at the Building Consent (BC) stage once development proposals have been formulated.

2 INTRODUCTION

2.1 SCOPE OF WORK

Wilton Joubert Limited (WJL) was engaged by the client, Shearwater Limited, to undertake a geotechnical site suitability assessment of ground conditions at the above site, where we understand, it is proposed to subdivide the property, legally described as Lot 1 DP 594558, into six individual allotments.

The purpose of this report is to provide Geotechnical assessments and preliminary recommendations pertaining to future residential construction within a designated building platform (DBP) identified on all individual allotments. The DBPs assessed on site are 400m² in area and ensure a minimum 10m boundary setback is maintained throughout. It is our understanding that this report will be submitted as part of the Resource Consent application for the proposed subdivision development.

Our scope does not include any:

- Environmental assessments of site subsoils or groundwater, or
- Civil assessments, including flooding.

2.2 SUPPLIED INFORMATION

Our assessment is primarily based on the following supplied documentation, as well as email correspondence with the client:

- Scheme Plan (1 sheet), indicating proposed layout of lots to be subdivided (6 total). Prepared by BOI Survey Ltd, dated 16 September 2024. Ref No: 5042.

Please note that this report pertains to confirming suitable DBPs for the six new vacant Lots (Lot 1-6) as depicted in our appended Site Plan (ref: 136070-G600).

The finalised subdivision scheme plan and/or land development proposals with Geotechnical implications, should be referred to us for review prior to submitting this report to Council for the subdivisional Resource Consent Application(s).

As no architectural drawings have been provided at the time of preparing this report, all future building construction within subject Lots 1-6 will require site-specific Geotechnical assessment at the Building Consent (BC) stage once development proposals have been formulated.

Figure 1: Screenshot of the subject Subdivision Scheme Plan Prepared by BOI Survey Ltd. Reference No.10153.

3 SITE DESCRIPTION

The subject ~1.21ha property proposed for subdivision is located within a 'Rural Living Zone' on the north-eastern outskirts of the Kerikeri township. The property and partial sub allotments are bordered by James Kemp Place to the west and Kemp Road to the north, approximately 800m southeast of the Waipapa Road – Landing Road intersection roundabout. Apart from the 'Coastal Marine Zone' environment confined to the Kerikeri River which is offset approximately 100m southeast of the property, surrounding properties are generally zoned 'Rural Living'.

Topographically speaking, the site is situated atop a broad crest, falling south due west at gentle grades averaging less than 5°. Existing ground levels across the site generally range between 18m (northeast) and 14m (southwest) New Zealand Vertical datum.

No existing built development is present on-site. However, it is noted that two grass swale drains have been formed traversing northwest to southeast through the property and subsequent proposed allotments. Ground cover across the property comprises lawn, with both the northern and western boundaries generally planted in shelterbelt trees. The eastern boundary is primarily bordered by neighboring smaller residential properties whilst the southern boundary is bordered by a vacant allotment.

At the time of preparing this report, we note that the Far North District Council (FNDC) on-line GIS Water Services Map indicates that:

- A mains water service line trends along the northern side of Kemp Road, as well as the western side of James Kemp Place,
- Stormwater service connections are present at the north-western and south-western boundary corners,
- A rider main connecting to the northern water mains service line, and
- Wastewater connections are not available to the property.

Figure 2: Screenshot aerial view of the subject site from the FNDC on-line GIS Water Services Map.

4 PROPOSAL

In reviewing the supplied Subdivision Scheme Plan (see Figure 1), it is our understanding that the client intends to subdivide the property into six individual allotments with similar lot sizes as per the below table.

Proposed Lot Sizes	
Lot 1	2,007m²
Lot 2	2,002m²
Lot 3	2,001m²
Lot 4	2,009m²
Lot 5	2,155m²
Lot 6	2,005m²

Proposed Lots 1 & 6 – Northern Allotments:

Proposed Lots 1 and 6 are the northernmost lots bordered by Kemp Road to the north and will encompass areas of 2,007m² and 2,005m², respectively. Access has not yet been formed to either of the lots however, we anticipate future access for proposed Lot 6 to be directly from Kemp Road. Access to proposed Lot 1 will either be via James Kemp Place or Kemp Road.

Proposed Lots 2 & 5 – Central Allotments:

Proposed Lots 2 and 5 are to be situated centrally within the parent property and will encompass areas of 2,002m² and 2,155m², respectively. Access has not yet been formed to either of the lots however, we understand that future access is proposed along a shared Right of Way (ROW) directly from James Kemp Place indicated as 'A' on the appended Scheme Plan.

Proposed Lots 3 & 4 – Southern Allotments:

Proposed Lots 3 and 4, located at the southernmost end of the property will encompass areas of 2,001m² and 2,009m², respectively. Access has not yet been formed to either of the lots however, we understand that future access is proposed along the shared ROW directly from James Kemp Place, indicated as 'B' on the appended Scheme Plan.

All DBPs appear to be positioned on near level to gently sloping terrain with no formed access at the time of our investigation.

Figure 2: Site photograph overlooking proposed Lots 1 & 6 (northwest direction). Orange cones are indicative of field-testing locations.

Figure 3: Site photograph overlooking proposed Lots 2 & 5 (northwest direction). Orange cones are indicative of field-testing locations.

Figure 4: Site photograph overlooking proposed Lots 3 & 4 (west direction). Orange cones are indicative of field-testing locations.

Figure 5: Grassed swale drains traversing through the property.

5 DESKTOP STUDY

5.1 PUBLISHED GEOLOGY

Local geology across the site and wider surrounding area is noted on the GNS Science New Zealand Geology Web Map, Scale 1:250,000, as; Kerikeri Volcanic Group Pleistocene Basalt of Kaikohe – Bay of Islands Volcanic Fields. These deposits are up to approximately 1.4 million years in age and described as; "*Basalt lava and volcanic plugs*" (ref: GNS Science Website).

Figure 6: Screenshot aerial view of the subject site and surrounding land from New Zealand Geology Web Map hosted by GNS Science. Blue marker is situated along the central northern boundary within parent property Lot 1 DP 594558.

5.2 LIQUEFACTION VULNERABILITY HAZARD ZONE

At the time of preparing this report, we note that the FNDC on-line GIS Liquefaction Vulnerability Map indicates that the property is located within an '*Unlikely*' zone, with surrounding areas of 'Unlikely' and 'Undetermined' zoning beyond the outskirts of the property to the east.

Please refer to Section 8.2 below for further detailed assessment pertaining to this identified hazard zone.

Figure 7: Screenshot aerial view of the subject site from the FNDC on-line GIS Liquefaction Vulnerability Map. Red circle approximately depicts parent property Lot 1 DP 594558.

6 GEOTECHNICAL INVESTIGATION

WJL carried out a shallow ground investigation within proposed Lots 1-6 on 2 September 2024. Our subsoil testing involved drilling twelve hand auger boreholes (HA) of 50mm diameter, to refusal depths ranging between 1.0m to 2.0m below present ground level (bpgl).

The HA logs are appended to this report with the approximate locations shown on our appended Site Plan (ref: 136070).

The soil sample arisings from the HA's were logged in accordance with the "Field Description of Soil and Rock", NZGS, December 2005. In-situ undrained shear vane tests were measured at intervals of depth and then adjusted in accordance with the New Zealand Geotechnical Society (NZGS); Guidelines for Handheld Shear Vane Testing, August 2001, with strengths classified in accordance with the NZGS Field Classification Guidelines; Table 2.10, December 2005. The materials identified are described in detail on the appended records, together with the results of the various tests undertaken, plus the groundwater conditions as determined during time on site.

7 GEOTECHNICAL FINDINGS

The following is a summary of the ground conditions encountered in our investigation. Please refer to the appended logs for greater detail.

7.1 TOPSOIL

Surficial topsoil was encountered in all investigated boreholes to depths ranging between 0.20m – 0.30m.

7.2 NATURAL GROUND

The underlying natural deposits encountered on-site were consistent with our expectations of Kerikeri Volcanic Group deposits, generally comprising of an approximate 0.45m to 1.60m thick veneer of very stiff, Slightly Clayey SILT and SILT, overlying Fine to Coarse Gravelly SILT layers with shallow inferred basalt rock below.

Measured in-situ, BS1377 adjusted peak shear strengths within the natural soils ranged between 152kPa (87kPa remould) and greater than 224kPa, where soil strength was excess of the shear vane capacity, or the vane was 'Unable to Penetrate' into the soil (UTP).

Where able to be determined, ratios of peak to remoulded vane shear strength values generally ranged between 1.7 and 2.2, indicating the underlying subsoils are 'Insensitive' to 'Moderately Sensitive' to disturbance. It should be noted that in most instance, ratios of peak to remould vane shear strength values were unable to be determined to due to soil strengths being in excess of the shear vane capacity, or being too hard/dense for the shear vane blade to penetrate through.

Figure 8: Site photograph of typical HA soil arisings within the property (proposed Lot 1 – HA01).

Figure 9: Site photograph of typical HA soil arisings within the property (proposed Lot 5 – HA10).

7.3 GROUNDWATER

Groundwater was not encountered within any of our twelve HA's which is to be expected due to the elevated nature of the property and contour of the land. The shallow nature of the inferred basalt rock underlying the site and formed grassed swale drain would also appear to accommodate the contouring of the land.

It should be noted that there is the potential for perched levels to be encountered during future development construction, depending on further contouring of any future building sites within each individual allotment. It is imperative that any future building site be appropriately shaped to direct all stormwater run-off away from the area.

8 GEOTECHNICAL ASSESSMENT

8.1 SITE STABILITY

The property and surrounding influential land are set on near level to gently sloping terrain, falling at average gradients of less than 5° to the south due west.

Based on:

- No obvious evidence of instability within the immediate vicinity of all DBPs,
- The gentle topography across the DBPs and surrounding land,
- The lack of steep slopes within and beyond the surrounding periphery of the property,
- The very stiff to hard nature of the underlying site subsoils and presence of inferred shallow basalt rock, and
- Lack of groundwater encountered within our HA's,

we perceive no risk of slope instability impacting on the proposed DBPs within Lots 1 - 6.

In the long-term, provided that all of the recommendations within this report are adhered to, then we do not anticipate any significant risk of instability either within, or immediately beyond, the DBPs within all six lots.

8.2 LIQUEFACTION

Liquefaction is a natural phenomenon where a loss of strength of sand-like soils is experienced following cyclic induced stress, which is typically a result of prolonged seismic shaking and the resultant increase in pore water pressure of saturated soils. Recent examples of this were experienced in Christchurch and the greater Canterbury Region during the Canterbury Earthquake Sequence between 2010-2011.

Cyclic loading during prolonged seismic shaking induces an increase in pore water pressure, which in turn decreases the effective stress of a sand-like deposit of soil. Excess pore water pressure (EPWP) can build to such an extent that the effective stress of the underlying soils is reduced to near zero, whereby the soils no longer carry shear strength and behave as a semi solid/fluid. In such a scenario, excess pore water pressures will follow the path of least resistance to eventual dissipation, which can lead to the migration of liquefied soils towards the surface, or laterally towards a free-face (edge of slope, riverbank, etc.) or layers that have not yet undergone liquefaction.

A screening procedure based on geological criteria was adopted to examine whether the DBPs might be susceptible to liquefaction, with observations as follows:

- There are no known active faults traversing through the proposed property or wider surrounding land,
- There is no historical evidence of liquefaction at the property,
- The DBPs are situated on raised land areas with good water-shedding characteristics, and
- The very stiff to hard nature of the underlying site subsoils, including inferred shallow basalt rock ranging between depths of 1.0m to 2.0m below the surface.

Based on the above, we conclude that the subsoils across the DBPs in Lots 1 - 6 have a negligible risk of liquefaction susceptibility and liquefaction damage is therefore considered to be unlikely.

9 CONCLUSIONS AND RECOMMENDATIONS

Based on our walkover inspection, fieldwork investigation, subsoil testing results and stability commentary as described above, we consider on reasonable grounds that this report can be submitted to the Territorial Authority in support of a Resource Consent application for subdividing the subject site, substantiating that in terms of section 106 of the Resource Management Act and its current amendments, either

a) No land in respect of which the consent is sought, nor any structure on that land, is, nor is likely to be subject to material damage by erosion, falling debris, subsidence, or slippage from any source, or

b) No subsequent use that is likely to be made of the land is likely to accelerate, worsen, or result in material damage to that land, other land, or structure, by erosion, falling debris, subsidence, or slippage from any source,

unless the Territorial Authority is satisfied that sufficient provision has been made or will be made in accordance with section 106(2).

Under section 106(2), the Territorial Authority may grant a subdivision consent if it is satisfied that the effects described above will be avoided, remedied, or mitigated by one or more of the following:

(a) Rules in the district plan:

(b) Conditions of a resource consent, either generally or pursuant to section 220(1)(d):

(c) Other matters, including works.

And we are therefore satisfied that the DBPs identified within proposed Lots 1 - 6 should be generally suitable for building development in terms of NZS3604:2011, subject to specific engineering design (SED), adhering to the following recommendations of this report, unless over-ridden by said site-specific geotechnical assessment.

9.1 FOUNDATIONS

9.1.1 FOUNDATION TYPES

New residential dwellings at proposed Lots 1 - 6 should be generally able to utilise any foundation type commensurate with the provisions of NZS3604:2011 and amendments 19 & 20 of the NZ Building Code, which may include, but not be limited to, the following options:

- Bored, concrete-encased, tanalised timber piles, supporting a suspended timber subfloor, subject to expansive soils design, or
- Reinforced, concrete stiffened raft slab foundation system designed for expansive soils, or
- Conventional reinforced, concrete slab-on-grade with deepened perimeter footings and/or masonry block foundation walls, subject to expansive soils design.

9.1.2 SHALLOW FOUNDATION BEARING CAPACITY

It is generally envisaged that the following bearing capacity values will be appropriate for the design of shallow foundations, subject to founding directly on or within competent engineered fill and/or natural ground, subject to assessment at the BC stage:

Geotechnical Ultimate Bearing Capacity	300 kPa
ULS Dependable Bearing Capacity (Φ=0.5)	150 kPa

9.1.3 EXPANSIVE SOILS

Soils underlying all DBPs comprised an approximate 0.45m to 1.60m thick layer of very stiff Slightly Clayey SILTs and SILTs, overlying Fine to Coarse Gravelly SILT layers with shallow inferred basalt rock below. The SILTs encountered within our HA's were non to low plasticity in nature and overlie inferred Non-Expansive basalt rock.

Based on the above and from extensive previous experience within volcanic settings across the Kerikeri Region, where Class S and Class M results have yielded during laboratory testing, we recommend a conservative primary classification of Class M (Moderately) expansive soils, as defined in clause 7.5.13.1.2, and introduced to NZS3604 by Amendment 19 of NZBC Structure B1/AS1:

- NZBC B1 Expansive Soil Class M
- Upper Limit of Characteristic surface movement (y_s) 44mm

Given that such soils are not considered to lie within the definition of "good ground" as per NZS3604, the design of shallow foundations are no longer covered by NZS3604, and care must be taken to mitigate against the potential seasonal shrinkage and swelling effects of expansive foundation soils on both superstructures and floors. We therefore recommend SED be undertaken by a qualified engineer for the design of future foundations.

At this preliminary stage, it is generally envisaged that a minimum footing embedment of 0.60m below finished ground levels and 0.30m into competent natural ground, whichever is deeper, will be suitable for future foundations. If future clients wish, they may choose to undertake an expansive soil laboratory lab test during the BC stage in determining a lesser expansive soil classification.

9.1.4 NZS1170.5:2004 SITE SUBSOIL CLASSIFICATION

We consider all DBP's in Lots 1 – 6 to be underlain with a Class C – Shallow Soil stratigraphy.

9.2 EARTHWORKS

No specific development proposals have been supplied for future allotments. We envisage minor cut/fill earthwork operations in the total order of less than 1.0m will be required to create level platforms at all proposed lots. Additionally, footing excavations may be anticipated to accommodate any proposed pile foundations.

At this preliminary stage, it is recommended that cut and fill batters are limited to respective grades of 1V:3H and 1V:4H without review and approval at the BC stage.

All future earthworks should be undertaken generally in accordance with the following standards but may be varied by the geotechnical engineer as found appropriate for the site conditions:

- NZS4431:2022 "Code of Practice for Earth Fill Residential Development",
- Section 2 "Earthworks & Geotechnical Requirements" of NZS4404:2010 "Land Development and Subdivision Infrastructure", and
- Section 2 "Earthworks and Geotechnical Requirements" of the Auckland Council Code of Practice for Land Development & Subdivision (Version 1.6 dated 24 September 2013).

We stress that any and all future works should be undertaken in a careful and safe manner so that Health & Safety is not compromised, and that suitable Erosion & Sediment control measures should be put in place. Any stockpiles placed should be done so in an appropriate manner so that land stability and/or adjacent structures are not compromised.

Furthermore:

- All works must be undertaken in accordance with the Health and Safety at Work Act 2015,
- Any open excavations should be fenced off or covered, and/or access restricted as appropriate,
- The location of all services should be verified at the site prior to the commencement of construction,
- The Contractor is responsible at all times for ensuring that all necessary precautions are taken to protect all aspects of the works, as well as adjacent properties, buildings and services, and
- Should the contractor require any site-specific assistance with safe construction methodologies, please contact WJL for further assistance.

9.3 STORMWATER & SURFACE WATER CONTROL

Uncontrolled stormwater flows must not be allowed to run onto or over site slopes, or to saturate the ground, so as to adversely affect slope stability or foundation conditions. It is noted that the grassed swale drains traversing through the property appears to assist the existing stormwater runoff from the site.

Overland flows and similar runoff such as from any higher ground are best intercepted by means of shallow surface drains and/or small bunds and be directed away from building footprints to protect building platforms from both saturation and erosion. Water collected in interceptor drains should be diverted away from building sites to an appropriate disposal point that is well clear of building platforms.

Under no circumstances should concentrated overflows from any source discharge into or onto the ground in an uncontrolled fashion.

10 UNDERGROUND SERVICES

Although FNDC on-line GIS Maps do not indicate any underground services (i.e. stormwater, wastewater lines) to be present within the site, other underground services, public or private, mapped, or unmapped, of any type could be present. It is recommended to stay on the side of caution during the commencement of any future works within the DBPs.

11 LIMITATIONS

We anticipate that this report is to be submitted to Council in support of a Resource Consent application.

This report has been commissioned solely for the benefit of our client, the Shearwater Ltd, in relation to the project as described herein, and to the limits of our engagement, with the exception that the local Territorial Authority may rely on it to the extent of its appropriateness, conditions, and limitations, when issuing the subject consent.

Any variations from the development proposals as described herein as forming the basis of our appraisal should be referred back to us for further evaluation. Copyright of Intellectual Property remains with WJL, 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 other geotechnical aspects of this site, nor for its use by any other person or entity, and any other person or entity who relies upon any information contained herein does so entirely at their own risk. 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.

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 and does not remove the necessity for the normal inspection of site conditions and the design of foundations as would be made under all normal circumstances.

Thank you for the opportunity to provide our service on this project, and if we can be of further assistance, please do not hesitate to contact us.

Yours faithfully,

WILTON JOUBERT LIMITED

Enclosures:

- Scheme Plan (1 sheet)
- WJL Site Plan (1 sheet)
- Hand Auger Borehole Records (12 sheets)
- ‘Foundation Maintenance & Footing Performance’ sheet BTF18: A Homeowner’s Guide, published by CSIRO (4 sheets)

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MEMORANDUM OF EASEMENTS				
PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT	
RIGHT OF WAY ELECTRICITY TELECOMMUNI-CATIONS WATER	Ⓐ	LOT 5 HEREON	LOTS 2-4 HEREON	
	Ⓑ	LOT 4 HEREON	LOTS 2, 3 & 5 HEREON	

NOTES

Local Authority - Far North District Council.
Comprised in - RT 1146018
Total Area - 1.21Ha

This drawing has been prepared solely for the use intended by the client ststed on the plan, and must nt be used for any other purpose. BOI Survey Ltd accepts no responsibility for this plan, or any data contained on this plan, to be used for any other purpose

Rev.	Reason For Issue or Amendment	Date	Drawn	Checked	Surveyed
A	Scheme Plan 1A JAMES KEMP PLACE, KERIKERI	16/09/24	TW	DC	TW

BOI SURVEY

BOI SURVEY LTD
55B Shepherd Road
Kerikeri 0230

e: Tony@boisurvey.co.nz

PROPOSED SUBDIVISION OF LOT 1 DP 594558

1A JAMES KEMP PLACE, KERIKERI

CLIENT: SHEARWATER LTD

JOB NO:		Scale:
5042		1:500 @ A3
Level Datum: NZVD 2016	Origin: -	Co-ord System: NZGD 2000
Drawing Number: 5042-002	Revision: A	Sheet: 1 of 1

LOT 1
2007m²

LOT 2
2002m²

LOT 3
2001m²

LOT 4
2009m²

LOT 5
2155m²

LOT 6
2005m²

HA 01
HA 02
HA 03
HA 04
HA 05
HA 06
HA 07
HA 08
HA 09
HA 10
HA 11
HA 12

20m x 20m

1.0m CONTOURS

14.95
14.69
14.45

Kemp Rd

0m 15m 45m 75m
SCALE 1:750

SITE LOCATION

IMAGE SOURCE:
FAR NORTH DISTRICT COUNCIL LOCALMAPS

SYMBOL KEY	
HA	HAND AUGER LOCATIONS
	DEVELOPMENT LOCATIONS

GENERAL NOTES

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

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

ISSUE / REVISION			
No.	DATE	BY	DESCRIPTION
A	SEP 2024	NPN	ISSUED WITH SITE SUITABILITY REPORT

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

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

RESOURCE CONSENT
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **SITE PLAN**

PROJECT DESCRIPTION: **PROPOSED 6-LOT SUBDIVISION**

PROJECT TITLE: **LOT 1 DP 594558
79 KEMP ROAD
KERIKERI
NORTHLAND**

ORIGINAL DRAWING SIZE:	OFFICE:
A3	KERIKERI
DRAWING SCALE: 1:750	CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 136070-G600	ISSUE: A

HAND AUGER : HA01

JOB NO.: 136070 **SHEET:** 1 OF 1

START DATE: 02/09/2024 **NORTHING:** **GRID:**

CLIENT: Shearwater Ltd **DIAMETER:** 50mm **EASTING:**

PROJECT: Geotechnical Investigation for 6 Lot Subdivision **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: 79 Kemp Road, Kerikeri **FACTOR:** 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, dry to moist, low plasticity, frequent weakly and strongly fused clast inclusions.		0.4		197+	-	-		
			0.6						
			0.8		197+	-	-		
			1.0						
			1.2		161	76	2.1		
			1.4						
			1.6		152	87	1.7		
	Fine to Coarse Gravelly SILT, greyish brown, very stiff to hard, dry to moist, no plasticity.		1.8						
	EOH: 2.00m - Too Hard To Auger		2.0		UTP	-	-		
			2.2						
			2.4						

REMARKS

End of borehole @ 2.00m (Target Depth: 3.00m)

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

LOGGED BY: JEM

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA02

JOB NO.: 136070 **SHEET:** 1 OF 1

START DATE: 02/09/2024 **NORTHING:** **GRID:**

CLIENT: Shearwater Ltd **DIAMETER:** 50mm **EASTING:**

PROJECT: Geotechnical Investigation for 6 Lot Subdivision **SV DIAL:** 772 **ELEVATION:** Ground

SITE LOCATION: 79 Kemp Road, Kerikeri **FACTOR:** 1.6 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brown, very stiff, dry to moist, low plasticity.		0.4		173	77	2.2		
	0.6m: Frequent orange and light yellow strongly and weakly fused clast inclusions.		0.6						
	0.7m: Frequent grey strongly nd weakly fused clast inclusions.		0.8		224+	-	-		
	Fine to Coarse Gravelly SILT, brown with grey, orange, light yellow and white gravels, very stiff to hard, dry to moist, no plasticity.		1.0						
			1.2		UTP	-	-		
			1.4						
	EOH: 1.40m - Too Hard To Auger		1.6		UTP	-	-		
			1.8						
			2.0						
			2.2						
			2.4						

REMARKS

End of borehole @ 1.40m (Target Depth: 3.00m)

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

LOGGED BY: SJP

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA03

JOB NO.:	136070	**SHEET:**	1 OF 1
START DATE:	02/09/2024	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	1994	**ELEVATION:**	Ground
FACTOR:	1.41	**DATUM:**	

CLIENT: Shearwater Ltd

PROJECT: Geotechnical Investigation for 6 Lot Subdivision

SITE LOCATION: 79 Kemp Road, Kerikeri

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, dry to moist, low plasticity, frequent white and yellow strongly and fused clast inclusions.		0.4		197+	-	-		
			0.6						
			0.8		197+	-	-		
			1.0						
	EOH: 1.20m - Too Hard To Auger		1.2		UTP	-	-		
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

TOPSOIL | CLAY | SAND | PEAT | FILL | SILT | GRAVEL | ROCK

REMARKS

End of borehole @ 1.20m (Target Depth: 3.00m)

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

LOGGED BY: JEM

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA04

JOB NO.:	136070	**SHEET:**	1 OF 1
START DATE:	02/09/2024	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	772	**ELEVATION:**	Ground
FACTOR:	1.6	**DATUM:**	

CLIENT: Shearwater Ltd

PROJECT: Geotechnical Investigation for 6 Lot Subdivision

SITE LOCATION: 79 Kemp Road, Kerikeri

SOIL DESCRIPTION

TOPSOIL | CLAY | SAND | PEAT | FILL | SILT | GRAVEL | ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brown, very stiff, dry to moist, low plasticity.		0.4		UTP	-	-		
	0.4m: Frequent orange and light yellow strongly and weakly fused clast inclusions.		0.6						
	Fine to Coarse Gravelly SILT, brown with orange gravel inclusions, very stiff to hard, dry to moist, no plasticity.		0.8		UTP	-	-		
			1.0						
	EOH: 1.20m - Too Hard To Auger		1.2		UTP	-	-		
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

REMARKS

End of borehole @ 1.20m (Target Depth: 3.00m)

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

LOGGED BY: SJP

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA05

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 1994 **ELEVATION:** Ground
FACTOR: 1.41 **DATUM:**

SOIL DESCRIPTION

TOPSOIL | CLAY | SAND | PEAT | FILL | SILT | GRAVEL | ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, dry to moist, low plasticity, frequent strongly and weakly fused clast inclusions.		0.4		197+	-	-		
			0.6						
	0.9m: Frequent light grey fine to coarse gravel inclusions.		0.8		197+	-	-		
	EOH: 1.00m - Too Hard To Auger		1.0		UTP	-	-		
			1.2						
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

REMARKS
End of borehole @ 1.00m (Target Depth: 3.00m)

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

LOGGED BY: JEM
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA06

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 772 **ELEVATION:** Ground
FACTOR: 1.6 **DATUM:**

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

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brown, very stiff, dry to moist, low plasticity.		0.4						
	0.4m: Frequent orange and light yellow strongly and weakly fused clast inclusions.				224+	-	-		
			0.6						
	0.8m: Occasional grey strongly and weakly fused clast inclusions.		0.8		224+	-	-		
			1.0						
			1.2		224+	-	-		
			1.4						
	1.6m: Occasional black specks.		1.6		224+	-	-		
	Fine to Coarse Gravelly SILT, brown with grey, orange and black gravels, very stiff to hard, dry to moist, no plasticity.		1.8						
	EOH: 1.90m - Too Hard To Auger		2.0		UTP	-	-		
			2.2						
			2.4						

REMARKS
End of borehole @ 1.90m (Target Depth: 3.00m)

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

LOGGED BY: SJP
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA07

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 1994 **ELEVATION:** Ground
FACTOR: 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, dry to moist, low plasticity, frequent strongly and weakly fused clast inclusions.		0.4		197+	-	-		
	0.7m: Pockets of grey fine to coarse gravel inclusions.		0.6						
			0.8		197+	-	-		
	0.9m: Becoming no to low plasticity.		1.0						
			1.2		197+	-	-		
			1.4						
	EOH: 1.40m - Too Hard To Auger				UTP	-	-		
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

SOIL DESCRIPTION
TOPSOIL CLAY SAND PEAT
FILL SILT GRAVEL ROCK

REMARKS
End of borehole @ 1.40m (Target Depth: 3.00m)

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

LOGGED BY: JEM
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA08

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 1994 **ELEVATION:** Ground
FACTOR: 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brown, very stiff, moist, low plasticity, frequent strongly and weakly fused clast inclusions.		0.4		197+	-	-		
			0.6						
			0.8		197+	-	-		
			1.0						
	EOH: 1.10m - Too Hard To Auger		1.2		UTP	-	-		
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

TOPSOIL FILL CLAY SILT SAND GRAVEL PEAT ROCK

REMARKS
End of borehole @ 1.10m (Target Depth: 3.00m)

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

LOGGED BY: JEM
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA09

JOB NO.: 136070 **SHEET:** 1 OF 1

START DATE: 02/09/2024 **NORTHING:** **GRID:**

CLIENT: Shearwater Ltd **DIAMETER:** 50mm **EASTING:**

PROJECT: Geotechnical Investigation for 6 Lot Subdivision **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: 79 Kemp Road, Kerikeri **FACTOR:** 1.57 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brownish orange, very stiff, dry to moist, low plasticity.		0.4		220+	-	-		
	0.5m: Some weakly cemented clast (<10mmø) inclusions, occasional white specks.		0.6						
	0.8m: Becoming orange with occasional brown streaks.		0.8		220+	-	-		
	SILT, orange with brown streaks, very stiff to hard, dry to moist, no plasticity.		1.0						
			1.2		UTP	-	-		
			1.4						
	1.6m: Becoming orange brown with black specks.		1.6		UTP	-	-		
			1.8						
	EOH: 2.00m - Too Hard To Auger		2.0		UTP	-	-		
			2.2						
			2.4						

REMARKS

End of borehole @ 2.00m (Target Depth: 3.00m)

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

LOGGED BY: NPN

CHECKED BY: DXS

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA10

JOB NO.: 136070 **SHEET:** 1 OF 1

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: DR4802 **ELEVATION:** Ground
FACTOR: 1.57 **DATUM:**

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

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brown with orange streaks, very stiff, dry to moist, low plasticity.		0.4		220+	-	-		
			0.6						
	0.8m: Becoming orangey brown with white specks.		0.8		220+	-	-		
			1.0						
			1.2		204	110	1.9		
	Slightly Fine to Coarse Gravelly SILT, orange and grey with black specks, very tiff to hard, dry to moist, no plasticity.		1.4						
			1.6		UTP	-	-		
	1.8m: 200mm lense of SILT, orangey brown, very stiff, moist, no plasticity.		1.8						
			2.0						
	EOH: 2.00m - Too Hard To Auger		2.2		UTP	-	-		
			2.4						

REMARKS
End of borehole @ 2.00m (Target Depth: 3.00m)

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

LOGGED BY: NPN
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

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Website: www.wiltonjoubert.co.nz

HAND AUGER : HA11

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: DR4802 **ELEVATION:** Ground
FACTOR: 1.57 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, light brownish orange, very stiff, dry to moist, low plasticity.		0.4		220+	-	-		
	0.5m: Becoming brown with orange and occasional white specks.		0.6						
	0.6m: Frequent weakly fused clast (<15mmø) inclusions.		0.8		220+	-	-		
	Fine to Coarse Gravelly SILT, brownish orange, very stiff to hard, dry to moist, no plasticity.		1.0						
			1.2		UTP	-	-		
			1.4						
	EOH: 1.50m - Too Hard To Auger		1.6		UTP	-	-		
			1.8						
			2.0						
			2.2						
			2.4						

REMARKS
End of borehole @ 1.50m (Target Depth: 3.00m)

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

LOGGED BY: NPN
CHECKED BY: DXS

▼ Standing groundwater level
▽ GW while drilling

WILTON JOUBERT Consulting Engineers
185 Waipapa Road, Kerikeri 0295
Phone: 09-945 4188
Email: jobs@wjl.co.nz
Website: www.wiltonjoubert.co.nz

HAND AUGER : HA12

CLIENT: Shearwater Ltd
PROJECT: Geotechnical Investigation for 6 Lot Subdivision
SITE LOCATION: 79 Kemp Road, Kerikeri

JOB NO.: 136070 **SHEET:** 1 OF 1
START DATE: 02/09/2024 **NORTHING:** **GRID:**
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STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: Slightly Clayey SILT, brownish orange, very stiff, dry to moist, low plasticity.		0.4		220+	-	-		
	0.5m: Some weakly fused clast (<15mmø) inclusions.		0.6						
	0.8m: Pockets of purplish grey silt inclusions, no plasticity.		0.8		UTP	-	-		
			1.0						
	EOH: 1.20m - Too Hard To Auger		1.2		UTP	-	-		
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						

TOPSOIL CLAY SAND PEAT
FILL SILT GRAVEL ROCK

REMARKS
End of borehole @ 1.20m (Target Depth: 3.00m)

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

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▼ Standing groundwater level
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Foundation Maintenance and Footing Performance:
A Homeowner's Guide

PUBLISHING

BTF 18-2011 replaces Information Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870-2011, the Residential Slab and Footing Code.

Causes of Movement

Settlement due to construction

There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

Erosion

All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

Saturation

This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume, particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

Seasonal swelling and shrinkage of soil

All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure

This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.

In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes
H1	Highly reactive clay sites, which may experience high ground movement from moisture changes
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes

Notes

1. Where controlled fill has been used, the site may be classified A to E according to the type of fill used.
2. Filled sites. Class P is used for sites which include soft fills, such as clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soil subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise.
3. Where deep-seated moisture changes exist on sites at depths of 3 m or greater, further classification is needed for Classes M to E (M-D, H1-D, H2-D and E-D).

Tree root growth
Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

Effects of Uneven Soil Movement on Structures

Erosion and saturation
Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpends).

Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

Seasonal swelling/shrinkage in clay
Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

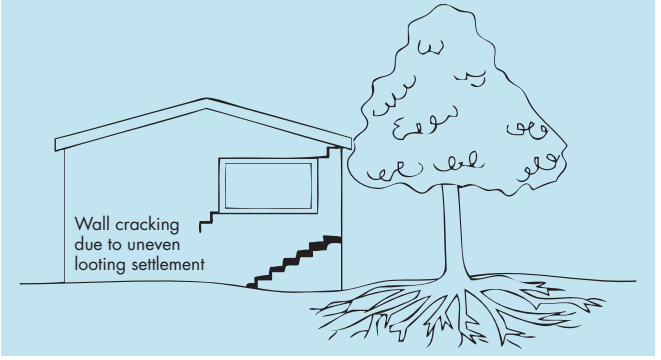
The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Trees can cause shrinkage and damage



Movement caused by tree roots
In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself
Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures
Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures
Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation causes a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures
Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem. Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870-2011.

AS 2870-2011 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/Cure

Plumbing
Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

Ground drainage
In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

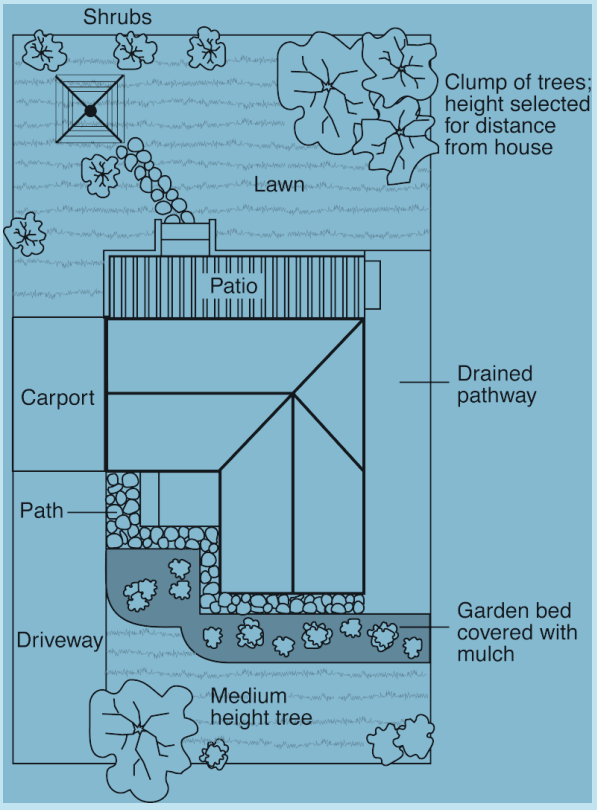
Protection of the building perimeter
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving should

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly.	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired.	5–15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted.	15–25 mm but also depends on number of cracks	4

Gardens for a reactive site



extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

Condensation

In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

Warning: Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

The garden

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

Existing trees

Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

Information on trees, plants and shrubs

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

Excavation

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

Remediation

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

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WILTON JOUBERT
Consulting Engineers

Construction Monitoring Services

Northland, Auckland-Waikato, Canterbury, Southern Lakes

Need a PS4?

- Please read the conditions of your Building Consent to determine which section of the works Council wants an engineer to sign off on.
- Book an inspection with Wilton Joubert Ltd or with a suitable qualified engineer.
- Have the Consent documents on site at the time of the inspection
- Be sure to verify both the grounding conditions (soil parameters) as well as the structural elements of works in question
- If in doubt what to get inspected please clarify with Council.

Producer Statements 4 - Construction Review Documents (PS4's) relates to Building Consents (BC) only, not Resource Consents (RC), unless there is an element of the RC which requires a BC, e.g. a retaining wall needed to develop a subdivision.
In soils, RC's are usually verified with a "Statement of Professional Opinion as to Suitability for Building Development", or variations on that title.

CONSTRUCTION MONITORING SERVICES

Construction monitoring refers to the physical inspection of selective components of the design or works as required by Council and as specified in the Consented documents. It is up to the Consent holder to read the special conditions set out by Council and arrange for the required inspections to be done. No PS4 can be issued without the physical inspection of works and sighting of Consented plans either by the design engineer, his representative, or another qualified engineer. (download PDF with more info via our website)

It is also important to note that, more often than not, there are two physical components that needs verification:

1. Geotechnical or grounding Conditions –referring to the strength or bearing capacity of the soil
2. Structural Components – verify that works are done as per design and in accordance with the consented plans.

To complicate matters there can be multiple engineers that might be engaged on the same site:

- Civil Engineer – To do storm water and wastewater designs
- Geotechnical Engineer – to do a Geotech report and specificity soil parameters as required
- Structural Engineer – to design structural components such as retaining walls, raft floors, beams and so on.

In cases where engineers from different companies are appointed it is important to make sure all the required boxes are ticked as not to complicate matters when it comes to the issuing of all the relevant PS4's.
Note: sites in the Auckland area might requires multiple PS4's for the same component (e.g. a raft floor requires a Geotechnical Engineer to verify the bearing capacity of the platform and a Structural engineer needs to verify the structural components are according to the design.
Not to mention a Council inspection is also required on the same floor to verify position, plumbing and so on.

In Summary:

- Read the conditions as laid out in the Consent documents to which elements of the design requires a PS4's from the design engineer.
- Have Consented plans on site during inspection time
- Book inspections ahead of time (a minimum of 48 hours in advanced)
- Ensure both grounding conditions as well as structural components are inspected. In some cases, this might mean two separate inspections if different engineers are involved.
- If you have any further questions, feel free to contact us at any time during business hours.

Construction Monitoring Enquiries
Email: *jobs@wjl.co.nz*
or scan QR code to visit our website

S and P McCann.

79 Kemp Road, Kerikeri

landscape assessment

14 October 2024

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Simon Cocker
Landscape Architecture

Document Quality Assurance

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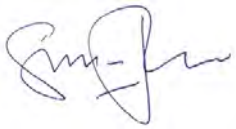
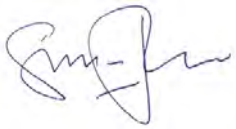
Prepared by	Simon Cocker Landscape Architect Principal SCLA	
Reviewed by	Simon Cocker Landscape Architect Principal SCLA	
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1.0 INTRODUCTION

Simon Cocker Landscape Architecture (SCLA) has been engaged by the applicant to undertake a landscape assessment for a subdivision at 79 Kemp Road, in Kerikeri. Under the Operative Plan the Site is within the Rural Living Zone and is understood to be a non-complying activity. Under the Proposed Plan the Site is located within the Rural Residential Zone and will be a discretionary activity.

2.0 ASSESSMENT METHODOLOGY

The assessment has been prepared by a Registered Landscape Architect with reference to the Te Tangi a Te Manu (Aotearoa New Zealand Landscape Guidelines. July 2022)[1]. The assessment methodology is detailed in Appendix 2. In addition, this report has been prepared in accordance with the NZILA (New Zealand Institute of Landscape Architects) Code of Conduct[2]. For the purpose of this assessment, a rating of low – moderate equates to minor in terms of RMA terminology.

Desktop study and site visits

In conducting this assessment, a desktop study was completed which included a review of the relevant information relating to the landscape and visual aspects of the project. This information included:

- The Operative Far North District Plan and Proposed Far North District Plan;
- Scheme plan (5042-002, Rev A);
- Plan titled 'Proposed Elevations' (A-201);
- The Kororipo-Kerikeri Basin Plan Working Group. *Sustainable Development Plan for the Kororipo-Kerikeri Basin* 2005;
- Wilton Joubert. Civil Site Suitability Report. Rev A,
- Application and decision (RC-2220780-RMASUB), and;
- Aerial photography, Far North District Council GIS mapping, Bing Maps (aerial photography), and Google Earth.

A visit was undertaken on the morning of 30 August 2024. The weather conditions during the visit showery with light winds.

3.0 THE PROPOSAL

The proposal is illustrated in Figures 2a – 2c, with the scheme plan included as Figure 2b. This plan shows six proposed lots with a minimum area of 2,001m^2 (Lot 3), and a maximum of 2,155m^2 (Lot 5). The proposed lots are aligned such that their boundaries reflect the rectilinear cadastral patterning of the wider landscape.

Proposed lots 1, 2, 3 and 6 will be accessed via individual crossings off Kemp Road / James Kemp Place. The location of these has not been identified on the scheme plan. Lots 4, and 5 will be accessed via the pan-handle accesses shown on the scheme plan.

Mitigation plantings are proposed along the James Kemp Place and Kemp Road frontages of the property (refer to Figure 2c), and along the eastern and southern residential boundaries. The latter residential boundaries will be planted with a hedge which will grow to a minimum height of 2.5m and will provide a buffer between development within the subject Site and dwellings within the neighbouring properties.

[1] https://nzila.co.nz/media/uploads/2022_09/Te_Tangi_a_te_Manu_Version_01_2022_.pdf
[2] Contained in Appendix 1 of: http://www.nzila.co.nz/media/50906/registered_membership_guide_final.pdf

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The existing shelterbelts will be removed and the road frontages (predominantly) planted with a fragmented low shrub mix, and a variety of exotic tree species. The boundary at the north western corner of the Site will be planted with a hedge so that the development will be screened from views south along Kemp Road, and headlight sweep from cars on the road will be blocked.

The planting strategy is informed by the desire to mimic the existing vegetation patterns in the surrounding area, which is characterised by a mix of deciduous exotic tree species, and amenity garden plantings on road frontages (refer to photos 1, 2, 3, and 4). In addition, as is evident on Figures 2a and 2c, boundary shrub and hedge plantings tend to reinforce the cadastral pattern, and create the a balance between built form and a containing structure of vegetation.

It is recommended that a design control relating to fencing be included as a consent notice on the title of the proposed lots. This will require that the road boundaries of Lots 1, 2 , 3 and 6 be either retained as open (with the proposed vegetation delineating the boundary), or fenced with a visually permeable fence with a height no greater than 900mm (such as post and rail).

This requirement is to ensure that the development retains an open frontage which is in keeping with the existing character of the area.

4.0 EXISTING ENVIRONMENT

4.1 The site context and character

The Kororipo-Kerikeri Basin is a distinctive natural feature lying within an area of extrusive basalt flows that comprise the relatively flat plateau of Kerikeri. The Kerikeri River has incised a gorge and drains eastwards into the tidal Kerikeri Basin where Kemp House, the Stone Store, St James Church and wharf are located (refer to photo 5).

Road access to the core heritage zone is by Kerikeri Road which descends from Kerikeri Township to the present bridge and enters Landing Road. Adjacent to the bridge is the main public parking area with toilet facilities. Within the reserves there is a network of walking tracks. On the north bank of the river the Kerikeri River track links Rainbow Falls to the Kororipo-Kerikeri Basin area and continues to Kemp Road. On the south side of the river are the Kororipo Pa (refer to photo 5), Pa Road, Hongi Hika and Fairy Pools tracks.

Indigenous vegetation comprising remnants of totara forest in association with kahikatea, kanuka and manuka is dominant on public lands between Rainbow Falls and the Department of Conservation Bay of Island's Area Office. Further to the east exotic vegetation is dominated by stands of large Eucalyptus.

The subject Site is visually separate from the Basin and the Kororipo Pa site, being screened by both landform, vegetation and buildings. To gain a visual connection to the Basin, the viewer has to be situated at the south western end of James Kemp Place. Here the landform drops away into the Kerikeri River valley, and views are possible across the river to the Pa, and Basin (refer to photo 5). The Site occupies a relatively flat 'plateau' within an otherwise undulating landscape whilst the by the incised Kerikeri River valley contains this plateau, looping around its western, southern and eastern sides. When on the plateau, there is no sense of connection to, nor views of the river due to the visual enclosure provided by built form, landform and vegetation. The Site is not therefore, considered to be within the coastal environment.

On this plateau, the Site is contained within a residential setting which displays a 'leafy' suburban character. As is evidenced by photos 1 – 4, and 6, and 7, both James Kemp Place and Kemp Road have an urban character infrastructure, being sealed and with kerb, and footpaths. The individual is constantly informed of the presence of buildings by glimpses or direct views to dwellings and garages, views of parked vehicles and boats on driveways, and domestic infrastructure such as decks, washing lines and lawn areas. Built form is leant some softening by well planted and established gardens,

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and in places there are hints of a historic productive and horticultural land use; not least being the remnant shelterbelts that contain the road frontage boundaries of the Site.

The Site itself – as is evidenced by photos 8, 9 and 10 offers an unexpected sense of spaciousness within the relatively contained enclosure of the residential area and is reminiscent of a sports field, surrounded on two sides by residential development. Under grass and devoid of taller vegetation with the exception of the shelterbelts on its road frontages, the Site is flat.

On its north eastern side, a number of single storey dwellings crowd the Site's boundary. Visible in photos 8 and 9, these dwellings are situated within 105, 109, 111, 115, and 119 Kemp Road. To the south, and separated from the Site to some degree by mature trees, a two storey dwelling is located within 1C James Kemp Place (refer to photos 9 and 10). This dwelling is separated from the Site by a recently subdivided lot (1B James Kemp Place).

To the south east and east of the Site, and on the southern side of the Kerikeri River, the terrain rises to the catchment boundary ridge which separates the catchments of the Kerikeri River from that of the Okura River. The ridge is defined by Kerikeri Inlet Road, and various dwellings located on the north western flank of the road (accessed from Kerikeri Inlet Road, Blacks Road and Rivercrest Way), offer views to the north and north west. These views overlook the 'plateau' and the subject Site.

4.2 Statutory Matters

Under the Operative Plan the Site is located within the Rural Living Zone. The status of the application is non-complying in terms of subdivision.

Under the Proposed District Plan the Site is located within the Rural Residential zone and is within the Kerikeri Heritage Area (Part B). The Site is on the edge of, but outside the Coastal Environment, and with views to the River not possible, the Site does not display any coastal character.

As noted above, The site is zoned Rural Living. This zone is part of the Rural Environment as defined/mapped within the District Plan. Table 13.7.2.l Minimum Lot Sizes applies and this stipulates that the minimum lot size as a discretionary activity is 3,000m^2. The proposal therefore (under the Operative Plan) is non-complying.

Amongst the Objectives and Policies listed below, there are some with little or no relevance to this proposal. These have not been included in the following assessment.

Rural Zone objectives and policies

8.3 *OBJECTIVES*

8.3.2 *To avoid, remedy* or *mitigate the adverse and cumulative effects* of *activities on the rural environment.*

8.3.7 *To promote the maintenance* and *enhancement* of *amenity values* of *the rural environment to a level that is consistent with the productive intent* of *the* zone.

8.4 POLICIES

8.4.2 *That activities be allowed to establish within the rural environment to the extent that any adverse effects* of *these activities are able to be avoided, remedied or mitigated* and *as a result the life supporting capacity* of *soils* and *ecosystems is safeguarded* and *rural productive activities are able to continue.*

8.4.3 *That any* new *infrastructure for development in rural areas be designed* and *operated in a way that safeguards the life supporting capacity* of *air, water, soil* and *ecosystems while*

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protecting areas of *significant indigenous vegetation* and *significant habitats* of *indigenous fauna, outstanding natural features* and *landscapes.*

8.4.4 *That development which will maintain or enhance the amenity value* of *the rural environment* and *outstanding natural features* and *outstanding landscapes be enabled to locate* in *the rural environment.*

8.4.7 *That, when considering subdivision, use* and *development in the rural environment, the Council will have particular regard to ensuring that its intensity, scale* and *type is controlled to ensure that adverse effects* on *habitats (including freshwater habitats), outstanding natural features* and *landscapes* on *the amenity value* of *the rural environment,* and *where appropriate* on *natural character* of *the coastal environment, are avoided, remedied or mitigated. Consideration will further be given to the functional need for the activity to be within rural environment* and *the potential cumulative effects* of *non-farming activities.*

Rural Living Zone objectives and policies

8.7.3 OBJECTIVES

8.7.3.1 *To achieve a style* of *development* on *the urban periphery where the effects* of *the different types* of *development are compatible.*

8.7.3.2 *To provide* for *low density residential development* on *the urban periphery, where more intense development would result* in *adverse effects* on *the rural and natural environment.*

8.7.4 POLICIES

8.7.4.1 *That a transition between residential and rural zones* is *achieved where the effects* of *activities in the different areas are managed to ensure compatibility.*

8.7.4.2 *That the Rural Living Zone be applied to areas where existing subdivision patterns have led to a semi-urban character but where more intensive subdivision would result in adverse effects* on *the rural and natural environment.*

8.7.4.7 *That provision be made for ensuring that sites, and the buildings and activities which may locate* on *those sites, have adequate access to sunlight and daylight.*

8.7.4.10 *That provision be made to ensure a reasonable level* of *privacy for inhabitants* of *buildings* on *adjoining sites.*

The Site is within the Rural Residential Zone in the Proposed Plan. The zone description for the Rural Residential zone explains that

"…the character of the zone will remain predominantly residential as the adjoining settlement will provide for most day to day services. ……, the Rural Residential zone does retain the ability to undertake farming activities at a domestic scale appropriate to the size of the lots. The Rural Residential zone provides for smaller lot sizes of approximately 2,000-4,000m that are capable of providing for on-site infrastructure servicing, as distinct from the Rural Lifestyle zone that has a larger minimum lot size and greater expectations of maintaining rural character and amenity.

Provisions around building height, setback, site coverage, lighting, and other matters help to maintain the character and amenity of the Rural Residential environment and minimise any nuisance and adverse impacts on neighbouring properties.

Objectives and policies of relevance are as follows:

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RRZ-O1. The Rural Residential zone is used predominantly for rural residential activities and small scale farming activities that are compatible with the rural character and amenity of the zone.

RRZ-O2. The predominant character and amenity of the Rural Residential zone is maintained and enhanced, which includes:

- *a. peri-urban scale residential activities;*
- *b. small-scale farming activities with limited buildings and structures;*
- *c. smaller lot sizes than anticipated in the Rural Production or Rural Lifestyle zones; and*
- *d. a diverse range of rural residential environments reflecting the character and amenity of the adjacent urban area.*

RRZ-O4. Land use and subdivision in the Rural Residential zone:

- *a. maintains rural residential character and amenity values;*
- *b. supports a range of rural residential and small-scale farming activities; and*
- *c. is managed to control any reverse sensitivity issues that may occur within the zone or at the zone interface.*

RRZ-P1. Enable activities that will not compromise the role, function and predominant character and amenity of the Rural Residential zone, while ensuring their design, scale and intensity is appropriate, including:

- *a. rural residential activities;*
- *b. small-scale farming activities;*
- *c. home business activities;*
- *d. visitor accommodation; and*
- *e. small-scale education facilities.*

RRZ-P5. Manage land use and subdivision to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application:

- *a. consistency with the scale and character of the rural residential environment;*
- *b. location, scale and design of buildings or structures;*
- *c. at zone interfaces:*
  - *i. any setbacks, fencing, screening or landscaping required to address potential conflicts;*
  - *ii. the extent to which adverse effects on adjoining or surrounding sites are mitigated and internalised within the site as far as practicable;*
- *d. the capacity of the site to cater for on-site infrastructure associated with the proposed activity;*
- *e. the adequacy of roading infrastructure to service the proposed activity;*
- *f. managing natural hazards;*
- *g. any adverse effects on historic heritage and cultural values, natural features and landscapes or*
- *1. indigenous biodiversity; and*
- *h. any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.*

RRZ-R3 requires that the site area per residential unit is at least 4,000m^2 . Where the site area is at least 2,000m^2, then the activity status will be discretionary.

RRZ-S1 requires that maximum height of a building or structure, or extension or alteration to an existing building or structure is 8m above ground level.

RRZ-S5 requires that building or structure coverage of the site area is no more than 12.5% or 2,500m , whichever is the lesser. Within the proposed lots, 12.5% equates to a coverage of 250m^2 where the lot size is 2,000m^2. Where the standard is not met, matters of discretion are restricted to:

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a. *the character and amenity of the surrounding area;*

b. *any landscaping, planting and screening to mitigate any adverse effects;*

d. *the extent to which private open space can be provided for future uses;*

e. *the extent to which the sitting, setback and design mitigate visual dominance on adjacent sites and surrounding environment; and*

f. *natural hazard mitigation and site constraints.*

The subject Site is within the area subject to the Part B Heritage Area Overlay. The Proposed Plan explains that the Part B overlay:

"*Covers the archaeologically sensitive slopes surrounding Kororipo Pā and the Church Missonary Settlement (CMS). The north and east ridge line also provide the sight lines from Kororipo Pā. There still remains a legacy of early horticultural subdivision pattern which supports the identity of Kerikeri, predominantly located along the Kerikeri Inlet Road ridgeline*

Objectives and policies are as follows:

HA-O1. The heritage values of Heritage Area Overlays, as derived from the sites, buildings and objects of historic significance, archaeological sites and landform, are identified and protected.

HA-P1. To protect the unique heritage values of each Heritage Area overlay by:

a. *identifying and protecting the heritage buildings, objects and sites, and archaeological sites within the Heritage area overlay;*
b. *maintaining the architectural and historical integrity of scheduled Heritage Resources;*
c. *acknowledging the surrounds or setting of the Heritage area overlay which has an important relationship with the values of the Heritage Resources;*
d. *providing for construction and alteration of buildings or structures when they contribute to the cultural values, character and heritage values of the Heritage area overlay; and*
e. *providing for the demolition of non-heritage buildings or structures when they do not contribute to the cultural values, character and heritage values of the Heritage area overlay.*

HA-P2. To maintain the integrity of the Kerikeri Heritage area overlay and protect the heritage values by retaining the visual dominance and connection of the Kerikeri Mission Station buildings and Kororipo Pa through:

a. *the control of the scale, form, colour; and*
b. *location of alterations and development of buildings or structures*

HA-P3. To maintain visual connection to Kororipo Pā, the Stone Store and Kemp House by limiting built development and landscaping within Part B to protect viewshafts of Kororipo Pā.

4.3 Visual Catchment

As is evident from Plate 1 below, the subject Site occupies a relatively flat 'plateau' within an otherwise undulating landscape. The landform rises to the north west over a distance of some 300m, and to the east, south east and south, the plateau is defined by the steeply sloping valley containing the Kerikeri River.

Proximate views of the Site are constrained by the existing shelterbelt which contains its south western and north western sides. With the removal of these features, views will be possible from the adjoining road corridors (James Kemp Place and Kemp Road – refer to photos 1, 3, 4, and 6), and from nearby existing and future dwellings accessed from those roads including numbers 2, 8, 10, and 12 James Kemp Place, and 57, 86, and 88, Kemp Road.

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Plate 1: The Site environs and topography

As can be seen from photos 8, 9 and 10, the north eastern and south eastern Site boundaries are relatively open, and direct views into the Site are possible from numbers 105, 109, 111, 115, 119 Kemp Road (along the north eastern boundary), and 1B and 1C James Kemp Place on the south eastern boundary. At present, 1B is vacant, and the dwelling within 1C offers filtered views through existing trees to the Site. Once 1B is developed, it is likely that views to the Site from 1C will be (at least) in part obscured.

Although views are possible along the adjoining Kemp Road (from the north west), and from James Kemp Place (from the west), views from properties beyond those immediately adjoining the Site are obscured by built form, or vegetation.

Views to the south and the Site from the rising landform to the north are also obscured by built form, or vegetation and views north west from the Kororipo pa are similarly obscured by built form, or vegetation (although the existing shelterbelts can be glimpsed – refer to photos 11, 12 and 13).

Distant views from dwellings on the valley side to the east, north east and south east of the Site are possible (refer to photo 14). This includes dwellings accessed from Blacks Road and Kerikeri Inlet Road at distances of between 300 – 700m.

5.0 IDENTIFIED LANDSCAPE VALUES

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In 2007, a proposal for the Kerikeri Basin Precinct was submitted to UNESCO for its inclusion on the World Heritage List[3]. The proposal described the landscape and values of the Precinct thus:

The Kerikeri Basin, in Northland, comprises land surrounding the Kerikeri River where it flows into the Kerikeri Inlet. The authentic heritage elements within this landscape are a unique cluster of Maori and Christian missionary contact period places and structures, including Kororipo pa (fortified settlement) and associated sites, the Kororipo whirlpool, the Kerikeri Mission Station (Mission House and Stone Store), and other archaeological sites within the Basin and its waterways….

…..There was settlement here prior to European arrival, and the basin was the coastal settlement of Hongi Hika of Nga Puhi, a pivotal figure in New Zealand history in the 1820s and 1830s.

The Basin is on a longstanding route from the outer Bay of Islands to the Taiamai Plains (southwest of Kerikeri), a densely settled area prior to the 1820s.

The Kerikeri Mission Station was founded in 1819. It is the oldest surviving European settlement in New Zealand. The Kerikeri Mission House, built in 1822, is New Zealand's oldest surviving building. The Stone Store, built in 1836 as part of the mission settlement, is New Zealand's oldest stone building and the oldest trading building. The two stand close together and dominate the former wharf frontage to the river. They are of contrasting form and bulk.

The site is enhanced by the river in the natural shrubland setting of the basin, not dissimilar to that of the 19th century, and the Kerikeri Falls, one of the outstanding natural features of the basin.

Although this landscape from two centuries ago is fragile, the efforts of past owners and the present conservation agencies have ensured that the key places have survived reasonably intact. Thus the site is considered to meet the tests of authenticity for World Heritage status as regards the structures and sites and their setting, and comprises a cultural landscape of the highest significance……

…….The Kerikeri Basin is notable for its integration of a mission settlement and the adjacent Maori settlements. Other New Zealand Church of England mission sites of the early period were abandoned some years after their establishment and little or no trace of them remains.

The Sustainable Development Plan for the Kororipo – Kerikeri Basin[4] identifies the key historical elements which make up the Precinct. These are:

- The unique cluster of Ngapuhi and early missionary contact period sites and structures that ring the Kororipo whirlpool. These can be seen in Map two.
- Kororipo pa, and its associated waahi tapu and the Kororipo kainga. The pa was used as the coastal stronghold of Hongi Hika and the Kororipo the launching point for his notorious canoe-borne musket campaigns of the 1820s.
- The Kerikeri Mission House (Kemp House), New Zealand's oldest European building, built in the early 1820s and witness to every phase of modern New Zealand history. In addition there are also important collections associated with the history of this place and its occupants.
- The Stone Store, built in the early 1830s, by which time Kerikeri was already an English settlement, most of the Maori left were schoolchildren and mission servants.
- The Kemp property - currently a restaurant - the site of the first mission buildings. It is survived today by an old pear tree and contains Maori and pakeha archaeological sites, and a building that may relate to this early contact period.

[3] https://whc.unesco.org/en/tentativelists/
[4] https://infocouncil.fndc.govt.nz/Open/2020/09/CO_20200924_AGN_2341_AT_files/CO_20200924_AGN_2341_AT_Attachment_10661_1.PDF

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- Adjacent to this land is St James Church and graveyard, the site of earlier habitation.

- Further sites, structures and objects are likely to be identified over time on both the land and within the basin waterways as archaeological and hapu research continues.

- The relationships about the Kororipo to spiritual places associated with the ancient ancestor-venerating Polynesian or Maori religion of the country, and the younger evangelistic Protestant Christianity of the Church Missionary colonisers. The latter are celebrated, but the former, which have been largely ignored by Pakeha till now, are exemplified by the spiritual presence of the following sites.

- The Kororipo pool, long an abode of the Ngapuhi ancestor Kauea. Maori customary belief has it that he assumed the form of a giant stingray to transform himself into a taniwha and reputedly burrowed underground from Hokianga to surface at Kerikeri;

- A waahi tapu located at the Kororipo Pa. This especially dedicated site allowed for Maori rites processes in readiness for the final secretive internment. The area is venerated by descendants to this day.

- A waahi tapu on top of the rocky point forming the north shore of the Kororipo, where at least one arikirahi of the Ngai Tawake confederation was taken to die, and where his corpse was embalmed in accordance with ancient Maori custom.(Note: NZHPT has registered the area as a wahi tapu, Registration number 7598. This issue is the subject of ongoing discussion.).

The subject Site is however, visually and spatially separated from the Basin area and rather than the values described above, displays a residential character that is characterised by urban-type roading infrastructure, and a balance of built form and vegetation. The vegetation moderates the dominance of built form and imparts a sense of elevated residential amenity. In addition, remnant features such as shelterbelt fragments – including the shelterbelt that currently contains the road frontages of the Site – serve to reference the previous productive / horticultural land use of the area.

The key landscape values of the area are therefore balance between vegetation and built form, which includes a sense of spaciousness and openness associated with the road corridors.

6.0 ASSESSMENT OF LANDSCAPE EFFECTS

The effects covered in this assessment, include those that can occur in relation to physical features, viewing audiences and visual amenity and/or on the site's contribution to the existing landscape character and amenity values.

Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced. This may in turn affect the perceived value ascribed to the landscape and includes visual amenity effects under the ambit of 'experiential attributes'.

Change in a landscape does not, of itself, necessarily constitute an adverse landscape or natural character effect. Landscape is dynamic and is constantly changing over time in both subtle and more dramatic transformational ways, these changes are both natural and human induced. What is important in managing landscape change is that adverse effects are avoided or sufficiently mitigated to ameliorate the effects of the change in land use.

6.1 Physical - abiotic attributes

The key abiotic attributes of the site encompass the landform, its geology, and its hydrology. Overall, the abiotic attributes of the site and its residential context have subject to some modification as a result of building activities. The

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proposal will result in a level of modification that is consistent with the existing landscape whereby limited earthworks are anticipated for the construction of dwellings and associated infrastructure. The proposal will require no changes in the hydrological systems of the area.

The change in the abiotic attributes will therefore be very small.

6.2 Physical - biophysical biotic attributes

The biotic attributes of the Site are the living organisms which shape an ecosystem. The proposal will be located on an area of land that has been subject to a productive land use which has diminished its biotic values. The majority of development will occur within an existing open and grassed area, but the existing shelterbelts on the road boundary will be removed. These features (which comprise an exotic species) have a very limited biotic / ecological value, and it is considered that the change in the biotic values of the Site will be very limited.

6.3 Physical – land use and built attributes

As identified above, the Site occupies a location within a landscape that displays a built and residential character which differs from the historic, natural and cultural character displayed by the Basin Precinct to the south and south east. Photos 1, 2, 3, 4 and 8 illustrate how the character of the area is manifest in a balance between built form and a vegetated framework which softens the dominance of buildings when viewed from the road corridors, or from more distant locations as is evidenced by representative photo 14.

Typically, the vegetation patterns emphasise the rectilinear patterning of the cadastral patterns where plantings reflect lot boundaries and although this serves to define the size of individual lots when viewed in aerial photography (as is illustrated in Figures 1 and 2a), the vegetation masks appreciation of lot sizes when experienced from the ground.

The proposed landscape mitigation planting (and controls on fencing typology), will ensure that – when experienced from locations external to the Site – the development will have a character that is consistent with the wider landscape. Moreover, the subdivision pattern will be consistent with the patterning of the surrounding landscape where lots of 2,000m^2 are a feature.

The change in the land use and built character of the Site will therefore be small.

6.4 Perceptual attributes

Experiential attributes comprise the interpretation of human experience of the landscape. This includes visible changes in the character of the landscape – its naturalness as well as its sense of wildness and remoteness including effects on natural darkness of the night sky.

As described above, the proposed landscape mitigation planting (and controls on fencing typology), will ensure that – when experienced from locations external to the Site – the development will have a character that is consistent with the wider landscape. Notwithstanding the fact that the zoning provides for residential development within the Site, individuals residing in properties adjoining the Site will be buffered from views of built development by the proposed hedge.

The appearance of the Site from the road frontages will be softened by the proposed road frontage plantings which includes low shrub, hedge, and tree planting. These plantings have been designed to mimic the vegetation character of the surrounding residential landscape.

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Although users of the road, and occupants of proximate residential properties will be afforded glimpse views of built form within the proposed lots, such glimpse views will be akin to the existing visual character of the road corridor where buildings are visible through vegetation.

It is considered therefore, that the proposal will result in a character of development that is consistent with, and sympathetic to the existing residential character of the area, and the change in the experiential attributes of the Site will be small.

Turning to visual amenity effects, three separate groups of potential receptors have been identified, these being:

- Residential neighbours to the east and south;
- Occupants of residences and roads to the west and north;
- Occupants of residences, and users of the roads to the north east, east and south east.

The former two groups have been discussed above, and it is the opinion of the author that the potential adverse visual amenity effect of the proposal that will be experienced by these groups will be low once the mitigation planting has become established.

For the third group, this includes receptors located on the Kerikeri Inlet Road ridge flanks, from where are afforded views over the 'plateau' and the Site. Whilst the separation distances range between 300 – 700m, these potential viewers are elevated above the Site and plateau, and views are relatively expansive (as represented by photo 14). Where visible, the Site will be seen within a context of residential settlement and vegetation. Although the change from the existing situation – where the open grassed area of the Site is evident – to a situation where the Site is populated by six dwellings, the resulting appearance of the Site will be consistent with the character of the surrounding area, particularly once occupants have begun to establish gardens within their individual lots.

It is the opinion of the author that the potential adverse visual amenity effect of the proposal that will be experienced by this viewer groups will be (at most) low.

6.5 Social, cultural and associative attributes

Social, cultural and associative values are linked with individual's relationship with the landscape, their memories, the way they interact with and use the landscape and the historical evidence of that relationship.

Section 5 in this assessment has detailed the significant social, cultural and associative attributes of the Precinct. It is reiterated however, that the main elements that make up those values are clustered within the western portion of the Precinct. This is not to diminish the importance of the balance of the Precinct, the valley / basin form, and character of which influences and underpins the prevailing values of the whole.

The Site is separated from the Precinct and it is understood that Heritage NZ Pouhere Taonga have acknowledged this visual separation.

No other social, cultural or associative attributes are known to be associated with the Site and the proposal will therefore not result in any appreciable change in these attributes.

6.6 Summary of landscape effects

In summary, any landscape effects would be limited to an existing area that has been previously modified and within a wider area that displays a residential but vegetated character. The proposal will result a very limited localised change in

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the abiotic and biotic attributes of the Site, but the landform character of the Site will be maintained and the proposal will reflect the land use and built character of the surrounding area.

The proposal will be visible from within the visual catchment to the north east, east and south east, but will be a recessive element within the catchment. The building will be screened from immediate residential neighbours once the mitigation planting has become established.

The social, cultural and associative attributes of the site will not be affected. Overall it is the opinion of the author that the potential adverse landscape effects will be low.

7.0 ASSESSMENT AGAINST THE STATUTORY FRAMEWORK

Under the Operative Plan, the Rural Living Zone is described as an area of transition between fully productive land use and residential use. The site is mainly bounded by properties with non-productive land uses (predominantly residential). Although characterised by a robust vegetative framework, the area character is residential rather than rural. Plantings are mainly of an amenity garden type although a limited numbers of features (shelterbelt trees), remain that reference the historical rural character and productive land use.

The proposal (including the proposed landscape planting and fencing controls), will result in a character of development that is consistent with this existing landscape character, and will maintain and enhance the landscape character and amenity values of the area.

Furthermore, the proposed landscape mitigation planting will ensure that the amenity values experienced by neighbouring properties will mitigate visual dominance on adjacent sites

The proposal will not detract from the abiotic and biotic / ecological and landscape values of the area including air, water, soil and ecosystems while protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna, outstanding natural features and landscapes.

The proposal will not detract from the values of the Kerikeri Basin Heritage Precinct (Part B).

The subdivision is therefore considered both sustainable and appropriate given its location and zoning. It will not create adverse cumulative effects of a minor or more than minor nature, The proposed development can occur in a manner that maintains the amenity and character of the area.

It is the opinion of the author that the proposal will be consistent with the objectives and policies of the Plan where they relate to this assessment.

8.0 CONCLUSION

Under the Operative Plan the Site is within the Rural Living Zone and is understood to be a non-complying activity. Under the Proposed Plan the Site is located within the Rural Residential Zone and will be a discretionary activity.

The subdivision seeks to create six proposed lots with a minimum area of 2,001m^2 (Lot 3), and a maximum of 2,155m^2 (Lot 5). The proposed lots are aligned such that their boundaries reflect the rectilinear cadastral patterning of the wider landscape.

Mitigation plantings are proposed along the James Kemp Place and Kemp Road frontages of the property, and along the eastern and southern residential boundaries. The latter residential boundaries will be planted with a hedge which will grow to a minimum height of 2.5m and will provide a buffer between development within the subject Site and dwellings within the neighbouring properties.

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The existing shelterbelts will be removed and the road frontages (predominantly) planted with a fragmented low shrub mix, and a variety of exotic tree species. The boundary at the north western corner of the Site will be planted with a hedge so that the development will be screened from views south along Kemp Road, and headlight sweep from cars on the road will be blocked.

The planting strategy seeks to replicate the vegetative character of the surrounding area where built form is integrated within a – predominate gardenesque – vegetative framework, where exotic deciduous trees are common. The area therefore displays a residential character, albeit softened by vegetation.

Overall it is the opinion of the author that the potential adverse landscape effects will be low.

Although the Site is within the Kerikeri Basin Heritage Precinct (under the Proposed District Plan), it is visually separated from the Precinct and will not be visible from Kororiko Pa. The proposal will be consistent with the provisions of the statutory instruments where they apply to the scope of this report, and the proposal is considered to be appropriate from a landscape and visual perspective.

Simon Cocker

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APPENDIX 1: Figures

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McCann: 79 Kemp Road, Kerikeri

Landscape assessment

FIGURE 1: The site and its landscape context

Simon Cocker Landscape Architecture

McCann: 79 Kemp Road, Kerikeri

Landscape assessment

FIGURE 2a: The site and proposed Lot 1 and 2 building sites

Simon Cocker Landscape Architecture

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MEMORANDUM OF EASEMENTS				
PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT	
RIGHT OF WAY ELECTRICITY TELECOMMUNI-CATIONS WATER	Ⓐ	LOT 5 HEREON	LOTS 2-4 HEREON	
	Ⓑ	LOT 4 HEREON	LOTS 2, 3 & 5 HEREON	

NOTES

Local Authority - Far North District Council.
Comprised in - RT 1146018
Total Area - 1.21Ha

This drawing has been prepared solely for the use intended by the client ststed on the plan, and must nt be used for any other purpose. BOI Survey Ltd accepts no responsibility for this plan, or any data contained on this plan, to be used for any other purpose

McCann: 79 Kemp Road, Kerikeri

Landscape assessment

FIGURE 2b: Scheme Plan

Rev.	Reason For Issue or Amendment	Date	Drawn	Checked	Surveyed
A	Scheme Plan 1A JAMES KEMP PLACE, KERIKERI	16/09/24	TW	DC	TW

BOI SURVEY

BOI SURVEY LTD
55B Shepherd Road
Kerikeri 0230

e: Tony@boisurvey.co.nz

PROPOSED SUBDIVISION OF LOT 1 DP 594558

1A JAMES KEMP PLACE, KERIKERI

CLIENT: SHEARWATER LTD

JOB NO:		Scale:
5042		1:500 @ A3
Level Datum: NZVD 2016	Origin: -	Co-ord System: NZGD 2000
Drawing Number: 5042-002	Revision: A	Sheet: 1 of 1

Note: A single maximum 5m wide vehicular access to Lots 6, and 1 will be permitted through the road frontage plantings.

Species	grade	spacing	% mix
Trees			
Backhousia citriodora	35L	-	-
Ginkgo biloba	45L	-	-
Lagerstroemia indica	35L	-	-
Prunus campanulata 'Pink Clouds'	35L	-	-
Quercus coccinea - Scarlet Oak	45L	-	-
Hedge Type 1			
Ficus Tuffy	2L	700mm	50
Eugenia ventenatii "Lilly pilly"	2L	700mm	50
Low shrub mix Type 1			
Coprosma 'Hawera'	1L	700mm	15
Ceanothus griseus var. horizontalis 'Yankee Point'	1L	800mm	10
Corokia x virgata	1L	1.0m	10
Hebe 'Wiri Charm'	1L	800mm	15
Leucadendron 'Amy' (PBR)	1L	800mm	10
Metrosideros collina 'Tahiti'	1L	800mm	10
Teucrium fruticans	1L	8000mm	15
Westringia fruticosa 'Grey box'	1L	800mm	15

0m 10m 20m 30m 40m

Hedge Type A

Low screen Type A

Amenity specimen tree

McCann: 79 Kemp Road, Kerikeri

Landscape assessment

FIGURE 2c: Landscape mitigation plan

Simon Cocker Landscape Architecture

Photo 1: View north west along James Kemp Place, with Site frontage to right of frame

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 2: View south across James Kemp Place from Site frontage

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 3: View north east along James Kemp Road with Site frontage to right of frame

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 4: View south east along Kemp Road to north west corner of Site

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 5: View to Kororipo pa from western end of James Kemp Place

Photo date: 10 May 2023

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 6: View east along James Kemp Place to south west corner of Site

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 7: View north west from Site frontage to Lot 1 DP 516763

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 8: View north east across Site (pan 1 of 2)

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 9: View east across Site (pan 2 of 2)

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 10: View south west across Site

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 11: View from Kororipo Pa toward Site

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 12: View from Kororipo Pa toward Site

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 13: View to east from Kerikeri Road near Stone Store.

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos taken with digital equivalent of 50mm focal length unless otherwise specified.
Photos represent a 124° horizontal and 55° vertical field of view, and should be read at a distant of 400mm

Simon Cocker
Landscape Architecture

Photo 14: View to north west from near 26 Blacks Road

Photo date: 30 August 2024

McCann: 79 Kemp Road, Kerikeri

Photos sourced from Google StreetView

Simon Cocker Landscape Architecture

APPENDIX 2: Landscape and Visual Effects Assessment Methodology

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Landscape and Visual Effects Assessment Methodology

Introduction

The landscape and visual effects assessment process provides a framework for assessing and identifying the nature and level of likely effects that may result from a proposed development. Such effects can occur in relation to changes to physical elements, the existing character of the landscape and the experience of it. In addition, the landscape assessment method may include an iterative design development processes which includes stakeholder involvement. The outcome of any assessment approach should seek to avoid, remedy or mitigate adverse effects. A separate assessment is required to assess changes in natural character in coastal areas and other waterbodies.

When undertaking landscape and visual effects assessments, it is important that a structured and consistent approach is used to ensure that findings are clear and objective. Judgement should always be based on skills and experience, and be supported by explicit evidence and reasoned argument.

While landscape and visual effects assessments are closely related, they form separate procedures. The assessment of the potential effect on the landscape forms the first step in this process and is carried out as an effect on an environmental resource (i.e. landscape elements, features and character). The assessment of visual effects considers how changes to the physical landscape affect the viewing audience. The types of effects can be summarised as follows:

> **Landscape effects:**
> *Change in the physical landscape, which may change its characteristics or qualities.*
>
> **Visual effects:**
> *Change to views which may change the visual amenity experienced by people.*

The policy context, existing landscape resource and locations from which a development or change is visible all inform the 'baseline' for landscape and visual effects assessments. To assess effects, the landscape must first be described, including an understanding of the key landscape characteristics and qualities. This process, known as landscape characterisation, is the basic tool for understanding landscape character and may involve subdividing the landscape into character areas or types. The condition of the landscape (i.e. the state of an individual area of landscape or landscape feature) should also be described alongside a judgement made on the value or importance of the potentially affected landscape.

This outline of the landscape and visual effects assessment methodology has been undertaken with reference to the Quality Planning Landscape Guidance Note1[1] and its signposts to examples of best practice which include the UK guidelines for landscape and visual impact assessment[2] and Te Tangi a te Manu[3].

Assessing landscape effects requires an understanding of the nature of the landscape resource and the magnitude of change which results from a proposed development to determine the overall level of landscape effects.

Nature of the landscape resource

Assessing the nature of the landscape resource considers both the susceptibility of an area of landscape to change and the value of the landscape. This will vary upon the following factors:

- Physical elements such as topography / hydrology / soils / vegetation;
- Existing land use;
- The pattern and scale of the landscape;
- Visual enclosure / openness of views and distribution of the viewing audience;

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[1] http://www.qualityplanning.org.nz/index.php/planning-tools/land/landscape

[2] Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)

[3] Te Tangi a te Manu (Aotearoa New Zealand Landscape Guidelines), NZILA July 2022.

- The zoning of the land and its associated anticipated level of development;
- The value or importance placed on the landscape, particularly those confirmed in statutory documents; and
- The scope for mitigation, appropriate to the existing landscape.

The susceptibility to change takes account of both the attributes of the receiving environment and the characteristics of the proposed development. It considers the ability of a specific type of change occurring without generating adverse effects and/or achievement of landscape planning policies and strategies.

Landscape value derives from the importance that people and communities, including tangata whenua, attach to particular landscapes and landscape attributes. This may include the classification of Outstanding Natural Landscape (RMA s.6(b)) based on important biophysical, sensory/ aesthetic and associative landscape attributes, which have potential to be affected by a proposed development.

Magnitude of Landscape Change

The magnitude of landscape change judges the amount of change that is likely to occur to existing areas of landscape, landscape features, or key landscape attributes. In undertaking this assessment, it is important that the size or scale of the change is considered within the geographical extent of the area influenced and the duration of change, including whether the change is reversible. In some situations, the loss /change or enhancement to existing landscape elements such as vegetation or earthworks should also be quantified.

When assessing the level of landscape effects, it is important to be clear about what factors have been considered when making professional judgements. This can include consideration of any benefits which result from a proposed development. Table 1 below helps to explain this process. The tabulating of effects is only intended to inform overall judgements.

Contributing factors		Higher	Lower
Nature of Landscape Resource	**Susceptibility to change**	The landscape context has limited existing landscape detractors which make it highly vulnerable to the type of change which would result from the proposed development.	The landscape context has many detractors and can easily accommodate the proposed development without undue consequences to landscape character.
	The value of the landscape	The landscape includes important biophysical, sensory and associative attributes. The landscape requires protection as a matter of national importance (ONF/L).	The landscape lacks any important biophysical, sensory or associative attributes. The landscape is of low or local importance.
Magnitude of Change	**Size or scale**	Total loss or addition of key features or elements. Major changes in the key characteristics of the landscape, including significant aesthetic or perceptual elements.	The majority of key features or elements are retained. Key characteristics of the landscape remain intact with limited aesthetic or perceptual change apparent.
	Geographical extent	Wider landscape scale.	Site scale, immediate setting.
	Duration and reversibility	Permanent. Long term (over 10 years).	Reversible. Short Term (0-5 years).

Table 1: Determining the level of landscape effects

Visual Effects

To assess the visual effects of a proposed development on a landscape, a visual baseline must first be defined. The visual 'baseline' forms a technical exercise which identifies the area where the development may be visible, the potential viewing audience, and the key representative public viewpoints from which visual effects are assessed.

The viewing audience comprises the individuals or groups of people occupying or using the properties, roads, footpaths and public open spaces that lie within the visual envelope or 'zone of visual influence' of the site and proposal. Where

possible, computer modelling can assist to determine the theoretical extent of visibility together with field work undertaken to confirm this. Where appropriate, key representative viewpoints should be agreed with the relevant local authority.

Nature of the viewing audience

The nature of the viewing audience is assessed in terms of the susceptibility of the viewing audience to change and the value attached to views. The susceptibility of the viewing audience is determined by assessing the occupation or activity of people experiencing the view at particular locations and the extent to which their interest or activity may be focused on views of the surrounding landscape. This relies on a landscape architect's judgement in respect of visual amenity and reaction of people who may be affected by a proposal. This should also recognise that people more susceptible to change generally include: residents at home, people engaged in outdoor recreation whose attention or interest is likely to be focused on the landscape and on particular views; visitors to heritage assets or other important visitor attractions; and communities where views contribute to the landscape setting.

The value or importance attached to particular views may be determined with respect to its popularity or numbers of people affected or reference to planning instruments such as viewshafts or view corridors.

Important viewpoints are also likely to appear in guide books or tourist maps and may include facilities provided for its enjoyment. There may also be references to this in literature or art, which also acknowledge a level of recognition and importance.

Magnitude of Visual Change

The assessment of visual effects also considers the potential magnitude of change which will result from views of a proposed development. This takes account of the size or scale of the effect, the geographical extent of views and the duration of visual change which may distinguish between temporary (often associated with construction) and permanent effects where relevant. Preparation of any simulations of visual change to assist this process should be guided by best practice as identified by the NZILA[4].

When determining the overall level of visual effect, the nature of the viewing audience is considered together with the magnitude of change resulting from the proposed development. Table 2 has been prepared to help guide this process:

Contributing factors		Higher	Lower
Nature of Landscape Resource	**Susceptibility to change**	Views from dwellings and recreation areas where attention is typically focussed on the landscape..	Views from places of employment and other places where the focus is typically incidental to its landscape context. Views from transport corridors.
	The value of the landscape	Viewpoint is recognised by the community such as an important view shaft, identification on tourist maps or in art and literature. High visitor numbers.	Viewpoint is not typically recognised or valued by the community. Infrequent visitor numbers..
Magnitude of Change	**Size or scale**	Loss or addition of key features in the view. High degree of contrast with existing landscape elements (i.e. in terms of form scale, mass, line, height, colour and texture). Full view of the proposed development	Most key features of view retained. Low degree of contrast with existing landscape elements (i.e. in terms of form scale, mass, line, height, colour and texture. Glimpse / no view of the proposed development.
	Geographical extent	Front on views. Near distance views; Change visible across a wide area.	Oblique views. Long distance views. Small portion of change visible.
	Duration and reversibility	Permanent. Long term (over 15 years).	Transient / temporary. Short Term (0-5 years).

Nature of Effects

[4] Best Practice Guide: Visual Simulations BPG 10.2, NZILA

In combination with assessing the level of effects, the landscape and visual effects assessment also considers the nature of effects in terms of whether this will be positive (beneficial) or negative (adverse) in the context within which it occurs. Neutral effects can also occur where landscape or visual change is benign.

It should also be noted that a change in a landscape does not, of itself, necessarily constitute an adverse landscape or visual effect. Landscape is dynamic and is constantly changing over time in both subtle and more dramatic transformational ways, these changes are both natural and human induced. What is important in managing landscape change is that adverse effects are avoided or sufficiently mitigated to ameliorate the effects of the change in land use. The aim is to provide a high amenity environment through appropriate design outcomes.

This assessment of the nature effects can be further guided by Table 3 set out below:

Nature of effect	Use and definition
Adverse (negative):	The proposed development would be out of scale with the landscape or at odds with the local pattern and landform which results in a reduction in landscape and / or visual amenity values
Neutral (benign):	The proposed development would complement (or blend in with) the scale, landform and pattern of the landscape maintaining existing landscape and / or visual amenity values
Beneficial (positive):	The proposed development would enhance the landscape and / or visual amenity through removal of restoration of existing degraded landscapes uses and / or addition of positive elements or features

Table 3: Determining the Nature of Effects

Cumulative Effects

During the scoping of an assessment, where appropriate, agreement should be reached with the relevant local authority as to the nature of cumulative effects to be assessed. This can include effects of the same type of development (e.g. wind farms) or the combined effect of all past, present and approved future development[5] of varying types, taking account of both the permitted baseline and receiving environment. Cumulative effects can also be positive, negative or benign.

Cumulative Landscape Effects

Cumulative landscape effects can include additional or combined changes in components of the landscape and changes in the overall landscape character. The extent within which cumulative landscape effects are assessed can cover the entire landscape character area within which the proposal is located, or alternatively, the zone of visual influence from which the proposal can be observed.

Cumulative Visual Effects

Cumulative visual effects can occur in combination (seen together in the same view), in succession (where the observer needs to turn their head) or sequentially (with a time lapse between instances where proposals are visible when moving through a landscape). Further visualisations may be required to indicate the change in view compared with the appearance of the project on its own.

Determining the nature and level of cumulative landscape and visual effects should adopt the same approach as the project assessment in describing both the nature of the viewing audience and magnitude of change leading to a final judgement. Mitigation may require broader consideration which may extend beyond the geographical extent of the project being assessed.

Determining the Overall Level of Effects

The landscape and visual effects assessment concludes with an overall assessment of the likely level of landscape and visual effects. This step also takes account of the nature of effects and the effectiveness of any proposed mitigation.

[5] The life of the statutory planning document or unimplemented resource consents

This step informs an overall judgement identifying what level of effects are likely to be generated as indicated in Table 4 below. This table which can be used to guide the level of landscape and visual effects uses an adapted seven-point scale derived from Te Tangi a te Manu (Aotearoa New Zealand Landscape Guidelines)

	Effect rating	Use and definition
More than minor	**Very high**	Total loss of key elements / features / characteristics, i.e. amounts to a complete change of landscape character
	High	Major modification or loss of most key elements / features / characteristics, i.e. little of the pre-development landscape character remains. Concise Oxford English Dictionary Definition High: adjective- Great in amount, value, size, or intensity
	Moderate to high	Modifications of several key elements / features / characteristics of the baseline, i.e. the pre-development landscape character remains evident but materially changed.
	Moderate	Partial loss of or modification to key elements / features / characteristics of the baseline, i.e. new elements may be prominent but not necessarily uncharacteristic within the receiving landscape. Concise Oxford English Dictionary Definition Moderate: adjective- average in amount, intensity, quality or degree
Minor	**Moderate to low**	Minor loss of or modification to one or more key elements / features / characteristics, i.e. new elements are not prominent or uncharacteristic within the receiving landscape.
	Low	No material loss of or modification to key elements / features / characteristics. i.e. modification or change is not uncharacteristic and absorbed within the receiving landscape. Concise Oxford English Dictionary Definition Low: adjective- 1. Below average in amount, extent, or intensity
Less than minor	**Very low**	Little or no loss of or modification to key elements/ features/ characteristics of the baseline, i.e. approximating a 'no change' situation.

Table 4: Determining the overall level of landscape and visual effects

Determination of "minor"

Decision makers determining whether a resource consent application should be notified must also assess whether the effect on a person is less than minor6[6] or an adverse effect on the environment is no more than minor[7]. Likewise, when assessing a non-complying activity, consent can only be granted if the s104D 'gateway test' is satisfied. This test requires the decision maker to be assured that the adverse effects of the activity on the environment will be 'minor' or not be contrary to the objectives and policies of the relevant planning documents.

These assessments will generally involve a broader consideration of the effects of the activity, beyond the landscape and visual effects. Through this broader consideration, guidance may be sought on whether the likely effects on the landscape resource or effects on a person are considered in relation to 'minor'. It must also be stressed that more than minor effects on individual elements or viewpoints does not necessarily equate to more than minor effects on the wider landscape resource. In relation to this assessment, moderate-low level effects would generally equate to 'minor'.

[6] RMA, Section 95E
[7] RMA Section 95D

Outlook

79 James Kemp Rd

From Gina Hook <gina@ngatirehia.co.nz>
Date Thu 10/10/2024 11:05 AM
To Andrew McPhee <andrew@bayplan.co.nz>

Kia ora Andrew,

Te Rūnanga o Ngāti Rēhia Trust acknowledges your ongoing efforts to engage with Ngāti Rēhia regarding the proposed subdivision of your property 79 James Kemp Road, Kerikeri.

We appreciate the open dialogue and the opportunity to participate in the process, which is essential to maintaining the integrity of our cultural and environmental values.

Following the site visit today on 10th October, conducted with yourself and representatives from Ngāti Rēhia, we are pleased to confirm Te Rūnanga o Ngāti Rēhia supports the proposed application to subdivide at the above-mentioned property.

We trust this confirmation will assist in the processing of your application with the council and look forward to working with you in the future.

Please feel free to reach out if further consultation is required.

As requested, please see below contact information for Whati

Whati Rameka
whati@ngatirehia.co.nz
021 076 9425

Nga mihi

Gina Hook
Taiao Coordinator | Te Whare Taiao o Ngāti Rēhia
Phone: (09) 401 6399 | Mobile: 022 406 0728
2 Aranga Rd, Kerikeri 0230 | PO Box 202, Kerikeri 0245
Te Rūnanga o Ngāti Rēhia Trust

NGĀTI RĒHIA

“Ngāti Rēhia mata mamoe, Ngāti Rēhia mata kakaa,
Titiro ki ngā maunga, ngā awa, ngā moana, ngā whenua tapu o Ngāti Rēhia”

Outlook

Six lot subdivision 79 Kemp Rd Kerikeri

From Andrew McPhee <andrew@bayplan.co.nz>
Date Tue 17/09/2024 1:49 PM
To taiao@ngatirehia.co.nz <taiao@ngatirehia.co.nz>

1 attachments (5 MB)
5042 002 Scheme colour.pdf;

Kia ora

My client is proposing a six lot subdivision at 79 Kemp Rd, Kerikeri. The site is zoned Rural Living.

The site sits outside the heritage area (Kerikeri visual buffer) identified in the Operative District Plan, but is identified in the Proposed District Plan (PDP) Kerikeri Heritage Overlay: Part B. Heritage Area Overlays have immediate legal effect and relevant to this application is SUB-13 - Subdivision of a site within a heritage area overlay (Restricted Discretionary activity). Matters of discretion include any consultation with tangata whenua.

The overview in the PDP states that Kerikeri Heritage Area: Part B *"Covers the archaeologically sensitive slopes surrounding Kororipo Pā and the Church Missionary Settlement (CMS). The north and east ridge*

line also provide the sight lines from Kororipo Pā. There still remains a legacy of early horticultural subdivision pattern which supports the identity of Kerikeri, predominantly located along the Kerikeri Inlet Road ridgeline. "

The proposed subdivision is located in a large lot residential environment devoid of horticultural activities. It is commensurate with the land use pattern in this locale and the density of housing found in the immediate surrounds.

I have attached a copy of the proposed scheme plan for you to consider.

I would appreciate any feedback or comment you have on this application for the purposes of consultation with tangata whenua.

I look forward to hearing from you.

Ngā mihi

Andrew McPhee (BPlan Hons)
Director | Consultant Planner
Bay of Islands Planning (2022) Ltd

021784331

andrew@bayplan.co.nz

https://www.bayplan.co.nz
Kerikeri House, Suite 3 88 Kerikeri Road, Kerikeri, 0295

Outlook

Re: Six lot subdivision 79 Kemp Rd Kerikeri

From Andrew McPhee <andrew@bayplan.co.nz>
Date Fri 27/09/2024 2:41 PM
To Bill Edwards <BEdwards@heritage.org.nz>
Cc James Robinson <jrobinson@heritage.org.nz>; Mike Butler <MButler@heritage.org.nz>

Thanks Bill, have a great weekend.

Kind regards
Andrew

From: Bill Edwards <BEdwards@heritage.org.nz>
Sent: Friday, 27 September 2024 2:18 pm
To: Andrew McPhee <andrew@bayplan.co.nz>
Cc: James Robinson <jrobinson@heritage.org.nz>; Mike Butler <MButler@heritage.org.nz>
Subject: RE: Six lot subdivision 79 Kemp Rd Kerikeri

Thanks Andrew

My mistake I should have picked up on that especially as my home is 78 Kemp Road! I do not foresee any visual amenity issues with kororipo because of this subdivision. . I note that you are undertaking discussions with Ngati Rehia about a planting plan.

Nga mihi

Bill

Bill Edwards Area Manager, Northland| Heritage New Zealand Pouhere Taonga |Northland Area Office, 21 Hobson Ave, PO Box 836 Kerikeri 0245, New Zealand | Ph: (64 09) 407 0470| DDI: (64 09) 407 0471| Visit www.heritage.org.nz and learn more about New Zealand's heritage places

Tairangahia a tua whakarere; Tatakihia nga reanga o amuri ake nei- Honouring the past; Inspiring the future

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From: Andrew McPhee <andrew@bayplan.co.nz>
Sent: Friday, September 27, 2024 12:01 PM
To: Bill Edwards <BEdwards@heritage.org.nz>
Cc: James Robinson <jrobinson@heritage.org.nz>; Mike Butler <MButler@heritage.org.nz>
Subject: Re: Six lot subdivision 79 Kemp Rd Kerikeri

Hi Bill

Thank you for the response and feedback.

I note that the site doesn't have river frontage and was subject to a subdivision a few years ago to create three lots. The site subject to this application is Lot 1 DP 594558.

The applicant will be preparing a planting/landscape plan as part of the application, and I am meeting with a representative of Ngati Rehia in a couple of weeks to get their feedback.

Kind regards
Andrew

From: Bill Edwards <BEdwards@heritage.org.nz>
Sent: Friday, 27 September 2024 11:49 am
To: Andrew McPhee <andrew@bayplan.co.nz>
Cc: James Robinson <jrobinson@heritage.org.nz>; Mike Butler <MButler@heritage.org.nz>
Subject: RE: Six lot subdivision 79 Kemp Rd Kerikeri

Kia ora Andrew

Thank you for the email. I know the piece of land well as I live nearby. The land at present has a shelter belt around it and I do not think it is visible form the Kororipo Basin. However, some of the land fronts the Kerikeri river and so the river entrance to the Kororipo area is important and may be subject to cultural tourism by waka in the near future. May I suggest that buildings on the river frontage that the view shafts be softened by plantings preferably native along the river frontage of the property.

Nga mihi

Bill Edwards Area Manager, Northland| Heritage New Zealand Pouhere Taonga |Northland Area Office, 21 Hobson Ave, PO Box 836 Kerikeri 0245, New Zealand | Ph: (64 09) 407 0470| DDI: (64 09) 407 0471| Visit www.heritage.org.nz and learn more about New Zealand's heritage places

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From: Andrew McPhee <andrew@bayplan.co.nz>
Sent: Wednesday, September 25, 2024 3:25 PM
To: Bill Edwards <BEdwards@heritage.org.nz>
Subject: Fw: Six lot subdivision 79 Kemp Rd Kerikeri

Hi Bill

Me again!

I am looking to get feedback on the application below, as it is now considered to be within the Kerikeri Heritage Area Part B within the Proposed Far North District Plan, which have immediate legal effect.

Are you able to assist or send me in the direction of someone who can please.

I look forward to hearing from you.

Kind regards
Andrew

From: Andrew McPhee <andrew@bayplan.co.nz>
Sent: Tuesday, 17 September 2024 1:44 pm
To: infonorthland@heritage.org.nz <infonorthland@heritage.org.nz>
Subject: Six lot subdivision 79 Kemp Rd Kerikeri

Hi there

My client is proposing a six lot subdivision at 79 Kemp Rd, Kerikeri. The site is zoned Rural Living.

The site sits outside the heritage area (Kerikeri visual buffer) identified in the Operative District Plan, but is identified in the Proposed District Plan (PDP) Kerikeri Heritage Overlay: Part B. Heritage Area Overlays have immediate legal effect and relevant to this application is SUB-13 - Subdivision of a site within a heritage area overlay (Restricted Discretionary activity). Matters of discretion include any consultation with Heritage New Zealand Pouhere Taonga.

The overview in the PDP states that Kerikeri Heritage Area: Part B *"Covers the archaeologically sensitive slopes surrounding Kororipo Pā and the Church Missionary Settlement (CMS). The north and east ridge line also provide the sight lines from Kororipo Pā. There still remains a legacy of early horticultural subdivision pattern which supports the identity of Kerikeri, predominantly located along the Kerikeri Inlet Road ridgeline. "*

The proposed subdivision is located in a large lot residential environment devoid of horticultural activities. It is commensurate with the land use pattern in this locale and the density of housing found in the immediate surrounds.

I have attached a copy of the proposed scheme plan for you to consider.

I would appreciate any feedback or comment you have on this application for the purposes of consultation with Heritage New Zealand.

I look forward to hearing from you.

Kind regards

Andrew McPhee (BPlan Hons)
Director | Consultant Planner
Bay of Islands Planning (2022) Ltd

021784331

andrew@bayplan.co.nz

https://www.bayplan.co.nz
Kerikeri House, Suite 3 88 Kerikeri
Road, Kerikeri, 0295

Outlook

RE: Six lot subdivision 79 Kemp Rd Kerikeri CRM:0592072

From Lara McDonald <lmcdonald@doc.govt.nz>
Date Wed 25/09/2024 3:04 PM
To Andrew McPhee <andrew@bayplan.co.nz>

You don't often get email from lmcdonald@doc.govt.nz. Learn why this is important

Hi Andrew,

DOC is aware of significant archaeology in this area. Specifically Archaeological site P05/452.

It will be necessary to consult with Te Runanga O Ngati Rehia and Heritage NZ for their feedback on your proposal as this is an area of significant cultural heritage.

Thank you
Lara McDonald
Senior Ranger, Community
0272099197

---------- Original Message ----------
From: Andrew McPhee <andrew@bayplan.co.nz>;
Received: Tue Sep 17 2024 13:47:06 GMT+1200 (New Zealand Standard Time)
To: DOC CSC <info@doc.govt.nz>; Customer Service Centre <info@doc.govt.nz>;
Subject: Six lot subdivision 79 Kemp Rd Kerikeri

You don't often get email from andrew@bayplan.co.nz. Learn why this is important

Hi there

My client is proposing a six lot subdivision at 79 Kemp Rd, Kerikeri. The site is zoned Rural Living.

The site sits outside the heritage area (Kerikeri visual buffer) identified in the Operative District Plan, but is identified in the Proposed District Plan (PDP) Kerikeri Heritage Overlay: Part B. Heritage Area Overlays have immediate legal effect and relevant to this application is SUB-13 - Subdivision of a site within a heritage area overlay (Restricted Discretionary activity). Matters of discretion include any consultation with The Department of Conservation.

The overview in the PDP states that Kerikeri Heritage Area: Part B *"Covers the archaeologically sensitive slopes surrounding Kororipo Pā and the Church Missionary Settlement (CMS). The north and east ridge line also provide the sight lines from Kororipo Pā. There still remains a legacy of early horticultural subdivision pattern which supports the identity of Kerikeri, predominantly located along the Kerikeri Inlet Road ridgeline. "*

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I would appreciate any feedback or comment you have on this application for the purposes of consultation with The Department of Conservation.

I look forward to hearing from you.

Kind regards

Andrew McPhee (BPlan Hons)

Director | Consultant Planner

Bay of Islands Planning (2022) Ltd

021784331

andrew@bayplan.co.nz

https://www.bayplan.co.nz

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PH +64 (0)9 401 5440
FAX +64 (0)9 407 0611
www.topenergy.co.nz

9 October 2024

Andrew McPhee
Bay of Islands Planning (2022) Ltd

Email: andrew@bayplan.co.nz

To Whom It May Concern:

RE: PROPOSED SUBDIVISION
Shearwater Investments Ltd – 1a James Kemp Place, Kerikeri. Lot 1 DP 594558.

Thank you for your recent correspondence with attached proposed subdivision scheme plans.

Top Energy's requirement for this subdivision is nil.
Top Energy can advise that electricity infrastructure has been recently installed to allow for new connections for proposed Lots 1-6.

In order to get a letter from Top Energy upon completion of your subdivision, a copy of the resource consent decision must be provided.

Yours sincerely

Aaron Birt
Planning and Design
T: 09 407 0685
E: aaron.birt@topenergy.co.nz

Chorus New Zealand Limited

04 October 2024

Chorus reference: 11008713

Attention: Steven Sanson

Quote: New property development early design only

6 connections at Lot: 1, Deposited Plan: 594558, North Auckland

Your project reference: N/A

Thank you for your enquiry about having Chorus network designed for the above development. Chorus is pleased to advise that, as at the date of this letter, we are able to provide an early design for this property development based upon the information that has been provided.

The total contribution we would require from you is **$575.00 (including GST)**. This quote is valid for 90 days from 04 October 2024. This quote is conditional on you accepting a NPD Early Design Contract with us and making payment. We reserve the right to withdraw this quote and requote should we become aware of additional information that would impact the scope of this quotation.

This quote is only for the service of high-level design work and does not constitute any commitment by either party to reticulate fibre network to the site. When the development is ready for fibre network reticulation to every connection, a new request will be required, and standard pricing will apply at that time. For more information on what's involved in getting your development connected, visit our website www.chorus.co.nz/develop-with-chorus.

Kind Regards

Chorus New Property Development Team