

Started on 3 December 2025 at 10:09am | Completed on 3 December 2025 at 10:27am

Form 6

Further submission in support of, or in opposition to, submission/s on the notified Proposed Kaipara District Plan

Clause 8 of Schedule 1, Resource Management Act 1991

This is a further submission that is either **in support of** or **in opposition to** a submission already received by Kaipara District Council on all topics except for the topic of Light in the Proposed Kaipara District Plan.

No new submission points can be made.

The topic of Light was notified for further submissions on 21 October 2025 prior to all other topics due to the hearing for Light being confirmed for December 2025.

- This Form 6 is available for further submissions on all Proposed Kaipara District Plan topics except for Light. The topic of Light was notified for Further Submissions between 21 October 2025 and 4 November 2025 as a hearing for this topic is being held in December 2025.
- **PRIVACY ACT NOTE:** Please note that all information provided in your further submission is considered public under the Local Government Official Information and Meetings Act 1987 and may be published to progress the process for the Proposed Kaipara District Plan and may be made publicly available.
- I understand that information provided in my submission may be published. *
1A
 - Yes
 - No

- **Use this page to provide your contact details and indicate your preferences regarding hearings.**

- Please provide your details: *

2A

**Your
initial/s
and last
name**

S Allsop

**Your
postal
address
(including
Post
Code)**

3 A Ripiro Drive

**Contact
phone
number**

0272554805

- Enter your email address:

2B

sara.allsop@xtra.co.nz

- Do you have an agent who is acting on your behalf?

2C

- Yes
 No

- We prefer to contact you by email, as it's faster and more reliable than post.
2E However, we're happy to use whichever method suits you best — please select your preferred contact method below: *

- Email
 Postal

- I am (select one of the following options): *

2G

- a person representing a relevant aspect of the public interest
 a person who has an interest in the proposal that is greater than the interest the general public has
 the local authority for the relevant area

- You must specify the grounds for saying that you come within this category (see 2H examples below if you need assistance): *

Any person that has an interest in the proposed policy statement or plan greater than the interest that the general public has is likely to include owners of land and users of resources directly

affected by plan provisions. It is also likely to include iwi and hapu where their interests are directly affected

- *For example: Any person representing a relevant aspect of the public interest would likely include public interest environmental groups*

OR

Any person that has an interest in the proposed policy statement or plan greater than the interest that the general public has is likely to include owners of land and users of resources directly affected by plan provisions. It is also likely to include iwi and hapu where their interests are directly affected

- I wish to be heard in support of my further submission *
2I
 - Yes
 - No
- If others make a similar further submission, I will consider presenting a joint case
2J with them at the hearing *
 - Yes
 - No
- Council planners have summarised all original submissions and each original submission has a unique reference number, listed below in the Summary of Submissions link below - original submitters may have lodged more than one submission - ensure you carefully enter the correct submission details when you get to the Submission questions!.
 - See all of the summarised original submissions here: [Summary of Submissions](#)
 - You can access the entire list of Original Submissions here: [Original Submissions](#)
 - Original submitter contact details can be found here: [Submitter Contact Details](#)

All of the above documents will open in a new window on your computer, you can also download and save them all if you wish.

- **Instructions:**

1. Enter the **Original Submitter's Name** and the **Submission Point Number** you are further submitting on.
Ensure accuracy—incorrect details may result in your submission being rejected.
2. After completing questions 3B–3E, you can add up to **19 more further submissions** on this form.
3. If you need to make more than 20 further submissions, **start a new form.**

- Enter the name of the person or organisation who made the original submission
3A that you are further submitting on: *

Sara Allsop

- Enter the exact submission point number that you are further submitting on
3B (incorrect numbers may cause your submission to be rejected):

FS15.1

9

- I support/oppose (tick applicable) the original submission of the submitter: *
3C
 - I support this original submission point of the submitter named above
 - I oppose this original submission point of the submitter named above

- **Clearly explain below why you support or oppose the original submission point:**

1. Keep your explanation **brief** and ensure you give clear reasons for why you are supporting or opposing the original submission.
2. If you would like to upload any documentation to support your submission - you can do this in the next question.
3. **Important:** Do **not** introduce new submission points - only enter your reasons for supporting or opposing the original submission point.

- The reasons for my support/opposition are: *
3D

I write to formally lodge my objection to the proposed rezoning and subdivision plans at Baylys Beach, including the Diamond Brothers' development proposal. My property is directly affected by this rezoning, and the adverse effects—particularly in relation to stormwater, environmental risk, and infrastructure pressure—raise significant concerns under the Resource Management Act 1991 (RMA).

1. Existing Stormwater Issues Already Acknowledged by Council
Kaipara District Council's own documentation relating to my property explicitly identifies stormwater constraints and notes development limitations due to water-management issues. These are not hypothetical or minor concerns; they are long-standing, significant, and well-recorded within Council files.

For more than 21 years, I have witnessed a substantial increase in stormwater volume from the neighbouring farmland onto our property, consistent with changing weather patterns and increasingly severe rainfall events. These issues are already placing undue stress on the surrounding environment, land stability, and drainage systems.

2. Rezoning Conflicts With RMA Statutory Duties

Under the RMA Sections 5, 6, and 7, the Council is legally obliged to:

Section 5: Promote the sustainable management of natural and physical resources and ensure that the environment is safeguarded for future generations.

Section 6: Recognise and provide for the protection of natural features, the coastal environment, and at-risk landforms.

Section 7: Have particular regard to the efficient use of resources, the maintenance and enhancement of environmental quality, and the effects of climate change.

The proposed rezoning, in its current state, is incompatible with these obligations. Increasing housing density in an area with known stormwater instability and documented environmental risk fails to safeguard existing communities and directly contradicts the requirement to avoid, remedy, or mitigate adverse environmental effects.

3. Failure to Address Climate-Related Risk

The RMA requires Councils to consider and respond to the effects of climate change (Section 7(i)). Stormwater volumes in our area have already intensified over the past two decades, and all evidence indicates that these pressures will continue to escalate.

While other councils across New Zealand are proactively restricting developments that worsen climate-related impacts—particularly runoff, flooding, and risks to the coastal environment—Kaipara District Council appears to be pursuing a plan that increases those risks. This is inconsistent with responsible and climate-resilient planning expectations.

4. Foreseeable and Significant Adverse Effects

Approving the rezoning and allowing housing development above or surrounding my property will:

- Exacerbate stormwater flows onto already vulnerable land
- Increase infrastructure stress and potential for system failure
- Heighten risk to downstream and coastal properties
- Create foreseeable environmental and property damage
- Contravene the Council's own planning records and identified constraints

Given these clear, predictable impacts, proceeding with the proposal would represent a failure to appropriately consider adverse environmental effects as required under Sections 5–8 of the RMA.

5. Council Accountability

Should the rezoning be approved and additional environmental stress result—as is highly foreseeable—I and other affected property owners will hold the Council accountable for any subsequent damage or loss. The Council has prior knowledge of stormwater risks in this area and cannot reasonably claim that the consequences were unforeseen.

6. Request

For the reasons above, I strongly urge the Council to reconsider

and decline the Baylys Beach rezoning proposal in its current form.

- Do you have any attachments that relate directly to your Further Submission that you would like to upload? *
3E
 - Yes
 - No

- Upload the file/s you wish to attach here:
3F
 - [COuncil Ripiro Property.jpg](#)
 - [3 ripiro drive lim copy.pdf](#)

- Do you have another further submission to make? *
3G
 - Yes
 - No

• Thank You for Your Submission

This is confirmation that your further submission has been successfully received and it will be forwarded to the District Planning Team for analysis. If there are any queries on your further submission, we will contact you either via email or telephone.

Next Steps (Legal Requirement)

- You must serve a copy of your further submission on the original submitter within 5 working days of submitting it to the Council.
- This is your responsibility.
- Download contact details of original submitters here: [Submitter Contact List](#)

Additional Information:

- If you submitted electronically, **no signature is required**.
- A copy of your submission will be emailed to you shortly.
 - If you don't receive it within a few minutes, check your **spam/junk/updates folders**.
- If you nominated an agent for correspondence, they will also receive a copy.

Land Information Memorandum

Application

Sara Allsop 24 Aliford Avenue Ellerslie Auckland 1061	No. L160536 Application date 31/10/16 Issue date 14/11/16 Phone 027 255 4805 Fax
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Please Note: This LIM report contains information for the entire legal description below

Property

Valuation No.	0104016612
Location	3 Ripiro Drive, Baylys Beach
Legal Description	LOT 2 DP 400247
Owner	Martinovich Theresa Marie
Area (hectares)	1.9363

Rates

Government Valuation	
Land	\$340,000
Capital Value	\$345,000
Improvements	\$5,000
Current Rates Year 2016 to 2017	
Annual Rates	\$2,679.63
Current Instalment	\$ 669.91
Current Year - Outstanding Rates	\$ 669.91
Arrears for Previous Years	\$ 0.00
Next Instalment Due	1/01/17
<p>Note: Rates are charged in four instalments for the period commencing 1 July and ending 30 June each year.</p> <p>Please refer to the Kaipara District Council Long Term Plan 2015/2025 and to the Kaipara District Council Development Contribution Policy 2015 which can be found at the Council website www.kaipara.govt.nz.</p>	

Planning/Resource Management

Zoning:	Kaipara District Plan 2013: Residential - West Coast Overlay. See attached information regarding the District Plan.
Full details of the zone requirements are found in the current District Plan. Relevant zone ordinance can be found at the Council website	
31/03/11	RESOURCE CONSENT 110012 : Proposed extension of time for RM050068 Decision Notified 10/03/11 : GRANTED UNDER DELEGATED AUTHORITY 10/03/11
24/08/07	RESOURCE CONSENT 070079A : Variation to RM070079. stage 1 created DP 400247. Section 224 Issued 12/06/09 : GRANTED UNDER DELEGATED AUTHORITY 3/08/07

Consent Notices for Lots 1 - 8 drawing attention to the Site Suitability Report by Steve Gibson, Northern Civil Consulting Engineers Ltd, dated May 2005 and require compliance with the recommendations of the report. Requiring that wastewater treatment and disposal systems be the subject of specific engineering design by a suitably qualified competent Engineer to the approval of the Council. The site is located within the likely Drainage District for the community sewerage system to service Baylys Beach. As such, it is likely that the individual lots of the subdivision will be required to connect to this system when it is available and comply with all of the Council's requirements relating to such connection.

Consent Notices for all lots setting out the nature of the restrictive covenants recommended by the Stormwater Management Report as applicable to the areas of land subject to the restrictive covenants. Requiring the construction of stormwater detention devices at the time of residential development. Such devices shall be specifically designed by an appropriately qualified competent engineer to the approval of the Council to ensure that the peak stormwater runoff from each lot will be no greater than that which would have occurred prior to development. All concentrated sources of stormwater be directed to the stormwater detention devices. Requiring ongoing maintenance of the stormwater detention devices. Requiring overflows from the stormwater detention devices. Each allotment owner be a shareholder or member of the entity formed to own, operate, maintain and administer all matters associated with the communal stormwater system.

- 24/05/07 RESOURCE CONSENT 070079 : Variation To RM050068 to Allow for a Staged Development Decision Notified 3/05/07 : GRANTED UNDER DELEGATED AUTHORITY 3/05/07
- 29/05/06 RESOURCE CONSENT 050068 : Proposed subdivision of Pt Lot 3 DP 66113 into eight lots Decision Notified 8/05/06 : GRANTED UNDER DELEGATED AUTHORITY 2/11/05
- RESOURCE CONSENT 950476 : SUBDIVISION INTO 5 LOTS Decision Notified 31/01/84 : APPROVED BY COUNCIL 27/01/84
- RESOURCE CONSENT 950739 : SUBDIVISION INTO 24 LOTS Consent Effective 00 : APPROVED IN PRINCIPLE 20/12/63

No other information located.

Building

No information located.

Sewer and Water

Sewer Not available

Stormwater No information located.

Water Water is metered.
A/c: 012017
Balance Owing: \$0.00
Prev Year Billed: \$90.70
Prev Year Consumed:0

No other information located.

Land and Building Classifications

No information located.

Refer to copy of map from District Plan for other classifications in the immediate vicinity.

Compliance with Swimming Pool Bylaw

No pool registered to this property.

Land Transport Requirements

No information located.

Special Land Features

Baylys Beach Stormwater Management Plan copy attached. Overland Flowpath and possible detention pond.

No information located.

Licences/Environmental Health

No information located.

Network Utility Operators

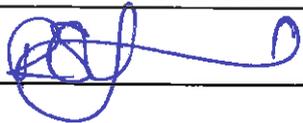
Information related to the availability of supply, authorisations etc (eg, electricity or gas) can be obtained from the relevant Network Utility Operator.

Other Information

No title search has been done on this property.

Notes

1. Final inspections on buildings were not mandatory prior to 1 January 1993. Should an evaluation of the building be required an independent qualified person should be consulted. In the interests of safety, an inspection of any fireplace within the dwelling may be requested of Council at any time, after paying the appropriate fee.
2. Every care has been taken to ensure that the information supplied by the Council on this form is accurate. The Council relies on information available to it, and will not be held responsible for incomplete or inaccurate information provided, or for any errors or omissions made in good faith.
3. Please note that the property was neither inspected nor visited in the course of the preparation of this Land Information Memorandum.
4. Other information may be held by other authorities, for example the Northland Regional Council or Heritage New Zealand.
5. This Land Information Memorandum is a disclosure of information (which may be historical) held by the Council at the time of application and is subject to change.
6. Any enquiry not accompanied by a fee will be invoiced separately. (All prices are GST inclusive.)
7. Any Resource or Building consents run with the land; if the project is incomplete, there may be existing/additional charges to pay for which the new owner will be liable.
8. A Development Contribution and or Financial Contribution may be payable if development is carried out, the effect of which is to require new or additional assets or assets of increased capacity and as a consequence Council incurs capital expenditure to provide appropriately for those assets and that capital expenditure is not otherwise funded or provided for. Future rating policies are outlined in Council's Long Term Plan 2015-2025.

Name: 

Date: 14/11/16 

Performance Standards of the Kaipara District Plan 2013

To view the performance standards (rules) for each zone please refer to the relevant chapter of the Kaipara District Plan 2013:

Rural - Chapter 12

Residential - Chapter 13

Business: Commercial and Industrial - Chapter 14

Maori Purposes: Maori Land – Chapter 15A

Maori Purposes: Treaty Settlement Land – Chapter 15B

Estuary Estates – Chapter 16

All Zones - Chapter 10 Network Utilities and Chapter 11 Transport Network

How can I view the Kaipara District Plan 2013?

If you have access to the internet and want access to the most up to date information, visit the website

www.kaipara.govt.nz

If you do not have access to a computer you can visit one of the following locations to view a hard copy of the Plan:

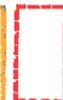
Venue	Opening Hours	
Kaipara District Council Office - Dargaville 42 Hokianga Road Dargaville Telephone (09) 439 7059	Monday - Friday	8.00am to 4.30pm
Kaipara District Council Office - Mangawhai Unit 5, The Hub 6 Molesworth Drive Telephone (09) 431 3161	Monday - Friday	8.30am to 4.30pm
Kaiwaka Library Corner State Highway 1 and Kaiwaka Mangawhai Road Kaiwaka Telephone: (09) 431 2539	Monday Wednesday - Saturday	4.00pm to 6.00pm 10.00am to 2:00pm
Maungaturoto Library Centennial Building Hurdall Street Maungaturoto Telephone: (09) 431 8811	Monday, Tuesday Wednesday Thursday Friday Saturday	10.30am to 1.00pm 10.30am to 12 noon 10.30am to 1.00pm 10.30am to 4.00pm 10.00am to 1.00pm
Paparoa Library Brook House State Highway 12 Paparoa Telephone: (09) 431 7555	Monday Wednesday Thursday Friday Saturday Market Days	1.30pm to 4.30pm 10.00am to 12 noon 1.30pm to 4.00pm 9.30am to 1.00pm 9.30am to 1.00pm
Ruawai Library Ruawai College State Highway 12 Ruawai Telephone: (09) 439 2216	Monday to Friday	9.00am to 2.30pm
Dargaville Library Corner Poto and Normanby Streets Dargaville Telephone: (09) 439 3150	Monday to Friday Saturday Sunday	9.00am to 5.00pm 9.30am to 12.30pm Closed

Map Series One - Land Use Legend

	State Highway
	Railway
	Bridge or Causeway
	Unimproved Road
	Cadastral Parcel Boundary
	Sea, Lakes and Rivers
Zones	
Each Zone has a Chapter in the Plan	
	Rural (Chapter 12)
	Business: Commercial (Chapter 14)
	Business: Industrial (Chapter 14)
	Residential (Chapter 13)
	Maori Purpose: Maori Land (Chapter 13A)
	Maori Purpose: Treaty Settlement Land (Chapter 13B)
	Estuary Estates (Chapter 16)

KAIAPARA DISTRICT PLAN / OPERATIVE VERSION - NOVEMBER 2013

Map Series Two - Sites, Features and Units Legend

	State Highway
	Railway
	Bridge or Causeway
	Cadastral Parcel Boundary
	Sea, Lakes and Rivers
	Heritage Resource (Chapter 17)
	Notable Tree (Chapter 19)
	Areas of Significance to Maori (Chapter 17)
	Reserve Management Units (Chapter 20)
	Designation Areas (Chapter 21)
	Outstanding Natural Landscapes
	Maungaturoto Dairy Factory Noise Contour Boundary (45dB(A) eq)
	50 KV Electricity Transmission Line
	110 KV and 220 KV Electricity Transmission Line (Chapter 10)
	Natural Gas Pipeline (Chapters 10 & 21)
	Petroleum Gas Pipeline
	Maungaturoto Dairy Factory Wastewater Pipeline



Scale: 1: 5,000 @ A3
 Contains Crown Copyright Data, Crown Copyright Reserves.
 Tasmanian New Zealand makes no representation about the suitability of any
 property rights in this Database layer and the data in it being suitable only to
 Transparenc. While all reasonable efforts have been made to ensure that up-to-date
 information is provided, the Corporation does not accept any responsibility for any errors, omissions or inaccuracies in the above.

KAIPARA DISTRICT LOCAL GOVERNMENT INFORMATION OFFICE
Map Series Two
 Sites, Features and Units : Baylys

Map 33 of 60



Information and Rates for Current Rating Year - 2016/17

Valuation No 0104016612

Property Description

Location: 3 Ripiro Drive, Bayllys Beach
 Legal Description: LOT 2 DP 400247
 Certificate of Title 399564
 Service Flags Water-Meter
 Use 29 Lifestyle: Vacant
 TORAS 111000
 Tenure Property is not leased. Owner is also occupier.
 Ownership Private: Individual
 Rateability Rateable
 Apportionment Std property - Not Applicable, Not apportionment

Category LV
 Category Group Lifestyle Vacant or Unimproved
 Ward 3
 Region 1
 Zone 9A

Valuations

Area (Hectares)	1.9363	Land Value	340,000
Improvements	5,000	Capital Value	345,000
Nature of Improvements	FG OI		
Valuation Date	1/09/14		

RATES for Current Year - 2016/17
 (Next Year - 2017/18)

Code	Description (Basis)	Factor	Estimated Amt
002	Uniform Annual General Charge (U)	1.00	708.00
003	NRC Targeted Land Management (L)	340000.00	135.59
006	Bayllys Stormwater (L)	340000.00	603.50
013	NRC Services/Recreational/ - Emergency (U)	1.00	143.57
030	NRC Infrastructure Rate (L)	340000.00	12.61
045	Dargaville Water - Connectable (U)	1.00	62.82
230	General Rate Residential - & small sized lifestyle (L)	340000.00	1,013.54
Total Rates Levied			\$ 2,679.63
Rates Last Year			2,702.90
Instalments YTD			1,339.82
Current Instalment			669.91

History

Year	Land Value	Capital Value	Annual Rates
2015/16	340,000	345,000	2,702.90
2014/15	380,000	385,000	2,848.61
2013/14	380,000	385,000	2,841.07
2012/13	380,000	385,000	3,035.55
2011/12	545,000	550,000	2,214.90
2010/11	545,000	550,000	2,031.50
2009/10	1,025,000	1,375,000	3,340.60
2008/09	780,000	1,100,000	3,296.20
2007/08	780,000	1,100,000	3,191.40
2006/07	780,000	1,100,000	2,990.70

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Digital Title Plan - LT 400247

Survey Number LT 400247
Surveyor Reference 259 GIBBONS MARTINOVICH
Surveyor Shane Michael Stratton
Survey Firm Stratton Bentley Surveyors Ltd (Kamo)
Surveyor Declaration

Survey Details

Dataset Description LOTS 1 AND 2 BEING A SUBDIVISION OF PART LOT 63 DP 66113
Status Initiated
Land District North Auckland
Submitted Date
Survey Class Class II Cadastral Survey
Survey Approval Date
Deposit Date

Territorial Authorities

Kaipara District

Comprised In

CT NA42A/855

Created Parcels

Parcels	Parcel Intent	Area	CT Reference
Lot 1 Deposited Plan 400247	Fee Simple Title	1.3846 Ha	399563
Lot 2 Deposited Plan 400247	Fee Simple Title	1.9363 Ha	399564
Marked A Deposited Plan 400247	Easement		
Marked B Deposited Plan 400247	Easement		
Marked C Deposited Plan 400247	Easement		
Marked D Deposited Plan 400247	Easement		
Total Area		3.3209 Ha	

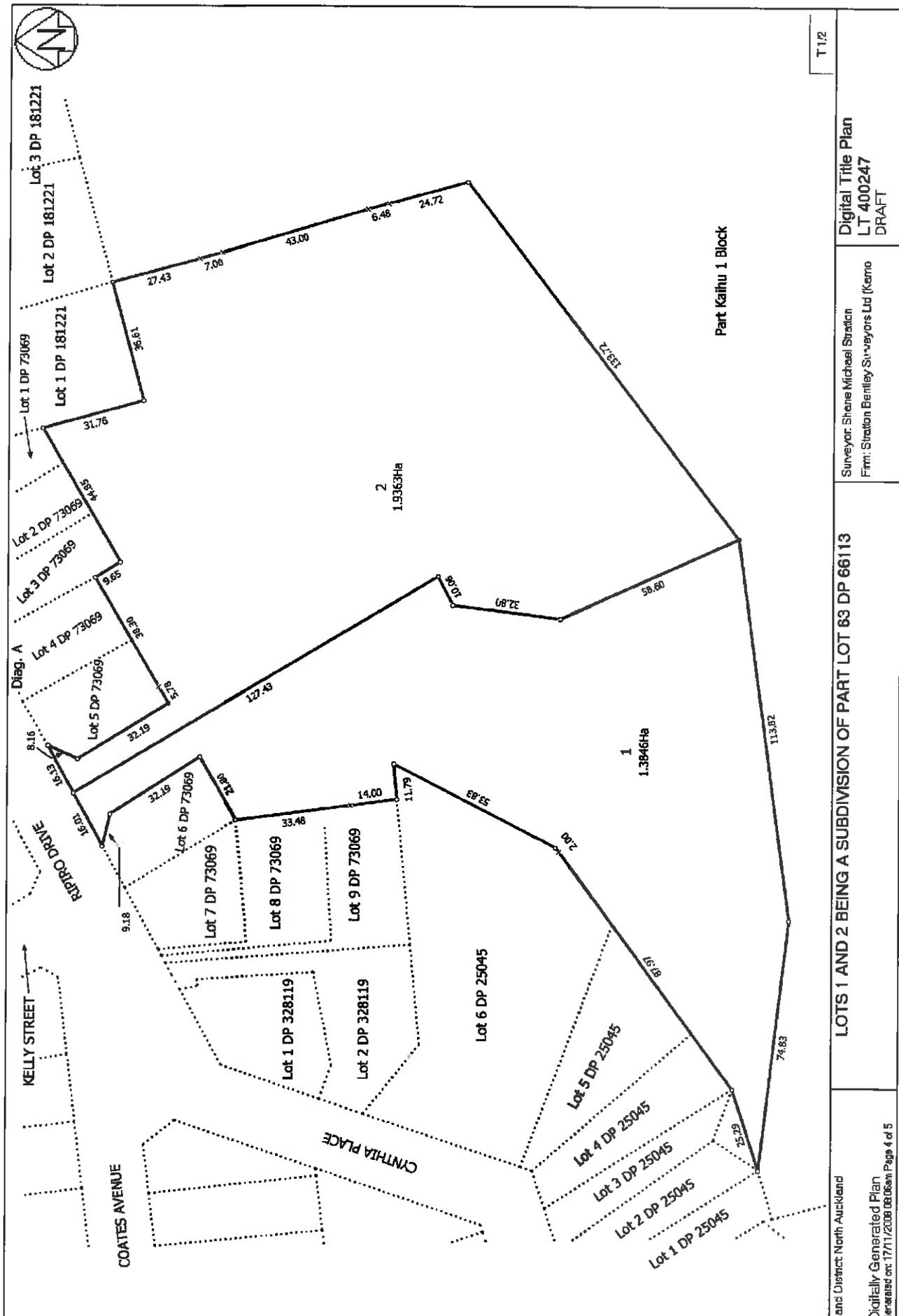
Memorandum of Easements In Gross			
Purpose	Shown	Servient Tenement	Grantee
Right to Drain Stormwater	A & C	Lot 2 Hereon	Kaipara District Council
	B & D	Lot 1 Hereon	

Schedule / Memorandum

Plan Number

DP 400247

Memorandum of Easements (Pursuant to s243 Resource Management Act 1991)			
Purpose	Shown	Servient Tenement	Dominant Tenement
RIGHT OF WAY. RIGHT TO TRANSMIT ELECTRICITY. RIGHT TO TRANSMIT TELECOMMUNICATIONS AND COMPUTER MEDIA. RIGHT TO DRAIN STORMWATER. RIGHT TO DRAIN SEWERAGE. RIGHT TO CONVEY WATER.	A	LOT 2 HEREON	LOT 1 HEREON
	B	LOT 1 HEREON	LOT 2 HEREON



T 1/2

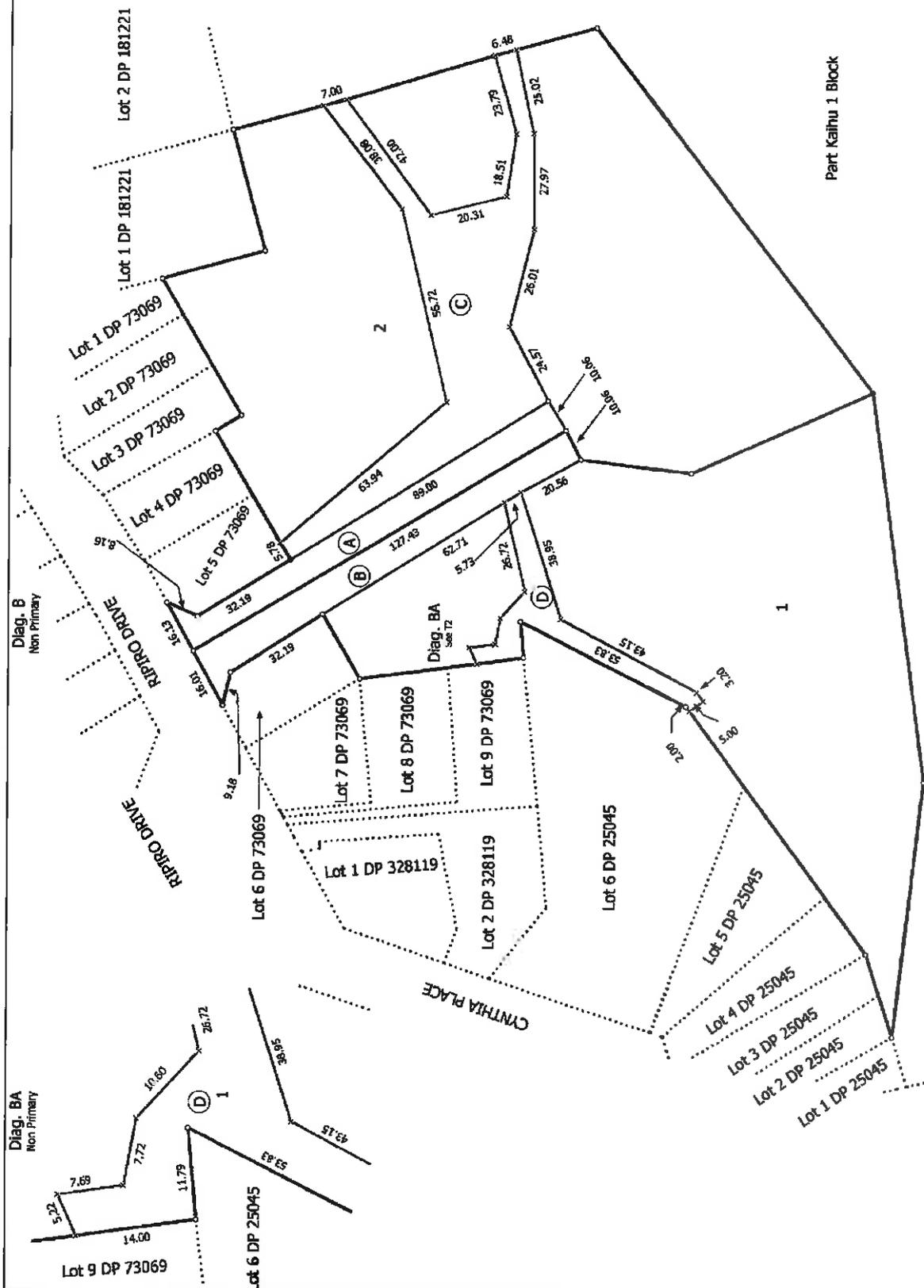
Digital Title Plan
LT 400247
DRAFT

Surveyor: Shane Michael Stratton
Firm: Stratton Bentley Surveyors Ltd (Kamo)

LOTS 1 AND 2 BEING A SUBDIVISION OF PART LOT 63 DP 66113

Land District: North Auckland
Digitally Generated Plan
Generated on: 17/11/2009 08:05am Page 4 of 5





T 22

Digital Title Plan
 LT 400247
 DRAFT

Surveyor: Shere Michael Stratton
 Firm: Stratton Bentley Surveyors Ltd (Kamo)

LOTS 1 AND 2 BEING A SUBDIVISION OF PART LOT 63 DP 66113

Land District: North Auckland
 Digitally Generated Plan
 Generated on: 17/11/2008 00:05am Page 5 of 5

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

CON19.SEC 221 CONSENT NOTICE KDC

IN THE MATTER of the Resource Management Act 1991
("the Act")

AND

IN THE MATTER of a subdivision consent as evidenced
by Land Transfer Plan No. 400247

AND

IN THE MATTER of a Consent Notice issued pursuant to
Section 221 of the Act by THE KAIPARA
DISTRICT COUNCIL ("the Council")

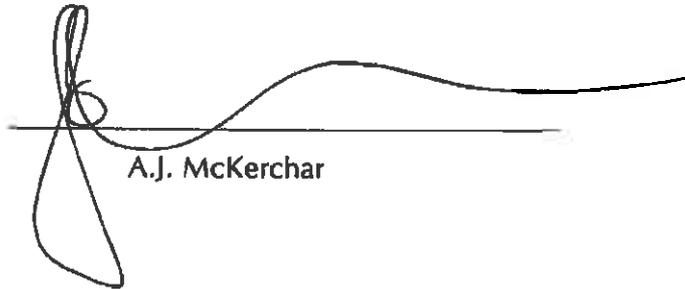
I, ALAN JOHN McKERCHAR Principal Administrative Officer for the Council HEREBY
CERTIFY that the following conditions to be complied with on a continuing basis were
imposed by the Council as conditions of approval for the subdivision as effected by Land
Transfer Plan No.400247 ("the plan")

- (i) The registered proprietors for the time being of Lots 1 and 2 on the plan attention is drawn to the Site Suitability Report by Steve Gibson, Northern Civil Consulting Engineers Ltd dated May 2005 and such registered proprietors are required to comply with the recommendations of the report.
- (ii) Wastewater treatment and disposal systems be the subject of specific engineering design by a suitably qualified competent Engineer to the approval of Council

- (iii) The site is located within the likely Drainage District for the community sewerage system to service Baylys Beach. As such, it is likely that the individual lots of the subdivision will be required to connect to this system when it is available and comply with all of the Council's requirements relating to such connection.
- (iv) The registered proprietors for the time being of Lots 1 & 2 on the plan will comply with any recommendations and/or restrictions detailed in the Seakins Engineering Solutions Stormwater Management Report dated 31 March 2008, a copy of which is annexed hereto.
- (v) The owner of each Lot on the plan is required to be a shareholder or member of the entity formed to own, operate, maintain and administer all matters associated with the communal stormwater system for the subdivision.

DATED at Dargaville this 20th day of November 2008

Authenticated by the said ALAN JOHN McKERCHAR, Chief
Executive Officer for THE KAIPARA DISTRICT COUNCIL.



A.J. McKerchar

Seakins Engineering Solutions Ltd
P O Box 15
Maungakaramea

Ph 09 432 3024
Mob 0272 766 106
mseakins@xtra.co.nz



D GIBBONS AND T MARTINOVICH



Ripiro Drive, Baylys Beach – Residential Subdivision

Stormwater Management Report

31 March 2008

*D Gibbons & T Martinovich
Ripiro Drive, Baylys Beach Residential Development
Stormwater Management Report – Stage 1*



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1. INTRODUCTION

A Resource Consent (RM 070079A) was granted by the Kaipara District Council in August 2007 to D Gibbons and T Martinovich to subdivide an existing 3.32 ha site into 8 residential properties. The site is located off Ripiro Drive in Bayllys Beach.

This subdivision would be undertaken in three stages as described below:

- Stage 1 – To create Lots 1 and 2 being 1.35 ha and 1.97 ha respectively
- Stage 2 – To subdivide Lot 1 to create Lots 2A and 2B being 1,000m² in area and a balance lot of 1.15 ha
- Stage 3 – To subdivide Lot 2 to create Lots 3A, 3B, 3C and 3D being 1,000m² in area each and a balance lot of 1.57ha

Resource Consent conditions 1(c), 3(c) and 5(c) require a Stormwater Management Report to be prepared for each stage of the development.

The purpose of this report is to develop a Stormwater Management Report for all three stages of this development.

2. CONSENT REQUIREMENTS

The relevant consent conditions are 1(c), 3(c) and 5(c). Condition 1(c) states the following:

1(c) *An assessment of the existing drainage paths affecting Lots 1 & 2 and the drainage paths post-development shall be undertaken by an appropriately qualified competent Engineer experienced in urban stormwater drainage. The assessment shall:*

- i) *Take into consideration the requirements of Section 9 of the Draft Kaipara District Council Code of Practice for Land Subdivision and Development Year 2000, particularly the provisions relating to average recurrence interval standards and runoff coefficients.*
- ii) *Identify any existing drainage paths.*
- iii) *Determine appropriate pipe sizes for the piping of primary flow paths.*
- iv) *Identify the extent of secondary flow paths for the 100 year ARI flood.*

The resultant Stormwater Management Report shall identify the need for any restrictive covenants to be imposed on any areas of land affected by secondary flow paths and recommend the extent and nature of any such restrictive covenants, having regard to the requirements of the Kaipara District Council Code of Practice for Land Subdivision and Development Year 2000. The Stormwater Management Report shall be submitted to Council for approval.

Consent conditions 3(c) and 5(c) are the same as the above condition apart from the reference to the lots being – "Lots 2A, 2B and Balance Lot (Lot 1)" for condition 3(c) and "Lots 3A, 3B, 3C, 3D & Balance Lot (Lot 2)" for condition 5(c).

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This Stormwater Management Report shall address these issues.

In addition to the above, consent condition 3(e) requires that Stage 2 of the development provide the following:

- 3(e) *Engineering calculations, plans, specifications and a management plan shall be prepared and submitted to Council for approval for the stormwater detention pond to attenuate the flows leaving the site for all lots of the subdivision (Stages 2 & 3). The documentation shall confirm the design and sizing of the proposed stormwater detention ponds in order to ensure that the post development flows are at least 5% less than the pre-development flows for the 10%, 5%, 2% and 1% AEP flood events and shall fully detail all proposed earthworks, pond hydraulics, stormwater inlets and outlets, scour protection works, treatment expectations, maintenance procedures and access for maintenance.*

Although this report does not attempt to provide the information required for this condition, a preliminary sizing of the stormwater attenuation pond has been undertaken to determine the appropriate drainage easements required to protect the proposed pond location from inappropriate development.

3. EXISTING SITE

The existing site consists of predominantly pasture, with a long single-lane driveway leading from Ripiro Drive to an existing dwelling and garage towards the western extent of the site. Refer to the attached Scheme Plan in Appendix 1.

The site slopes generally from the east to the west. An east-west ridgeline is located within the southern portion of the site which breaks the site into two defined catchment areas. The catchment boundaries are discussed in more detail in Section 4 of this report.

The existing drainage features of the site are detailed in Appendix 2 and are summarised below:

- There are two natural overland flowpaths that enter into the site from the east. These combine to form a wide flat drainage path that descends towards the existing driveway.
- A small pond (approximately 100m² of surface area) has been constructed to intercept this drainage path. This pond is used for stock watering purposes.
- Overflow from the pond runs westward through a natural flowpath to the driveway where it is channelled through a 300mm diameter concrete pipe. The driveway alignment dips as it crosses the culvert which provides a defined secondary flow path.
- A man made drain has been cut in a natural depression located to the east of the driveway. This drain runs south from the northern end of the site and parallel to the driveway. The drain discharges into the natural flow path leading from the pond.
- From the driveway, the flow path continues west until it nears the site boundary where it turns to the south west. The flow path continues south

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west until it reaches the existing garage where it crosses the site boundary and discharges down a steep vegetated bank to the west.

- Roof water from the existing dwelling is piped into soakholes. Roof water from the existing garage discharges onto the ground.

4. BAYLYS BEACH STORMWATER MANAGEMENT PLAN

A Draft Stormwater Management Plan (SWMP) was prepared for the Baylys Beach urban area by Duffill Watts & King Ltd in September 2003. This plan identified stormwater catchment areas, determined peak flows resulting from these catchments and identified any proposed upgrade works to accommodate these flows.

The site encroaches onto four catchments identified in the SWMP. These are B1, B3, B4 and the Southern Stream. This is shown on the plan included in Appendix 2.

Of these catchment areas, the most significant is catchment B1 which is located at the eastern end of the site. This rural catchment has an area of 30.3ha and includes pasture land and the local golf course. By comparison catchments B3 and B4 have an area of only 3.8ha in total which comprises a mixture of rural and urban land.

Catchment B1 discharges into catchment B3 which in turn discharges into catchment B4 via a 600mm culvert (labelled b4). This culvert has insufficient capacity for the 5 year ARI and 50 year ARI design flows causing flooding of the downstream residential properties on Cynthia Place.

The Southern Stream catchment is a large 432ha catchment which comprises rural land to the south of the Baylys Beach urban area. Although this catchment is much larger than catchment B1, it is less significant as it discharges through undeveloped land and does not have any flooding issues.

The SWMP calculates the peak stormwater flows as follows:

Catchment	Time of Concentration (min)	5 year ARI flow m ³ /sec	50 year ARI flow m ³ /sec
B1	25	2.02	4.06
B3	10	0.24	0.48
B1 + B3	28	2.23	4.38

The SWMP recommends the construction of a detention pond in catchment B1 to be located on the subject site. Section 5.3.3 of the SWMP states:

"Two constructed detention ponds in the large rural catchments A1 and B1 are recommended for further investigation. There is evidence that detention ponds previously existed at the proposed locations shown on the drawing. Detention ponds in these locations in conjunction with the natural detention in the gullies would enable the existing drainage infrastructure to accommodate design flows from both existing and future development."

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The overflow from catchment B1 could also be diverted into the Southern Stream catchment provided there is adequate scour protection on the steep bank between the proposed detention pond and the stream.

Council's engineers have subsequently advised that diverting stormwater flows into the Southern Stream catchment would not be acceptable due to concerns about excessive scour on the stream bank.

Section 5.2 of the SWMP also sets out design parameters for calculating stormwater flows as follows:

Rainfall Intensity	Runoff Coefficient	
	Residential	Pasture
> 100 mm/hr	0.55	0.40
< 75 mm/hr	0.50	0.35

Return Period	Rainfall Depth (mm)			Rainfall Intensity (mm/hr)		
	at Time of Concentration of:			at Time of Concentration of:		
	10 min	20 min	30 min	10 min	20 min	30 min
1 in 5 yr	17	25	32	102	75	64
1 in 50 yr	30	45	55	180	135	110
1 in 100 yr*	34	51	62	204	153	124

* Note – We have extrapolated the 1 in 100 yr Rainfall Depths and Rainfall Intensities in the above table using the graphs shown in Appendix 3.

These design parameters will be used in this stormwater report.

5. PROPOSED STORMWATER SYSTEM

5.1 Overview

The proposed stormwater system and drainage easements are shown in Appendix 4. This system has been designed using the following philosophies:

- A stormwater detention pond will be constructed in Lot 2 at approximately the same location as the existing pond. This pond will be sized to provide post development stormwater flows from the site that are at least 5% less than the pre-development flows.
- The pond design shall take into account the ultimate development of the site and it has been assumed that the entire site will be developed into residential sections. Although this will require a larger pond than that required to service Stages 1 to 3 of this development, it will safeguard the ability of the balance Lots 1 and 2 being further subdivided in the future.
- Stormwater flows in catchment B1 will be directed into the proposed pond. Flows in Catchment B3 will drain directly to the flow path leading to the western boundary.



- The pond will provide sufficient attenuation for the entire site. No other detention devices are required even for areas of the site that do not drain into the pond.
- The proposed stormwater detention pond will need to be constructed as part of Stage 2 of the development.
- The area of land that drains south into the Southern Stream catchment does not affect the stormwater detention pond or other drainage features and has therefore been excluded from consideration in this report.

Preliminary calculations of the stormwater detention pond and the other drainage systems are included in Appendix 5. Detailed design of the pond and proposed new drainage systems should be carried out at the relevant stage to confirm these preliminary designs.

5.2 Stage 1

Stage 1 involves the splitting of the existing parent lot into Lots 1 and 2 of 1.35ha and 1.97ha respectively.

Lot 1 already contains the existing house, garage and driveway and therefore the subdivision will not affect existing stormwater flows.

Lot 2 will result in the construction of a new driveway, dwelling and associated hardstand areas. Where possible flows from these impermeable surfaces should be directed into the existing pond. Where this is not possible, flows should be directed to the nearest existing drainage flowpath as shown in Appendix 2. If the new driveway crosses any of the existing drainage facilities or flow paths, culverts should be provided which cater for the required stormwater flows.

As part of Stage 1, the easements and/or restricted covenants shown in Appendix 5 shall be established on the titles to protect the existing and proposed future drainage paths and pond location from inappropriate development. This is described in more detail in Section 5.5 of this report.

5.3 Stage 2

Stage 2 involves splitting Lot 1 into three lots being Lots 2A, 2B and the balance of Lot 1. The area of Lots 2A and 2B are to be 1,000m² each and Lot 1 would be reduced to 1.15ha.

As described in Section 5.1, the Stormwater detention pond is to be constructed during this stage.

This stage will also require the creation of Rights of Way A and B. These rights of way are to be 3.5m wide and concreted or sealed. Drainage from these rights of way will be collected by kerb or swale and directed to two sumps located in the two existing low areas of each right of way. As shown in Appendix 4, these sumps are to discharge into a new 300mm diameter piped Stormwater system located on Lot 2 immediately east of Right of Way B. This piped system is to discharge into the detention pond.

A 1050mm diameter culvert will need to be installed under each right of way where they cross the major flowpath downstream of the pond. The size of this culvert should be confirmed once the detailed design of the pond has been completed. The

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rights of way shall have a low area approximately 20m long where they cross this culvert to enable secondary flows to overtop the pavement in a controlled manner.

Roof water from buildings on Lots 2A and 2B is to be collected into a 200mm diameter piped stormwater system that discharges into the main flowpath on Lot 1.

Surface flows from Lots 2A and 2B will be collected by a new 2m wide swale drain located on the western boundary of these lots. This swale is to be a minimum of 100mm deep and is to have side slopes of 1V:10H. Material excavated in the creation of this swale should be placed to form a low bund along the western edge of the swale. The swale is to flow southward from Lot 2A, through 2B and to discharge into the main flowpath via Lot 1. This swale has been designed to accommodate the 100 year ARI flows.

5.4 Stage 3

Stage 3 involves splitting Lot 2 into five lots being Lots 3A, 3B, 3C, 3D and the balance of Lot 2. The area of Lots 3A to 3D are to be 1,000m² each and Lot 2 would be reduced to 1.57ha.

Roof water from buildings on Lots 3A, 3B, 3C and 3D are to be collected into the new piped stormwater system located parallel to Right of Way B which is to be constructed as part of Stage 2.

Surface flows from Lots 3A, 3B, 3C and 3D will be collected by filling in and reshaping the existing man-made drain to form a new 2m wide swale drain. This swale is to be a minimum of 100mm deep and is to have side slopes of 1V:10H. The swale is to flow southward from Lot 3A to Lot 3B and into Lot 2 before discharging into the detention pond. This swale has been designed to accommodate the 100 year ARI flows.

5.5 Drainage Easements & Restricted Covenants

It is proposed to lodge drainage easements and/or restrictive covenants on the titles of Lots 1 and 2 as part of Stage 1 of the development. These drainage easements and/or restrictive covenants would then need to be transferred to the new lots created by Stages 2 and 3 of the development.

The location and size of the drainage easements and/or restrictive covenants are shown on the Sheet 4 included in Appendix 4.

The areas shown in orange on the plan shall be drainage easements made in favour of the Kaipara District Council as this incorporates a land drainage system and includes 30ha of upstream catchment. The Council has made it a condition of consent for post development flows to be 5% less than the pre-development flows. Therefore, the proposed detention pond is providing a public benefit to downstream properties and it is reasonable to expect that Council would require access rights to the pond.

The areas shown in red could either be drainage easements or restricted covenants as these drainage systems are expected to remain in private ownership. If restricted covenants are adopted, these should prohibit the following activities within the areas shown:

- The construction of buildings or other structures including fences

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- The planting of vegetation that would affect the performance of the drainage systems
- The modification of the drainage systems or ground levels

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APPENDIX 1

SCHEME PLAN

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APPENDIX 3

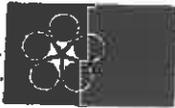
100 YEAR ARI RAINFALL INTENSITY CALCULATIONS

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Stormwater Management Report - Stage 1*



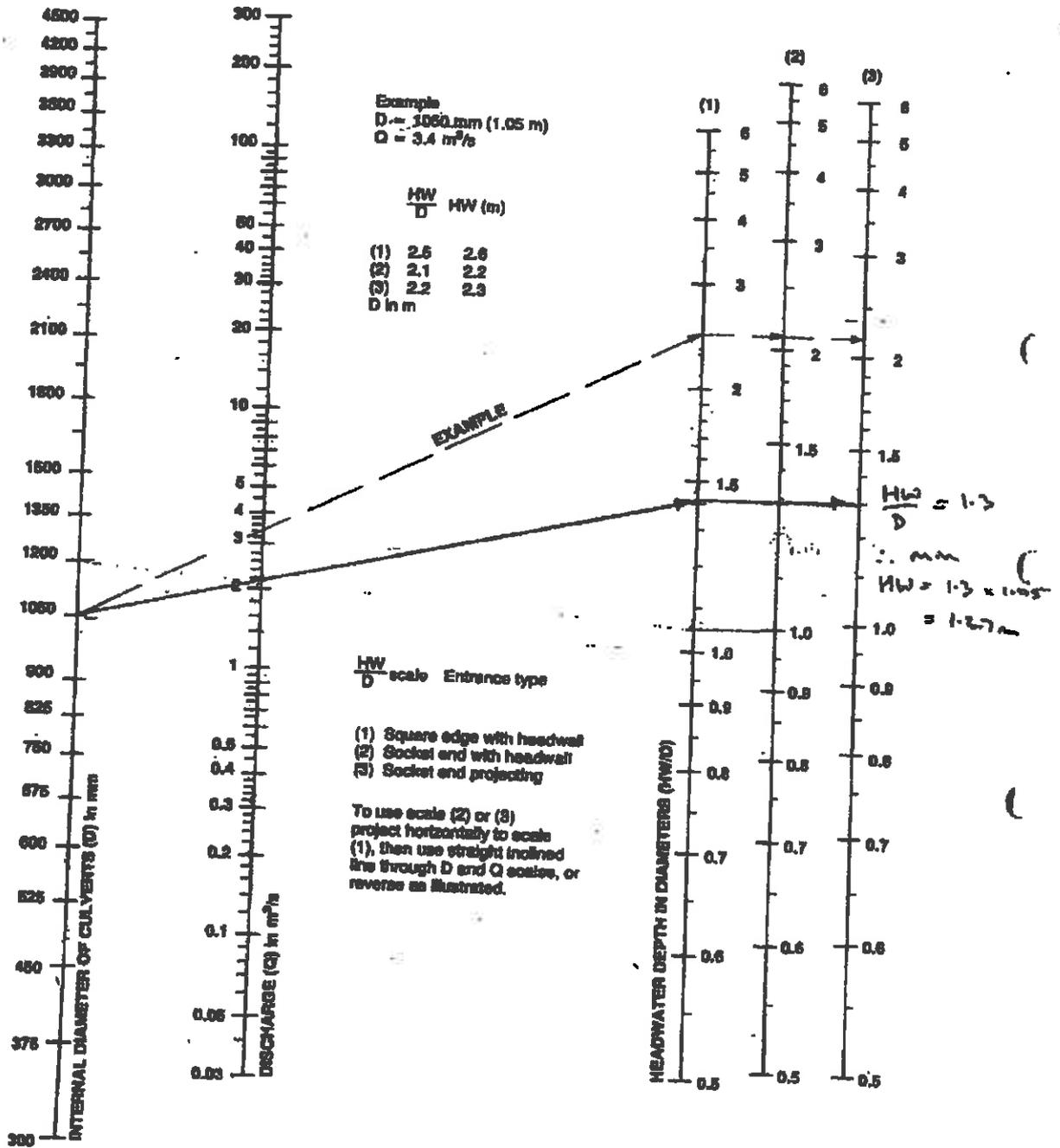
APPENDIX 4

PROPOSED STORMWATER SYSTEM



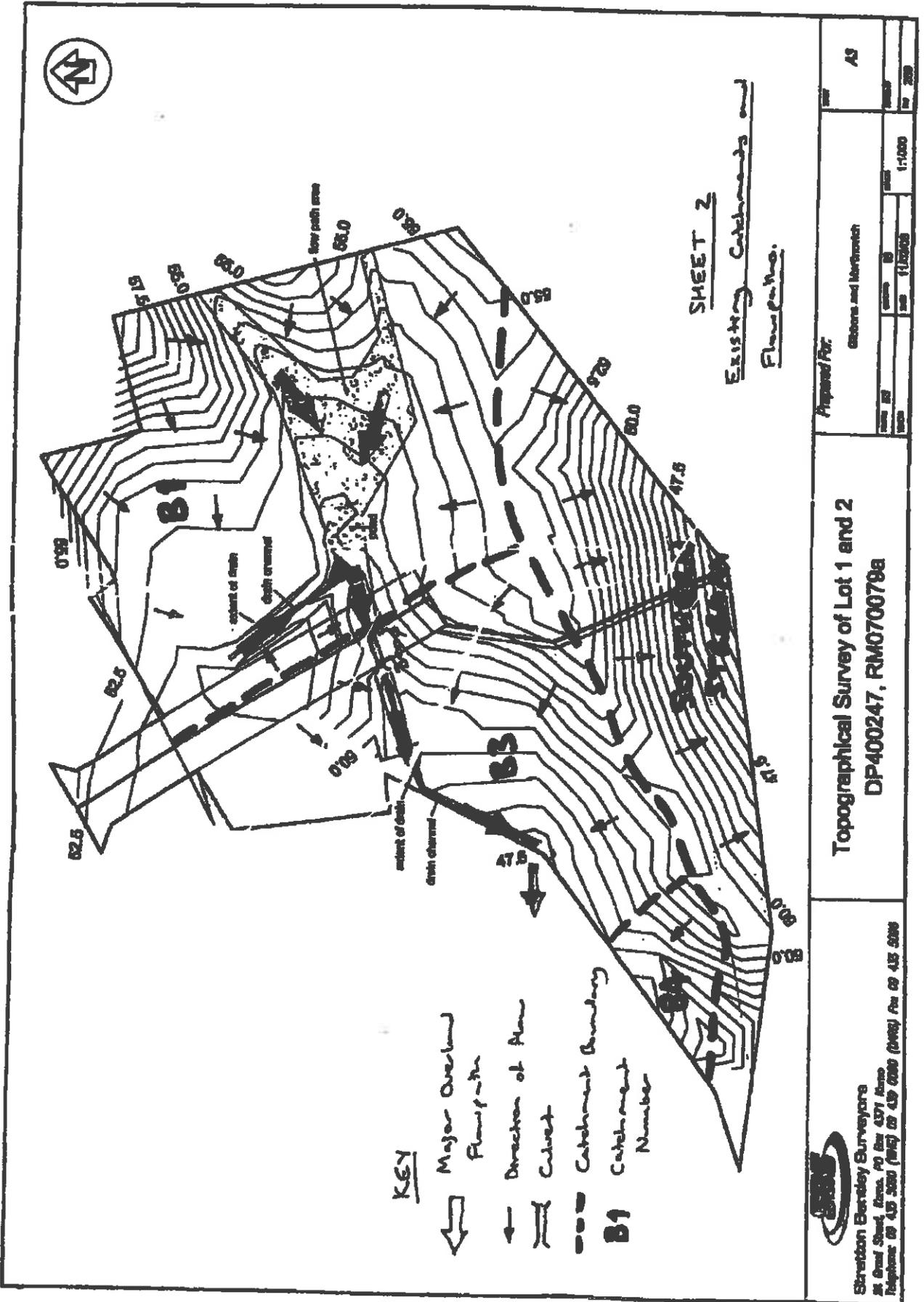
HYDRAULICS OF PRECAST CONCRETE CONDUITS

SECTION 3



HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

FIGURE 3.3 ADAPTED FROM [3.4]



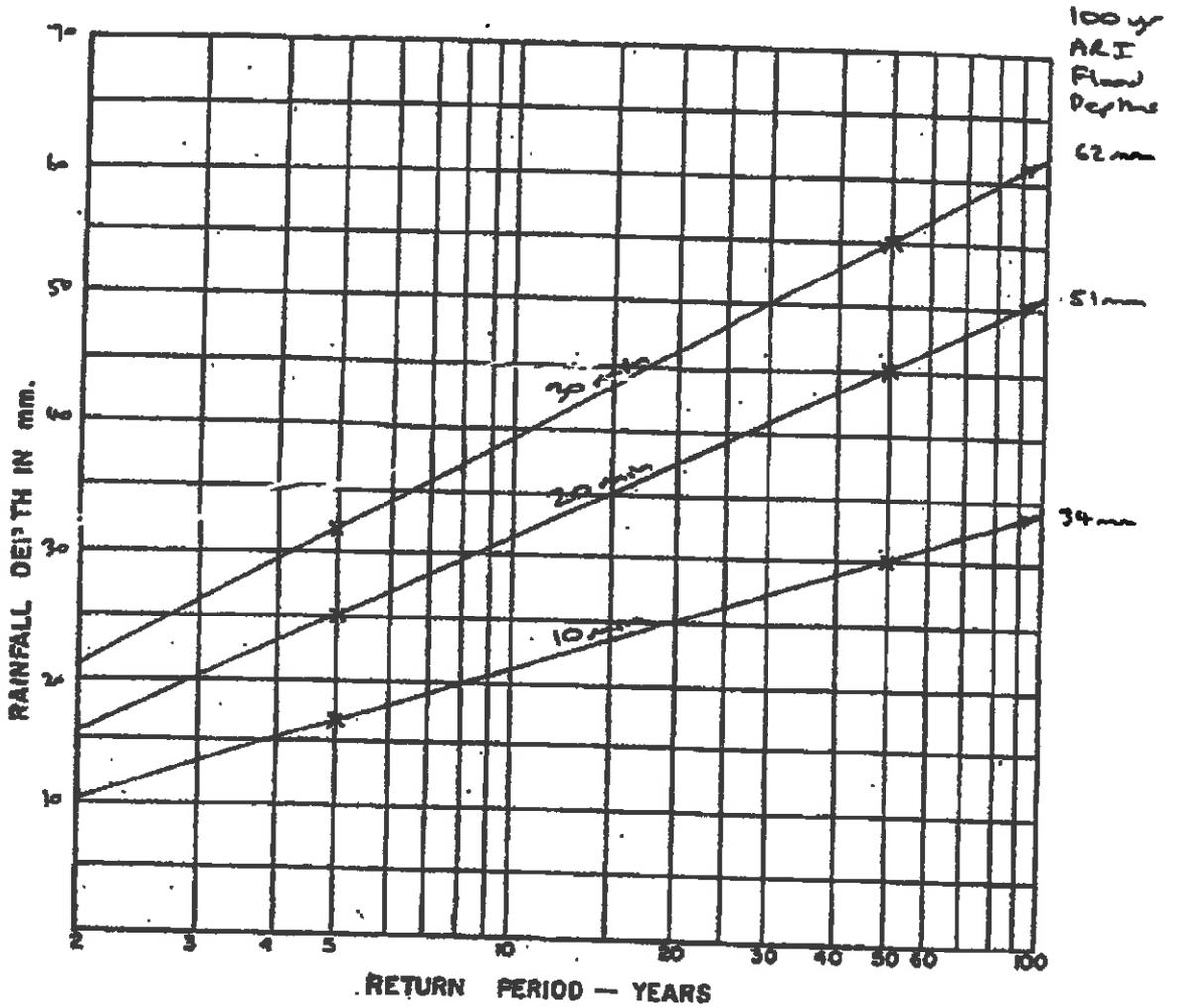


FIG.1 RETURN PERIOD PLOTTING DIAGRAM

3 - 4

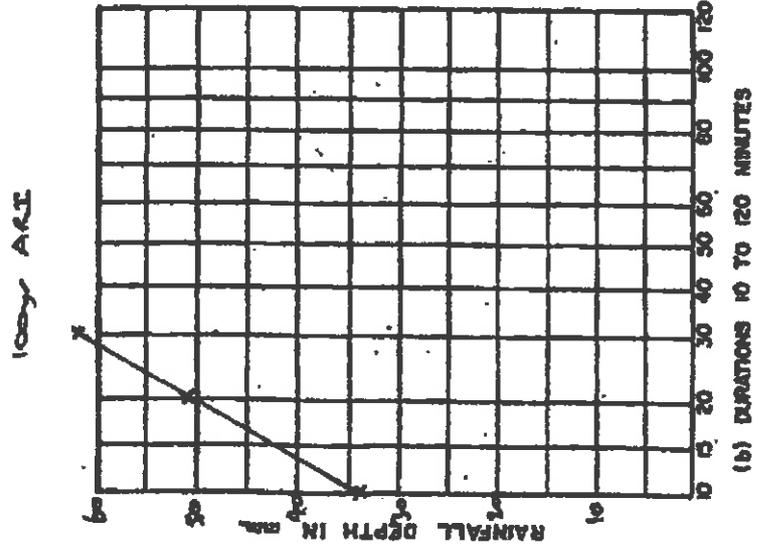
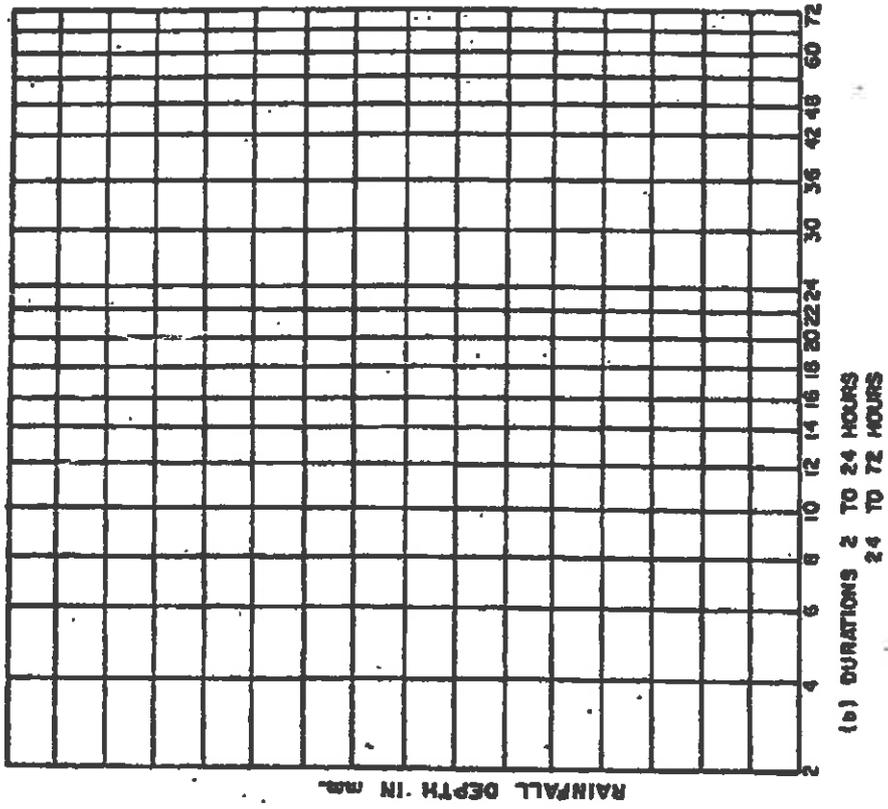
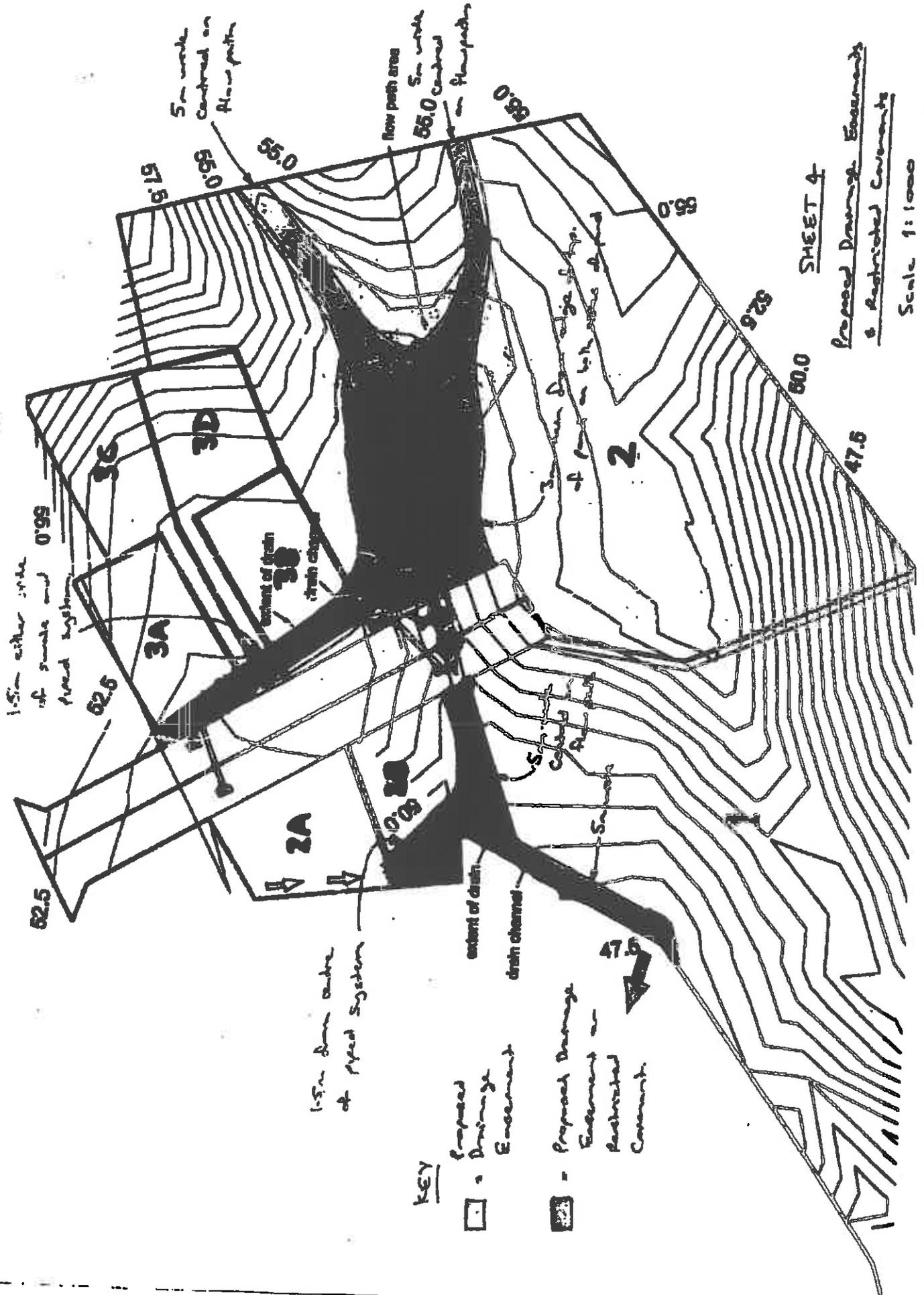


FIG. 2 DEPTH - DURATION PLOTTING DIAGRAMS





Gibbons & Martinovich Development.

31/3/08

Rapiro Drive, Bayliss BeachDetermine 100yr ARI Design Flows

From Bayliss Beach SWMP -

Catchment	Area	% Residential	Tc	I ₂₄ mm/h	C _{ra}	Q ₁₀₀ m ³ /sec
B1	30.3ha	0%	25	121	0.40	4.06
B3	1.92ha	5%	10	180	0.50	0.48
B1 + B3	32.2ha	2%	28	114	0.43	4.38

Assume site is fully developed (ie ultimate development)

⇒ Additional residential area in catchments B1 & B3

⇒ B1 - 1.97 ha less 0.17 ha (Southern Stream catchment)
 = + 1.71 ha

⇒ B3 - 1.35 ha plus 0.09 ha (from Lot 2)
 less 0.57 ha (Southern Stream catchment)
 less 0.10 ha (B4 catchment)
 = + 0.77 ha

Therefore total residential area -

for B1 - 30.3 ha × 0% + 1.71 ha = 1.71 ha

for B3 - 1.92 ha × 5% + 0.77 ha = 0.87 ha

Calculate Runoff coefficients for Fully Developed Site.

- For B1 - $(1.71 \times 0.55 + (30.3 - 1.71) \times 0.40) / 30.3$
 = 0.41

- For B1 + B3 - $((1.71 + 0.87) \times 0.55 + (32.2 - 1.71 - 0.87) \times 0.40) / 32.2$
 = 0.41

100yr ARI Flows -

- For B1 - $Q_{100} = \frac{1}{3.6} \times C \times A$
 $= \frac{1}{3.6} \times 0.41 \times \frac{57m \times 60m}{25mm (T_c)} \times 70.3ha$
 $= \frac{1}{3.6} \times 0.41 \times 137mm/hr \times 70.3ha$
 $= \underline{4.73 m^3/sec}$

- For B1 + B3 - $Q_{100} = \frac{1}{3.6} \times 0.41 \times \frac{60m \times 60m}{28mm (T_c)} \times 32.2ha$
 $= \frac{1}{3.6} \times 0.41 \times 129mm/hr \times 32.2ha$
 $= \underline{4.73 m^3/sec}$

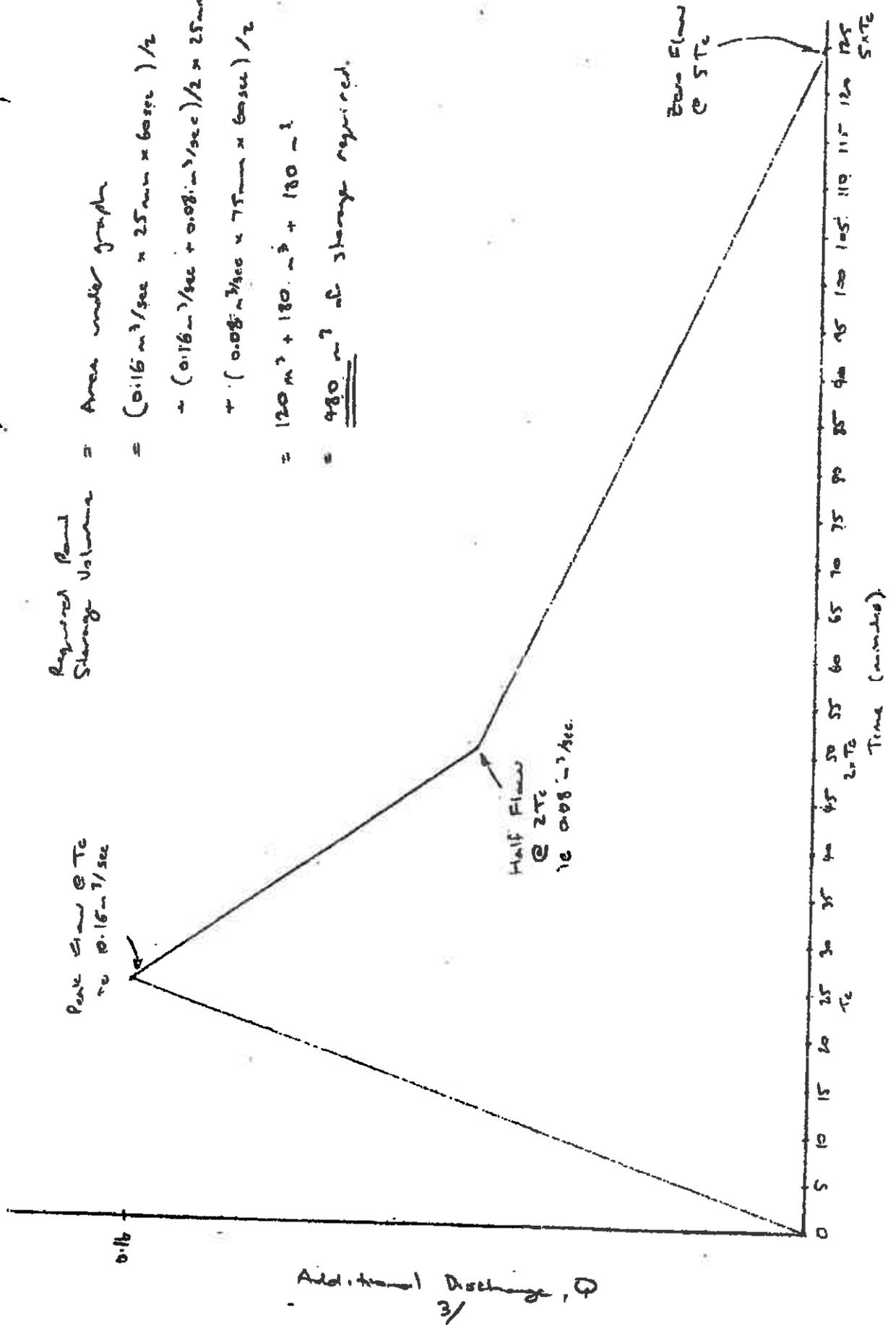
Consent Condition 3 (c) requires that the post development flows from the site are at least 5% less than the pre development flows.

- Site Area = catchments B1 + B3
 $= 1.71ha + 0.77ha$
 $= 2.48ha$

Pre development flows less 5% from site for 100yr ARI
 $= \frac{1}{3.6} \times 0.40 \times 137mm/hr \times 2.48 \times 95\%$
 $= 0.36 m^3/sec$

Post developed flows from site for 100yr ARI
 $= \frac{1}{3.6} \times 0.55 \times 137mm/hr \times 2.48ha$
 $= 0.52 m^3/sec$

Therefore, need to detain $0.52 - 0.36 = 0.16 m^3/sec$



Design Primary SW System for Lots 3A - 3D.

Catchment Area -

- 4 Lots @ $1,000 \text{ m}^2 = 4,000 \text{ m}^2$

- Upstream Catchment = 4 lots @ $1,000 \text{ m}^2 = 4,000 \text{ m}^2$

- Right of way = $123 \text{ m} \times 10 \text{ m} + 75 \text{ m} \times 10 = 1,980 \text{ m}^2$

\therefore Total Catchment Area = $7,980 \text{ m}^2$

= 0.8 ha

However primary system only takes impervious areas -

\therefore - 4 lots @ $300 \text{ m}^2 \text{ say} = 1,200 \text{ m}^2$

- Right of way = $123 \text{ m} \times 3.5 \text{ m} + 75 \text{ m} \times 3.5 \text{ m} = 693 \text{ m}^2$

\therefore Total Catchment Area = $1,893 \text{ m}^2$

$Q_5 = \frac{1}{3.6} \times 1,893 \text{ m}^2 = 0.90 = 102 \text{ (for } T_2 = 10 \text{ min)}$
 = 48 l/sec

From attached curves chart -

- Require $300 \text{ mm } \phi$ @ $0.5\% \text{ R/I}$

Design Overland Flowpath Swale for Lots 3A - 3D

Calculate 100yr ARI Flow

$\Rightarrow Q_{100} = \frac{1}{3.6} \times 0.55 \times 204 \text{ mm/hr} \times 0.8 \text{ ha}$

= 269 l/sec

Use Manning's Equation

$Q = \frac{1}{n} A R^{2/3} S^{1/2}$

where n = Manning's Number
 A = cross sectional area
 R = wetted perimeter
 S = slope

$n = 0.035$ for earth with stones or masonry.

Try Swale with 1 in 10 side slopes



$$A = (10H + 10H) \times H / 2$$

$$= 10H^2$$

$$R = 20H$$

Try with $S = 0.5\%$

$$\Rightarrow Q = \frac{1}{0.035} \times (10H^2) \times (20H)^{2/3} \times 0.005^{1/2} = 0.249 m^3/s$$

$$\Rightarrow 10H^2 \times (20H)^{2/3} = 0.123 m^3/s$$

Try $H = 0.1m$

$$\Rightarrow Q = 0.159 m^3/sec \therefore OK$$

\therefore Use 2m wide \times 0.1m deep (min) swale with 1 in 10 side slopes.

Design Overland Flow Path Swale for Lots 2A-2B

Catchment Area:

- 2 lots @ $1,000 m^2 = 2,000 m^2$

- Right of way = $7m \times 100m = 700 m^2$

\therefore Total Catchment Area = $2,700 m^2$

= $0.27 ha$

As this is less than the design flows for the swale drain for Lots 3A-3D adopt the same design-

Use = 2m wide x 0.1m deep (max) trapezoidal
with 1 in 10 side slopes.

Calculate width of Existing Main Drain Channels
above Pond for 100yr ARI flows.

$Q_{100} = 4.73 \text{ m}^3/\text{s}$ as calculated on sheet 2.

Assume 60% of this flow comes from the northern
fork & 40% from the southern fork.

$\Rightarrow Q_{100} \text{ Northern fork} = 4.73 \times 60\% = 2.84 \text{ m}^3/\text{s}$

$Q_{100} \text{ Southern fork} = 4.73 \times 40\% = 1.89 \text{ m}^3/\text{s}$

Calculate for Northern Fork above pond

- Slope = 5%

Cross section



$$A = (9H + 9H) \times \frac{H}{2} + 2 \times H$$

$$= 9H^2 + 2H$$

$$R = 9H + 2 + 2$$

$$= 18H + 2$$

$$\Rightarrow Q = \frac{1}{0.035} \times (9H^2 + 2H) = (18H + 2)^{2/3} \times 0.05^{1/2} = 2.84$$

$$= (9H^2 + 2H) \times (18H + 2)^{2/3} = 0.445$$

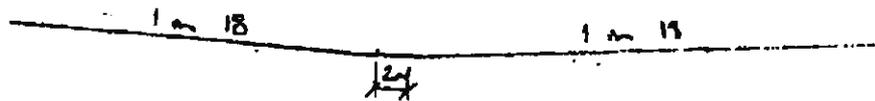
Try $H = 0.1 \text{ m} \Rightarrow 0.71$ \therefore Okay.

Flow width during 100yr ARI = $18 \times 0.1 + 2$
= 3.8m

Calculate for Southern Fork above Pond

- Slope = $\frac{1m}{26m} = 3.8\%$

Cross Section



$A = 18H^2 + 2H$

$R = 36H + 2$

$\Rightarrow Q = \frac{1}{0.035} \times (18H^2 + 2H) \times (36H + 2)^{2/3} = 0.038^{1/2} = 1.89$
 $= (18H^2 + 2H) \times (36H + 2)^{2/3} = 0.379$

Try $H = 0.05m \Rightarrow 0.353 \therefore \text{ok}$

\therefore Flow width during 100yr ARI = $36 \times 0.05 + 2 = \underline{\underline{3.8m}}$

Calculate Width of Existing Main Drain Channel below Pond for 100yr ARI flow

$Q_{100} = 4.73 m^3/sec$ as calculated on sheet 2.

Slope = $\frac{1m}{33m} = 3\%$

Cross Section -



$A = (4H + 4H) \times \frac{H}{2} + 1H$

$= 4H^2 + H$

$R = 8H + 1$

$$\rightarrow Q = \frac{1}{0.075} \times (4H^2 + H) \times (8H + 1)^{2/3} \times 0.03^{1/2} = 4.73$$

$$= (4H^2 + H) \times (8H + 1)^{2/3} = 0.95$$

Try $H = 0.25 \text{ m} \Rightarrow 1.04 \therefore \text{okay.}$

\therefore Flow Width during 100 yr ARI = $0.25 \times 8 + 1$
 $= \underline{\underline{3.0 \text{ m}}}$

Determine Right of Way Culvert Size

$Q_5 = 2.02 \text{ m}^3/\text{sec.}$ for undeveloped Catchment B1

plus increase in runoff due to full development.

$\Rightarrow 1.71 \text{ ha}$ of rural land becoming residential
 (from sheet 1)

\Rightarrow Runoff coefficient increase = $0.50 - 0.35$
 $= 0.15$

$$\therefore Q_5 = 2.02 \text{ m}^3/\text{s} + \frac{1}{3.6} \times 0.15 = 69 \text{ mm/hr} \times 1.71$$

$$= 2.02 + 0.05$$

$$= \underline{\underline{2.07 \text{ m}^3/\text{sec.}}}$$

Headwater depth = 1.5m

Therefore, from the attached chart the required culvert size is 1050mm ϕ . A low area shall be created on the right of way over 2m to accommodate the secondary flow path.

- Note - the culvert size should be confirmed following the detailed design of the stormwater pond.

Design Primary SW. System for Lots ZA + ZB.

Catchment Area:

- Allow for 300m² of impermeable area per lot.
- ⇒ 2 × 300m² = 600m².

$t_c = 10 \text{ minutes}$

∴ $Q_p = \frac{1}{3.6} \times 600 \text{m}^2 \times 0.9 \times 102 \text{mm/h}$
 $= 15.3 \text{ l/sec}$

From attached Nomogram Chart:-
 - Require 200mm ϕ @ 0.5% S_v

GIBBONS AND MARTINOVICH SUBDIVISION

RIPIRO DRIVE BAYLYS BEACH

SITE SUITABILITY REPORT

MAY 2005

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Document Approved by



Date... 3/6/05

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1. Location

The site is a 3.3ha lot (Lot 3 DP 66113) located on the southern side of Ripiro Drive at Baylys Beach.

2. Background

This report has been prepared following a request by Kaipara District Council for further information pursuant to section 92 of the Resource Management Act 1991.

The request is for a site suitability report from a chartered professional engineer, which includes the following information:

- i) Means to mitigate the effects of on site stormwater disposal on downstream properties.
- ii) Suitability of the site for proposed on site effluent disposal facilities

The Kaipara District Council Stormwater Management Plan shows the site to contain the drainage path for an east west catchment within the stormwater management plan area. Downstream properties are subject to flooding as a result of development occurring within the flood flow path. The flooding is a result of water from properties to the east draining onto the downstream properties and overtopping of the drain channel running along Cynthia Place.

3. Proposed Development

The owners of Lot 3 DP 66113 are proposing to subdivide the property into six lots of 1000 m² and two balance lots of 1.45ha and 1.27ha. The property is zoned residential in the operative Kaipara District Plan.

4. Investigations

The following investigations have been carried out for this report:

- i) Two boreholes were sunk on the property in the locations indicated on the drawings and soakage tests carried out to indicate effluent soakage acceptance rates.
- ii) The site has been inspected to determine heights in relation to drainage paths and ground contours.
- iii) The Kaipara District Council Stormwater Management Plan for Baylys Beach has been reviewed and hydrological analysis carried out.

4.1 Published Geology

The New Zealand Geological Survey Map 1:250,000, Sheet 2A, *Whangarei* indicates that the site and ground in close proximity is underlain by:

- High level coastal sand, lignite beds and inland alluvium (terrace deposits higher than 35m) of Quaternary age.

4.2 Published Soil Types

The New Zealand Land Inventory Map 1:100,000 Sheet P06/07 indicates that the site is located on soils of the Coastal Sand Dune Complex comprising Red Hill sand.

The Baylys Beach stormwater management plan figure 3 shows that the site comprises:

- Sand: quartzose, with minor feldspar and clay, forming fixed dunes, with minor sump deposits: unconsolidated to very soft. Unweathered or weathered brown stained, very soft clayey sand to depths of 5 m.

4.3 Topography

The Topography consists of gently sloping land. The property is in pasture. There is good exposure to sun and wind and the site has a southwesterly aspect.

5. Stormwater Suitability

5.1 Catchment Characteristics

The catchment area for the watercourse through the property is 49.77 Ha. The catchment shape is long and thin and the catchment slope is relatively flat. The maximum flow path is 1.53 km over predominantly pasture with poorly defined drainage channels that are dry except after rainfall.

A small dam has been constructed within the property that acts as a stormwater detention dam and this reduces flood peaks.

5.2 Stormwater Site Suitability

The effect on the catchment of subdividing for residential use will be:

1. There will be an impermeable area created by the house and any paved areas. This will slightly increase the amount of runoff as the area for infiltration will be slightly reduced. In peak floods this effect will be slight, as the existing ground would normally be assumed to be saturated.
2. The runoff from the impermeable areas will likely runoff quicker than would be expected from the existing grass area. However the location of the subdivision in the lower reaches of the catchment means that this will have little effect on the peak.

The presence of the detention dam will regulate the runoff to mitigate the slight effect of subdivision and development.

5.3 Stormwater improvements

Stormwater management can be improved as part of the subdivision and development by:

- Extending the detention pond to the proposed access and constructing a higher embankment across the watercourse for the access. A piped culvert under the access will regulate the flood flow and the additional storage will provide some control of flood peaks. Shifting the dam 20 m downstream will more than double the existing storage from 215 cu m to 500 cu m. The additional storage required to mitigate the effects from the subdivision is 120 cubic metres and the extra storage over this is equivalent to 8 extra lots. The provision of extra stormwater detention however will not remove existing flood effects downstream but it will reduce them.
- A 60m open drain and 35 m culvert (or deeper drain) can be constructed along the boundary between lots 7 and 8 to divert excess water from the detention dam into the adjacent catchment. The adjacent catchment has much less sensitivity to flood flows but the water path will need protection from erosion from the culvert outlet. The level of flood protection provided by the open drain will be well in excess of the effect of the subdivision and would be primarily to address an existing problem.

Either of these methods will improve stormwater management in this particular catchment. Diverting the excess water into the adjacent catchment is a discretionary activity under rule 27.3.3 of the Northland Regional Water and Soil Plan and will hence require resource consent.

6. Effluent Disposal

6.1 Fieldwork

Our fieldwork for this report involved two hand auger boreholes to depths of 1.0m with a scala penetrometer to 1.6 m. The soil profile is a silty fine sand to 500 mm depth changing to an orange sandy silt loam at 650 mm depth. Ground water level was not discovered in either hole. A soakage Test was taken at the site. These two sites were considered to be representative of the site condition. The results of the tests are presented on the appended sheets.

The elevation of the site from stream level and the underlying strata at the site suggest that it is unlikely that groundwater will affect the type of effluent disposal system chosen.

6.2 Soakage

The site is in moderate draining soils. The site is also sloping and does not appear to be subject to high water tables.

The site is suitable for on site effluent disposal provided shallow trenches are used and distribution of effluent is by way of drop boxes. This will allow incremental loading of trenches in series.

6.3 Loading

Std household 180 l/p/d (NZS 1547)
180 - 210 l/p (NRC W&S Plan)

assume 180 l/d

Assume 6 people (average loading)

⇒ 6 x 180 = 1080 l/d

(Individual Dwellings) Household serving 6 people. 3500L Septic tank (NZS 1547).
Recommend multi-chamber digester tank

The digester tank provides separate compartments for blackwater and greywater. This requires additional plumbing but has the advantage of much improved treatment performance.

6.4 Site Soakage

Based on the presoaked holes of 100mm diameter the soakage is calculated to exceed 100 mm/day.

These results indicate good drainage. The tests confirm that the soil type (NZS 1547) is category 2 sandy loam soil. Ground water level is not considered to have an effect.

For design use soil category 2 at a load rate of 30 mm/day (l/m²/day).

For an application rate 1080 L/d

$1080/30 = 36 \text{ m}^2$ soakage area required

Assume 0.4m deep conventional trench @ 0.6m wide. This requires 60 m length with a 1 m wide buffer each side (160 sq m area).

This would require 2 trenches 30m long along the contour at 2 m centers with a drop box between trenches Refer typical cross section attached (T.P.58). A filter which screens the effluent to less than 3.5 mm should be fitted to the tank outlet.

6.5 Conditions

The following conditions need to be met for a septic tank to be a permitted activity under the Regional Water and Soil Plan;

The discharge of primary treated sewage effluent (not including stormwater) into or onto land from on-site treatment and disposal systems is a permitted activity, provided that:

- (a) The lowest point of the disposal system is not less than 1.2 metres above the winter (June, July or August) groundwater table.
- (b) A filter, which screens the effluent to less than 3.5 millimetres, is fitted on the outlet of the septic tank.
- (c) No part of the disposal area and reserve area is located within 20 metres, measured horizontally, of any existing groundwater bore located on any other property.
- (d) No part of the disposal area and reserve area is located within 20 metres, measured horizontally, of any surface water (as defined in this plan).
- (e) The effluent is evenly distributed to the entire infiltration surface of the disposal system.
- (f) The selection and sizing of the treatment and disposal system has been based on:
 - i) The volume of the discharge;
 - ii) The appropriate design loading rate for the identified soil type; and
 - iii) Has taken into account any constraints identified by a detailed site investigation.

The Council will accept as compliance with (f)(i – iii) an effluent treatment system designed in accordance with the principles and procedures outlined in Australian/New Zealand Standard "On-site Domestic Wastewater Management" (AS/NZS 1547:2000).

- (g) There is no surface runoff of any contaminants from the disposal area.
- (h) The discharge result is no more than minor contamination of ground and surface water beyond a 20 metre separation distance measured horizontally from any part of the disposal system, or beyond the boundary of the property on which the discharge is taking place, whichever is the lesser.
- (i) The volume of effluent discharged does not exceed 3 cubic metres per day, averaged over the month of the greatest discharge.
- (j) The maximum volume of effluent discharged does not exceed 6 cubic metres over any 24 hour period.
- (k) A reserve area equivalent to 100% of the design disposal area has been allowed for and set aside.

7. Conclusion

7.1 Effluent disposal

The investigations show that the site is suitable for on-site disposal of wastewater. The likely area required for on-site disposal of effluent can be accommodated within the proposed 1000 square metre

lots. There is also sufficient area to accommodate a reserve area as required to remain a permitted activity under the Regional Water and Soil Plan.

7.2 Stormwater Disposal

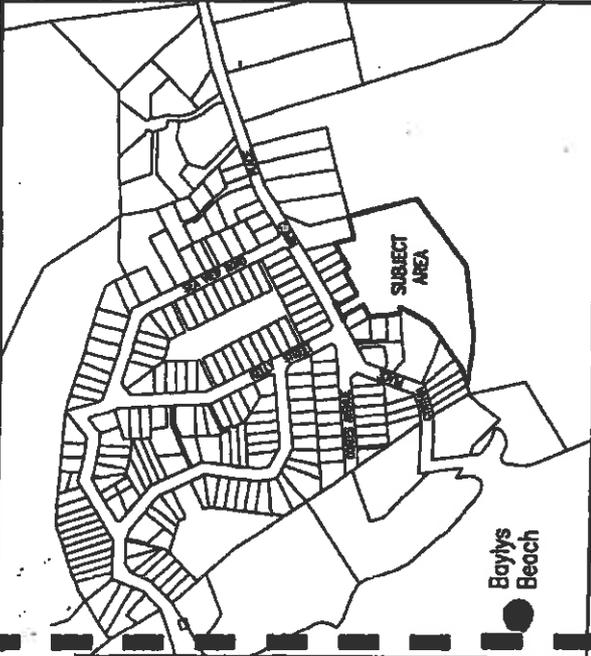
The effect that subdivision and subsequent residential development and its associated on-site stormwater disposal will have on downstream flooding will be slight. The existing stormwater detention dam will help mitigate the effects. It is recommended that this dam be extended downstream by approximately 20 m to provide additional storage that will mitigate any additional effect from the development. It is further recommended that diversion of flood peaks to the adjacent catchment be considered by Council to provide improved protection to downstream property.

Attached are:

1. Subdivision Plan
2. Drainage calculations
3. Borehole Logs

Steve Gibson
BE, MIPENZ (Civil Structural), CPEng, IntPE,
for
Northern Civil Consulting Engineers Ltd

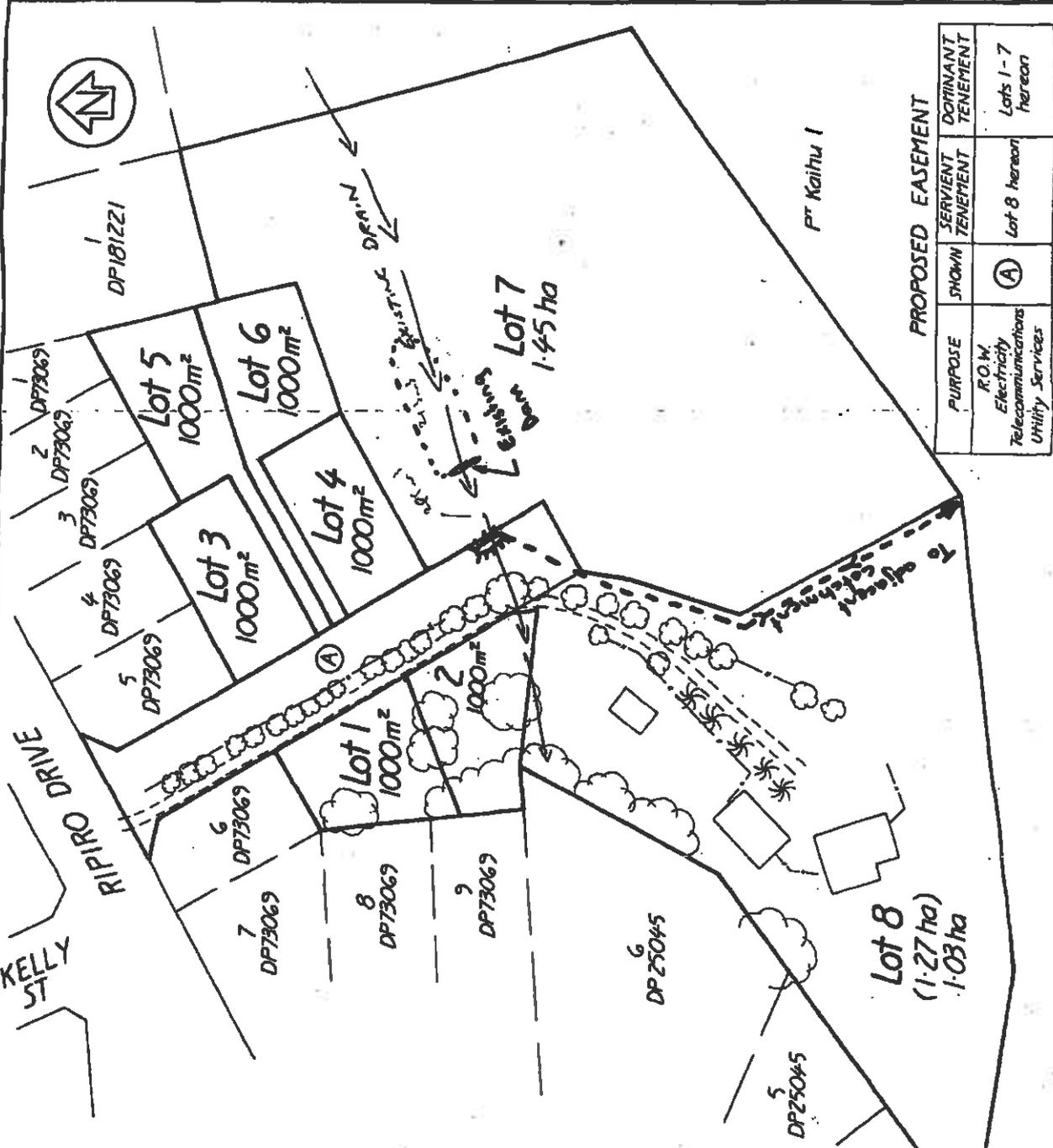
APPENDIX A – Subdivision Plan



LOCALITY DIAGRAM
Scale 1:8000

NOTES:

Areas and distances are approximate only and subject to survey.
 Building setbacks are 4.5m from all road boundaries, or a boundary of 1.5m and 3m from all other boundaries.
 Total Area: 3.3197ha
 Compiled in: CT42A/855



PROPOSED EASEMENT

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W Electricity Telecommunications Utility Services	(A)	Lot 8 hereon	Lots 1-7 hereon

LANDS & SURVEY

LAND & ENGINEERING SURVEYORS
 RESOURCE MANAGEMENT CONSULTANTS
 CADASTRAL & TOPOGRAPHICAL MAPS
 TOURIST & AERIAL MAPS
 GPS & SPATIAL INFORMATION SERVICES
 (Incorporating HODGES & ELRICK LTD)

**Proposed Subdivision of
Pt Lot 3 DP66113**

Prepared for D & T Gibbons

PROJECT	IB	CREATED	IB	SCALE	1:1000	SHEET	(A3)
DRAWN		DATE	February 2005			SHEET OF	7/83
CHECKED		DATE					

APPENDIX B -- Drainage Calculations

NORTHERN CIVIL
 Consulting Engineers Ltd
 PO Box 10050, Te Maai Whangarei
 CALDERA RD, Te Maai Whangarei
 Phone: 09 438 5373

JOB NAME: Gibber Bayly's Area | PAGE No:
 SECTION:
 JOB No: | DESIGNED: [Signature]
 DATE: 31/5/05 | CHECKED:

Average slope 20m in 1.200m = 1.7/100
 Overland flow path = 1.2km
 Densely grassed surface $n = 0.060$
 Overland flow time = 65min $\therefore t_c = 1 \text{ hour}$

$$Q = \frac{1}{3.6} C I A$$

$$C = 0.35 \quad A = 0.498 \text{ km}^2$$

for hr	5	10	20	50
depth = 1	83	39	45	52

for ARI = 20 year

$$Q = \frac{0.35 \times 45 \times 0.498}{3.6}$$

$$= 2.18 \text{ m}^3/\text{sec}$$

compare with stormwater runoff plan @ of 1.1 m³/sec
 but use C = 0.05

for t_c calculated $t_c = 30 \text{ min}$

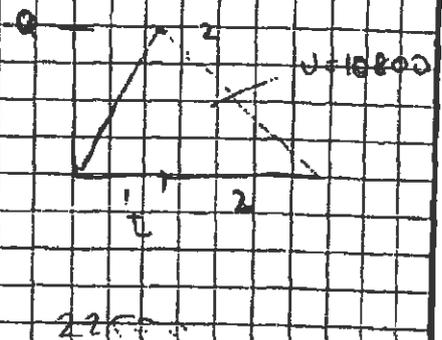
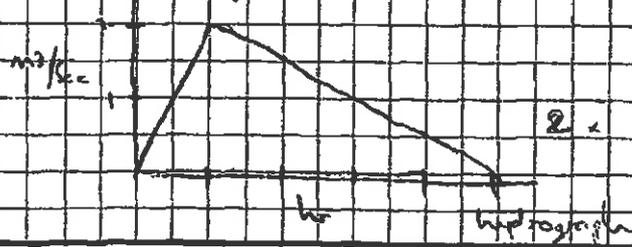
30 min	ARI	5	10	20	50
	depth	29	36	43	51
	t_c			33	

for ARI = 20 year

$$Q = 0.35 \times \frac{43}{3.6} \times 0.498$$

$$= 2.08 \text{ m}^3/\text{sec}$$

compare with



NORTHERN CIVIL
 Consulting Engineers Ltd
 PO Box 10050, Te Mai, Whangarei
 Ph (09) 438 3345, Fax (09) 438 3373
CALCULATION SHEET

JOB NAME:		PAGE No:
SECTION:		
JOB No:	DESIGNED:	
DATE:	CHECKED:	

Additional infiltration

per lot Assume 350m² impervious, with
 a runoff coeff (C) of 0.25 higher than existing
 grass

$$\text{Additional } Q = \frac{1}{3.6} CIA$$

$$C = 0.25 \quad I = 350 \times 10^{-6} \text{ km}^2$$

$$T = 45 \text{ min/hr}$$

$$Q = \frac{1}{3.6} \times 0.25 \times 45 \times 350 \times 10^{-6} \text{ m}^3/\text{sec}$$

$$= 1.1 \times 10^{-3} \text{ m}^3/\text{sec}$$

$$= 1.1 \text{ l/sec per lot} = 4 \text{ m}^3/\text{hr} \Rightarrow 20 \text{ m}^3/\text{day}$$

$$\text{Total } Q \text{ per lot} = 0.25 \times 1000 = 45 \text{ m}^3$$

$$\text{For 6 lots} = 270 \text{ m}^3$$

maximum additional = 120 m³ = additional storage required
 for 6 lots

time for runoff

length of overland flow path $L = 60 \text{ m}$
 slope $S = 5\%$

$$\text{time} = 12 \text{ min}$$

RAINFALL DEPTH - DURATION - FREQUENCY RELATIONS

UNITS. MILLIMETRES. AN ASTERISK SHOWS INCOMPLETE RECORD AND POSSIBLE
 OF A GREATER VALUE HAVING OCCURRED

THE SYMBOL * INDICATES THAT MAX IS AN OUTLIER. VES/X.
 X AND S ARE MEAN AND STANDARD DEVIATION OF ANNUAL MAXIMA.

A53982 DARGAVILLE MAF

YEAR	10M	20M	30M	1H	2H	6H	12H	24H	48H	72H
77	17	22	25	26	26	28	31	54	68	70
78	31	31	25	29	33	47	59	67	89	102
80	17	17	18	19	22	33	44	51	70	90
81	11	17	20	23	31	42	43	74	75	87
82	8	9	10	15	17	37	55	70	76	77
83	7	11	17	22	28	42	45	54	61	67
84	20	34	39	42	43	43	63	72	83	89
85	9	15	18	21	33	69	94	122	129	133
86	8	10	15	22	28	57	69	92	101	115

A53982 DARGAVILLE MAF

UNITS. MILLIMETRES

DURATION	10M	20M	30M	1H	2H	6H	12H	24H	48H	72H	(T,N)
X	12	17	21	24	29	44	56	72	81	92	
S	5	8	8	8	7	12	18	22	21	22	
Vs	41	45	40	32	25	28	32	31	25	23	
T=2	11	16	19	23	28	43	54	69	81	89	0.319
T=5	17	25	29	33	37	58	76	97	106	116	0.627
T=10	21	31	36	39	42	68	90	115	123	133	0.889
T=20	25	37	43	45	48	78	105	132	139	150	1.150
T=50	30	45	51	53	55	90	123	155	160	172	1.494
LIM	26	38	43	46	49	79	107	135	141	152	0.889
MAX	20	34	39	42	43	69	94	122	129	133	
N	9	9	9	9	9	9	9	9	9	9	

TABLE 2

APPENDIX C – Borehole Logs

AS/NZS 1547:2000

80

Excavation log for AS/NZS 1547

Company logo & address details

Client name: D-T Construction

Excavation no: 1

Project name:

Lot number: 5

Logged by: [Signature]

Map sheet name:

Street address: Lots 3 DP 6613 Rapiro Drive Baylys Beach

Date of inspection: 25/05/05

Grid reference: E N

Surface level: R L

Slope: % flat

Land form element: rolling

Ground cover: grass

Surface condition: level

Vegetation:

Water table depth: Not done

Indicative drainage: SW

Parent material:

Parent material:

Parent material:

Parent material:

Layer	Lower depth mm	Horizon	Moisture condition*	Colour (moist)	Field texture	Coarse fragments % volume	Structure	Modified Emerson	Soil category	Sample taken (Y/N)	Consistency	Permeability	Other assessment
1	0-20	Topsoil	slightly moist	10YR 5/6	fine sand	0	granular						
2	20-450		moist	10YR 5/6	fine sand	0	granular						
3	450-550		Moist	10YR 5/6	fine sand	0	modified granular		670	becomes hard			
4	550-670		"	strong	medium	0			Scale to 1.6m				
5													

Use another form if > 5 layers or major horizons.

Notes/comments/observations:

Overall Soil Category assigned:

Soil appears favourable for:

(List system types)

Checked by:

Maximum depth of system: 1.6m

FIGURE 4.1A1 SOIL PROFILE INFORMATION AND DATA SHEET : EXAMPLE

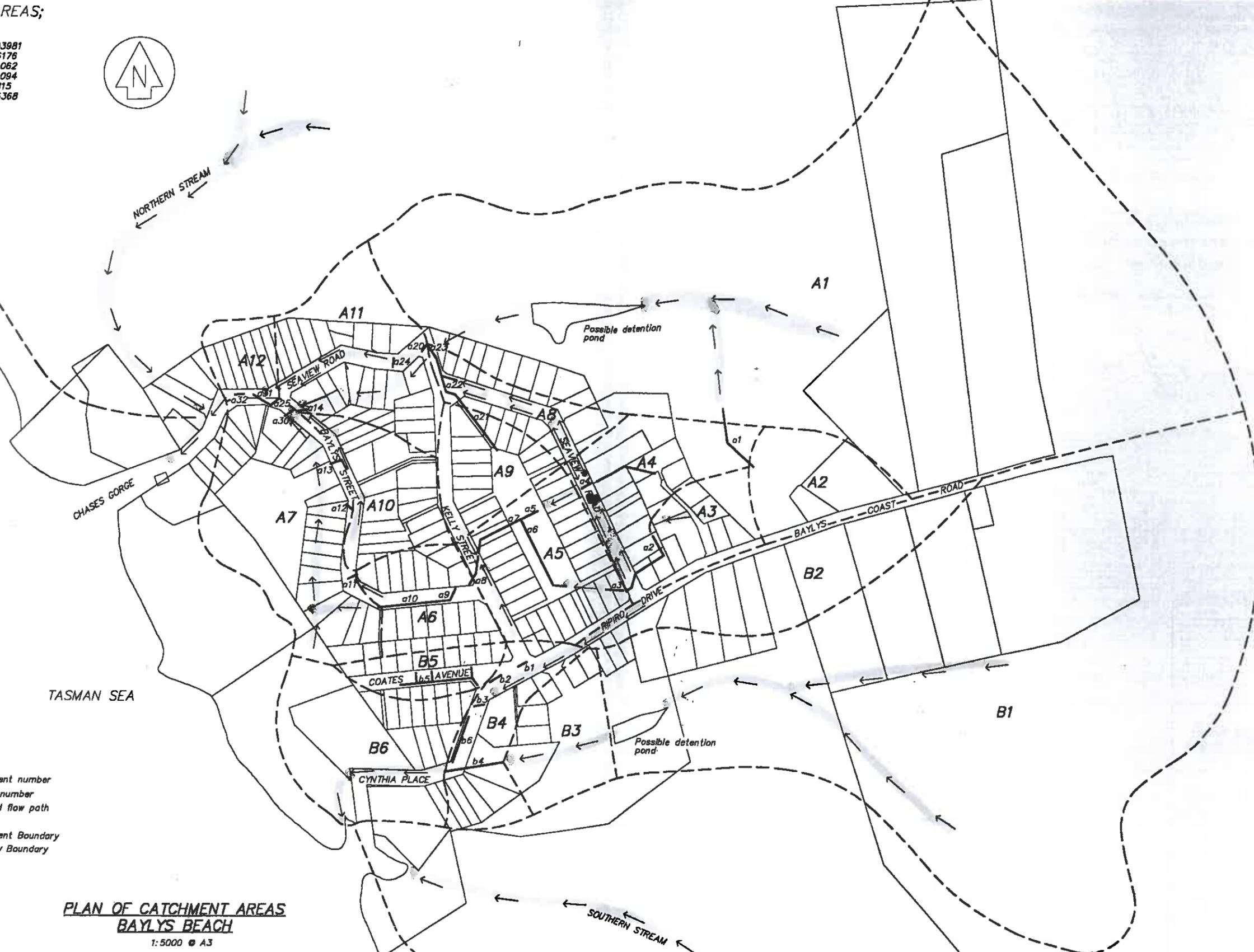
Soakage Test

Hole No 2
 Hole dia mm 105
 Hole depth mm 630
 Date 25-May-05

Time	Depth	Time elapsed	Water volume	Soakage area	Soakage rate	Ave Head	Soakage rate / mhead
Min	mm	min	l	sq. m	l/sqm/min	m	l/sqm/min/m
1.5	123						
2.5	152	1	0.25111	0.1625	1.55	492.5	3.1
7.5	240	5	0.76199	0.1432	1.06	434	2.5
11.5	281	4	0.35502	0.1219	0.73	369.5	2.0
2.5	78	2.5	0.67540	0.1950	1.39	591	2.3
3.7	100	1.2	0.19050	0.1785	0.89	541	1.6
4.5	108	0.8	0.06927	0.1735	0.50	526	0.9
16.5	244	12	1.17763	0.1498	0.66	454	1.4
29.5	320	13	0.65808	0.1148	0.44	348	1.3
39.5	370	10	0.43295	0.0940	0.46	285	1.6
43.5	382	4	0.10391	0.0838	0.310039	254	1.2

CATCHMENT AREAS;
(square metres)

- | | |
|-----------|-----------|
| A1-354245 | B1-303981 |
| A2-19279 | B2-36176 |
| A3-15231 | B3-19062 |
| A4-27179 | B4-19094 |
| A5-30511 | B5-9815 |
| A6-17577 | B6-36368 |
| A7-47711 | |
| A8-13355 | |
| A9-16103 | |
| A10-19417 | |
| A11-34189 | |
| A12-8351 | |



- KEY;**
- A1, A2 Catchment number
 - a1, a2 Culvert number
 - ← Overland flow path
 - Culvert
 - - - Catchment Boundary
 - Property Boundary

PLAN OF CATCHMENT AREAS
BAYLYS BEACH

1:5000 @ A3

No.	Revisions	Date	Appd.

Scale	Scale	Checked	Date
Surveyed			
Designed	M.W.		9/03
Drawn	G.P.		9/03
Approved			

Duffill Watts & King Ltd
CONSULTING ENGINEERS

File: Ref C:\101200-200-1134\Baylys & Pahi stormwater.DWG

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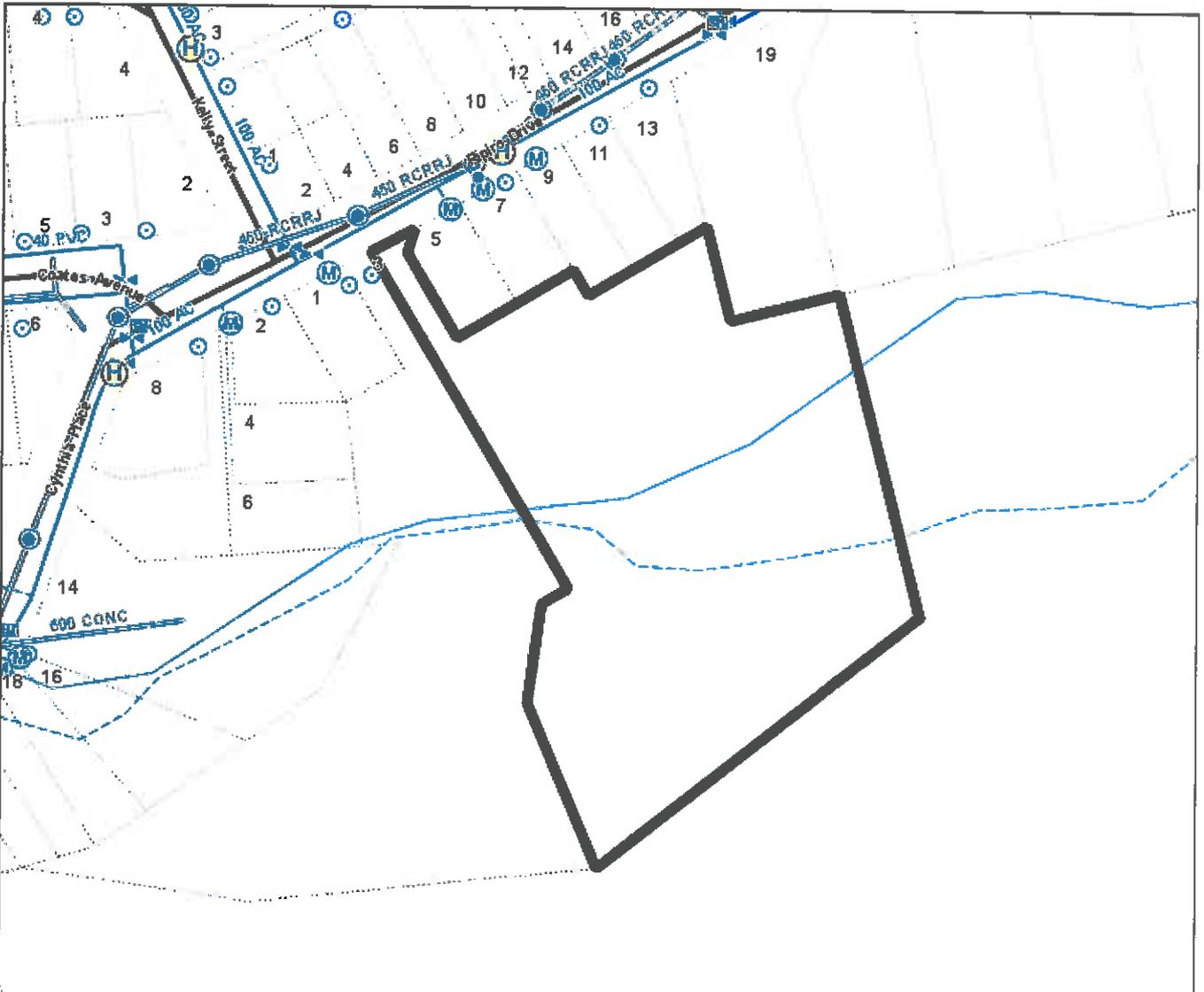
Client **KAIPARA DISTRICT**
KAIPARA DISTRICT COUNCIL

Project **BAYLYS BEACH STORMWATER MANAGEMENT PLAN**
CATCHMENT AREAS

Job No.	20112	Sheet No.	01
Drawing No.	1986 C	Phase	RO
Revision			

0104016612

Print Date: 1/11/2016
 Print Time: 1:25 PM



Stormwater	Water	Wastewater	Drainage
Az Stormwater Line Label	Az Water Line Label	Az Wastewater Line Label	Urban Drainline
Stormwater Point	Water Point	Wastewater Point	Stopbank Line
Manhole	Connection	Boundary Kit	Floodgate Point
CatchPit	Dummy Node	Dummy Node	Drainage Catchment
Dummy Node	Fire Hydrant	FlushPoint/Outlet	Drain Label
Soakpit	Inlet	Grinder Pump	Drainline
Outlet	Meter	Inspection Shaft/Manhole	nz-rivers-and-streams-centrelines
Inlet	Tapping Band	Pump Station	nz-mainland-river-centrelines-topo-150k
Floodgate	Treatment Plant	Rodding Eye	nz-mainland-drain-centrelines-topo-150k
Unknown	Tank	Storage Tank	Bridge_Point
Stormwater Line	Valve	Valve	SLU_Polygons
Culvert	Other	Other	SLU_Points
Catchpit Lead	Water Line	Wastewater Line	RAMM Road Export
Gravity Main	Pipe Main	Gravity Main	RAMM Roads
Open Drain	Raw Water	Rising Main	Metal
Service	Rising Main	Service	N/A
Other Drain	Service	Wastewater Plant	Sealed
	Water Plant		

Scale: 1:2101
 Original Sheet Size A4

Projection: NZGD2000 / New Zealand Transverse Mercator 2000
 Bounds: 1867328.19454132,8020810.31299247
 1867716.74834108,8021133.82989013

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0104016612

Print Date: 1/11/2016
 Print Time: 1:26 PM



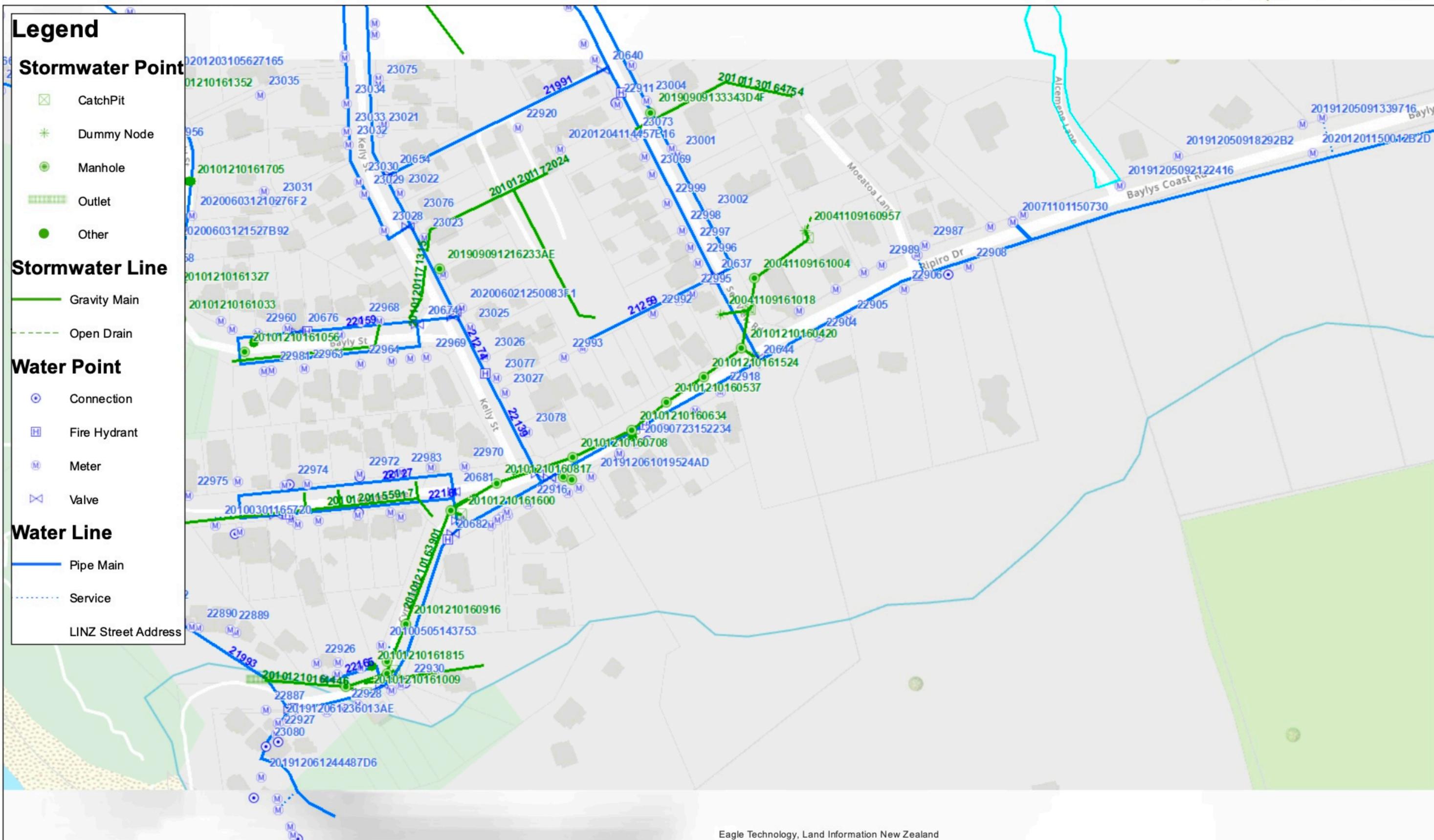
Stormwater	Water	Wastewater	Drainage
Az Stormwater Line Label	Az Water Line Label	Az Wastewater Line Label	Urban Drainline
● Stormwater Point	○ Water Point	⊠ Wastewater Point	⌞ Stopbank Line
● Manhole	○ Connection	⊠ Boundary Kt	● Floodgate Point
■ CatchPit	* Dummy Node	* Dummy Node	▨ Drainage Catchment
* Dummy Node	⊠ Fire Hydrant	⊠ FlushPoint/Outlet	● Drain Label
■ Soakpit	↑ Inlet	⊠ Grinder Pump	⌞ Drainline
□ Outlet	⊠ Meter	⊠ Inspection Shaft/Manhole	⌞ nz-rivers-and-streams-centrelines
↑ Inlet	★ Tapping Band	⊠ Pump Station	⌞ nz-mainland-river-centrelines-topo-150k
◆ Floodgate	⊠ Treatment Plant	⊠ Rodding Eye	⌞ nz-mainland-drain-centrelines-topo-150k
◆ Unknown	○ Tank	⊠ Storage Tank	● Bridge_Point
⌞ Stormwater Line	⊠ Valve	⊠ Valve	⊠ SLU_Polygons
⌞ Culvert	● Other	● Other	● SLU_Points
⌞ Catchpit Lead	⌞ Water Line	⌞ Wastewater Line	⌞ RAMM Road Export
⌞ Gravity Main	⌞ Pipe Main	⌞ Gravity Main	⌞ RAMM Roads
⌞ Open Drain	⌞ Raw Water	⌞ Rising Main	⌞ Metal
⌞ Service	⌞ Rising Main	⌞ Service	⌞ N/A
⌞ Other Drain	⌞ Service	⌞ Wastewater Plant	⌞ Sealed
	⌞ Water Plant		

Scale: 1:2101
 Original Sheet Size A4

Projection: NZGD2000 / New Zealand Transverse Mercator 2000
 Bounds: 1667328.19454132,8020810.31299247
 1667716.74834108,8021133.82988013

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210028-Assets



Eagle Technology, Land Information New Zealand



Scale: 1:2,257

Original Sheet Size: A3

Projection: NZGD 2000 New Zealand Transverse Mercator

Bounds: 1,667,080.8192 6,021,355.3287
1,667,996.2538 6,020,818.3492

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