

PROPOSED PLAN CHANGE ENGINEERING REPORT

**18, 28, 44, 76, 76A, 112, 116, 136, 140 WAIHOEHOE ROAD
AND 15-50 KATH HENRY LANE
DRURY, AUCKLAND**

Prepared for:
Oyster Capital Ltd
May 2019




PROPOSED PLAN CHANGE ENGINEERING REPORT

18, 28, 44, 76, 76A, 112, 116, 136, 140 WAIHOEHOE ROAD
AND 15-50 KATH HENRY LANE
DRURY, AUCKLAND

Prepared for:
Oyster Capital Ltd
May 2019

Crang Consulting Ltd
Unit 4/517 Mount Wellington Highway, Mount Wellington
PO Box 42-089, Orakei, Auckland 1745
Tel: (09) 320 3325
Email: info@crangcivil.co.nz

Document Quality Assurance Statement			
File Ref.	1257-1		
Report Name	Engineering Report		
Report No.	1257/1		
File Location	p:\1257 - waihoehoe road\6.0 reports\6.2 plan change report\engineering report - 116 waihoehoe road plan change rev03.doc		
Action	Personnel	Sign	Date
Prepared	Cameron Gifford Senior Civil Engineer		10/05/2019

Document Revision Status				
Revision No.	Description	Section/ Page	Author	Date
01	For Information		CG	10/05/2019
02	For Issue		CG	16/08/2019

Contents

1	Executive Summary	5
2	Introduction	6
3	Earthworks	7
4	Water Supply.....	9
5	Wastewater.....	9
6	Utility Services.....	11
7	Conclusion	12

Appendices

Appendix A Plan Change Engineering Drawings

Appendix B Watercare Correspondence

1 Executive Summary

Oyster Capital (“Oyster”) is applying to Auckland Council for a Plan Change to the Auckland Unitary Plan (Operative in Part) (AUP) to rezone 48.9 hectares of Future Urban land in Drury East. It is proposed to rezone the land to a mix of residential zones (Terraced Housing and Apartment Buildings and Mixed Housing Urban) with provision for drainage reserves. The rezoning proposal provides capacity for up to 1054 dwellings. Additionally, a precinct is proposed with trigger rules that stage the release of development capacity with the delivery of required infrastructure.

Oyster has an interest in 18.4 hectares of land on the northern side of Waihoehoe Road as outlined in Figure 1 below. Oyster are experienced residential and land developers in Auckland and are currently undertaking large scale and high-quality housing developments in Whenuapai and Beachlands.

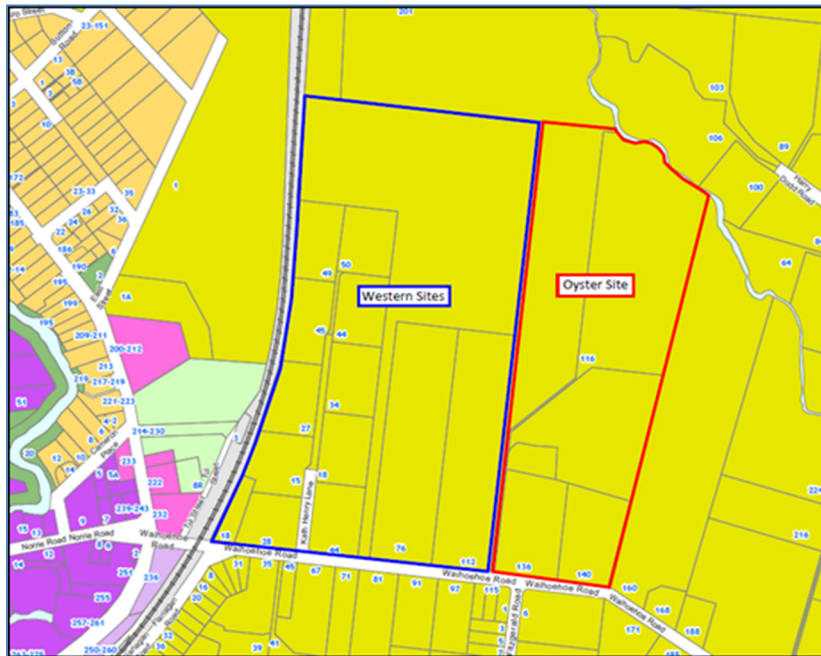


Figure 1: Showing the Plan Change Area and the Oyster Capital land holdings (shown in red)

An infrastructure assessment and report has been prepared by Crang Consulting to support a Private Plan Change (PPC) made by Oyster Capital at 18, 28, 44, 76, 76A, 112, 116, 136, 140 Waihoehoe Road and 15-50 Kath Henry Lane. Infrastructure can be provided to service the proposed development area as follows:

- Earthworks will be required to form suitable lot platforms and appropriately graded proposed public roads. Environmental controls can be utilized in strict compliance with Councils GD05 standard.
- Wastewater servicing can be provided for the development in compliance with Watercare’s engineering requirements. It is proposed to service the development by installing temporary pumpstations and connecting to Watercares’ trunk gravity main installed along Fitzgerald Road. This has been agreed in principal with Watercare.

- Potable water can be supplied to and throughout the development by way of a new public watermain from Watercares BSP at Flanagan Road - consistent with the Watermain strategy in the Opākeke-Drury draft Structure Plan.

It is considered that there is adequate existing infrastructure in the immediate vicinity to allow for the rezoning of the land and future developments. The effect of the proposal on the existing infrastructure is considered to be less than minor.

For information regarding road design, stormwater and contamination we direct the reader to the associated Traffic Report, Stormwater Management Plan and Preliminary Site Investigation respectively provided by others.

2 Introduction

Crang Consulting Ltd has been commissioned by Oyster Capital Ltd to assess the existing infrastructure and to outline the required engineering solutions required to support a private plan change of a site comprising of a number of properties. These properties include 18, 28, 44, 76, 76A, 112, 116, 136, 140 Waihoehoe Road and 15-50 Kath Henry Lane, referred to as “the site” in this report.

The proposed plan change envisages a maximum of 1054 lots over 48.9 hectares. The proposed lots will be predominantly zoned Mixed Housing Urban (58%) with the remainder comprising Terrace Housing and Apartment (42%). Given the size of this development and the fragmented land holding, the proposed lots will be delivered in stages. It is anticipated that the existing lot 116 Waihoehoe Road be delivered first (with sub staging possible) with construction commencing as early as 2020.

The site is located in close proximity to the existing township of Drury in the south of Auckland. The development site is predominantly rural in nature and currently contains a number of life style blocks and an industrial facility (South Auckland Forging Engineering Ltd). The vast majority of the site is in pasture. The site is bordered to the North by the Waihoehoe Stream, to the west by the North Island Main Trunk Railway Line (NIMT) and Waihoehoe Road to the South.

The site has a rolling topography with a network of existing natural gullies interspersed throughout the site. The southern portion of the site falls gently from East to West via an existing gully. The northern portion of the site generally falls from South to North through a series of existing gullies toward the Waihoehoe Stream. There are a number of small manmade lakes contained in natural gully systems.

An aerial photo of the site is shown below in Figure 2

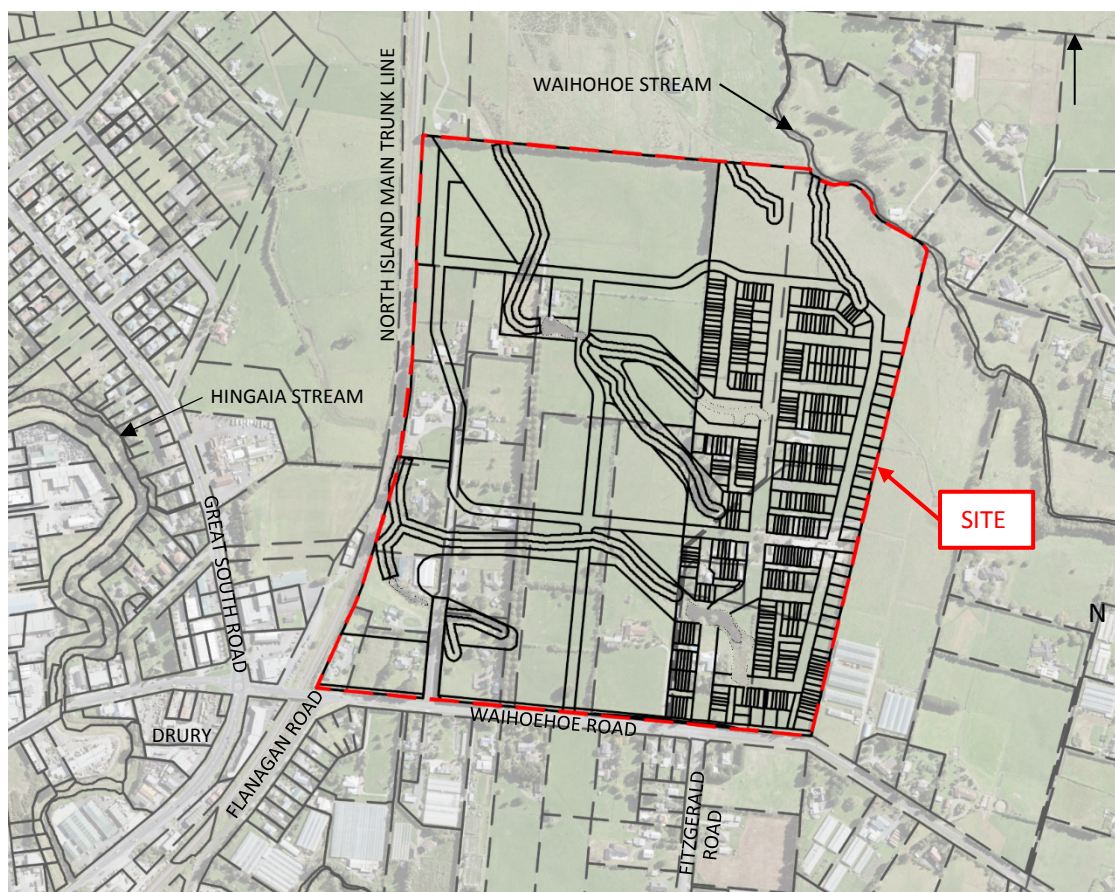


Figure 2 - Existing Site

The key infrastructure considerations associated with developing the land have been identified as follows:

- Undertaking site wide bulk earthworks to achieve suitable building platforms and that required for the construction of the new roads.
- The ability to provide adequate services for the development including wastewater reticulation, water supply and utility services.

These issues are addressed in this report.

3 Earthworks

3.1 Earthworks Description

Earthworks will be necessary on site to develop the land, build the roads and prepare building platforms. The proposed design for these lots will achieve the following:

- Minimise the earthworks volumes as much as practical
- Preserve existing stream systems by maintaining stream channels where detailed.
- Provide suitable gradients for each house site and therefore minimises future earthworks by building contractors.

- Achieve road gradients and levels that comply with Council standards and directs overland flows to the appropriate stormwater treatment device/attenuation basin.

The final earthworks levels will be determined at detailed design stage and will be subject to resource consent and engineering plan approval. Preliminary analysis suggest a cut to fill balance is achievable with a nominal cut and fill depth of 3.0m.

Levels are nominally proposed to be lifted on the northern extent of the proposed development to form a park edge road. This fill will be marginally within the 100 year flood plain therefore offset flood mitigation will be required. It is proposed that this flood volume will be fully compensated for by cutting within the 100 year flood plain to the north of the park edge road.

All material will be placed under the supervision of a suitably experienced Geotechnical Engineer.

The earthworks area for the entire development is expected to be in the vicinity of 49ha (inclusive of flood offset mitigation earthworks). Earthworks will be staged over multiple earthwork seasons.

3.2 Erosion and Sediment Control

Erosion and sediment controls will comply with the requirements of the Auckland Council GD05 “Erosion and sediment control guidelines”. It is expected that a combination of erosion and sediment controls will be required including but not limited to:

- The construction of new sediment retention ponds dosed with flocculent to maximize sediment removal efficiencies.
- Decanting earth bunds dosed with flocculent to maximize sediment removal efficiencies.
- The use of cleanwater diversion bunds, to intercept and direct cleanwater away from the proposed area of works. These bunds will be sized to accommodate flows from 5% Annual Exceedance Probability (AEP) storm event.
- Progressive stabilization of the earthworks area as it is completed.
- The construction of topsoil bunds, silt fences and hay bales for areas that are outside of the catchment of a sediment pond.
- Installation of contour drains at the completion of each days work.

The production of an Adaptive Environmental Monitoring Management Plan (AEMMP) could be utilized to monitor treatment outcomes and allow corrective action to maximize treatment efficiencies. Regular site inspections by Council Officers will further ensure high levels of sediment and erosion control proficiency.

4 Water Supply

Offsite works are required to service the site with a potable reticulated water supply. It is proposed to install a new watermain between the Flanagan Road Bulk Supply Point (BSP) and the intersection of the collector road and Waihoehoe Road (as shown in Figure 3 below). Connections will be made from the new main on Waihoehoe Road to Kath Henry Lane, the proposed local and collector road. The diameter and alignment is yet to be confirmed and will be subject to detailed investigation of Drury wide potable watermain requirements to ensure sufficient supply is provided for future development areas.

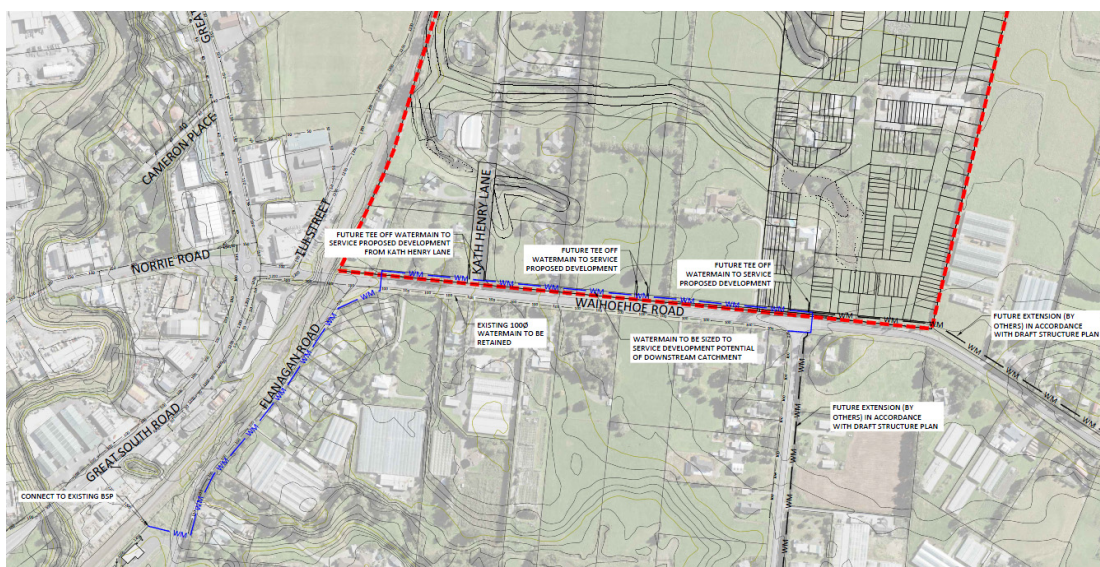


Figure 3 – Offsite Potable Watermain Servicing Layout

The watermain within the development will be sized during Resource Consent and Engineering Plan Approval Stage but will provide for adequate flow rates and pressures for domestic use and firefighting include provisions for hydrants - compliant with the New Zealand Fire Service Fighting Water Supplies Code of Practice SNZ PAS 4509:2008. This proposal is consistent with the Watermain strategy in the Opākeke-Drury draft Structure Plan.

5 Wastewater

The Drury area is a growth area targeted by Watercare. There are several wastewater pumpstation, risingmain and gravity main upgrades and new works proposed over the next 15 years to enable the development of the wider Drury area.

A permanent wastewater solution has been agreed with Watercare to service the development site area however this solution isn't anticipated to become operational until 2028. As a result, an interim solution was agreed with Watercare to enable construction commencement by 2020.

The interim solution is the construction of two temporary pumpstations on the northern periphery of the site (as shown in Figure 4 below) to collect gravity wastewater flows from the development and pump these flows via a rising main to a new gravity sewer at Waihoehoe Road. This gravity main will convey wastewater flows to 91 Fitzgerald Road where it will enter a trunk gravity sewer being constructed by Watercare (operational by mid 2020). The trunk

sewer flows by gravity to the Flanagan Road pumpstation. The proposal is supported by Watercare (refer to Appendix B for email correspondence).

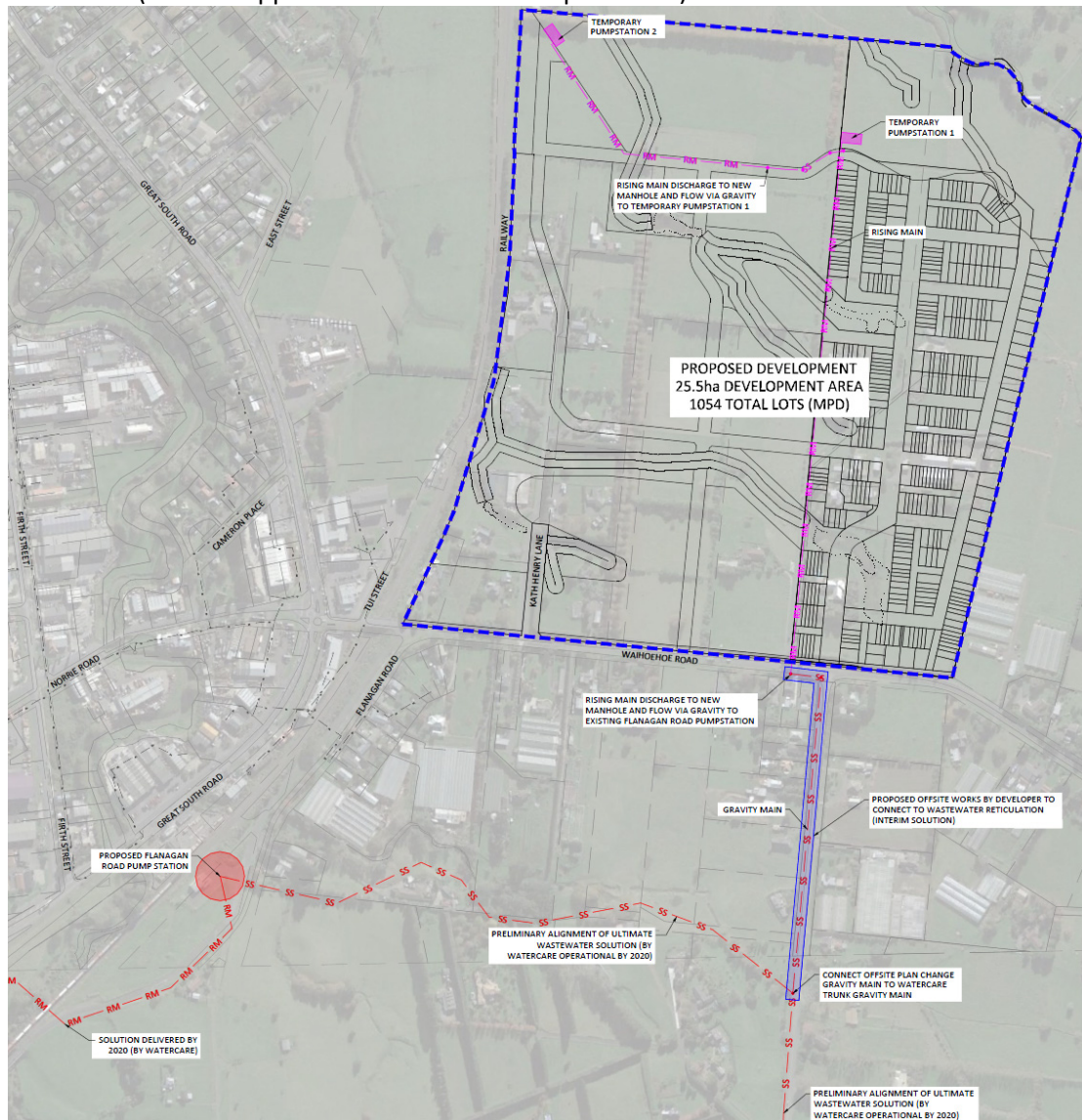


Figure 4 – Interim Wastewater Servicing Solution

The permanent solution requires decommissioning of the existing temporary pumpstations and construction of permanent gravity sewers to be installed linking the satellite manholes for each pumpstation to the new trunk sewer on the northern perimeter of the site. This is scheduled to be installed by Watercare post 2028 (construction dates still to be confirmed). This shown in Figure 5 below.

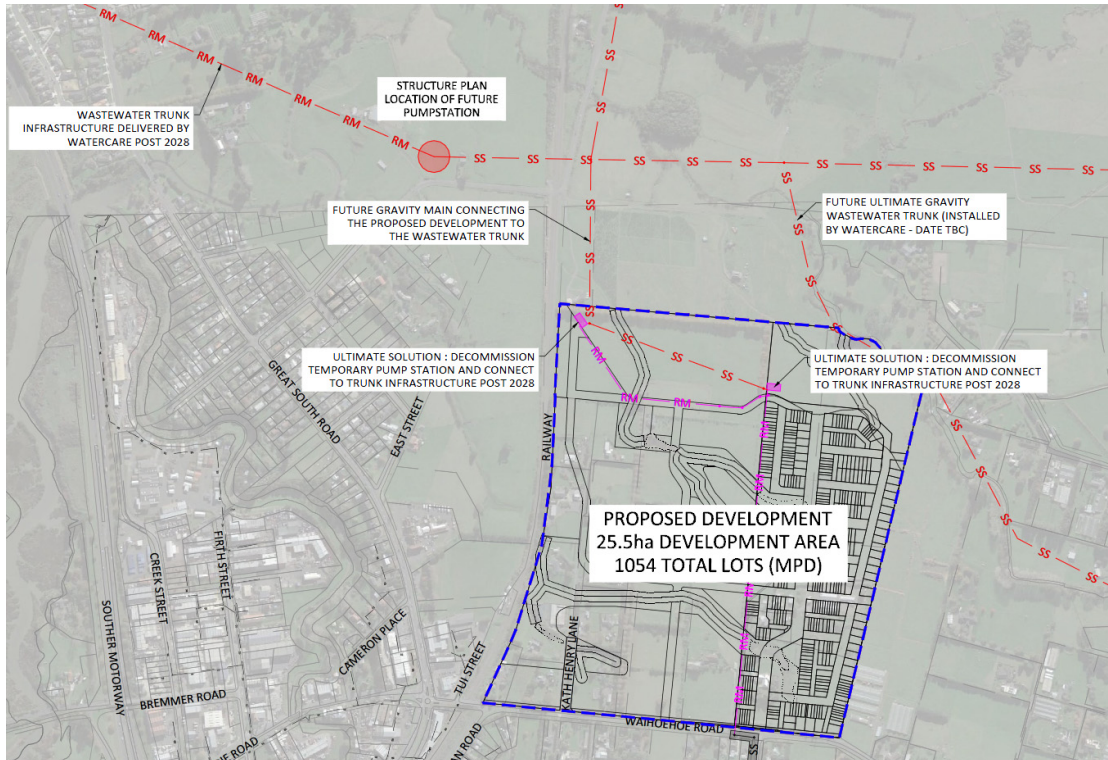


Figure 5 - Permanent Wastewater Servicing Solution

The lots within the proposed development will be drained via new gravity wastewater reticulation to the aforementioned temporary pumpstation (in the interim case) or the trunk gravity sewer to on the northern perimeter in the permanent solution.

6 Utility Services

Existing overhead power and telecommunications infrastructure exists on Waihoehoe Road. It is anticipated that upgrades to both networks will be required to service the proposed development. Vector and Chorus will be engaged to provide these designs which will ensure power and telecommunication infrastructure will be available for the site.

This development does not propose the installation of a reticulated gas supply or envisage its use in any future stage of this development.

7 Conclusion

The civil engineering for the development of 18, 28, 44, 76, 76A, 112, 116, 136, 140 Waihoehoe Road and 15-50 Kath Henry Lane in the PPC in Drury can be summarised as follows:

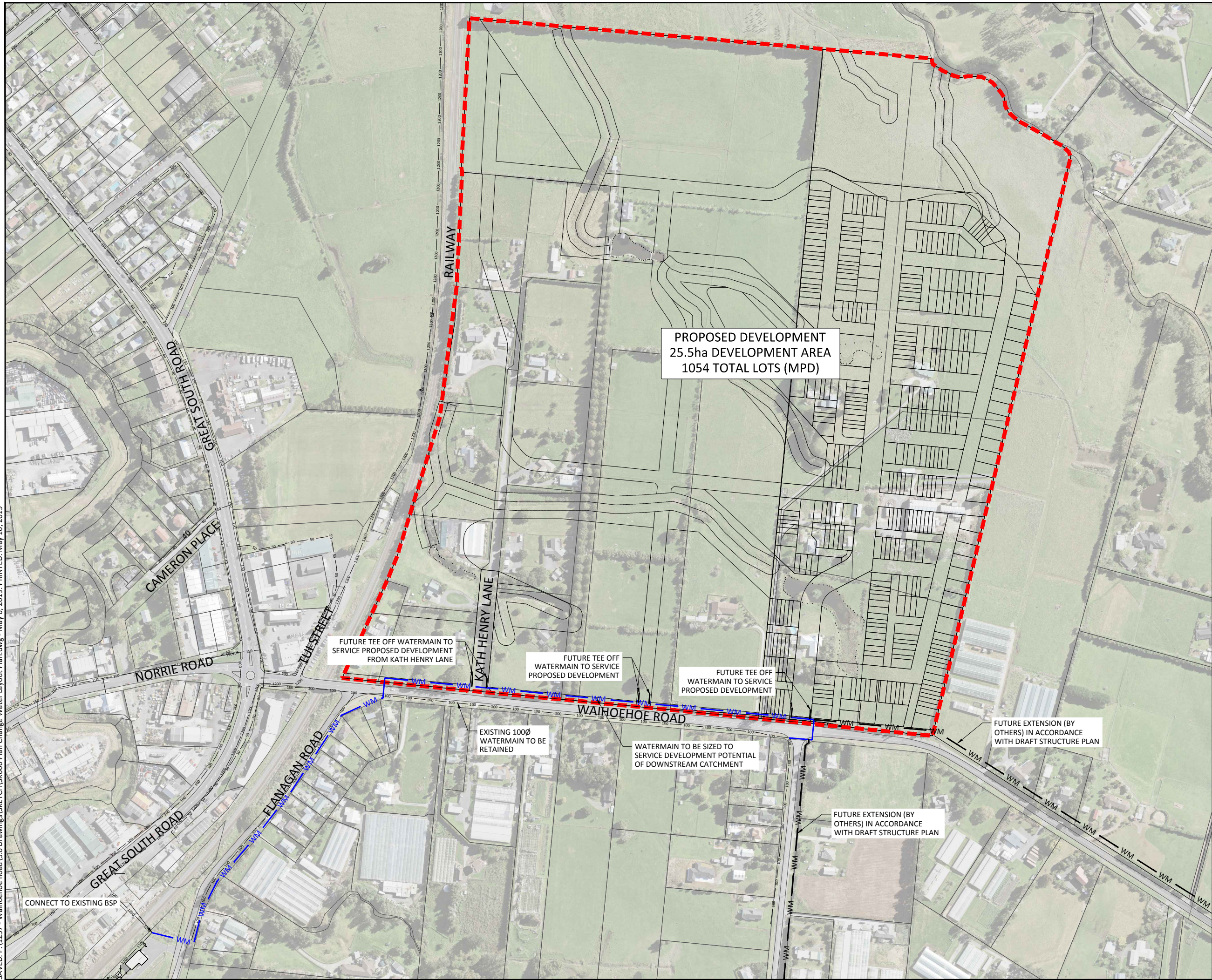
- Earthworks will be required to form suitable lot platforms and appropriately graded proposed public roads. Environmental controls will be utilized in accordance with Council standards to ensure that potential effects from sediment discharges and dust are no more than minor.
- Wastewater servicing can be provided for the development in compliance with Watercare's engineering requirements and connected to an existing adequate system.
- Potable water can be supplied to and throughout the development by way of a new public watermain from Watercares BSP at Flanagan Road. Fire hydrants will be located within the road reserves to provide for firefighting – compliant with the New Zealand Fire Service Fighting Water Supplies Code of Practice SNZ PAS 4509:2008.

It is considered that there is adequate existing infrastructure in the immediate vicinity to allow for the rezoning of the land and future developments. The effect of the proposal on the existing infrastructure is considered to be less than minor.

APPENDIX A

ENGINEERING DRAWINGS

SAVED: P:\1257 - Waihoehoe Road\5.0 Drawings\SKETCH\SK006 Plan Change Water Layout Plan.dwg - May 6, 2019. PRINTED: May 10, 2019



LEGEND

- PROPOSED DEVELOPMENT BOUNDARY
- 10.0 EXISTING CONTOUR
- 10.5 EXISTING CONTOUR
- WM PROPOSED WATERMAIN
- WM FUTURE WATERMAIN
- 100 EXISTING WATERMAIN

0	ORIGINAL ISSUE	CG	30/04/2019
REVISION	CHANGES	CHECKED	DATE

COPYRIGHT:
This document and the copyright in this document remain the property of Crang Consulting Ltd. The contents of this document may not be reproduced either in whole or in part by any means whatsoever without the prior written consent of Crang Consulting.



phone +64 09 320 3325
web www.crangcivil.co.nz
address Unit 4, 517 Mount Wellington Highway, Auckland
post PO Box 42-089, Orakel, Auckland 1745, NZ










CLIENT
OYSTER CAPITAL

PROJECT
**WAIHOEHOE ROAD
PRIVATE PLAN CHANGE**

TITLE
**OFFSITE POTABLE WATER
SUPPLY PLAN**

DATE	APRIL 2019	SCALE	A1 1:2000
DRAWN	MS	A3 1:4000	
DESIGNED	CG	REVISION	0
PROJECT No	1257	DRAWING No	SK006



- | | |
|---|--------------------------------------|
|  | PROPOSED DEVELOPMENT
BOUNDARY |
|  | PROPOSED RISING MAIN |
|  | PROPOSED TEMPORARY
SANITARY SEWER |
|  | PROPOSED SANITARY
SEWER MANHOLE |
|  | PROPOSED
PUMPSTATIONS |
|  | TEMPORARY RISING MAIN |
|  | TEMPORARY GRAVITY
MAIN |
|  | EXISTING SANITARY
SEWER |
|  | EXISTING RISING MAIN |

0	ORIGINAL ISSUE	CG	07/05/19
REVISION	CHANGES	CHECKED	DATE

COPYRIGHT:
This document and the copyright in this document remain the property of Crang Consulting Ltd. The contents of this document may not be reproduced either in whole or in part by any means whatsoever without the prior written consent of Crang Consulting.



phone +64 09 320 3325
web www.crangcivil.co.nz
address Unit 4, 517 Mount Wellington Highway, Auckland
post PO Box 42-089, Orakei, Auckland 1745, NZ

CLIENT

OYSTER CAPITAL

PROJECT

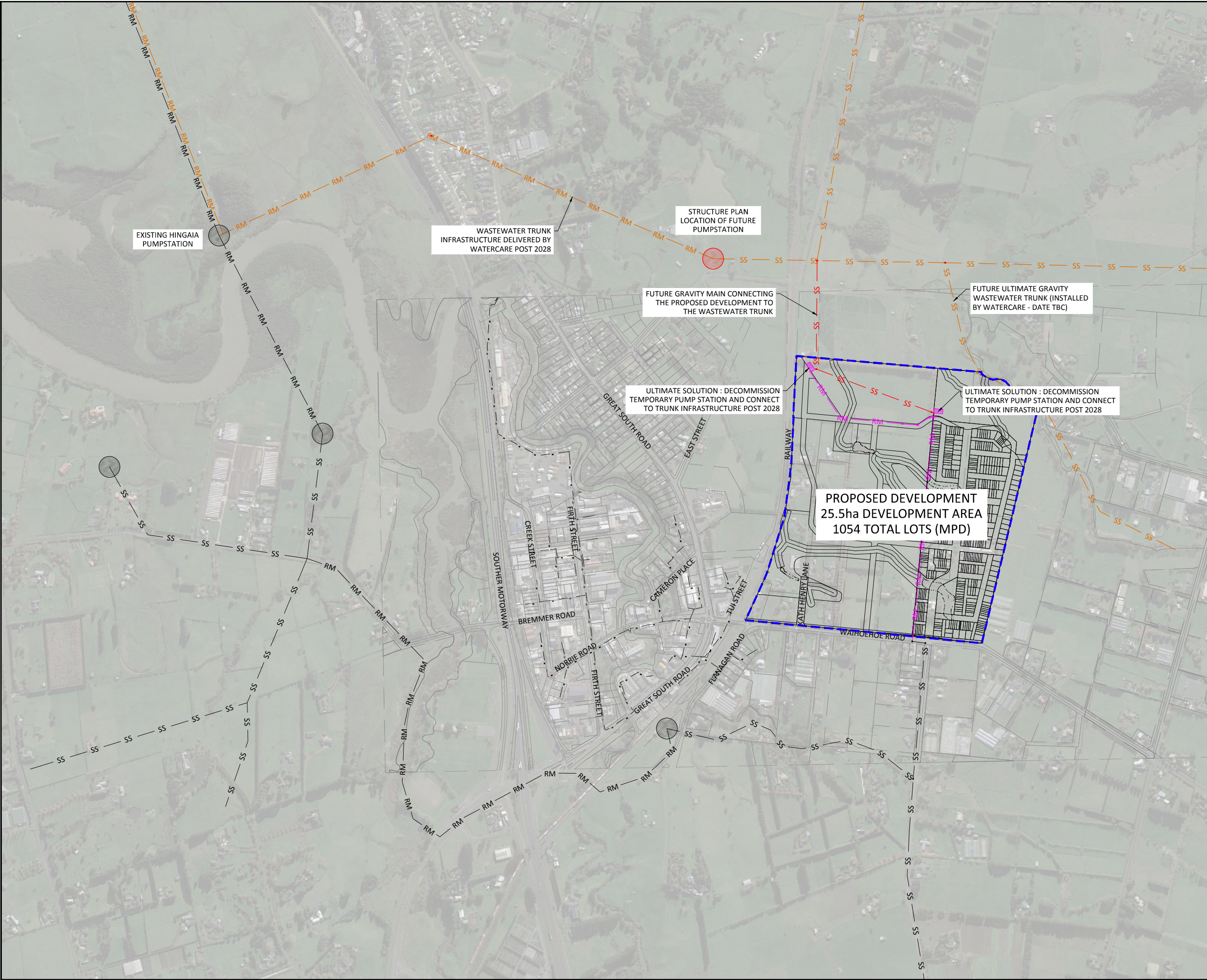
WAIHOEHOE ROAD
PRIVATE PLAN CHANGE

TITLE

PRE 2028 WASTEWATER
SERVICING PLAN
INTERIM SOLUTION

DATE		MAY 2019		SCALE	
DRAWN		MS		A1	1:2500
DESIGNED		CG		A3	1:5000
PROJECT No 1257		DRAWING No SK007		REVISION 0	

SAVED: P:\1257 - Waihoehoe Road\5.0 Drawings\SKETCH\SK007 Plan Change Wastewater Pre2020 Plan.dwg - May 10, 2019. PRINTED: May 10, 2019



LEGEND

- PROPOSED DEVELOPMENT BOUNDARY
- SS PROPOSED SANITARY SEWER INSTALLED BY DEVELOPER
- RM PROPOSED RISING MAIN INSTALLED BY DEVELOPER
- SS SANITARY SEWER INSTALLED BY WATERCARE
- RM RISING MAIN INSTALLED BY WATERCARE
- RM RISING MAIN AND PUMPSTATION TO BE DECOMMISSIONED BY DEVELOPER
- PUMP STATION INSTALLED POST 2028 BY WATERCARE
- SS EXISTING SANITARY SEWER
- RM EXISTING RISING MAIN
- EXISTING SANITARY SEWER MANHOLE
- EXISTING PUMP STATION

0	ORIGINAL ISSUE	CG	07/05/19
REVISION	CHANGES	CHECKED	DATE

COPYRIGHT:
This document and the copyright in this document remain the property of Crang Consulting Ltd. The contents of this document may not be reproduced either in whole or in part by any means whatsoever without the prior written consent of Crang Consulting.



phone +64 09 320 3325
web www.crangcivil.co.nz
address Unit 4, 517 Mount Wellington Highway, Auckland
post PO Box 42-089, Orakei, Auckland 1745, NZ

CLIENT
OYSTER CAPITAL

PROJECT
**WAIHOEHOE ROAD
PRIVATE PLAN CHANGE**

TITLE
**POST 2028 WASTEWATER
SERVICING PLAN**

DATE	MAY 2019	SCALE	A1 1:5000
DRAWN	MS	A3 1:10000	
DESIGNED	CG	REVISION	0
PROJECT No	1257	DRAWING No	SK008

APPENDIX B

WATERCARE CORRESPONDANCE

Cameron Gifford

From: Andrew <andrew@oystercapital.co.nz>
Sent: Thursday, 2 May 2019 6:16 p.m.
To: Cameron Gifford
Subject: Fwd: 116 Waihoehoe Road, Drury
Signed By: andrew@oystercapital.co.nz

Categories: This message has been archived by Retain on May 03 2019 01:17

Hi Cam,

Second waterCare email below FYI.

Andrew McCarthy
Planning and Development Manager
andrew@oystercapital.co.nz
021 403 328



Begin forwarded message:

From: "CTucker (Carl)" <Carl.Tucker@water.co.nz>
Subject: RE: 116 Waihoehoe Road, Drury
Date: 3 August 2018 at 3:23:42 PM NZST
To: Cameron <cameron@oystercapital.co.nz>
Cc: Andrew <andrew@oystercapital.co.nz>, "IGotelli (Ilze)" <ilze.gotelli@water.co.nz>

Hi

By up front I meant when we start providing service from the interim solution – ie when you get your titles but I'm sure we can be pragmatic on that.

The pump station will be located on the northern end of our site at 103 flannagan Rd and a gravity pipe will extend from there to Fitzgerald Rd – you will need to connect to that gravity main at either the flannagan rd or fitzgerlad rd end. Below is a draft of the route (subject to design alterations).

I suggest we draft up the basis of an agreement which will give you something to work with as you progress with the development.

If you are happy in principle with the above we can draft something up

Thanks



From: Cameron [<mailto:cameron@oystercapital.co.nz>]
Sent: Friday, 3 August 2018 12:00 p.m.
To: CTucker (Carl) <Carl.Tucker@water.co.nz>
Cc: Andrew <andrew@oystercapital.co.nz>; IGotelli (Ilze) <ilze.gotelli@water.co.nz>
Subject: Re: 116 Waihoehoe Road, Drury

Hi Carl,

Thanks for taking the time to work this through with us.

That all sounds reasonable. To clarify “upfront” is that prior to starting to works on our site, or prior to the “Final” Waste Water Solution being constructed? The former would be a bit tuff I think but lets work through it.

Have you got a plan of 103 Flannagan Rd showing the pump station...we need to make sure we can get to it with out going through third party property etc...

How would you like to proceed from here?

Cheers

Cam

On 31/07/2018, at 12:18 PM, CTucker (Carl) <Carl.Tucker@water.co.nz> wrote:

Andrew

Our proposed solution is

- An interim connection will be allowed to Watercare's wastewater pump station being built at 103 Flannagan Rd – you will need to construct the connection from your property to this location. This pump station will be available in mid 2020.
- An upfront contribution (payable to Watercare) to the estimated cost of the final solution. This will be a pump station north of Waihoehoe piped to Hingaia. This will cater for the entire catchment on the north side of Waihoehoe and we would expect you to pay an upfront contribution equal to your proportional share of that solution plus the costs of connecting your property to it at the time it is built including decommissioning the interim solution.

If you are amenable in principal to this solution we can work through the concept design and costing of the final solution for this catchment such that we can agree a contribution.

Thanks

Carl

From: Andrew [<mailto:andrew@oystercapital.co.nz>]
Sent: Thursday, 12 July 2018 5:33 p.m.
To: CTucker (Carl) <Carl.Tucker@water.co.nz>
Cc: lGotelli (Ilze) <ilze.gotelli@water.co.nz>; Cameron <cameron@oystercapital.co.nz>
Subject: Re: 116 Waihoehoe Road, Drury

Hi Carl,

Thanks for your quick response. I'll liaise with Vaughan to get more information; we certainly don't want to waste WaterCare or Veolia's time if the approach outlined in the letter is flawed.

Let's touch base next week when the GHD study becomes available to see what options we have.

I appreciate the time you've taken so far on this one - thank you.

Regards,
Andrew

Andrew McCarthy
Planning and Development Manager
andrew@oystercapital.co.nz
021 403 328

On 12/07/2018, at 5:20 PM, CTucker (Carl)
<Carl.Tucker@water.co.nz> wrote:

Andrew

I've had a quick read of the letter from Vaughan – I have sent it to Veolia and our planning guys for comment but my initial feedback is I can't see a link between the analysis which seems to suggest upgrades of pump stations and pipes is required to the conclusion which indicates all is good. Unless I missed something this is disappointing

I also understand Veolia told Crang's that there was no capacity in the Flanagan or Norrie Rd pump stations.

A draft of the GHD study will be available next week – I will revert then – with a proposed solution to your servicing question

Thanks

From: Andrew [<mailto:andrew@oystercapital.co.nz>]
Sent: Wednesday, 11 July 2018 8:01 a.m.
To: IGotelli (Ilze) <ilze.gotelli@water.co.nz>; CTucker (Carl) <Carl.Tucker@water.co.nz>
Cc: Cameron <cameron@oystercapital.co.nz>
Subject: 116 Waihoehoe Road, Drury

Good morning Ilze and Carl,

Hope all is well with you both.

Following on from the meeting we had to discuss the site at 116 Waihoehoe Road, Crang Civil have prepared a brief wastewater servicing letter with supporting information (attached to this email) outlining an interim solution for the site to be serviced to enable subdivision and development to be expedited. This solution involves construction of a temporary pump station on the subject site, possibly pumping to the station at Flanagan Road (subject to further capacity checks).

It would be greatly appreciated if WaterCare could review the attached information and provide comments. If it is agreed that this is an acceptable interim solution we will proceed with further detailed investigations.

At the meeting we had back in May it was mentioned that Robert White at GHD was preparing a wastewater study for the wider catchments area. Has this been completed now, and if so, is it available for distribution to us?

Regards,
Andrew

Andrew McCarthy
Planning and Development Manager
andrew@oystercapital.co.nz

Disclaimer: This e-mail message and any attachments are privileged and confidential. They may contain information that is subject to statutory restrictions on their use.