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Appendix 3: Servicing Report

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Engineering Servicing Report

Darfield Plan Change

CLIENT	ADDRESS	REFERENCE
Rupert and Catherine Wright	13 Mulholland Drive, Darfield	6096

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Report Information

Reference:	6096
Title:	Darfield Plan Change - Servicing Report
Client:	Rupert and Catherine Wright
Filename:	6096- Darfield Plan Change - Servicing Report
Version:	2
Date:	**7/25/2019**
Prepared by:	Jalesh Devkota/James Hopkins
Reviewed by:	Clayton Fairbairn

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Contents

1 Introduction

1.1 Report Purpose

This purpose of this report is to demonstrate the serviceability of the proposed plan change area in Darfield that is outlined in Figure 1, below. This report has been prepared to support the application for a private plan change, to enable rezoning of the land for residential and commercial use.

This report will address wastewater, stormwater and water supply. Roading and natural hazards have been addressed in separate reports.

The proposed development will comprise approximately 35 residential allotments with the balance as commercial allotments. The site is located east of the Darfield township and has been identified as having potential for low density residential development (DAR 6) in the Malvern Area Plan 2031.

Figure 1: Proposed Plan Change Area

2 Wastewater

2.1 Existing Infrastructure

There is no existing wastewater reticulation and treatment system in Darfield. Hence, there is no wastewater network servicing the subject site. Existing dwellings are connected to on site treatment and disposal systems.

2.2 Possible disposal methods

The following methods of wastewater disposal are possible for the plan change area.

2.2.1 On site wastewater treatment and disposal

Sewer from each lot can be treated by an aerated treatment facility such as, but not limited to, the Oasis Clearwater system. Treated effluent will then be disposed of via effluent fields. Consent to discharge wastewater into the ground will be required from Canterbury Regional Council (ECan).

2.2.2 Reticulated system

A gravity or pressure reticulation network, discharging to a centralised wastewater treatment facility is possible. It is considered unnecessary given the ability to service the plan change area by on site treatment and disposal systems.

As there are no existing wastewater reticulation and treatment facilities in Darfield. Baseline Group (BLG) have completed a field visit and investigated possible routes and location for a sewer treatment system. It was concluded that it was not viable to install a new treatment system as it was too land intensive and cost prohibitive.

2.2.3 Reticulated system, pumping to Rolleston

A gravity or low pressure reticulation network, discharging to the existing wastewater treatment plan in Rolleston is an option. It is however that this is unnecessary given the ability to service the plan change area by on site treatment and disposal systems.

2.3 Proposed disposal method

It is proposed that the plan change area is serviced by individual on site disposal systems.

2.4 ECan consent requirements

It is noted that the proposed residential allotments are in the order of 2,000m^2. These will require consent from ECan due to not complying with the requirements of rule 5.8 of the Land and Water Regional Plan (LWRP).

3 Stormwater

3.1 Existing Infrastructure

There is no existing stormwater network in Darfield. Soils in the area are typically free draining and stormwater in this region is primarily discharged into the ground via soak pits installed at each property.

3.2 Ground Water

A review of local ECan wells in the ECan GIS viewer indicates that the water table is at least 80 m below the ground (Refer to Table 1 below). This does not however, preclude the existence of perched groundwater tables within the underlying strata. In addition to that, the groundwater levels within the site will be prone to some fluctuation. The levels are expected to rise during periods of prolonged and/or heavy rainfall and fall during dry weather. Groundwater levels will also be connected to seasonal river levels, and groundwater recharge from the alps and foothills. However there is no evidence that such fluctuations will result in groundwater levels compromising the ability to dispose of stormwater to ground.

Well	Location	Highest Measured Groundwater Level (below GL)	Lowest Measured Groundwater Level (below GL)
BX22/0051	1.08 km east from site	85.22	85.22
L35/0624	477m north from site	127.94	127.94
L35/1163	968m south from site	90.63	90.63
L35/0213	1.43km north from site	91.56	98.74

Table 1: ECan Well Logs

3.3 Proposed Stormwater Disposal Method

Owing to the presence of low ground water levels and lack of reticulated stormwater, it is proposed that stormwater from the plan change area will discharge into the ground via soak pits.

Roof water from dwellings and associated hard stand runoff will be directed to individual soak pits installed at the time of building consent and allowed to infiltrate into the ground.

Standard kerb and channels will be installed either side on each carriageway to collect stormwater and convey to sumps. Runoff from the roads in the proposed plan change area will drain through kerb and channel to sumps. Sumps will be constructed with a nominal storage depth below the outlet pipe to promote settling of sediment and be fitted with submerged Y-junctions to reduce hydrocarbons. Each sump will discharge into an appropriately sized soak pit, positioned adjacent to the sump to allow runoff to discharge to ground.

Roof and hardstand areas within individual lots of the commercial area can also be designed to dispose to ground (with treatment if necessary depending on the nature of the operation within the site).

Discharge to ground is assessed as a discretionary activity under the ECan LWRP, and a stormwater discharge consent will be required.

4 Water Supply

4.1 Existing Infrastructure

The Darfield water supply provides reticulated potable water from two deep bores to both the Darfield Township (unrestricted supply) and two restricted supply zones to rural properties surrounding the township. Water is being supplied to the north of the plan change area site via DN150 pipe in Horndon St and a DN75 PE80 pipe along the northern side of West Coast Road (SH73). To the east of the plan change area Creyke Road is serviced by DN50 PE80 diameter pipe. A Selwyn District Council (SDC) as-built plan is attached as Appendix 1.

4.2 Proposed Servicing

The SDC water supply Activity Management Plan (AMP) indicates that the water supply in Darfield is operating at its consent limit (83 l/s). Reservoir storage (located at the corner of SH73 and Kimberley Rd) and higher distribution pumping capacity helps meet peak hour flow demand in excess of the consented abstraction capacity for short durations. Despite this, the existing Darfield water supply scheme does not have enough capacity to service the proposed plan change area.

Discussions with SDC identified that the supply will need to be augmented for servicing the plan change area. It was agreed to find a suitable land nearby the proposed subdivision or in the subdivision itself, where a new bore, pumps, reservoir and treatment facility will need to be installed. It is anticipated that the bore will need to be extended to a depth in excess of 100m, anecdotally other bores in the area extend to 200m below existing ground to ensure continuity of supply with groundwater fluctuations. A new network of pipes will be installed on the subdivision and water will be supplied to the individual lots from this network. This new reticulation can connect to the existing SDC network as required.

4.3 Water Supplies for Firefighting

For firefighting purposes, the classification for the residential portion of the plan change area will be FW2 (from SNZ PAS 4509:2008 New Zealand Fire Service Firefighting Water Supplies Code of Practice), based on all properties being residential, non-sprinklered structures. This classification requires at least one fire hydrant to be located within 135 m of any dwelling, and two hydrants located within 270m of any dwelling. Each hydrant must have the capacity to provide a minimum of 12.5 L/s with a minimum residual pressure of 100 kPa.

New mains, fire hydrant and water supply pipes need to be installed on the proposed development site. Pipe sizes and positioning of fire hydrants will satisfy the criteria of SNZ PAS 4509:2008.

As the firefighting classification of the individual buildings commercially zoned portion of the plan change is unknown this would need to be ascertained and managed at the time of building consent. This will be managed at the time the new water infrastructure is designed and constructed to ensure there is sufficient capacity to service the likely commercial development within the zone.

5 Electrical and Communications

5.1 Electrical

Orion have confirmed the application site can be serviced with reticulated power from the existing network. A copy of the letter from Orion confirming the ability to connect has been received and is included as Appendix 2 of this report.

5.2 Communications

Chorus NZ Ltd have confirmed the application site can be serviced with telecommunications from the existing network. A copy of the letter from Chorus confirming the ability to connect has been received and is included in Appendix 3.

Each lot will be serviced by underground utilities

6 Conclusion

6.1 General

This servicing report has been prepared to accompany the private plan change application. Based on the preliminary design and discussions to date, the proposed subdivision can be serviced in accordance with the requirements of SDC Engineering Code of Practice, NZS 4404:2010 - Land development and subdivision infrastructure and engineering best practice.

6.2 Services

Wastewater from each lot can be treated and disposed of utilising on site systems. Stormwater from all roof and hardstand areas can discharge into the ground via soak pits. An augmentation of the existing Darfield water reticulation with a new bore and pump within or adjacent to the plan change area will provide adequate flows and pressures to the plan change area. New water mains, submains and laterals along with new fire hydrants will need to be installed at the proposed subdivision site for water supply and firefighting purposes.

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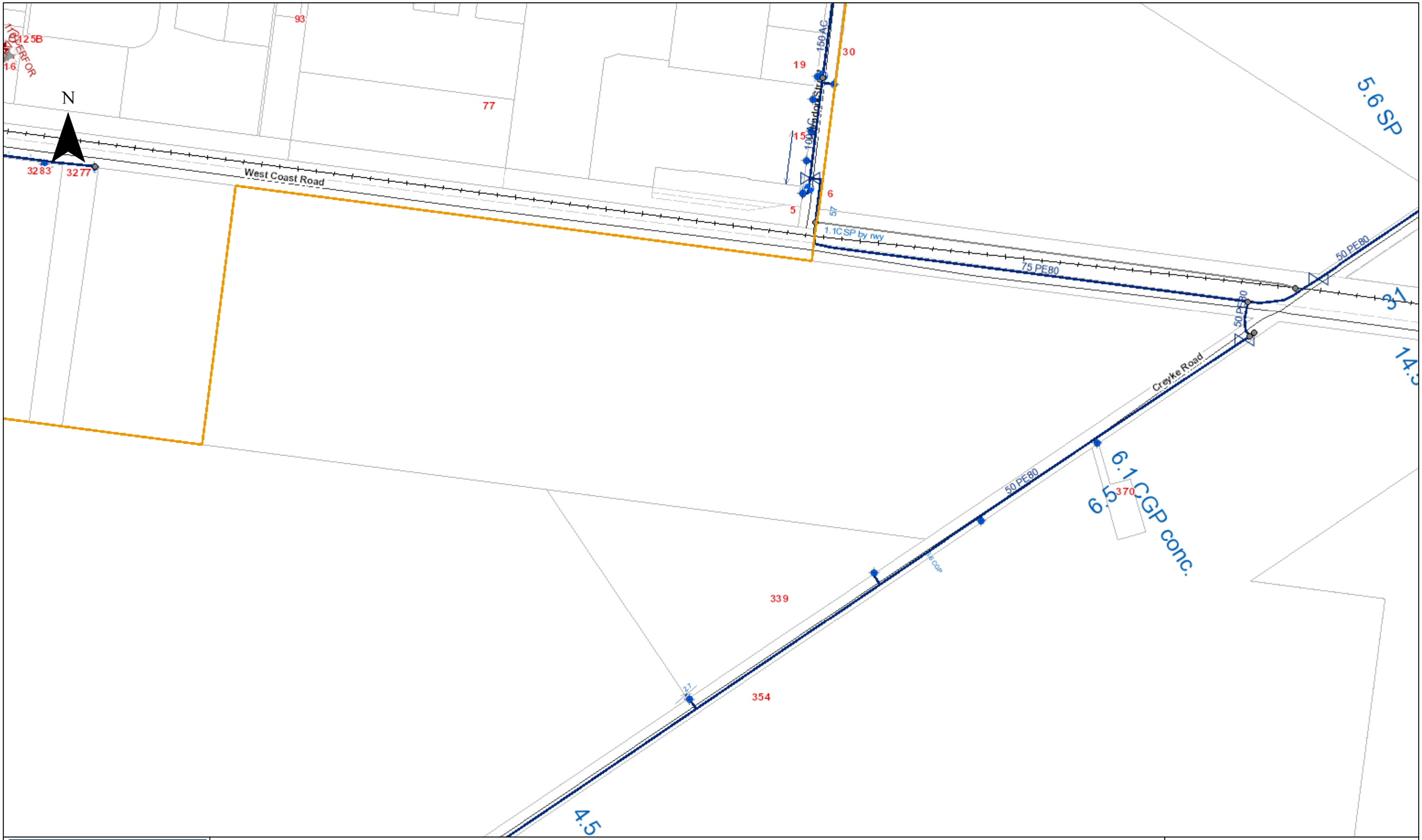
Appendix 1: Water Supply As-Built plan

LocalMaps Print



0 110 220 330 440

Metres

22/08/2017
Cadastral Information dervided from Land Information New Zealand's Digital Cadastral Database (DCDB)

Data Projection: NZGD2000 New Zealand Transverse Mercator

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Appendix 2: Orion Confirmation Letter

Direct: +64 3 363 9722
Email: craig.marshall@oriongroup.co.nz
Ref: **ES336580**

21 August 2017
Re: West Coast Road, Darfield

C/O
Jalesh Devkota
Baseline Group
Level 1 140 Welles Street
Christchurch 8011

jalesh@blg.nz

Dear Sir,

Proposed sub-division connection to the Orion network
CT39B/123, corner of West Coast and Creyke Roads, Darfield.

I refer to your letter and the above named property(s). I have investigated your request and comment as follows;

1. Orion has the capacity on the network to meet your request
2. There are no specific connections available for this subdivision; however,
3. A connection could be made available for one or more dwellings with alteration to the Orion network.
4. There will be costs associated in providing the connection(s). These costs will be the responsibility of the property owner, not Orion.
5. To comply with Orion's network security conditions an alternative feed from adjoining developments may also be required.
6. This type of work would be a typical design build project. If you decide to proceed; have your designer forward their proposal to Orion for approval. Orion will forward Terms and Conditions for acceptance.

The terms and conditions presented to the applicant will encompass Orion's policies and practices current at the time.

Please don't hesitate to contact me on (03) 363 9722 if you have any questions, or email me at craig.marshall@oriongroup.co.nz.

Yours faithfully

Craig Marshall
Reticulation Support Engineer

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Appendix 3: Chorus Confirmation Letter

Chorus Network Services
PO Box 9405
Waikato Mail Centre
Hamilton 3200
Telephone: 0800 782 386
Email: tsg@chorus.co.nz

Sub Div Ref: DRF42085

21 August 2017

Your Ref:

Baseline Group

Attention: Jalesh
Dear Sir / Madam

SUBDIVISION RETICULATION – DRF: West Coast Road, Darfield. 154 Lots - Estimate Only

Thank you for your enquiry regarding the above subdivision.

Chorus is pleased to advise that, as at the date of this letter, we would be able to provide ABF telephone reticulation for this subdivision. In order to complete this reticulation, we require a contribution from you to Chorus' total costs of reticulating the subdivision. Chorus' costs include the cost of network design, supply of telecommunications specific materials and supervising installation. At the date of this letter, our estimate of the contribution we would require from you is $283,360.00 (including GST).

We note that (i) the contribution required from you towards reticulation of the subdivision, and (ii) our ability to connect the subdivision to the Chorus network, may (in each case) change over time depending on the availability of Chorus network in the relevant area and other matters.

If you decide that you wish to undertake reticulation of this subdivision, you will need to contact Chorus (see the contact details for Chorus Network Services above). We would recommend that you contact us at least 3 months prior to the commencement of construction at the subdivision. At that stage, we will provide you with the following:

- confirmation of the amount of the contribution required from you, which may change from the estimate as set out above;

- a copy of the Contract for the Supply and Installation of Telecommunications Infrastructure, which will govern our relationship with you in relation to reticulation of this subdivision; and

- a number of other documents which have important information regarding reticulation of the subdivision, including - for example - Chorus' standard subdivision lay specification.

Yours faithfully

Reid McKenzie
Network Services Coordinator