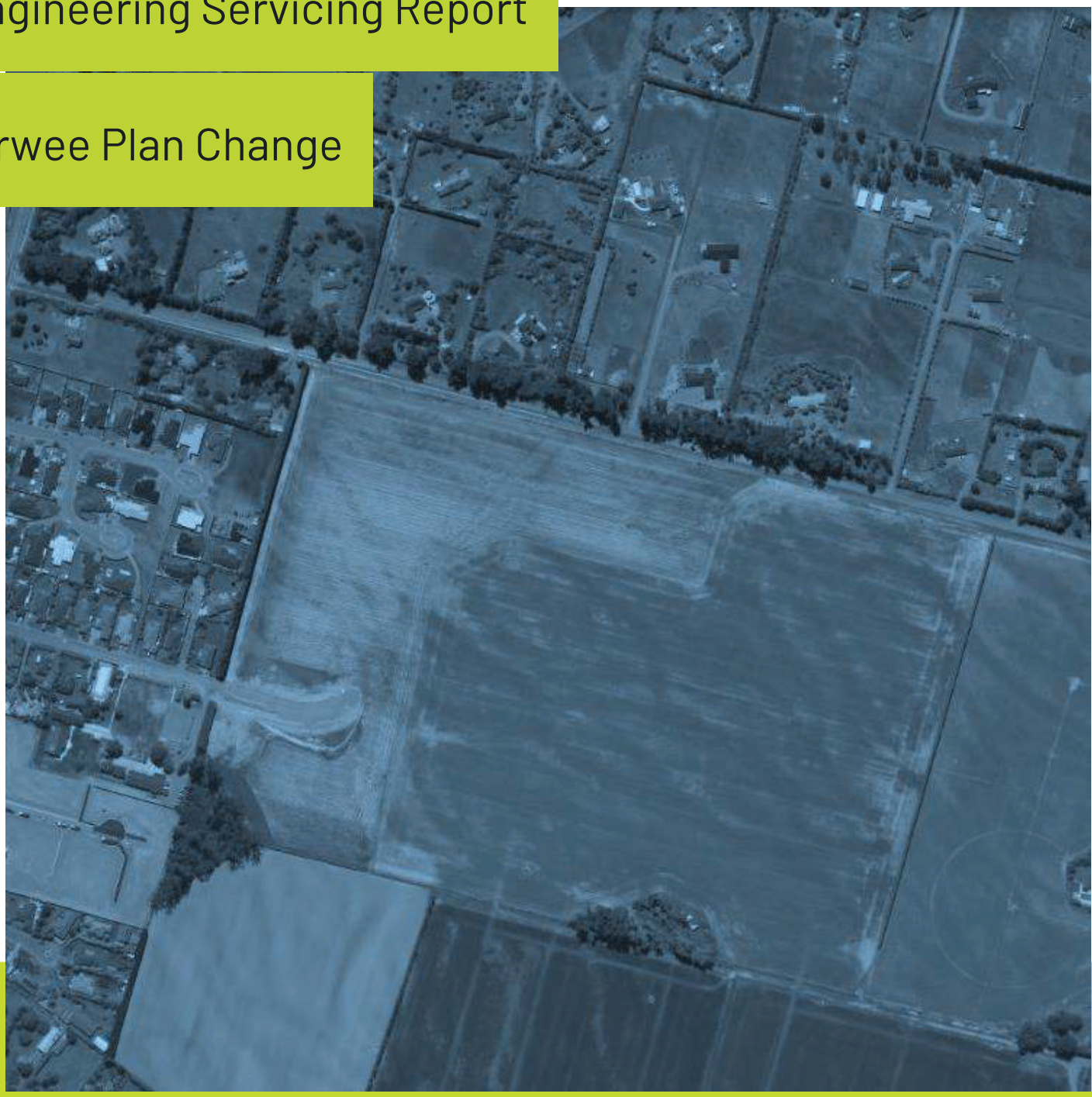
BASELINEGROUP

Appendix 7: Servicing Report

BASELINEGROUP

Engineering Servicing Report

Kirwee Plan Change



CLIENT	ADDRESS	REFERENCE
Kirwee Central Properties Limited	PO Box 14, Kirwee 7543	6178

BASELINEGROUP

Report Information

Reference:	6178
Title:	Kirwee Plan Change - Servicing Report
Client:	Kirwee Central Properties Limited
Filename:	6178- Kirwee Plan Change - Servicing Report
Version:	2
Date:	27/11/2019
Prepared by:	Jalesh Devkota
Reviewed by:	Clayton Fairbairn

CHRISTCHURCH OFFICE

T 03 339 0401

E info@blg.nz

A 54 Manchester Street
Christchurch Central, Christchurch 8011

MARLBOROUGH OFFICE

T 03 578 7299

E info@blg.nz

A Level 1, 30 Maxwell Road, Blenheim 7201

BASELINEGROUP

Contents

1 Introduction

1.1 Report Purpose

This purpose of this report is to demonstrate the ability to provide potable water, wastewater, stormwater roading, electrical and telecommunications services to the proposed plan change area at Kirwee as identified in Figure 1, below. This report has been prepared to support the application for a private plan change, to enable rezoning for higher density residential use.

The application site has an estimated residential allotment yield of 163 lots which will be constructed in stages. The proposed allotments range in area from 869 m^2 to 4000 m^2. The site is located east of the Kirwee township, on rural land which is generally flat and currently utilized for arable farming. The site is bounded by Hoskyns Road to the north, residential allotments to the west and rural land to the east. The site has been identified as undeveloped residential land in the Malvern 2031 Plan.

Aerial photography and current property boundaries on the site are presented in Figure 1.

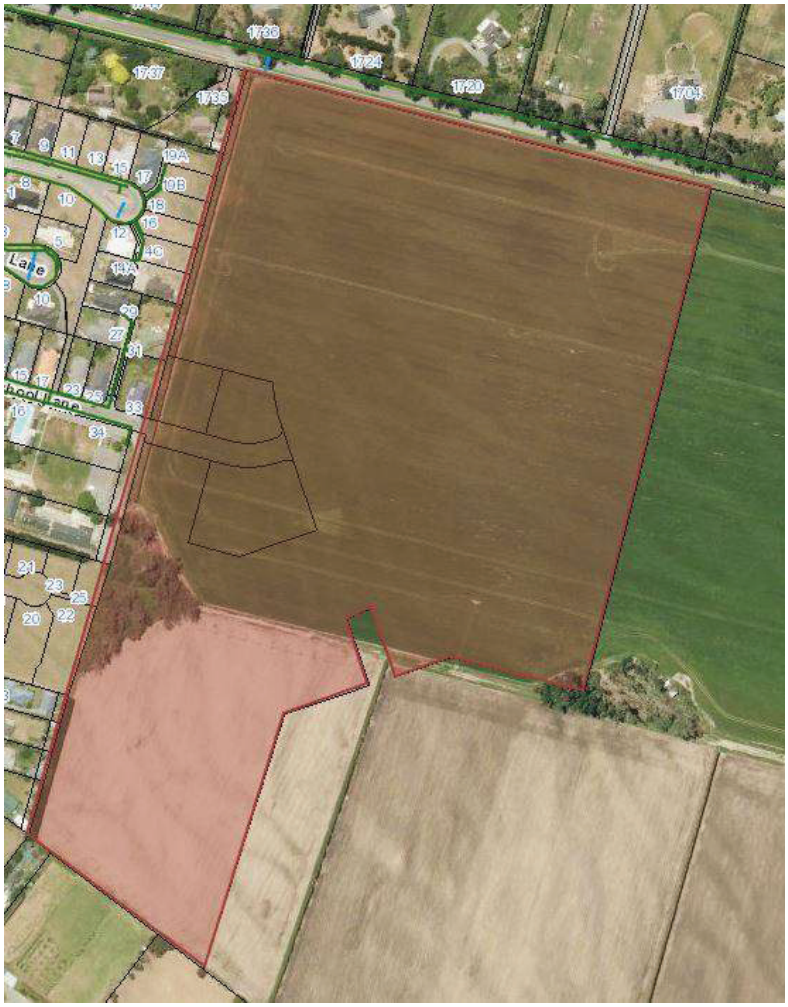


Figure 1: Overall Development Site

2 Natural Hazards

2.1 Flooding and Inundation

The application site is not identified within a Flood Hazard Area. A Flood Risk Report has been obtained from Environment Canterbury (ECan) for the proposed plan change area. This report was prepared on 25th October 2012 and is attached as Appendix 1 to this report. ECan carried out flood assessment on Lots 1 & 2 DP 350121 - Hoskyns Road, Kirwee. Based on historical flood records and floodplain studies by ECan, the property is outside recorded floodplain of major rivers and areas recorded by ECan as flood ponding areas. The locality has not been monitored to determine any extent of flooding from localized rainfall events in the area. Anecdotal evidence indicates that the land is not flood prone.

As the site is not within ECan's priority floodplain monitoring area, it is concluded that it is not in a high flood risk area for river breakouts.

2.2 Other Hazards

The following potential hazards have been considered and deemed not to pose a notable risk for the application site.

2.2.1 Erosion

The site is relatively flat and not particularly susceptible to erosion. Erosion was not noted during site visits and deemed not to be of any concern for the application site.

2.2.2 Landslips/Rockfall

The site is relatively flat and not near any steep slopes. Landslips and rockfalls are not considered a risk for the application site.

2.2.3 Subsidence

There are active faults that cross the central and western parts of the Selwyn District as well as many other active faults that are within 50 – 100 km of the District that represent a significant earthquake hazard[1].

The nearest known active faults listed in the NZS1170.5:2004 which are regarded as major are the Alpine, Kakapo and Hope Fault. The recently active Port Hills and the Greendale Faults, as well as a number of smaller reverse and strike-slip faults (the Porters Pass/Amberley Fault Zone, Springbank Fault and the Hororata Fault[2]), were identified. Table 1 summarizes the proximities of the fault near the application site on Hoskyns Road.

[1] Geotech Consulting Ltd. (2001). Selwyn District Engineering Lifelines Project; Earthquake Hazard Assessment. Christchurch: Environment Canterbury

[2] Environment Canterbury (2009), Earthquake Hazard Assessment for Waimakariri District, Report No. R09/32

Table 1 - Faults near the application site

Fault Name	Distance from Fault (km)
Alpine	110
Kakapo	80
Hope	130
Port Hills	35
Greendale	15
Porters Pass	45
Amberley	55
Springbank	25
Hororata	20

Since the Canterbury earthquakes of September 2010 and February 2011, the potential for liquefaction has been thrust to the forefront of hazard assessment. Liquefaction is the loss of soil strength during earthquake shaking and it occurs in saturated soil (as exists when the soil is below the ground water table or sea level), with water filling the soil's pore spaces. In response to the soil compressing (by ground shaking for example), this water increases in pressure and attempts to flow out from the soil to zones of low pressure (which are usually found in the material above the liquefaction).

Liquefaction is more likely to occur in loose to moderately saturated granular soils with poor drainage, such as silty sands or sands and gravels capped or containing seams of impermeable sediments. These types of deposits are usually geologically young (less than 10,000 years).

The geotechnical report prepared by Davis Ogilvie states the underlying soils of the application site are dense, dry sands and gravels. The site is deemed to be non-liquefiable and settlement due to liquefication is not expected during Ultimate Limit State (ULS) and Serviceability Limit State (SLS) seismic events.

3 Sewer

3.1 Existing Infrastructure

There is no existing wastewater reticulation system in Kirwee and there is no wastewater network servicing the application site. Existing dwellings in the Kirwee township are connected to individual on-site wastewater systems.

3.2 Options

Gravity and pressure sewer disposal methods are not viable since there is no existing sewer treatment facility at Kirwee.

A number of options have been identified for the disposal of wastewater on the application site:

1. Low pressure wastewater system pumping to a centralised on-site community treatment and disposal system
2. Low pressure wastewater pump system pumping (downhill) to the existing wastewater treatment facility in Rolleston.
3. Gravity network with centralised on-site community system.
4. Gravity network with centralised pump station, pumping (downhill) to Rolleston.
5. Septic Tank Effluent Pumping (STEP) system where the liquid from on-site septic tanks is pumped to a centralised on-site community disposal system.
6. STEP system with liquor being pumped to the existing wastewater treatment facility in Rolleston.

Baseline Group have completed a field visit and investigated possible routes and location for a sewer treatment system. It was concluded it was not viable to install a new treatment system in Kirwee as it was too land intensive and cost prohibitive.

While it is preferred to utilise the currently widely adopted on-site disposal method, at least six viable methods have been identified should a consent for this not be forthcoming, thus is can be considered At this time the most economic and sustainable environmental outcomes can be achieved with individual onsite aerated wastewater treatment systems upon each allotment.

3.2.1 Proposed Disposal Method On-site wastewater disposal

Sewer from each lot will be treated by onsite aerated wastewater treatment systems installed on each allotment at the time of building consent. Installation, maintenance and operation of septic tanks will be the responsibility of the respective lot owners. This option will not meet the Environment Canterbury permitted activity requirement for new on-site wastewater management. Consent to discharge wastewater to ground will be required from Environment Canterbury.

The proposed disposal method is individual on-site wastewater treatment – with each allotment connecting to an individual system for the treatment and disposal to land of wastewater.

This system is used for all existing residential sites in the Kirwee township.

4 Stormwater

4.1 Existing Infrastructure

There is no existing stormwater network in Kirwee. Soils in the area are typically free draining and stormwater in this area rapidly soaks into the ground.

The soil profile of the application site is shallow, well drained silty loam overlaying medium dense to very dense well graded sands and gravels. The gravel horizon occurs at a maximum depth of approximately 1.0 m below ground level. Intrusive site investigations including Standard Penetration Testing (SPT) show the soil within the site comprises medium dense to very dense well graded sands and gravels to a minimum depth of 15.0m below ground level. ECan water monitoring wells have concluded that these granular deposits are consistent to considerable depth.

4.2 Ground Water

Groundwater levels have a significant impact on the stormwater disposal options available. A search of nearby Environment Canterbury (ECan) ground water monitoring wells found two recorded wells within 5 km of the application site. The following well logs show measured groundwater information.

Well	Location	Highest Measured Groundwater Level (below GL)	Lowest Measured Groundwater Level (below GL)
L35/0163	3 km west from site	83.8	45.7
M35/0921	4 km east from site	55.3	24.87

Table 2 - ECan Well Logs

4.3 Proposed Stormwater Disposal Method

Owing to the presence of low ground water levels and the lack of reticulated stormwater, we propose that stormwater from the site is discharged to the ground via soak pits. Roof water from dwellings 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 hardstand areas of the proposed subdivision 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 capture bouyant hydrocarbons. Each sump will discharge into an appropriately designed soak pit, positioned adjacent to each sump to allow runoff to discharge to ground.

The discharge to ground is assessed as a discretionary activity under the Environment Canterbury Land and Water Regional Plan, and a stormwater discharge consent will be required at the time of Engineering Approval.

5 Water Supply

5.1 Existing Infrastructure

The Kirwee water supply provides untreated groundwater from a deep well to both the Kirwee Township (unrestricted supply) and a restricted supply to rural properties surrounding the township. The township scheme also provides fire fighting water supplies.

Water is presently supplied to the north of the development site via 100 diameter PVCu pipe and 150 PVCu pipe through the new development area. To the west the site is serviced with a 100 diameter PVCu pipe from School Lane.

5.2 Proposed Servicing

The SDC water supply Water Supplies Activity Management Plan[3] states the water supply in Kirwee is operating at its limit in terms of peak day demand and restrictions need to be imposed from time to time to keep demand with the capacity of the infrastructure and the consented daily abstraction limit. Therefore, the existing water supply scheme in Kirwee does not have sufficient capacity at this time to service the proposed plan change area.

Talks with SDC identified the supply will need to be augmented to service the development site. 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. A new network of pipes will be installed on the subdivision and water will be supplied to the individual lots from this network. To this end a utility allotment (Lot 400 DP 528758) has been vested with the SDC for the purpose of providing a new water supply well and headworks and subdivision development adjacent to Hoskyns Road has installed pipes of sufficient diameter to supply water from the utility allotment to the proposed development.

5.3 Water Supplies for Firefighting

For firefighting purposes, the classification for the subdivision 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 270 m 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.

The new mains, fire hydrants and water supply pipes will be installed on the proposed development site and they will be sized and positioned to meet the requirements of residential potable water supply and fire fighting water supplies. Subject to council confirmation of the new networks supply and pressure, it is expected that the new pipe sizes and positioning of fire hydrants will satisfy the criteria of SNZ PAS 4509:2008.

[3] Water Supplies Activity Management Plan, Volume 2, 2015, Selwyn District Council

6 Roading

An integrated Traffic Assessment has been prepared by Carriageway Consultants Limited and this report should be referred to for an assessment of the capacities of the roading network.

7 Electrical and Communications

Each allotment will be serviced by underground utilities.

7.1 Electrical Supplies

The electrical lines company 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.

7.2 Telecommunications

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.

8 Conclusion

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 Practise and NZS 4404:2010 Land Development Engineering.

Wastewater from each lot will discharge into the ground via onsite wastewater systems installed within each lot of the proposed subdivision.

Stormwater will also discharge into the ground and a consent from ECan will be required to do so.

New water mains, submains and laterals along with new fire hydrants will need to be installed at the proposed subdivision site for water supply within the subdivision. A new water supply is required however land has been provided for this and the existing water reticulation infrastructure is adequately sized for when the new supply is provided.

The roading ITA assesses the site as being able to be adequately serviced from the existing roading network.

With it acknowledged consents for discharge and water supply are required, there are no insurmountable matters which would prohibit the servicing of the site.

BASELINEGROUP

Appendix 1: Flood Risk Report

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

Customer Services
P. 03 353 9007 or 0800 324 636

58 Kilmore Street
PO Box 345
Christchurch 8140

P. 03 365 3828
F. 03 365 3194
E. ecinfo@ecan.govt.nz

www.ecan.govt.nz

25 October 2012

Davis Ogilvie
PO Box 589
Christchurch 8140
Attn: Cameron Hall

Dear Cameron

FLOOD RISK – LOTS 1 & 2 DP 350121 – HOSKYNS ROAD, KIRWEE

The property is outside the recorded floodplains of the major rivers and areas recorded by Environment Canterbury as flood ponding areas. This assessment is based on historical flood records and floodplain studies held by Environment Canterbury.

Environment Canterbury and previously the North Canterbury Catchment Board have not monitored the locality to determine any extent of flooding resulting from localised rainfall events.

Environment Canterbury does not have sufficient information to comment on whether or not there is any risk of localised flooding by runoff from adjoining land or water-races or drains. Environment Canterbury staff have not inspected the property in order to ascertain any such risk.

Other possible sources of information would be local knowledge or the Selwyn District Council.

Yours Sincerely

Nick Griffiths

HAZARD ANALYST

Our Ref: HAZA/FLD/ASS/CHC/12574
Your Ref:
Contact: Nick Griffiths

BASELINEGROUP

Appendix 2: Orion Confirmation Letter

Direct: +64 3 363 9722
Email: craig.marshall@oriongroup.co.nz
Ref: **ES336597**

18 August 2017
Re: 2410 West Coast road

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
Lot 1001 DP 489829, 2410 West Coast road, Kirwee

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.

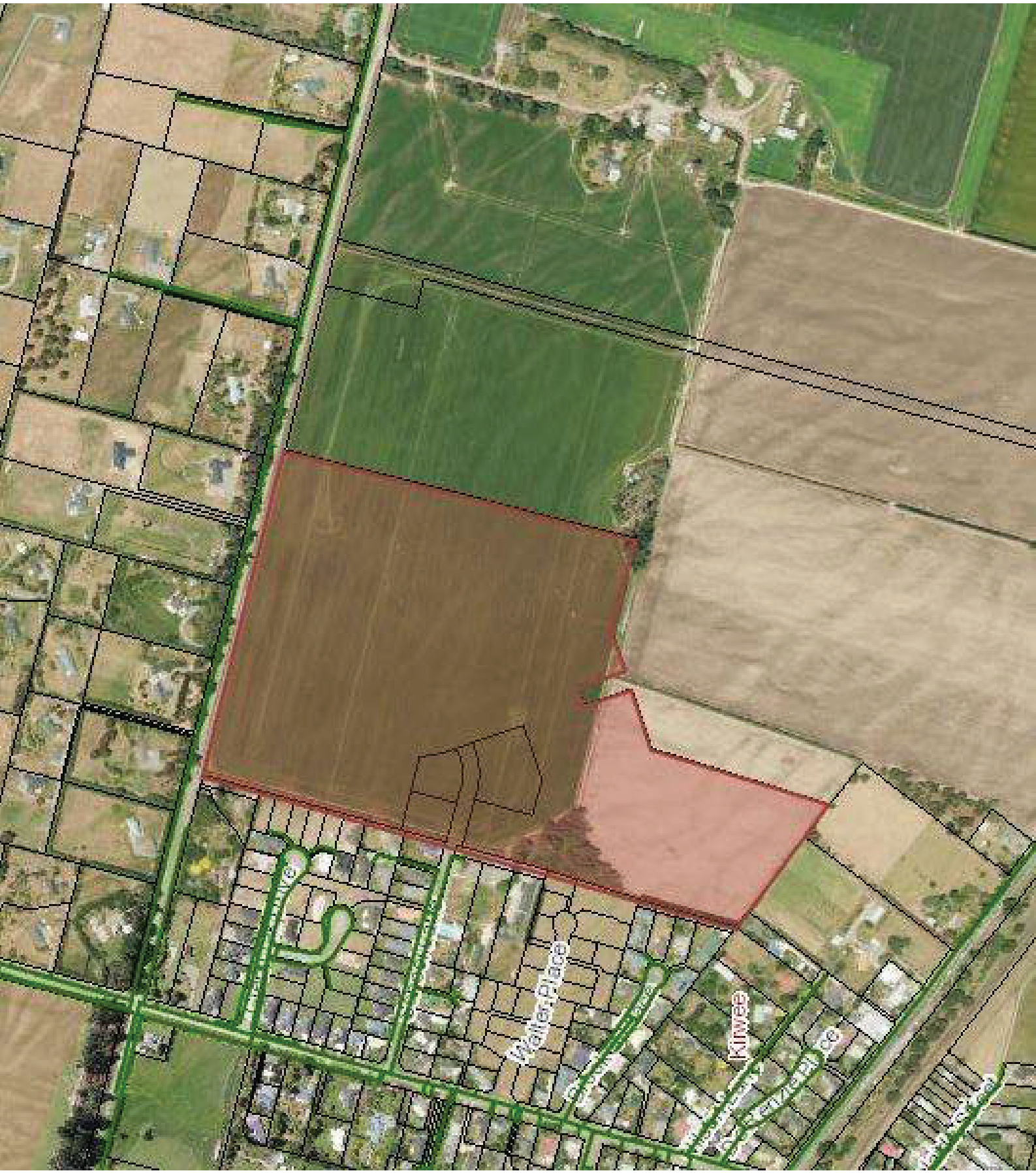
The terms and conditions presented to the applicant will encompass Orion's policies and practices current at the time.

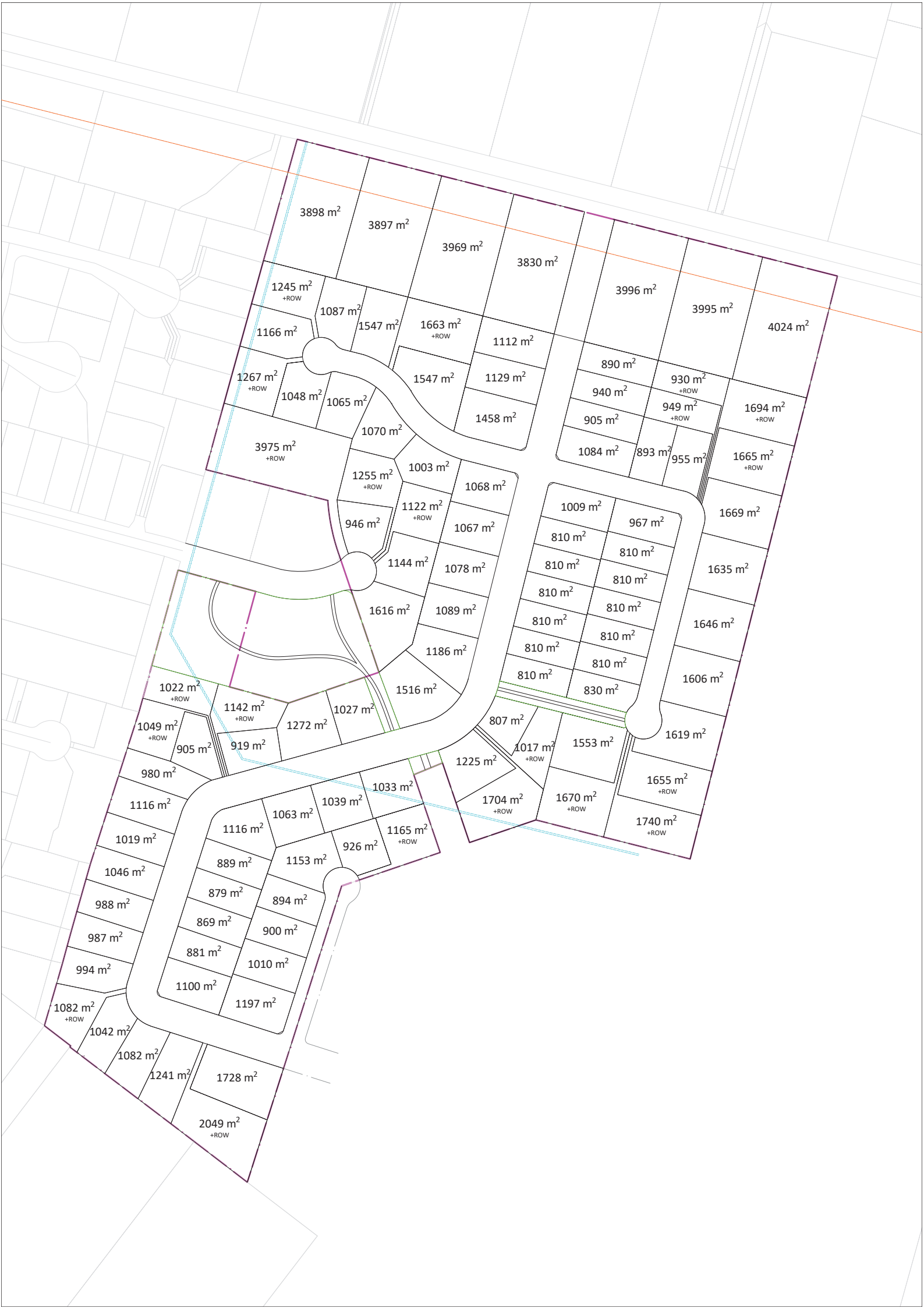
Please don't hesitate to contact me on (03) 363 9722 if you have any questions, or email me at craig.marshall@oriongroup.co.nz.

Yours faithfully

Craig Marshall
Reticulation Support Engineer

Orion New Zealand Ltd
565 Wairakei Road
PO Box 13896
Christchurch 8141
+64 3 363 9898
oriongroup.co.nz


Kinwee


3898 m²
3897 m²
3969 m²
3830 m²
3996 m²
3995 m²
4024 m²
1245 m² +ROW
1087 m²
1547 m²
1663 m² +ROW
1112 m²
1166 m²
1267 m² +ROW
1048 m²
1065 m²
1547 m²
1129 m²
1458 m²
890 m²
930 m² +ROW
940 m²
949 m² +ROW
1694 m² +ROW
905 m²
1084 m²
893 m²
955 m²
1665 m² +ROW
3975 m² +ROW
1070 m²
1255 m² +ROW
1003 m²
1068 m²
1122 m² +ROW
1067 m²
946 m²
1144 m²
1078 m²
1616 m²
1089 m²
1186 m²
1516 m²
1009 m²
967 m²
810 m²
1669 m²
1635 m²
1646 m²
1606 m²
1619 m²
1655 m² +ROW
1740 m² +ROW
1022 m² +ROW
1142 m² +ROW
1027 m²
1272 m²
1049 m² +ROW
905 m²
919 m²
980 m²
1116 m²
1019 m²
1046 m²
988 m²
987 m²
994 m²
1082 m² +ROW
1042 m²
1082 m²
1241 m²
1728 m²
2049 m² +ROW
807 m²
1017 m² +ROW
1553 m²
1225 m²
1704 m² +ROW
1670 m² +ROW
1033 m²
1039 m²
1063 m²
1116 m²
1165 m² +ROW
926 m²
1153 m²
889 m²
879 m²
894 m²
869 m²
900 m²
881 m²
1010 m²
1100 m²
1197 m²

BASELINEGROUP

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: KWI42088

31 August 2017

Your Ref:

Baseline Group
40 Welles Street,
Christchurch

Attention: Jalesh
Dear Sir / Madam

SUBDIVISION RETICULATION – KWI : Hoskyns Road, Kirwee, Christchurch - 150 Lot Subdivision - SIMPLE ESTIMATE

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 $276,000.00 (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

Ruthie Coltrane
Network Services Coordinator