BASELINEGROUP

# Appendix 7: Servicing Report

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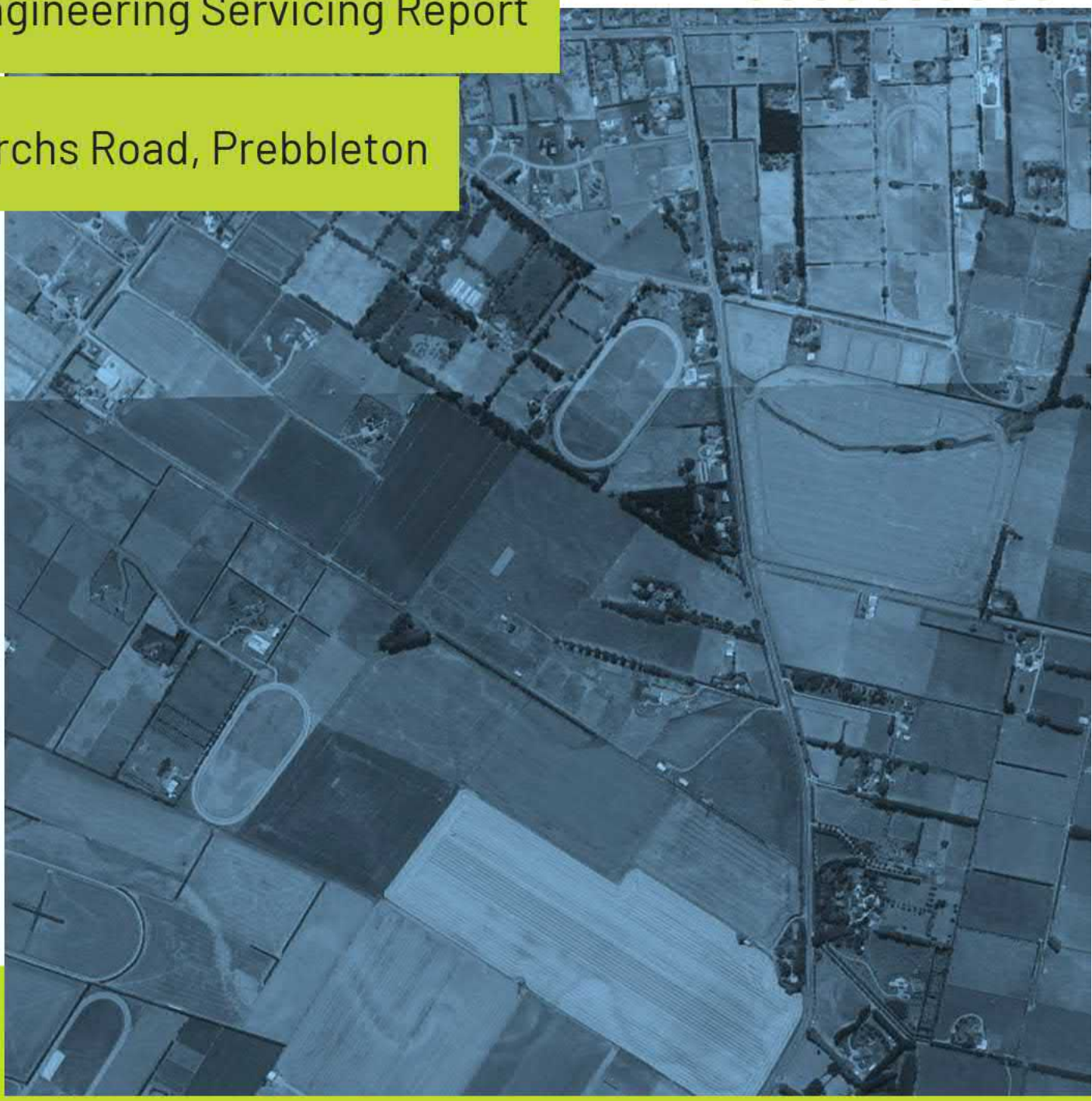
# Engineering Servicing Report

## Birchs Road, Prebbleton



| CLIENT | ADDRESS | REFERENCE |
| --- | --- | --- |
| Birchs Village Ltd | Birchs Road, Prebbleton | 7389 |

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# Report Information

| | |
|---|---|
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| Client: | Birchs Village Ltd |
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## Contents

# 1 Introduction

## 1.1 Report Purpose

Birchs Village Limited is proposing to develop a series of land parcels into a residential and neighbourhood commercial development with associated roads, services, and reserves. The purpose of this report is to demonstrate the serviceability of the proposed development site to accompany a plan change application. The newly zoned land has been assessed as being capable of yielding between 527 and 1581 residential allotments. Commercial demand will require more detailed assessment at the time consent is sought in order to provide for the specific infrastructure demands of the use.

Future development of the site in association with a subdivision consent will likely include the following major items:

- Earthworks – including clearing and forming new site levels.
- Construction of stormwater, sewer and water reticulations
- Construction of roads, right of ways and footpaths
- Connection of new roads and services to the existing Council Network
- Construction of power and telecommunications reticulations
- Landscaping

## 1.2 Location and Description of site

The application site, a series of rural lifestyle land parcels totalling 36.58 Ha, is located south of the existing Prebbleton Township (Hamptons Road) and west of Birchs Road.

The site contains several established dwellings associated with rural residential use. A number of other rural activities have taken place in various locations in the application site namely a horse training track and an intensive farming operation (poultry), which is no longer operational.

The existing topography can generally be described as flat with slight undulations, localised depressions and roughly defined overland drainage channels that drain in a south easterly direction towards Birchs Road.

# 2 Sewer

## 2.1 Existing Infrastructure

The site of the proposed development is not currently serviced by Council's sewer network and there are no sewers within Birchs or Hamptons Road to achieve an outfall to the site at this time.

There is an existing public sewer network located approximately 600 m to the north and upgradient in Birchs Road that represents the closest available outfall to the application site.

## 2.2 Proposed Disposal Method

The quantity of wastewater generated form the plan change area will vary depending on the ultimate yield of the developments. It is proposed any new allotments will be serviced by a gravity sewer network. Topography constraints prevent an extension of the gravity network to accommodate the development site which, in turn, will necessitate the installation of a new pump station.

The Average Dry Weather Flow (ADWF) for the proposed development has been calculated assuming 220 L per person per day and 2.8 people per dwelling. A Peak Dry Weather Flow (PDWF) factor of 2.5 x ADWF and a Peak Wet Weather Flow (PWWF) factor of 2.0 x PDWF has been applied. The resultant flows are set out in table 1 below:

| Yield (lots) | ADWF (l/s) | PDWF (l/s) | PWWF (l/s) |
|---|---|---|---|
| 600 | 4.3 | 10.7 | 21.4 |
| 1,500 | 10.7 | 26.7 | 53.5 |

Confirmation is required from Council the existing sewer reticulation and treatment facilities are capable of receiving the additional loading generated by the development.

Whilst the desired outfall for the outgoing rising main from the pump station is still to be finalised, a new pressure sewer main could be extended along Birchs Road and discharge into the sewer reticulation at the intersection of Trices and Birchs Road.

The design and construction of the new wastewater reticulation will be in accordance with Selwyn District Councils Code of Practice and developed in accordance with any resource consent conditions prior to submission to Council for approval subdivision and or engineering approval. Any specific demand and or infrastructure constraints are best determined at the time of detailed design due to the pace of development in Prebbleton currently and the evolving infrastructure systems to cope with increased demand.

# 3 Stormwater

## 3.1 Existing Stormwater System

Roadside drains along Birchs Road convey stormwater toward the intersection of Birchs and Leadleys Roads or further south along Birchs Road. In both instances, stormwater joins a series of open drains and creek networks that drain the wider area towards the Halswell River located approximately 4.5 km to the southeast of the development site.

There is an existing drainage easement between the site's northern boundary and Hampton Road. The title information shows this is intended to serve properties to the south. This can be investigated further during detailed design associated with any future development of the site.

## 3.2 Stormwater Quantity

It is anticipated any future development of the site will be required to achieve hydraulic neutrality in storm events and be designed around maintaining existing stormwater flow regimes across the site, to mitigate potential downstream impacts from the proposal.

A Flood Assessment has been provided by Environment Canterbury and has identified the majority of the site flood risk can be addressed through the implementation of appropriate Finished Floor Levels. A portion of the site in the southwest is significantly lower than the rest of the site and is considered high risk for flooding. It is proposed to utilise this area for stormwater management and reserves, subject to detailed design at this time of subdivision.

The application site is not situated within the Coastal Confined Gravel Aquifer System and recent geotechnical investigations suggest soakage is feasible. It is expected that a majority of surface water runoff will be discharged to ground in similar fashion to the stormwater controls adopted in the wider Prebbleton area, further geotechnical investigation at subdivision consent stage will be required to refine soakage rates and attenuation volumes.

Preliminary calculations (based on the Christchurch City Councils Waterways Wetlands and Drainage guide (CCC WWDG)) suggest a volume of approximately 37,000 $m^3$ of storage would be required to satisfy the attenuation requirements for the 36-hour 2 % return interval storm event. The final volume will vary, depending on the density of the developments within the plan change area. Higher density development will result in more hardstand area and therefore potentially larger stormwater attenuation volume, whereas a lower density development with fewer lots will result in less hard stand area, and a smaller attenuation volume. The exact volume required, and the requisite area of land would be determined at subdivision time. A possible location for such a facility would be in the sites south-eastern corner where the site naturally falls prior to discharge to Birchs Road. Alternatively, a series of smaller basins could be positioned in such a way that they facilitate development staging.

## 3.3 Primary Stormwater System (piped)

The primary stormwater system will consist of an integrated network of roads, sumps, pipes and associated structures to convey stormwater to:

1) A stormwater attenuation/detention/soakage facility designed in general accordance with the Selwyn District Councils code of practice guide prior to its controlled discharge to existing drainage channels on Birchs Road at a rate that is equal to or less than predeveloped run off rates.

2) Soakpits - subject to favourable geotechnical and percolation testing undertaken at subdivision consent stage.

The stormwater discharge to ground will require appropriate consents to be obtained from Environment Canterbury.

## 3.4 Secondary Stormwater System

Secondary flow paths will be considered and provided within the internal roading network and reserves to ensure conveyance of stormwater through and from the site once the primary system becomes surcharged. The location and design of secondary flow paths will be developed through subdivision consent stage and detailed submitted to Council for approval in due course. It is anticipated that secondary flow paths to and from the site will be maintained so as not to drastically alter or redirect existing stormwater flow patterns.

# 4 Water Supply

## 4.1 Existing Infrastructure

The application site is not serviced by Council's potable water network and existing houses are primarily supplied from privately owned bore supplies.

There is an existing public water main located within Hamptons Roads that terminates within 300 m of the application site and a public main in Birchs Road approximately 600 m to the north of the site.

## 4.2 Proposed Servicing

It is proposed any new residential allotments on the application site will be serviced by an extension to the Councils water reticulation.

Chart 1 from Selwyn District Councils Code of Practice – Part 7 demands an additional 0.14 L/s for 600 connections, and 0.12 L/s for 1500 connections. This results in a peak demand between 84 L/s and 180 L/s.

Subject to Council confirming their water reticulation has the capacity to meet the additional demand generated by the proposal the existing water main in Hamptons Road could be extended by approximately 300 m to the subdivision frontage to provide a connection.

The design and construction of the water reticulation will be in accordance with Selwyn District Councils Code of Practice and developed in accordance with any resource consent conditions prior to submission to Council for approval.

## 4.3 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.

New mains, fire hydrant and water supply pipes need to be installed on the proposed development site. Subject to council confirmation of the new networks supply and pressure, it is expected that the new pipe sizes and standard positioning of fire hydrants at approximately 130 m spacing will satisfy the criteria of SNZ PAS 4509:2008 and this can be confirmed at the time of detailed design.

# 5 Roading

## 5.1 Existing Infrastructure

The site has road frontage to Birchs and Hamptons Road. Birchs Road is a dual lane carriageway with one 3 3.5 m wide traffic lane in each direction, gravel shoulders and grassed berms. It is classified as a collector road and has a speed limit of 80 km/h. Hamptons Road is a dual lane carriageway with approximately 6.0 m of formed width and grassed berms. It is classified as a local road and has a speed limit of 80 km/h. It is noted due to the presence of the Birchs Road Reserve, lowering of the speed limit to 60 km/hr on both Hamptons and Birchs Road is proposed.

## 5.2 Proposed Roads and access

An integrated Transport Assessment report has been prepared by NOVO Group and discusses preliminary roading alignments and their connectivity to existing roads within the wider area. It is acknowledged a final layout is still to be developed and it will likely be influenced by the requirements of the proposed recreation reserve as well as upgrades to existing roads and intersections to facilitate the development. As such, we make the following generalised comments regarding the proposed roading:

- Where possible the topography of the site would not be significantly altered, however, there will be some areas that will require excavation or filling to achieve compliant roading alignments and gradients and secondary flow paths for stormwater conveyance. The intent is to work with and enhance the existing topography of the land to minimise any earthworks.
- Geotechnical investigations indicate suitable underlying material to facilitate the design and construction of new roads.
- All roads will be designed and constructed to the requirements of the Selwyn District Councils Code of Practice.

# 6 Earthworks, Geotechnical and Environmental

A Geotechnical Report has prepared by Coffey dated 9 March 2021 and concludes the site is suitable for residential development and can be generally categorised as Technical Category (TC) 1 with localised pockets of TC2 performance. Groundwater has been established to be at a depth of 2.0 m and it is not anticipated any future earthworks activities will intercept groundwater.

It is expected future earthworks associated with subdivision of the site will be limited to minor reshaping/regrading of existing levels to form new road alignments and the possible formation of stormwater attenuation/detention facilitates. It is also expected there may be some minor reshaping and regrading of existing ground levels to achieve compliant surface falls on residential allotments.

All earthworks activities will be in accordance with an approved Erosion and Sediment Control Plan.

# 7 Electrical and Communications

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 1 of this report.

Chorus have indicated their infrastructure could be extended to service the proposed development. An email confirmation from Chorus has been received and is included in Appendix 1.

Each lot will be serviced by underground utilities which will extend into the net area of each lot to the standards of the utility provider.

# 8 Conclusion

This servicing report has been prepared to accompany an application for a plan change and identifies options to provide servicing to the application site.

The proposal will require extensions to public water and sewer networks in order to facilitate its development. There are currently no known impediments in terms of the provision of water or sewer to the application site, which would make it unsuitable for the proposed change in zoning. It is considered appropriate any upgrades required to the wider water and sewer infrastructure serving Prebbleton to accommodate future development of the site are determined at the time of detailed design and engineering approval. Onsite stormwater management is proposed, and the proposal will seek to maintain secondary flow paths. The site can be serviced by electricity and telecommunications and will be connected to the existing roading, cycle and public transport infrastructure.

Subject to Council confirmation of the proposed servicing options identified within this report there are no significant engineering constraints to overcome in order to provide the required level of servicing. Detailed design will be undertaken as part of the subdivision consent stage where plans, specifications and details will be submitted for Council's review and acceptance.

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# Appendix 1: Orion and Chorus Confirmation

*Direct:* +64 3 363 9534
*Email:* Steve.Hancock@oriongroup.co.nz
Ref **ES: 443086**

21 May 2021

Baseline Group
54 Manchester Street
CHCH
**CHCH 8011**

Attention: Hayden Chittenden

Dear Hayden,

**Proposed Sub-Division connection to the Orion network – Birchs Road, Large Sub-Division, Prebbleton**

***The letter is not suitable for Section 224 Title Clearance***.

I refer to your application and the above-named property. I have investigated your request and comment as follows;

1. Orion has the capacity on the upper network to supply the proposed subdivision of the above lot(s).
2. To comply with Orion's network security conditions, an alternative feed from adjoining developments may also be required.
3. There are presently no specific connections available for this Sub-Division; however,
4. Connection(s) could be made available with alteration / addition to the Orion network.
5. There will be costs associated with providing the connection(s). These will be in line with our 'Extensions and Connections Policy'.
6. This type of work would be a typical design build project. If you proceed; please have your designer forward their proposal to Orion for approval.

The terms and conditions presented will encompass Orion's policies and practices current at the time.
Please don't hesitate to contact me on (*03*) *363 9534*, or email me at: *Steve.Hancock@oriongroup.co.nz*

Yours faithfully

Steve Hancock
**Contract Manager Sub-Divisions**

## Sally Elford

**From:** Chorus Property Developments <develop@chorus.co.nz>
**Sent:** Tuesday, 27 April 2021 12:24 PM
**To:** Hayden Chittenden
**Subject:** Chorus Simple Estimate | LCN64134 | LCN: Birchs Road, Prebbleton, Selwyn District. 200 Lots High Level Estimate

Hi Hayden,

Thank you for providing an indication of your development plans in this area. I can confirm that we have infrastructure in the general land area that you are proposing to develop. Chorus will be able to extend our network to provide connection availability. However, please note that this undertaking would of course be subject to Chorus understanding the final total property connections that we would be providing, roll-out of property releases/dates and what investment may or may not be required from yourselves and Chorus to deliver the infrastructure to and throughout the site in as seamless and practical way as possible.

The cost involved would be a minimum of our current standard fee of $1600 per lot excluding GST. This cost can only be finalised at the time that you are ready to proceed.

Chorus is happy to work with you on this project as the network infrastructure provider of choice. What this ultimately means is that the end customers (business and home owners) will have their choice of any retail service providers to take their end use services from once we work with you to provide the physical infrastructure.

Please reapply when you are ready to proceed

Liz Bath

Property Development Coordinator
**T** 0800 782 386 (Option 1)

**E** develop@chorus.co.nz

PO Box 9405
Hamilton
**www.chorus.co.nz**

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