

PRELIMINARY SEWER SERVICING REPORT

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QUALITY ASSURANCE

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1.0 INTRODUCTION

1.1 Purpose of the Report

The purpose of this report is to outline the preliminary engineering options for sewer servicing of a proposed development to support an application to re-zone Lots 1 to 9 DP 576274 to SETZ Settlement under the proposed Te Tai o Poutini Plan (TTPP), slated to zone the aforementioned land to SETZ – PREC 4 Settlement – Rural Residential Precinct. The land is currently zoned Rural under the Operative Grey District Plan.

The re-zoning is to facilitate subdivision into large residential sections (approximately 1,000 m²) to meet market demand. The area requested for Settlement zoning is shown below in Figure 1 and attached as **Appendix A**.

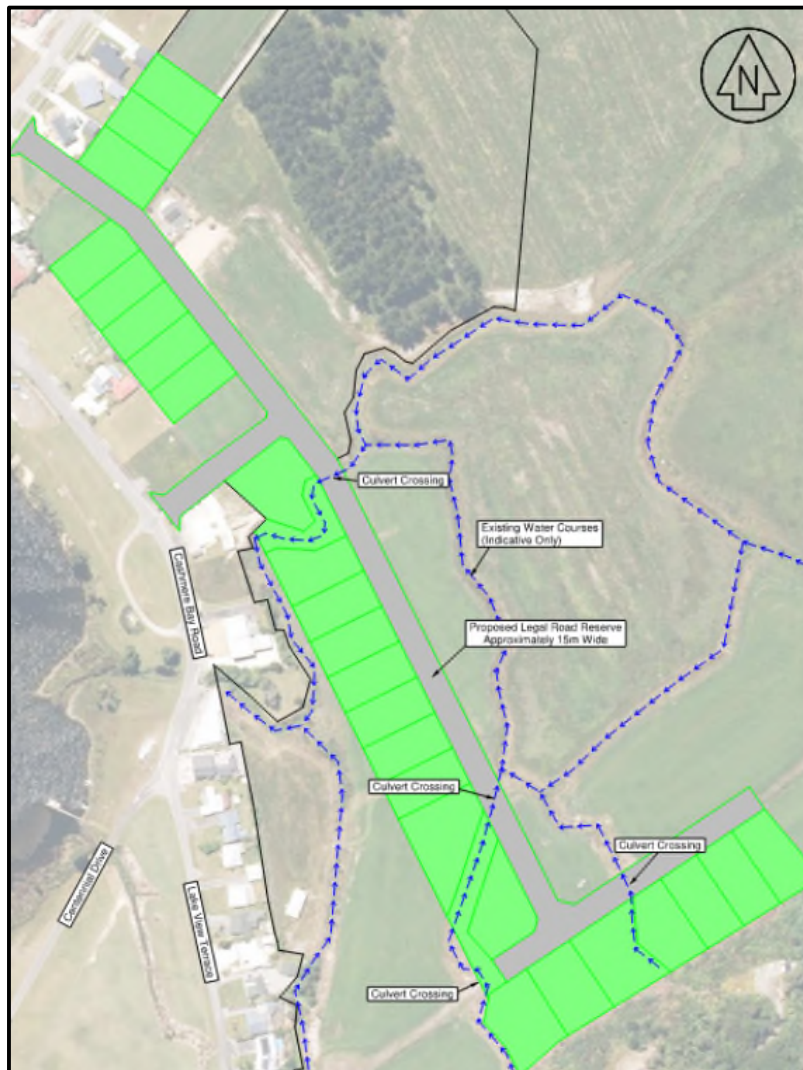


Figure 1: Scheme Plan.

The development is expected to yield 25 large residential sections. The development area is approximately 4 ha.

1.2 Site Description

The site is rural in nature and there are no structures on the site other than rural and residential fencing. Existing water courses cross the land at several locations and will be retained during / following development.

The site is bounded by an existing road, existing rural lands and existing large residential lots.

2.0 EXISTING INFRASTRUCTURE

There is no existing sewer infrastructure on the development site available for connection.

The majority of the Cashmere Bay community are serviced by two privately owned sewer treatment and disposal systems. One is located in the northwest of Cashmere Bay and is owned and operated by David Ellerm. The other is located in the southeast of Cashmere Bay and is owned and operated by GDC.

Several residential lots also hold consents for on-site treatment and disposal of wastewater.

3.0 SEWER SERVICING STRATEGY / OPTIONS

There are four (4) main options available for the sewer servicing of the proposed development. These are:

1. On-site Management,
2. Connection to the local system owned and operated by David Ellerm,
3. Connection to the local system owned and operated by GDC,
4. A new community system.

The four options above will be explored in further detail below.

3.1 On-site Management

On-site management would see individual lot owners install, operate and maintain individual secondary or tertiary wastewater treatment and discharge systems. The treatment systems are likely to take the form of proprietary filtration and treatment systems with advanced Nitrogen and pathogen reduction capabilities before discharge via evapotranspiration and infiltration beds.

3.1.1 Assessment

It is understood that on-site servicing will be a permitted activity for sites as small as 1,000 m² in the SETZ Settlement Zone under the TTPP and therefore will not require resource consent.

However, statutory treatment / discharges requirements will still need to be met for all systems. The area of development is also relatively close to Lake Brunner and will represent a significant increase in discharges for the surrounding area.

As each system will be owned and operated by various individuals, monitoring of said systems and their correlating discharges may be difficult and the individual and cumulative effects on ground water and surrounding water courses will be hard to monitor and quantify.

The sensitive nature of the surrounding environment, including Lake Brunner, will need to be taken into account when deciding on the appropriate nature for wastewater management systems.

3.2 Local System Owned and Operated by David Ellerm

Many existing residential lots currently utilise the privately owned and operated sewer treatment and disposal system of David Ellerm. This system is located in the northwest of the Cashmere Bay settlement and the area is shown below in Figure 2.



Figure 2: David Ellerm's Privately Owned and Operated Sewer System.

3.2.1 Assessment

If utilising David Ellerm’s system, reticulation would need to be built to connect the new lots to the existing system. This is standard practice for most developments and would not pose any significant difficulty. Both options of a gravity or low-pressure sewer network would also be available.

It is understood that there is currently sufficient capacity within the existing network to service the proposed development.

As this is a privately owned and operated system, individuals would need to come to an agreement with the owner for access to said system. Furthermore, access to and continued use is not guaranteed and depending on each individual agreement usage may be revoked, resulting in the need to obtain another sewer treatment and disposal option.

3.3 Local System Owned and Operated by GDC

Many existing residential lots currently utilise the GDC-owned and operated sewer treatment and disposal system. This system is located in the southeast of the Cashmere Bay settlement and the area is shown below in Figure 3.

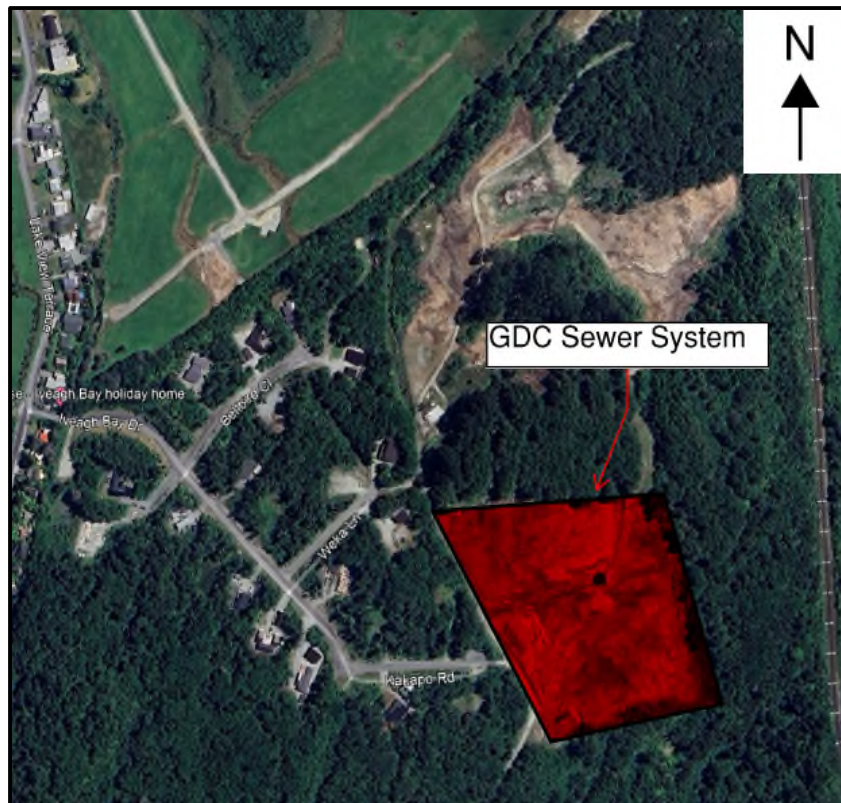


Figure 3: GDC Owned and Operated Sewer System.

3.3.1 Assessment

If utilising the GDC system, reticulation would need to be built to connect the new lots to the existing system. This is standard practice for most developments and would not pose any significant difficulty. Due to the location of the GDC system in relation to the proposed development either a low-pressure system or a gravity system in tandem with a pump station would be required.

It is understood that there is currently sufficient capacity within the existing network to service the proposed development. However, this spare capacity is currently owned by Ngāi Tahu, who constructed said system before vesting to council, for the future development of their adjacent land.

Further to the above, the land covering the proposed development is not currently covered by the council's easement for treatment.

3.4 New Community System

A new community system would see the construction of a new centralised sewer treatment plant and disposal fields to either be owned and run by a new private entity or to be vested to council.

Typically, treatment systems would consist of collection and balance tanks, batch reactor and / or advanced filtration systems, advanced nitrogen and pathogen removal followed by UV treatment before discharge via large evapotranspiration and / or infiltration beds.

3.4.1 Assessment

There is significant land surrounding the proposed development that could serve as a location for a new community system.

An advantage to this is that one central collection, treatment and disposal location will allow for easier monitoring of discharge rates and discharge contaminant levels. It will also facilitate the easier identification of any non-compliance and allow for making changes if required to ensure discharge rates and contaminant levels are met.

Typical treatment and disposal options are also modular which will allow for future extension of said system to cater for any future developments within the wider Cashmere community.

However, ongoing operational and maintenance costs will need to be addressed and higher capital and replacement costs will be associated with this option (compared to previously discussed options).

4.0 CONCLUSION

There are several sewer servicing options available for the proposed development, these being:

1. On-site Management,
2. Connection to the local system owned and operated by David Ellerm,
3. Connection to the local system owned and operated by GDC,
4. A new community system.

Each option has its own advantages and challenges that will need to be addressed at the consenting and engineering design phases; however, as displayed above, sewer servicing can be provided for the proposed development location.

APPENDIX A

Scheme Plan

