Edendale – Wyndham Wastewater Treatment Plant

Resource Consent Application and Assessment of Environmental Effects

Southland District Council

09 March 2023

→ **The Power of Commitment**

Project name		Edendale-Wyndham WWTP consent renewal					
Document title		Edendale – Wyndham Wastewater Treatment Plant | Resource Consent Application and Assessment of Environmental Effects					
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Form 9

APPLICATION FOR RESOURCE CONSENT
UNDER SECTION 88 OF THE
RESOURCE MANAGEMENT ACT 1991

TO: **Environment Southland**
Private Bag 90116
Invercargill
9840

From: **Southland District Council**
Po Box 903
Invercargill
9840

(Please note different address for service at the end of this form)

Southland District Council applies for the resource consents described below:

1. **THE NAMES AND ADDRESSES** of the owners and occupiers of any land to which the application relates are as follows:

   Owners/Occupiers WWTP:
   Southland District Council (SDC) owns and occupies the lots associated with the WWTP.

   Owners/Occupiers Discharge Location:
   The Southland District Council owns and manages activities associated within the road reserve.

2. **THE LOCATION** to which this application relates is:
   WWTP:
   Physical location: Edendale – Wyndham Road.
   Legal description: The WWTP comprises of two continuous land parcels and road reserve
   - Fee Simple, 1/1, Section 34 Block III Mataura Hundred
   - Fee Simple, 1/1, Section 36 Block III Mataura Hundred
   - Road Reserve (no information available)

   Certificate of Titles attached to the application in Appendix C.

   Discharge Location:
   Physical location: Edendale – Wyndham Road Bridge.
   Legal description: Road Reserve (no information available)

3. **THE TYPES** of resource consent sought from the consent authority:

Regional Water Plan for Southland (RWPS):

- Discharge permit for the discharge of contaminants into surface water from a community sewage scheme pursuant to Rule 2 of the RWPS as a discretionary activity.

4. **A DESCRIPTION** of the activity to which the application relates is:

SDC is seeking resource consent to renew Consent: 204630-V1, which is due to expire on 10 September 2023. SDC is seeking a short-term consent while additional options are being investigated to upgrade and improve the existing performance of the wastewater treatment plant. The existing consent relates to the operation and maintenance of the Wastewater Treatment Plant for Edendale and Wyndham (WWTP). The existing WWTP treats domestic wastewater which is then conveyed to the Mataura River and subsequently discharged into the river via multiple diffuser outlets at the Edendale – Wyndham Road bridge. A more detailed description of the WWTP is included in Section 3 of the attached report and shown on the appended plans. These should be read as forming part of this application.

5. **AN ASSESSMENT OF ENVIRONMENTAL EFFECTS** in accordance with the Fourth Schedule of the RMA, is provided in Section 5 of the attached report in such detail that corresponds with the scale and significance of the effects that the works have on the environment.

6. **AN ASSESSMENT OF THE ACTIVITY AGAINST ANY RELEVANT PROVISIONS** of a document referred to in section 104(1)(b) of the RMA including the information required by clause 2(2) of Schedule 4 of that Act is included in Section 6.

7. **OTHER CONSENTS OR PERMITS APPLIED FOR**

No other resource consents or permits are required from Environment Southland or Southland District Council.

Signed on behalf of SDC

Jan Steenkamp
Senior Environmental Planner
GHD Limited

Dated this 8th day of March 2023.

ADDRESS FOR SERVICE of Applicant for consent processing matters and invoicing:

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ADDRESS FOR SERVICE of the SDC for all other matters relating to the consent.

Paul Reid
Consents/Compliance Manager
Southland District Council
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9840

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1. Introduction

1.1 Purpose of this report

The Southland District Council (SDC) seeks resource consent from Environment Southland (ES) in accordance with Section 88 of the Resource Management Act, 1991 (RMA) to renew Consent: 204630-V1, which is due to expire on 10 September 2023.

The SDC furthermore seeks approval form ES to continue operation under the existing resource consent in accordance with Section 124 of the Resource Management Act, 1991(RMA).

The application to renew Consent: 204630-V1 will be assessed as a new activity against the provisions of the RWPS and the PSWLP to determine the actual or potential adverse effects on the receiving environment.

The PSWLP became operative (in part) on 1 March 2021. As such, relevant objectives, policies and rules of the PSWLP as well as those in the RWPS, must be considered in all resource consent applications lodged with Environment Southland.

The Resource Consent Application provides the following information:

– Application details set out in Form 9
– Description of the site and receiving environment (Sections 2).
– Description of the proposed activity and recommended conditions (Sections 3).
– Description of the resource consent required for the proposal (Section 4).
– An assessment of the effects of the proposal on the environment and the ways in which adverse effects will be avoided or mitigated (Section 5).
– Assessment against Part 2 and Section 104 of the RMA including consideration of the following relevant documents (Section 6).
– Consultation with affected or interested parties (Section 7).
– Any other relevant matters necessary to determine the application.

The Assessment of Environmental Effects (AEE) in Section 5 of this document has been prepared in accordance with Schedule 4 of the RMA. The level of detail provided within this report reflects the scale and significance of effects. Measures to avoid, remedy or mitigate potential adverse effects are also included.

1.2 Background

1.2.1 Existing Edendale - Wyndham Wastewater Treatment Plant

The existing Edendale-Wyndham Wastewater Treatment Plant (WWTP) was established in 2008 and combines and treats wastewater from the communities of Edendale and Wyndham. The current plant is based on a vermiculture treatment system and comprises the following elements:

- Inlet screens (2 units)
- Filter belt press
- Vermiculture treatment beds (5 beds), “worm beds”
- Phosphorus removal system
- UV disinfection

The original resource consent application dated 28 June 2007 describes the existing WWTP in more detail. Please refer to Appendix A for the original resource consent application.

1.2.2 Existing WWTP constraints

The WWTP currently requires significant operator intervention to maintain its performance. In particular, the following key issues have resulted in the plant operation being highly manual and labour intensive, with limited process resilience:

- Vermiculture beds are operating at maximum capacity during wet weather events
- Manual rotation, addition and disposal of the woodchip/sand layer for the vermiculture beds
- Process reliance on the belt filter unit, which the operators advised limited solids conveyor capacity, resulting breakdown at times
- Complexity of the Alum dosing system

GHD Ltd (GHD) is currently investigation the existing WWTP operations and constraints and will advise SDC on the best approach to improve and upgrade the wastewater system to accommodate current and future wastewater demand generated by Edendale and Wyndham. The investigation will furthermore consider alternative discharge methods which are not covered in this application for resource consent.

1.2.3 Consultation with Environment Southland

GHD and the SDC met with ES 7th September 2022. The purpose of the site visit was to discuss the constraints of the existing plant and also consider options for the consent renewal project with ES. GHD and SDC advised ES that the WWTP would require an upgrade to meet expected population growth and to address the current constraints with the WWTP operation. The parties agreed that the SDC would apply for a short-term (five year) consent to allow the continuation of the current WWTP until further investigations have been completed to determine the future discharge options and reduce operational requirements.

1.2.4 Resource Consent Process

1.2.4.1 Renewal of existing consent

SDC holds a Discharge Permit (Consent 204630-V1), issued by Environment Southland (ES), to discharge to the Mataura River. The consent was initially granted on 10th September 2008 and expires on 10th September 2023. Conditions to the consent were varied in May 2017 (V1 of the consent).

The existing consent (Consent 204630-V1) authorises the discharge of treated sewage effluent from the Edendale and WWTP into the Mataura River at about map reference NZMS 260 F46:886-236. The consent authorises an average daily flow of 264 m3/day and a maximum daily rate of 528 m3/day. The consent conditions require sampling of the discharge effluent and receiving environment at minimum frequencies throughout each year, in addition to ecological evaluation of the receiving waters every three years.

Based upon further investigations (GHD 2022), it appears that the average daily volumes associated with the operation and capacity of the treatment plant were underestimated in the previous design and consent application. This is shown in the monitoring results, whereby the consented average daily flow volume is exceeded. This is likely because the projected wastewater flow generation per capita in the original resource consent application was underestimated for the Edendale and Wyndham populations.

The existing consent is due to expire on 10 September 2023 and SDC seeks a short-term consent duration of five years to enable the discharge of wastewater to the Mataura River. This will enable SDC to continue the discharge in the interim period while investigating various option to upgrade and improve the existing WWTP and discharge locations.

1.2.4.2 Section 124 RMA

Section 124 of the RMA provides the ability for consent holders to exercise their existing resource consent while applying for a new resource consent application.

"***124 Exercise of resource consent while applying for new consent***

(1)Subsection (3) applies when—

(a) a resource consent is due to expire; and

(b) the holder of the consent applies for a new consent for the same activity; and

(c) the application is made to the appropriate consent authority; and

(d) the application is made at least 6 months before the expiry of the existing consent.

(2) Subsection (3) also applies when—

(a) a resource consent is due to expire; and

(b) the holder of the consent applies for a new consent for the same activity; and

(c) the application is made to the appropriate consent authority; and

(d) the application is made in the period that—

(i) begins 6 months before the expiry of the existing consent; and

(ii) ends 3 months before the expiry of the existing consent; and

(e) the authority, in its discretion, allows the holder to continue to operate.

(3) The holder may continue to operate under the existing consent until—

(a) a new consent is granted and all appeals are determined; or

(b) a new consent is declined and all appeals are determined.

(4) This section does not apply to an application to which section 165ZH applies".

The discharge permit is due to expire on 10th September 2023 and the SDC is applying to ES for a new consent for the same activity. The application was lodged at least 6 months before the expiry of the existing consent. Subsection (3) of Section 124 therefore applies which determine if the continuation rights can be applied.

The term "same activity" as stipulated in Section 124(1)(b) is not defined in the RMA. The expectation in the RMA is that the replacement resource consent application does not have to be for exactly the same activity as that authorised by an existing resource consent in order to obtain Section 124 continuation rights. Rather, the proposed activity should be substantially the same as the currently authorised activity.

Whether the activity is substantially the same must be considered on a case-by-case basis and the best approach to determine if the proposal is for the same activity, is to assess the actual scope of the original application in respect of what is being proposed by the new consent application. The following matters must be considered:

- Is the new application fundamentally for the same activity from what was originally applied for?
- Does the new application have materially similar adverse effects than what was originally applied for?
- Does the new application expand or extend the original activity as applied for?

The proposal is fundamentally to roll over the existing discharge permit for a maximum term of five years to continue discharging treated wastewater into the Mataura River produced at the Edendale – Wyndham WWTP. Minor changes are proposed as part of the new resource consent application to account for current volume non-compliance issues and to rectifying the underestimated population growth projections as part of the original consent application. The new application proposes to slightly increase the average daily volume and maximum daily volumes to accommodate the actual performance of the wastewater plant reflected in the monitoring. In respect of the slight increase in discharge volumes, the potential adverse effects are materially no different to what was originally applied for and consented as the water quality measured below the discharge point continues to meet the Mataura River water quality standards beyond the mixing zone despite the slight volume increase. As previously mentioned, the volume proposed in the new application is slightly more than what was originally applied for under the existing consent. The additional volume is not considered to be substantially more than what was applied for in the original resource consent application. This slight increase in volume will also ensure the new application can achieve the maximum and average daily discharge limits over the course of the next five years.

Based on the above assessment, it is considered that the slight changes are not substantially different from the original activity that what was applied for in the original consent application. As such, the new resource consent application is considered to meet the requirements to justify Section 124 continuation rights as it is for the same activity.

The SDC therefore seeks confirmation from ES that they can continue to operate under the existing consent operation under Section 124 of the RMA until a new consent is decided and any appeals have been determined.

1.3 Scope and limitations

This report: has been prepared by GHD for Southland District Council and may only be used and relied on by Southland District Council for the purpose agreed between GHD and Southland District Council as set out in section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Southland District Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

2. Description of Site and Environment

2.1 Locality

The existing WWTP is located on a site of approximately 3 ha, situated 1.1 km northwest of the Edendale – Wyndham Road bridge over the Mataura River. The WWTP has an existing pipe conveying the treated wastewater to the Mataura River outfall following the alignment of Edendale - Wyndham Road, within the existing road reserve.

2.2 Land use

2.2.1 Existing Site

The site is currently used for the Edendale – Wyndham WWTP. The plant is based on a vermiculture treatment system and comprises the following elements:

– Inlet screens (2 units).

– Filter belt press.

– Vermiculture treatment beds (5 beds), “worm beds”.

– Phosphorus removal system.

– UV disinfection.

2.2.2 Surrounding Environment

The surrounding land uses are predominantly farming. The Wyndale Transfer Station (190 Edendale Wyndham Highway, Edendale) is less than 150 m away, southeast across the Edendale – Wyndham Road. The nearest dwelling is approximately 300 m to the southeast of the property. The boundaries of the Urban Resource Areas of Edendale and Wyndham are not closer than 1.8 km and 1.9 km, respectfully.

2.3 WWTP Designation

The WWTP is within a Designation under the SDC District Plan for the establishment, maintenance and repair works associated with a WWTP on the site. The following conditions apply to the designation:

1. That the perimeter of the designated site be fenced.
2. Any access gates into the designated site shall be securely locked when no authority operator is actively using the site.
3. The designated site is maintained in a tidy state following any works within the wastewater treatment site.
4. No refuelling of equipment takes place on any area of a river or lakebed or within the perimeter of the designated site.

The Designation conditions are not specifically relevant to the processing of this resource consent application but set out the site restrictions associated with the land use activity of a WWTP.

2.4 Geology and Soil

The 1:250,000 GNS[1] geology web map indicates that near the Site is located within the Late Quartenary formation which consists of alluvium and colluvium deposits which constituent unconsolidated to poorly consolidated mud, gravel and peat of alluvial and colluvial origin. To the east of the Site, is the Ferndale Group deposits, with the

[1] GNS Science (2022). New Zealand Geology Web Map, 1:250K Geology. Accessed from: https://data.gns.cri.nz/geology/ on 10/3/22

west of the Site comprising the Middle Quarternary alluvium and colluvium formation, adjacent to both of these formations is the East Southland Group Late Oligocene to Miocene formation.

Landcare Research New Zealand soil database, S-Map Online[2], was reviewed to gain an understanding of the soils underlying the site. The main soil types underlying the site are classified as brown soils. Brown soils are generally observed to be brown or yellow-brown subsoil below a dark grey-brown topsoil caused by thin coatings of iron oxides that have been weathered from the parent material. Brown Soils occur in places where summer drought is uncommon and which are not waterlogged in winter. The drainage capacity of the soils are expected to be moderately well-drained to well-drained.

Field investigations undertaken at the site (summarised in GHD, 2022[3]) confirmed the presence of a silty gravelly layer of moderately high infiltration capacity throughout much of the site surrounding the WWTP (within the former excavated quarry). This is overlain by a silt material which appears to limit infiltration in land surrounding this former excavated area.

2.5 Hydrogeology

The WWTP site straddles two ES Groundwater Management Zones (GMZs) – the Edendale GMZ to the west and the Lower Mataura GMZ to the east.

The Edendale GMZ comprises an extensive alluvial unconfined aquifer system with recharge likely dominated by localised rainfall and runoff with discharge predominantly to spring fed surface waters. Some throughputs to the Lower Mataura GMZ along the eastern boundary are also possible. The area is characterised by high yields and has a high allocation status. The depth to groundwater typically ranges from 6-12 metres below ground level (mbgl) with groundwater flow typically towards the East and the South.

The Lower Mataura GMZ comprises a series of alluvial terraces of varying thicknesses with recharge from local rainfall infiltration and discharge to spring fed surface waters and the Mataura River and the coastal environment. The area has a low allocation status but is utilised for domestic and farm water supplies with the groundwater depth typically ranging from 1-2 mbgl. Groundwater flow direction is towards the South.

2.6 Surface Water

The WWTP is approximately 1km upstream of the Mataura River. The WWTP discharges treated wastewater directly into the Mataura River from outfalls on the Edendale – Wyndham Road Bridge.

The river's headwaters are located in the Eyre Mountains and enters the Pacific Ocean at Toetoes Bay on the southern coast of the South Island. Much of its channel is braided.

The Mataura River is approximately 60m wide at the Edendale – Wyndham Road Bridge, where the discharge occurs, although the width of the river increases to 90 metres a short distance downstream of the bridge.

At the point of discharge the river water is Classified as Mataura 3 under the RWPS.

2.6.1 Water Flow

The Mataura River has a median flow of 55,7501/s and a mean annual low flow of 18,9001/s.

The daily average Mataura flow (recorded at ES Seaward Downs monitoring site) has been compared to the recorded discharge volume from the WWTP (Figure 1Figure). The records show that the WWTP discharge accounts for a very small proportion of the Mataura River flow (the average proportion is < 0.01%).

[2] Landcare Research (2021). S-Map Online. Accessed from: https://smap.landcareresearch.co.nz on 10/3/22
[3] Soil Infiltration Testing – Edendale-Wyndham WWTP. GHD Technical Memorandum 17/12/22

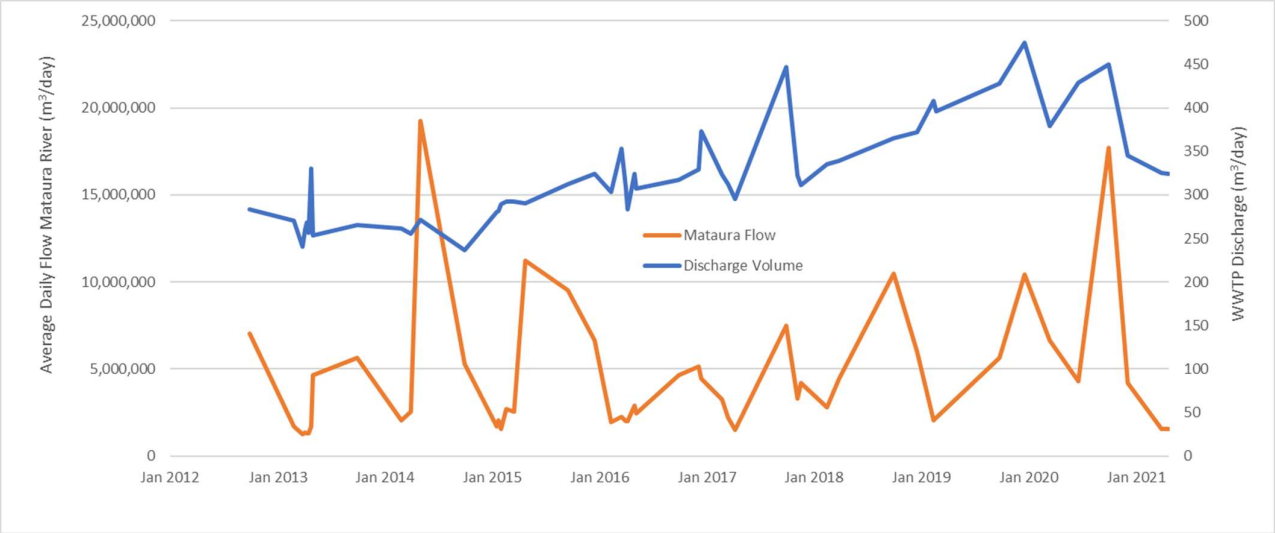

Figure 1 *Discharge Volume versus Mataura River Flow*

2.6.2 Water quality monitoring

Mataura River water instream measurements have been undertaken and samples have been collected upstream and downstream of the existing WWTP discharge between April 2013 and September 2022. These samples have been measured in-situ for temperature, pH, conductivity, clarity and Dissolved Oxygen (DO) and analysed for Total Suspended Solids (TSS) and key contaminants. Selected results are summarised in Figure 2 to Figure .

2.6.2.1 Total Suspended Solids (TSS)

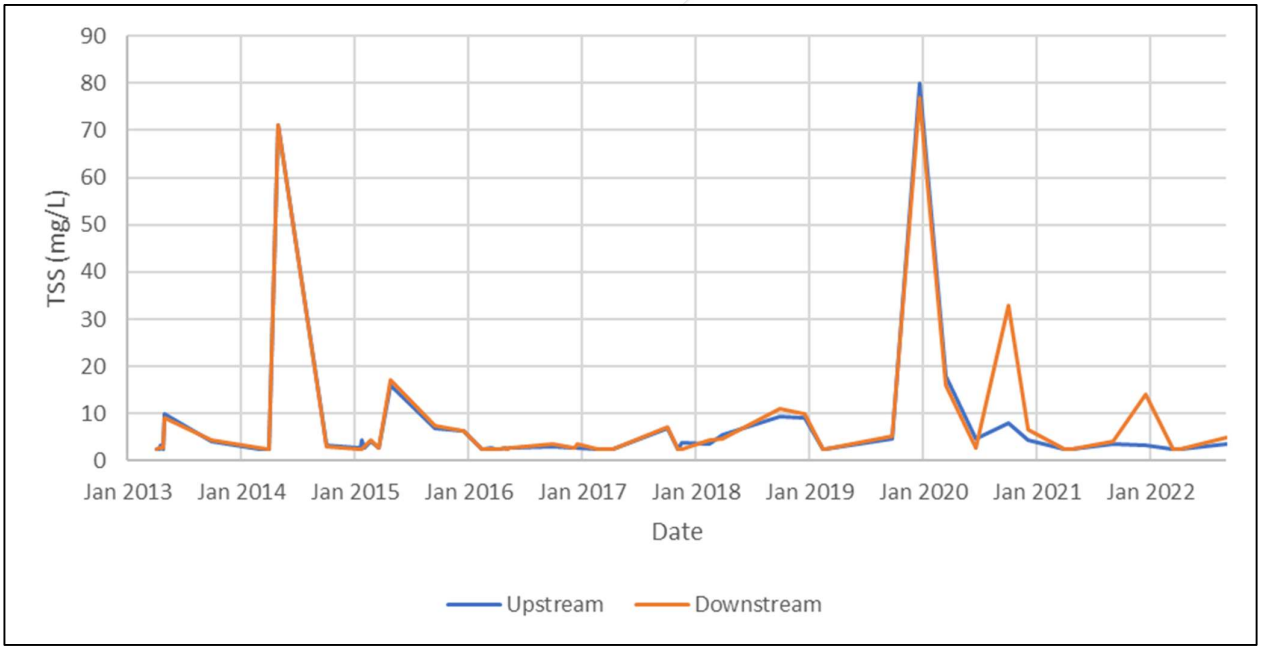

Figure 2 *Upstream-Downstream TSS*

TSS concentrations upstream and downstream of the discharge point are similar and generally steady with some spikes noted in March 2014 and December 2019 (Figure 2). These spikes coincide with high flow events within the Mataura River. An increased measured downstream TSS (compared to upstream TSS concentrations) is evident in September 2020 and December 2021. Elevated TSS concentrations within the discharge are not

evident in samples taken on this day (Figure 2) therefore it is considered unlikely the cause of this discrepancy (between upstream and downstream concentrations) is a result of the WWTP discharge.

2.6.2.2 Ammonical-N

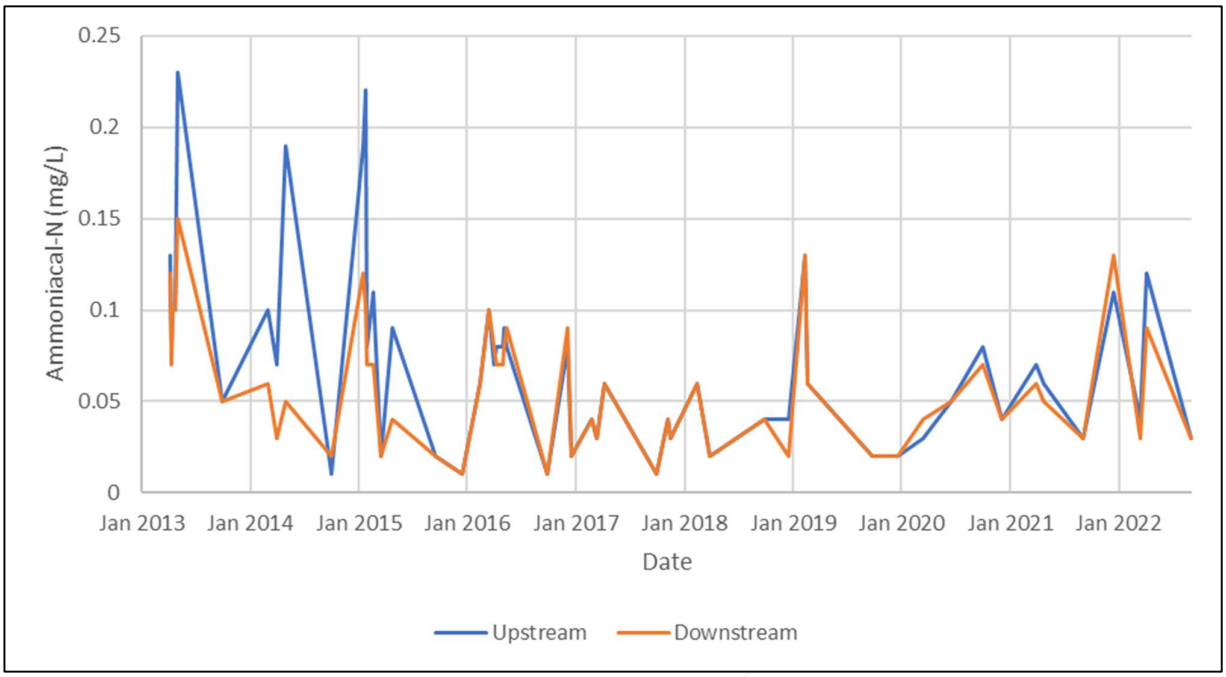

Figure 3 Upstream-Downstream Amm-N

Ammonical-N concentrations upstream and downstream of the discharge point are shown in Figure 3. The concentrations are typically similar with the exception of data before September 2015, where upstream concentrations tended to be higher than downstream concentrations.

2.6.2.3 Total Nitrogen (TN)

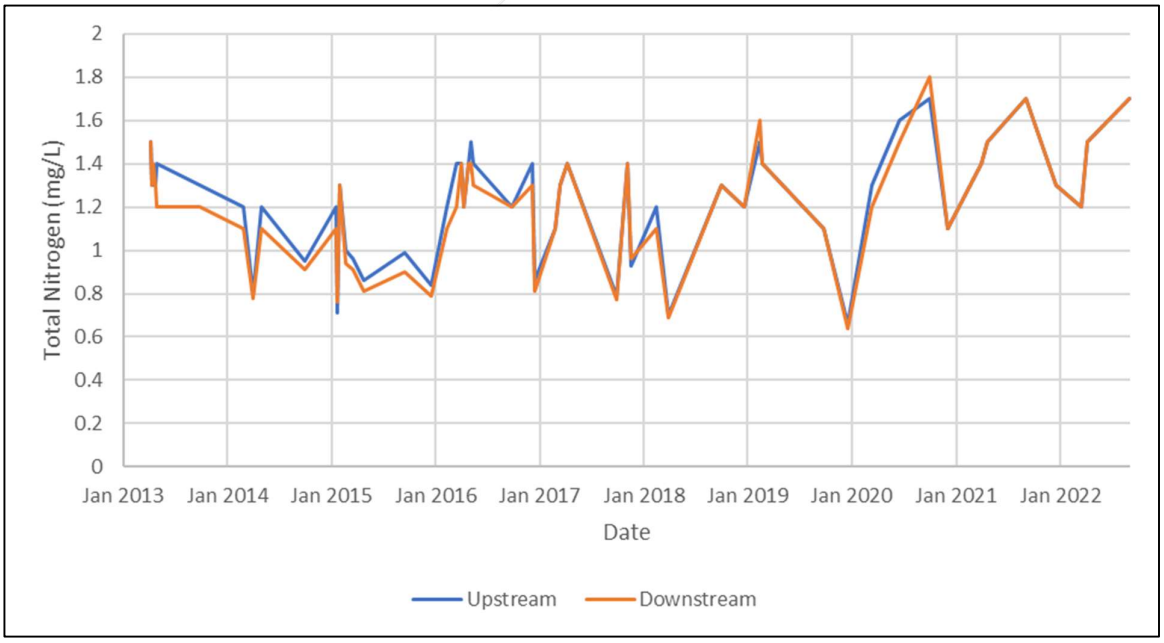

Figure 4 Upstream-Downstream TN

Total Nitrogen concentrations upstream and downstream of the discharge point are typically similar (Figure 4).

2.6.2.4 Nitrate - N

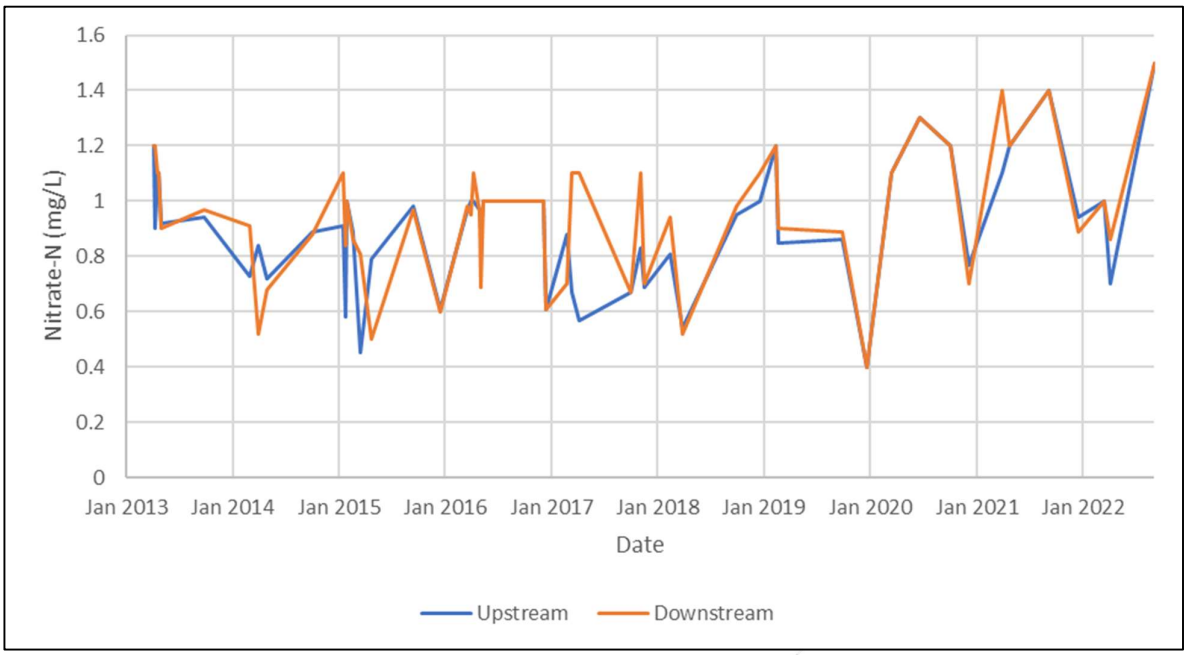

Figure 5 Upstream-Downstream Nitrate-N

Nitrate-N concentrations upstream and downstream of the discharge point are typically similar (Figure 5Figure).

2.6.2.5 Dissolved Reactive Phosphorus (DRP)

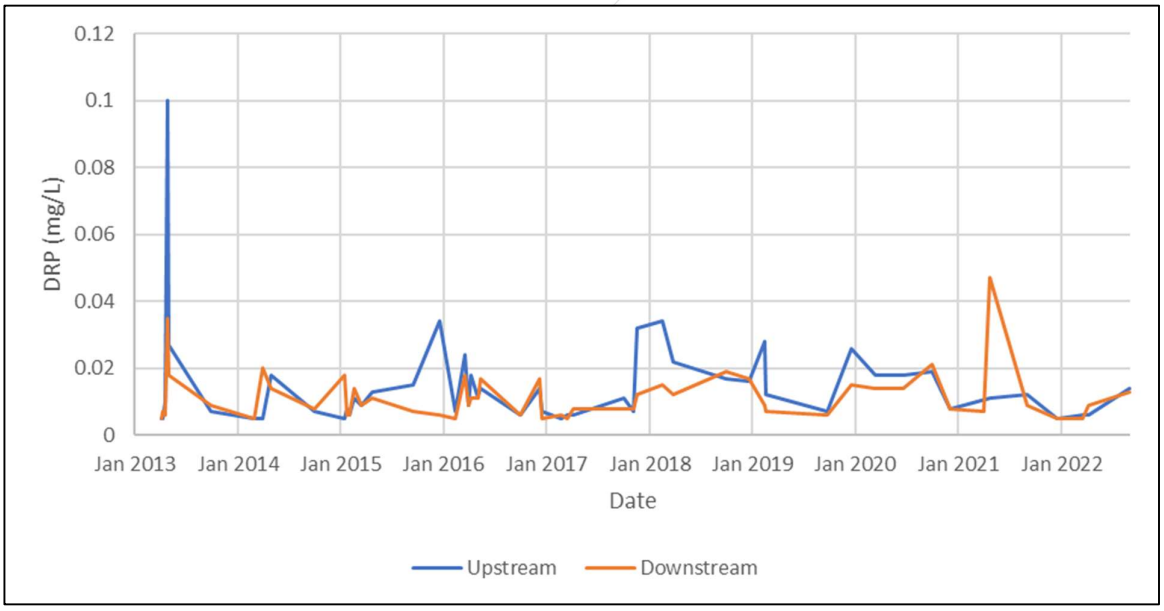

Figure 6 Upstream-Downstream DRP

Dissolved Reactive Phosphorus (DRP) concentrations upstream and downstream of the discharge point are generally similar (Figure 6).

2.6.2.6 Total Phosphorus (TP)

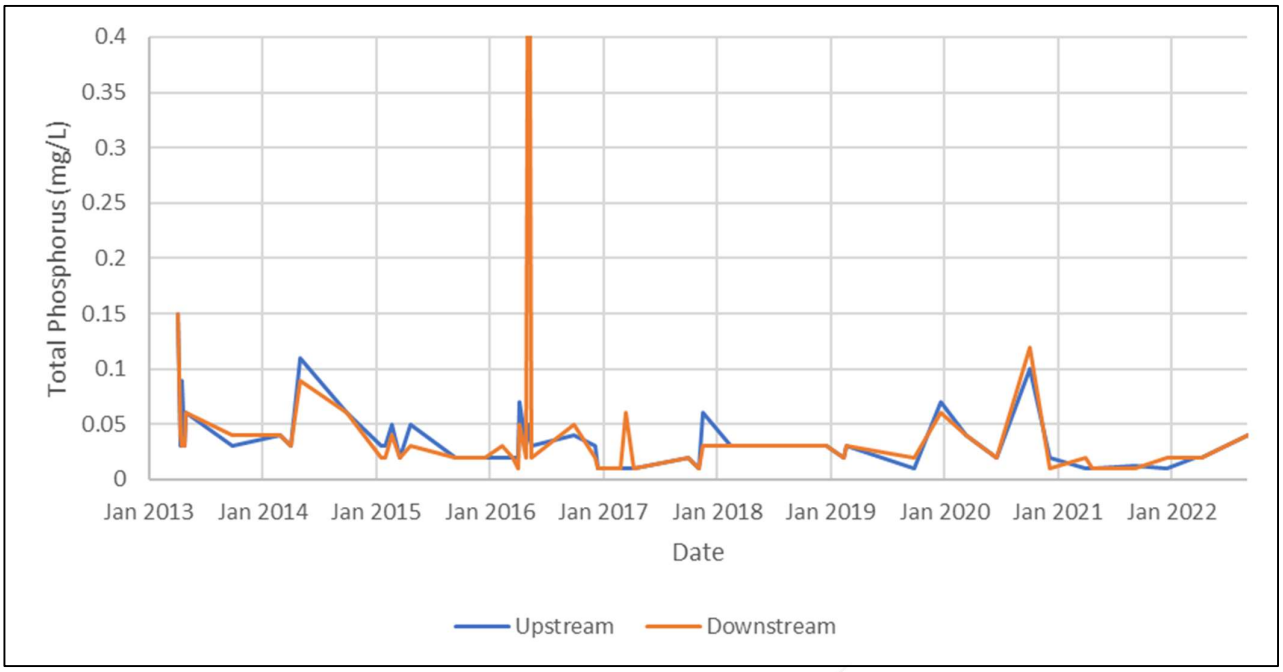

Figure 7 Upstream-Downstream TP

Total Phosphorus (TP) concentrations upstream and downstream of the discharge point are generally similar (Figure 7). One notable exception is during May 2016 where the downstream concentration is considerably elevated in relation to the upstream concentration. There is no comparable discharge sample from this sampling event for comparison, however based on other analyses undertaken on this date (which downstream the sample is not elevated in respect to the upstream sample), this TP result is considered an anomaly and the elevated concentrations are potentially due to sample or laboratory error.

2.6.2.7 Escherichia coli (E.coli)

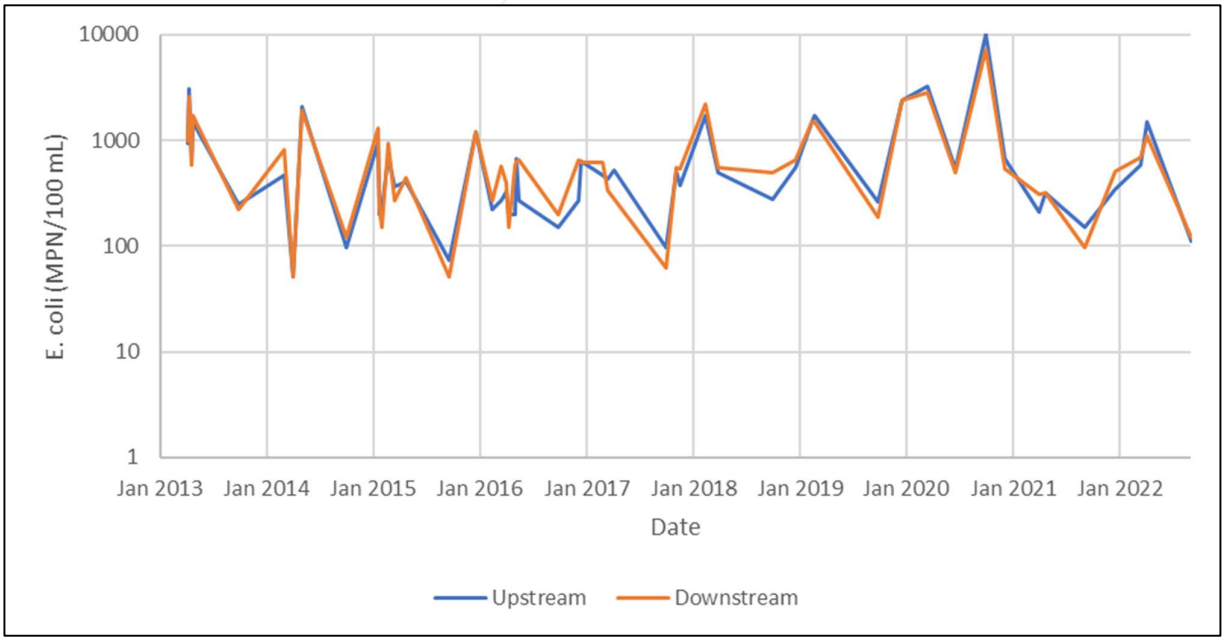

Figure 8 Upstream-Downstream E. coli

E. coli counts upstream and downstream of the discharge point are generally similar (Figure 8).

2.6.2.8 Dissolved Oxygen (DO)

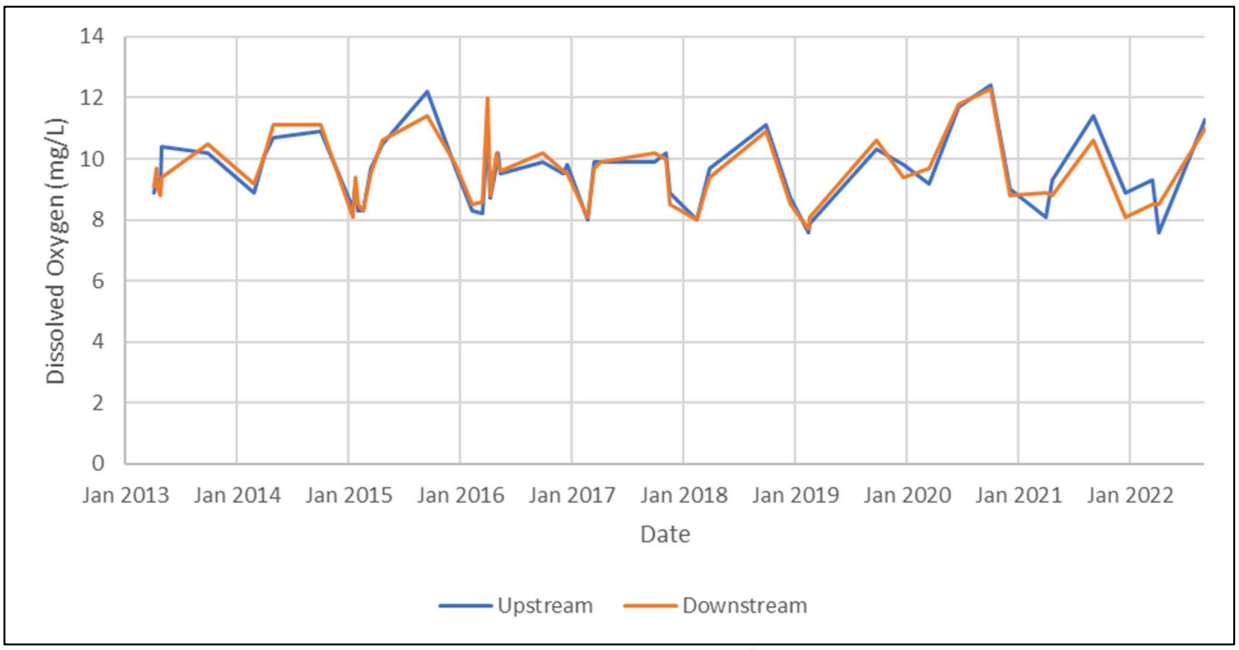

Figure 9 Upstream-Downstream DO

Measured DO concentrations upstream and downstream of the discharge point are typically similar (Figure 9).

2.6.2.9 Overall Water Quality

In terms of overall river water quality, Environment Southland's State of the Environment Report[4], classifies the water quality within the Mataura River in the vicinity of the current WWTP discharge (Water quality sampling sites at the Mataura Bridge) and Mataura River at Gore (upstream from current discharge location) and Seaward Downs and Mataura Island bridge (downstream from the current discharge location) as 'very poor' to 'poor' in terms of E.*coli,* 'poor' in terms of suspended sediment and 'good' to 'very good' in terms of nitrate, ammonia, dissolved oxygen and dissolved reactive phosphorus.

2.6.3 Aquatic Ecology

The Mataura River supports a number of freshwater species, including trout, lamprey and numerous macro invertebrates such as mayflies. Environment Southlands Technical Report 2020[5] regarding Freshwater in Southland describes ecology health levels based on various macroinvertebrates indexes, which is widely used in New Zealand as an indicator of stream ecosystem health. The "Mataura River at Mataura Island Bridge" monitoring site is approximately 13km downstream of the discharge point at the Edendale-Wyndham Road bridge. Based on the monitoring results shown in Appendix 1 of the technical report, trends over the last 10 years of data shows that the Macroinvertebrate Community Index (MCI) is likely improving, Semi-Quantitative Macroinvertebrate Community Index (SQMCI) is likely deteriorating and the percentage Ephemeroptera, Plecoptera and Trichoptera (%EPT) is very likely to improve.

[4] Environment Southland. Current Environment State and the "gap" to draft freshwater objectives for Southland. Dec 2019.
[5] Environment Southland Technical Report - Freshwater macroinvertebrates in the Southland Region: updating state and trend; predicting reference condition; and investigating drivers of macroinvertebrate community health – Appendix 1 page 61.

2.6.4 Recreational values

The Water Conservation (Mataura River) Order 1997 declared that the protected waters include outstanding fisheries and angling amenity features. The Mataura River also provides opportunities for jet boating, scenic attractions and other sport and outdoor recreational activities.

2.6.5 Cultural and heritage values

The Mataura River was an important ara tawhito (traditional travel route) that provided direct access from Murihiku to Whakatipu Waimāori (Lake Wakatipu). The Mataura River was a significant kāinga mahinga kai (food-gathering place) for local Kāi Tahu, and was tribally renowned for its abundance of kanakana (lamprey, Geotria australis). The value of the Mataura River and its ecosystem have been recognised as a Statutory Acknowledgement that identifies Te Runanga o Ngai Tahu's cultural and spiritual associations with the river.

2.6.6 Other consents in area

Fonterra holds a consent (205500-V1) to discharge up to 9,300m3 per day of treated dairy wastewater, up to 20,700m3 per day of condensate, cooling and denitrification water and demineralisation water from the Edendale dairy factory to the Mataura River. The discharge point is about 200 metres upstream of the Wyndham Road bridge. The consent expires 31 December 2023. It is understood that Fonterra discharge domestic wastewater through the Edendale – Wyndham WWTP.

There are no other water permits authorised by Environment Southland downstream of the discharge point to take and use surface water from the Mataura River. There is a groundwater permit (20158402-V1) approximately 2km southwest of the discharge point. The well authorises the take and use of groundwater for irrigation purposes.

3. Description of the proposed activity

SDC have recognised that the existing Edendale – Wyndham WWTP requires significant operator intervention to maintain its performance. In addition, estimated population growth will cause more pressure on the existing wastewater system, which means the discharge into the Mataura River going forward will not meet the volume restrictions set out under the existing resource consent.

In addition, the average daily volumes associated with the operation and capacity of the treatment plant were underestimated in the previous design and consent application. This is shown in the monitoring results which indicate that the consented average daily flow volume has been exceeded. This is likely because the projected wastewater flow generation per capita in the original resource consent application and design was underestimated for the Edendale and Wyndham populations.

Work is currently underway to investigate alternative wastewater management options to either retain, retrofit or replace the existing WWTP. While the technical investigation is underway, the existing WWTP will continue to be operated and maintained by SDC until the upgrade and improvements have been confirmed and installed to treat wastewater.

3.1 Existing Wastewater Treatment Plant

3.1.1 Design Data Basis

GHD revised the design data basis associated with the original design of the existing WWTP and found some of the input values were underestimated. As such, the following applies to the design data basis going forward:

- the operational flow and capacity demand of the WWTP will rather be represented by the January 2019 and January 2022 flow record period.
- the population growth has been updated and is based on more recent census data and SDC projections. The updated data is used to ensure the existing WWTP provides sufficient flow and capacity to maintain the operation.
- the influent wastewater characteristics has furthermore been amended based on revised assumed per capita generation rates.

The following sections therefore provides an updated data basis in relation to the operation of the existing WWTP.

3.1.1.1 Population

Table 1 presents the population data from the NZ Census 2013 and 2018, as well as the estimates for 2022, 2027 and 2052.

Table 1 Population Growth

	Edendale	Wyndham	Total
2013 Census	552	552	1104
2018 Census	588	573	1161
		% growth per annum	1.0%
Expected population in 2022	613	597	1210
Expected population in 2027	645	629	1273
Expected population in 2052	834	813	1646

It is assumed that the population data from 2013 and 2018 census is representative of Edendale-Wyndham population and the growth rate is representative of the SDC population projections for 2027 and 2052.

3.1.1.2 Wastewater Flows

Wastewater flow records can be extracted from the flow record at the terminal pump stations at Edendale and Wyndham, and the WWTP flowmeter between the Balance Tank and the rotary belt filter. We understand that the flowmeter within the treatment plant is more reliable and used as a proxy for plant discharge flow (with the UV outlet flowmeter is out of service).

The daily wastewater flow record at this flowmeter between July 2012 and January 2022 is shown in Figure 10. As shown in this time-series plot, the wastewater flow has increased steadily in the past 10 years.

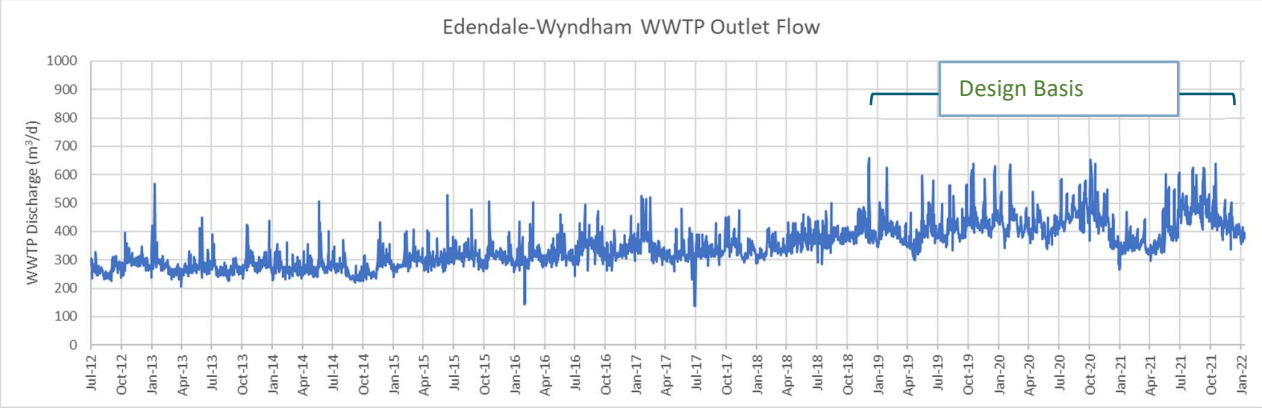

Figure 10 Wastewater Daily Outflow (July 2012 – January 2022)

Wastewater outlet flow between January 2019 and January 2022 was adopted as representative of the current WWTP receiving environment. Average Dry Weather Flow (ADWF), Average Daily Flow (ADF) and Maximum Daily Flow (MDF) were extracted from this data.

Peak Wet Weather Flow (PWWF) instantaneous was calculated based on the design flow criteria from SDC for residential wastewater flows, with dry weather diurnal peaking factor (PF) of 2.5 and dilution/infiltration factor of 2 for wet weather.

The 2027 and 2052 flow estimates were calculated assuming existing peaking factors retained.

Fonterra Edendale factory domestic wastewater is understood to be discharging into the sewer, and hence is already included in the recent flow data.

Table 2 below displays the current estimated wastewater flows and the flow estimates in 2027 and 2052.

Table 2 Wastewater Flow Estimation

	Units	2022	2027	2052
Population		1210	1273	1646
ADWF	m^3/day	400	416	509
ADF	m^3/day	422	439	538
MDF	m^3/day	653	679	831
PWWF (Instantaneous)	L/s	23	24	29

As seen from the table above, the wastewater flow is expected to increase by approximately 4% between now and 2027, on the basis of linear population growth. It is envisaged that the 4% increase of wastewater flows and loads could be accommodated within the existing plant with minor augmentation.

3.1.1.3 Influent wastewater characteristics

The wastewater from Edendale, Wyndham and the Fonterra factory domestic discharge is assumed to have similar characteristics to typical municipal domestic wastewater, with correspondingly low levels of metals and

other industrial contaminants. No significant industrial wastewater is intended to be treated at the proposed WWTP, and this is not expected to change in the future.

In the absence of wastewater data, typical per capita (EP) generation rates (as Water Environment Federation MOP8 Table 2.11) have been used to estimate the approximate wastewater contaminant loads. The following per capita values were used in the calculation:

- Biochemical Oxygen Demand (BOD_5): 70 g/day
- Total Suspended Solids (TSS): 75 g/day
- Total Nitrogen (TN): 13 g/day
- Ammoniacal Nitrogen (AmmN): 10 g/day
- Total Phosphorus (TP): 3 g/day

Table 3 shows the estimated contaminant loads in the wastewater at various projected population growth stages. The concentrations are comparable to those reported in Table 2 of the Wastewater Sector Report (MfE 2020).

Table 3 Wastewater Contaminant Loads

	Units	2022	2027	2052
Population		1210	1273	1646
Average Daily Flows	m^3/day	422	439	538
BOD_5	kg/d	85	89	115
TSS	kg/d	91	96	123
TN	kg/d as N	16	17	21
AmmN	kg/d as N	12	13	16
TP	kg/d as P	3.6	3.8	4.9

3.1.2 Operation of existing WWTP

Wastewater from the terminal pump station is first treated by two Huber Rotamat screens, where large solids are captured. The solids (screenings) accumulated are compacted and dewatered by a screw, and discharged into a wheelie bin.

Screened wastewater gravitates to two 100m^3 balance tanks (underground and inclined).

Screened wastewater from the inlet works is then pumped to the rotary belt filter, where fine solids are separated and dewatered as a pre-treatment prior to the vermiculture treatment. Filtrate from the rotating belt filter gravitates to a storage tank and the sludge is disposed of into bins onsite.

From the filtrate storage tank, the filtered wastewater is pumped to the five vermiculture treatment beds. Secondary biological treatment occurs in these beds, and treated effluent leaves the beds as subnatant, which then flows to a collection manhole via gravity.

From there, effluent is then dosed with aluminium sulphate solution before pumped to the phosphorus removal system consisting of a series of “clarifier” tanks. After phosphorus removal, the effluent is UV disinfected prior to discharge into the Mataura River.

Discharge of treated effluent is via three discrete pipes fitted with diffusers mounted to the Edendale-Wyndham Road bridge piers, as described in SDC Wastewater Activity Management Plan 2018[6].

Alum floc from the phosphorus removal system gravitates to two alum residual beds where alum sludge is collected and disposed of offsite.

[6] Refer to Appendix C - 15-AMP-Wastewater-2018-2048-DRAFT-FEB-18.pdf (southlanddc.govt.nz)

Figure 11 presents the process flow diagram and Figure 12 shows an aerial capture of the existing WWTP.

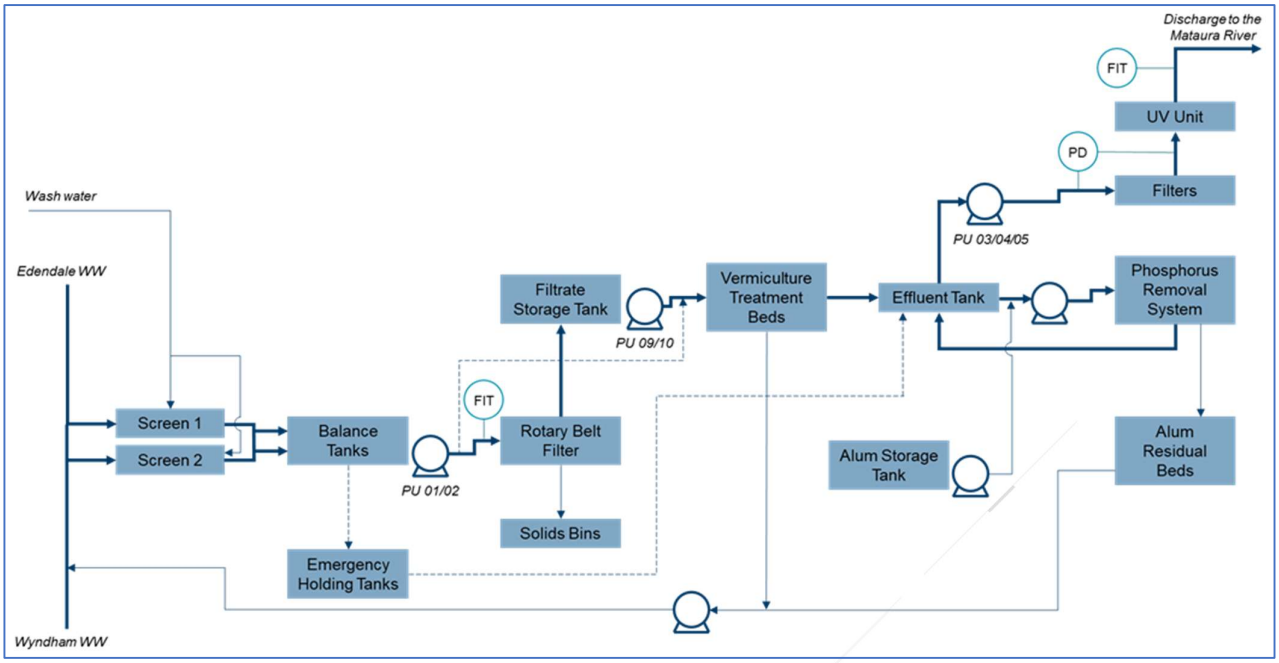

Figure 11 Edendale-Wyndham WWTP Process Flow Diagram

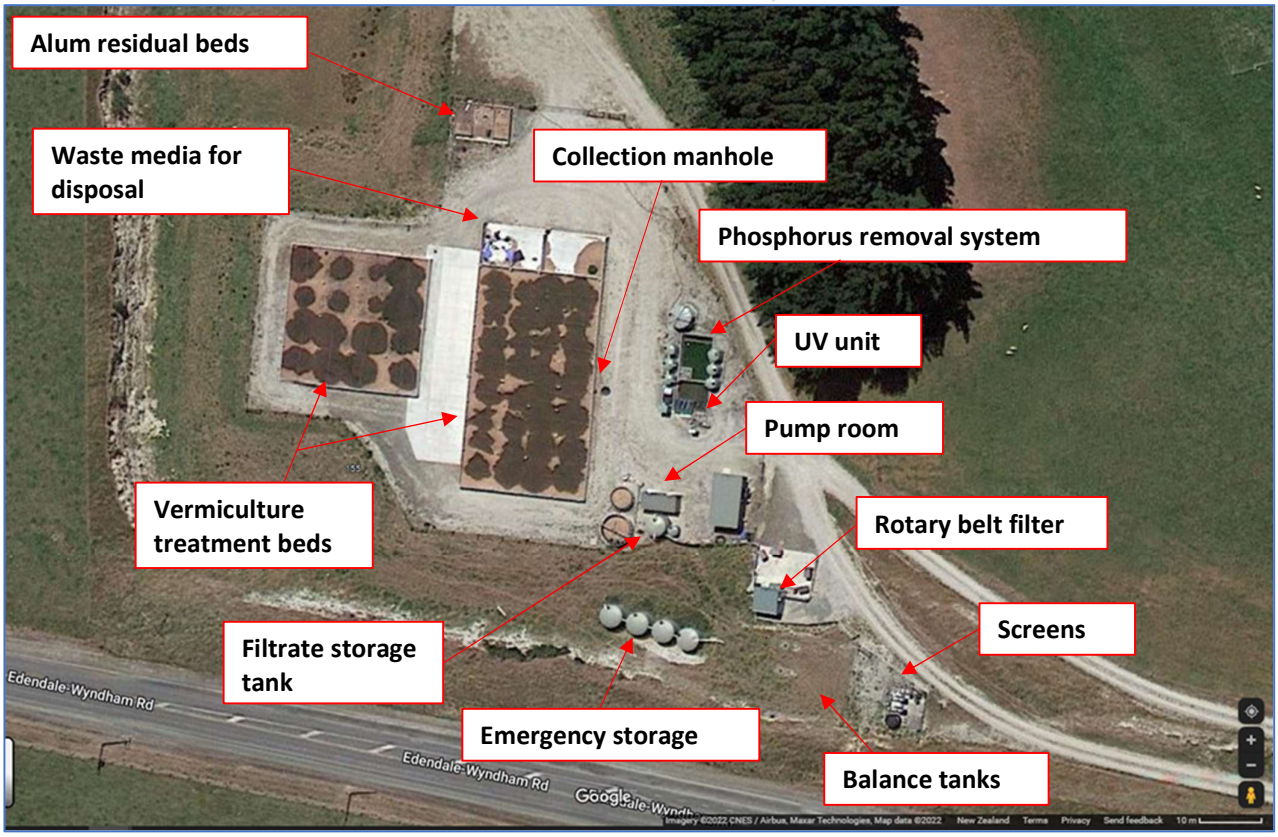

Figure 12 Existing Edendale-Wyndham Wastewater Treatment Plant

3.1.3 Nature of the Discharge

The influent wastewater is primarily domestic in nature, and therefore the contaminants of concern will be microbial pathogens, BOD, suspended solids, nitrogen and phosphorus.

3.1.3.1 Quantity from WWTP

As described in Section 3.1.1.2, the wastewater flows recorded at the flowmeter between the Balance Tank and the rotary belt filter have been used to estimate the plant discharge flow.

Wastewater outlet flow between January 2019 and January 2022 was adopted as representative of the current WWTP receiving environment. Average Daily Flow (ADF) and Maximum Daily Flow (MDF) were extracted from these data.

The calculated design flows (between January 2019 and January 2022) associated with the existing WWTP are summarised in Table 4 below:

Table 4 WWTP Inflow and Discharge Flows- Current

	Units	Discharge from Treatment Plant
Average Daily volume	m^3/day	422
Maximum Daily volume	m^3/day	653

The original WWTP design estimated a daily flow of 264 m3/day and a maximum daily rate of 528 m3/day to be discharged to the Mataura River. Based on the wastewater flows recorded at the flowmeter between 2019 and 2022, the average daily volume increased by 60% and the Maximum daily flow increased by 24% above the existing WWTP design outputs.

3.1.3.2 Quality from WWTP

The existing consent requires that the treated wastewater discharge to the Mataura River does not exceed the limits summarised in Table 5. The existing consent stipulates at least 4 plant outlet samples to be collected every year (three times between November and April and once between August and September). The table below compares the recent plant effluent results (Sept 17 to Sept 22) with the current limits.

Table 5 Recent Plant Performance Results and Consent Limits

Parameter	Unit	Sept 17-Sept 22 data		Current consented Limit (average)[7]
		Mean	95%ile	
BOD_5	g/m^3	10	21	30
TSS	g/m^3	17	46	70
Dissolved Reactive Phosphorus (DRP)	g/m^3	2.5	4.2	4
AmmN	g/m^3	8.7	15	15
TN	g/m^3	30	40	No limit
E. Coli	MPN/100mL	1696	16,000	6,000 cfu/100mL

WWTP discharge samples collected between September 2012 and September 2022 are shown in graphs below.

[7] Mean shall be from any four consecutive samples taken at the Mataura River prior to the outfall.

3.1.3.2.1 Five-day Biochemical Oxygen Demand (BOD5)

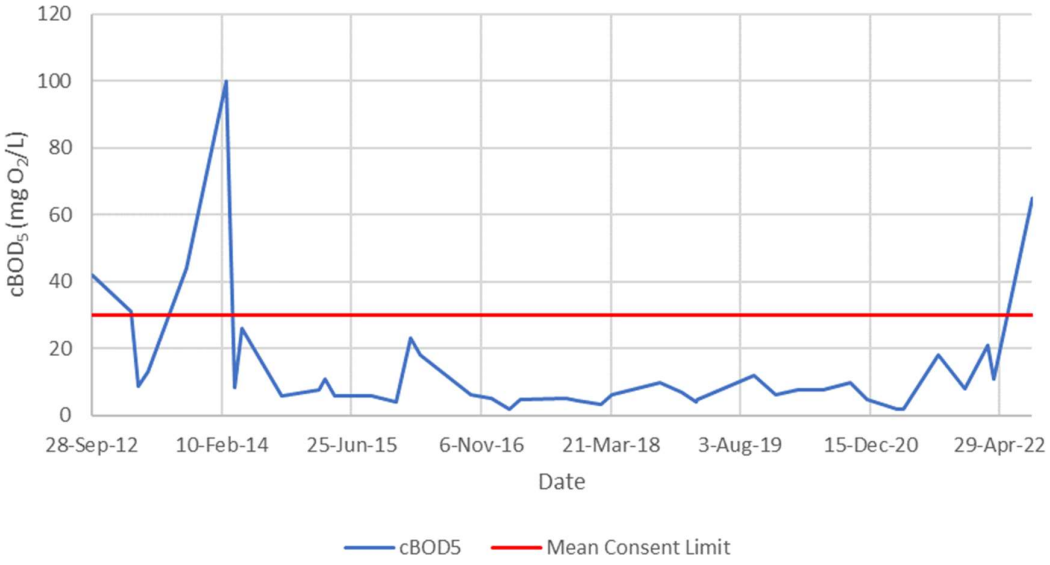

Figure 13 Discharge Biochemical Oxygen Demand

Observation: The above graph (Figure 13) shows that the existing plant generally complies with the consent limit for BOD_5 (30 mgO_2/L), while there were a few noted elevated spikes in Feb 2014 and Sep 2022, respectively. Also, some samples were stated with very low BOD_5 concentrations (<2 g/m^3) in Feb 2017 and Mar/Apr 2021.

3.1.3.2.2 Total Suspended Solids (TSS)

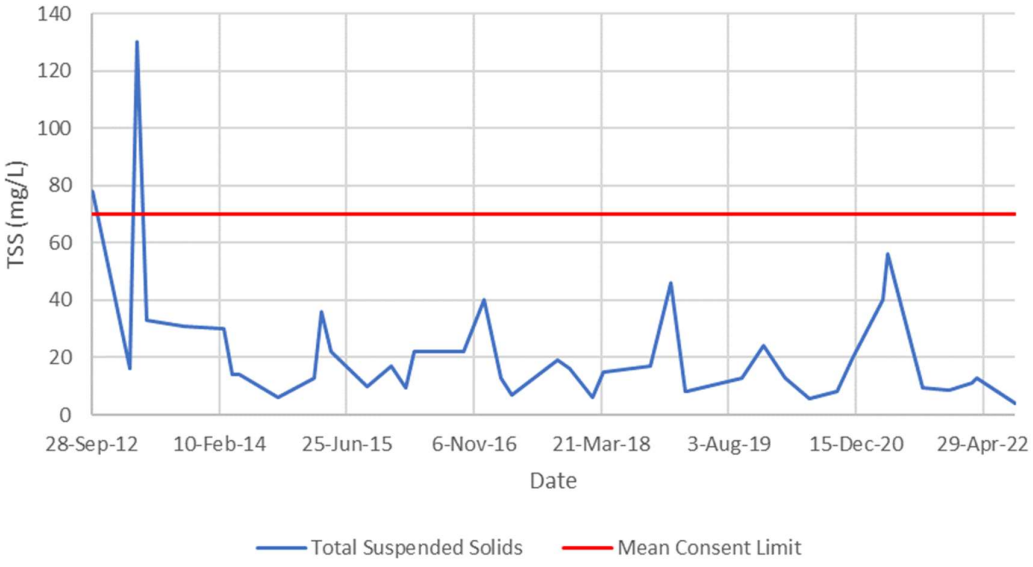

Figure 14 Discharge Total Suspended Solids

Observation: Total Suspended Solids (TSS) is generally well under the consent limit (70 mg/L), with few exceptions in Sep 2012 and Mar 2013 (Figure 14).

3.1.3.2.3 Dissolved Reactive Phosphorus (DRP)

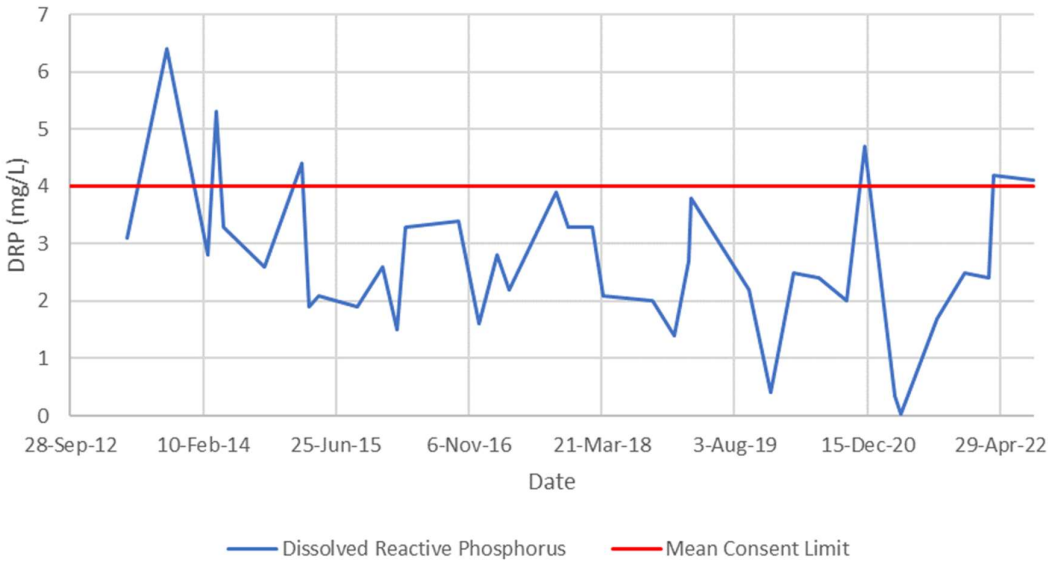

Figure 15 Discharge Dissolved Reactive Phosphorus

3.1.3.2.4 Total Phosphorus (TP)

Observation: Dissolved Reactive Phosphorus (DRP) generally complies with the consent limit of 4 mg/L, however, some samples were slightly over the limit before Feb 2015 and in Dec 2020. Also, there were some extremely low values in Dec 2019 and Mar/Apr 2021 (Figure 15).

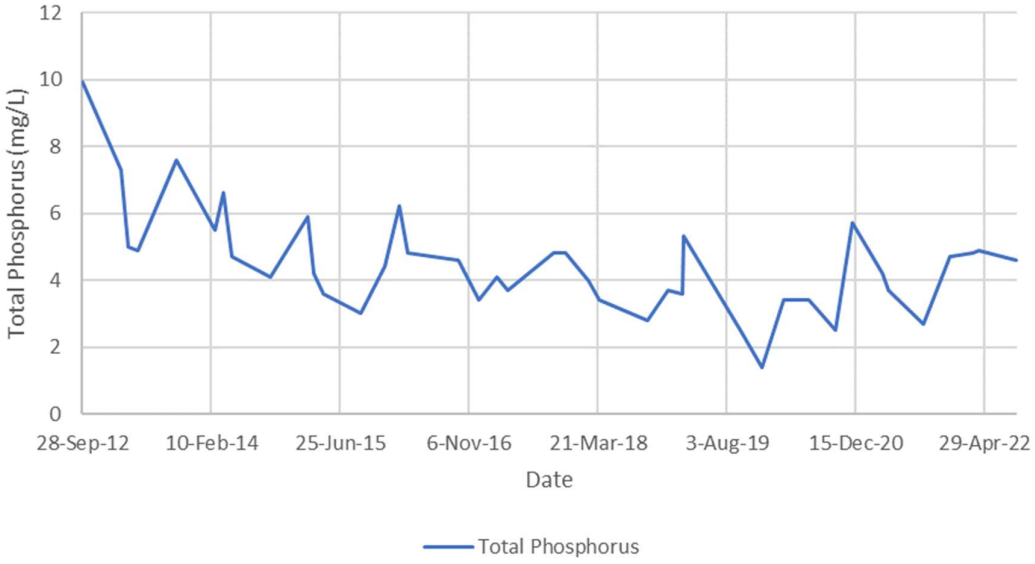

Figure 16 Discharge Total Phosphorus

Observation: Total Phosphorus (TP) has decreased slightly over the years, reaching the lowest concentration in Dec 2019 (Figure 16).

3.1.3.2.5 Ammoniacal Nitrogen

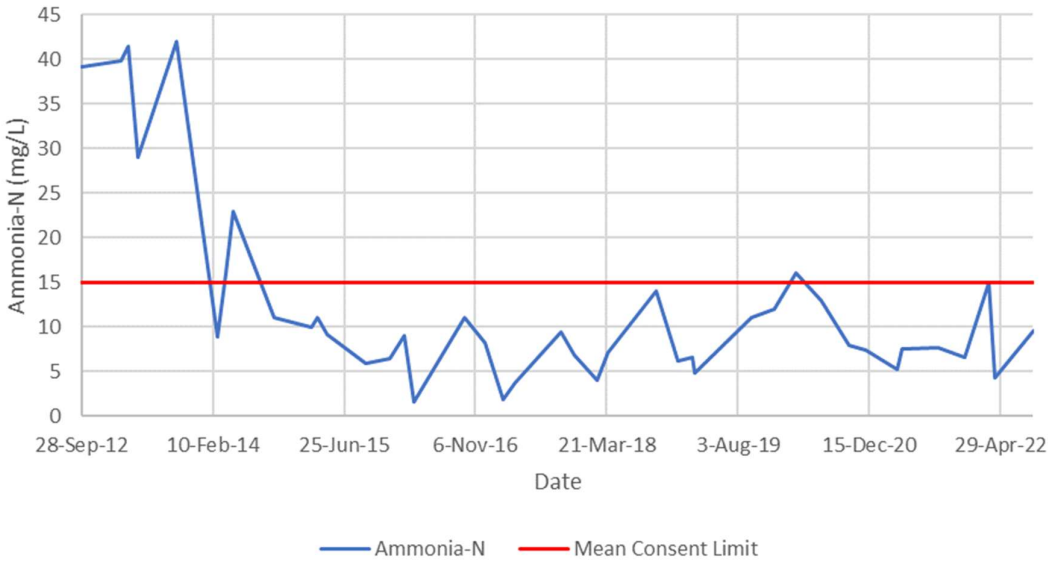

Figure 17 Discharge Ammoniacal Nitrogen

Observation: Ammoniacal Nitrogen has decreased considerably since Sep 2013 and typically complies the consent limit of 15 mg/L(Figure 17).

3.1.3.2.6 Total Nitrogen (TN)

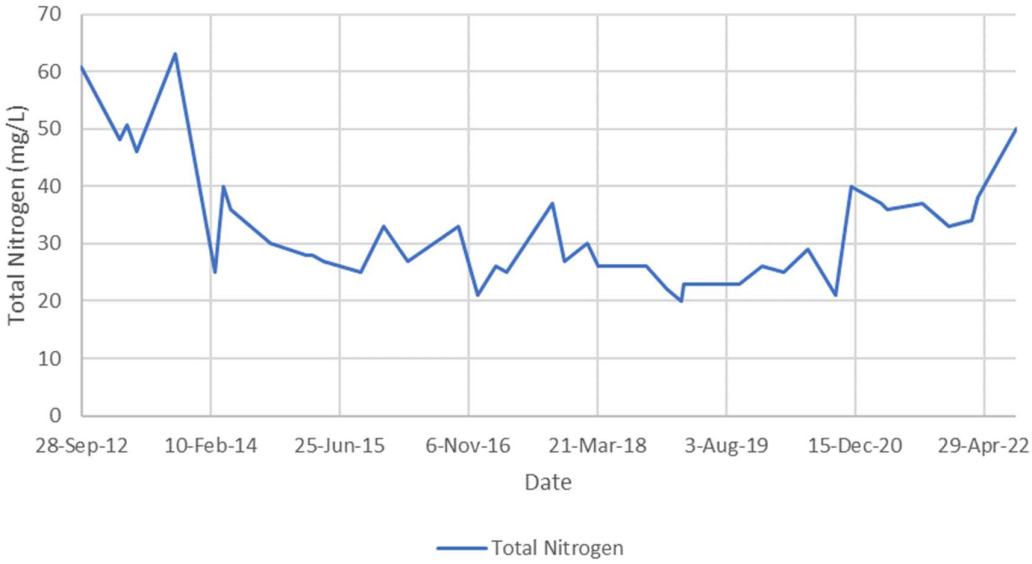

Figure 18 Discharge Total Nitrogen

Observation: Total Nitrogen (TN) has decreased significantly since Sep 2013, following similar pattern in the Amm-N trend. Higher concentrations have been observed since Dec 2020 (Figure 18).

3.1.3.2.7 Escherichia coli (E.coli)

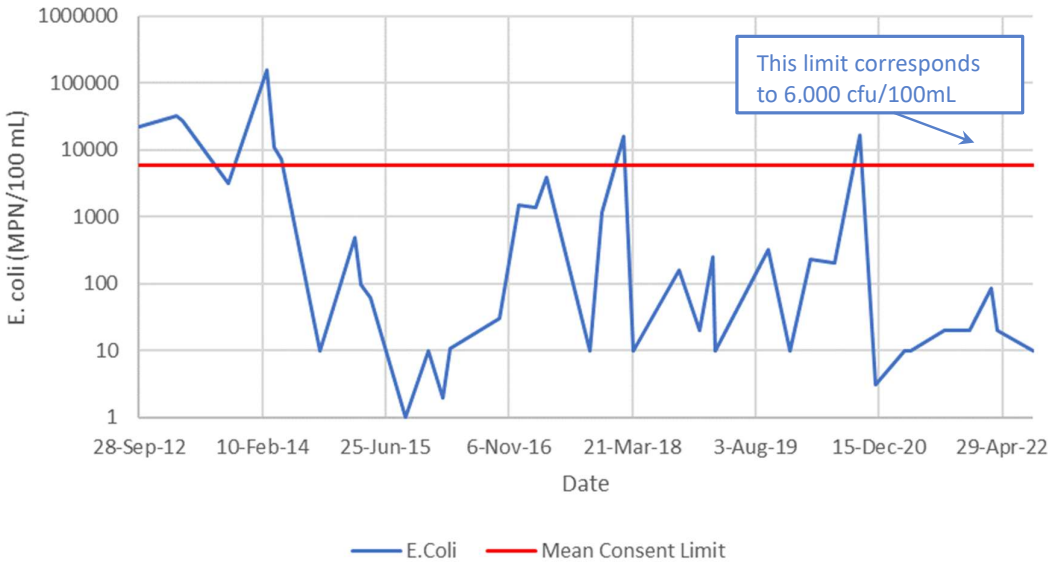

Figure 19 Discharge E. Coli

Observation: E. coli is highly variable but typically complies with the consent limit since Sep 2014. There were a few occasional spikes in Feb 2018 and Sep 2020, respectively (Figure 19).

3.1.3.3 Discharge points in Mataura River

The discharge occurs downstream of discharges of treated wastewater from the Gore and Mataura townships and the Alliance Mataura wastewater discharge, and in proximity to the Fonterra treated wastewater discharge. The Wyndham stormwater network discharge is to an oxbow that connects to the river about 1.3 km downstream of the WWTP discharge point in the Mataura River.

3.1.3.4 Monitoring points in Mataura River

There is existing monitoring of the mixed effluent discharge upstream and downstream of the Edendale – Wyndham bridge (Figure 20). Monitoring of the Mataura River is currently required, at least 5 meters upstream of the point of discharge, and at a point downstream of the mixing zone (425 m) (Figure 21). Monitoring requires SDC to take representative samples (at least three times between 1st November and 15th April and once between August and September). The monitoring regime is effective and will continue to be maintained for the proposed duration of consent.

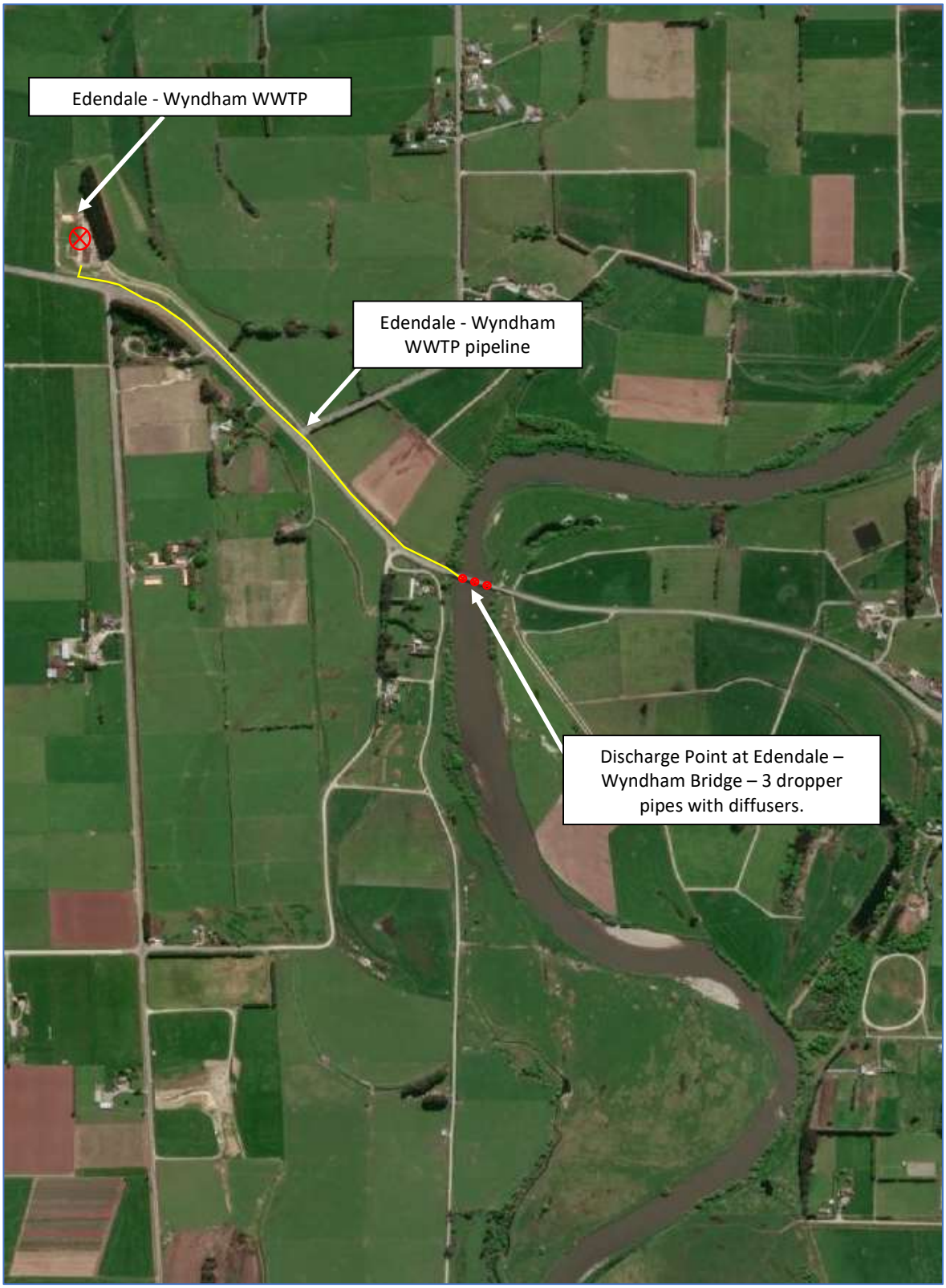

Figure 20 ***Edendale – Wyndham WWTP and discharge point at Edendale – Wyndham Bridge***

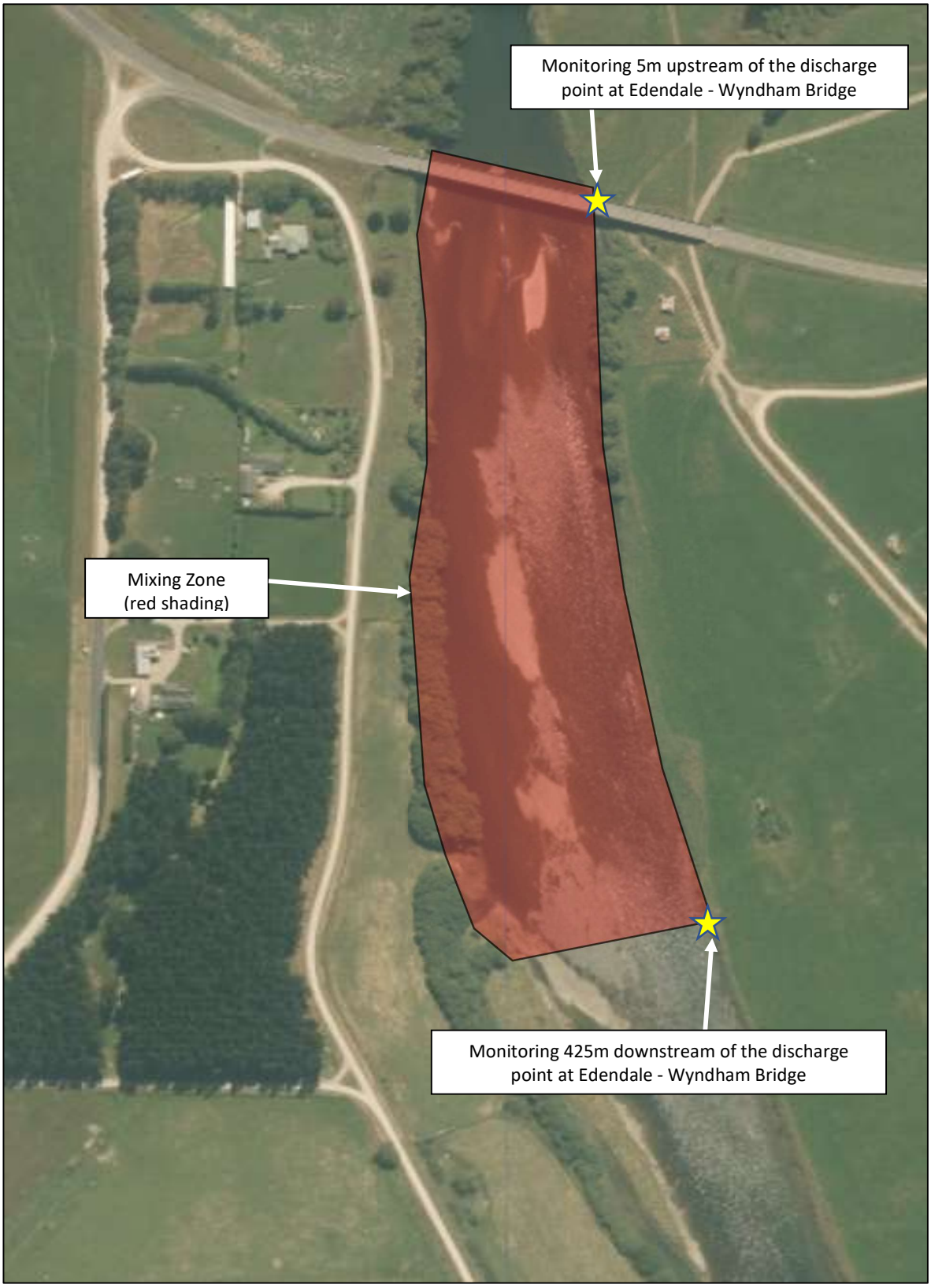

Figure 21 *Mixing Zone and monitoring sites*

3.2 Proposed conditions of consent

Purpose of Consent

1. This resource consent duration is five years

   (Note: Pursuant to Sections 123 and 124 of the Resource Management Act 1991, a new consent will be required at the expiration of this consent. The application will be considered in accordance with the plans in effect at that time, and the adverse effects of the proposed activity)

2. This consent authorises the discharge of treated sewage effluent, at an average daily flow of 450 m3 / day and a maximum daily rate of 700 m3 / day, into the Mataura River at about map reference NZTM2000: 1278920E – 4861696N. This consent does not authorise the disposal of sludge or untreated sewage or wastes collected from any point in the reticulation or treatment system.

Accidental or Emergency Discharges

3. In the event of an accidental or emergency discharge of wastewater or partially treated wastewater to land or water, the consent holder (or the consent holder's agent) shall inform Environment Southland Compliance Manager of the event:

   a. As soon as practicable, and not later than six hours following first identification of the accident or emergency discharge.

   ***Advice Note**: accidental or emergency discharge of wastewater also include any wet weather or dry weather overflows from any part of the wastewater treatment plant.*

4. When informing Environment Southland of any accidental or emergency discharge of wastewater to land or water, as specified in condition (3), the Consent Holder shall provide the following information:

   a. The date, time, location and estimated volume of the discharge;

   b. The cause of the discharge;

   c. Clean up procedures undertaken;

   d. Measures to be undertaken to prevent a recurrence of the discharge.

Complaints

5. The consent holder shall maintain a register of complaints received about the wastewater treatment and disposal system. The register shall record the response and actions taken to each compliant. The complaints register shall be forwarded to Council's Compliance Manager by 31 July each year.

Monitoring

6. The consent holder shall assess and record the rate of inflow per day into the treatment system. Compliance with this condition can be met by recording the pumping hours at the final pump station and converting this to volume, based on the calibrated pumping rate of the pump(s). A copy of this record for the previous calendar year is to be supplied to the Council's Compliance Manager by 31 July each year.

7. The consent holder shall:

   a. monitor the wastewater discharge to the Mataura River by taking a representative sample of the wastewater prior to the outfall at the Edendale – Wyndham Bridge:

      i. at least four times each year, three times between November and April and once between August and September; and

      ii. analysing the samples for the following:

         1. Temperature;

         2. Electrical Conductivity;

         3. Carbonaceous Biochemical Oxygen Demand (BOD_5) concentration;

         4. Total Suspended Solids concentration;

5. E.Coli concentration;
6. Nitrate Nitrogen concentration;
7. Total Nitrogen concentration;
8. Total Ammonia Nitrogen concentration ($NH4^+$ -N and NH_3-N);
9. Total Phosphorus concentration;
10. Dissolved Reactive Phosphorus concentration; and
11. pH

b. monitor the Mataura River, at least five metres upstream of the point of discharge, and at a point downstream of the mixing zone (425 m) at a location approved by this Council's Compliance Manager, by taking representative samples:

   i. at least three times between 1 November and 15 April each year

      1. Except in accordance with clause (b)(i)(2)' below, samples taken under this condition shall be taken when flow in the Mataura River, as measured at the Southland Regional Council's monitoring site at Tuturau, is less than 25 cumecs;
      2. If at least two samples have not been taken in accordance with clause (b)(i)(1) above by 28 February due to flow conditions, three samples shall be taken at fortnightly intervals until 15 April. These shall be in addition to any samples taken in accordance with clause (b)(i)(1) prior to 28 February; and

   ii. once between August and September each year; and

   iii. analysing the samples for the following:

      1. pH;
      2. Temperature;
      3. Electrical Conductivity;
      4. E.Coli concentration;
      5. Nitrate Nitrogen concentration;
      6. Total Ammonia Nitrogen concentration ($NH4^+$ -N and NH_3-N);
      7. Dissolved Reactive Phosphorus concentration;
      8. Turbidity;
      9. Dissolved Oxygen concentration; and
      10. Suspended Solids concentration.

8. Samples collected for discharge and receiving water monitoring shall conform with the following:

   a. the discharge and receiving water monitoring shall be undertaken at about the same time within a one hour period, on each monitoring occasion;

   b. for the purpose of condition 8, representative samples shall be grab samples;

   c. sample collection, preservation and analysis shall be carried out in accordance with the most recent edition of APHA "Standard Methods far the Examination of Water and Wastewater";

   d. the monitoring and analysis are to be carried out by a laboratory with IANZ registration or equivalent, or as agreed to, in writing, with the Council's Director of Environmental Management;

   e. the results of the analysis shall be supplied to the Council, no later than 20 working days from the end of the month in which the samples are taken. The methods of analysis are to be specified with the results;

   f. the Southland Regional Council may audit monitor sample collection up to once each year; and

g. the exact sampling points shall be agreed with the Council's Compliance Manager.

9. The consent holder or its agent shall survey macroinvertebrate fauna and periphyton in the receiving waters at two sites, one above and one at least 100 metres below the discharge point but within the mixing zone specified in Condition 14. The survey shall be as follows:

    a. The survey shall be undertaken once every three calendar years, at a time when the Mataura River, as measured at the Southland Regional Council's monitoring site at Tuturau, has had a flow of less than 25 cumecs for a period of at least twenty consecutive days. The monitoring sites and methodology shall be to the satisfaction of the Council's Compliance Manager;

    b. the macroinvertebrate fauna monitoring results shall be presented as a species inventory together with mean relative abundances, and shall be summarised as a total number of species and total number of organisms per square metre. The mean total invertebrate densities at each site shall be compared statistically using the Mann-Whitney U Test to assess the significance ($p<0.05$) of any difference that may occur;

    c. the result of the survey and statistical analysis shall be reported to the Southland Regional Council within 20 working days of the completion of the requisite field work; and

    d. visual and photographic assessment of the periphyton coverage on the river bed at both above sites to assess compliance with Ministry for the Environment New Zealand Periphyton Guidelines June 2000.

10. The consent holder shall submit an annual report to the Council's Compliance Manager by 31 July each year. This report shall include but not be limited to the following details completed during the reporting year:

    a. Summary of wastewater influent and effluent and a comparison to WWTP system capacity.

    b. Assessment of water sampling data and comparison between upstream and downstream monitoring sites;

    c. Assessment of wastewater discharge quality against:

        i. Water quality standards for Mataura 3 beyond the mixing zone,

        ii. Discharge limits and parameters at the point of discharge;

        iii. Wastewater performance standards.

    d. Description of planned and unplanned maintenance activities;

    e. Description of any maintenance or operations failures and actions taken;

    f. Assessment of consent conditions and demonstrating compliance within consent;

    g. Description of any system updates or changes to the operation and improvement of the WWTP;

    h. Description of any accidental or emergency discharges and actions taken; and

    i. Summary of any complaints associated with the WWTP or discharge to Mataura River.

    Advice note: The reporting year is defined by the financial year.

System Shut Down

11. The consent holder shall ensure the treatment system is designed so it is capable of being shut down for a least one hour per day for the purpose of allowing monitoring of other discharges in the Mataura River. When notified by the consent authority the discharge must cease within two hours of notification for a period of at least one hour to allow sampling to be carried out.

Limits and Standards

12. The consent holder shall ensure that the treated wastewater discharge shall not exceed the following maximum limits:

Parameter	Mean Concentration
BOD_5 (g/m^3)	30
Suspended Solids (g/m^3)	70
Dissolved Reactive Phosphorus (g/m^3)	4
Ammonia – N (g/m^3)	15
E.Coli (cfu/100mL)	1,000

Advice Note: For the purposes of this consent, the mean shall be from any four consecutive samples taken in accordance with condition 8(a).

13. The following water quality standards shall apply to the change in effects caused by the discharge of treated wastewater to the Mataura River (Classified as Mataura 3),
    a. when measured at the discharge point at Edendale – Wyndham Bridge:
        i. Any discharge is to be substantially free from suspended solids, grease and oil.
    b. when measured inside of the zone of reasonable mixing:
        i. There shall be no bacterial or fungal slime growths visible to the naked eye as obvious plumose growths or mats.
        ii. Fish shall not be rendered unsuitable for human consumption by the presence of contaminants; and when measured inside of the zone of reasonable mixing.
    c. when measured outside of the zone of reasonable mixing:
        i. The daily maximum ambient water temperature shall not be increased by more than 3°C, as a result of any discharge;
        ii. The pH of the water must be within the range 6 to 9, (Table 6), except when due to natural causes;
        iii. The waters must not be tainted so as to make them unpalatable, nor must they contain toxic substances to the extent that they are unsafe for consumption by humans or farm animals, nor must they emit objectionable odours;
        iv. There shall be no bacterial or fungal slime growths visible to the naked eye as obvious plumose growths or mats;
        v. There must not be any destruction of natural aquatic life by reason of a concentration of toxic substances;
        vi. The natural colour and clarity of the waters must not be changed to a conspicuous extent;
        vii. The oxygen concentration in solution in the waters must not be reduced below 5 milligrams per litre;
        viii. The concentration of faecal coliforms shall not exceed 1,000 coliforms per 100 millilitres; and
        ix. Fish shall not be rendered unsuitable for human consumption by the presence of contaminants.

Advice Note 1*: For the purpose of this condition, the zone of reasonable mixing in the Mataura River shall extend from 5 metres upstream of the discharge point to 425 metres downstream.*

Advice Note 2: *Monitoring requirements require sample collection, preservation and analysis to be carried out in accordance with the most recent edition of American Public Health Association (APHA) "Standard Methods for the*

Examination of Water and Wastewater" or National Environmental Monitoring Standard (NEMS) and analyses to be carried out by a laboratory with International Accreditation New Zealand (IANZ) registration or equivalent.

Table 6 – Water quality trigger values[8]

Total Ammoniacal Nitrogen Freshwater Trigger Values in mg/m^3 at different pH (Temperature is not taken into account)	
Ph	**$NH4^+$ - N + NH_3 – N mg/m^3**
6.0	2570
6.1	2555
6.2	2540
6.3	2520
6.4	2490
6.5	2460
6.6	2430
6.7	2080
6.8	2330
6.9	2260
7.0	2180
7.1	2090
7.2	1990
7.3	1880
7.4	1750
7.5	1610
7.6	1470
7.7	1320
7.8	1180
7.9	1030
8.0	900
8.1	780
8.2	660
8.3	560
8.4	480
8.5	400
8.6	340
8.7	290
8.8	240
8.9	210
9.0	180

Operation and Management

14. There shall be no addition of nitrogen, phosphorus or sulphur-based chemicals to the treatment system without the authorisation of the Council's Compliance Manager.
15. The consent holder shall ensure that signage, informing the public of the public health risk associated with the discharge of treated wastewater authorised by this consent into the Mataura River, is maintained in a prominent place near the discharge. The sign shall include a contact number for the consent holder.
16. The consent holder shall maintain an Operations and Management Plan (O & M Plan) for the Wyndham-Edendale wastewater treatment system, which includes, but not limited to the following information:

[8] Source - Australian and New Zealand Environment and Conservation Council (ANZECC) October 2000: Australian and New Zealand Guidelines for Fresh and Marine Water Quality

a. describing the various treatment process steps;

b. describing how the wastewater treatment system will be operated and maintained to ensure that treatment is optimised at all times;

c. outline contingency measures to handle emergency events;

17. The consent holder shall operate and maintain the Wyndham-Edendale wastewater treatment system in accordance with the O & M Plan.

18. The consent holder shall update the O & M Plan if there are any changes or upgrades to the Wyndham-Edendale wastewater treatment system or its operation.

19. The consent holder shall maintain a log of inspections and works carried out on the treatment system, and make the log available, upon request, to the Council's Compliance Manager.

4. Resource Consent Requirements

4.1 Regional Water Plan for Southland (RWPS)

The purpose of this Plan is to promote the sustainable management of Southland's rivers, lakes, groundwater, surface water, and wetland resources. The plan is aimed at enabling the use and development of fresh water where this can be undertaken in a sustainable way, providing a framework for activities, such as discharges to water, taking and using water, and structures and bed disturbance activities in riverbeds.

An assessment of the proposal against the relevant rules of the RWPS is provided below. Overall, the following consent is required under the RWPS:

- Discharge permit for the discharge of contaminants into surface water from a community sewage scheme pursuant to Rule 2 of the RWPS as a **discretionary activity.**

4.2 Proposed Southland Water and Land Plan (PSWLP)

The proposed Southland Water and Land Plan seeks to address activities that are known to have a significant effect on water quality.

Environment Southland's proposed Southland Water and Land Plan was made partially operative following a council meeting in January 2021.

Appeals to the objectives of the proposed plan have been resolved through the Environment Court, with the Court directing council to make changes to this section of the plan. The proposed plan became operative (in part) on 1 March 2021. There are still appeals to the Environment Court regarding some of the rules that have not been resolved.

An assessment of the proposal against the relevant rules of the Proposed Southland Water and Land Plan - Part A - Decisions version 4 April 2018, is provided below. Overall, the following consent is required under the PSWLP:

- Discharge permit for the discharge of contaminants into surface water from a community sewage scheme pursuant to Rule 33A of the PSWSP as **a non-complying activity.**

Rule 33A of the PSWSP is currently under appeal and the rule can therefore not be treated as operative as the Environment Court has not resolved the points of appeal.

4.3 Summary

Applications lodged after the notification date of a proposed plan must consider both the operative and proposed plan (notified version) rules. The application is made after the notification date of the PSWLP and was therefore assessed against both plans. Since the PSWLP is only partly operative and Rule 33A is currently under appeal, the application must be classified as a **discretionary activity** pursuant to Rule 2 of the RWPS. The application must still consider the objectives and policies of the operative and proposed plans to determine the application.

5. Assessment of Environmental Effects

Under Section 104(1)(a) of the RMA, when considering an application for resource consent the consent authority must, subject to Part 2, have regard to any actual or potential effects on the environment.

The actual or potential effects of the proposal have been evaluated to a level appropriate to the scale and significance of effects as required by Section 88 of the RMA.

The application relates to the discharge of treated wastewater into the Mataura River as per the existing consent. The assessment does not assess the operation of the WWTP site as no consent is needed for the operation.

As the consent is for a discretionary activity, there are no specific matters that must be addressed in this assessment of effects. Guidance has been taken from:

Regional Fresh Water Plan for Southland

Objectives

- Objective 2, 3 and 4 to manage and maintain water quality by encouraging best environmental practices to improve water quality and avoiding exceedance of water quality standards.

Policies

- Policy 1,3, 4, 8 and 9 associated with meeting water quality standards, encouraging best management practices to manage water quality in surface water bodies and encoring discharges at time of high flow to assimilate contaminants concentrations.

Proposed Southland Water and Land Plan:

Objectives

Objective 1, 2 and 6 to manage land and water sustainably by recognizing interconnectedness, protecting mauri of water and ensure water quality is maintained or improved where degraded

Policies

- Policy 15A, 17a and 44 associated with the maintenance of water quality, managing community sewerage schemes in accordance with recognised industry standards and implementing Te Mana O Te Wai.

The nature, scale and intensity of these effects on the receiving environment are described and assessed in the sections below.

5.1 Positive effects and community benefits

The existing WWTP requires significant operator intervention to maintain its performance and investigations are underway to develop appropriate long-term solutions to ensure the wastewater treatment system for Edendale and Wyndham is managed effectively and provides sufficed capacity to meet future demand. These solutions will likely require upgrades to the existing WWTP to meet current best practice guidelines which will ultimately increase system capacity, adapt management to maintain performance and consider alternative discharge methods to reduce the overall impact of the treated discharge on the receiving environment.

Although SDC is seeking authorisation to operate the existing WWTP over the next five years, they are committed in finding appropriate solutions to improve the overall operation of the WWTP. Based on the comparison of water quality samples taken upstream and downstream of the discharge point in the Mataura River, the volume of treated discharge water in relation to the flow within the receiving environment is showing concentrations levels of various contaminants are generally similar and not noticeably affecting water quality. The data demonstrates that the current discharge of treated wastewater into the Mataura River is not causing any discernible adverse effects in the environment.

On this basis it considered appropriate to authorise the discharge activity into the Mataura River for another five years as water quality in the Mataura River has not degraded beyond what is anticipated under the existing consent. The community will furthermore benefit from this approach as it provides SDC with time to investigate further options to improve the overall operation and performance. Technical expertise is required to develop a

new long-term solution to manage the ongoing operation of the Edendale – Wyndham WWTP. The upgrades required will typically improve the overall performance of the existing WWTP and provide additional capacity to meet future community demand.

Proposed upgrades to the existing WWTP will minimise adverse effects on water quality, and avoid, remedy, or mitigate other adverse effects of the operation of, and discharges of the system. The proposed improvements will also ensure the designing, operating and maintenance of the WWTP is in accordance with recognised industry standards. Potential designs will also consider measures to progressively reduce the frequency and volume of wet weather overflows and ensure the system is operated and maintained to minimise the likelihood of dry weather overflows occurring. This approach is consistent with the direction of the Proposed Water and Land Plan.

5.2 Actual or potential effects on surface water quality and aquatic ecology

The Edendale – Wyndham WWTP has been in operation since 2008 and has been discharging treated wastewater into the Mataura River. The treated wastewater from the WWTP mainly comprises of dissolved contaminants, suspended solids and micro-organisms. Some of this is dissolved into the water and some exists as separate particles. Discharging treated wastewater into the Mataura River may impair water quality and ecological communities if the discharge is not appropriately managed to maintain healthy river conditions which will allow organic materials to be processed naturally by aerobic and anaerobic bacteria.

When the wastewater discharge brings excessive loads of organic material into the waterways, aerobic bacteria consuming the material deplete dissolved oxygen in the water. When wastewater discharge brings excessive nutrients into waterways, the growth of algae and scum is stimulated, which can reduce levels of dissolved oxygen. In both cases, aquatic life suffers. Where there is an overwhelming amount of wastewater in the waterways, all the oxygen will be used up and the anaerobic bacteria will take over. The water will go septic (anaerobic) and this will have significant impact on ecosystems, as will other forms of oxygen-dependent life.

5.2.1 Water quality standards

In many areas of Southland, water quality in surface waterbodies is degraded and the first priority is to ensure that the water quality does not degrade any further. The main objective is to manage water quality so that there is no reduction in the quality of the water in any surface water body, beyond the zone of reasonable mixing for discharges. The Southland Regional Water Plan and Proposed Water and Land Plan details the water quality parameters and relevant standards that have been identified as being necessary to protect these values by focusing on the critical or most sensitive values for each waterbody.

There is existing monitoring of the wastewater discharge upstream and downstream of the Edendale – Wyndham bridge. Monitoring is required at least 5 meters upstream of the point of discharge, and at a point 425 m downstream of the mixing zone (Refer to Figure 21). Based on the observed upstream and downstream water quality comparisons as described in Section 2.6 of this report, it has been demonstrated that the current WWTP discharge to the Mataura River complies with these water quality standards beyond the zone of reasonable mixing as contaminant concentrations and loadings show no obvious change between these locations. This is predominantly due to the very small volume discharged into the Mataura River compared to the flow of the receiving environment.

Water quality standards are proposed as conditions of consent to allow the consent to continue for a duration of five years while SDC considers upgrades to improve the overall performance of the WWTP. The proposed water quality standards are similar to those already consented under the existing discharge permit. The proposed conditions relating to water quality standards are consistent with the requirements set out under the RWPS and PSWLP. The main difference between the existing consent and proposed water quality standards (Section 3.3,) is the reduction in Ecoli concentrations from 6,000 MPN/100mL to 1,000 MPN/100mL. This is consistent with the proposed plan changes. As such the existing monitoring sites and monitoring regime will be maintained and reported to ES on an annual basis to ensure and demonstrate compliance with the water quality standards.

5.2.2 Discharge Limits and Parameters

In addition to the water quality standards proposed to maintain water quality beyond the mixing zone, the treated wastewater discharge when measured prior to the outfall at the Edendale – Wyndham bridge, will not exceed the following discharge limits set out in Table 7:

Table 7 - Treated wastewater discharge limits and compliance with limits

Parameter	Consent Mean Concentration	Sept 17 – Sept 2022 results (average)
BOD_5 (g/m^3)	30	10
Suspended Solids (g/m^3)	70	17
Dissolved Reactive Phosphorus (g/m^3)	4	2.5
Ammonia – N (g/m^3)	15	8.7
E.Coli (MPN/100mL)	1,000	1,696*

** This value includes two events with unusual E.Coli spikes of 16,000 and 17,000 MPN/100mL in February 2018 and September 2020, respectively. The values are generally around 140 MPN/100mL.*

The existing consent stipulates at least 4 plant outlet samples to be collected every year (three times between November and April and once between August and September). Table 7above compares the recent plant effluent results (averaged between Sept 17 to Sept 22) with the proposed discharge limits. The results averaged over the last 5-year period indicated that the discharge will currently comply with the proposed discharge limits.

Based on annual compliance reports (2019 to 2022) attached as **Appendix B**, it was concluded that the discharge from the Wyndham and Edendale community wastewater treatment system when compared in "Table 3" (limits and standards set for BOD5, Suspended Solids, Dissolved Reactive Phosphorus, Ammonia and E.Coli) should not be adversely affecting local benthic macroinvertebrate and periphyton communities of the Mataura River". The annual reports demonstrate that the WWTP will continue to meet water quality standards in the Matuara River.

E.Coli is considered as one of the worst contributors affecting water quality in the Mataura River based on the state of environment report. As such, the proposed E.coli (MPN/100mL) limit when measured at the discharge point will reduced to 1,000 (MPN/100ml). This is a significant reduction compared to the existing consent which will contribute to the improvement of E.Coli concentrations in the Mataura River.

5.2.3 Zone of reasonable mixing

The zone of reasonable mixing in the Mataura River currently extends from 5 metres upstream of the discharge point to 425 metres downstream of the discharge point. Managing discharges to ensure compliance with the water quality standards following reasonable mixing will avoid levels of contaminants in water and sediments that could harm the health of humans, domestic animals including stock and/or aquatic life.

Land and Water Aotearoa (LAWA)[9] monitors several sites within Southland and keeps records for the Mataura River at Seaward Downs monitoring site, which is 13km downstream of the WWTP discharges site at the Edendale-Wyndham Road bridge. Based on LAWA records the mean flow within the river is 91 m3/s and median flow is 69 m3/s. The recent outflow from the WWTP is up to 653 m3/day, or approximately 7.6 L/s. Records show that the WWTP discharge accounts for a very small proportion of the Mataura River flow (the average proportion is < 0.01%).

The zone of reasonable mixing as defined by Policy 9 (Zone of reasonable mixing) in the RWP is still considered appropriate to the renewal consent to avoid or mitigate levels of contaminants concentrations in the receiving

[9] Land, Air, Water Aotearoa (LAWA) - Mataura River at Seaward Downs

waterbody. Based on the observed upstream and downstream water quality comparisons and the very small volume of treated discharge water entering the Mataura River, it is demonstrated that the current mixing zone is appropriate as the discharge is showing a very low impact on water quality within the Mataura River.

5.2.4 Impact on instream ecology and aquatic organisms

There are a wide range of variables to consider when determining the actual or potential adverse effects of the discharge on instream ecology and aquatic organisms. If the river is not in a healthy state, there is a high risk that the proposed discharge of nutrient and organic rich wastewater may adversely impact water quality and the overall mauri of the waterbody.

High levels of nutrients discharged into a waterbody can result in excessive growths of aquatic weeds and algae. Some forms of nutrients can become toxic (eg. Ammoniacal N) to aquatic life at high concentrations, particularly under certain temperatures and pH conditions can cause direct harm to fish and macroinvertebrates. In cases where organic matter increases in a waterbody, the number of decomposers will subsequently increase. These decomposers grow rapidly and use a great deal of oxygen during their growth. This leads to a depletion of oxygen as the decomposition process occurs. A lack of oxygen can kill aquatic organisms which causes direct harm to the ecosystem.

E.Coli and suspended sediment have been identified as the main water quality issues within the Mataura River at the current discharge location. Other key contaminants of concern potentially associated with the treated wastewater discharge (ie. nitrate, ammoniacal N, dissolved reactive phosphorus) are other key indicators of degraded surface water bodies. However current available data for the area does not indicate any significant issues with these contaminants within the Mataura River at the location of interest. Although the current discharge contributes to the deterioration in water quality within the receiving environment, the overall contribution from the plant is considered minor.

5.2.5 Summary

The water quality assessment has shown that the existing discharge of treated wastewater into the Mataura River, beyond the mixing zone, is currently meeting the water quality standards identified under the provisions of the RWPS and PSWLP.

The replacement consent will maintain water quality and not exceed water quality standards going forward. SDC is in the process of investigating further feasible options to improve the overall performance of the existing WWTP. As such, the long-term solution which SDC will commit will contribute to improving the quality of the treated wastewater which will ultimately improve the state of the receiving environment.

The implementation of the proposed conditions of consent requires that the discharge will not result in an exceedance of the water quality standards below the reasonable point of mixing. The applicant will furthermore implement and maintain an Operation and Management Plan describing the various system processes and requirements to operate and maintain the WWTP.

The proposed conditions of consent are considered appropriate to ensure adverse effects of the discharge in the Mataura River will be adequately mitigated, so that beyond the zone of reasonable mixing, the water quality standards will continue to be met for the duration of consent.

5.3 Actual or potential effects on other users

5.3.1 Public Health

The surface water discharge potentially causes a health risks associated with contact recreation or fishing within the mixing zone. However, as can be seen in Table 7 in the previous section, contact recreation standards will be maintained in the Mataura River downstream of the mixing zone. In the area of the mixing zone, signs are already in place along the riverbank to warn the public against attempting to access the river in that area. It is unlikely that the discharge of treated wastewater into the Mataura River will effects public health as appropriate mitigation is in place to restrict access to the area.

5.3.2 Other consents

There are no other consents authorised for the take and use of surface water downstream of the discharge point at the Edendale – Wyndham Bridge. Fonterra holds a discharge permit authorising the discharge of up to 9,300m3 per day of treated dairy wastewater, up to 20,700m3 per day of condensate, cooling and denitrification water and demineralisation water from the Edendale dairy factory to the Mataura River. The discharge point is about 200 metres upstream of the Wyndham Road bridge. It is unlikely that the discharge of treated wastewater into the Mataura River will impact any other users.

5.3.3 Recreational use

The Mataura River is popular with anglers as its internationally renowned for its brown trout fishery. The WCO was passed in 1997 in recognition of "outstanding fisheries and angling amenity features". The river is also used for other recreational uses including river boating, kayaking, bathing, swimming and whitebaiting. The Mataura River is also poplar for tramping and camping activities. The discharge will not likely have an impact on recreational use since the discharge meets current water quality standards set under the WCO and other regional planning provisions.

5.4 Actual or potential effects on tangata whenua values

The Mataura River has been identified as a Statutory acknowledgment Area that identifies Te Runanga o Ngai Tahu's cultural and spiritual associations with the river. The Mataura River was a significant kāinga mahinga kai (food-gathering place) for local Kāi Tahu, and was tribally renowned for its abundance of kanakana (lamprey, Geotria australis).

Te Kawa o Te Taiao is the relevant Iwi Management Plan and states that the four Rūnanga Papatipu o Murihiku; Te Rūnanga o Awarua, Te Rūnanga o Oraka/Aparima, Te Rūnanga o Hokonui and, Te Rūnaka o Waihōpai are collectively involved in the protection and promotion of the region’s natural and physical resources by providing input into the processes required by the RMA and other relevant legislation.

Specific provisions within the RMA and other acts require the recognition and provision for the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga, to have particular regard to kaitiakitanga and take into account principles of the Treaty of Waitangi.

The Regional and Territorial Authorities have an important relationship with Murihiku tangata whenua based on a Charter of Understanding which is endorsed by Te Rūnanga o Ngāi Tahu.

The Charter:

- is based on a co-management model
- is unique in the South Island if not New Zealand
- caters for resources and knowledge flows
- places onus on Te Rōpū Taiao as the management conduit
- provides an open forum at beginning Te Rōpū Taiao hui for matawaka

The activities have been assessed against the provisions of the Te Kawa o Te Taiao Iwi Management Plan and discussed further below in Section 6 of this report. The overarching policy direction is that wastewater should not be discharged directly into surface water and land application systems should be promoted in the first instance. This is mainly because of the sensitivity of the waterbody compared to a land application system. Land application systems may however still result in the potential for leaching where contaminants may enter groundwater. However, the effects associated with land application systems are significantly less than discharging treated wastewater directly into surface water as there is a multibarrier approach to reduce and minimise contaminants.

Monitoring occurs regularly upstream and downstream of the discharge point and shows water quality beyond the mixing zone is currently meeting water quality standards. The concentration of certain contaminants, when measured at the discharge point, have also been limited. E.Coli and suspended sediment have been identified as the main water quality issues within the Mataura River at the current discharge location. Current monitoring shows

E.Coli levels are similar when compared between the upstream and downstream locations. The proposed E.Coli limits at the discharge point will be reduced to 1,000 MPN/100mL as part of the short term consent proposal to improve the quality of the treated discharge.

Based on the assessment it is considered that the proposal is overall not consistent with the overarching policy direction of the Te Kawa o Te Taiao Iwi Management Plan, which is to promote land application systems over surface water discharges. Consultation with the various Papatipu Runanga within the Southland Region and Te Rūnanga o Ngāi Tahu is currently underway regarding the proposed renewal of a short-term consent to allow continuance of the existing WWTP for five years. This will allow SDC more time to investigate alternative options to improve the overall performance of the wastewater treatment system including alternative discharge methods, such as feasible land application systems.

Provided the WWTP is managed in accordance with the Operation and Management Plan and complies with the discharge limits and water quality standards set for the Mataura River, its considered that the mauri of water is protected.

5.5 Actual or potential cumulative effects

The Mataura River is 240 kilometres long and the discharge site is located within the Lower Mataura Surface Water Management Zone. Based on the information on Environment Southland "Beacon GIS database", Mataura River at Mataura Island Bridge monitoring site indicates:

- there is an increased health risk (less than 1%) for wading or boating activities,
- the macroinvertebrates quality is fair,
- there is regular or longer duration blooms, indicating high nutrient levels and/or significant natural flow or habitat disruption.

The Edendale – Wyndham WWTP has been discharging treated wastewater into the Mataura River since 2008 and monitoring shows the river continues to meet water quality standards (in terms of acceptable change in water between upstream and downstream locations). Allowing the discharge to continue for another five years will unlikely increase the impact on the receiving surface water environment in terms of water quality.

Based on the assessment above, there are no other consented users of surface water downstream of the discharge point that could be impacted by the proposal. There are several recreational users that may be affected but given the current level of treatment and the small volume discharged into the Mataura River, the risk on recreational users is expected to be extremely low.

The Mataura River has been identified as a Statutory acknowledgment Area that identifies Te Runanga o Ngai Tahu's cultural and spiritual associations with the river. Discharging treated wastewater to land is the preferred discharge method since the effects are significantly less when compared to surface water discharges and the sensitivity of the receiving environment. However, consultation is underway with the relevant Papatipu Runanga to outline the contingency plan in order to upgrade and improve the WWTP to give effect to the IMP going forward.

The assessment of effects on water quality have demonstrated that the discharge is not currently causing degradation of the river and water quality is maintained when comparing the sampling recorded upstream and downstream of the discharge point. This concludes the discharge has a very low impact on water quality. Water quality standards are required under the various planning provisions of the RWPS and PSWLP. The WCO sets out additional requirements to protect the health and wellbeing of the Mataura River.

Based on the above its considered that the actual and potential cumulative effects will be no more than minor on the environment and less than minor on any person using the Mataura River.

5.6 Conclusion

The assessment indicates that overall, the potential effects from the treated discharge into the Mataura River are less than minor. This is due to the degree of treatment employed, general low levels of anticipated contaminants and the environmental setting. As such, the overall effects are less than than minor.

6. Statutory Assessment

When making a determination on a resource consent under the RMA, a consent authority is required to give consideration to a number of national, regional and district level statutory documents. The following provides an assessment of the main statutory considerations of relevance to the application.

6.1 Resource Management Act

The Resource Management Act (RMA) provides the framework for all resource utilisation in New Zealand. The overriding purpose of the RMA is "to promote the sustainable management of natural and physical resources" (s.5). Sustainable management is to be achieved by avoiding, remedying or mitigating the adverse effects of activities on the environment.

Part ll of the RMA Sections 5 to 8, outlines the purpose and principles of the Act, which apply in relation to any resource use, development or protection.

6.1.1 Part 2 - Purpose and Principles

Part 2 of the RMA sets out the overall purpose of the Act and defines the RMA's purpose and principles. The purpose of the RMA as set out in Section 5 is to promote the sustainable management of natural and physical resources. The proposed

Section 6 of the RMA sets out the matters of national importance, which must be recognised and provided for in relation to managing the use, development, and protection of natural and physical resource. The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga have been recognised since the Mataura River has been identified as a Statutory Acknowledgement that identifies Te Runanga o Ngai Tahu's cultural and spiritual associations with the river. The Mataura River was a significant kāinga mahinga kai (food-gathering place) for local Kāi Tahu, and was tribally renowned for its abundance of kanakana (lamprey, Geotria australis). The application was referred to the relevant Papatipu Runanga to determine if the proposal is not in conflict with any policies and objectives identified in the IWI Management Plan. Consultation with Te Runanga o Ngai Tahu will be undertaken as the Mataura River has been recognised as a Statutory Acknowledgement Area.

Section 7 of the RMA provides a list of further matters that particular regard must be given in relation to managing the use, development, and protection of natural and physical resources. Of relevance to the proposal, particular regards have been given to kaitiakitanga, intrinsic values of ecosystems, maintenance and enhancement of the quality of the environment. Kaitiakitanga ensures that Māori rights are actively protected through honourable conduct, fair processes, robust consultation, and good decision-making. Consultation is underway and the proposed short term consent will be discussed with the relevant Papatipu Runanga in more detail. This will provide SDC an opportunity to investigate alternative options to improve the performance of the WWTP going forward. Water quality beyond the general zone of mixing in the Mataura River currently meeting water quality standards. These water quality standards provide for the maintenance of healthy waterways, enhancement of the quality of the environment and the protection of intrinsic values of ecosystems.

Section 8 of the RMA relates to managing the use, development, and protection of natural and physical resources while taking account of the principles of the Treaty of Waitangi. The proposal will maintain water quality in the Mataura River by complying with the relevant water quality standards. Monitoring and reporting are required to ensure the health of the waterbody is maintained. The WWTP will be managed in accordance with an Operations and Management Plan setting out the relevant processes required to maintain high treatment standards priort to discharging into the Mataura River. The Mataura River has been identified as a Statutory Acknowledgment and consultation with Te Runanga o Ngai Tahu is underway to seek their feedback. The proposal was furthermore assessed against the relevant Iwi management Plan and overall considered to be inconsistent as the preferred discharge methods is land based and not into surface water. The proposal is considered to be in accordance with the principles of the Treaty of Waitangi.

The application was assessed against the relevant planning provisions and was overall considered that an approval from the consent authority to allow SDC to continue the operation of the existing WWTP for an interim

period will not contravene the Purpose and Principles of the RMA. The SDC is currently investigating alternative methods to improve the operation of the existing WWTP and discharge environments.

6.1.2 Section 15

Section 15(1) of the RMA states that no person may discharge any contaminant from any industrial or trade premises onto or into land unless the discharge is expressly allowed by a rule (in a regional plan and in any relevant proposed regional plan), a resource consent or regulations.

The Resource consent application must be prepared in accordance with Section 88 of the RMA. Applications must include a full description of the activity and an assessment of any actual or potential effects that the activity may have on the environment and the ways in which significant effects can be "avoided, remedied or mitigated". Such assessments must be prepared in accordance with the Fourth Schedule of the RMA. This Schedule sets out the matters that should be included and those that should be considered.

The activity is not expressly allowed by a rule or regulation and resource consent is therefore required to authorise the activity in accordance with Section 15 of the RMA. The application has been provided in accordance with Section 88 and the fourth schedule of the RMA.

6.1.3 Section 104

Section 104 of the RMA requires that when the consent authority considers an application for resource consent subject to Part 2 and section 77M, that they must have regard to the following:

a. any actual or potential effects on the environment of allowing the activity;

b. any measure proposed or agreed to by the SDC for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and

c. any relevant provisions of—

    i. a national environmental standard:

    ii. other regulations:

    iii. a national policy statement:

    iv. a New Zealand coastal policy statement:

    v. a regional policy statement or proposed regional policy statement:

    vi. a plan or proposed plan; and

d. any other matter the consent authority considers relevant and reasonably necessary to determine the application.

e. When considering a resource consent application that relates to a wastewater network, as defined in section 5 of the Water Services Act 2021, a consent authority—

    i. must not grant the consent contrary to a wastewater environmental performance standard made under section 138 of that Act; and

    ii. must include, as a condition of granting the consent, requirements that are no less restrictive than is necessary to give effect to the wastewater environmental performance standard

The actual or potential effects on the environment of the activity was assessed in section 5 and was considered to have less than minor effects on the environment and less than minor effects on any person. The application has had regard to the following planning provisions or other matters to determine the application.

6.1.3.1 Water Services Act 2021 (WSA)

Section 104(2D) of the RMA requires councils to have regard to the following matters:

When considering a resource consent application that relates to a wastewater network, as defined in section 5 of the Water Services Act 2021, a consent authority—

a. must not grant the consent contrary to a wastewater environmental performance standard made under section 138 of that Act; and

b. must include, as a condition of granting the consent, requirements that are no less restrictive than is necessary to give effect to the wastewater environmental performance standard.

The WWTP is defined as a wastewater network, as defined in section 5 of the Water Services Act 2021. Wastewater network means the infrastructure and processes that –

a. are used to collect, store, transmit through reticulation, treat, or discharge wastewater; and

b. are operated by, for, or on behalf of one of the following:

i. a local authority, council-controlled organisation, or subsidiary of a council-controlled organisation:

ii. a department:

iii. the New Zealand Defence Force.

Taumata Arowai is the current regulator of drinking water with an oversight role in relation to wastewater, but their wastewater oversight role (which will include establishing national standards and performance measures under section 138 Water Services act 2021) won't commence until late 2023. Therefore, there aren't currently any wastewater environmental performance standards made under section 138 of the WSA that must be considered under s.104(2D) RMA.

Although there are no current wastewater environmental standards to be considered by the council to grant the short term resource consent application, the following condition of consent is proposed to ensure that the consent adheres to the provisions of Section 104 (2D) of the RMA:

"The consent holder will maintain the following wastewater performance standards introduced by Taumata Arowai from 1 January 2024:

d. Wastewater environmental performance standards made under Section138 of the Wastewater Services Act, or

e. Where Wastewater environmental performance standards are more restrictive than the current conditions of consent, the consent holder will consult with Taumata Arowai in accordance with Section138 of the Wastewater Services Act to establish appropriate instruments for the receiving environment addressing:

i. drinking water standards;

ii. aesthetic values;

iii. compliance rules, and

iv. acceptable solutions or verification methods."

6.1.3.2 Water Conservation (Mataura River) Order 1997 (WCO)

On 13 July 1984, four organisations applied for a national water conservation order in respect of the Mataura River and its tributaries. The Water Conservation (Mataura River) Order 1997 was made on 7 July 1997. The WCO sets out provisions relating to discharges in Clause 7, stating that a discharge permit must not be granted for any discharge into protected waters, if the effect of the discharge would breach the following provisions and standards:

7. Provisions relating to discharges

1. A discharge permit must not be granted and a regional plan must not be made for any discharge into the protected waters if the effect of the discharge would be to breach the following provisions and standards:

a. any discharge is to be substantially free from suspended solids, grease, and oil:

b. "…"(discharge point not within reference area):

c. *"…"(discharge point not within reference area)*

d. *after allowing for a reasonable mixing of the discharge with the receiving waters in those parts of the protected waters other than the parts specified in paragraphs (b) and (c),—*

   i. *the natural water temperature must not be changed by more than 3 degrees Celsius:*

   ii. *the acidity or alkalinity of the waters as measured by the pH must be within the range of 6.0 or 9.0, except when due to natural causes:*

   iii. *the waters must not be tainted so as to make them unpalatable, nor must they contain toxic substances to the extent that they are unsafe for consumption by humans or farm animals, nor must they emit objectionable odours:*

   iv. *there must not be any destruction of natural aquatic life by reason of a concentration of toxic substances:*

   v. *the natural colour and clarity of the waters must not be changed to a conspicuous extent:*

   vi. *the oxygen content in solution in the waters must not be reduced below 5 milligrams per litre.*

2. *Where it is impracticable, because of emergency overflows or the carrying out of maintenance work or any other temporary situation, to require compliance with the relevant provisions of subclause (1), water permits, and discharge permits may be granted by the Southland Regional Council.*

Sampling is currently taken at least 4 time each year, three times between 1 November and 31 April when the Mataura River at Environment Southland's Tuturau monitoring site. The discharge to the Mataura River has been occurring for over 10 years and all sampling to date has shown no discernible difference between upstream and downstream of the discharge point. Since the consent was first granted, there has been no exceedance of the discharge limits provided for in the resource consent application as confirmed by compliance records supplied by the consent authority. The conditions were set out with the specific purpose to ensure the treated discharge meets the WCO standards as well as water quality limits set out under the Regional Water Plan for Southland, which applies outside of the zone for reasonable mixing.

As such, allowing SDC to continue the operation of the existing WWTP in the interim period in accordance with the mitigations proposed, will not contravene the WCO.

6.1.3.3 National Policy Statement for Freshwater Management 2020

The National Policy Statement for Freshwater Management 2020 (NPS-FM) came into effect on 3 September 2020 and sets out the objectives and policies for freshwater management under the RMA.

An assessment in regard to the hierarchy of obligations in Te Mana o te Wai is provided below with an assessment of the relevant objective and policies NPS-FM is provided ***Table 8***.

(a) first, the health and well-being of water bodies and freshwater ecosystems

Comment*: The Edendale – Wyndham WWTP is required to comply with a wide range of specific water quality standards beyond the mixing zone set out under the provisions of the RWPS and the PSWLP. In addition, the Mataura River WCO sets out further water quality standards to meet as the waters are considered protected. Based on compliance monitoring reports the existing WWTP complies with the relevant water quality standards and will continue to do so over the next five years while SDC finds new solutions to improve the overall performance of the wastewater treatment system and the quality of the discharge. The discharge to the Mataura River is miniscule when compared to the baseflow of the river and does not appear to be causing adverse effects causing harm to the health and well-being of water bodies and freshwater ecosystems.*

(b) second, the health needs of people (such as drinking water)

Comment: *The Edendale – Wyndham WWTP has been in operation since 2008 providing essential wastewater treatment services to the local communities. There are no bathing sites or swimming areas near the discharge point at the Edendale – Wyndham bridge. Signs have also been provided on site to*

warn the public against attempting to use the river for recreational activities or access in that area given the potential health risks associated with the contaminated discharge. There are no other water user takers within the mixing zone where water quality standards apply. Based on current sampling records there does not appear to be much difference between the water quality measured upstream and downstream of the mixing zones. The discharge of treated wastewater into the Mataura River does therefore not appear to contribute much to the degradation of the waterbody, which is likely because of the high dilution factor in the Mataura River. As such, the health needs of people have been considered and considered not to be impacted provide the WWTP is allowed to continue discharges into the river for a period of five years.

(c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

***Comment**: The treated wastewater discharge from the WWTP into the Mataura River does not adversely impact the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future as existing water quality standards are achieved. Wastewater infrastructure and treatment systems are essential to support the growing populations within Edendale and Wyndham and to provide for economic development. SDC is currently investigation alternative options which will improve the overall performance of the WWTP in the future. Significant investment and resources are required to implement any proposed changes which is anticipated to happen over the next five years. The discharge to the Mataura River does not impact any other social, cultural or wellbeing values. This is because there are no sensitive cultural or residential activities within proximity to the discharge point at the Edendale – Wyndham bridge and mixing zone.*

Table 8 *Assessment against NPS-FM*

Objective	Policy	Comment
(1) The objective of this National Policy Statement is to ensure that natural and physical resources are managed in a way that prioritises: (a) first, the health and well-being of water bodies and freshwater ecosystems (b) second, the health needs of people (such as drinking water) (c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.	**Policy 1**: Freshwater is managed in a way that gives effect to Te Mana o te Wai.	The proposal is considered to give effect to Te Mana o te Wai based on the assessment above. It is considered that the activity is not likely to result in a degradation of water quality beyond the mixing zone and adequate mitigation is proposed to manage and maintain the performance of the WWTP over the next five years.
	Policy 3: Freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments.	Water quality beyond the mixing zone within the Mataura River is regulated under the RWPS and the PSWLP. The Mataura WCO provides further water quality standards to be achieved beyond the mixing zone. Sampling upstream and downstream confirms the compliance with the water quality standards. It is therefore considered that freshwater is managed in an integrated manner which provides for different users of the waterbody.
	Policy 5: Freshwater is managed through a National Objectives Framework to ensure that the health and well-being of degraded water bodies and freshwater ecosystems is improved, and the health and well-being of all other	The health and wellbeing of the Mataura River and freshwater ecosystems are managed in accordance with water quality standards set out under the RWPS and PSWLP. The Mataura WCO is an additional layer requiring the

	water bodies and freshwater ecosystems is maintained and (if communities choose) improved	protection of water quality and ecosystems. The discharge from the WWTP into the Mataura River is adequately managed to meet water quality standards beyond the mixing zone. This ensures freshwater ecosystems is maintained.
	Policy 13: The condition of water bodies and freshwater ecosystems is systematically monitored over time, and action is taken where freshwater is degraded, and to reverse deteriorating trends.	SDC is required to provide an annual report to ES assessing the impact of the discharge on water quality in the Mataura River. SDC is furthermore required to implement an Operations and Management Plan describing the various process and monitoring requirements. Sampling has indicated that water quality downstream of the discharge point is not degrading given small volume of treated wastewater. SDC is currently investigation alternative options to improve the overall performance of the existing WWTP and ensure adequate capacity is provided to meet the community's growth demand.

The proposal does overall not contravene the objectives and polices of the NPS-FM.

6.1.3.4 Environment Southland - Regional Policy Statement

The Environment Southland Regional Policy Statement (RPS) became operative in December 2017. The purpose of the RPS is to integrate the management of natural and physical resources of the region by providing an overview of the issues, policies and methods relevant to the whole region.

The RPS establishes sustainable resource management policies relating to tangata whenua; biodiversity; water quality, quantity and water bodies; landscape and soils; transport and the built environment; the air, coast, energy and solid waste; and natural hazards, and hazardous substances.

Objectives and policies related to this resource consent application, but not directly related in terms of Regional or District Plans, are assessed within this document (Table 9), and include:

Table 9 - Assessment against RPS

Objectives	Policies	Assessment
Chapter 3: Tangata Whenua		
Objective TW.2 All local authority resource management processes and decisions take into account iwi management plan	**Policy TW.3** Take iwi management plans into account within local authority resource management decision making processes.	The proposal was assessed against the relevant Iwi Management Plans and considered to be consistent with the objectives and policies.
Objective TW.3 Mauri and wairua are sustained or improved where degraded, and mahinga kai	**Policy TW.4** When making resource management decisions, ensure that local authority functions and powers are exercised	Te Runanga o Ngai Tahu and the Papatipu Runanga were consulted as part of the process to ensure the proposal has appropriate regard to

and customary resources are healthy, abundant and accessible to tangata whenua.	in a manner that recognises and provides for cultural values and recognises that only tangata whenua can identify their relationship and that of their culture.	tangata whenua values and customary resources.
Chapter 4: Water		
Objective WQUAL.1 Water quality in the region: (a) safeguards the life-supporting capacity of water and related ecosystems; (b) safeguards the health of people and communities; (c) is maintained, or improved in accordance with freshwater objectives formulated under the National Policy Statement for Freshwater Management 2014; (d) is managed to meet the reasonably foreseeable social, economic and cultural needs of future generations and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga.	**Policy WQUAL.1** Identify values of surface water and manage discharges and land use activities to maintain or improve water quality to ensure freshwater objectives in freshwater management units are met. **Policy WQUAL.2** Maintain or improve water quality, having particular regard to the following contaminants: (a) nitrogen; (b) phosphorus; (c) sediment; (d) microbiological contaminants. **Policy WQUAL.5** Improve water quality by specifying targets to improve water quality within those water bodies within defined timeframes;.	The existing WWTP is manged in accordance with an Operations and Management Plan setting out water quality limits to achieve prior to discharging to the Mataura River. Water quality measured below the reasonable zone of mixing is currently meeting water quality standards for the Mataura River. These water quality standards were developed to maintain intrinsic values of ecosystems, the health of the waterbody and enhancement the quality of the environment.
Chapter 6: Biodiversity		
Objective BIO.2 Maintain indigenous biodiversity in Southland and protect areas of significant indigenous vegetation and significant habitats of indigenous fauna for present and future generations.	**Policy BIO.4** Manage a full range of indigenous habitats and ecosystems to achieve a healthy functioning state, and to ensure viable and diverse populations of native species are maintained, while making appropriate provisions for lawful maintenance and operation of existing activities. **Policy BIO.8** Recognise the role of tangata whenua as kaitiaki, by providing for: (a) tangata whenua values and interests to be incorporated into the management of indigenous biodiversity;	The proposal will maintain water quality and not cause degradation of indigenous biodiversity values within the Mataura River. Tangata whenua values will be maintained. The mauri of water will be protected provided the water quality standards measured below the reasonable zone of mixing is not exceeded. This is unlikely given the small portion of wastewater discharged into the Mataura River having a high dilatation factor to reduce concentrations.

	(b) consultation with tangata whenua regarding the means of maintaining and restoring or enhancing habitats identified in accordance with Policy BIO.1 that have particular significance to tangata whenua; (c) active involvement of tangata whenua in the protection of cultural values associated with indigenous biodiversity;	
Chapter 9: Air Quality		
Objective AQ.1 Enable the discharge of contaminants into air while managing the adverse effects of those contaminants on human health and wellbeing, and the environment.	**Policy AQ.1** Avoid, remedy or mitigate the adverse effects of discharges of contaminants to air on human health, cultural and amenity values and the environment.	The wastewater is adequately treated and discharged directly into the Mataura River. The discharge will only become anaerobic provided the BOD are low and there is an increase in decomposers. Sampling taken from the rivers has demonstrated there is sufficient levels of BOD to process organic matter so it's unlikely that the discharge will become anaerobic and odorous causing adverse effects within the receiving environment.

The proposal does overall not contravene the objectives and policies of the RPS.

6.1.3.5 Regional Water Plan for Southland

The Regional Water Plan for Southland promotes the sustainable management of Southland's rivers, lakes and freshwater resources.

There are several policies and objectives that relate to this proposal. As well as this, there are rules which define the standards which must be met for any discharge to water (Table 10).

Table 10 - Assessment against RWPS

Objectives	Policies	Assessment
Objective 2 - To manage water quality so that there is no reduction in the quality of the water in any surface water body, beyond the zone of reasonable mixing for discharges. Objective 3 - Maintain and enhance waterbodies so that water quality is maintained or improved, and therefore protects the values of bathing, trout and native fish habitat, stock drinking	Policy 1 - Recognise the differing characteristics of each water body class, including Mataura 3, and apply water quality standards established under any Water Conservation Order.	While the discharge is not avoidable, the treated nature of the discharge will ensure that contaminants are minimal and the state of the Mataura River maintained.
	Policy 3 - Allow no discharges to surface water bodies that will result in degradation of the water quality beyond a zone of reasonable mixing.	There is considered to be a reasonable zone of mixing so as to avoid or mitigate any adverse effects on freshwater bodies
	Policy 4 - In waters other than natural state waters, manage discharges to meet or exceed water quality	The discharge does not result in an exceedance of water quality standards beyond the reasonable

water, Ngai Tahu cultural values and the natural character of the water body.	standards, and so avoid levels of contaminants in water or sediments that could harm the health of humans, domestic animals, including stock, and/or aquatic life.	zone of mixing. As such, the discharge of contaminants into the Mataura River will not harm the health of aquatic life. There is higher health risk associated with human and animal consumption that should preferably be avoided.
	Policy 6 - Encourage best management practices to: • Reduce faecal contaminant inputs • Reduce nutrient inputs • Avoid or reduce discharges that increase BOD • Reduce contaminants that alter water colour and clarity	The exiting WWTP meets current best management practices to reduce contaminants levels. SDC is considering alternatives that will overall improve the performance of the wastewater treatment system and the discharge quality.
	Policy 7 - Prefer discharges to land over discharges to water where this is practicable, and the effects are less adverse	Treated wastewater from the WWTP is currently discharged into the Mataura River. SDC is considering all practicable options going forward to reduce adverse effects in the receiving environment.
	Policy 8 - Prefer point source discharges to water at times of high flow over discharges at normal or low flows and ensure that where discharging does take place at low flows, the effects that could not be practically avoided are minimised.	The outfall to the Mataura River utilises multiple diffusers down the bridge piers. The portion of wastewater discharged into the Mataura River is indiscernible when compared to the overall flow in the river.
	Policy 9 - In determining the zone of reasonable mixing, minimise the size of area where water quality standards will be breached. Included in the considerations should be: • Aquatic ecosystem values in area • Need for fish passage • Users of the water body, adjacent to and downstream of discharge	The zone of reasonable mixing was set in the original resource consent as 5m upstream and 425m downstream of the discharge point. The zone is still considered to reasonable as this allows sufficient breakdown of organics and reduction of contaminate concentrations.
	Policy 10- Promote, where appropriate, the use of diffusers for point source discharges into water.	The outfall to the Mataura River utilises multiple diffusers down the bridge piers. This will be maintained for the duration of consent.

	Policy 16 - Use non-regulatory methods to promote good environmental practice.	The WWTP is managed in accordance with an Operations and Management Plan. This is to ensure the plant is managed adequately and to maintain high performance standards.
	Policy 17 - Assess on an ongoing basis whether the adoption of best management practises has resulted in improvements and consideration the introduction of further interventions if improvements have not resulted.	Conditions of consent have been proposed which requires the consent holder to assess the overall performance of the WWTP and to consider if introduction of further interventions is required if the wastewater treatment system is not operating as intended.

The proposal does overall not contravene the objectives and policies of the RWPS.

6.1.3.6 Proposed Southland Water and Land Plan

The Proposed Southland Water and Land Plan promotes the sustainable management of Southland's rivers, lakes and freshwater resources.

There are a number of policies and objectives that relate to this proposal. As well as this, there are rules which define the standards which must be met for any discharge to water (Table 11).

Table 11 - Assessment against PSWLP

Objectives	Policies	Assessment
Objective 1 - Land and water and associated ecosystems are sustainably managed as integrated natural resources, recognising the connectivity between surface water and groundwater, and between freshwater, land and the coast. Objective 2 - The mauri of water provides for te hauora o te taiao (health and mauri of the environment), te hauora Objective 6 - Water quality in each freshwater body, coastal lagoon and estuary will be: c. maintained where the water quality is not degraded; and d. improved where the water quality is	Policy 1 – Enable papatipu rūnanga to participate Policy 2 – Take into account iwi management plans	Consultation with the relevant papatipu runanga is underway to ensure participation and consideration of the relevant iwi management plans.
	Policy 14 – Preference for discharges to land	Treated wastewater from the WWTP is currently discharged into the Mataura River. SDC is considering all practicable options going forward to reduce adverse effects in the receiving environment.
	Policy 15A – Maintain water quality where standards are met.	Water quality below the zone of reasonable mixing is currently meeting water quality standards set out under the provision of the PSWLP. The proposal is to renew the existing consent that is due to expire. The application demonstrated that the adverse effects of the discharged are avoided and mitigated, to that beyond the zone of reasonable mixing those standards will

degraded by human activities.		continue to be met for the next five years.
	Policy 17A - Community sewerage schemes and on-site wastewater systems.	The existing WWTP was designed operated and maintained in accordance with recognised industry standards. Going forward there will be no changes to the operation of the WWTP until SDC have investigated alternative options to improve the performance of the wastewater treatment system. Alternative options will ensure measures are implemented to progressively reduce the frequency and volume of wet weather overflows and implement adequate maintenance to minimise the likelihood of dry weather overflows.
	Policy 32 – Protect significant indigenous vegetation and habitat	Specific water quality limits have been proposed as conditions of consent to ensure high treatment levels are achieved prior to the discharge entering the Mataura River. The assessment of effects has demonstrated the discharge is not having adverse effects on the overall health of the waterbody as MCI is showing an improvement downstream of the discharge point.
	Policy 44 – Implementing Te Mana o te Wai	The proposal is consistent with the hierarchy of obligations and implementing Te Mana o te Wai as discussed earlier in the report.

The proposal does overall not contravene the objectives and policies of the PSWLP.

6.1.3.7 Ngai Tahu Fresh Water Policy

This document has been prepared by Te Runanga O Ngai Tahu as its Freshwater Policy Statement. Its focus is the management of the freshwater resource within the rohe of Ngai Tahu. As water is central to all life, and as a taonga provided by Maori ancestors, the present generation of Ngai Tahu is responsible for ensuring that this taonga continues to be available for future generations. Objectives and policies of specific relevance to this application are:

Mauri

Objective – Restore, maintain and protect the mauri of freshwater resources.

Policies: Identify freshwater resources where mauri is adversely affected, and he activities that cause such effects.

The proposal was referred to the papatipu runanga for consultation to define the values and uses of the catchment, issues to be addressed and preferred water quality limits to protect cultural values. The discharge of treated wastewater is currently into water, however the discharge is not resulting in water quality standards beyond the mixing zone to be exceeded.

Mahinga Kai

Objective - To maintain vital, healthy mahinga kai population and habitats capable of sustaining harvesting activity.

Policies: Protect critical mahinga kai habitats and identified representative areas.

The proposed wastewater treatment facility will treat the effluent to a quality that will ensure no discrenable adverse effects on the Mataura River, protecting downstream mahinga kai resources.

6.1.3.8 Te Whakatau Kaupapa O Murihiku

This document is a resource management strategy, which expresses Kai Tahu beliefs and values, which regulatory authorities need to have regard to, as part of their decision-making processes. It can be used as a basis for consultation between Treaty partners, in accordance with the principles of the Treaty of Waitangi.

Te Whakatau Kaupapa o Murihiku identifies values, objectives, policies and outcomes sought by the tangata whenua of Murihiku.

Policies of relevance to this application are:

- That the Southland Local Authorities should actively encourage the disposal of effluent onto land rather than into water, provided that the groundwater is not polluted in the process.

The proposal requires the discharge of treated wastewater into the Mataura River to continue for another five years while SDC undertakes further investigation to find alternative solutions to improve the overall performance of the WWTP. The investigation is to consider the advantages and disadvantages to either retain, retrofit or replace the existing WWTP.

6.1.3.9 Te Tangi a Tauira Iwi

Section 3.5 Te Rā a Takitimu (Southland Plains)

This section of the plan describes ngā take and ngā kaupapa associated with the Southland Plains. This includes the lands, waters, mahinga kai and biodiversity from the Waiau River east to the Matāura River and the foothills that separate the Waimea Plains from the mountain ranges.

Wastewater Disposal

- Require that sufficient and appropriate information is provided with applications to allow tangata whenua to assess cultural effects (e.g. nature of the discharge, treatment provisions, assessment of alternatives, actual and potential effects).
- Wastewater disposal options that propose the direct discharge of treated or untreated effluent to water need to be assessed by the kaitiaki rūnanga on a case by case, individual waterway, basis.
- Wastewater disposal options that propose the direct discharge of treated or untreated effluent Require that the highest environmental standards are applied to consent applications involving the discharge of contaminants to land or water (e.g. standards of treatment of sewage).
- Any discharge activity must include a robust monitoring programme that includes regular monitoring of the discharge and the potential effects on the receiving environment. Monitoring can confirm system performance, and identify and remedy any system failures
- Duration of consent for wastewater disposal must recognise and provide for the future growth and development of the industry or community, and the ability of the existing operations to accommodate such growth or development.
- Require conditions of consent that allow for a 5-year review of wastewater disposal activities. During review, consent holders should be required to consider technological improvements.

Comment:

Sufficient information regarding the proposed activity is provided in the application to allow tangata whenua to assess cultural effects. The proposal involves the discharge of treated wastewater to water for a duration of five years which is considered appropriate given water quality standards in the Mataura River is currently met below

the mixing zone. There is a robust monitoring programme in place which is required to assess the effects on the receiving environment. In addition, an Operations and Management Plan is currently implemented which set out system performance requirements and actions to remedy and identify system failure. The existing WWTP is adequate to accommodate the current and future population demand. Investigation is underway to identify solutions to further improve the performance and capacity to the WWTP. The application proposes conditions of consent to review the performance of the WWTP in order to consider technical improvements.

General Water Policy

- Protect and enhance the mauri, or life supporting capacity, of freshwater resources throughout Murihiku.
- Promote the management of freshwater according to the principle of ki uta ki tai, and thus the flow of water from source to sea.
- Protect and enhance the customary relationship of Ngāi Tahu ki Murihiku with freshwater resources.

Comment:

The WWTP discharges treated wastewater into the Mataura River. Monitoring upstream and downstream of the discharge point indicates water quality standards below the reasonable mixing zone is achieved. Consultation was carried out with the relevant paptipu Runanga and Te Runanga o Ngai Tahu to protect the customary relationship of Ngāi Tahu ki Murihiku with freshwater resources.

Discharge to Water

- When existing rights to discharge to water come up for renewal, they must be considered in terms of alternative discharge options.
- Any discharge activity must include a robust monitoring programme that includes regular monitoring of the discharge and the potential effects on the receiving environment.

Comment:

The existing resource consent authorises the discharge of treated wastewater into the Mataura River. The proposal is to consent the discharge for another five years while SDC investigates alternative options which will improve the overall performance of the WWTP. These will consider to either retain, retrofit or replace the existing WWTP. Alternative discharge locations will also be considered as part of the investigations. As previously mentioned, the WWTP has a robust monitoring programming already in place to assess the effects of the discharge and identify actions to remedy operational failures.

Water Quality

- Strive for the highest possible standard of water quality that is characteristic of a particular place/waterway, recognising principles of achievability. This means that we strive for drinking water quality in water we once drank from, contact recreation in water we once used for bathing or swimming, water quality capable of sustaining healthy mahinga kai in waters we use for providing kai.
- Require cumulative effects assessments for any activity that may have adverse effects of water quality.
- Avoid the use of water as a receiving environment for the direct, or point source, discharge of contaminants. Generally, all discharge must first be to land.

Comment:

There are no bathing sites or domestic water takes directly downstream of the discharge point that would potentially be affected by the proposal. There are signs in place to warn the public accessing or using the environment that the area downstream of the Edendale – Wyndham Bridge is contaminated and may cause harm to human health. Cumulative effects have been considered under the assessment of effects section of the report and it was concluded that the low volume of treated wastewater entering the river does not result in more than minor effects give the high dilution factor and monitoring showing that water quality standards are met below the mixing zone. SDC is currently investigation alternative discharge locations which may include land application where practicable as the preferred option.

Summary

Based on the above assessment against the Te Rā a Takitimu section, it is considered that the proposal does not contravene the identified policies of the Te Tangi a Tauira Iwi Plan.

6.1.3.10 Statutory Acknowledgement for Mataura River

The Mataura River is recognised as a Statutory Acknowledgement Area and listed within Schedule 42 of the Ngāi Tahu Claims Settlement Act 1998.

> ***Ngāi Tahu association with the Mataura River***
>
> *"The area of the Mataura River above the Mataura Falls was traditionally used by the descendants of the Ngāti Mamoe chief, Parapara Te Whenua. The descendants of Parapara Te Whenua incorporate the lines of Ngāti Kurī from which the Mamaru family of Moeraki descend. Another famous tupuna associated with the river was Kiritekateka, the daughter of Parapara Te Whenua. Kiritekateka was captured by Ngāi Tahu at Te Anau and her descendants make up the lines of many of the Ngāi Tahu families at Ōtākou.*
>
> *For Ngāi Tahu, histories such as these reinforce tribal identity and solidarity, and continuity between generations, and document the events which shaped the environment of Te Wai Pounamu and Ngāi Tahu as an iwi.*
>
> *The Mataura was an important mahinga kai, noted for its indigenous fishery. The Mataura Falls were particularly associated with the taking of kanakana (lamprey). The tūpuna had considerable knowledge of whakapapa, traditional trails and tauranga waka, places for gathering kai and other taonga, ways in which to use the resources of Mataura, the relationship of people with the river and their dependence on it, and tikanga for the proper and sustainable utilisation of resources. All of these values remain important to Ngāi Tahu today.*
>
> *The mauri of the Mataura represents the essence that binds the physical and spiritual elements of all things together, generating and upholding all life. All elements of the natural environment possess a life force, and all forms of life are related. Mauri is a critical element of the spiritual relationship of Ngāi Tahu Whānui with the river.*

Consultation with Te Runanga o Ngai Taha and the relevant paptipu runanga is underway to define tangata whenua values associated with the Mataura River and to determine any concerns relating to the proposal to renew the existing discharge permit for five years while further investigation is underway to improve the overall performance of the WWTP.

6.1.4 Section 105

Section 105 states:

1. *"If an application is for a discharge permit or coastal permit to do something that would contravene section 15 or section 15B, the consent authority must, in addition to the matters in section 104(1), have regard to—*
    a. *the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and*
    b. *the applicant's reasons for the proposed choice; and*
    c. *any possible alternative methods of discharge, including discharge into any other receiving environment.*
2. *If an application is for a resource consent for a reclamation, the consent authority must, in addition to the matters in section 104(1), consider whether an esplanade reserve or esplanade strip is appropriate and, if so, impose a condition under section 108(2)(g) on the resource consent."*

The nature of the discharge and the sensitivity of the receiving environment has been discussed in Section 3.1.3 of this document. SDC is proposing to renew the existing resource consent for an additional duration of five years to investigate alternative wastewater management treatment options for Edendale and Wyndham given the current challenges and pressures regarding the existing WWTP. SDC is currently investigation alternative methods and until this work has been completed, treated wastewater from the Edendale – Wyndham WWTP will continue to be

discharged to the Mataura River. SDC is envisages to implement improvements to the WWTP within the next five years.

6.1.5 Section 107

Section 107 states:

2. *"Except as provided in subsection (2), a consent authority shall not grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15A allowing—*
    a. *the discharge of a contaminant or water into water; or*
    b. *a discharge of a contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water;*
    c. *the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:*
    d. *any conspicuous change in the colour or visual clarity:*
    e. *any emission of objectionable odour:*
    f. *the rendering of fresh water unsuitable for consumption by farm animals:*
    g. *any significant adverse effects on aquatic life.*
3. *consent authority may grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15A that may allow any of the effects described in subsection (1) if it is satisfied—*
    a. *that exceptional circumstances justify the granting of the permit; or*
    b. *that the discharge is of a temporary nature; or*
    c. *that the discharge is associated with necessary maintenance work— and that it is consistent with the purpose of this Act to do so.*
4. *In addition to any other conditions imposed under this Act, a discharge permit or coastal permit may include conditions requiring the holder of the permit to undertake such works in such stages throughout the term of the permit as will ensure that upon the expiry of the permit the holder can meet the requirements of subsection (1) and of any relevant regional rules*."

There will be less than minor effects on the receiving surface water after reasonable mixing of the contaminants being discharged to the Mataura River. The discharged is appropriately treated and based on sampling downstream of the discharge point there has been no observation of any of the above effects. (Refer to Section 5).

6.1.6 Section 108

In assessing a resource consent application a consent authority can, under the provisions of Section 108 of the RMA, impose consent conditions as considered necessary to avoid, remedy or mitigate the adverse effects of the activity on the environment. Suggested consent conditions are outlined in Section 3.

6.1.7 Section 123

To determine the term of resource consent, consideration must be given to the relevant planning framework. Policy 40 of the Proposed Southland Water and Land Plan sets out planning direction to determine the term of resource consents. The determination should consider the following factors:

1. granting a shorter duration than that sought by the applicant when there is uncertainty regarding the nature, scale, duration and frequency of adverse effects from the activity or the capacity of the resource;
2. relevant tangata whenua values and Ngāi Tahu indicators of health;
3. the duration sought by the applicant and reasons for the duration sought;

4. the permanence and economic life of any capital investment;
5. the desirability of applying a common expiry date for water permits that allocate water from the same resource or land use and discharges that may affect the quality of the same resource;
6. the applicant's compliance with the conditions of any previous resource consent, and the applicant's adoption, particularly voluntarily, of good management practices; and
7. the timing of development of FMU sections of this Plan, and whether granting a shorter or longer duration will better enable implementation of the revised frameworks established in those sections.

The SDC seeks a consent duration of five years to allow SDC sufficient time to investigate alternative options to improve and upgrade the existing WWTP for Edendale and Wyndham.

7. Consultation

SDC consulted with ES regarding the renewal of the resource consent to allow the discharge to continue for an additional five years while further investigation is underway to find optimal solutions to improve the overall performance of the existing WWTP.

SDC have some communication with Papatipu Runanga within the Southland Region regarding the proposed renewal of a short-term consent to allow continuance of the existing WWTP for another five years. Discussions will continue once the resource consent application will be circulated for comment.

8. Notification

8.1 Public Notification

Section 95A of the RMA sets out four steps to be taken by the consent authority in deciding whether to publicly notify an application. An assessment of the proposed works against these steps is provided in 3 below:

Table 3 - Public notification assessment

(Step 1) A consent authority must notify an application if:	
– Public notification is required under Section 95C; – The applicant requests public notification; or – The application has been made jointly with an application to exchange recreation reserve land.	None of the matters outlined are triggered by this application.
(Step 2) A consent authority must not notify an application if:	
– A rule or national environmental standard precludes public notification of the application; – The activity is a controlled activity; – The activity is a restricted discretionary or discretionary activity, but only if the activity is a subdivision of land or a residential activity; – The activity is a restricted discretionary, discretionary, or non-complying activity, but only if the activity is a boundary activity; or The activity is a prescribed activity.	Public notification is not precluded because the criteria of Section 95A(5) are not met as the activity is not a controlled activity, subdivision or a boundary activity.
(Step 3 and Step 4) Therefore, public notification is only required if:	
– A rule or national environmental standard that requires public notification; – The consent authority decides, in accordance with section 95D, that the activity will have or is likely to have adverse effects on the environment that are more than minor; or Special circumstances apply.	The application is not subject to a rule or national environmental standard that requires public notification and the adverse effects of the proposal will be no more than minor overall on the environment as discussed in section 5. No special circumstances in relation to the application warrant the application being publicly notified.

It is therefore considered that this application does not require public notification.

8.2 Limited Notification

Section 95B relates to limited notification of a consent application and sets out the steps to be taken by the consent authority in deciding whether to notify an application on a limited basis. As detailed in Table 4 below, limited notification is not required because the adverse effects on people will be less than minor.

Table 4 - Limited notification assessment

(Step 1) A consent authority must determine whether there are certain affected groups and affected persons	
– Affected protected customary rights groups; or – Affected customary marine title groups (in the case of an application for a resource consent for an accommodated activity; or – Land subject to a statutory acknowledgement.	The Mataura River is subject to a statutory acknowledgement. Consultation was carried out with Te Runanga o Ngai Tahu and the relevant papatipu Runanga.
(Step 2) If not required by Step 1, limited notification is precluded if:	
– The activity is subject to a rule or national environmental standard that precludes limited notification; or – The application is for a controlled activity under the district plan (except subdivision), or a prescribed activity.	The application is not subject to a rule or national environmental standard that precludes limited notification.
(Step 3) If not precluded by Step 2, the consent authority must give limited notification of the application to any affected person.	
– A person is affected if the adverse effects of the activity on that person are minor or more than minor (but not less than minor). – Adverse effects permitted by a rule in a plan or national environmental standard (the permitted baseline) may be disregarded. The adverse effects on those persons who have provided their written approval must be disregarded.	Based on the assessment of effects in Section 5 the effects on Te Runanga o Ngai Tahy and the relevant papatipu runaga was not determined.

Consultation is ongoing with Te Runanga o Ngai Tahu. No other parties are considered to be affected by the proposal and therefore once the outcome of this will determine whether limited notification is required or not.

9. Conclusion

9.1 Assessment of Effects

Resource consent is sought for a discretionary activity from Environment Southland for the discharge of treated wastewater from the Edendale – Wyndham WWTP into the Mataura River.

In terms of overall river water quality, Environment Southland's State of the Environment Report , classifies the water quality within the Mataura River in the vicinity of the current WWTP discharge (Water quality sampling sites at the Mataura Bridge) and Mataura River at Gore (upstream from current discharge location) and Seaward Downs and Mataura Island bridge (downstream from the current discharge location) as 'very poor' to 'poor' in terms of E.coli, 'poor' in terms of suspended sediment and 'good' to 'very good' in terms of nitrate, ammonia, dissolved oxygen and dissolved reactive phosphorus

The assessment of effects in Section 5 demonstrated that the existing discharge of treated wastewater into the Mataura River, beyond the mixing zone, is currently meeting the water quality standards for the "Mataura 3 river classification" as identified under the provisions of the RWPS and PSWLP. The replacement consent will maintain water quality and not exceed water quality standards going forward. The quality of the treated discharge will furthermore be restricted via consent conditions for several critical analytes to ensure the WWTP performance is maintained to prevent further degradation of the Mataura River.

The short-term consent is ultimately a roll over consent from what was authorised under the existing discharge permit, with updated consent conditions. SDC is in the process of investigating further feasible options to improve the overall performance of the existing WWTP. The proposed disposal will likely be land based but nothing has been confirmed to date by SDC. As such, the long-term solution which SDC will commit will contribute to improving the quality of the treated wastewater which will ultimately improve the state of the receiving environment.

The assessment concludes that the potential effects on the environment caused by the activity are considered less than minor.

9.2 Statutory Assessment

The proposal is overall consistent with the relevant objectives and policies of Part 2 of the RMA and the Southland Regional Water Plan and proposed Southland Water and Land Plan. The proposal is however not aligned with the Te Whakatau Kaupapa O Murihiku and Te Tangi a Tauira Iwi Management Plans. The general direction under the relevant objective and policy is to dispose wastewater to land as opposed to water. The long-term solution will however address this concern and will ensure the new application gives effect to Te Mana O Te Wai.

Given the assessment in this application, it is considered that resource consent can be granted on a non-notified basis.

9.3 Section 124 Continuation

The resource consent application has demonstrated that S124 continuation rights may be applied to the existing discharge permit. This is because the new application is for the same activity and the slight changes are not substantially different from the original activity that what was applied for in the original consent application. As such, the new resource consent application is considered to meet the requirements to justify Section 124 continuation rights as it is for the same activity.

The SDC therefore seeks confirmation from ES that they can continue to operate under the existing consent operation under Section 124 of the RMA until a new consent is decided and any appeals have been determined.

Appendices

Appendix A

Consent: 204630 and Consent 204630-V1

MWH

14047

29 JUN 2007

File 5122-028

MWH Ref: Z1451801

Chair		D EM	
GM		D CS	
Bio		Catch	
Cons		Env C	
P&P		Env I	
IT		Fin	

28 June 2007

Environment Southland
Private Bag 90116
INVERCARGILL

Attention: **John Engel**
Manager, Consents

Dear John

Edendale - Wyndham Wastewater Treatment Plant
Resource Consent Application and Assessment of Environmental Effects

On behalf of Southland District Council, enclosed is an Assessment of Effects on the Environment report in support of resource consent applications and a notice of requirement for the proposed Edendale - Wyndham Wastewater Treatment Plant.

As you may be already aware, the Southland District Council's Water & Waste Services team are assessing the technical feasibility of the Biofiltro wastewater treatment unit which is well established in Chile, but not in New Zealand. In order to continue the project programme the enclosed Resource Consent Application and Assessment of Environmental Effects considers both a pond-based treatment system and the Biofiltro system. The application is submitted using a "black box" approach where the greatest effects of the two options have been assessed, and as such, the proposed conditions would allow SDC to implement either option once approval has been achieved.

SDC understands this situation is uncommon but is necessary to maintain the project programme, while providing time to assess the opportunity presented by the Biofiltro treatment unit. The Council would appreciate your support for this approach.

In the enclosed applications, the following resource consent is sought under Section 88 of the Resource Management Act 1991:

- A Discharge Permit for discharge of contaminants to surface water

Please note in Section 1.6 of the document, it is requested that Environment Southland and Southland District Council consider jointly processing the appropriate aspects of the applications and notice of requirement.

MWH New Zealand Limited
Tower 1, Deans Park
7 Deans Avenue
Addington
P O Box 13-249
Christchurch 8141
New Zealand

Telephone : 64-3-366 7449
Facsimile : 64-3-341 5345
Website : www.mwhglobal.com/nz

If you have any questions regarding the applications, please contact Murray Sorrell on (03) 343 8735 in the first instance. Please invoice the relevant processing charges directly to the applicant, Southland District Council (Attn: Justin Reid).

Yours sincerely
MWH New Zealand Limited

James Thorne
Civil Engineer

Encl.: Resource Consent Application and Assessment of Environmental Effects

Copy to: Bevan McKenzie, Southland District Council

MWH

Meeting the challenge

Southland District Council

Edendale - Wyndham WWTP

Resource Consent Application and Assessment of Environmental Effects

May 2007

This document has been prepared for the benefit of Southland District Council. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.

This disclaimer shall apply notwithstanding that the report may be made available to other persons for an application for permission or approval to fulfil a legal requirement.

Quality Assurance Statement	
MWH New Zealand Limited Tower 1, Deans Park 7 Deans Avenue Addington P O Box 13-249 Christchurch 8141 New Zealand Phone : 64-3-366 7449 Fax : 64-3-341 5345	**Project Manager:** Dugall Wilson
	Prepared by: Frances Bodger, James Thorne
	Reviewed by: Murray Sorrell, Janan Dunning, Dylan Walton
	Approved for issue by: Shane Bishop

Southland District Council

Edendale - Wyndham WWTP
Resource Consent Application and Assessment of Environmental Effects

Contents

Part One – Application Forms

Form 9 of the Resource Management Act 1991 – Environment Southland

Application for Resource Consent under Section 88 of the Resource Management Act 1991.

To: Environment Southland (Consent Authority)
Private Bag 90116
INVERCARGILL

From: Southland District Council
PO Box 903
INVERCARGILL

(Please note different address for service at the end of this form)

Southland District Council applies for the resource consents described below:

1. The name and address of the owners of the land* to which this application relates is:

	Lot A	Lot B
Current Owner:	Scobies Transport Limited	P and N Ferguson
Address:	PO Box 4 Cardigan Road WYNDHAM 9690	Wyndham – Mokoreta Road RD 2 WYNDHAM

* Refer to Figure A3, Appendix A for a map identifying the two lots

These parcels of land are soon to be purchased and owned by Southland District Council.
Address: PO Box 903
15 Forth Street
INVERCARGILL

2. The locations to which this application relates is:

	Lot A	Lot B	Outfall Location
Physical Address:	Edendale – Wyndham Road	Edendale – Wyndham Road	Edendale – Wyndham Road Bridge
Legal Description:	Sections 34, 35 and 36 of Blk III Mataura Hundred (SO 7587)	To be advised, as subdivision pending (part of existing Lot 3 DP 3312)	Road Reserve
Map Reference:	NZMS 260 F46:877-245	NZMS 260 F46:877-244	NZMS 260 F46:886-236

3. The type of resource consent sought is:

   A **discharge permit** to discharge contaminants into surface water from a community sewage scheme (Rule 2, Proposed Regional Fresh Water Plan).

   This consent is sought for a term of 25 years.

4. Description of the activity to which the application relates:

   Southland District Council (SDC) is seeking resource consent for its proposed new Wastewater Treatment Plant for Edendale and Wyndham, to be situated at the gravel pit on Edendale – Wyndham Road, opposite the intersection with Island - Edendale Road, 2 km E of Edendale township. The proposed WWTP will treat domestic wastewater from both Edendale and Wyndham. The treated wastewater is to be conveyed to the Mataura River, and discharged into the river via multiple outlets on the Edendale – Wyndham Road bridge.

   The project will require some earthworks at the site to excavate and form the new treatment plant. Trenching and pipelaying is also required to install the outfall pipe from the proposed WWTP to the outfall at the Mataura River.

5. Additional resource consents required:

   The need for other resource consents, such as discharge to air, has been considered in Section 1.3 of the attached application. The matter of installation of pipelines around the Mataura River bridge has been discussed with Environment Southland, where it was concluded that consents are not necessary as there is no proposed change to the present situation. It is considered that no other additional resource consents are required from Environment Southland.

   A notice of requirement and applications for land use consents for the construction and operation of the wastewater treatment plant and pump stations associated with the Edendale-Wyndham sewerage scheme have been lodged with the Southland District Council.

6. Attached, in accordance with Section 88 and the Fourth Schedule of the Resource Management Act 1991, is an assessment of environmental effects (AEE) in the detail that corresponds with the scale and significance of effects that the proposed activity may have on the environment.

7. Additional information (if any), required to be included in the application by the District or Regional Plan or regulations, is set out in the AEE in Part Two of this document.

.....

Signature of applicant or person authorised
to sign on behalf of applicant

.....

Date

Address for service of applicant:

Southland District Council
c/o MWH NZ Ltd
PO Box 13 249
CHRISTCHURCH

Attention: Murray Sorrell

Telephone: (03) 343 8735
Fax: (03) 341 5345
Email: murray.a.sorrell@mwhglobal.com

Form 18 of the Resource Management Act 1991 – Southland District Council

Notice of Requirement for a new Designation under Section 168A of the Resource Management Act 1991

To: Southland District Council
PO Box 903
INVERCARGILL

From: Southland District Council
PO Box 903
INVERCARGILL

Southland District Council gives notice of a requirement for a designation to be incorporated into the Southland District Plan, pursuant to Section 168A of the Resource Management Act 1991, with respect to the proposed Edendale-Wyndham Wastewater Treatment Plant.

1 The Reasons Why the Designation is Needed

Southland District Council proposes to construct and operate a new combined wastewater treatment system for the townships of Edendale and Wyndham.

A parcel of land is primarily required for the purposes of wastewater treatment. As an integral part of the development of the gravel pit site for wastewater purposes, it is proposed to extract gravels from Lot B for embankment construction. Approval for the gravel extraction is sought in terms of Rule PRA.4 Soil Displacement Activities of the District Plan.

A designation on the land would allow works and modifications to be carried out in accordance with the purpose of the designation and will also set a record in the District Plan for the community to fully understand the use and nature of the site. A designation on this site will enable potential future expansion of the plant in accordance with improvements in wastewater treatment methods.

2 The Physical and Legal Description of Land Affected by the Designation:

	Lot A	Lot B
Current Owners:	Scobies Transport Limited	P and N Ferguson
Contact Address:	PO Box 4 Cardigan Road WYNDHAM 9690	Wyndham – Mokoreta Road RD 2 WYNDHAM
Legal Description:	Sections 34, 35 and 36 of Blk III Mataura Hundred (SO 7587)	To be advised, as subdivision pending (part of existing Lot 3 DP 3312)
Map Reference:	NZMS 260 F46:877-245	NZMS 260 F46:877-244

A map showing the land affected by the designation is provided in Figure A3, Appendix A.

Southland District Council has entered into a contract to purchase Lot A and is negotiating with P and N Ferguson to purchase Lot B subject to gaining resource consent approval.

Address: P.O. Box 903
15 Forth Street
Invercargill

Physical Description:

The site is predominantly a former gravel pit, surrounded by farmland, with the pit floor approximately 10 m below the surrounding ground levels. Further description of the physical location and character of the area where the designation is required is set out in Section 2 of the AEE.

3 The Nature of the Proposed Work

This application is submitted on a "black box" approach. For this approach the operation is viewed as a "black box" where the inputs, outputs and effects of the activity are defined but the actual process within the "black box" is not absolutely specified. This "black box" approach is required to allow the better of two options for the wastewater treatment plant operation to be selected. The opportunity to allow the development of either of these two options and the need for this particular approach are explained below.

Conceptual work on the development of a sewerage scheme for Edendale – Wyndham occurred during 2004/2005, and culminated in a detailed application for subsidy to the Department of Health. Based on this work and associated consultation, the proposal established the development of an aerated lagoon and maturation pond located in the old Gravel Pit with discharge to the Mataura River. This proposal has been peer reviewed, and gained approvals from the Department of Health and the Community Board.

As indicated in Appendix F, detailed site investigation work has been undertaken to further define the previously selected pond based treatment system.

In March 2007, the Southland District Council was approached unsolicited by Biofiltro NZ Ltd, advising that they could offer a "new" treatment system for Edendale – Wyndham. The new system had many of the advantages of a mechanical plant (small foot print) but as it was based on sawdust and worms, tended to be natural with a sustainable concept. The Biofiltro concept was developed in Chile and while at this time there are no plants in New Zealand (and essentially none outside Chile) there are over 60 plants reportedly operating successfully in Chile.

As the Biofiltro process appears to have merit, the Southland District Council are evaluating the process and the offer from Biofiltro seriously, including the risks associated with a "new" process. This evaluation process will take time, and if undertaken sequentially with other requirements, will delay the intended construction proposed for 2008.

To maintain the proposed programme and also maintain some flexibility, the consent applications are submitted on a "black box" approach where the possible proposals are defined as Option A for the pond based system and Option B for the Biofiltro system.

This approach is seen as acceptable because:

- It is consistent with the requirements of the Resource Management Act 1991 where the focus is on the effects
- The two possible processes and proposals are adequately defined

- The effects undertaken in the Assessment of Effects are the greatest effects of either option and hence the consent and the conditions would cover either option

The works involved in construction of the proposed wastewater treatment facility are outlined below and are more fully described in Section 2 of the AEE.

Option A is the **pond based** option and would include the following elements:

- Construction of a new aerated lagoon
- Construction of a new maturation pond
- Construction of zoned wetland, attached to the maturation pond
- Miscellaneous works, including pipes and small structures, as necessary for a functional wastewater treatment plant

Option B is the **Biofiltro** option and would include the following elements:

- Installation of a Biofiltro unit
- Installation of an inlet screen
- Installation of a UV disinfection unit
- Miscellaneous works, including pipes and small structures, as necessary for a functional wastewater treatment plant

The proposed designation comprises a total area of approximately 3 ha. This area is required to allow some flexibility, in accordance with the purpose of the designation, if modifications and layout changes occur.

4 Effects on the Environment and Proposed Mitigation Measures

An assessment of the effects on the environment of the proposed designation is set out in the Assessment of Environmental Effects, in Section 6 of the attached document. This includes a description of measures to avoid, remedy or mitigate against any adverse effects.

It is noted that consideration of the effects is restricted to the tests contained in s.168A(3) of the RMA, which it is considered are met.

5 Alternative Options Considered

Alternative options have been considered in Sections 2 and 7 of the AEE attached. Southland District Council is satisfied that the designation is necessary to enable the proposed project to proceed and that the approach selected is the most appropriate, given environmental, technical and economic considerations.

6 A Statement of the Other Resource Consents and Approvals Required in Relation to the Activity to Which the Application Relates and Whether or Not Such Consents or Approvals Have Been Applied For

Approval is sought in this application in terms of Rule PRA.4 Soil Displacement Activities of the District Plan, for the extraction of gravel predominantly from Lot B for embankment building as an integral part of the designation of the land for wastewater purposes.

Resource consent is required from Environment Southland for a discharge permit to discharge contaminants to surface water. Land use consent to construct and operate pump stations in the Edendale – Wyndham sewerage scheme have also been applied for in a separate application to Southland District Council.

Upon acceptance of the designation, and incorporation of it into the Southland District Plan (SDP), the project will be incorporated within the boundaries of the new designation. Therefore, in accordance with S.176 of the RMA, resource consent in terms of the SDP will not be required from Southland District Council.

7 Consultation Undertaken with Parties Likely to be Affected by the Designation

Consultation has been undertaken through meetings with the Edendale and Wyndham Community Boards, the communities and key stakeholders.

The landowners of the proposed site of the treatment plant have also indicated their agreement for the proposal by engaging in the process of selling land to the Southland District Council. Further details on the issues discussed and resolved through this consultation process are provided in Sections 2 and 8 of the AEE.

The pond system proposal, Option A, has not changed since the original concept was developed under extensive consultation and written approvals have not been sought for this option. Option B is a new development with the Biofiltro system and further consultation is ongoing and paralleling the evaluation process. There will be opportunity for public comment during the public notification stage for this notice of requirement.

8 Additional Information

Additional information in support of this application is provided under Part Two of this document, the Assessment of Effects on the Environment (AEE).

.....

Signature of applicant or person authorised
to sign on behalf of applicant

.....

Date

Address for service of applicant:

Southland District Council
c/o MWH New Zealand Limited
PO Box 13-249

CHRISTCHURCH

Attention: Murray Sorrell

Telephone No. (03) 343 8735
Fax No. (03) 341 5345
Email: murray.a.sorrell@mwhglobal.com

Annexures:
(a) An assessment of effects on the environment.

Part Two - Report

1 Introduction

1.1 Background

The two townships of Edendale and Wyndham are 5 km apart on the Mataura River floodplain, approximately 35 km northeast of Invercargill. In Edendale, the existing sewage disposal system of individual septic tanks and soakholes poses a significant health risk from contamination of groundwater (which provides drinking water to some residents). These disposal systems are also expected to fail as the inadequate sizing of many soakholes leads to blockages and creeping failure. Wyndham township has a combined sewer system that discharges to an unnamed branch of the Mataura River. Monitoring of the receiving environment shows that the discharge is resulting in various water quality exceedances, with microbiological concentrations exceeding public health guidelines, and objectionable odours in the vicinity of the discharge.

With the recent availability of the Ministry of Health subsidy scheme for upgrading small community sewerage systems, the communities of Edendale and Wyndham, together with the Southland District Council, have decided to implement a new community wastewater scheme to eliminate the current health risk and provide future security for the towns.

A series of new resource consents are sought for the construction and operation of a combined wastewater treatment plant for the communities of Edendale and Wyndham. The period of consent initially desired by Council was a term of 35 years as the asset life exceeds this period. However, after consultation and taking into consideration Iwi desires, the term of consent sought is for a period of not less than 25 years.

In addition to the consents, a Notice of Requirement (NoR) to designate land for the wastewater treatment plant is included in anticipation of Southland District Council purchasing the proposed site.

1.2 "Black Box" Approach

This application is submitted on a "black box" approach. For this approach the operation is viewed as a "black box" where the inputs, outputs and effects of the activity are defined but the actual process within the "black box" is not absolutely specified. This "black box" approach is required to allow the better of two options for the wastewater treatment plant operation to be selected. The opportunity to allow the development of either of these two options and the need for this particular approach are explained below.

Conceptual work on the development of a sewerage scheme for Edendale – Wyndham occurred during 2004/2005, and culminated in a detailed application for subsidy to the Department of Health. Based on this work and associated consultation, the proposal was established on the development of an aerated lagoon and maturation pond located in the old Gravel Pit with discharge to the Mataura River. This proposal has been peer-reviewed, and gained approvals from the Department of Health and the Community Board.

As indicated in Appendix F, detailed site investigation work has been undertaken to further define the previously selected pond based treatment system.

In March 2007, the Southland District Council was approached unsolicited by Biofiltro NZ Ltd advising that they could offer a "new" treatment system for Edendale – Wyndham. The new system had many of the advantages of a mechanical plant (small foot print) but as it was based on sawdust and worms, tended to be natural with a sustainable concept. The Biofiltro concept was developed in Chile and while at this time there are no plants in New Zealand (and essentially none outside Chile) there are over 60 plants reportedly operating successfully in Chile.

As the Biofiltro process appears to have merit, the Southland District Council are evaluating the process and the offer from Biofiltro seriously, including the risks associated with a "new" process. This evaluation process will take time, and if undertaken sequentially with other requirements, will delay the intended construction proposed for 2008.

To maintain the proposed programme and also maintain some flexibility, the consent applications are submitted on a "black box" approach where the possible proposals are defined as Option A for the pond based system, and Option B for the Biofiltro system.

This approach is seen as acceptable because:

- It is consistent with the requirements of the Resource Management Act 1991 where the focus is on the effects
- The two possible processes and proposals are adequately defined
- The effects undertaken in the Assessment of Effects are the greatest effects of either option and hence the consent and the conditions would cover either option

The two options below are described more fully in Section 2.6

Option A is the **pond based** option and would include the following elements:

- Construction of a new aerated lagoon
- Construction of a new maturation pond
- Construction of zoned wetland, attached to the maturation pond
- Miscellaneous works, including pipes and small structures, as necessary for a functional wastewater treatment plant

Option B is the **Biofiltro** option and would include the following elements:

- Installation of a Biofiltro unit
- Installation of an inlet screen
- Installation of a UV disinfection unit
- Miscellaneous works, including pipes and small structures, as necessary for a functional wastewater treatment plant

1.3 Resource Consents Sought

The following resource consents and NoR are sought:

	Activity	Rule
Regional Council	Discharge of contaminants to surface water	2 of Proposed Regional Freshwater Plan for Southland
District Council	Notice of Requirement	S.168 to S.179 of the RMA
	Land use consent to construct and operate pump stations [1]	PWN.2 of Southland District Plan
	Soil Displacement Activity approval	PRA.4 of Southland District Plan

[1] There is a separate land use consent application document, and therefore further consideration of the pumps stations and their potential effects is not included in this application document

A Designation is sought to designate a parcel of land for the purposes of wastewater treatment and discharge. By recording the designation in the District Plan, the use and nature of the site will be highlighted to the community. The suggested conditions of the NoR will safeguard against potential effects on neighbouring sites from discharges. A designation on the site allows activity to be undertaken in accordance with the purpose and conditions of the designation, and provides a degree of certainty to the community. It also gives flexibility for the requiring authority to carry out the designated activity as new methods and technology find innovative ways to manage the wastewater.

Approval is sought in this application in terms of Rule PRA.4 Soil Displacement Activities of the District Plan, for the extraction of gravel predominantly from Lot B for embankment building as an integral part of the designation of the land for wastewater purposes.

1.4 Associated Activities for which Consent is not Sought

The Solid Waste Management Plan for Southland restricts discharge of cleanfill onto land if the volume is greater than 500 m^3 (Rule 4.5.5). However, the earthworks for the pond option are considered a construction activity rather than discharge, and therefore consent is not required. Precedence for this interpretation was set by Environment Southland for the Tuatapere WWTP Resource Consent Application and AEE, August 2006.

Consent to discharge to air is not required under Rule 5.5.3(9) of the Southland Regional Air Quality Plan, as the population to be serviced by the proposed WWTP is less than 10,000. In Option A the proposed pond and wetland system will have an earthy, musty odour, normally noticeable at the water's edge. For this option the use of aerators in the lagoon will help ensure the process does not become anaerobic, which produces stronger odours. In Option B the proposed Biofiltro system will produce little odour, as the process is aerobic. There is a 150 m buffer zone from the ponds and sewage treatment operation to the neighbouring properties that will mitigate the impacts of any odour produced.

Consent for discharge of contaminants to groundwater (or land) is also not necessary as the intention of this scheme is to dispose of all treated wastewater to surface water at the Mataura River. The pond and wetland option will be lined to prevent potential contamination of groundwater.

There is an open drain around the perimeter of the gravel pit site. It is intended that this drain will remain as is, in terms of any change in capacity, and hence there will be no effect beyond the site boundary from a change in

flow. In some areas, the open drain may be replaced by a subsurface drain installed at the same level, and with the same capacity, as the existing drain. Therefore, consent for discharge to this drain is not required.

1.5 Assessment of Environmental Effects

This Assessment of Environmental Effects (AEE) has been prepared in accordance with the requirements of Section 168 of the RMA with regard to the designation, and the Forth Schedule and Section 88 of the RMA with regard to the resource consents required. Accordingly, the AEE will address the following:

- A description of the proposed activity
- A description of the site and the receiving environment
- An assessment of the effects of the proposal on the environment and the ways in which adverse effects will be avoided or mitigated
- Alternative treatment sites and methods
- Consultation with affected or interested parties
- Suggested consent conditions

1.6 Combined Application

This is a combined application to both consent authorities with the intention that the two authorities will jointly process the consents and NoR, including notification, hearings and decisions. The benefit of the combined application is to avoid duplication, avoidance of doubts with stakeholders and to avoid potentially conflicting decisions and conditions. Should, for any reason, the consent authorities choose to process the consents separately, the AEE has been structured in such a manner that only certain sections need consideration as applicable by the relevant Council.

2 Description of the Activity

2.1 Overview

The proposal is to construct, operate and maintain a new wastewater treatment plant (WWTP) for the communities of Edendale and Wyndham. This will replace the existing on-site systems at Edendale and the untreated reticulation system at Wyndham. The proposed site is in an old gravel pit, adjacent to the Edendale – Wyndham Road and opposite the intersection of Island – Edendale Road.

Two different options are described in this section adopting a "black box" approach; refer to 1.2 "Black Box" Approach.

Option A – Pond Based
The proposed treatment system is comprised of an aerated lagoon and maturation pond, providing primary and secondary treatment of the wastewater. The treated wastewater will then pass through a wetland area, with alternating planted and open water zones, for final polishing, before being conveyed to an outfall into the Mataura River.

Option B – Biofiltro
The proposed treatment system is comprised of an inlet screen, storage/equalisation tanks, Biofiltro unit and UV disinfection unit to provide primary and secondary treatment of the wastewater. The treated wastewater will then be conveyed to an outfall into the Mataura River.

2.2 Site Location

The proposed wastewater treatment plant will be located on a site of approximately 3 ha, 1.1 km NW of the Edendale-Wyndham Road bridge over the Mataura River. The treatment plant will be constructed within an existing gravel pit, while a pipe conveying the treated wastewater to the Mataura River outfall following the alignment of Edendale – Wyndham Road, within the existing road reserve.

The existing floor of the gravel pit is approximately 10 m below surrounding ground levels. For Option A the ponds will be built onto the existing gravel pit floor. Option B also has the treatment units constructed on the existing gravel pit floor.

For both options the alignment of the pipe to the outfall will follow the Edendale – Wyndham Road. A location map of the proposed treatment site is provided in Figure A1, Appendix A.

2.3 Issues with Existing Sanitary System

As initially outlined in Section 1.1, there are some significant public health risks associated with the existing sanitary systems for both Edendale and Wyndham.

2.3.1 Edendale

There is no community sewerage system in Edendale, with individual properties using septic tanks and soakholes to treat and dispose of sanitary waste. The local soils consist of low permeability loess overlying free draining gravels, into which the soakholes discharge. Many residents in the town obtain their drinking water from bores that access the same gravel layer, and there is clear potential for contamination of drinking water and the associated health risks.

A further issue is that many of the soakholes have insufficient area to provide adequate infiltration of the effluent. This results in overloading of the soils, a reduction in the ability of the soil to allow infiltration of the effluent and acceleration of creeping failure, all increasing the risks to public health.

2.3.2 Wyndham

Wyndham uses a combined sewer system to dispose of its sanitary wastes. Each property has a septic tank and separate stormwater system that discharge into the combined sewers. Due to the variable soil conditions across Wyndham, disposal systems such as soakholes have never been a viable option.

The combined sewer discharges into an unnamed branch of the Mataura River, with an overflow further up the system into a small watercourse for peak storm flows. Monitoring of the Mataura River, both upstream and downstream of the discharge location, shows that the national water quality guidelines are regularly exceeded for ammonia and microbiological concentrations due to the sewage discharge. This poses a health risk to recreational users and also a negative impact on the receiving aquatic environment. Noticeable odours are being generated in the open channel through to the Mataura River, with some buildup of sludge and sewage fungi in the channel.

The discharge into the sewers had a water right until its expiry in 1994. Its renewal was opposed by affected parties, and there has been a long string of reports and investigations to find an alternative solution ever since. In 2004, a five year consent was obtained to use the existing sewer system in order to legitimise the discharge, while providing a finite timeframe in which to develop a more permanent, acceptable solution.

2.4 Design Data

2.4.1 Population

The WWTP will be designed to service a total population of 1,467, comprised of 700 people at Wyndham and 600 people at Edendale, plus an allowance for Fonterra's Edendale factory, if they choose to connect their domestic waste to the Edendale – Wyndham Wastewater Treatment System (WWTS). This additional load has been assessed at 167 pe (based on an average daily flow of 30 m^3/day).

2.4.2 Wastewater Flows and Loads

As there is no existing sewer system to provide wastewater flows and load data, the design flows and loads have been based on typical per capita wastewater parameters. A per capita flow of 180 L/pe/day has been adopted. This is within the range given in NZS4404:2004 of 180-250 L/pe/day for daily flow per capita.

A peaking factor of 5 is then applied, based on the peaking factors identified in NZS 4404:2004, with 2 x for maximum daily wet weather flow and 2.5 x for diurnal peak.

The inflows and loads design parameters are as follows:

- Total Connected Population: 1,467 pe
  Comprised of:
  - Edendale population 600 pe
  - Wyndham population 700 pe
  - Fonterra population equivalent 167 pe
- Average daily flow: 264 m³/day
- Maximum day flow (wet weather): 528 m³/day (2 x average inflow)
- Maximum hourly flow: 15 L/s (5 x average inflow)
- Average BOD load: 75 g BOD/pe/day
- Maximum BOD load: 110 kg BOD/day (1.5 x average load)

2.4.3 Influent Wastewater Characteristics

The wastewater from Edendale, Wyndham and the Fonterra factory is all domestic in nature, with correspondingly low levels of metals and other industrial contaminants. No significant industrial wastewater is intended to be treated at the proposed WWTP, and this is not expected to change in the future. Therefore, the proposed treatment systems are appropriate for the expected sewage characteristics.

2.5 Evaluation and Selection of the Proposed Treatment and Disposal System

2.5.1 Receiving Environment

As first outlined in the Preliminary Design Report for Edendale - Wyndham WWTP (Appendix C), the sensitivity of the receiving environment is a key driver in selecting a treatment system. The potential receiving environments initially considered were either discharge to land and ultimately, groundwater, or discharge to surface water, specifically the Mataura River and a tributary.

Land disposal was discounted as a viable option as there was insufficient land available locally, despite the soil conditions meaning it would be technically feasible at low loading rates. The local land is highly valued for its dairying productivity.

The only viable alternative to land disposal is to discharge the treated effluent to the Mataura River, which is currently used for disposal of both Wyndham's wastewater and the process wastewater from the Fonterra factory. The Matuara River is large and would provide a high degree of dilution and operational contingencies to the proposed discharge (estimated at 3,700 x at minimum river flow and 18,000 x at median flow) (refer to Section 6.2.1).

In order to avoid adverse effects on the Mataura River, the wastewater treatment system must reduce the contaminant concentrations to levels where, following mixing with the river, water quality standards are maintained in the river. Relevant receiving water standards and predicted concentrations downstream of the discharge are discussed in Section 6.2.1.

2.5.2 Site Selection

Four sites were considered for the treatment plant (Figure A6, Appendix A), based on their proximity to a possible river discharge point:

- Gravel Pit site
- Redan Rd Reserve
- Cardigan Rd Reserve
- Southern Site

In an assessment of the advantages and disadvantages of each site for the proposed WWTP, it was concluded that the Gravel Pit site provided the advantages of currently being unused apart from temporary storage of materials, providing a visual barrier from neighbouring properties, and allowing discharge from the Mataura River bridge. The other three sites had some flooding issues and were more likely to have greater visual impact or inadequate separation distances from neighbours. In economic terms, the gravel pit provided the lowest cost option for a combined WWTP for Edendale and Wyndham. Hence, during the concept development stage the gravel pit was endorsed by the Council and community as the preferred treatment plant site. Further details on the site selection and assessment are provided in Appendix E.

2.5.3 Treatment Process Selection

Based on the requirements of the Mataura River as the receiving environment and the amount of land available at the gravel pit site, options for treatment ranged from a fully mechanical process to a pond-based system (further detail on the advantages and disadvantages of the two pond options is provided in Table 1). For pond based treatment the two options were a passive oxidation pond or an aerated lagoon. A passive oxidation pond required more land area than was available at the gravel pit. Also, as the gravel pit is set significantly below surrounding ground levels, there is limited airflow across the site and increased shading. Under these conditions, an aerated lagoon would have better performance control. Therefore, an aerated lagoon was initially advanced as the preferred option. The use of a pond-based treatment system is appropriate in term of operations and maintenance for SDC, as it generally requires low operational attendance and is in line with other SDC WWTPs, which are typically pond-based systems.

Although a pond-based system was originally adopted as the preferred treatment system, when the Southland District Council was approached by Biofiltro NZ Ltd a reassessment of options identified significant advantages presented by a treatment system only recently introduced into New Zealand, the Biofiltro system. This treatment system uses worm-based organic degradation, followed by filtration and UV disinfection, to treat domestic wastewater to a quality better or equal than that from a pond-based system. The assessment, and its conclusions, of this Biofiltro system are presented in Section 2.6.2.

Table 1: Comparison of the Capabilities and Issues of two Wastewater Treatment Options for Edendale – Wyndham WWTP [1]

Key Parameters		*Purely Pond-Treatment* **Aerated Lagoon, Maturation Pond**		*Combination Pond/Mechanical-Treatment* **Aerated Lagoon, Clarifier, Aerobic Digester, UV Disinfection**	
Treatment Capability	BOD reduction	√	Aerated lagoon capable of reducing BOD	√	Aerated lagoon capable of reducing BOD
	Disinfection	√	Adequate disinfection occurring in maturation pond	√	Effective disinfection through UV unit
	Sludge production and storage	√	Pond provide storage capacity for sludge Desludging required every 15 years		Required regular sludge disposal to landfill – an aerobic digester reduces sludge volume
	Low Algae and Suspended Solids		Ponds generate algae	√	Low suspended solids as no algae generated
	Nutrient Reduction		Additional nutrient reduction processes can be added into this treatment system		Additional nutrient reduction processes can be added into this treatment system
Operation Requirements		√	Simple operation requirements Sludge handling only during desludging work		Significant maintenance requirements for the UV unit Regular sludge handling
Land Area Requirements			Significant land area needed – assessed at 1.7 ha	√	Small footprint – assessed at 0.45 ha
Capital Cost		√	Assessed at $1.74 M		Assessed at $1.98 M
Operational Cost		√	Aerated lagoon OPEX only – common to both options		Additional OPEX for clarifier and UV, over and above aerated lagoon OPEX

[1] √ indicates a strong, positive feature of the treatment option

2.5.4 Nutrient Reduction

Studies of the Mataura River and its ecosystem health indicate that the river has elevated nitrogen and phosphorus levels, primarily as a result of agricultural runoff and treated effluent discharges (both industrial and domestic) throughout its catchment. The potential consequences of these elevated nutrient levels include excessive periphyton growth and an imbalance in the species structure of the aquatic community. A specific treatment step can be included in the WWTP process to reduce phosphorus levels prior to discharge. Phosphorus is targeted as it is the limiting nutrient for periphyton growth.

However, for a small facility such as that proposed for Edendale and Wyndham, the high capital cost and operational complexity of phosphorus reduction may outweigh the tangible benefits of reducing contaminant levels when the mass discharge of phosphorus is not very high (expected to be ~1 kg/day). Precedent for this approach can also be seen from consenting requirements for other Southland wastewater treatment facilities, with small dischargers such as Mataura township (at 1 kg/day), not required to incorporate nutrient reduction processes. Large dischargers, such as Gore township and Alliance Mataura, do have phosphorus reduction under their new consents, which reduce their present phosphorus loads of 24 kg/day and 100 kg/day, respectively, to 2 kg/day and 14.4 kg/day. With the large dischargers reducing their loading into the river, (and assuming the proposed Edendale – Wyndham WWTP operates without phosphorus reduction), it is expected that the future phosphorus loading will be acceptable, as shown in Appendix D.

The issue of phosphorus loading in the Mataura River has been discussed with key stakeholders and resolved that it is acceptable that phosphorus reduction should not be required. It has therefore been decided that phosphorus reduction will not be included in the design of the proposed Edendale – Wyndham WWTP, although this does not preclude it from being added in the future if a review of new conditions indicate this is necessary.

2.5.5 Site Constraints

In selecting the gravel pit as the preferred site for the WWTP, constraints of the site needed to be taken in consideration with the design of the WWTP; in particular, embankment material supply and groundwater issues for the pond-based Option A.

Geotechnical investigations were carried out on site to identify material types and confirm groundwater levels across the site (refer to Appendix F). These investigations concluded that groundwater was sitting at approximately RL 28.4, with the lowest point of the existing pit floor at about RL 28.7. Any lined pond would need to have a minimum separation distance from groundwater of 0.3 m, for protection of the liner. From these investigations, a summary letter was prepared on options for sourcing bank-building materials and dealing with groundwater for the pond-based Option A, as outlined in Table 2.

Table 2: Alternatives for Pond Floor Levels and Associated Considerations

Alternative	Pond Floor Level	Required Change in Groundwater Level	Considerations
1	RL 28.0	Lower by 0.7 m	• Subsurface drainage required to lower groundwater levels • Need to consider increased discharge into existing open drain, and ultimately, main waterway • The deeper the excavation, the more bank-building material is made available
2	RL 28.3	Lower by 0.4 m	
3	RL 28.5	Lower by 0.2 m	
4	RL 28.7	No change	• Need for an additional source of bank-building materials, from either: a) Off-site sources b) Purchase and use of an adjacent strip of land, west of the gravel pit c) Purchase and use of an adjacent area, north of the gravel pit

The feedback on this summary from stakeholders indicated that lowering the drains was to be avoided where possible, as this could potentially have adverse effects on the waterway into which the drain system would discharge and on surrounding groundwater levels. Discussions with the adjacent landowners concluded with the owner of the western strip of land being unwilling to sell, however it is likely that the strip would have most probably been unsuitable for the primary function of supplying bank-building gravels. The owners of the northern area indicated they would be willing to sell a small parcel of their land to the Council (refer to Figure A3, Appendix A).

On the basis of consultation and the resulting preliminary arrangements, it was agreed that the pond (and any other treatment option) would be built essentially at the present pit floor level, and that deepening the drains would not be done. It was also confirmed that:

- This would minimise the impacts on the nearby waterway
- Some gravel for bank-building could be sourced from unexcavated areas on the site
- Further gravel is to be sourced from an adjacent parcel of land to the north of the gravel pit site, which the current owner has agreed to sell to SDC
- The remaining balance of gravel would be imported from a local commercial supplier

2.5.6 Discharge Considerations

Earlier consultation with key stakeholders had concluded with the option for co-sharing with the Fonterra outfall for their wastewater treatment system as most preferred. However, in subsequent discussions between Fonterra and SDC, Fonterra advised that their existing disposal system has insufficient capacity for their own purposes (and to this end, are intending to carry out remedial maintenance on their outfall), and co-sharing is not viable.

The next best option therefore, is to discharge from the Edendale – Wyndham Road bridge, as:

- This point is close to the gravel pit site
- It allows the outfall pipe to remain in road reserve along its alignment

- It gives provision for installing multiple outlets down the bridge piers on the downstream side of the bridge

The bridge is approximately downstream of the 350m-long Fonterra mixing zone (with Fonterra's compliance monitoring point being immediately upstream of the road bridge); hence the proposed discharge location would not overlap with the Fonterra discharge and mixing zone.

2.6 Description of Proposed System

One of the following options will be constructed as the Edendale – Wyndham treatment system. Option A, the pond based option, can be considered as the default option. It is possible that Option B, the Biofiltro option, could be developed following a rigorous evaluation process and discussion with interested parties. Both options are presented as alternatives in the process "black box" with the proposed effects being adequate to allow either option.

2.6.1 Option A: Pond Based

The proposed wastewater treatment process will comprise the following elements (refer also to Figures A2.1 and A4, Appendix A):

Inlet Screen
An inlet screen will screen coarse material out of the inflow and deposit it in a small covered skip (to avoid odour issues). This skip will be regularly emptied, with the screenings removed to a controlled landfill site.

Aerated Lagoon
Primary treatment will occur in the aerated lagoon, where biological processes will reduce organic contaminants (BOD), as well as other contaminants. Mechanical aerators will maintain higher oxygen levels in the wastewater, which enables the bacteria to break down the contaminants. A hydraulic retention time of 3-4 days is required, giving a required pond volume of 1,000 m^3. Using the standard New Zealand design guidelines for aeration power requirements of 1 kg BOD/hr requiring 1 kW aerated capacity, four 2.2 kW surface aerators will be used in the aerated lagoon. The aerators will operate continuously, keeping the lagoon contents completely mixed.

Maturation Pond
The maturation pond provides secondary treatment of the wastewater, primarily by sunlight (UV) disinfection and settling of the suspended bacteria from the aerated lagoon. A standard design retention time of 20 days is used, giving a required minimum volume of 5,280 m^3, based on an average daily inflow of 264 m^3/day. The maturation pond will have a depth of 1.5 m, to ensure effective sunlight penetration and adequate oxygen levels are maintained. Therefore to achieve the required volume with this depth, the maturation pond will need a minimum surface area of 3,500 m^2.

Zoned Wetland
Connected to the maturation pond, a zoned wetland will provide final polishing of the treated wastewater through algal die-off and re-aeration, before it is piped to the outfall. The wetland will be comprised of alternating planted and open water zones, in accordance with international best practice.

Within the planted zones, the wetland will have a nominal water depth of 300 mm, with banked sides to ensure there are no excessively shallow areas that could promote insects such as mosquitoes. In the open water zone,

the wetland will shelve down a maximum of 600 mm. Local species of native wetland plants will be used, as they typically require low maintenance, will be robust and healthy in the local climate and should be effective in providing good aeration and shade cover to the treated wastewater.

Discharge System and Mixing Zone

From the wetland, the treated wastewater will be piped to the outfall at the Mataura River bridge, following the alignment of the Edendale – Wyndham Road. Dilution of the treated effluent will occur in the river mixing zone (refer to Section 6.2.1.2 and Figure A5, Appendix A). The proposed mixing zone, for monitoring purposes, extends from the bridge to a point 350 m downstream of the bridge.

Operations and Maintenance Requirements

SDC contract Fulton Hogan (FH) to operate and maintain their WWTPs (typically pond-based systems) throughout the district, and the operational and maintenance responsibilities for the proposed Edendale – Wyndham WWTP will be incorporated into this contract.

Conclusion

In light of the issues identified with existing sanitary systems in both Edendale and Wyndham (refer to Section 2.3), the proposed community treatment and disposal system will provide an effective and reliable means of managing the sanitary wastes of these communities, in a manner that minimises risks to both public health and the environment.

2.6.2 Option B: Biofiltro

To meet the site specific and performance requirements, a Biofiltro domestic sewage treatment plant is an alternative. The Biofiltro process is a proprietary process, only recently introduced into New Zealand. The Biofiltro process was developed in Chile approximately 15 years ago and presently in that country, there are around 60 plants successfully treating either domestic or higher strength industrial waste.

The principal advantage of the Biofiltro process is that it has many of the attributes of a natural treatment process, yet has a reasonably small footprint, more typical of a mechanical or package plant. The main component of the Biofiltro process is the bed which occupies approximately 750 m^2 and an overall treatment site area of approximately 2,000 m^2 being contained in a rectangular concrete walled tank. This area is small compared to that of an equivalent pond-based system which would require an area of around 16,000 m^2.

The Biofiltro process comprises the following main components:

- Automatically-cleaned fine screen (approx 3 mm) for removal of coarse material and inert material
- Two equalisation tanks to temporarily store peak flows and provide average flows to the Biofiltro bed. The tanks also provide approximately half day emergency storage
- Biofiltro bed, approximately 750 m2 (30 m x 25 m) and approximately 1 m deep, to provide organic treatment
- Small sedimentation tank for trapping coarse materials such as worms and sawdust
- UV disinfection system, required due to the reasonable short retention time in the plant and to exceed the performance requirements of a pond-based system

Inlet Screen and UV Disinfection

The inlet screen and UV disinfection system are typical components of other treatment systems. The inlet screen would screen material to a small covered skip (to avoid odour and fly issues). It would be regularly removed to a controlled landfill site.

Biofiltro Bed

The Biofiltro bed is unique in New Zealand and could be envisaged as a "trickling filter based on sawdust" (coarse chips), rather than rock or plastic media. The sawdust is used to provide an acceptable media for worms to live in as these worms provide the basic treatment mechanism. Screened sewage is sprayed over the top surface and percolates vertically through the sawdust to underdrains at the base of the Biofiltro tank.

The organic load is high at the top, and hence, worms are prolific in this area. The lower areas are predominantly populated by a biological community to further treat and polish the wastewater.

The worms feed on the organics, producing mainly humus. The humus also acts as a filter for other contaminants such as nitrogen and phosphorus. The upper layer of approximately 100 mm of humus/sawdust is removed annually, typically to repopulate other processes such as soil conditioning or controlled landfill activities. Blockage of the surface is avoided due to the action of the worms.

The entire process is maintained aerobic by the spray system, air vents to the underdrains, control of the application site and the coarseness of the sawdust. Due to the aerobic conditions there are no objectionable odours.

Due to the filtering and biological action in the lower zone of the Biofiltro bed, the resulting treated wastewater is of a high quality, and atypically for an organic treatment system, does not contain fine suspended material that requires further filtering or a clarifier. However, small sedimentation tanks are included to trap any coarse material such as sawdust or worm parts prior to disinfection or disposal. Due to the relatively short retention time in the process, UV disinfection is usual.

Discharge System and Mixing Zone

From the outlet of the UV unit, the treated wastewater will be piped to the outfall at the Mataura River bridge, following the alignment of the Edendale – Wyndham Road. Dilution of the treated effluent will occur in the river mixing zone (refer to Section 6.2.1.2 and Figure A5, Appendix A). The proposed mixing zone, for monitoring purposes, extends from the bridge to a point 350 m downstream of the bridge.

Operation and Maintenance Requirements

SDC presently contract Fulton Hogan (FH) to operate and maintain their WWTPs throughout the district. The operational and maintenance responsibilities for the proposed Edendale – Wyndham WWTP will be incorporated into this contract or possibly a separate contract with Biofiltro to maintain and operate the plant. The Biofiltro treatment system has low operational requirements with the main effort being similar to a pond system involving the inlet screen and pumps.

Summary of Key Features of the Proposed Treatment System

The key features of the Biofiltro process are:

- High quality of treated wastewater
- Aerobic process, minimising odour production
- Natural, sustainable process (the humus can be used as soil conditioner and worms recycled to other plants)

- Treatment process mimics natural soils process, and hence may meet cultural objectives. The process also converts human waste into a natural product.
- Has low operator requirements and it does not need to be controlled
- Avoids the production of sludges or pond desludging
- Small footprint

Conclusion

In light of the issues identified with existing sanitary systems in both Edendale and Wyndham (refer to Section 2.3), the proposed community treatment and disposal system will provide an effective and reliable means of managing the sanitary wastes of these communities, in a manner that minimises risks to both public health and the environment.

3 Nature of the Discharge

3.1 Overview

As outlined previously in Section 2.4.3, the influent wastewater is primarily domestic in nature, and therefore the contaminants of concern will be microbial pathogens, BOD, suspended solids, nitrogen and phosphorus. The treatment process proposed for this WWTP will treat the wastewater to meet the treated effluent standards shown in Table 4.

3.2 Discharge to Water

3.2.1 Quantity

The design flows and loads are summarised in Table 3.

Table 3: Design Effluent Flows and Loads (for Total Connected Population of 1,467 pe)

	Inflows to Treatment Plant	Discharge from Treatment Plant
Average daily volume	264 m^3/day	264 m^3/day
Maximum daily volume	528 m^3/day	848 m^3/day [1]

[1] Based on Maximum Daily Volume = (2.5 x Average Daily Volume) + rainfall on ponds

Rainfall has been assessed as contributing an additional 320 m^3/day of flow to the discharge, assuming 20 mm rainfall per day across the combined 16,000 m^2 surface area of the ponds and wetlands. It should be noted that this is an increase only in the volume of the discharge, and not in the mass discharge of contaminants.

3.2.2 Quality

Option A – Pond Based

The WWTP process is expected to provide sufficient treatment to ensure the treated wastewater meets the quality standards shown in Table 4. The expected performance is based on monitoring results from other similar aerated lagoon and maturation pond systems in Southland and throughout New Zealand. These numbers can be adopted as the consent conditions for the treated wastewater quality.

Table 4: Typical Treated Wastewater Quality from Aerated Lagoon and Maturation Pond Systems

Contaminant		Median	95th Percentile
BOD	g/m^3	30	100
Suspended Solids	g/m^3	70	120
Ammoniacal Nitrogen	g/m^3	21	28
Nitrate Nitrogen	g/m^3	5	12
Total Nitrogen	g/m^3	25	34
Dissolved Reactive Phosphorus	g/m^3	5	6
Faecal Coliforms	cfu/100 mL	5,000	150,000
E. coli	cfu/100 mL	5,000	150,000

Maximum concentrations are not specified for the discharge, as, due to the natural variability of the effluent, maximum concentration values are difficult to define and do not provide a useful standard for compliance monitoring purposes. Hence, 95th percentile concentrations are used instead of maximums. This is in accordance with the New Zealand Wastewater Monitoring Guidelines (NZWERF, 2002).

While a nominally sized wetland will be included in Option A, to fulfil a polishing and cultural function, there is no quality improvement that can be reliably obtained to justify reducing the consent compliance limits. Hence the quality limits expected from a pond system have been adopted.

Option B – Biofiltro

The track record of existing Biofiltro plants as provided by the supplier includes the following treatment efficiencies:

BOD_5	95%
Total Suspended Solids	95%
Total Nitrogen	70%
Total Phosphorous	70%
Faecal Coliforms	99%

These performances are better or equal to that of a well designed pond-based system. While it is anticipated there could be a lower concentration of Total Nitrogen, Total Phosphorus and Faecal Coliforms compared to a pond-based system, a conservative position has been adopted to give appropriate consent conditions, with the following final treated effluent standards proposed in Table 5.

Table 5: Expected Effluent Quality from the Proposed Treatment System

Contaminant	Median Value
BODs	30 g/m^3
Total Suspended Solids	70 g/m^3
Total Nitrogen	25 g/m^3
Total Phosphorous	5 g/m^3
Faecal Coliforms	5000 cfu/100mL

3.2.3 Monitoring Point

The treatment plant performance will be monitored by measuring and sampling the discharge on the downstream side of the wetlands for Option A and downstream of the UV unit for Option B, prior to being conveyed to the bridge outfall. This is a practical location for sampling as the entire discharge passes through this point, the constriction into a pipe enables easy sampling, and the treatment process is complete by this point. There will also be monitoring of the mixed effluent discharge 350 m downstream of the bridge.

4 Description of Receiving Environment

4.1 Overview

The proposed WWTP site is an old gravel pit, set down from the surrounding land, 1.2 km northwest from the Edendale – Wyndham Road bridge across the Mataura River. It is in an area used primarily for farming. The large-scale modifications to the site throughout its history mean it is suitable for an activity such as a community WWTP, as the site environment is not particularly sensitive, with limited ecological or biodiversity value.

4.2 Neighbours

The land surrounding the proposed WWTP site is zoned as Plains Resource Area on the Southland District Plan, with the land immediately adjacent to the gravel pit used for stock grazing and cropping. The Wyndale Refuse Station is less than 150 m away, southeast across the Edendale Wyndham Road.

The nearest dwelling is approximately 300 m to the southeast of the gravel pit. The boundaries of the Urban Resource Areas of Edendale and Wyndham are no closer than 1.8 km and 1.9 km, respectively.

4.3 Site Conditions

4.3.1 Land Use

The main site has previously been owned by Scobies Transport Ltd., a Wyndham-based transportation company. They have used parts of the site as a truck wash and for temporary storage of composite material, but largely the site is unused.

Prior to this, the site was an active gravel pit. As part of the gravel extraction work, surface drains have been formed on the site to control the groundwater table (Refer to Figure A4, Appendix A). This history of land use means the site has already been significantly modified, with large-scale excavation of gravel and modification of groundwater and surface drainage across the site.

An additional area of land, adjacent to the north side of the gravel pit, is to be purchased by SDC as part of the development of the WWTP. This land is currently in pasture.

4.3.2 Soil Type

The site is on the floodplain of the Mataura River, with the gravel pit floor at approximately 30 m above sea level. The mean level of the Mataura River at the Edendale – Wyndham Bridge is at approximately 20 m above sea level.

Subsurface investigations of the soils within the gravel pit show a typical profile of sandy silts overlying sandy gravel alluvial deposits. There is some clay towards the northern end of the site.
Some areas of fill were identified from the subsurface investigations, comprising largely of clean soils. Some waste material, such as tyres and scrap metal, was also found on site, but this will be removed prior to construction of the ponds. Any material unsuitable for embankment construction will be used for landscape contouring and non structural purposes on the site.

The existing gravel on site is likely to be appropriate for use in constructing the ponds. However, as the volume of available onsite gravel is limited, majority of the gravel will be sourced from either the adjacent land to the north of the gravel pit or from a commercial supplier.

4.3.3 Groundwater

Site investigations (refer to Appendix F) show groundwater is flowing across the site from west to east, towards the Mataura River. Groundwater levels are typically 0.5 m below the existing floor of the gravel pit, and are controlled by the existing system of open drains around the perimeter of the gravel pit.

The gravels are highly permeable which was shown from groundwater mapping where the results indicated a very small piezometric gradient across the site.

4.3.4 Vegetation

The gravel pit is largely devoid of vegetation. However, since excavation of the gravel stopped, some exotic grasses and weeds have grown back. There is little ecological or biodiversity value in the existing vegetation on site.

4.3.5 Site Visibility

As the site is an excavated gravel pit, with an excavated depth of approximately 10 m, the base of the pit is not readily visible from publicly accessible areas.

4.4 Climate and Weather

Environment Southland maintains rainfall records for Tuturau, 8 km upstream of Wyndham. Mean annual rainfall measured at Tuturau from 1987 to 2007 is at 1100 mm per annum. The prevailing winds are from the south. This is typical for the Eastern Southland area.

For the pond-based Option A, mechanical aeration is necessary to ensure adequate oxygenation of the wastewater during treatment since the gravel pit set below the surrounding land and the site will be largely sheltered from wind. There is significant capacity in the ponds to buffer rainfall accumulation on the ponds, or attenuate higher than anticipated wastewater flows from the sewerage system.

4.5 Surface Water

4.5.1 Flows

Environment Southland provides flow monitoring data at several sites on the Mataura River, with the nearest site to Edendale and Wyndham being Tuturau. In Environment Southland's Annual Environmental Monitoring Report for 2004/05, the Minimum Recorded flow was 11.52 cumecs, based on 23 years of data. In comparison, the Long-Term Median flow for this stretch of the river is 58.29 cumecs.

4.5.2 Water Quality

Environment Southland's State of the Environment (SoE) Report, released in 2000, states that the water quality of the lower Mataura River has been significantly affected by industrial and effluent discharges and surrounding land-use activities. In terms of faecal contamination, the lower Mataura River has faecal levels above the guideline value for contact recreation, while nitrogen levels are also significantly above guideline concentrations. Phosphorus levels are less elevated, although point sources of phosphorus, such as from sewage and meatworks discharges into the Mataura River, have resulted in increased algal growth. Both ammonia and BOD levels are below guidelines, with a long term trend of improvement.

The value of the Mataura River and its ecosystem is recognised both in a Statutory Acknowledgement that identifies Te Runanga o Ngai Tahu's cultural and spiritual associations with the river, and in a Conservation Order, set in 1997, that outlines water quality standards to be maintained in the river. Further standards for any discharge into the river are provided in the Proposed Regional Fresh Water Plan (PRFP) for Southland (refer Section 5.3.2).

4.5.3 Aquatic Ecosystems

The Mataura River supports a number of freshwater species, including trout, lamprey and numerous macro invertebrates such as mayflies. A Water Conservation Order for the Mataura River recognises its value as a world-class trout fishing river.

However, in the lower reaches of the Mataura River, the cumulative effects of discharges to the river (e.g. meatworks effluent) have resulted in poor ecosystem health (Environment Southland, 2000). This assessment is based on an evaluation of the Macroinvertebrate Community Index (MCI) of parts of the river, measuring the diversity of species and the environment's ability to support sensitive species.

A further contributor to poor ecosystem health is the confirmed establishment of the invasive algae *Didymosphenia geminate* (Didymo) in 2006. This algae has the potential to cause a decline in biodiversity through loss of suitable habitats for freshwater aquatic species, including fish, plants and invertebrates. Elevated nutrient levels (refer to Section 4.5.2) have been shown to increase Didymo biomass (Kilroy et al., 2005).

4.6 Summary – Suitability of Receiving Environment

The proposed WWTP site is appropriate for the receiving environment, as summarised:

- The gravel pit provides sufficient land area for the proposed WWTP
- The site is not very visible from the surrounding areas, as the gravel pit floor is set approximately 10 m below surrounding ground levels
- It is away from any urban areas, surrounded by farms. The nearest dwelling is 300 m southeast from the southern boundary of the gravel pit.

The Mataura River is a suitable receiving environment for the treated wastewater as:

- The treatment system is designed to produce treated effluent that meets regional and national guidelines for water quality
- The river flow provides a large dilution of contaminants (i.e. from 3,700x to 18,000x, at minimum and median flows, respectively)

5 Statutory Framework

5.1 Overview

This section provides an evaluation of the proposal in the context of the Resource Management Act 1991 (RMA) and the relevant Southland Regional and District Plans. The statutory assessment under the RMA, relevant to both the NoR and consent applications, is provided in Section 5.2. Relevant regulatory objectives and policies have been outlined in Sections 5.3 and 5.4.

5.2 Resource Management Act

The RMA provides the framework for all resource utilisation in New Zealand. The overriding purpose of the RMA is *"to promote the sustainable management of natural and physical resources"* (s.5). Sustainable management is to be achieved by avoiding, remedying or mitigating the adverse effects of activities on the environment.

Part II of the RMA, Sections 5 to 8, outlines the purpose and principles of the Act, which apply in relation to any resource use, development or protection

5.2.1 Resource Consent Application

Section 15(1) of the RMA states that no person may discharge any contaminant from any industrial or trade premises onto or into land unless the discharge is expressly allowed by a rule (in a regional plan and in any relevant proposed regional plan), a resource consent or regulations.

Resource consent applications must be prepared in accordance with Section 88 of the RMA. Applications must include a full description of the activity and an assessment of any actual or potential effects that the activity may have on the environment and the ways in which significant effects can be *"avoided, remedied or mitigated"*. Such assessments must be prepared in accordance with the Fourth Schedule of the RMA. This Schedule sets out the matters that should be included and those that should be considered.

Section 104 of the RMA requires that when assessing any discharge permit application any actual and potential effects on the environment of allowing the activity, and any relevant provisions of various planning documents must be considered. In addition, Sections 105 and 107 of the RMA outline further matters that must be considered for discharge permits.

Section 105 states that for an application for a discharge permit, the consent authority must have regard to –

(a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
(b) the applicant's reasons for the proposed choice; and
(c) any possible alternative methods of discharge, including discharge into any other receiving environment.

These issues have been considered further in Sections 2, 3, 4 and 7 of this document.

Section 107 addresses restrictions on the granting of discharge permits. It states that a consent authority may not grant a discharge permit allowing –

(a) the discharge of a contaminant or water into water; or

(b) a discharge of a contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water;

if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:

(c) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:

(d) any conspicuous change in the colour or visual clarity:

(e) any emission of objectionable odour:

(f) the rendering of fresh water unsuitable for consumption by farm animals:

(g) any significant adverse effects on aquatic life.

For this proposal it is considered that there will be no more than minor effects on the receiving surface water after reasonable mixing of the contaminants (refer to Section 6).

In assessing a resource consent application a consent authority can, under the provisions of Section 108 of the RMA, impose consent conditions as considered necessary to avoid, remedy or mitigate the adverse effects of the activity on the environment. Suggested consent conditions are outlined in Section 9.

5.2.2 Notice of Requirement

Any activity can be authorised either by a rule in a Regional Plan or District Plan, or through resource consent, or a designation. Sections 168 to 179 relate to the issuing of a notice of requirement by a territorial authority and the process that should be followed.

"[168A] (1) When a territorial authority proposes to issue notice of a requirement for a designation –

(a) For a public work within its district and for which it has financial responsibility; or

(b) In respect of any land, water, subsoil, or airspace were a restriction is necessary for the safe or efficient functioning or operation of a public work –

It shall notify the requirement in accordance with Section 93(2); and the provisions of Section 168, with all the necessary modifications, shall apply to such notice.

(3) When considering a requirement and any submissions received, a territorial authority must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to –

(a) any relevant provisions of –

(iii) a regional policy statement;

(iv) a plan or proposed plan; and

(b) whether adequate consideration has been given to alternative sites, routes or methods of undertaking the work if –

(ii) it is likely that the work will have a significant adverse effect on the environment; and

(c) whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought; and

(d) any other matter the territorial authority considers reasonably necessary in order to make a decision on the requirement.

On the basis of the information presented in this Notice of Requirement, it is considered that the effects on the environment as a result of the designation of the site will be of minor (Section 6).

The Notice of Requirement is reasonably necessary for achieving the objectives of Southland District Council (s.168A(3c)), particularly because:

- The Council wishes to signal its intent to use this site for wastewater treatment and discharge purposes
- The designation allows some feasibility if modifications and layout changes occur on the designated site, albeit the need for s.176A (Outline Plan) approval
- The designation sets a record in the District Plan for the community to fully understand the use and nature of the site
- The suggested conditions of the NoR safeguard the potential effects on the Mataura River from the proposed discharge
- To enable potential future expansion of the plant in accordance with the purpose and conditions of the designation, if and when new methods and technology find innovative ways to deal with wastewater

Consideration of alternative sites, routes and methods (s.168A(3b)) has been conducted. There is no other practicable site or method considered appropriate for the discharge from the oxidation pond (refer to Sections 2 and 7).

5.3 Relevant Planning Instruments

5.3.1 Environment Southland – Regional Policy Statement

The Regional Policy Statement (RPS) became operative in December 1997. The purpose of the RPS is to integrate the management of natural and physical resources of the region by providing an overview of the issues, policies and methods relevant to the whole region. All regional and district plans must be consistent with the RPS.

The RPS establishes sustainable resource management policies relating to tangata whenua; biodiversity; water quality, quantity and water bodies; landscape and soils; transport and the built environment; the air, coast, energy and solid waste; and natural hazards, and hazardous substances.

Objectives and policies related to this resource consent application, but not directly related in terms of Regional or District Plans, are assessed within this document, and include:

"***Chapter 5.1 Takata Whenua O Murihiku***
Objective 1.2 - To recognise the importance of wahi tapu, wahi taoka, mahika kai and the customary use of water to Kai Tahu.

Objective 1.3 - To incorporate Maori cultural and traditional spiritual values where appropriate into resource management decision making processes.

Chapter 5.2 Biodiversity
Objective 2.2 - To maintain and enhance the biodiversity of indigenous species within the Southland Region.

Policy 2.4 - Avoid, wherever practicable, remedy or mitigate adverse impacts on biodiversity and the natural processes of ecosystems.

Chapter 5.5 Water Quality
Objective 5.1- To sustain the quality of the Region's water resources so as to:
a. meet the needs of a range of uses, including the reasonably foreseeable needs of future generations
b. safeguard the life-supporting capacity of water and related ecosystems.

Objective 5.2 - To ensure that in the use and development of water and land resources, and the discharge of contaminants, water quality is maintained and wherever practicable enhanced.

Objective 5.3 – To ensure the taking, use, damming diversion of water and the discharge of contaminants into water does not compromise water quality standards established for the region.

Policy 5.2 – Require all point source discharges, after reasonable mixing, to comply with water quality standards.

Policy 5.4 - Utilise land treatment of liquid wastes where this can be undertaken in a sustainable manner and without significant adverse environmental effects.

Policy 5.5 – In preparing, implementing and administering Regional and District Plans and in considering resource consents, local authorities shall assess the effects of land use and development on ground water and surface water quality, including both point and non-point source discharges, and provided for any adverse effects to be avoided, remedied or mitigated.

Chapter 5.6 Lakes, Rivers and Wetlands
Objective 6.4 – To avoid wherever practicable, remedy or mitigate, the adverse effects of activities in, on, under, adjacent to, or over the beds of lakes, rivers and wetlands.

Policy 6.6 – Enhance the water quality, amenity and instream values of lakes, rivers and wetlands and promote bank stability.

Chapter 5.10 Built Environment
Objective 10.1 – To achieve the sustainable management of the built environment in such a way that the needs of future generations are met.

Policy 10.2 – Require that network utilities associated with the built environment be undertaken in such a manner as to avoid wherever practicable, remedy or mitigate effects on the quality of the natural and physical resources.

Chapter 5.12 Air Quality
Objective 12.1 – To protect the Region's air quality, and to enhance the air quality in areas where it has been degraded."

This application is considered to be consistent with the identified objectives and policies of the RPS, in particular because:

- The quality of treated wastewater is expected to meet all required receiving water standards after the zone of reasonable mixing, and in this way will help maintain biodiversity and water quality in the river
- For Option A the ponds are to be lined with a synthetic liner and there is very little potential in the system for seepage to groundwater. Option B is a contained process with no identifiable impacts on groundwater. Therefore, any potential effects on groundwater quality will be minor.
- Both of the proposed treatment processes are aerobic, thus minimising the generation of objectionable odours that may occur under anaerobic conditions. A 150 m buffer zone is incorporated into the designation to provide separation from sensitive receptors (e.g. neighbouring houses).

Further discussion and analysis of the expected effects of the proposed WWTP are covered in Section 6.

5.3.2 Proposed Regional Fresh Water Plan for Southland (Resource Consent Application)

The Proposed Regional Fresh Water Plan (PRFP) for Southland promotes the sustainable management of Southland's rivers, lakes and freshwater resources.

There are a number of policies and objectives that relate to this proposal. As well as this, there are rules which define the standards which must be met for any discharge to water.

Objective 2 *– To manage water quality so that there is no reduction in the quality of the water in any surface water body, beyond the zone of reasonable mixing for discharges.*

Objective 3 *– Maintain and enhance waterbodies so that water quality is maintained or improved, and therefore protects the values of bathing, trout and native fish habitat, stock drinking water, Ngai Tahu cultural values and the natural character of the water body.*

Policy 1 *– Recognise the differing characteristics of each water body class, including Mataura 3, and apply water quality standards established under any Water Conservation Order.*

Policy 3 *– Allow no discharges to surface water bodies that will result in degradation of the water quality beyond a zone of reasonable mixing.*

Policy 4 *– In waters other than natural state waters, manage discharges to meet or exceed water quality standards, and so avoid levels of contaminants in water or sediments that could harm the health of humans, domestic animals, including stock, and/or aquatic life.*

Policy 6 *– Encourage best management practices to:*

- Reduce faecal contaminant inputs
- Reduce nutrient inputs
- Avoid or reduce discharges that increase BOD
- Reduce contaminants that alter water colour and clarity

Policy 7 *– Prefer discharges to land over discharges to water where this is practicable and the effects are less adverse.*

Policy 8 *– Prefer point source discharges to water at times of high flow over discharges at normal or low flows, and ensure that where discharging does take place at low flows, the effects that could not be practically avoided are minimised.*

Policy 9 *– In determining the zone of reasonable mixing, minimise the size of area where water quality standards will be breached. Included in the considerations should be:*

- Aquatic ecosystem values in area
- Need for fish passage
- Users of the water body, adjacent to and downstream of discharge

Policy 10 *– Promote, where appropriate, the use of diffusers for point source discharges into water.*

Policy 16 *– Use non-regulatory methods to promote good environmental practice.*

Policy 17 *– Assess on an ongoing basis whether the adoption of best management practises has resulted in improvements and consideration the introduction of further interventions if improvements have not resulted.*

The proposed discharge of treated wastewater into the Mataura River from the Edendale - Wyndham WWTP is considered to be consistent with the above objectives and policies, because:

- While the discharge is not avoidable, the treated nature of the discharge will ensure that contaminants are minimal and the state of the Mataura River maintained
- There is considered to be a reasonable zone of mixing so as to avoid or mitigate any adverse effects on freshwater bodies
- The outfall to the Mataura River utilises multiple diffusers down the bridge piers

The Mataura River is covered by a Water Conservation Order, set in 1997. Within the Order, provisions and standards are outlined for the river water quality to be met after a zone of reasonable mixing from any discharge to the river. These standards are reflected in the rules of the PRFP, as follows:

Rule 2 *– Discharges to surface water bodies that meet water quality standards*
The discharge of any contaminant into a surface water body, outside Natural State Waters, where the discharge will not reduce the water quality below the standards listed in the following table for a surface water body classified as 'Mataura 3', is a discretionary activity.

Standards	
1	Any discharge is to be substantially free from suspended solids, grease and oil.
2	The daily maximum ambient water temperature shall not be increased by more than 3°C, as the result of any discharge.
3	The pH of the water must be within the range 6 to 9, except when due to natural causes.
4	The water must not be tainted so as to make them unpalatable, nor must they contain toxic substances to the extent that they are unsafe for consumption by humans or farm animals, nor must they emit objectionable odours.
5	There shall be no bacterial or fungal slime growths visible to the naked eye as obvious plumose growths or mats. Note that this standard also applies to within the zone of reasonable mixing for a discharge.
6	There must not be any destruction of natural aquatic life by reason of a concentration of toxic substances.
7	The natural colour and clarity of the waters must not be changed to a conspicuous extent.
8	The oxygen concentration in solution in the waters must not be reduced below 5 milligrams per litre.
9	Fish shall not be rendered unsuitable for human consumption by the presence of contaminants.

For Option A the pond system for treating the wastewater will be designed to New Zealand Standards. The quality of the treated effluent being discharged into the Mataura River is expected to meet quality standards achieved by other secondary-treatment WWTPs in Southland (refer to Table 7, Section 6.2.1.1). For Option B the Biofiltro system is expected to treat the wastewater to a quality that is equal or better than a well designed pond system, refer to Section 3.2.2.

Additionally, the rate of dilution occurring in the Mataura River is high (refer to Table 7, Section 6.2.1.1). Because of the reasonable mixing zone and understanding of the potential environmental effects of this discharge, all the above standards will be met. The discharge will be monitored at several points within the treatment and disposal system to ensure the treatment process is effective and that the discharge ultimately meets water quality standards. Further details on the proposed monitoring regime are provided in Section 9.

5.3.3 Southland District Plan

5.3.3.1 Notice of Requirement

Section 3.13 of the Southland District Plan (SDP) relates to public works and network utilities. A number of objectives and policies relate to this notice of requirement, including:

Objective PWN.1 – To provide for the efficient development, operation and maintenance of public works and network utilities throughout the District, while as far as practicable avoiding, remedying and mitigating potentially adverse environmental effects.

Objective PWN.2 – To make appropriate provision in the Plan for the activities of public work and network utility operators.

Policy PWN.1 – To minimise or avoid the adverse effects of public works and utilities.

Policy PWN.4 – To provide for network utility operations and other essential public services which are necessary for the well-being of people and communities.

Policy PWN.5 – To encourage public work and network utility operators to design work facilities and operations with minimal adverse visual impact where this can be achieved without inhibiting operation or efficiency.

The proposal is consistent with the above objectives and policies, particularly as the community wastewater scheme serves the communities of Edendale and Wyndham in treating and discharging of sewerage in a sustainable manner.

Rule PWN.2 – Restricted Discretionary Activities throughout the District:

The following are restricted discretionary activities:

- *Pumping Stations for public water, drainage and sewer pipes.*

Rule PWN.6 – Separation distances from oxidation ponds, sewerage and wastewater treatment facilities:

The following separation distances shall apply:

- *150 metres from Isolated Residential buildings primarily occupied by people for whatever purpose.*
- *300 metres for any Urban Resource Area.*

Rule PWN.7 – Designations:

All requirements for designation are shown on the District Planning Maps.

The proposed new wastewater treatment and disposal system complies with all but one rule in the District Plan, Rule PWN.2. This rule states that all pumping stations associated with sewer pipes are restricted discretionary activities. Council may only extend its discretion to consider standard of construction and the potential effects on amenity values, and sites of significance to the Tangata Whenua. Land use consent is sought for the six pump stations within the Edendale – Wyndham sewerage reticulation system in a separate application. These pump stations will be designed to subdivision standards and New Zealand standards, and therefore incorporate engineering best practice in their design and construction. Also, the standard pump station design utilises a duty/standby pump system, with SCADA and alarm, and hence, any potential adverse effects both in construction and operation will be minor. Further discussion on these pump stations is contained in the land use consent application.

With regard to Rule PWN.6, a 150m buffer zone will extend around the new designation. No existing dwellings are within the buffer zone. The District Plan Maps 34, 43 (Edendale URA) and 56 (Wyndham URA) show the site is at least than 1.8 km from the nearest boundary of the Urban Resource Area (URA) of Edendale, and 1.9 km from the URA boundary of Wyndham. The site is outside the Potential Floodable Area for the Mataura River, as shown on District Plan Map 34.

5.3.3.2 Soil Displacement Activities

Rule PRA.4 – Soil Displacement Activities in Section 4 Rural Resource Areas of the Southland District Plan defines permitted and discretionary activities in the follow manner:

Rule PRA.4 – Soil Displacement Activities

(i) Permitted Activities

Any activity whose effect is to displace soil, subsoil or rock on a property for the purposes of extracting gravel, rock or soil is a permitted activity provided that:

(a) Where material is extracted for use the following shall apply:
Volume displaced shall not exceed 1,000m³ over a 12-month period provided that the total amount extracted over any time period does not exceed 3,000m³ from one site unless a resource consent is received under Rule PRA.4(iii)

(iii) Discretionary Activities
(a) Any activity that does not comply with (i) and (ii) above is a discretionary activity.
(b) Except as provided for under (i) and (ii) above, any activity whose effect is to displace soil, subsoil or rock for the purpose of extracting or investigation into extraction of minerals (as defined by the Crown Minerals Act 1991), topsoil and peat from the ground and for the construction of tunnels is a discretionary activity.

An application under this rule in addition to the information required under Rule APP.1 shall include a Management or Operation Plan in such detail as corresponds with the scale and significance of the actual or potential effects. The following matters will be considered in any assessment of such an activity;

(a) Compliance with the rules contained within the District Plan, (in particular, rules in relation to heritage sites, including waahi tapu.
(b) Operations for removal, storage and future use of topsoil and subsoils.
(c) Proposals for stockpiling material and its effect on the environment.
(d) Water requirements, disposal of water and control of runoff.
(e) Leachate control and treatment.
(f) Engineering structures.
(g) Hours of operation.
(h) Transportation and access requirements.
(i) The effects of noise, vibration, dust and smell.
(j) Effect on essential services such as roading and utility reticulation.
(k) Possible future use of the property.
(l) Progressive restoration and rehabilitation of the site including landscaping.
(m) Fire safety requirements.
(n) Likely effect on residents in the locality.
(o) The provisions of the Operation Programme or Management Plan developed.

Since the proposed volume of extracted gravel (approximately 5,000m³) is greater than the annual volume of 1,000m³ allowed for a permitted activity, the proposed activity is discretionary under the rule and is required to address the matters listed above in a level of detail that corresponds to the scale and significance of the effects.

5.3.4 Environment Southland Regional Air Quality Plan

The purpose of this document is to maintain and enhance Southland's existing air quality and to avoid unnecessary regulation. It is concerned with the effect of discharges on air quality, public health and the environment; the release of greenhouse or ozone depleting gases; and the effect of objectionable and noxious discharges.

Rule 5.5.3 states that any discharges of contaminants into air from the following industrial or trade premises are permitted activities, provided that the criteria that follow the list are met:

- (9) Foulwater treatment processes with a design capacity population equivalent BOD5 of less than 10,000 people.

The population being serviced by the Edendale – Wyndham WWTP is significantly less than 10,000 people, and therefore a discharge permit to discharge contaminants to air from the Edendale – Wyndham WWTS is not required. Both of Option A and Option B are aerobic processes and thereby minimise any odours. Also, in both cases, the screenings from the inlet screen will be stored in a covered skip and regularly removed from the site.

5.4 Other Planning Documents

5.4.1 Ngai Tahu Fresh Water Policy

This document has been prepared by Te Runanga O Ngai Tahu as its Freshwater Policy Statement. Its focus is the management of the freshwater resource within the rohe of Ngai Tahu. As water is central to all life, and as a taonga provided by Maori ancestors, the present generation of Ngai Tahu is responsible for ensuring that this taonga continues to be available for future generations.

Objectives and policies of specific relevance to this application are:

Mahinga Kai
Objective - To maintain vital, healthy mahinga kai population and habitats capable of sustaining harvesting activity.

Policies: Ensure that activities in the upper catchments have no adverse effect on mahinga kai resources in the lower catchments.

The proposed wastewater treatment facility will treat the effluent to a quality that will ensure no adverse effects on the Mataura River, protecting downstream mahinga kai resources.

5.4.2 Te Whakatau Kaupapa O Murihiku

This document is a resource management strategy, which expresses Kai Tahu beliefs and values, which regulatory authorities need to have regard to, as part of their decision-making processes. It can be used as a basis for consultation between Treaty partners, in accordance with the principles of the Treaty of Waitangi.

Te Whakatau Kaupapa o Murihiku identifies values, objectives, policies and outcomes sought by the tangata whenua of Murihiku.

Policies of relevance to this application are:

- *That the Southland Local Authorities should actively encourage the disposal of effluent onto land rather than into water, provided that the groundwater is not polluted in the process.*

The evaluation and selection process undertaken in the conceptual development of this proposal initially focussed on opportunities for land disposal, in acknowledgement of the above policy. However, site

investigations indicated a lack of available sites for land application of the effluent. Consequently alternative options were assessed for viability, with disposal to surface water deemed most suitable. Further details on this evaluation process have been provided in Section 2.5.

5.4.3 Statutory Acknowledgement for Mataura River

The Mataura River is covered by a Statutory Acknowledgement. This acknowledgement recognises Te Runanga o Ngai Tahu's cultural, spiritual, historic and traditional association with the Mataura River. This requires that consent authorities have regard to this Statutory Acknowledgement in processing consent applications, and that summarised consent applications are forwarded to Te Runanga o Ngai Tahu.

For Option A, the inclusion of a wetland component in the treatment process provides for Maori cultural aspirations of land contact of the treated effluent, prior to reaching the Mataura River. In Option B the Biofiltro process mimics natural soil processes in its treatment of the wastewater, and converts human waste into a natural product. This too provides the essential contact with land and also conversion of human waste before entering a natural water body.

Throughout the development of this sewerage scheme for Edendale-Wyndham, progress updates have been provided to local Iwi, through Te Ao Marama Inc., as part of the general consultation process, and written approval for the proposal is currently being sought from them. Further details on consultation are provided in Section 8.

6 Assessment of Effects

6.1 Positive Effects

There are significant public health benefits to the proposed community sewerage scheme. The combined scheme will eliminate the health risk posed by the failing soakholes in Edendale, both in terms of exposure to untreated sewerage and contamination of drinking water sources. In Wyndham, the community scheme will remove the health risk and odour nuisance associated with the discharge into the unnamed branch of the Mataura River.

With the proposed WWTP, the level of treatment of the wastewater will be greatly increased from the existing septic tanks, and the disposal of the treated wastewater will now be done in a controlled, acceptable manner. Any public health risk from the proposed WWTP will be restricted to the treatment plant site, which is to be designated for wastewater purposes and is only accessed by trained operators.

Environmental benefits from the proposed WWTP include:

- A higher quality of treated wastewater entering the receiving environment
- Sufficient treatment occurring within the WWTP so dilution is not relied on to meet water quality guidelines (in contrast to the existing Wyndham outfall)
- Reduction in the potential contamination footprint, from soakholes dispersed through Edendale to a compact treatment system that discharges a higher quality effluent as a controlled point source (although the discharge is diffused across several outfall pipes at the bridge)
- Centralised management of wastewater, by the Territorial Authority

6.2 Effects on Natural Resources

6.2.1 Effects on Water Resources and Aquatic Ecosystems

6.2.1.1 Relevant Water Quality Standards and Expected Effluent Quality

In line with the approach first outlined in Section 2.5.1, the proposed treatment system aims to produce treated wastewater of a quality that will meet the water quality guidelines of the receiving waters after the zone of reasonable mixing. Table 6 provides a summary of the relevant environmental guidelines for the receiving river environment. While the Ministry for the Environment (MfE) and the Australian New Zealand Environment and Conservation Council (ANZECC) produce national guidelines, Environment Southland also produces its own specific water quality standards in Appendix X of the Proposed Regional Fresh Water Plan for Southland. However, the national guidelines are arguably not inappropriate for use, as they are more stringent than many of the standards of the Proposed Regional Fresh Water Plan for Southland.

Table 6: New Zealand Freshwater Quality Guidelines (Including Southland Freshwater Plan)

Water Quality Parameter	Guideline Value	Reference
Contact Recreation		
E. Coli	< 260 per 100 mL(Acceptable) 260-550 per 100 mL (Alert mode) <130 per 100 mL in any sample	MfE (2003) Southland Fresh Water Plan
Faecal Coliforms	< 150 per 100 mL (contact recreation) < 100 per 100 mL (stock water supply)	ANZECC (2002)
Visual Clarity (black disc)	>1.6 m visual clarity > 1.3 m visual clarity	MfE (1994) Southland Fresh Water Plan
Aesthetic Quality		
Visual Clarity (black disc)	< 20% reduction in visual clarity	ANZECC (2002)
Hue (Munsell scale)	< 10 point change	MfE (1994)
Bacterial or fungal slimes	No bacterial or fungal slime growths visible to the naked eye as plumose growths or mats	Southland Fresh Water Plan
Nuisance growths	No conspicuous algal growths or sewage fungus (see nutrient guidelines below)	ANZECC (2002)
Aquatic Ecosystems		
Ammoniacal Nitrogen (total)[1]	< 0.90 g/m^3	ANZECC (2002)
Dissolved Inorganic Nitrogen[2] (nitrate + ammonia)	< 0.04 – 0.10 g/m^3	MfE (1992)
Dissolved Reactive Phosphorus[2]	< 0.015 – 0.03 g/m^3	MfE (1992)
Soluble BOD[3]	< 2.0 g/m^3	MfE (1992)
pH	7.2– 7.8	ANZECC (2002) and Southland Fresh Water Plan
Dissolved Oxygen	>98% saturation	ANZECC (2002)
Fish and other aquatic organisms shall not be rendered unsuitable for human consumption by the presence of contaminants		Southland Fresh Water Plan

1. To protect fish from ammonia toxicity
2. To prevent nuisance algal growths
3. To prevent sewage fungus

Table 7a and 7b provide a comparison between the expected effluent quality from the treatment system and the contaminant levels that are expected after dilution in the river. The tables show that even in low flows, there is a high level of dilution occurring in the mixing zone.

Guideline values for this comparison are taken from the national ANZECC and MfE guidelines. As can be seen from Table 6, these national guidelines generally use more numeric qualifiers than the more descriptive Environment Southland guidelines.

Table 7a: Expected Effluent Quality and Theoretical Downstream Concentration in Comparison to Guideline Values

Contaminant	Discharge Median Concentration [1]	Background Concentration [2]	Theoretical Downstream Concentration [3]	River Guideline Value [4]
Faecal Coliforms (cfu/100mL)	5,000	0	<50	100 *or* 150
Ammoniacal Nitrogen	21	0.039	0.045	0.9
Dissolved Inorganic Nitrogen (g/m^3)	25	0.669	0.676	0.04 - 0.10
Dissolved Reactive Phosphorus (g/m^3)	5	0.025	0.027	0.015 – 0.30
BOD (g/m^3)	30	0.800	0.802	2

Table 7b: Expected Effluent Quality and Dilution in Mataura River

Contaminant		Median [1]	95th %ile [1]	Guideline Value [4]	Required Dilution (from median values)	Expected Dilution [3]	
						At Minimum Flow	At Median Flow
BOD	g/m^3	30	100	2	15	3,715	18,800
Suspended Solids	g/m^3	70	120	Max. 20% reduction in visual clarity [5]	18	3,715	18,800
Ammoniacal Nitrogen	g/m^3	21	28	0.9	24	3,715	18,800
Dissolved Reactive Phosphorus	g/m^3	5	6	0.015 - 0.03	167 - 333	3,715	18,800
Faecal Coliforms	cfu/100 mL	5,000	150,000	100	50	3,715	18,800

1 Refer to Table 4

2 Background values taken from Fonterra outfall 1999 consent review report, mean concentrations downstream of outfall.Guidelines values based on either contact recreation or protection of aquatic ecosystems, MfE and ANZECC (refer to Table 6)

3 Based on: Minimum recorded flow in Mataura River in the vicinity of the proposed WWTP outfall is 11.52 cumecs, long-term median flow is 58.29 cumecs (Source: Environment Southland: Annual Environmental Monitoring Report 2004/05, 2005). Outflow under average dry weather flow conditions in the WWTP is 3.1 L/s.

4 Guidelines values based on either contact recreation, stock water, or protection of aquatic ecosystems, MfE and ANZECC (refer to Table 6)

5 Quinn and Hickey (1993) concluded that increases in suspended solids of more than ~4 g/m^3 resulted in marked reductions (greater than 50%) in sensitive vertebrate groups. Therefore the required dilution value is based on a maximum of 4 g/m^3.

6.2.1.2 Mixing Zone

The discharge into the Mataura River will be through diffusers on the piers of the Edendale – Wyndham Road Bridge. Discharging the treated wastewater like this, along a dispersed front, will aid in rapid mixing and dilution of the treated wastewater, and help minimise the area of non-compliance (mixing zone).

The non-compliance or mixing zone allows mixing and dilution of the discharge with the river, with its boundary defined as the point beyond which the water quality standards must be met. Monitoring downstream of the mixing zone, as part of the consent conditions, will confirm that the standards are being met. In line with consent conditions for the nearby treated wastewater discharge at the Fonterra outfall, it is proposed to have the downstream monitoring point 350 m downstream of the bridge discharge (refer to Figure A5, Appendix A).

6.2.1.3 Aquatic Ecosystems

Adverse effects on aquatic ecosystems are not expected, as discussed below:

Physical Effects

Suspended solids are the primary source of reduced visibility and light penetration in water. Both of the proposed options remove these suspended solids; through the vegetation cover resulting in algal die-off and subsequent settling out within the wetlands for the pond-based Option A, and through the filtration process within the Biofiltro unit in Option B. Also, smothering of aquatic life through settling of solids (particulate organic matter) is not expected to be an issue, with the two options settling out a significant portion of solids. As noted in Table 7, Quinn and Hickey (1993) concluded that increases in the suspended solids above ~4 g/m^3 resulted in marked reductions (greater than 50%) in sensitive invertebrate groups. At the expected 95th percentile suspended solids discharge of 120 g/m^3, the increase in the river suspended solids concentration will be significantly less than 0.1 g/m^3.

Dissolved Oxygen Depletion

Due to the low organic content (BOD) of the discharge, there will be no detectable decrease in the dissolved oxygen levels downstream of the discharge. The low organic content will also avoid development of any heterotrophic growths (sewage fungus, as is currently growing at the existing Wyndham outfall area).

For pond systems there are natural diurnal variations in dissolved oxygen (DO) within the treated effluent, due to temperature fluctuations and changes in wind conditions. The open water zones within the wetland will help to raise DO levels prior to discharge to the river.

Nitrogen and Phosphorus

Studies of the Mataura River and its ecosystem health indicate that the river has elevated nitrogen and phosphorus levels, primarily as a result of agricultural runoff and treated effluent discharges (both industrial and domestic) throughout its catchment. The potential consequences of these elevated nutrient levels include excessive periphyton growth and an imbalance in the species structure of the aquatic community. A specific treatment step can be included in the WWTP process to reduce phosphorus levels prior to discharge. Phosphorus is targeted as it is the limiting nutrient for periphyton growth.

However, an assessment of the phosphorus loading contributions to the Mataura River (Appendix D) from other treated wastewater discharges shows that the mass loading from the proposed Edendale – Wyndham WWTP is minimal due to dilution effects.

Ammonia

Ammonia is toxic to fish, with an ANZECC guideline value of 0.9 g/m^3 (refer to Table 5). With an expected ammonia concentration of ~21 g/m^3 (from expected median concentration values), there may be an area around each diffusers where the ammonia concentration is above the guideline value until sufficient dilution occurs. A schematic of this effect is shown in Figure A5, Appendix A.

There is potential for these elevated ammonia zones to block fish passage if they are allowed to connect with the adjacent zones across the full width of the river. To avoid this, only two of the three diffusers from the bridge will be operating at any one time, and therefore also providing general contingency in the discharge system (e.g. for maintenance).

6.2.1.4 Groundwater

The gravel pit has existing manmade drains across the site that control the groundwater levels (Figure A4, Appendix A). The manmade drain discharges into a natural waterway in the neighbouring farmland. The proposed upgrade of the manmade drains will remove the exotic weeds that are currently blocking the drain. Ultimately, the capacity and water level of the drain will not be altered.

Option A: Pond Based

The synthetic lining of the ponds and wetlands will prevent any seepage to groundwater, and therefore there will not be any impact on groundwater quality at the site as a result of the WWTP operations. The synthetic liner material will be robust and durable. A system of underdrains will be installed as a contingency measure to protect the liner against any occurrences of high groundwater and also allow monitoring of any seepage from beneath the liner to confirm the integrity of the lining system.

Option B: Biofiltro

The Biofiltro unit, along with the inlet screen and UV unit, will be installed at existing levels in the gravel pit. Groundwater levels are typically 0.5 m below the existing pit floor level, and are controlled by existing manmade drains across the site. The development of the proposed wastewater treatment plant will not interfere with groundwater quality, as the treatment units are all self-contained.

6.2.2 Effects on Terrestrial Ecosystems

It is expected that there will be minimal impact on terrestrial ecosystems, as the site area is well disturbed, with a history of gravel extraction that has left the site devoid of native vegetation. The ecological community that may have since developed in the site once gravel extraction stopped is likely to have low biodiversity values, and be formed mostly of primary successional species.

The pit walls are vertical, and have been like this for several years with no evidence of slippage. However, should this occur, the ponds in Option A have been designed with additional bank width on the external bunds to prevent any debris falling into the ponds. The finished bunds of the ponds will provide some buttressing of the pit walls. In Option B the Biofiltro units and other required plant will be set back from the pit walls.

6.2.3 Summary – Effects on Natural Resources

In summary, no significant adverse effects are expected on the aquatic and terrestrial ecosystems as a result of the operation of the proposed Edendale – Wyndham WWTP. The proposed treatment process has been designed to meet relevant receiving environment guidelines.

6.3 Effects on Historic and Cultural Values

6.3.1 Historic Values

The gravel pit site has no historic values. The proposed WWTP will not impact on any other area of historic importance.

6.3.2 Cultural Considerations

A review of the District Plan does not show any archaeological sites or wahi taonga (special places) within the vicinity of the proposed WWTP site. Throughout consultation with the community, including Te Ao Marama as representative of Kai Tahu in the area, no further indications were given of the site being in the proximity of wahi taonga.

As further discussed in Section 8, consultation with the community concluded that land based disposal was not a viable option. However, both of the proposed options demonstrate a provision towards the cultural preference of land contact and conversion of the effluent from human waste before discharge to a natural water body. Option A includes a wetland component as part of the treatment process acting as a land passage for the treated effluent. In Option B the proposed Biofiltro treatment process mimics soil processes, converting human waste to a natural product as the wastewater passes through the sawdust based trickling filter. Consultation with the local Iwi indicates acceptance of the Biofiltro system based on the treatment process, the expected better performance and the inclusion of a UV disinfection system.

6.4 Effects on Visual and Amenity Values

6.4.1 Noise

It is expected that the level of noise for both options will be significantly below the District Plan requirements (Rule PRA.8), which state a limit of 60 dBA (L_{10}), provided that corrected noise levels do not exceed 40 dBA (L_{10}) at the boundary of an Urban Resource Area or at the notional boundary of any building used residential, hospitality, tourist, educational or health activities. Any noise in Option A will be restricted to soft water and motor noise from the aerators. The aerator noise is unlikely to exceed 40 dBA, with the nearest neighbouring activity being the Wyndale Transfer Station, 150 m S of the site boundary. It is therefore unlikely that there will be any noise nuisance from the aerators. Option B will have negligible noise since the treatment process is based on gravity flow of the wastewater, with minimal mechanical or moving parts.

In the ongoing operation of the WWTP, there will be limited traffic at the site, with typical operator visits of one per day. This is similar, or less than, present vehicle movements at the sites from the transport trucks. Therefore, adverse impacts from vehicle noise are expected to be minimal.

6.4.2 Odours

In general, the aerobic treatment process of the two proposed WWTPs will minimise the production of stronger odours (refer to Sections 1.4). Screenings from the inlet screen will be stored in a covered skip and regularly removed from the site, thereby controlling any potential odour or fly issues. Furthermore, the site design follows standard criteria for maintaining separation distances to neighbouring dwellings that help ensure neighbours are not impacted by any odours.

6.4.3 Visual Amenity Values

Wastewater activities are often perceived as undesirable land uses. However, the gravel pit site in its current state is considered to have few practical future uses. It is essential that the wastewater for the communities of Edendale and Wyndham are effectively managed to remove the existing public health risk, and the largely unused gravel pit provides an appropriate site for treating the wastewater.

A particular advantage of the gravel pit is that the site is largely hidden from the adjacent road and farmland by the surrounding pit faces, minimising any visual impacts. A Notice of Requirement is lodged through this application to designate the site for sewerage works. As part of this, a 150 m buffer zone will extend out from all open water sections of the treatment system to delineate the required separation distances from the ponds to neighbouring dwellings. Normal farm buildings are allowable within this zone. A plan of this proposed designation area is shown in Figure A3, Appendix A.

6.4.4 Public Health

As described previously, the proposed WWTP will remove the existing health risks from the septic tank and soakhole systems. With the change to a surface water discharge, there is potential for there to be new health risks associated with contact recreation or fishing within the mixing zone. However, as can be seen in Table 7a in the previous section, contact recreation standards will be maintained in the Mataura River downstream of the mixing zone. In the area of the mixing zone, signs will be placed along the river bank to warn the public against attempting to access the river in that area.

6.5 Construction Effects

6.5.1 Noise and Dust

Within the suggested conditions of the designation, it will be required by the contractors to:

- Suppress construction dust through use of a water tanker
- Restrict hours of work to 0700-1800 Monday to Saturday, with no work to take place on Sundays or public holidays

These conditions will help ensure dust and noise nuisance is kept to a minimum.

Control of sediment into the open drain will be done by creating a settlement pond in the drain nears it outlet to the neighbouring waterway. This pond will reduce the flow velocity (and hence energy), allowing suspended sediments to settle out on the floor of the pond.

6.5.2 Construction Traffic and Safety

Access to the gravel pit is from a gravel road off the Edendale – Wyndham Road (Figure A2, Appendix A). The intersection with the main road is along a straight section of the Edendale – Wyndham Road, with good visibility. There will be sufficient area within the gravel pit site for construction vehicles to manoeuvre as needed.

6.6 Assessment of Effects for Gravel Extraction

Soil displacement activities are defined as either permitted or discretionary under rules PRA.4 (i) and (iii), Section 4.1 Rural Resource Areas of the Southland District Council District Plan. The proposed gravel extraction activity is not a permitted activity as the volume of extracted soil is approximately 5,000m^3, which is greater than the maximum 12 monthly volume of 1,000m^3 for a permitted activity.

Therefore, approval is sought for the extraction of gravel from parts of Lot B to be used solely for the construction of bund walls for a pond-based wastewater treatment system on the old gravel pit site. An Operation Plan for the gravel extraction is included in Appendix G. This plan has been prepared to a level of detail that corresponds to the scale and significance of the expected effects of this activity, which are relatively minor due to the activity being a small extension to an existing gravel pit site. The old gravel pit is approximately 30,000m^2 and has been established for many decades. The proposal will integrate the comparatively minor area of Lot B, approximately 1,500m^2, into the gravel pit and extend the gravel extraction toward the boundary of Lot B.

Listed below are the matters that require to be addressed in considering this gravel extraction as a discretionary activity. Further detail can be found in the Operation Plan.

Compliance with the rules contained within the District Plan
As the site has been established as a gravel pit for many years, it is expected that there is no heritage value or significance in relation to waahi tapu.

Operations for removal, storage and future use of topsoils and subsoils
The top soil layers will be used for landscaping onsite and the gravel subsoil will be used for building pond bund walls for the proposed wastewater treatment facility.

Proposals for stockpiling material and its effect on the environment
Top soil will be temporarily stockpiled before landscaping and will be placed onsite away from the drainage waterways. Any fuel storage will follow best practise for site management and will be separated from waterways. No gravel stockpiling will be necessary as the excavation will follow a cut and place method.

Water requirements, disposal of water and control of runoff
Existing drains will facilitate the passage of stormwater and will continue to control the groundwater levels on site.

Leachate control and treatment
No leachate is expected since the proposed excavation is entirely cleanfill gravel.

Engineering structures
No engineering structures are required for the gravel extraction.

Hours of operation
Site operation will be restricted to normal daylight hours with no work on Sundays and as limited by the proposed conditions.

Transportation and access requirements
The existing road to the old gravel pit site will be used for vehicle access.

Noise, vibration, dust and smell
No excessive noise, vibration, dust or smell is expected. The isolation of the site as part of an existing gravel pit within a rural environment will mitigate the nuisance impact of any noise, vibration, dust and smell effects.

Effect on essential services
There will be no change to services or infrastructure.

Possible future use of the property
The site is being developed for wastewater purposes only.

Progressive restoration and landscaping of the site
The site will be landscaped and developed fit for purpose for the wastewater treatment facility.

Fire safety
No special fire safety considerations are required.

Effect on residents in the locality
The effect on residents will be minimal due to the existing nature of the site as a gravel pit, the relative isolation and the rural surrounding environment.

Consultation
The two adjacent landowners have been consulted regarding the proposed gravel extraction and have indicated their support for the proposal.

Operation Plan
An Operation Plan has been included as Appendix G.

From the above assessment, it is concluded that the effects of the proposed gravel extraction will be minimal.

7 Consideration of Alternatives

An evaluation of alternatives (including consideration of the receiving environment, treatment process and site location) was first discussed in Section 2.5. The following is a summary of the options considered for the Edendale – Wyndham Sewerage Scheme.

7.1 Suitable Receiving Environment

The two options for receiving environment were:

- Surface water
- Land, and ultimately, groundwater

Insufficient land area was available locally, and so it was decided that the treatment system would discharge to surface water, namely the Mataura River.

7.2 Achieving the Required Level of Treatment

The Mataura River has a history of degraded water quality, as a legacy of farming runoff and effluent discharges (both domestic and industrial). It has elevated nitrogen and phosphorus levels, and therefore is sensitive to further contributions from the WWTP discharge.

The general alternatives for the treatment process that were considered ranged from mechanical unit processes to natural pond systems. The pond-based system was initially favoured as it has less operational requirements, less capital outlay, and is similar to other SDC WWTPs, which are typically pond-based, while providing adequate treatment for what the receiving environment needs. SDC have since included Option B as a possible alternative to the pond-based system. One of the benefits of the Biofiltro system is the treatment quality achieved with a final effluent quality that is equal or better than a well designed pond system.

7.3 Site Location

Four potential sites were selected for further investigation. The Gravel Pit site provided the greatest advantage, including currently being unused apart from temporary storage of materials, providing a visual barrier from neighbouring properties, and allowing a diffused discharge from the Mataura River bridge. Hence, during the concept development stage it was endorsed by the Council and community and advanced as the preferred treatment plant site.

7.4 Final Treatment Design

To reduce the required pond footprint, an aerated lagoon was selected over a passive oxidation pond. This pond design will also allow for the addition of phosphorus removal if it is deemed necessary in the future.

Options for the discharge into the Mataura River were considered, with co-sharing of the Fonterra outfall initially preferred. Fonterra indicated that this would not be viable, due to insufficient capacity in their outfall pipe. Therefore, the option of discharging via diffusers from the Edendale – Wyndham Road bridge presented the next best option, in terms of minimising both the impact on the receiving environment and the length of the outfall pipe from the WWTP.

8 Consultation

SDC has undertaken consultation on the proposed wastewater treatment and disposal scheme through several meetings with the Community Boards of Edendale and Wyndham, the communities and other stakeholders. The stakeholders that have participated in these discussions are:

- Fish and Game
- Te Ao Marama Inc.
- Department of Conservation
- Environment Southland
- Public Health South
- Neighbouring landowners – P and N Ferguson, G and L McEwan

A copy of the Report to Council in August 2006 is provided in Appendix B. The report summarises the issues raised during public submissions on the proposed sewerage scheme, and provides Council comments on resolving these issues.

As first outlined in Section 2.5 (Evaluation and Selection of the Proposed Treatment and Disposal System), several important design issues went through the consultation process to determine the preferred approach, as follows:

1. *Site selection* – the Council and community endorsed the gravel pit as the preferred site, from a selection of four potential sites
2. *Nutrient removal* – it was agreed that phosphorus removal was not required in the treatment process, although the proposed design will allow the addition of phosphorus removal if it is deemed necessary in the future
3. *Discharge location* – the stakeholders indicated that co-sharing with the Fonterra outfall was preferred. However, discussions with Fonterra indicated this was not viable, and so a diffuse discharge off the Edendale – Wyndham Road bridge was resolved to be the next best option
4. *Groundwater control* – feedback from consultation indicated that dewatering at the gravel pit site was to be avoided where possible, and therefore, the ponds have been designed with their floor level on the existing pit base
5. *Material sourcing* – discussions with neighbouring landowners have confirmed one is willing to sell some land to provide supplementary material for the pond banks
6. *Cultural consideration and need for wetland* – the inclusion of a wetland was considered necessary to meet cultural expectation and "polish" the effluent prior to disposal. Consultation with the local Iwi indicates the acceptability of the Biofiltro process and that the requirement of a wetland is adequately substituted for by the better quality provided by the process and the UV disinfection system.

As there was extensive consultation in developing the original concept for the wastewater treatment system, written approvals have not been sought. There will be further opportunity for public comment during the public notification stage for this application.

9 Proposed Consent Conditions

9.1 Monitoring Philosophy

The monitoring conditions for the discharge to surface water are provided in Section 9.2. It is suggested that it would be most effective and informative for the operation of the treatment plant if the monitoring results were reported against the expected values, given in Table 4, Section 3.2.2, as a measure of the performance of the system.

During consultation, there has been discussion on the most appropriate frequency of monitoring, with consensus that quarterly monitoring in the environment would be effective and acceptable. It is considered that a consistent frequency of monitoring across the site would be most effective for consent compliance monitoring, and therefore it is concluded that quarterly compliance monitoring be undertaken for both the receiving environment and treatment system. Monthly performance monitoring of the treatment system could be undertaken initially to benchmark the performance of the system.

It should also be noted that the monitoring of flow volume is to be undertaken at the inflow to the WWTP, while the wastewater quality sampling will be undertaken where the treatment process is complete. This is at the outflow of the wetland for Option A and at the outflow from the UV unit for Option B.

9.2 Resource Consent Conditions

Description of Resource Consent
To discharge treated municipal wastewater from the Edendale – Wyndham wastewater treatment plant (WWTP) into surface water.

Consent Period
1. The consent period is 25 years.

Purpose
2. This consent authorises the discharge of treated wastewater from the Edendale – Wyndham Wastewater Treatment Plant to the Mataura River, at an average dry weather flow of 264 m^3/day and an average wet weather flow of 528 m^3/day, at about NZMS 260 F46:886-236.

Monitoring Conditions
3. The consent holder shall monitor:
    a. The daily rate of inflow to the treatment system;
    b. The wastewater discharge, as follows:
        i. Samples are to be taken of the discharge from the WWTP at quarterly intervals
        ii. Mataura River shall be sampled at the upstream and downstream monitoring locations at quarterly intervals

iii. The samples shall be analysed for:
- Temperature
- Electrical Conductivity
- Carbonaceous Biochemical Oxygen Demand (BOD_5) concentration
- Suspended Solids Concentration
- Total Nitrogen concentration
- Ammoniacal Nitrogen concentration
- Dissolved Reactive Phosphorus
- Escherichia coli concentration

iv. The sampling locations shall be:
- The wetland outlet pipe (Option A) *OR* the outlet from the UV unit (Option B)
- Upstream, Mataura River: approximately 20 m upstream of the discharge point
- Downstream, Mataura River: 350 m downstream of discharge point

Compliance Conditions

4. The 24-hour volume recorded under Condition 2 shall not exceed 528 m^3/day.

5. There shall be no objectionable odour to the extent that it causes an adverse effect beyond the site boundary, where the site boundary is be deemed to be 150 m beyond the designated boundaries of the wastewater treatment plant site.

Reporting Conditions

6. The Consent Holder shall report on an annual basis the results of all flow and water quality monitoring carried out in accordance with this consent, and report them against the treated wastewater quality criteria provided in Table 4 of this AEE document.

Edendale – Wyndham WWTP Operation and Maintenance Manual

7. An Operation and Maintenance Manual for the new WWTP shall be prepared and provided to the Southland Regional Council Compliance Officer within six months of the date of the issue of this consent.

9.3 Designation Conditions

The purpose of the designation is to establish, operate, maintain and repair works associated with a wastewater treatment plant on the site, being Sections 34, 35 and 36 of Blk III Mataura Hundred (SO 7587), and pending subdivision of Lot 3 DP 3312.

1. That the perimeter of the designated site be fenced.
2. Any access gates into the designated site shall be securely locked when no authority operator is actively using the site.
3. The designated site is maintained in a tidy state following any works within the wastewater treatment site.
4. No refuelling of equipment takes place on any area of a river or lake bed or within the perimeter of the designated site.
5. That construction shall be undertaken between the hours of 0700-1800 Monday to Saturday and exclude working any Sunday or Public Holiday.
6. During construction, any fugitive dust shall be suppressed by the use of a water tanker.

7. The requiring authority shall submit the final design plans to Southland District Council Group Manager – Services & Assets for approval. Note: This approval is a statutory responsibility under S. 171A of the Resource Management Act 1991.

10 References

Environment Southland, 2000. *Southland's State of the Environment Report for Water*, Chapter 3: How do we Measure Up? State of fresh water and ecosystems, Environment Southland, Invercargill, pp. 31-42.

Kilroy, C., Biggs, B., Blair, N., Lambert, P., Jarvie, B., Dey, K., Robinson, K., Smale, D., 2005. *Ecological Studies on Didymosphenia geminata*, NIWA Client Report: CHC2005-123.

NZWERF, 2002. *New Zealand Municipal Wastewater Monitoring Guidelines*, New Zealand Water Environment Research Foundation, Wellington.

Quinn, J. M., Hickey, C. W., 1993. Effects of sewage waste stabilisation lagoon effluent on stream invertebrates, in *Journal of Aquatic Ecosystem Stress and Recovery*, Vol. 2, No. 3, Springer Netherlands, pp. 205-219.

Appendix A Figures

Figure A1	Location Map of Proposed Edendale – Wyndham WWTP
Figures A2.1, A2.2	Site Features
Figure A3	Proposed Designation
Figure A4	Plan and Cross-sections of Ponds
Figure A5	Mixing Zone and Proposed Monitoring Points
Figure A6	Options Evaluation: Edendale and Wyndham Wastewater Treatment and Disposal Sites

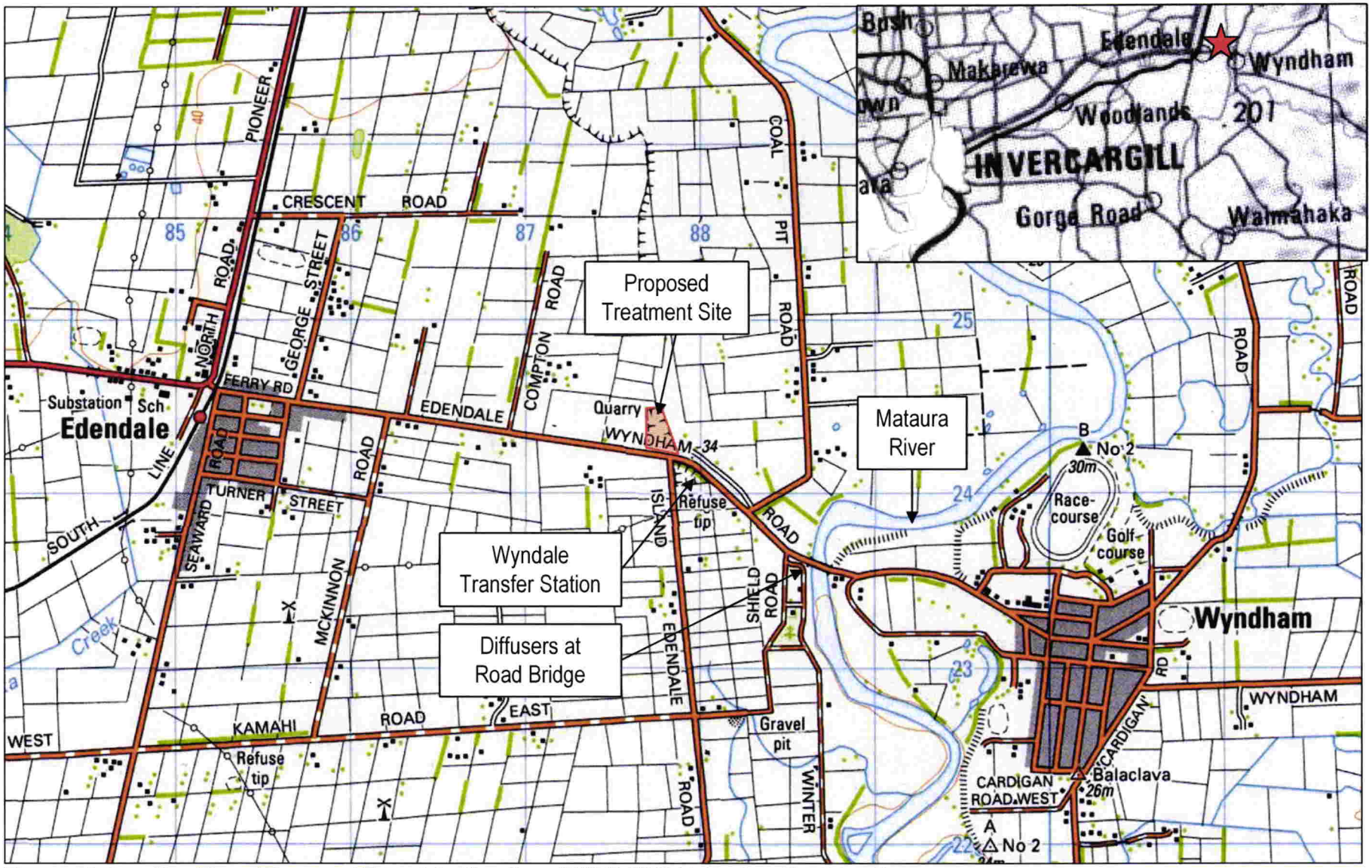

Figure A1: Location Map of Proposed Edendale-Wyndham WWTP (INSET: Eastern Southland)

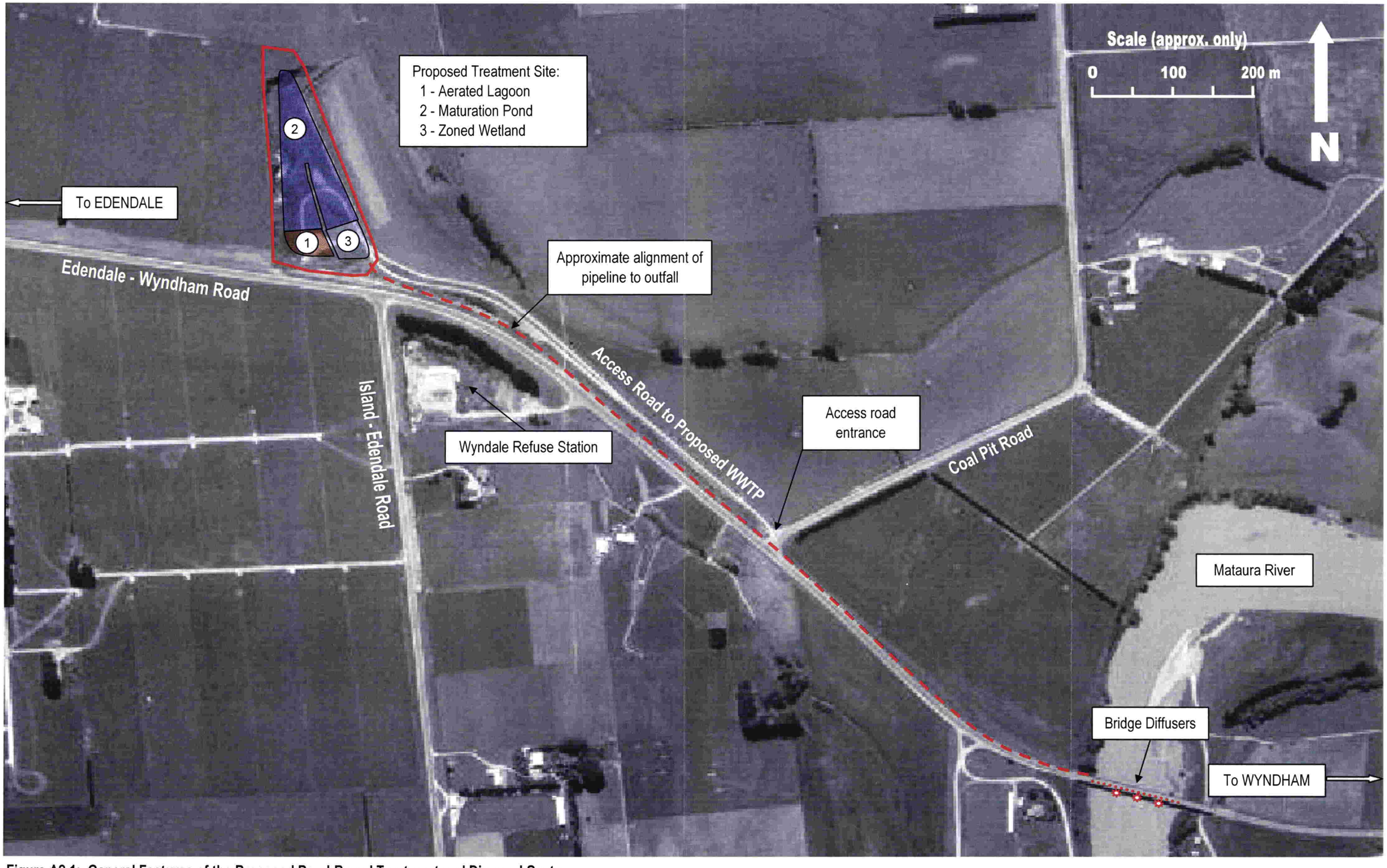

Figure A2.1: General Features of the Proposed Pond-Based Treatment and Disposal System

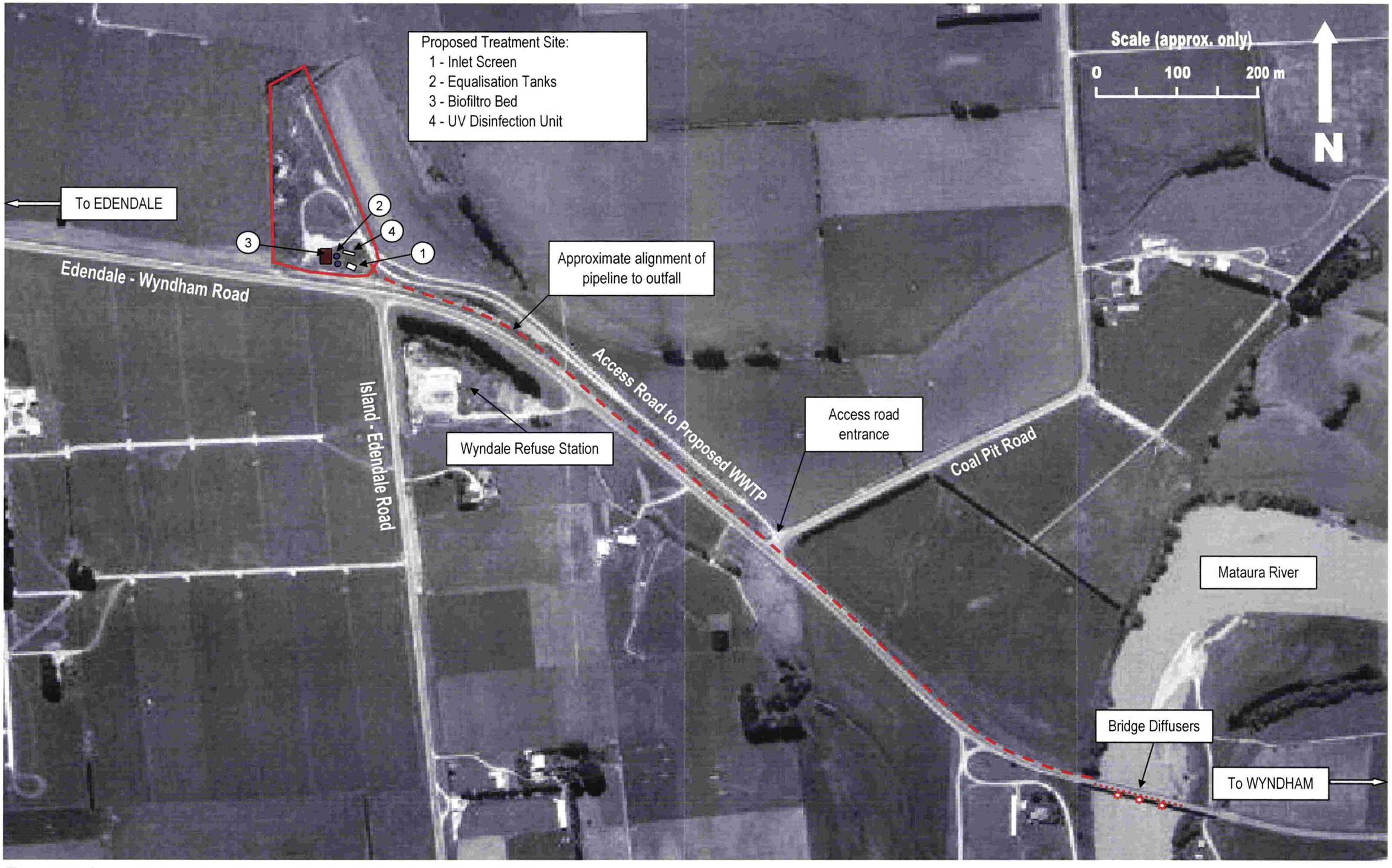

Figure A2.2: General Features of the Proposed Biofiltro Treatment and Disposal System

CP & AN Ferguson
376 Wyndham Mokoreta Road
Minihaw
Wyndham

RJ & AM Caldwell
McCulloch Trustee Limited
70 Edendale Wyndham Road
Edendale RD5

EDENDALE-WYNDHAM ROAD

LOT A

LOT B

ISLAND-EDENDALE ROAD

ACCESS ROAD

GR & LN McEwan
C Newfield Trust
Edendale RD3
Wyndham

N

DO NOT SCALE - IF IN DOUBT, ASK

ORIGINAL SIZE **A1**

KEY:

- DESIGNATION BOUNDARY - LOT A AREA = 25790m² (APPROX.)
- DESIGNATION BOUNDARY - LOT B AREA = 1570m² (APPROX.)
- LEGAL BOUNDARY CHECKS

NOT FOR CONSTRUCTION

REV	REVISIONS	DRAWN	CHECKED	APPROVED	DATE

	Name	Date
SURVEYED		
DESIGNED	FJB	05/07
DESIGN CHECK	MAS	05/07
DRAWN	GCL	05/07
DRAWING CHECK		
APPROVED		

MWH

People First
Southland District Council

EDENDALE WYNDHAM SEWERAGE SCHEME
PROPOSED DESIGNATION PLAN

LOT A & B

Status Stamp: **WORKING PLOT**

Date Stamp:

SCALES **(A1)** 1 : 1000

Drawing No.	Sheet No.	Rev.
Z1451801	SK11	A

XREFS : Contours, Planview showing Crossections, X-Legal Boundry checks, XTownship_EDD_WYD_1

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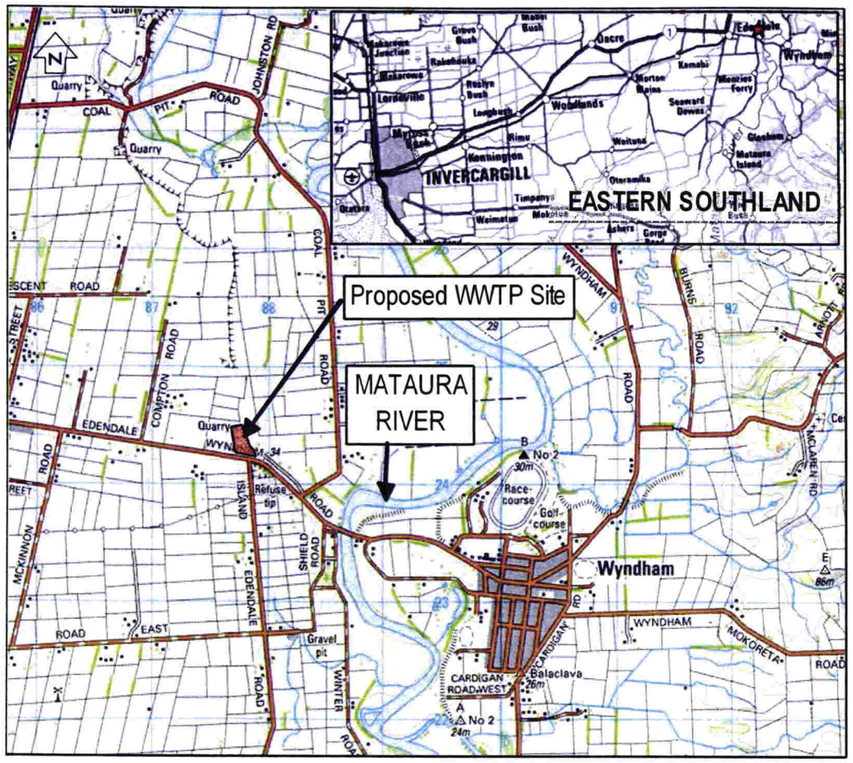

LOCATION PLAN

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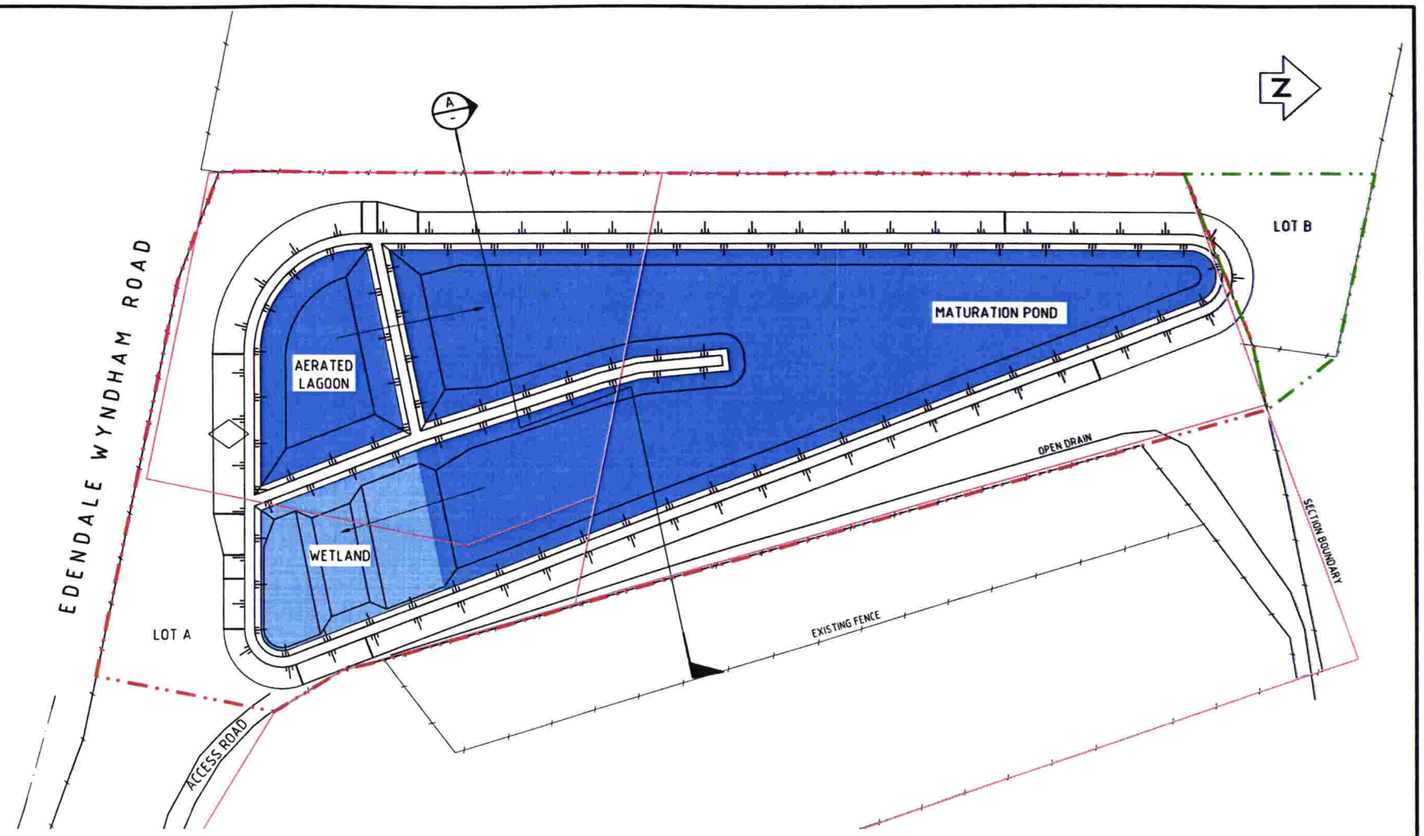
(INSET 1: 500,000)



SITE PLAN

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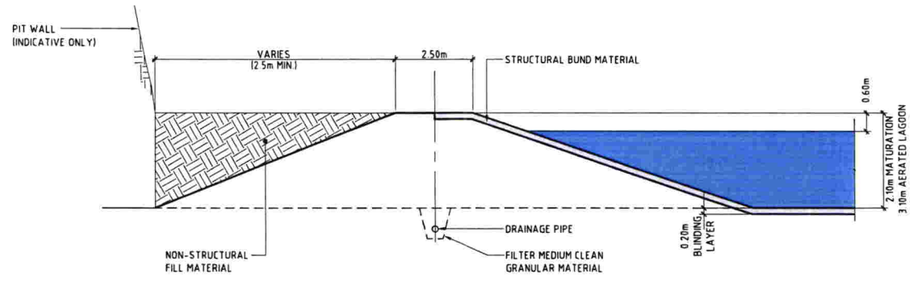
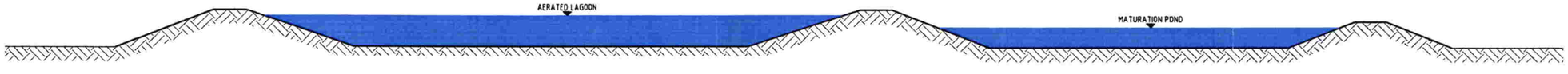


TYPICAL BUND SECTION

SCALE 1 : 100



CROSS SECTION

SCALE 1 : 200

NOT FOR CONSTRUCTION

REV	REVISIONS	DRAWN	CHECKED	APPROVED	DATE

	Name	Date
SURVEYED		
DESIGNED	FB	05.07
DESIGN CHECK	MAS	05.07
DRAWN	RAH	05.07
DRAWING CHECK		
APPROVED		

MWH

People First
Southland District Council

EDENDALE WYNDHAM SEWERAGE SCHEME
WWTP CROSS SECTIONS

SCHEME PLAN

Status Stamp	FOR CONSENT
Date Stamp	22/05/2007
SCALES (A1)	1 : 200
Drawing No.	Z1451801
Sheet No.	SK01
Rev.	A

XREFS : Civil3D Edendale

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DO NOT SCALE - IF IN DOUBT, ASK

ORIGINAL SIZE A1

DO NOT SCALE - IF IN DOUBT, ASK

ORIGINAL SIZE A1

N

RJ & AM Caldwell
McCulloch Trustee Limited
70 Edendale Wyndham Road
Edendale RD5

CP & NI Ferguson
376 Wyndham Mokoreta Road
Mimihau
Wyndham

EDENDALE-WYNDHAM ROAD

WWTP SITE

ISLAND-EDENDALE ROAD

ACCESS ROAD

Southland
District
Council

GR & LN McEwan
C Newfield Trust
Edendale RD3
Wyndham

RJ & AM Caldwell
McCulloch Trustee
Limited
70 Edendale
Wyndham Road

Southland
District
Council

GR & LN McEwan
C- Newfield Trust
Edendale RD3
Wyndham

AP & JM Taylor
264 Wyndham Mokoreta Road
Mimihau
Wyndham

KEY:

- DESIGNATION BOUNDARY - LOT A
- DESIGNATION BOUNDARY - LOT B
- 150m DESIGNATION BUFFER ZONE
- LEGAL BOUNDARY CHECKS

NOT FOR CONSTRUCTION

REV	REVISIONS	DRAWN	CHECKED	APPROVED	DATE

	Name	Date
SURVEYED		
DESIGNED	FJB	05/07
DESIGN CHECK	MAS	05/07
DRAWN	GCL	05/07
DRAWING CHECK		
APPROVED		

MWH

People First
Southland District Council

EDENDALE WYNDHAM SEWERAGE SCHEME
PROPOSED DESIGNATION PLAN

SITE OVERVIEW
LOT A & B

Status Stamp: **WORKING PLOT**

Date Stamp:

SCALES (A1) 1 : 1000

Drawing No.	Sheet No.	Rev.
Z1451801	SK11a	A

XREFS : Contours, Planview showing Crossections, X-Legal Boundry checks, XTownship_EDD_WYD_1

\\nzchc2s01\projects\0 E1 PROJECTS\214500+\214518 Edendale & Wyndham Sewerage\CAD\Z1451801_SK11a.dwg

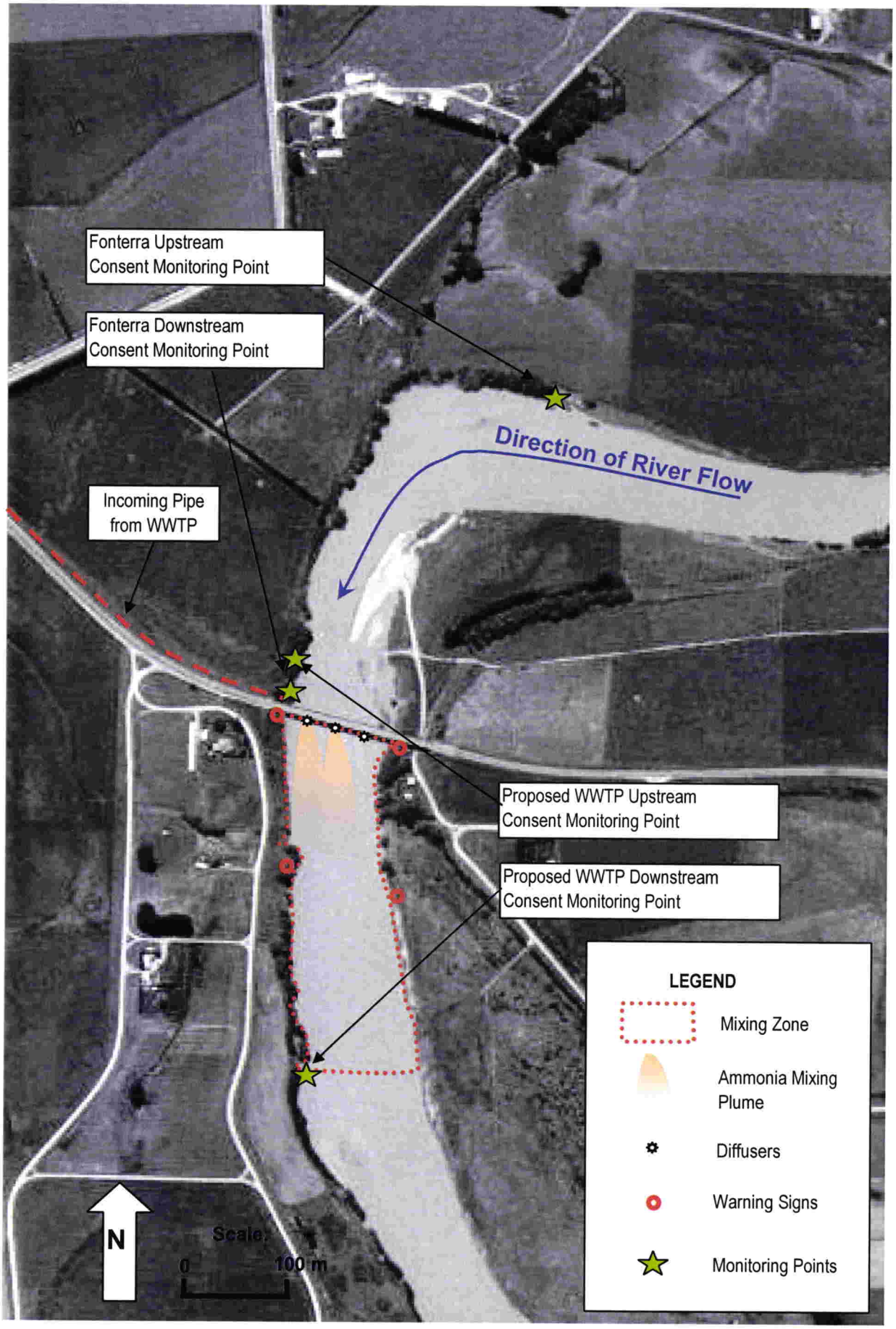


Figure A5: Mixing Zone and Proposed Monitoring Points for the WWTP Discharge

Gravel Pit Treatment Site

Fonterra Outfall

Edendale

Wyndham

Redan Reserve
Treatment Site

Cardigan Road West Reserve
Treatment Site

Southern Treatment Site

Legend

- Wastewater Treatment Plant
- Treated Wastewater Outfall
- Rising Main
  Wastewater Only
- Combined Stormwater / Wastewater
  Rising Main
- Wastewater Pipes

Edendale and Wyndham Wastewater Treatment and Disposal Sites

0 1.5 3

kilometres

Appendix B

Annual Reports 2019-2022

Southland District Council

Edendale-Wyndham Wastewater Report 2019

Resource Consent 204630

Paul Reid
Resources Engineer

Introduction

This report has been prepared in accordance with condition 11 of Resource Consent 204630 for the period 1 July 2018 to 30 June 2019.

Background

In September 2008 Resource Consent 204630 was issued to discharge treated sewage from the Edendale Wyndham Wastewater Treatment System to the Mataura River

Resource consent was granted giving Council the option to either install a new BioFiltro treatment system using a biological treatment or a traditional oxidation pond treatment system.

Council decided to utilise the biological treatment system of the BioFiltro treatment system which uses worms to process the biological matter.
The Edendale plant has been upgraded in 2014--15 with 62% extra treatment bed being added.
On May 10 2017 Environment Southland granted two amendments to conditions 8 (b) and 10.
Condition 8 (b) ii <25 cumec sampling was removed, and Section10 macroinvertebrate sampling was changed from annual to every 3 years.

Accidental or Emergency Discharges

There were no accidental or emergency discharges for the 2018-19 year.

Odour Complaints

There have been no environmental complaints this financial year.

Summary of Monitoring Results

Inflow

Please see Appendix A.

The discharge from the wastewater treatment system is available on Historian tag PS033.

Table 1 – Flow Summary Data

	Mean	Maximum
Discharge (m^3/day)	395	658

The average daily inflows are higher than the estimated daily dry weather average inflow of 264m^3 / day. The maximum daily volume of 528m^3/day has been exceeded on five occasions in the 2018-19 year.
SDC will apply to amend Discharge Permit 204630, Condition 2 "at an average daily flow of 264 m^3/day" in the 2019-20 year.

Discharge Quality

Table 2 – Discharge Monitoring Results 1 July 2018 to 30 June 2019

Discharge Monitoring Results-Resource Consent 204630 2018-19										
Date	BOD_5 Limit 30g/m^3	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen Limit 15g/m^3	Nitrate Nitrogen (g/m^3)	Total Nitrogen (g/m^3)	Dissolved Reactive Phosphorous Limit 4g/m^3	Total Phosphorous (g/m^3)	Total Suspended Solids Limit 70g/m^3	E-coli Limit 6,000MPN /100mL
28/09/2018	10	427	7.03	14	7.2	26	2	2.8	17	160
18/12/2018	7.1	477	7.04	6.2	14	22	1.4	3.7	46	20
12/02/2019	4	458	6.62	6.6	8.7	20	2.7	3.6	8	250
19/02/2019	4.7	483	6.69	4.8	14	23	3.8	5.3	8	10
Mean	6.5	461	6.85	7.9	11	23	2.5	3.9	20	110
Median	5.9	468	6.86	6	11.4	23	2.4	3.7	13	90
Maximum	10	483	7.04	14	14	26	3.8	5.3	46	250
Minimum	4	427	6.62	4.8	7.2	20	1.4	2.8	8	10

The on-site plant improvements made in the 2014-15 year have resulted in complete compliance with all Section 13 limits.

Receiving Waters

Table 3 – Summary of Scheduled Monitoring Results Environment (1 July 20187 to 30 June 2019)

Parameters	Upstream Mean	Downstream Mean
Dissolved Oxygen (g/m^3)	8.8	8.8
Dissolved Reactive Phosphorus (g/m^3)	0.018	0.013
Electrical Conductivity (mS/cm@25C)	99	99
Escherichia coli (MPN/100mL)	1010	1040
Nitrate Nitrogen (g/m^3)	1	1
pH	7.36	7.3
Total Ammonia Nitrogen (g/m^3)	0.07	0.06
Total Suspended Solids (g/m^3)	5.9	6.5

Macroinvertebrate Fauna and Periphyton

Edendale-Wyndham sampling criteria detailed in Condition 10 (a) namely "The survey shall be undertaken at a time when the Mataura River, as measured at Southland Regional Council's monitoring site at Tuturau, has had a flow of less than 25 cumecs for a period of at least twenty consecutive days."
The macroinvertebrate and periphyton sampling wasn't undertaken this year due to timing issues, SDC is aware as per the amended resource consent conditions this sampling should be undertaken once every three years.

Conclusion

The discharge from the Wyndham and Edendale community wastewater treatment system when compared in "Table 3" should not be adversely affecting local benthic macroinvertebrate and periphyton communities of the Mataura River".

Appendix A.

Edendale-Wyndham Wastewater Discharge-Resource Consent 204630 528m^3/day	
Date	**m^3/Day**
1/07/2018	383
2/07/2018	388
3/07/2018	361
4/07/2018	290
5/07/2018	439
6/07/2018	376
7/07/2018	402
8/07/2018	356
9/07/2018	363
10/07/2018	377
11/07/2018	390
12/07/2018	379
13/07/2018	353
14/07/2018	356
15/07/2018	368
16/07/2018	394
17/07/2018	284
18/07/2018	350
19/07/2018	361
20/07/2018	439
21/07/2018	411
22/07/2018	422
23/07/2018	400
24/07/2018	350
25/07/2018	343
26/07/2018	354
27/07/2018	366
28/07/2018	403
29/07/2018	471
30/07/2018	437
31/07/2018	429
1/08/2018	338
2/08/2018	389
3/08/2018	344
4/08/2018	371
5/08/2018	341
6/08/2018	382
7/08/2018	367
8/08/2018	383
9/08/2018	368
10/08/2018	386
11/08/2018	380
12/08/2018	385

13/08/2018	323
14/08/2018	501
15/08/2018	378
16/08/2018	404
17/08/2018	370
18/08/2018	359
19/08/2018	370
20/08/2018	382
21/08/2018	367
22/08/2018	416
23/08/2018	382
24/08/2018	383
25/08/2018	392
26/08/2018	381
27/08/2018	392
28/08/2018	387
29/08/2018	387
30/08/2018	415
31/08/2018	401
1/09/2018	401
2/09/2018	411
3/09/2018	420
4/09/2018	371
5/09/2018	379
6/09/2018	382
7/09/2018	379
8/09/2018	371
9/09/2018	366
10/09/2018	358
11/09/2018	360
12/09/2018	375
13/09/2018	392
14/09/2018	363
15/09/2018	356
16/09/2018	373
17/09/2018	412
18/09/2018	355
19/09/2018	370
20/09/2018	356
21/09/2018	372
22/09/2018	364
23/09/2018	365
24/09/2018	399
25/09/2018	414
26/09/2018	408
27/09/2018	376
28/09/2018	365
29/09/2018	395
30/09/2018	381

1/10/2018	395
2/10/2018	399
3/10/2018	414
4/10/2018	396
5/10/2018	371
6/10/2018	374
7/10/2018	372
8/10/2018	367
9/10/2018	365
10/10/2018	376
11/10/2018	392
12/10/2018	398
13/10/2018	381
14/10/2018	390
15/10/2018	386
16/10/2018	375
17/10/2018	381
18/10/2018	398
19/10/2018	396
20/10/2018	380
21/10/2018	357
22/10/2018	385
23/10/2018	394
24/10/2018	379
25/10/2018	405
26/10/2018	417
27/10/2018	365
28/10/2018	359
29/10/2018	400
30/10/2018	417
31/10/2018	406
1/11/2018	393
2/11/2018	384
3/11/2018	465
4/11/2018	482
5/11/2018	428
6/11/2018	400
7/11/2018	390
8/11/2018	460
9/11/2018	477
10/11/2018	457
11/11/2018	473
12/11/2018	401
13/11/2018	397
14/11/2018	392
15/11/2018	393
16/11/2018	402
17/11/2018	440
18/11/2018	456

19/11/2018	469
20/11/2018	486
21/11/2018	472
22/11/2018	452
23/11/2018	448
24/11/2018	470
25/11/2018	413
26/11/2018	379
27/11/2018	382
28/11/2018	414
29/11/2018	427
30/11/2018	429
1/12/2018	445
2/12/2018	398
3/12/2018	361
4/12/2018	461
5/12/2018	634
6/12/2018	658
7/12/2018	517
8/12/2018	452
9/12/2018	359
10/12/2018	372
11/12/2018	374
12/12/2018	366
13/12/2018	393
14/12/2018	403
15/12/2018	376
16/12/2018	370
17/12/2018	380
18/12/2018	372
19/12/2018	358
20/12/2018	387
21/12/2018	402
22/12/2018	404
23/12/2018	380
24/12/2018	383
25/12/2018	398
26/12/2018	384
27/12/2018	366
28/12/2018	363
29/12/2018	366
30/12/2018	368
31/12/2018	347
1/01/2019	351
2/01/2019	344
3/01/2019	352
4/01/2019	359
5/01/2019	370
6/01/2019	484

7/01/2019	502
8/01/2019	478
9/01/2019	398
10/01/2019	374
11/01/2019	372
12/01/2019	383
13/01/2019	385
14/01/2019	429
15/01/2019	444
16/01/2019	461
17/01/2019	477
18/01/2019	452
19/01/2019	419
20/01/2019	407
21/01/2019	423
22/01/2019	433
23/01/2019	449
24/01/2019	412
25/01/2019	413
26/01/2019	388
27/01/2019	403
28/01/2019	610
29/01/2019	625
30/01/2019	403
31/01/2019	416
1/02/2019	397
2/02/2019	414
3/02/2019	429
4/02/2019	402
5/02/2019	418
6/02/2019	414
7/02/2019	412
8/02/2019	425
9/02/2019	438
10/02/2019	399
11/02/2019	400
12/02/2019	408
13/02/2019	386
14/02/2019	421
15/02/2019	433
16/02/2019	400
17/02/2019	381
18/02/2019	382
19/02/2019	396
20/02/2019	409
21/02/2019	412
22/02/2019	409
23/02/2019	418
24/02/2019	391

25/02/2019	390
26/02/2019	401
27/02/2019	425
28/02/2019	436
1/03/2019	388
2/03/2019	376
3/03/2019	377
4/03/2019	387
5/03/2019	386
6/03/2019	377
7/03/2019	401
8/03/2019	419
9/03/2019	414
10/03/2019	362
11/03/2019	366
12/03/2019	374
13/03/2019	376
14/03/2019	371
15/03/2019	373
16/03/2019	366
17/03/2019	354
18/03/2019	357
19/03/2019	360
20/03/2019	363
21/03/2019	371
22/03/2019	362
23/03/2019	370
24/03/2019	378
25/03/2019	353
26/03/2019	420
27/03/2019	431
28/03/2019	360
29/03/2019	348
30/03/2019	349
31/03/2019	354
1/04/2019	345
2/04/2019	355
3/04/2019	361
4/04/2019	356
5/04/2019	351
6/04/2019	363
7/04/2019	383
8/04/2019	350
9/04/2019	340
10/04/2019	467
11/04/2019	364
12/04/2019	360
13/04/2019	352
14/04/2019	338

15/04/2019	338
16/04/2019	343
17/04/2019	324
18/04/2019	311
19/04/2019	340
20/04/2019	372
21/04/2019	312
22/04/2019	301
23/04/2019	300
24/04/2019	299
25/04/2019	331
26/04/2019	333
27/04/2019	380
28/04/2019	340
29/04/2019	406
30/04/2019	358
1/05/2019	348
2/05/2019	378
3/05/2019	354
4/05/2019	319
5/05/2019	395
6/05/2019	338
7/05/2019	336
8/05/2019	328
9/05/2019	342
10/05/2019	355
11/05/2019	354
12/05/2019	398
13/05/2019	437
14/05/2019	361
15/05/2019	441
16/05/2019	598
17/05/2019	474
18/05/2019	396
19/05/2019	437
20/05/2019	389
21/05/2019	409
22/05/2019	378
23/05/2019	388
24/05/2019	385
25/05/2019	420
26/05/2019	413
27/05/2019	407
28/05/2019	389
29/05/2019	397
30/05/2019	416
31/05/2019	378
1/06/2019	430
2/06/2019	461

3/06/2019	429
4/06/2019	502
5/06/2019	495
6/06/2019	478
7/06/2019	447
8/06/2019	496
9/06/2019	423
10/06/2019	407
11/06/2019	399
12/06/2019	399
13/06/2019	410
14/06/2019	393
15/06/2019	384
16/06/2019	468
17/06/2019	579
18/06/2019	411
19/06/2019	403
20/06/2019	459
21/06/2019	410
22/06/2019	395
23/06/2019	359
24/06/2019	395
25/06/2019	399
26/06/2019	421
27/06/2019	386
28/06/2019	383
29/06/2019	388
30/06/2019	392
Mean	**395**
Maximum	**658**
Yearly Total	**144245**

Appendix B.

Receiving waters Upstream-Resource Consent 204630 2018-19								
Date	Dissolved Oxygen (g/m^3)	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen (g/m^3)	Nitrate Nitrogen (g/m^3)	Dissolved Reactive Phosphorous (g/m^3)	Total Suspended Solids (g/m^3)	E-coli MPN/100mL
28/09/2018	11.1	93	7.39	0.04	1.0	0.017	9.4	280
18/12/2018	8.7	91	7.33	0.04	1.0	0.016	9.2	560
12/02/2019	7.6	110	7.43	0.13	1.2	0.028	2.5	1500
19/02/2019	7.9	102	7.29	0.06	0.9	0.012	2.5	1700
Mean	8.8	99	7.36	0.07	1.0	0.018	5.9	1010
Median	8.3	98	7.36	0.05	1.0	0.017	5.9	1030
Maximum	11.1	110	7.43	0.13	1.2	0.028	9.4	1700
Minimum	7.6	91	7.29	0.04	0.9	0.012	2.5	280

Appendix C.

Receiving waters Downstream-Resource Consent 204630 2018-19								
Date	Dissolved Oxygen (g/m^3)	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen (g/m^3)	Nitrate Nitrogen (g/m^3)	Dissolved Reactive Phosphorous (g/m^3)	Total Suspended Solids (g/m^3)	E-coli MPN/100mL
28/09/2018	10.9	92	7.36	0.04	1.0	0.019	11	500
18/12/2018	8.5	90	7.33	0.02	1.1	0.017	10	660
12/02/2019	7.7	110	7.38	0.13	1.2	0.009	2.5	1500
19/02/2019	8.1	103	7.27	0.06	0.9	0.007	2.5	1500
Mean	8.8	99	7.3	0.06	1.0	0.013	6.5	1040
Median	8.3	98	7.35	0.05	1.0	0.013	6.3	1080
Maximum	10.9	110	7.38	0.13	1.2	0.019	11	1500
Minimum	7.7	90	7.27	0.02	0.9	0.007	2.5	500

Southland District Council

Edendale-Wyndham Wastewater Report 2020

Resource Consent 204630

Paul Reid
Consents and Compliance Manager

Introduction

This report has been prepared in accordance with condition 11 of Resource Consent 204630 for the period 1 July 2019 to 30 June 2020.

Background

In September 2008 Resource Consent 204630 was issued to discharge treated sewage from the Edendale Wyndham Wastewater Treatment System to the Mataura River

Resource consent was granted giving Council the option to either install a new BioFiltro treatment system using a biological treatment or a traditional oxidation pond treatment system.

Council decided to utilise the biological treatment system of the BioFiltro treatment system which uses worms to process the biological matter.
The Edendale plant has been upgraded in 2014--15 with 62% extra treatment bed being added.
On May 10 2017 Environment Southland granted two amendments to conditions 8 (b) and 10.
Condition 8 (b) ii <25 cumec sampling was removed, and Section10 macroinvertebrate sampling was changed from annual to every 3 years.

Accidental or Emergency Discharges

There were no accidental or emergency discharges for the 2019-20 year.

Odour Complaints

There have been no environmental complaints this financial year.

Summary of Monitoring Results

Inflow

Please see Appendix A.

The discharge from the wastewater treatment system is available on Historian tag PS033.

Table 1 – Flow Summary Data

	Mean	Maximum
Discharge (m^3/day)	429	637

The average daily inflows are higher than the estimated daily dry weather average inflow of 264m^3 / day. The maximum daily volume of 528m^3/day has been exceeded on eighteen occasions in the 2019-20 year.
SDC did not apply to amend Discharge Permit 204630, Condition 2 "at an average daily flow of 264 m^3/day" in the 2019-20 year, because consultation was required with submitters on the original application. This discharge permit is due to be renewed by 10th September 2023.

Discharge Quality

Table 2 – Discharge Monitoring Results 1 July 2019 to 30 June 2020

Discharge Monitoring Results-Resource Consent 204630 2019-20										
Date	BOD_5 Limit 30g/m^3	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen Limit 15g/m^3	Nitrate Nitrogen (g/m^3)	Total Nitrogen (g/m^3)	Dissolved Reactive Phosphorous Limit 4g/m^3	Total Phosphorous (g/m^3)	Total Suspended Solids Limit 70g/m^3	E-coli Limit 6,000MPN /100mL
25/09/2019	12	444	6.88	11	8.1	23	2.2	2.5	13	330
19/12/2019	6.1	526	6.6	12	12	26	0.41	1.4	24	10
12/03/2020	7.6	512	6.96	16	8.1	25	2.5	3.4	13	230
17/06/2020	7.5	523	6.75	13	15	29	2.4	3.4	5.8	210
Mean	8.3	501	6.80	13	11	26	1.9	2.7	14	195
Median	7.55	518	6.82	13	10	26	2.3	3.0	13	220
Maximum	12	526	6.96	16	15	29	2.5	3.4	24	330
Minimum	6.1	444	6.60	11	8.1	23	0.4	1.4	6	10

The on-site plant improvements made in the 2014-15 year have resulted in complete compliance with all Section 13 limits, with the exception of "Total Ammonia Nitrogen on the 12th March 2020.

Receiving Waters

Table 3 – Summary of Scheduled Monitoring Results Environment (1 July 2019 to 30 June 2020)

Parameters	Upstream Mean	Downstream Mean
Dissolved Oxygen (g/m^3)	10.3	10.4
Dissolved Reactive Phosphorus (g/m^3)	0.017	0.012
Electrical Conductivity (mS/cm@25C)	85	84
Escherichia coli (MPN/100mL)	1625	1473
Nitrate Nitrogen (g/m^3)	0.9	0.9
pH	7.35	7.3
Total Ammonia Nitrogen (g/m^3)	0.03	0.03
Total Suspended Solids (g/m^3)	27	25

Macroinvertebrate Fauna and Periphyton

Edendale-Wyndham sampling criteria detailed in Condition 10 (a) namely "The survey shall be undertaken at a time when the Mataura River, as measured at Southland Regional Council's monitoring site at Tuturau, has had a flow of less than 25 cumecs for a period of at least twenty consecutive days." Environment Southland has changed the monitoring site to Gore with a flow of less than 22.3 cumecs for a period of at least twenty consecutive days.
The macroinvertebrate and periphyton sampling hasn't undertaken this year to date due to timing issues, SDC is aware as per the amended resource consent conditions this sampling should be undertaken once every three years.

Conclusion

The discharge from the Wyndham and Edendale community wastewater treatment system when compared in "Table 3" should not be adversely affecting local benthic macroinvertebrate and periphyton communities of the Mataura River".

Appendix A.

Edendale-Wyndham Wastewater Discharge-Resource Consent 204630 528m³/Day	
Date	**m³/Day**
1/06/2019	430
2/06/2019	461
3/06/2019	429
4/06/2019	502
5/06/2019	495
6/06/2019	478
7/06/2019	447
8/06/2019	496
9/06/2019	423
10/06/2019	407
11/06/2019	399
12/06/2019	399
13/06/2019	410
14/06/2019	393
15/06/2019	384
16/06/2019	468
17/06/2019	579
18/06/2019	411
19/06/2019	403
20/06/2019	459
21/06/2019	410
22/06/2019	395
23/06/2019	359
24/06/2019	395
25/06/2019	399
26/06/2019	421
27/06/2019	386
28/06/2019	383
29/06/2019	388
30/06/2019	392
1/07/2019	376
2/07/2019	377
3/07/2019	380
4/07/2019	386
5/07/2019	379
6/07/2019	406
7/07/2019	426
8/07/2019	408
9/07/2019	385
10/07/2019	367
11/07/2019	375
12/07/2019	378
13/07/2019	405

14/07/2019	498
15/07/2019	423
16/07/2019	371
17/07/2019	372
18/07/2019	362
19/07/2019	364
20/07/2019	366
21/07/2019	365
22/07/2019	380
23/07/2019	388
24/07/2019	380
25/07/2019	376
26/07/2019	377
27/07/2019	345
28/07/2019	364
29/07/2019	392
30/07/2019	353
31/07/2019	443
1/08/2019	388
2/08/2019	397
3/08/2019	448
4/08/2019	449
5/08/2019	456
6/08/2019	562
7/08/2019	560
8/08/2019	430
9/08/2019	405
10/08/2019	406
11/08/2019	415
12/08/2019	416
13/08/2019	442
14/08/2019	443
15/08/2019	405
16/08/2019	334
17/08/2019	527
18/08/2019	528
19/08/2019	444
20/08/2019	394
21/08/2019	402
22/08/2019	400
23/08/2019	407
24/08/2019	427
25/08/2019	428
26/08/2019	439
27/08/2019	439
28/08/2019	406
29/08/2019	447
30/08/2019	448
31/08/2019	397

1/09/2019	393
2/09/2019	392
3/09/2019	392
4/09/2019	376
5/09/2019	377
6/09/2019	366
7/09/2019	373
8/09/2019	382
9/09/2019	382
10/09/2019	375
11/09/2019	390
12/09/2019	388
13/09/2019	480
14/09/2019	481
15/09/2019	376
16/09/2019	377
17/09/2019	449
18/09/2019	450
19/09/2019	385
20/09/2019	383
21/09/2019	379
22/09/2019	379
23/09/2019	397
24/09/2019	417
25/09/2019	428
26/09/2019	564
27/09/2019	560
28/09/2019	473
29/09/2019	421
30/09/2019	428
1/10/2019	433
2/10/2019	437
3/10/2019	431
4/10/2019	439
5/10/2019	431
6/10/2019	449
7/10/2019	442
8/10/2019	420
9/10/2019	504
10/10/2019	590
11/10/2019	616
12/10/2019	482
13/10/2019	411
14/10/2019	412
15/10/2019	507
16/10/2019	524
17/10/2019	417
18/10/2019	406
19/10/2019	395

20/10/2019	463
21/10/2019	485
22/10/2019	487
23/10/2019	461
24/10/2019	445
25/10/2019	469
26/10/2019	439
27/10/2019	418
28/10/2019	434
29/10/2019	448
30/10/2019	413
31/10/2019	419
1/11/2019	432
2/11/2019	409
3/11/2019	417
4/11/2019	418
5/11/2019	409
6/11/2019	404
7/11/2019	425
8/11/2019	424
9/11/2019	416
10/11/2019	429
11/11/2019	441
12/11/2019	398
13/11/2019	396
14/11/2019	425
15/11/2019	451
16/11/2019	479
17/11/2019	505
18/11/2019	454
19/11/2019	412
20/11/2019	557
21/11/2019	585
22/11/2019	488
23/11/2019	441
24/11/2019	452
25/11/2019	443
26/11/2019	439
27/11/2019	409
28/11/2019	411
29/11/2019	415
30/11/2019	416
1/12/2019	402
2/12/2019	391
3/12/2019	429
4/12/2019	443
5/12/2019	386
6/12/2019	384
7/12/2019	393

8/12/2019	379
9/12/2019	397
10/12/2019	406
11/12/2019	419
12/12/2019	408
13/12/2019	413
14/12/2019	445
15/12/2019	461
16/12/2019	443
17/12/2019	447
18/12/2019	417
19/12/2019	475
20/12/2019	602
21/12/2019	631
22/12/2019	567
23/12/2019	451
24/12/2019	458
25/12/2019	438
26/12/2019	446
27/12/2019	455
28/12/2019	476
29/12/2019	453
30/12/2019	458
31/12/2019	453
1/01/2020	432
2/01/2020	427
3/01/2020	438
4/01/2020	430
5/01/2020	424
6/01/2020	450
7/01/2020	495
8/01/2020	521
9/01/2020	540
10/01/2020	438
11/01/2020	454
12/01/2020	439
13/01/2020	436
14/01/2020	424
15/01/2020	419
16/01/2020	407
17/01/2020	408
18/01/2020	410
19/01/2020	343
20/01/2020	364
21/01/2020	368
22/01/2020	379
23/01/2020	402
24/01/2020	411
25/01/2020	391

26/01/2020	389
27/01/2020	385
28/01/2020	396
29/01/2020	408
30/01/2020	422
31/01/2020	381
1/02/2020	398
2/02/2020	411
3/02/2020	564
4/02/2020	608
5/02/2020	635
6/02/2020	637
7/02/2020	492
8/02/2020	472
9/02/2020	492
10/02/2020	446
11/02/2020	441
12/02/2020	456
13/02/2020	454
14/02/2020	440
15/02/2020	438
16/02/2020	463
17/02/2020	481
18/02/2020	453
19/02/2020	444
20/02/2020	457
21/02/2020	449
22/02/2020	440
23/02/2020	445
24/02/2020	460
25/02/2020	443
26/02/2020	406
27/02/2020	421
28/02/2020	413
29/02/2020	381
1/03/2020	384
2/03/2020	398
3/03/2020	412
4/03/2020	397
5/03/2020	406
6/03/2020	413
7/03/2020	424
8/03/2020	453
9/03/2020	398
10/03/2020	404
11/03/2020	416
12/03/2020	379
13/03/2020	383
14/03/2020	386

15/03/2020	383
16/03/2020	398
17/03/2020	395
18/03/2020	394
19/03/2020	408
20/03/2020	423
21/03/2020	407
22/03/2020	429
23/03/2020	467
24/03/2020	482
25/03/2020	432
26/03/2020	417
27/03/2020	434
28/03/2020	435
29/03/2020	399
30/03/2020	429
31/03/2020	450
1/04/2020	424
2/04/2020	390
3/04/2020	386
4/04/2020	399
5/04/2020	360
6/04/2020	362
7/04/2020	374
8/04/2020	380
9/04/2020	409
10/04/2020	412
11/04/2020	383
12/04/2020	374
13/04/2020	536
14/04/2020	540
15/04/2020	446
16/04/2020	422
17/04/2020	439
18/04/2020	443
19/04/2020	411
20/04/2020	398
21/04/2020	413
22/04/2020	416
23/04/2020	402
24/04/2020	400
25/04/2020	403
26/04/2020	395
27/04/2020	494
28/04/2020	496
29/04/2020	472
30/04/2020	461
1/05/2020	457
2/05/2020	445

3/05/2020	433
4/05/2020	439
5/05/2020	473
6/05/2020	475
7/05/2020	447
8/05/2020	449
9/05/2020	413
10/05/2020	416
11/05/2020	420
12/05/2020	412
13/05/2020	373
14/05/2020	400
15/05/2020	403
16/05/2020	416
17/05/2020	433
18/05/2020	434
19/05/2020	425
20/05/2020	385
21/05/2020	377
22/05/2020	374
23/06/2020	446
24/06/2020	451
25/06/2020	430
26/06/2020	403
27/06/2020	389
28/06/2020	391
29/06/2020	432
30/06/2020	435
Mean	**429**
Maximum	**637**
Yearly Total	**156532**

Appendix B.

Receiving waters Upstream-Resource Consent 204630 2019-20								
Date	Dissolved Oxygen (g/m^3)	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen (g/m^3)	Nitrate Nitrogen (g/m^3)	Dissolved Reactive Phosphorous (g/m^3)	Total Suspended Solids (g/m^3)	E-coli MPN/100mL
25/09/2019	10.3	90	7.35	0.02	0.9	0.007	5	260
19/12/2019	9.8	57	7.26	0.02	0.4	0.026	80	2400
12/03/2020	9.2	89	7.31	0.03	1.1	0.018	18	3300
17/06/2020	11.7	102	7.47	0.05	1.3	0.018	5	540
Mean	10.3	85	7.35	0.03	0.9	0.017	27	1625
Median	10.1	90	7.33	0.03	1.0	0.018	11	1470
Maximum	11.7	102	7.47	0.05	1.3	0.026	80	3300
Minimum	9.2	57	7.26	0.02	0.4	0.007	5	260

Appendix C.

Receiving waters Downstream-Resource Consent 204630 2019-20								
Date	Dissolved Oxygen (g/m^3)	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen (g/m^3)	Nitrate Nitrogen (g/m^3)	Dissolved Reactive Phosphorous (g/m^3)	Total Suspended Solids (g/m^3)	E-coli MPN/100mL
25/09/2019	10.6	90	7.33	0.02	0.9	0.006	5	190
19/12/2019	9.4	55	7.27	0.02	0.4	0.015	77	2400
12/03/2020	9.7	88	7.3	0.04	1.1	0.014	16	2800
17/06/2020	11.8	103	7.45	0.05	1.3	0.014	3	500
Mean	10.4	84	7.3	0.03	0.9	0.012	25	1473
Median	10.15	89	7.32	0.03	1.0	0.014	11	1450
Maximum	11.8	103	7.45	0.05	1.3	0.015	77	2800
Minimum	9.4	55	7.27	0.02	0.4	0.006	3	190

Southland District Council
Edendale-Wyndham Wastewater Report 2021

Resource Consent 204630

Paul Reid
Consents and Compliance Manager

Introduction

This report has been prepared in accordance with condition 11 of Resource Consent 204630 for the period 1 July 2020 to 30 June 2021.

Background

In September 2008 Resource Consent 204630 was issued to discharge treated sewage from the Edendale Wyndham Wastewater Treatment System to the Mataura River

Resource consent was granted giving Council the option to either install a new BioFiltro treatment system using a biological treatment or a traditional oxidation pond treatment system.

Council decided to utilise the biological treatment system of the BioFiltro treatment system which uses worms to process the biological matter.
The Edendale plant has been upgraded in 2014--15 with 62% extra treatment bed being added.
On May 10 2017 Environment Southland granted two amendments to conditions 8 (b) and 10.
Condition 8 (b) ii <25 cumec sampling was removed, and Section10 macroinvertebrate sampling was changed from annual to every 3 years.

Accidental or Emergency Discharges

There were no accidental or emergency discharges for the 2020-21 year.

Odour Complaints

There have been no environmental complaints this financial year.

Summary of Monitoring Results

Inflow

Please see Appendix A.

The discharge from the wastewater treatment system is available on Historian tag PS033.

Table 1 – Flow Summary Data

	Mean	Maximum
Discharge (m^3/day)	412	653

The average daily inflows are higher than the estimated daily dry weather average inflow of 264m^3 / day. The maximum daily volume of 528m^3/day has been exceeded on 26 occasions in the 2020-21 year.
SDC did not apply to amend Discharge Permit 204630, Condition 2 "at an average daily flow of 264 m^3/day" in the 2019-20 year, because consultation was required with submitters on the original application. This discharge permit is due to be renewed by 10th September 2023.

Discharge Quality

Table 2 – Discharge Monitoring Results 1 July 2020 to 30 June 2021

Discharge Monitoring Results-Resource Consent 204630 2020-21										
Date	BOD_5 Limit 30g/m^3	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen Limit 15g/m^3	Nitrate Nitrogen (g/m^3)	Total Nitrogen (g/m^3)	Dissolved Reactive Phosphorous Limit 4g/m^3	Total Phosphorous (g/m^3)	Total Suspended Solids Limit 70g/m^3	E-coli Limit 6,000MPN /100mL
30/09/2020	10	379	6.61	8	11	21	2	2.5	8	17000
3/12/2020	4.9	567	6.38	7.4	31	40	4.7	5.7	20	3.1
30/03/2021	<2.0	627	4.51	5.2	31	37	0.35	4.2	40	<10
21/04/2021	<2.0	603	4.98	7.6	29	36	0.0	3.7	56	<10
Mean	7.5	544	5.62	7	26	34	1.8	4.0	31	8502
Median	7.45	585	5.68	8	30	37	1.2	4.0	30	8502
Maximum	10	627	6.61	8	31	40	4.7	5.7	56	17000
Minimum	4.9	379	4.51	5	11	21	0.0	2.5	8	3.1

The on-site plant improvements made in the 2014-15 year have been mostly compliant this year with all Section 13 limits, with the exception of E-coli on 30th September and DRP on 3rd December 2020, these were individual non-compliances and did not contravene the "four consecutive sample" means.

Receiving Waters

Table 3 – Summary of Scheduled Monitoring Results Environment (1 July 2020 to 30 June 2021)

Parameters	Upstream Mean	Downstream Mean
Dissolved Oxygen (g/m^3)	9.7	9.7
Dissolved Reactive Phosphorus (g/m^3)	0.012	0.021
Electrical Conductivity (mS/cm@25C)	103	102
Escherichia coli (MPN/100mL)	2800	2118
Nitrate Nitrogen (g/m^3)	1.1	1.1
pH	7.34	7.4
Total Ammonia Nitrogen (g/m^3)	0.06	0.06
Total Suspended Solids (g/m^3)	19	20

Macroinvertebrate Fauna and Periphyton

Edendale-Wyndham sampling criteria detailed in Condition 10 (a) namely "The survey shall be undertaken at a time when the Mataura River, as measured at Southland Regional Council's monitoring site at Tuturau, has had a flow of less than 25 cumecs for a period of at least twenty consecutive days." Environment Southland has changed the monitoring site to Gore with a flow of less than 22.3 cumecs for a period of at least twenty consecutive days.
The macroinvertebrate and periphyton sampling was undertaken this year.

Conclusion

The discharge from the Wyndham and Edendale community wastewater treatment system when compared in "Table 3" should not be adversely affecting local benthic macroinvertebrate and periphyton communities of the Mataura River".

Appendix A.

Edendale-Wyndham 1-07-2020 to 30-06-2021 Limit 528 m3/Day	
1/07/2020	436
2/07/2020	416
3/07/2020	411
4/07/2020	428
5/07/2020	432
6/07/2020	479
7/07/2020	581
8/07/2020	585
9/07/2020	496
10/07/2020	432
11/07/2020	419
12/07/2020	431
13/07/2020	435
14/07/2020	425
15/07/2020	413
16/07/2020	414
17/07/2020	401
18/07/2020	409
19/07/2020	424
20/07/2020	427
21/07/2020	435
22/07/2020	439
23/07/2020	489
24/07/2020	530
25/07/2020	534
26/07/2020	470
27/07/2020	469
28/07/2020	445
29/07/2020	461
30/07/2020	464
31/07/2020	460
1/08/2020	461
2/08/2020	429
3/08/2020	430
4/08/2020	435
5/08/2020	449
6/08/2020	453
7/08/2020	440
8/08/2020	437

9/08/2020	448
10/08/2020	498
11/08/2020	503
12/08/2020	451
13/08/2020	524
14/08/2020	529
15/08/2020	480
16/08/2020	480
17/08/2020	482
18/08/2020	486
19/08/2020	476
20/08/2020	477
21/08/2020	466
22/08/2020	450
23/08/2020	451
24/08/2020	454
25/08/2020	454
26/08/2020	456
27/08/2020	449
28/08/2020	452
29/08/2020	472
30/08/2020	475
31/08/2020	453
1/09/2020	560
2/09/2020	566
3/09/2020	488
4/09/2020	408
5/09/2020	412
6/09/2020	409
7/09/2020	413
8/09/2020	400
9/09/2020	404
10/09/2020	501
11/09/2020	504
12/09/2020	419
13/09/2020	395
14/09/2020	399
15/09/2020	493
16/09/2020	536
17/09/2020	541
18/09/2020	573
19/09/2020	578
20/09/2020	501
21/09/2020	510
22/09/2020	517
23/09/2020	503
24/09/2020	478
25/09/2020	483
26/09/2020	428

27/09/2020	432
28/09/2020	483
29/09/2020	483
30/09/2020	450
1/10/2020	466
2/10/2020	369
3/10/2020	528
4/10/2020	620
5/10/2020	653
6/10/2020	621
7/10/2020	623
8/10/2020	576
9/10/2020	476
10/10/2020	463
11/10/2020	463
12/10/2020	462
13/10/2020	484
14/10/2020	505
15/10/2020	459
16/10/2020	439
17/10/2020	458
18/10/2020	458
19/10/2020	445
20/10/2020	447
21/10/2020	435
22/10/2020	443
23/10/2020	421
24/10/2020	415
25/10/2020	448
26/10/2020	516
27/10/2020	540
28/10/2020	440
29/10/2020	393
30/10/2020	435
31/10/2020	458
1/11/2020	463
2/11/2020	445
3/11/2020	435
4/11/2020	434
5/11/2020	451
6/11/2020	438
7/11/2020	417
8/11/2020	432
9/11/2020	437
10/11/2020	419
11/11/2020	427
12/11/2020	404
13/11/2020	452
14/11/2020	514

15/11/2020	535
16/11/2020	437
17/11/2020	504
18/11/2020	528
19/11/2020	452
20/11/2020	420
21/11/2020	440
22/11/2020	518
23/11/2020	548
24/11/2020	501
25/11/2020	457
26/11/2020	441
27/11/2020	448
28/11/2020	422
29/11/2020	412
30/11/2020	370
1/12/2020	381
2/12/2020	389
3/12/2020	345
4/12/2020	392
5/12/2020	407
6/12/2020	411
7/12/2020	378
8/12/2020	339
9/12/2020	354
10/12/2020	363
11/12/2020	436
12/12/2020	460
13/12/2020	438
14/12/2020	340
15/12/2020	355
16/12/2020	352
17/12/2020	371
18/12/2020	351
19/12/2020	363
20/12/2020	347
21/12/2020	364
22/12/2020	364
23/12/2020	343
24/12/2020	355
25/12/2020	364
26/12/2020	383
27/12/2020	353
28/12/2020	303
29/12/2020	285
30/12/2020	292
31/12/2020	266
1/01/2021	279
2/01/2021	292

3/01/2021	340
4/01/2021	362
5/01/2021	332
6/01/2021	320
7/01/2021	338
8/01/2021	350
9/01/2021	323
10/01/2021	324
11/01/2021	335
12/01/2021	335
13/01/2021	351
14/01/2021	346
15/01/2021	363
16/01/2021	323
17/01/2021	321
18/01/2021	334
19/01/2021	343
20/01/2021	357
21/01/2021	439
22/01/2021	469
23/01/2021	367
24/01/2021	358
25/01/2021	337
26/01/2021	337
27/01/2021	332
28/01/2021	361
29/01/2021	377
30/01/2021	341
31/01/2021	348
1/02/2021	401
2/02/2021	418
3/02/2021	349
4/02/2021	355
5/02/2021	368
6/02/2021	331
7/02/2021	333
8/02/2021	378
9/02/2021	387
10/02/2021	364
11/02/2021	380
12/02/2021	334
13/02/2021	351
14/02/2021	333
15/02/2021	362
16/02/2021	379
17/02/2021	350
18/02/2021	356
19/02/2021	342
20/02/2021	346

21/02/2021	358
22/02/2021	394
23/02/2021	410
24/02/2021	352
25/02/2021	356
26/02/2021	356
27/02/2021	340
28/02/2021	345
1/03/2021	336
2/03/2021	344
3/03/2021	360
4/03/2021	346
5/03/2021	352
6/03/2021	366
7/03/2021	350
8/03/2021	373
9/03/2021	371
10/03/2021	361
11/03/2021	373
12/03/2021	381
13/03/2021	362
14/03/2021	384
15/03/2021	409
16/03/2021	435
17/03/2021	443
18/03/2021	421
19/03/2021	357
20/03/2021	334
21/03/2021	344
22/03/2021	326
23/03/2021	333
24/03/2021	339
25/03/2021	329
26/03/2021	339
27/03/2021	326
28/03/2021	320
29/03/2021	332
30/03/2021	325
31/03/2021	330
1/04/2021	335
2/04/2021	338
3/04/2021	352
4/04/2021	297
5/04/2021	302
6/04/2021	337
7/04/2021	339
8/04/2021	328
9/04/2021	344
10/04/2021	349

11/04/2021	336
12/04/2021	323
13/04/2021	332
14/04/2021	358
15/04/2021	369
16/04/2021	371
17/04/2021	335
18/04/2021	332
19/04/2021	319
20/04/2021	323
21/04/2021	325
22/04/2021	328
23/04/2021	361
24/04/2021	364
25/04/2021	339
26/04/2021	343
27/04/2021	371
28/04/2021	378
29/04/2021	361
30/04/2021	386
1/05/2021	390
2/05/2021	365
3/05/2021	348
4/05/2021	349
5/05/2021	340
6/05/2021	328
7/05/2021	325
8/05/2021	327
9/05/2021	403
10/05/2021	406
11/05/2021	470
12/05/2021	479
13/05/2021	396
14/05/2021	350
15/05/2021	328
16/05/2021	339
17/05/2021	382
18/05/2021	390
19/05/2021	592
20/05/2021	603
21/05/2021	440
22/05/2021	445
23/05/2021	448
24/05/2021	429
25/05/2021	415
26/05/2021	419
27/05/2021	401
28/05/2021	545
29/05/2021	556

30/05/2021	425
31/05/2021	396
1/06/2021	392
2/06/2021	391
3/06/2021	385
4/06/2021	413
5/06/2021	419
6/06/2021	370
7/06/2021	369
8/06/2021	398
9/06/2021	392
10/06/2021	368
11/06/2021	374
12/06/2021	379
13/06/2021	397
14/06/2021	544
15/06/2021	548
16/06/2021	450
17/06/2021	413
18/06/2021	390
19/06/2021	382
20/06/2021	374
21/06/2021	368
22/06/2021	395
23/06/2021	401
24/06/2021	378
25/06/2021	472
26/06/2021	479
27/06/2021	451
28/06/2021	600
29/06/2021	608
30/06/2021	474
	Mean **412**
	Maximum **653**
	Yearly Total **150386**

Appendix B.

Receiving waters Upstream-Resource Consent 302704 2020-21								
Date	Dissolved Oxygen (g/m^3)	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen (g/m^3)	Nitrate Nitrogen (g/m^3)	Dissolved Reactive Phosphorous (g/m^3)	Total Suspended Solids (g/m^3)	E-coli MPN/100mL
30/09/2020	12.4	116	7.27	0.08	1.2	0.019	34	10000
3/12/2020	9.0	80	7.34	0.04	0.8	0.008	4	670
30/03/2021	8.1	108	7.39	0.07	1.1	0.008	<2.5	210
21/04/2021	9.3	106	7.34	0.06	1.2	0.011	<2.5	320
Mean	9.7	103	7.34	0.06	1.1	0.012	19	2800
Median	9.2	107	7.34	0.07	1.2	0.010	19	495
Maximum	12.4	116	7.39	0.08	1.2	0.019	34	10000
Minimum	8.1	80	7.27	0.04	0.8	0.008	4	210

Appendix C.

Receiving waters Downstream-Resource Consent 302704 2020-21								
Date	Dissolved Oxygen (g/m^3)	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen (g/m^3)	Nitrate Nitrogen (g/m^3)	Dissolved Reactive Phosphorous (g/m^3)	Total Suspended Solids (g/m^3)	E-coli MPN/100mL
30/09/2020	12.3	112	7.3	0.07	1.2	0.021	33	7300
3/12/2020	8.8	80	7.35	0.04	0.7	0.008	7	540
30/03/2021	8.9	108	7.46	0.06	1.4	0.007	<2.5	310
21/04/2021	8.8	106	7.33	0.05	1.2	0.047	<2.5	320
Mean	9.7	102	7.4	0.06	1.1	0.021	20	2118
Median	8.85	107	7.34	0.055	1.2	0.0145	20	430
Maximum	12.3	112	7.46	0.07	1.4	0.047	33	7300
Minimum	8.8	80	7.3	0.04	0.7	0.007	7	310

Southland District Council

Edendale-Wyndham Wastewater Report 2022

Resource Consent 204630

Paul Reid
Consents and Compliance Manager

Introduction

This report has been prepared in accordance with condition 11 of Resource Consent 204630 for the period 1 July 2021 to 30 June 2022.

Background

In September 2008 Resource Consent 204630 was issued to discharge treated sewage from the Edendale Wyndham Wastewater Treatment System to the Mataura River

Resource consent was granted giving Council the option to either install a new BioFiltro treatment system using a biological treatment or a traditional oxidation pond treatment system.

Council decided to utilise the biological treatment system of the BioFiltro treatment system which uses worms to process the biological matter.
The Edendale plant has been upgraded in 2014--15 with 62% extra treatment bed being added.
On May 10 2017 Environment Southland granted two amendments to conditions 8 (b) and 10.
Condition 8 (b) ii <25 cumec sampling was removed, and Section10 macroinvertebrate sampling was changed from annual to every 3 years.

Accidental or Emergency Discharges

There were no accidental or emergency discharges for the 2021-22 year.

Odour Complaints

There have been no environmental complaints this financial year.

Summary of Monitoring Results

Inflow

Please see Appendix A.

The discharge from the wastewater treatment system is available on Historian tag PS033.

Table 1 – Flow Summary Data

	Mean	Maximum
Discharge (m^3/day)	430	625

The average daily inflows are higher than the estimated daily dry weather average inflow of 264m^3 / day. The maximum daily volume of 528m^3/day has been exceeded on 22 occasions in the 2021-22 year.
SDC did not apply to amend Discharge Permit 204630, Condition 2 "at an average daily flow of 264 m^3/day" in the 2019-20 year, because consultation was required with submitters on the original application. This discharge permit is due to be renewed by 10th September 2023.

Discharge Quality

Table 2 – Discharge Monitoring Results 1 July 2021 to 30 June 2022

Discharge Monitoring Results-Resource Consent 204630 2021-22										
Date	BOD_5 Limit 30g/m^3	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen Limit 15g/m^3	Nitrate Nitrogen (g/m^3)	Total Nitrogen (g/m^3)	Dissolved Reactive Phosphorous Limit 4g/m^3	Total Phosphorous (g/m^3)	Total Suspended Solids Limit 70g/m^3	E-coli Limit 6,000MPN /100mL
3/09/2021	18	487	5.96	7.7	17	37	1.7	2.7	9.3	20
16/12/2021	8.1	521	5.88	6.6	22	33	2.5	4.7	8.8	20
15/03/2022	21	626	6.34	15	13	34	2.4	4.8	11	85
6/04/2022	11	506	6.09	4.3	14	38	4.2	4.9	13	20
Mean	14.5	535	6.07	8	17	36	2.7	4.3	11	36
Median	14.5	514	6.03	7	16	36	2.5	4.8	10	20
Maximum	21	626	6.34	15	22	38	4.2	4.9	13	85
Minimum	8.1	487	5.88	4	13	33	1.7	2.7	9	20

The on-site plant improvements made in the 2014-15 year have been mostly compliant this year with all Section 13 limits, with the exception of DRP on 6th April, this was individual non-compliance and did not contravene the "four consecutive sample" means.

Receiving Waters

Table 3 – Summary of Scheduled Monitoring Results Environment (1 July 2021 to 30 June 2022)

Parameters	Upstream Mean	Downstream Mean
Dissolved Oxygen (g/m^3)	9.3	8.9
Dissolved Reactive Phosphorus (g/m^3)	0.007	0.007
Electrical Conductivity (mS/cm@25C)	102	99
Escherichia coli (MPN/100mL)	648	602
Nitrate Nitrogen (g/m^3)	1	1
pH	7.28	7.4
Total Ammonia Nitrogen (g/m^3)	0.08	0.07
Total Suspended Solids (g/m^3)	3	6

Macroinvertebrate Fauna and Periphyton

Edendale-Wyndham sampling criteria detailed in Condition 10 (a) namely "The survey shall be undertaken at a time when the Mataura River, as measured at Southland Regional Council's monitoring site at Tuturau, has had a flow of less than 25 cumecs for a period of at least twenty consecutive days." Environment Southland has changed the monitoring site to Gore with a flow of less than 22.3 cumecs for a period of at least twenty consecutive days.
The macroinvertebrate and periphyton sampling was undertaken last year, the next survey is in 2024

Conclusion

The discharge from the Wyndham and Edendale community wastewater treatment system when compared in "Table 3" should not be adversely affecting local benthic macroinvertebrate and periphyton communities of the Mataura River".

Appendix A.

Edendale-Wyndham Wastewater Discharge -Resource Consent 204630 528 m^3/Day	
Date	**m^3/Day**
1/07/2021	451
2/07/2021	466
3/07/2021	474
4/07/2021	461
5/07/2021	463
6/07/2021	430
7/07/2021	489
8/07/2021	512
9/07/2021	526
10/07/2021	534
11/07/2021	490
12/07/2021	479
13/07/2021	481
14/07/2021	478
15/07/2021	489
16/07/2021	468
17/07/2021	469
18/07/2021	457
19/07/2021	462
20/07/2021	521
21/07/2021	527
22/07/2021	446
23/07/2021	428
24/07/2021	483
25/07/2021	488
26/07/2021	428
27/07/2021	461
28/07/2021	465
29/07/2021	461
30/07/2021	458
31/07/2021	436
1/08/2021	425
2/08/2021	433
3/08/2021	480
4/08/2021	487
5/08/2021	484
6/08/2021	457
7/08/2021	541

8/08/2021	615
9/08/2021	625
10/08/2021	515
11/08/2021	524
12/08/2021	528
13/08/2021	468
14/08/2021	546
15/08/2021	556
16/08/2021	513
17/08/2021	462
18/08/2021	468
19/08/2021	469
20/08/2021	589
21/08/2021	598
22/08/2021	465
23/08/2021	471
24/08/2021	465
25/08/2021	476
26/08/2021	488
27/08/2021	498
28/08/2021	487
29/08/2021	477
30/08/2021	466
31/08/2021	445
1/09/2021	515
2/09/2021	526
3/09/2021	478
4/09/2021	433
5/09/2021	440
6/09/2021	420
7/09/2021	407
8/09/2021	541
9/09/2021	565
10/09/2021	613
11/09/2021	624
12/09/2021	618
13/09/2021	607
14/09/2021	618
15/09/2021	494
16/09/2021	505
17/09/2021	499
18/09/2021	469
19/09/2021	461
20/09/2021	450
21/09/2021	493
22/09/2021	507
23/09/2021	515
24/09/2021	459
25/09/2021	469

26/09/2021	509
27/09/2021	531
28/09/2021	436
29/09/2021	438
30/09/2021	447
1/10/2021	466
2/10/2021	437
3/10/2021	439
4/10/2021	436
5/10/2021	437
6/10/2021	463
7/10/2021	411
8/10/2021	485
9/10/2021	512
10/10/2021	444
11/10/2021	447
12/10/2021	537
13/10/2021	559
14/10/2021	442
15/10/2021	417
16/10/2021	421
17/10/2021	434
18/10/2021	441
19/10/2021	460
20/10/2021	487
21/10/2021	432
22/10/2021	405
23/10/2021	442
24/10/2021	459
25/10/2021	455
26/10/2021	419
27/10/2021	434
28/10/2021	420
29/10/2021	434
30/10/2021	433
31/10/2021	451
1/11/2021	429
2/11/2021	422
3/11/2021	447
4/11/2021	431
5/11/2021	417
6/11/2021	390
7/11/2021	369
8/11/2021	389
9/11/2021	421
10/11/2021	421
11/11/2021	439
12/11/2021	412
13/11/2021	479

14/11/2021	511
15/11/2021	455
16/11/2021	429
17/11/2021	437
18/11/2021	456
19/11/2021	419
20/11/2021	410
21/11/2021	391
22/11/2021	421
23/11/2021	436
24/11/2021	404
25/11/2021	397
26/11/2021	400
27/11/2021	438
28/11/2021	462
29/11/2021	422
30/11/2021	399
1/12/2021	382
2/12/2021	340
3/12/2021	485
4/12/2021	504
5/12/2021	421
6/12/2021	453
7/12/2021	441
8/12/2021	405
9/12/2021	417
10/12/2021	412
11/12/2021	408
12/12/2021	379
13/12/2021	396
14/12/2021	384
15/12/2021	401
16/12/2021	388
17/12/2021	412
18/12/2021	420
19/12/2021	425
20/12/2021	380
21/12/2021	409
22/12/2021	399
23/12/2021	391
24/12/2021	401
25/12/2021	426
26/12/2021	391
27/12/2021	411
28/12/2021	414
29/12/2021	404
30/12/2021	398
31/12/2021	387
1/01/2022	378

2/01/2022	356
3/01/2022	368
4/01/2022	371
5/01/2022	396
6/01/2022	415
7/01/2022	366
8/01/2022	369
9/01/2022	376
10/01/2022	384
11/01/2022	395
12/01/2022	376
13/01/2022	359
14/01/2022	398
15/01/2022	421
16/01/2022	405
17/01/2022	396
18/01/2022	397
19/01/2022	424
20/01/2022	420
21/01/2022	405
22/01/2022	376
23/01/2022	393
24/01/2022	405
25/01/2022	408
26/01/2022	392
27/01/2022	397
28/01/2022	418
29/01/2022	414
30/01/2022	403
31/01/2022	409
1/02/2022	379
2/02/2022	409
3/02/2022	435
4/02/2022	427
5/02/2022	419
6/02/2022	432
7/02/2022	413
8/02/2022	385
9/02/2022	408
10/02/2022	432
11/02/2022	408
12/02/2022	392
13/02/2022	399
14/02/2022	401
15/02/2022	387
16/02/2022	421
17/02/2022	449
18/02/2022	441
19/02/2022	442

20/02/2022	483
21/02/2022	516
22/02/2022	441
23/02/2022	438
24/02/2022	416
25/02/2022	381
26/02/2022	357
27/02/2022	357
28/02/2022	374
1/03/2022	352
2/03/2022	351
3/03/2022	361
4/03/2022	363
5/03/2022	383
6/03/2022	366
7/03/2022	365
8/03/2022	374
9/03/2022	364
10/03/2022	364
11/03/2022	378
12/03/2022	360
13/03/2022	345
14/03/2022	354
15/03/2022	355
16/03/2022	330
17/03/2022	342
18/03/2022	306
19/03/2022	314
20/03/2022	300
21/03/2022	300
22/03/2022	314
23/03/2022	286
24/03/2022	352
25/03/2022	364
26/03/2022	316
27/03/2022	284
28/03/2022	297
29/03/2022	312
30/03/2022	310
31/03/2022	321
1/04/2022	318
2/04/2022	303
3/04/2022	300
4/04/2022	318
5/04/2022	331
6/04/2022	517
7/04/2022	521
8/04/2022	351
9/04/2022	330

10/04/2022	316
11/04/2022	315
12/04/2022	476
13/04/2022	486
14/04/2022	348
15/04/2022	349
16/04/2022	370
17/04/2022	371
18/04/2022	315
19/04/2022	328
20/04/2022	334
21/04/2022	484
22/04/2022	497
23/04/2022	492
24/04/2022	418
25/04/2022	430
26/04/2022	406
27/04/2022	376
28/04/2022	352
29/04/2022	359
30/04/2022	368
1/05/2022	365
2/05/2022	386
3/05/2022	393
4/05/2022	370
5/05/2022	328
6/05/2022	364
7/05/2022	371
8/05/2022	480
9/05/2022	491
10/05/2022	483
11/05/2022	379
12/05/2022	375
13/05/2022	364
14/05/2022	415
15/05/2022	426
16/05/2022	403
17/05/2022	363
18/05/2022	365
19/05/2022	354
20/05/2022	433
21/05/2022	444
22/05/2022	522
23/05/2022	535
24/05/2022	531
25/05/2022	524
26/05/2022	524
27/05/2022	401
28/05/2022	401

29/05/2022	401	
30/05/2022	462	
31/05/2022	476	
1/06/2022	464	
2/06/2022	471	
3/06/2022	479	
4/06/2022	435	
5/06/2022	424	
6/06/2022	402	
7/06/2022	409	
8/06/2022	403	
9/06/2022	380	
10/06/2022	389	
11/06/2022	416	
12/06/2022	426	
13/06/2022	449	
14/06/2022	477	
15/06/2022	516	
16/06/2022	527	
17/06/2022	533	
18/06/2022	536	
19/06/2022	475	
20/06/2022	458	
21/06/2022	426	
22/06/2022	437	
23/06/2022	481	
24/06/2022	488	
25/06/2022	419	
26/06/2022	429	
27/06/2022	399	
28/06/2022	409	
29/06/2022	412	
30/06/2022	455	
	Mean	**430**
	Maximum	**625**
	Total	**157019**

Appendix B.

Receiving waters Upstream-Resource Consent 204630 2021-22								
Date	Dissolved Oxygen (g/m^3)	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen (g/m^3)	Nitrate Nitrogen (g/m^3)	Dissolved Reactive Phosphorous (g/m^3)	Total Suspended Solids (g/m^3)	E-coli MPN/100mL
3/09/2021	11.4	103	7.12	0.03	1.4	0.012	4	150
16/12/2021	8.9	90	7.24	0.11	0.9	0.005	3	350
15/03/2022	9.3	99	7.44	0.04	1.0	0.006	3	590
6/04/2022	7.6	115	7.33	0.12	0.7	0.006	3	1500
Mean	9.3	102	7.28	0.08	1.0	0.007	3	648
Median	9.1	101	7.285	0.08	1.0	0.006	3	470
Maximum	11.4	115	7.44	0.12	1.4	0.012	4	1500
Minimum	7.6	90	7.12	0.03	0.7	0.005	3	150

Appendix C.

Receiving waters Downstream-Resource Consent 204630 2021-22								
Date	Dissolved Oxygen (g/m^3)	Electrical Conductivity (mS/cm@25C)	pH	Total Ammonia Nitrogen (g/m^3)	Nitrate Nitrogen (g/m^3)	Dissolved Reactive Phosphorous (g/m^3)	Total Suspended Solids (g/m^3)	E-coli MPN/100mL
3/09/2021	10.6	101	7.17	0.03	1.4	0.009	4	97
16/12/2021	8.1	88	7.33	0.13	0.9	0.005	14	510
15/03/2022	8.5	99	7.55	0.03	1.0	0.005	3	700
6/04/2022	8.5	109	7.36	0.09	0.9	0.009	3	1100
Mean	8.9	99	7.4	0.07	1.0	0.007	6	602
Median	8.5	100	7.35	0.06	0.9	0.007	3	605
Maximum	10.6	109	7.55	0.13	1.4	0.009	14	1100
Minimum	8.1	88	7.17	0.03	0.9	0.005	3	97

Appendix C

Certificate of Title

Terranet document ordering service

Certificate of Title with diagram: 1A/1425

Billing Code: 12553730-STG3-Stage 3 AEE

CoreLogic Reference: 3118511/1

Processed: 08 March 2023

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **SL1A/1425**
Land Registration District **Southland**
Date Issued 16 October 1972

Prior References
SLA4/146

Estate Fee Simple
Area 9308 square metres more or less
Legal Description Section 36 Block III Mataura Hundred
Registered Owners
Southland District Council

Interests

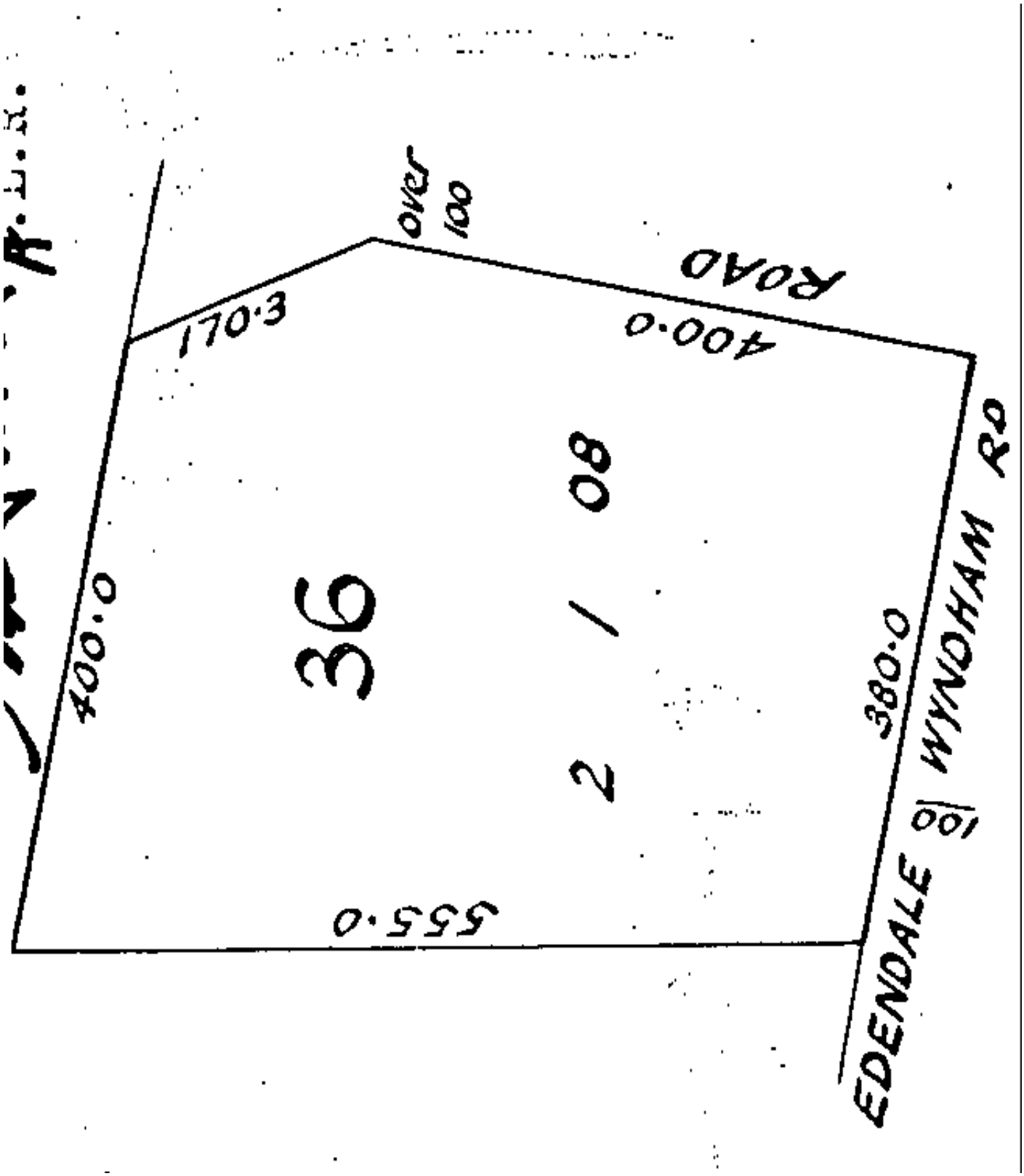
Subject to Section 59 Land Act 1948

241/99 Deed of Easement

Type	Servient Tenement	Easement Area	Dominant Tenement
Drainage	Section 36 Block III Mataura Hundred - herein	Part herein	Lot 2 Deposited Plan 4575, Lot 2 Deposited Plan 534 and Lot 2 Deposited Plan 3142 - CT SL181/264

5027319.1 Transfer creating the following easements - 6.3.2001 at 9:00 am

Type	Servient Tenement	Easement Area	Dominant Tenement	Statutory Restriction
Drain water	Section 36 Block III Mataura Hundred - herein	B DP 15183	Lot 1 Deposited Plan 12733 - CT SL10A/523	N/A
Drain water	Section 36 Block III Mataura Hundred - herein	B DP 15183	Lot 1 Deposited Plan 10336 and Lot 1 Deposited Plan 10650 - CT SL6C/28	N/A


over
100
ROAD
170·3
400·0
36
08
/
2
400·0
380·0
WYNDHAM RD
EDENDALE
555·0

Terranet document ordering service

Certificate of Title with diagram: 241/99

Billing Code: 12553730-STG3-Stage 3 AEE

CoreLogic Reference: 3118512/1

Processed: 08 March 2023

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**SL241/99**
Land Registration District	**Southland**
Date Registered	19 September 1968 01:50 pm

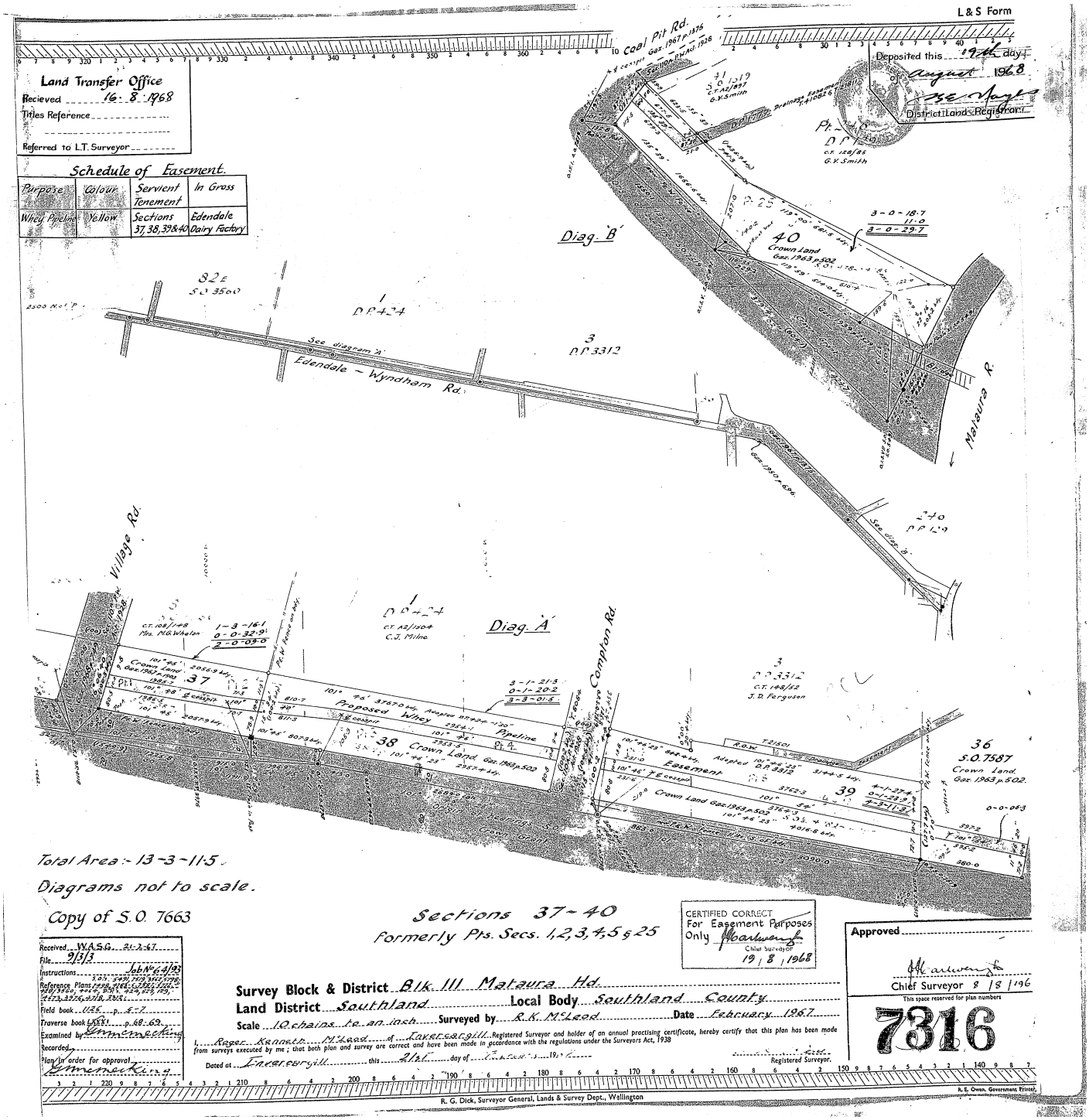
Prior References
SL181/264

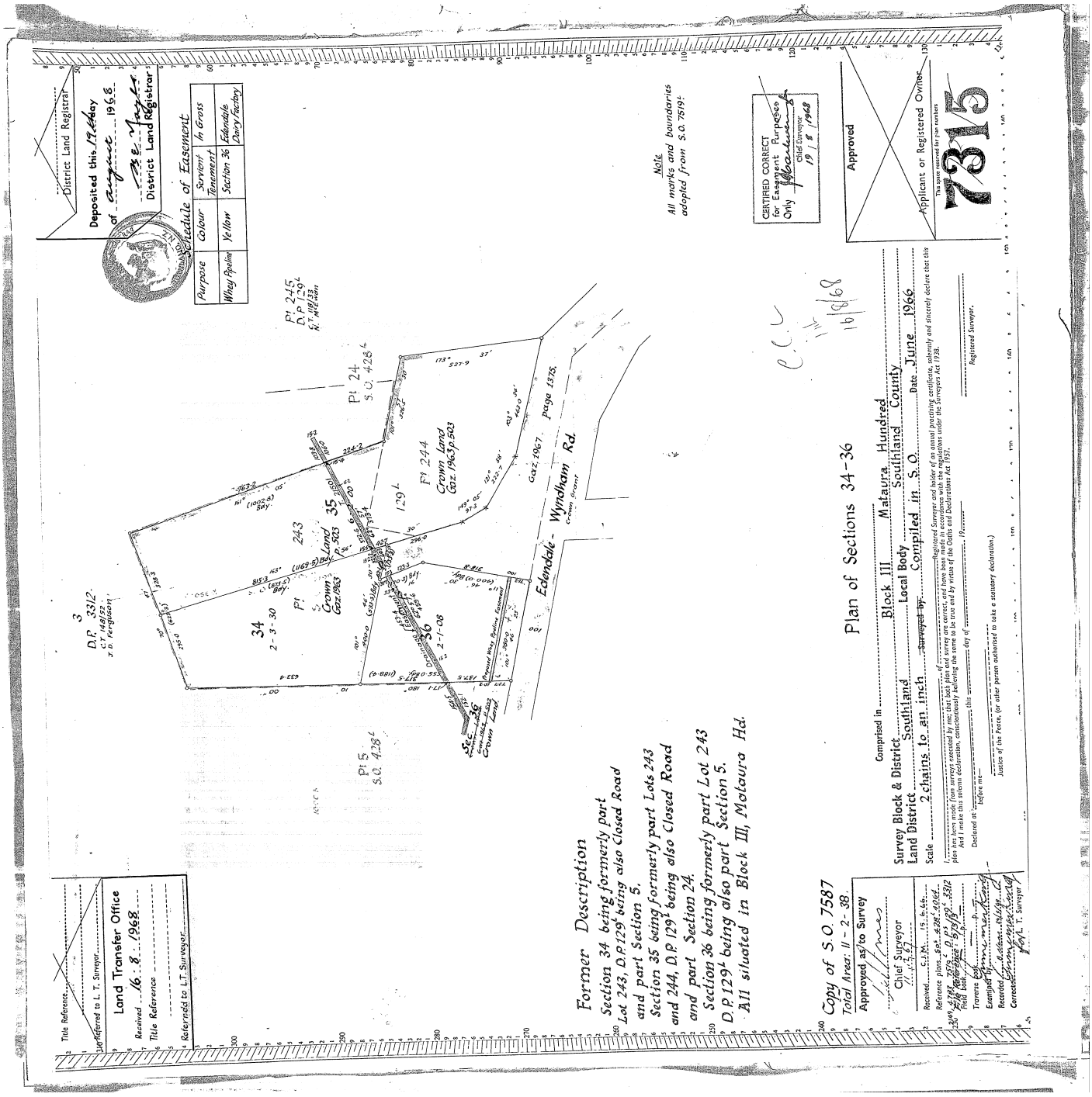
Type	Deed of easement under s60 Land Act 1948
Area	6.5243 hectares more or less
Legal Description	Section 36-40 Block III Mataura Hundred and Defined on Deposited Plan DP 7316 and Part Deposited Plan 7315
Purpose	Drainage easement coloured yellow on DP 7315 and DP 7316

Registered Owners
Her Majesty the Queen - Grantor

Interests

9184345.1 Surrender of the drainage right created by Deed of Easement 241/99 as appurtenant to CFR SL6C/28 - 26.9.2012 at 1:58 pm


L&S Form
Land Transfer Office
Recieved 16: 8: 1968
Titles Reference
Referred to L.T. Surveyor
Schedule of Easement.
Purpose | Colour | Servient Tenement | In Gross
Whey Pipeline | Yellow | Sections 37,38,39&40 | Edendale Dairy Factory
Deposited this 19th day of August 1968
District Land Registrar
Coal Pit Rd.
Diag. 'B'
Diag. 'A'
Edendale – Wyndham Rd.
Village Rd.
Compton Rd.
Mataura R.
See diagram 'A'
See diagram 'B'
Proposed Whey Pipeline
Crown Land Gaz. 1963 p.502
Total Area :- 13-3-11.5
Diagrams not to scale.
Copy of S.O. 7663
Sections 37-40
formerly Pts. Secs. 1,2,3,4,5 & 25
CERTIFIED CORRECT For Easement Purposes Only
Chief Surveyor 19/8/1968
Approved
Chief Surveyor 8/8/196
This space reserved for plan numbers
7316
Received WASG 21.2.67
File 9/3/3
Instructions Job No 64/93
Field book 1125 p. 4-7
Traverse book L2331 p. 48-63
Examined by
Recorded
Plan in order for approval
Survey Block & District Blk III Mataura Hd
Land District Southland Local Body Southland County
Scale 10 chains to an inch Surveyed by R.K. McLeod Date February 1967
I, Roger Kramer McLeod of Invercargill Registered Surveyor and holder of an annual practising certificate, hereby certify that this plan has been made from surveys executed by me; that both plan and survey are correct and have been made in accordance with the regulations under the Surveyors Act, 1938
Dated at Invercargill this 21st day of February 1968
Registered Surveyor.
R. G. Dick, Surveyor General, Lands & Survey Dept., Wellington
R. E. Owen, Government Printer


Plan of Sections 34-36
Comprised in Block III Malaura Hundred
Survey Block & District Southland Local Body Southland County
Land District Southland Surveyed by Compiled in S.O. Date June 1966
Scale 2 chains to an inch
Former Description
Section 34 being formerly part Lot 243, D.P.1291 being also Closed Road and part Section 5.
Section 35 being formerly part Lots 243 and 244, D.P.1291 being also Closed Road and part Section 24.
Section 36 being formerly part Lot 243 D.P.1291 being also part Section 5.
All situated in Block III, Malaura Hd.
Copy of S.O. 7587
Total Area: 11-2-38
Approved as to Survey
Chief Surveyor
Land Transfer Office
Received 16:8:1968
Deposited this 19th day of August 1968
District Land Registrar
Schedule of Easement
Purpose | Colour | Servient Tenement | In Gross
Whey Pipeline | Yellow | Section 36 | Edendale Dairy Factory
Edendale - Wyndham Rd
Gaz. 1967 page 1575
Crown Land Gaz. 1963 p.503
Crown Land Gaz. 1963
Pt 244
Pt 243
Pt 245 D.P.1294
Pt 24 S.O. 4284
Pt 5 S.O. 4284
D.P. 3312
34 2-3-30
35 2-1-08
36 2-1-08
129L
Note
All marks and boundaries adopted from S.O. 7591.
CERTIFIED CORRECT for Easement Purposes Only
Chief Surveyor
19/8/1968
Approved
Applicant or Registered Owner
315

REGISTER

EMBODIED IN REGISTER BOOK VOLUME 241 FOLIO 99
this nineteenth day of September one thousand nine hundred and sixty-eight.

Assistant Land Registrar, Southland.

241/99

DISTRICT LAND REGISTRAR SOUTHLAND, N.Z.

THIS DEED is made the 29th day of August 1968 BETWEEN HER MAJESTY THE QUEEN (hereinafter with her successors in title called "the Grantor") of the one part AND the EDENDALE DAIRY FACTORY COMPANY LIMITED a duly incorporated Company having its registered office at Edendale (hereinafter called "the Grantee") of the other part WHEREAS the Grantor is the registered proprietor of the land more particularly described in the First Schedule hereto (hereinafter called "the servient tenement") AND WHEREAS the Grantee is registered as proprietor of an estate in fee simple subject however to such encumbrances liens and interests as are notified by memoranda underwritten or endorsed hereon in all that piece of land more particularly described in the Second Schedule hereto (hereinafter called "the dominant tenement") AND WHEREAS there is at present constructed beneath the surface of the servient tenement a drain owned and constructed by the Grantee which drain runs from the dominant tenement through and under the servient tenement to the Mataura River near Wyndham AND WHEREAS the Grantor has agreed to give and grant to the Grantee the right to use such existing drain for the purpose of disposing of waste products and other effluent from the Grantee's premises at Edendale into the Mataura River NOW THEREFORE in pursuance of the premises and of the said agreement and in consideration of the covenants and conditions hereinafter contained the Grantor DOTH HEREBY GIVE AND GRANT to the Grantee its tenants and licensees and other the owner or owners for the time being of the dominant tenement all that the full right and liberty forever hereafter to use the existing drain beneath the surface of the servient tenement shown coloured yellow on Survey Office Plans Nos. 7587 and 7663 deposited in the Land Registry Office at Invercargill as Nos. 7315 and 7316 and thereon marked as "Proposed Whey Pipeline Easement" for the passage or conveyance of whey and other waste products, water, sewerage and other effluent AND for that purpose to enter upon the servient tenement or any part or parts thereof at any reasonable time or times with or without vehicles and other machinery to inspect repair maintain or renew the said drain or any part thereof and all connections, inspection pits and other works connected therewith and generally to do and perform such acts and things in or upon the servient tenement or any part there-of as may be necessary or proper for or in relation to any of the purposes aforesaid AND it is hereby covenanted and agreed by and between the Grantor and the Grantee as follows:-

241/99

1. THAT the Grantee shall and will at all times repair and maintain the said drain in a good and efficient state of repair for the purposes for which the same was designed and will prevent the same from becoming a nuisance.

2. THAT in the event of the Grantee entering into and upon the servient tenement for the purpose of inspecting, repairing, maintaining or re-placing the said drain or any part thereof the Grantee shall and will carry out and complete the same with as little disturbance to the surface of the servient tenement as possible and shall and will immediately on completion of any such work restore the surface of the servient tenement as nearly as possible to its original condition.

3. THAT the Grantee will from time to time repair and make good all damage to fences gates or drains in upon or around the servient tenement caused by the carrying out by the Grantee of any of the works hereinbefore mentioned.

4. THE Grantor hereby covenants with the Grantee that the Grantor will not place any buildings erections or fences over the said drain other than such fences and gates as may reasonably be required by the Grantor in exercising normal use and occupation of the servient tenement and the Grantor will not interfere with or in any way cause to be damaged or permit to be damaged the said drain or other works connected therewith and the Grantor will forthwith repair and make good any such damage that may have occured by or through the act or default of the Grantor or of any other person or persons acting on behalf of the Grantor.

IN WITNESS WHEREOF these presents have been executed by the parties hereto the day and year hereinbefore first written.

FIRST SCHEDULE

ALL THOSE pieces of land situated in the Mataura Hundred containing ~~15~~ 16 acres 0 roods ~~15~~ 12.5 poles more or less being Sections 36, 37, 38, 40 and 39 Block III of the said Hundred and being all of the land in Survey Office Plan No. 7663 (now Deposited as No. 7316) and part of the land in Survey Office Plan No. 7587 (now Deposited as No. 7315) Southland Land Registry

- K.AE

SECOND SCHEDULE

ALL THAT piece of land situated in the Mataura Hundred containing 2 acres 12.6 poles more or less being Lot 2 Deposited Plan No. 4575 and parts of Lot 2 Deposited Plan No. 534 and part of Lot 2 Deposited Plan No. 3142 and being part of Section 7 Block II of the said Hundred and being all of the land comprised and described in Certificate of Title Volume 181 folio 264 : Southland Land Registry TOGETHER WITH Drainage Rights granted by Transfers Nos 21501, 21811, 41082 and 103981 SUBJECT TO Drainage Rights granted by Transfer No. 66980 and SUBJECT ALSO to Mortgage No. 86216.

241/99

SIGNED on the day above-mined by Arthur Thomas Dobbs Deputy Commissioner of Crown Lands for Southland, for and on behalf of Her Majesty the Queen, in the presence of:-

A.T. Dobbs.
Commissioner of Crown Lands

Witness :
Occupation:
Address :

THE COMMON SEAL of the EDENDALE DAIRY FACTORY COMPANY LIMITED was hereunto affixed in the presence of:-

EDENDALE

K.O'Neill
J.E.Cafatick

THE BANK OF NEW SOUTH WALES, the Mortgagee of the land described in the Second Schedule of the aforesaid Deed under and by virtue of Mortgage No. 66216 : Southland Land Registry DOTH HEREBY CONSENT to the within-written Deed of Grant of Drainage Easement.

DATED this 16th. day of September. 1968.

SIGNED by The Bank of New South Wales as Mortgagee by its Attorney DICK GOULD WHEELER in the presence of:-

THE BANK OF NEW SOUTH WALES
By its Attorney

Witness:
Occupation: Bank Officer
Address: Bank of New South Wales Wellington

Correct for the purposes of the Land Transfer Act 1952

K.O'Neill
Solicitor for the Grantee

241/99

I, DICK GOULD WHEELER of the City of Wellington, Assistant Chief Manager for New Zealand of the Bank of New South Wales solemnly and sincerely declare:—

1. I am the Attorney of the Bank of New South Wales acting under a certain deed poll or Power of Attorney bearing date the 24th day of January one thousand nine hundred and sixty-six under the Common Seal of the Bank of New South Wales copy of which is deposited in the Land Transfer Offices at

AUCKLAND and there numbered A.165344
BLENHEIM and there numbered 48014
CHRISTCHURCH and there numbered 688552
DUNEDIN and there numbered 303393
GISBORNE and there numbered 82813
HAMILTON and there numbered B.551807
HOKITIKA and there numbered 33270
INVERCARGILL and there numbered 214550
NAPIER and there numbered 205713
NELSON and there numbered 106055
NEW PLYMOUTH and there numbered 142368
WELLINGTON and there numbered 677691

2. THAT under the powers by the said Deed conferred on me I have executed the annexed paper writing being Consent to Deed of Grant of Drainage Easement - Brendale Dairy Factory Company Limited. Her Majesty the Queen and Bank

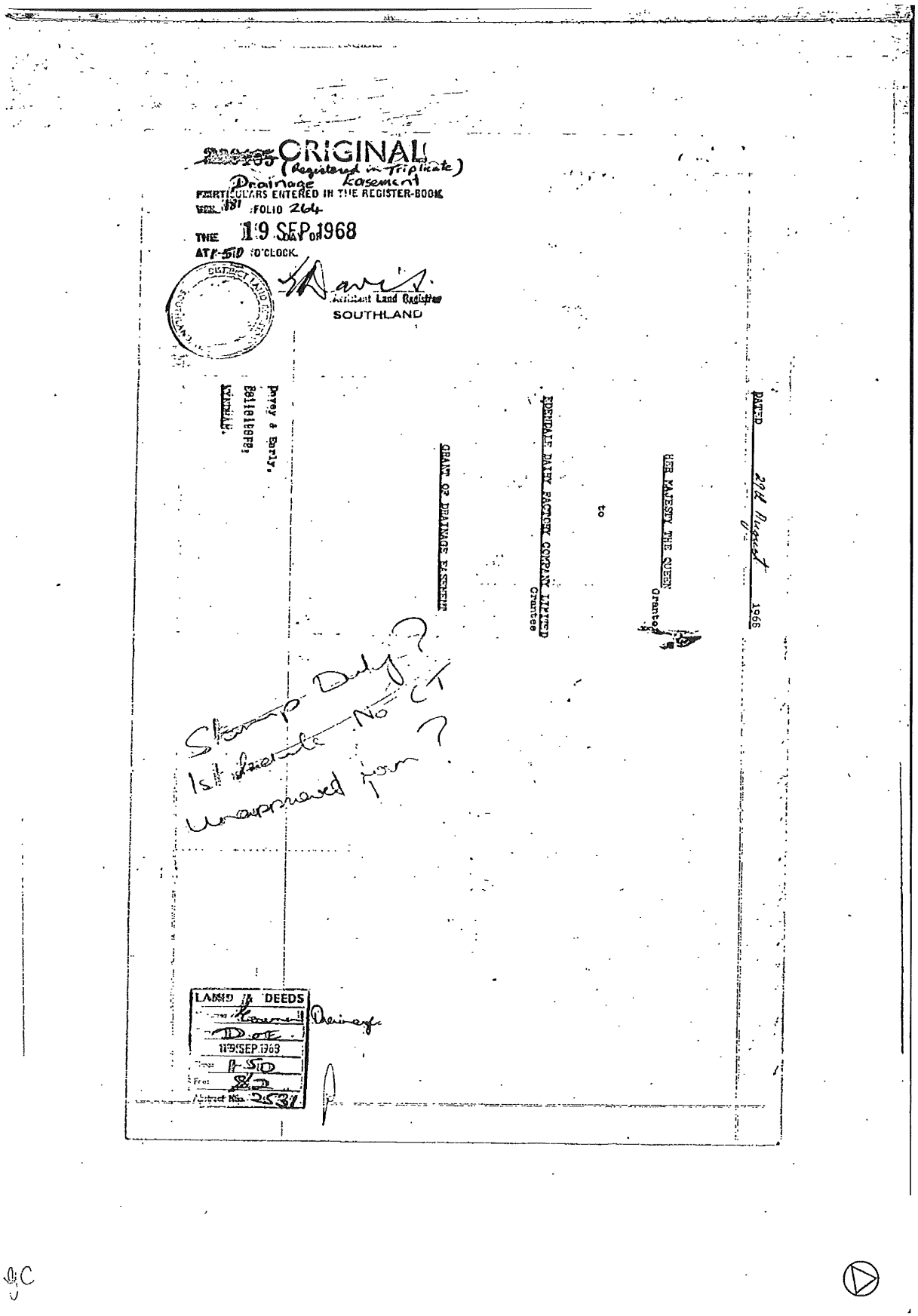
3. THAT I am an officer of the said Bank being Assistant Chief Manager for New Zealand of the said Bank and reside in the City of Wellington in the Dominion of New Zealand.

4. THAT I have not received any notice of the revocation of the said deed poll or Power of Attorney by the dissolution of the said Bank or otherwise.

AND I make this solemn Declaration conscientiously believing the same to be true by virtue of "The Oaths and Declarations Act 1957".

DECLARED at Wellington this 16th day of September, 1966 before me:

A Solicitor of the Supreme Court of New Zealand


ORIGINAL
(Registered in Triplicate)
Drainage Easement
PARTICULARS ENTERED IN THE REGISTER-BOOK
VOL 1831 FOLIO 264
THE 19 SEP 1968
AT 1-50 O'CLOCK
Assistant Land Registrar
SOUTHLAND
DISTRICT LAND REGISTRY SOUTHLAND
Perry & Early, Solicitors, Winton.
GRANT OF DRAINAGE EASEMENT
FONTERRA DAIRY FACTORY COMPANY LIMITED Grantee
to
HER MAJESTY THE QUEEN Grantor
DATED 22nd August 1968
Stamp Duty? No CT
Is this correct?
Unapproved for?
LAND & DEEDS
RECEIVED
19 SEP 1968
Drainage
1-50
&
2537

Terranet document ordering service

Certificate of Title with diagram: A2/1333

Billing Code: 12553730-STG3 Stage 3 AEE

CoreLogic Reference: 3118743/1

Processed: 08 March 2023

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

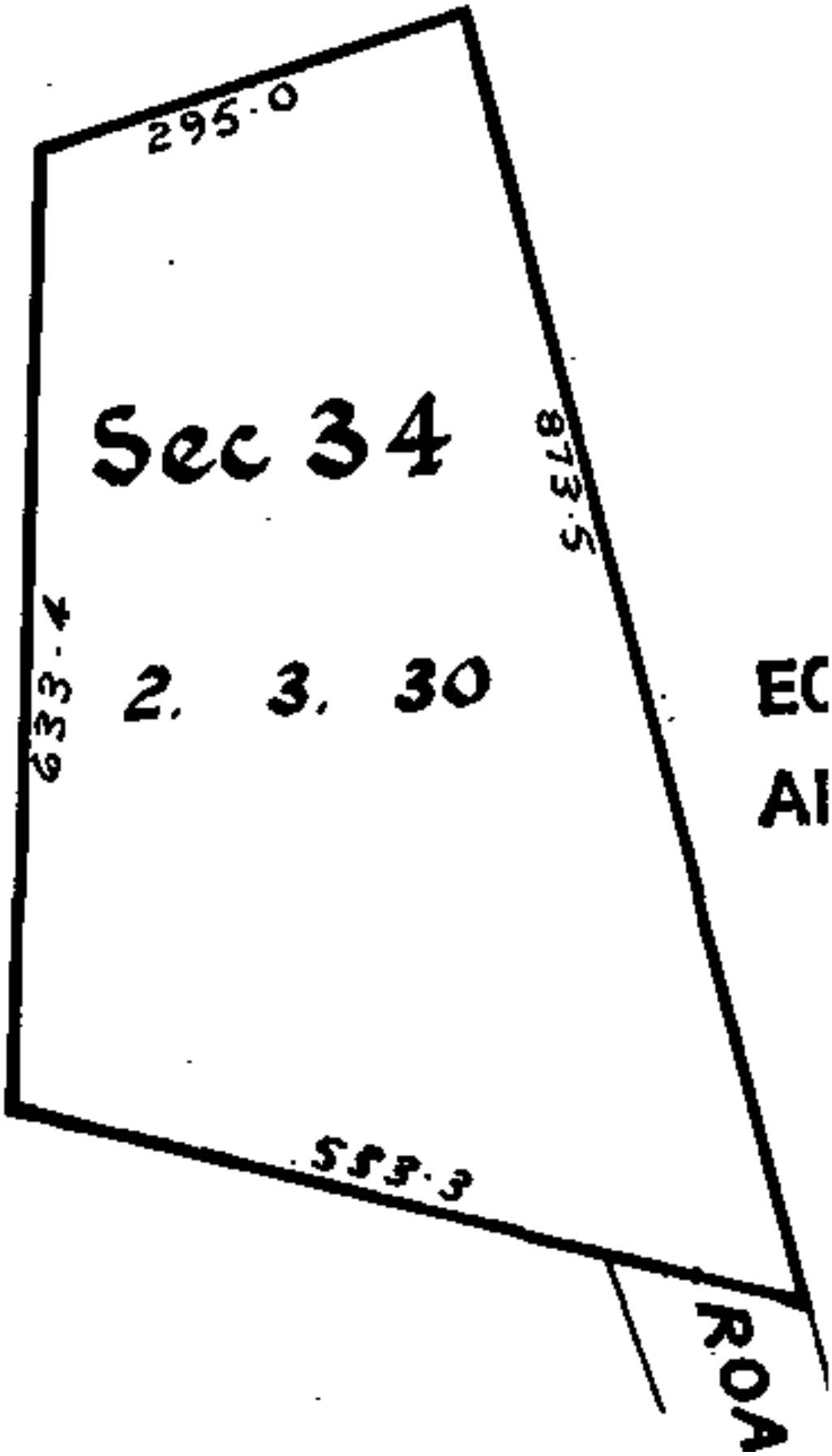
Identifier	**SLA2/1333**
Land Registration District	**Southland**
Date Issued	04 January 1968

Estate	Fee Simple
Area	1.1888 hectares more or less
Legal Description	Section 34 Block III Mataura Hundred
Registered Owners	

Southland District Council

Interests

Subject to Section 59 Land Act 1948


295·0
Sec 34
873·5
633·4
2. 3. 30
EC
Al
553·3
ROA

ghd.com

→ The Power of Commitment