



Balfour Wastewater Treatment Plant





Resource Consent Application and Assessment of Environmental Effects

Southland District Council

02 August 2023

→ **The Power of Commitment**



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Form 9

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

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From: Southland District Council
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(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 Balfour Wastewater Treatment Plant (WWTP):
Southland District Council (SDC) owns and occupies the lots associated with the WWTP.

Owners/Occupiers WWTP Discharge Location:
The SDC owns and occupies the lots associated with the WWTP discharge location.

2. **THE LOCATION** to which this application relates is:

Balfour WWTP:

Physical location: 4 Kruger Street, Balfour, 9779

Legal description: Section 1240 Block XXI Hokonui Survey District

Balfour WWTP Discharge Location:

Physical location: Longridge Stream at or about NZTM2000 1258033E - 4913911N .

Legal description: Section 1240 Block XXI Hokonui Survey District

Certificate of Title attached as Appendix A

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 33A(b) of the pSWLP as a Non-Complying Activity

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

The Balfour Wastewater Treatment Plant (WWTP) treats the Balfour township wastewater and has been in operation since 1963. The SDC is seeking resource consent to renew the existing discharge permit

(Consent:201674), which is due to expire on 2 February 2024. The Balfour WWTP has had subsequent improvements installed over the years. The resource consent application is for short-term duration while further investigation is undertaken to upgrade and convert the existing WWTP to a land-based disposal system. The existing consent authorises the discharge of treated wastewater from the Balfour WWTP to the Longridge Stream via an overland weeded ditch (hereafter referred to as "weeded drainage channel"). A more detailed description of the WWTP is included in Section 3 of the report.

5. **AN ASSESSMENT OF ENVIRONMENTAL EFFECTS** in accordance with Schedule 4 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.

SDC requests that the application be publicly notified pursuant to Section 95A(3)(a) of the RMA.

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 2st day of August 2023

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Glossary

Assessment of Environmental Effects (AEE)
Australian and New Zealand Environment and Conservation Council (ANZECC)
Average Daily Flow (ADF)
Average Dry Weather Flow (ADWF)
Biological Oxygen Demand (BOD5)
Carbonaceous Biochemical Oxygen Demand (cBOD5)
Dissolved Oxygen (DO)
Dissolved Reactive Phosphorus (DRP)
Environment Southland - Regional Policy Statement (RPS)
Environment Southland (ES)
Escherichia coli (E.coli)
Freshwater Management Units (FMU)
Inflow and Infiltration (I&I)
Maximum Daily Flow (MDF)
Multi-Criteria Analysis (MCA)

National Freshwater Policy Statement 2020 (NPS-FW)
Operations and Management Plan (O&M Plan)
Proposed Southland Water and Land Plan (pSWLP)
Regional Water Plan Southland (RWPS)
Resource Management Act, 1991 (RMA)
Services and Assets (S&A)
Southland District Council (SDC)
Southland District Plan (SDP)
Stormwater and Infiltration Program (SIP)
Total Kjeldahl Nitrogen (TKN)
Total Nitrogen (TN)
Total Phosphorus (TP)
Total Suspended Solids (TSS)
Wastewater Treatment Plant (WWTP)
Water Balance Model (WBM)
Water Services Act 2021 (WSA)

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). This is to replace consent Consent No:201674 relating to the exiting Balfour Wastewater Treatment Plant (WWTP), which is due to expire on 2 February 2024. The SDC furthermore seeks approval and confirmation from ES to lawfully continue operating under the existing resource consent in accordance with Section 124 of the RMA while the proposed short-term consent (5-year consent duration) is being processed and determined by ES.

The short term application will be assessed as a new activity against the provisions of the Regional Water Plan Southland (RWPS) and the Proposed Southland Water and Land Plan (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 ES.

The Resource Consent Application provides the following information:

- Application details set out in Form 9
- Description of the site and receiving environment (Section 2)
- Description of the proposed activity (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 (Section 6)
- Proposed conditions of consent to support the short term application (Section 7)
- Consultation with affected or interested parties (Section 8)
- Any other relevant matters necessary to determine the application

The Assessment of Environmental Effects (AEE) 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.

SDC requests that the application be publicly notified pursuant to Section 95A(3)(a) of the RMA.

1.2 Background

The existing Balfour Wastewater Treatment Plant (WWTP) and the reticulation system were constructed in 1963. The WWTP typically receives wastewater from the Balfour community and is predominantly domestic in nature. The wastewater reticulation network comprises of a gravity system that supplies the Balfour WWTP where wastewater is treated prior to discharging into the Longridge Stream via a weeded drainage channel maintained by the SDC.

The Balfour WWTP and subsequent discharge to the Longridge Stream was originally consented on 3 June 1993. The discharge permit was subsequently replaced by Consent:201674 on 2 February 2004 with a consent duration of 20 years. This application for resource consents seeks to replace the discharge permit for an additional five-year period.

The existing Balfour WWTP is authorised to discharge up to 250 m³/day of treated wastewater to the Longridge Stream, via a weeded drainage channel, however these limits have been exceeded in recent years. The exceedance would not have been anticipated when Consent No:201674 was granted and is likely caused by the growing Balfour population or potentially unforeseen inflow and infiltration (I & I) of other sources into the wastewater scheme.

There are numerous constraints in relation to the ongoing operation of the existing Balfour WWTP and subsequent discharges into the Longridge Stream given the recent changes to the national policy direction placing more emphasis on the health and wellbeing of waterbodies. As such, the proposal has been discussed with Environment Southland to find a pragmatic approach in reconsenting the activity for an additional five years.

GHD Ltd (GHD) is currently investigating 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 the Balfour community. The investigation will furthermore consider alternative discharge methods, including land disposal options, which are not covered in this application for resource consent.

1.3 Consultation with Environment Southland

GHD and SDC met with ES on 5th July 2023 to discuss the application. The consent relates to an existing discharge into Longridge Stream via a weeded drainage channel. The weeded channel is the final treatment and runs for approximately 60m.

SDC noted that short term improvements will be investigated given the degraded state of the receiving environment. Short-term improvements are discussed in Section 3.4 and include UV treatment, managing wet weather overflows and enhancing the riparian margins within the weeded drainage channel to improve treatment. The SDC is furthermore committed to reduce Inflow and Infiltration (I&I) by 15 % to reduce the wastewater inflow at the Balfour WWTP which will ultimately improve the treatment efficiency.

The parties involved agreed that the most pragmatic approach would therefore be to enable the discharge to continue in the interim period, while short term improvements, investigations, consenting and construction is undertaken to upgrade and convert the existing WWTP to a land-based disposal system.

1.4 Resource Consent Process

1.4.1 Replacement of existing consent

The existing consent is due to expire on 2 February 2024 and SDC seeks a short-term consent duration of five years to enable the discharge of wastewater to the Longridge Stream through the weeded drainage channel.

1.4.2 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 Balfour WWTP discharge permit is due to expire on 2 February 2024 and the SDC is applying to ES for consent for the same activity for a five year period. The application is 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 Longridge stream. Minor changes are proposed as part of the new resource consent application to account for current volume non-compliance issues and to rectify the underestimated population growth projections and I & I that were not anticipated as part of the original consent application. The new application proposes to consent an average daily volume (rather than a maximum volume) to accommodate the actual performance of the WWTP reflected in the monitoring. In respect of the increase in discharge volumes, the potential adverse effects are materially no different to what was originally applied for and consented.

Based on the above assessment, it is considered that the changes are not substantially different from the original activity. As such, the new resource consent application is considered to meet the requirements for 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 under Section 124 of the RMA until a new consent is decided and any appeals have been determined.

1.5 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 Balfour WWTP is located on the eastern outskirts of the Balfour township. The site is located at 4 Kruger Street, Balfour and is across the road from the Balfour Sports Grounds (Refer to Figure 1). The property is owned and maintained by the SDC and the strip of land is mainly utilised to convey stormwater and wastewater to the Longridge Stream.

The property is legally described as Section 1240 Block XXI Hokonui Survey District and contains the Balfour WWTP and wastewater drainage channel. The property covers a legal area of approximately 2.6ha and the area containing the WWTP is approximately 750m². The distance between the Balfour WWTP and the Longridge stream is approximately 650m (comprising of underground wastewater mains and weeded drainage channel).



Figure 1 Balfour WWTP property boundary

2.2 Existing Land Use

The Southland District Council District Plan identified the property (legally described as Sec 1240 Block XXI Hokonui SD) within two respective land use zones (Refer to Figure 6). The area within the urban fringe is zoned “urban”, while the area further east towards the Longridge Stream is zoned “rural”. The Balfour WWTP is also within a designated area (D48 – Wastewater Treatment).

The WWTP is directly across the road from the Balfour sports grounds and comprises of the treatment facilities that were constructed in the 1960s (Refer to Figure 2). The weeded drainage channel is located approximately 100m east of the WWTP and traverses for approximately 480m through farmland fenced on both sides (Figure 8). It should be noted that only the first 60m of the weeded drainage channel is used for final wastewater treatment.



Figure 2 *Balfour existing WWTP*

2.3 Surrounding Land Use

The Balfour WWTP is situated on the eastern side of Balfour along the urban fringe. The surrounding land uses between the Balfour WWTP and the Longridge Stream, along the 490m weeded drainage channel, are predominantly farmland (Refer Figure 3). The Balfour sportsground is situated across the road at 11 Kruger Street. The Scout and Guide Hall building is situated at 10 Kruger Street directly adjacent to the Balfour WWTP on the western boundary but appears to be temporarily closed. Between the Balfour WWTP and Queen Street the land use is predominantly residential with some lifestyle block size properties towards the north along Queen Street. The nearest residential dwelling towards the west of Balfour WWTP is located at 15 Kruger Street.



Figure 3 Farmland downstream of discharge point into Longridge Stream



Figure 4 Drainage channel at bottom end prior to discharging into Longridge Stream

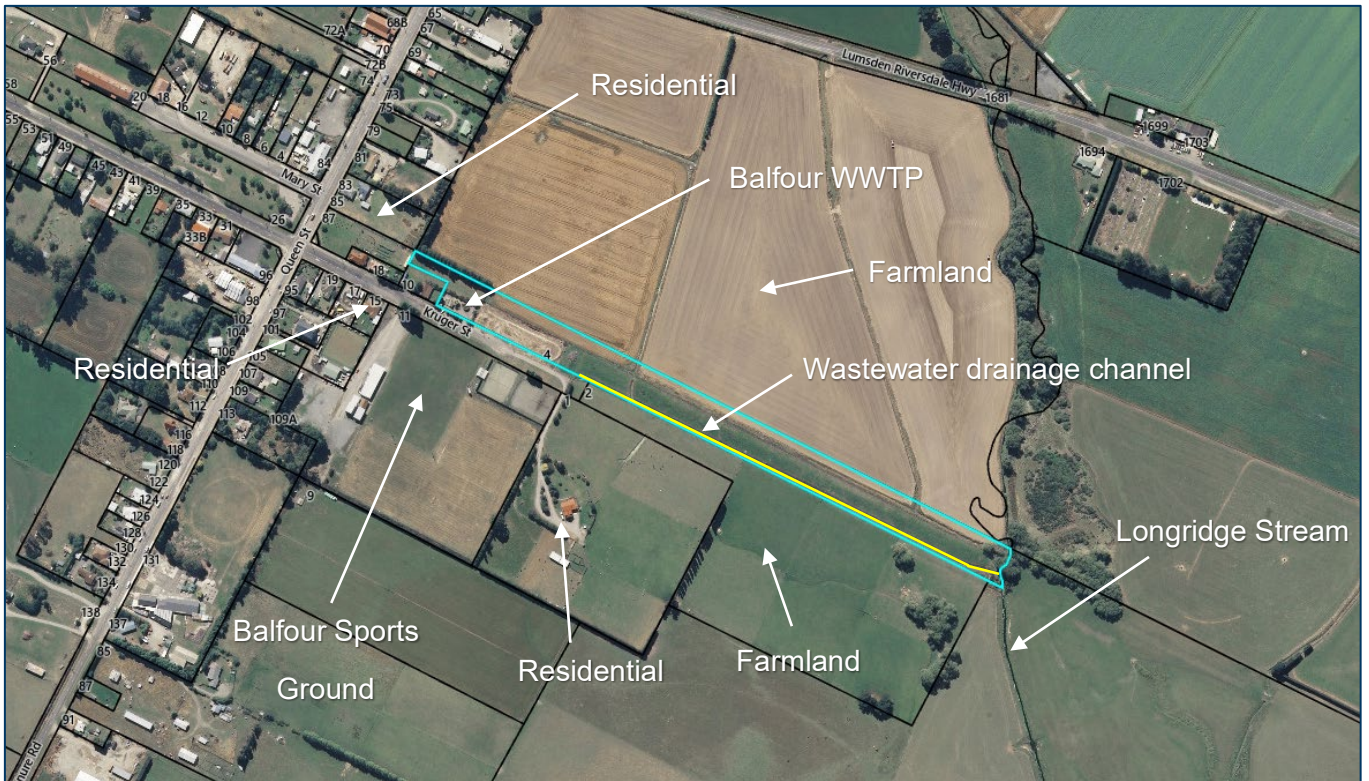


Figure 5 Surrounding Land Use

2.4 Balfour WWTP Designation

The Balfour WWTP is located within a Designation under the SDC District Plan (ID: D48) for the establishment, maintenance and repair works associated with the Balfour WWTP on the site (Figure 6). This designation is for the purpose of a public utility and is associated with Sec 1240 Block XXI Hokonui SD. There are no relevant conditions associated with the Designation ID: D48. (Refer to Section 5.3 of the SDP – Designations).

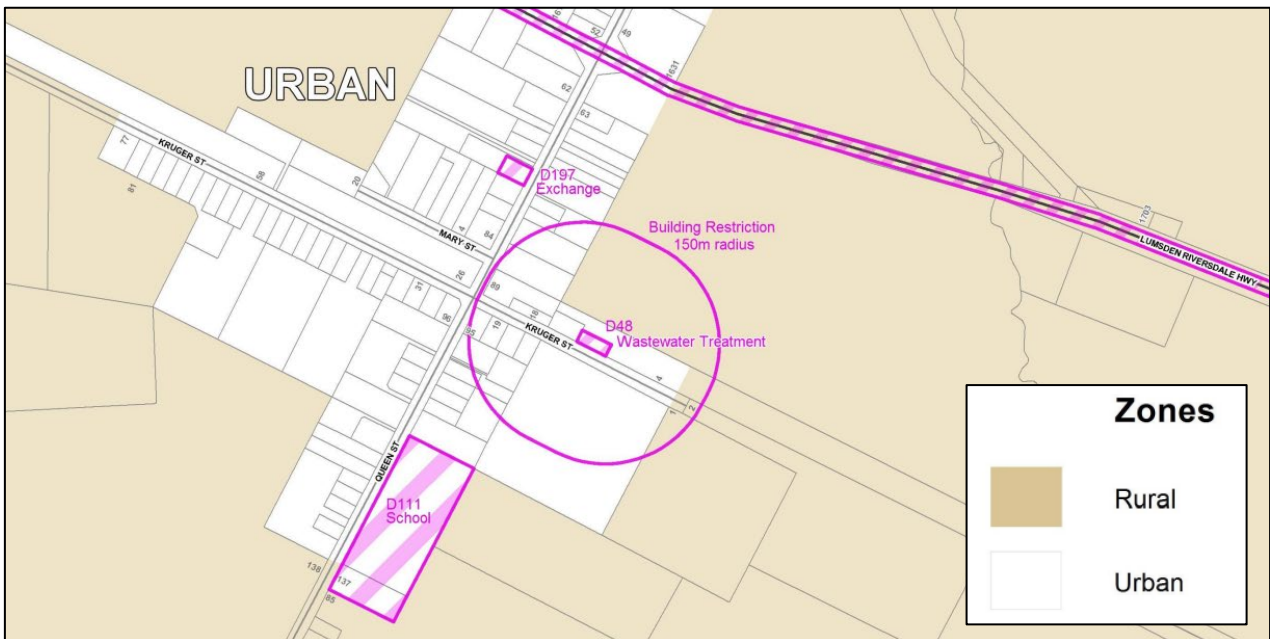


Figure 6 Balfour WWTP Designation and Land Use Zones

2.5 Wastewater Drainage Channel

The treated wastewater from the Balfour WWTP flows underground for approximately 100m through a 100mm diameter wastewater main into the weeded drainage channel. The first 60m of the wastewater drainage channel is used for final treatment of the wastewater (Figure 8). This section comprises of vegetation predominantly comprising of weeded grass species and the flow rate where visible through the vegetation is considered slow moving. The drainage channel is then intercepted further down by a farm drainage channel, assumed to convey stormwater from the upper township catchments (Figure 9). At this point the drainage channel slightly opens and the flow rate in the channel increases significantly. The vegetation in the remainder of the drainage channel is not as established but the bed and margins are still covered in weeded vegetation. There appears to be overland water sources feeding into the drainage channel (Figure 9) from adjacent properties (south of drainage channel) before discharging into Longridge Stream.

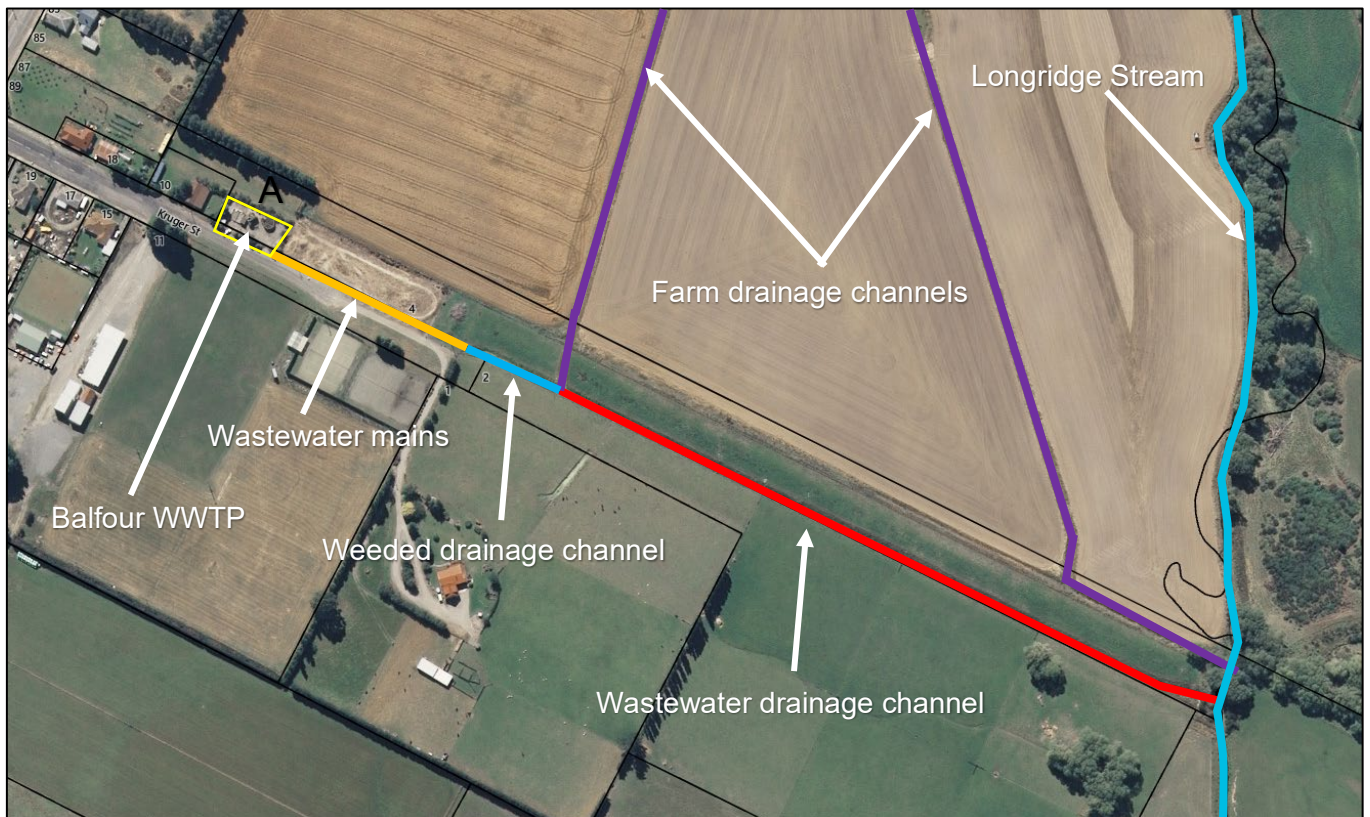


Figure 7 Wastewater mains, Weeded/wastewater drainage channel, Farm Drainage Channels and Longridge Stream

The wastewater drainage channel (referring to the red stretch between the weeded channel and the discharge point) is not considered to be a natural, modified or artificial watercourse. Although the flow within the drainage channel appears to be quite natural, its predominantly fed by farm drainage water and stormwater from the adjacent properties. Based on historical imagery the drainage channel has been in existence since the Balfour WWTP was constructed in 1963. The purpose of the channel does not meet the description of any of the watercourses and is considered to be a man-made wastewater drainage channel. The water quality standards do not apply to the wastewater drainage channel as it is not considered a natural watercourse.

2.6 Longridge Stream

The Longridge Stream is part of a larger catchment area that encompasses surrounding hills in the upper catchment and agricultural lands within the plains. The Longridge Stream arises near the Lintley Ranges just west of Tower Hill, near the Lumsden township. The stream is predominantly hill fed in the upper catchment and is joined by various other smaller tributaries along the way as it flows south past the Balfour township through the Waimea Plains. The stream then runs for approximately 8km until its confluence with the Waimea Stream. The Waimea Stream flows for another 15km to its confluence with the Maitava River near Mandeville.

2.6.1 Surface water classification

The Longridge Stream is classed in the Environment Southland Water Regional Plan (2014) and in Environment Southland's Proposed Southland Water and Land Plan (3 June 2016), as a 'lowland hard bed' river. A lowland hard bed river refers to a river that flows through a low-lying area and runs over a substrate composed of hard or resistant rock materials i.e gravels.



Figure 8 Weeded Drainage Channel and wastewater (left) Wastewater mains outfall pipe into Weeded channel (right)



Figure 9 Stormwater inflow through farm drainage channel (left) Overland inflow from neighbouring property (right)

2.6.2 Water Flow

There is no stream flow measurement in the weeded drainage channel or in the Longridge Stream at the point of discharge. Environment Southland has provided flow data for Longridge Stream at Sandstone (located approximately 6 km south of the weeded drainage channel discharge location) which has been derived by 'estimation, interpolation or extrapolation of actual data or known processes.

The simulated stream flow in Longridge Stream compared to the measured WWTP discharge volumes is shown in Figure 10. There is a visible pattern of elevated WWTP discharge volumes associated with stream flows. The average discharge accounts for 0.9% of the total average flow at Sandstone.

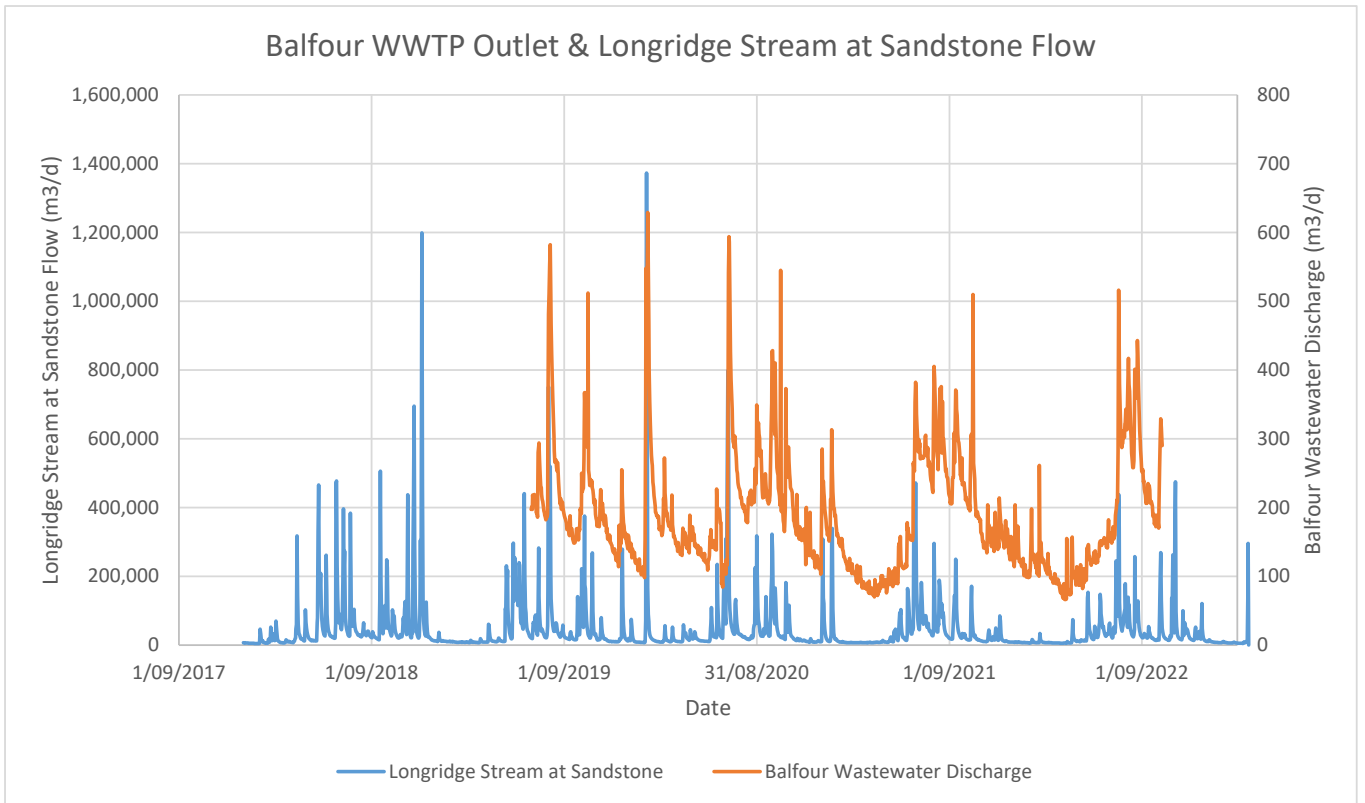


Figure 10 WWTP Discharge volume versus estimated flow in Longridge Stream (at Sandstone)

2.6.3 Water quality monitoring

Water quality sampling has been undertaken and samples have been collected between Jan 2018 and March 2023 from the WWTP discharge, the weeded drainage channel prior to discharge to Longridge Stream and upstream and downstream locations within Longridge Stream. These sampling locations are outlined in Figure 11. These samples have been analysed for ammoniacal nitrogen, carbonaceous biochemical oxygen demand (CBOD5), conductivity, dissolved oxygen (DO), dissolved reactive phosphorus (DRP), pH, total nitrogen, total oxidised nitrogen, total phosphorus, total suspended solids (TSS), turbidity and E.coli. Selected results are summarised in Figure 12 to Figure 20.



Figure 11 Sampling Locations associated with the Balfour WWTP discharge

2.6.3.1 Total Suspended Solids (TSS)

Total Suspended Solid concentrations upstream and downstream of the discharge location are variable (between < 2.5 mg/L and 40 mg/L) over the monitoring period presented (Figure 12). There is no clear relationship between upstream and downstream TSS concentrations and/or stream flow.

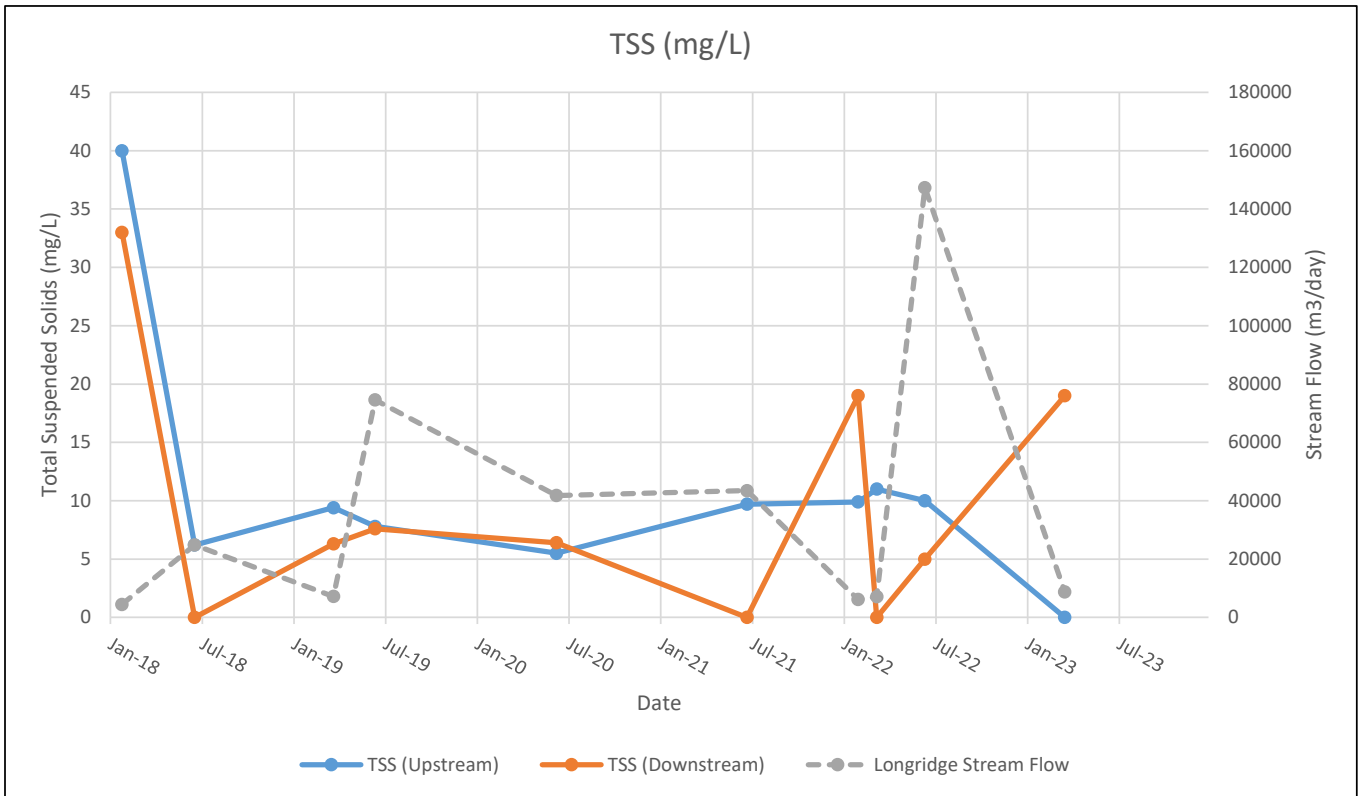


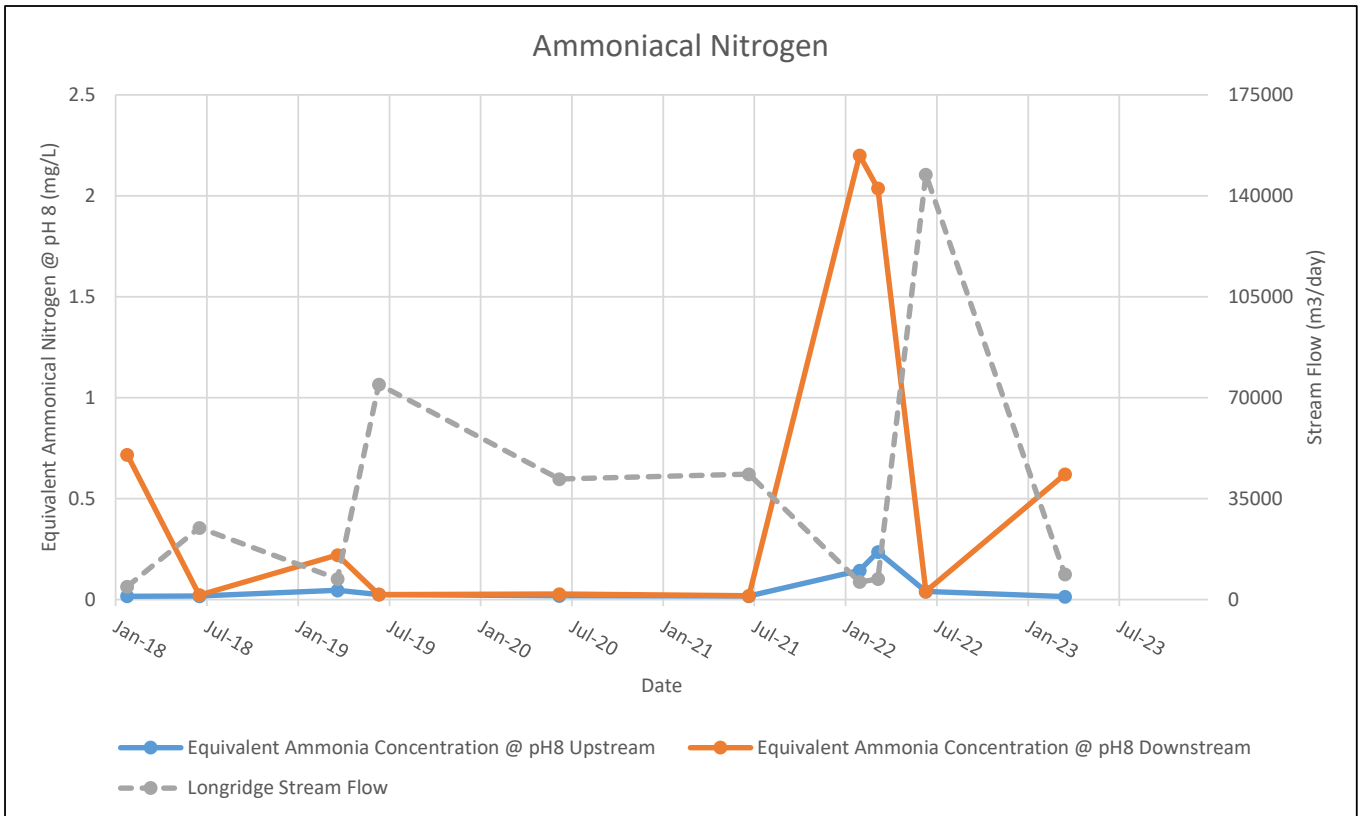
Figure 12 Upstream-Downstream TSS

2.6.3.2 Ammoniacal-N

Total measured ammoniacal N concentrations upstream and downstream of the discharge location together with stream flow and the current consented ammoniacal N concentration (adjusted for pH equivalence) over the monitoring period are presented in Figure 13. There is a pattern of elevated concentrations of ammoniacal N downstream of the discharge relative to upstream suggesting the current discharge is a contributor to the instream ammoniacal N load.

Peak concentrations are shown to have occurred during low flow periods suggesting the discharge is significantly affecting the instream water quality at these times.

During higher flow events the downstream ammoniacal N concentration and change in ammoniacal N in-stream concentration (upstream versus downstream) are significantly less noticeable / not apparent.



*The upstream and downstream result for Ammoniacal Nitrogen (during the March 2022 sampling event) have been swapped and differ from the analytical certificate due to an assumed sampling, naming and/or laboratory error.

Figure 13 Upstream-Downstream Ammoniacal-N

Figure 14 shows the equivalent ammoniacal N concentration (to pH 8) plotted against the derived estimated flow in Longridge Stream. Elevated levels of ammoniacal N occur during low flow events (defined as <math><10,000\text{m}^3/\text{day}</math>) which have (to date) coincided with sampling during the summer period (January – March).

Figure 15 shows the equivalent (to pH 8) ammoniacal N concentration on each sampling date from the point of discharge through to the downstream mixed sample. The elevated reported concentrations in the downstream sample (relevant to the ditch and discharge samples) on the 1 Feb 2022 are related to the high recorded pH on the downstream sample on this day (pH of 9.03 versus pH 7.39 in the upstream sample – no available ditch or discharge pH on this day). This significantly impacts the ammoniacal N equivalence value.

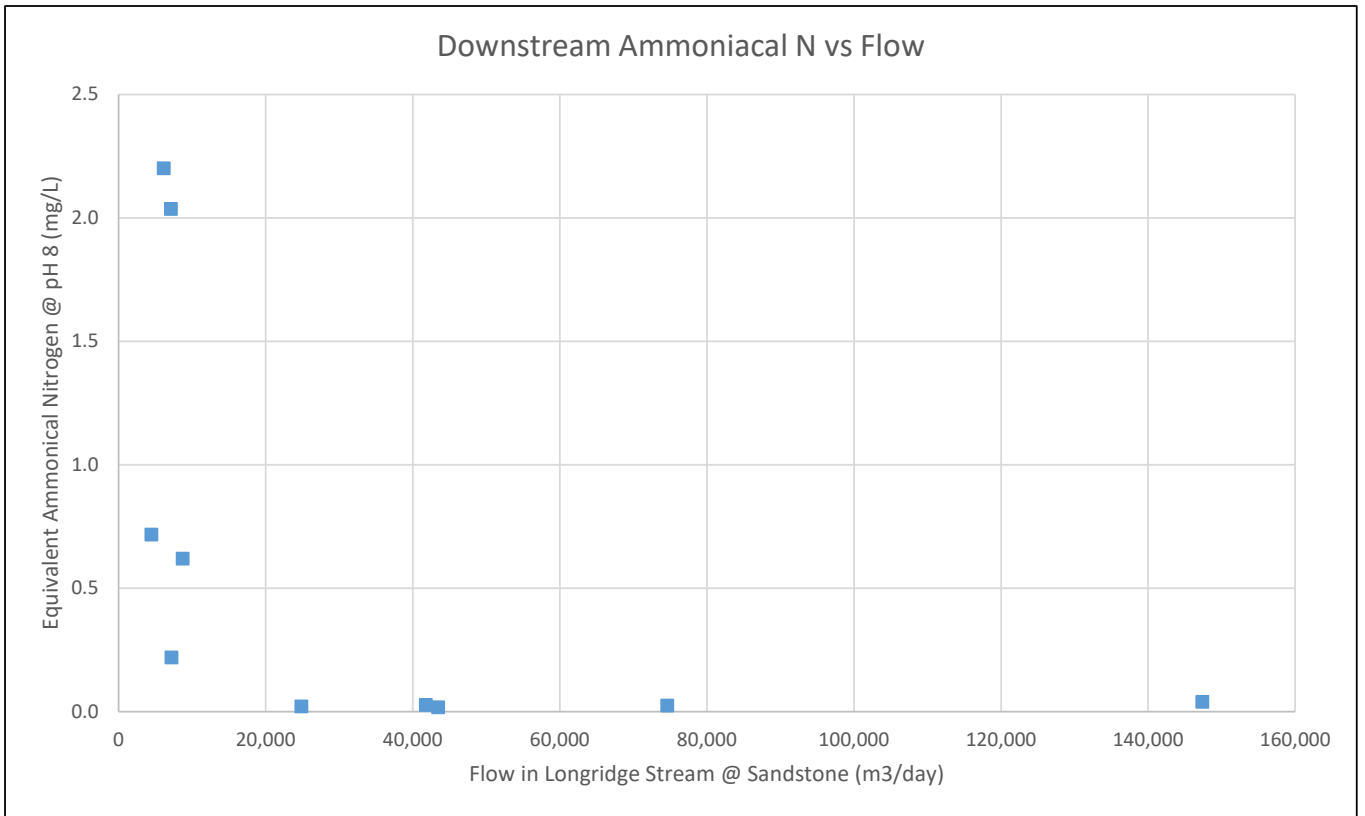


Figure 14 Upstream Ammoniacal-N versus stream flow (red indicates exceedance of compliance limit)

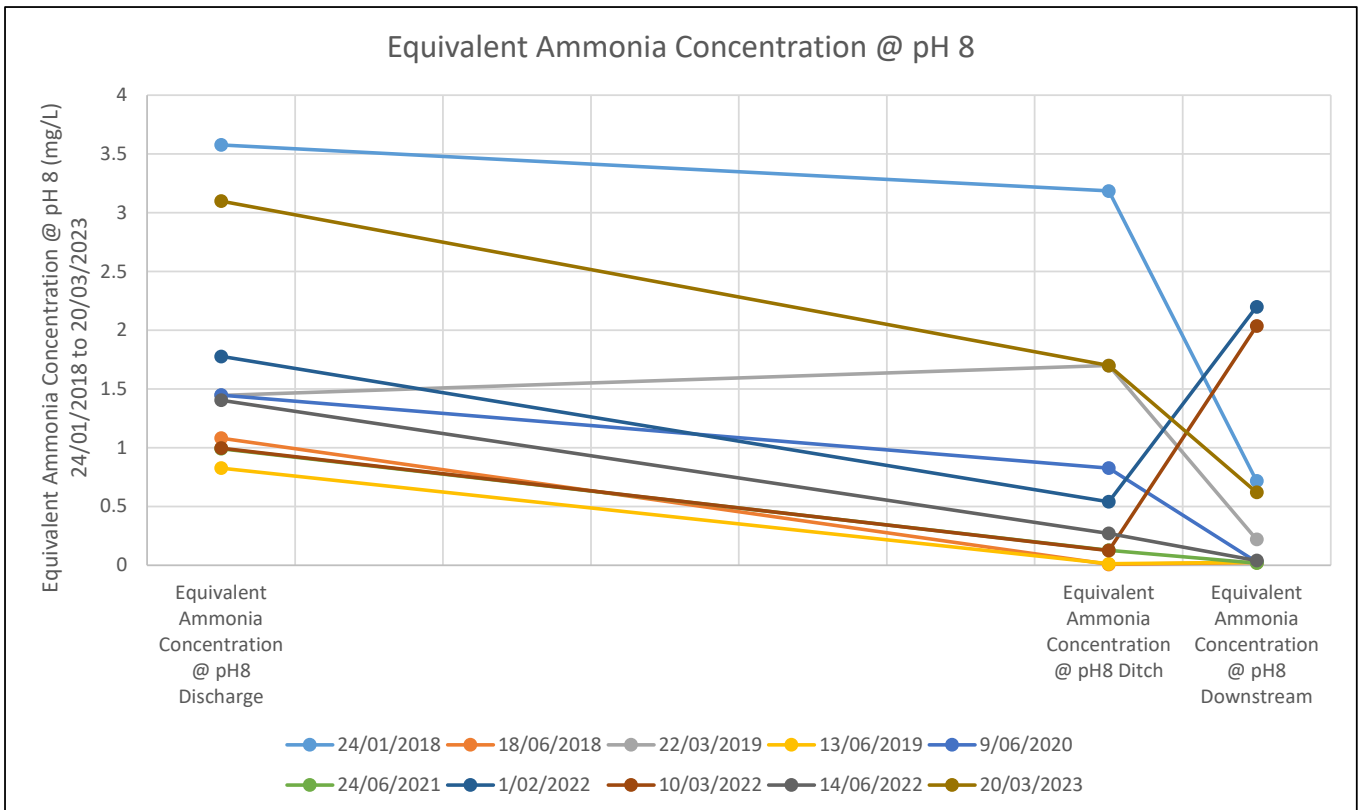


Figure 15 Ammoniacal N concentration – Discharge point to Receiving Environment

2.6.3.3 Total Oxidised Nitrogen (TON)

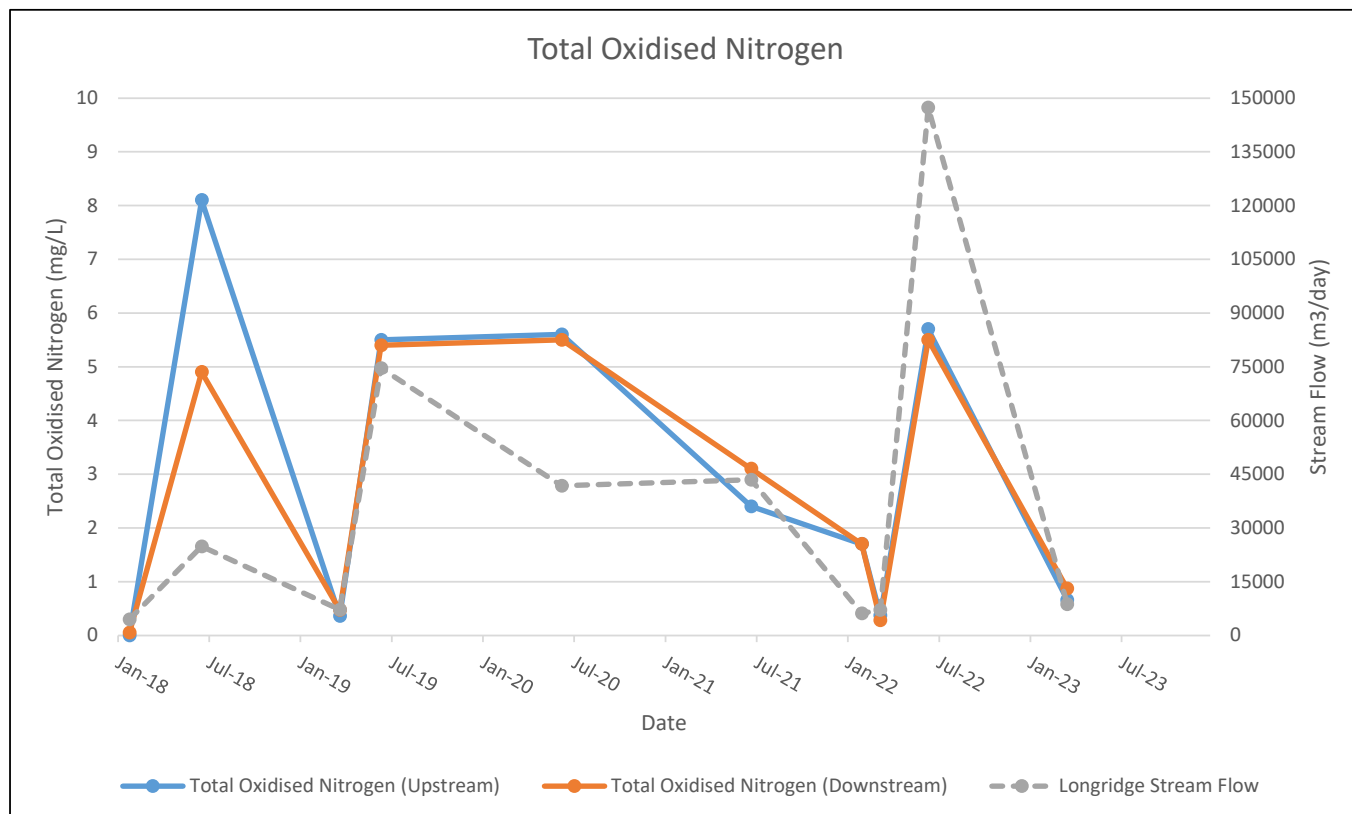
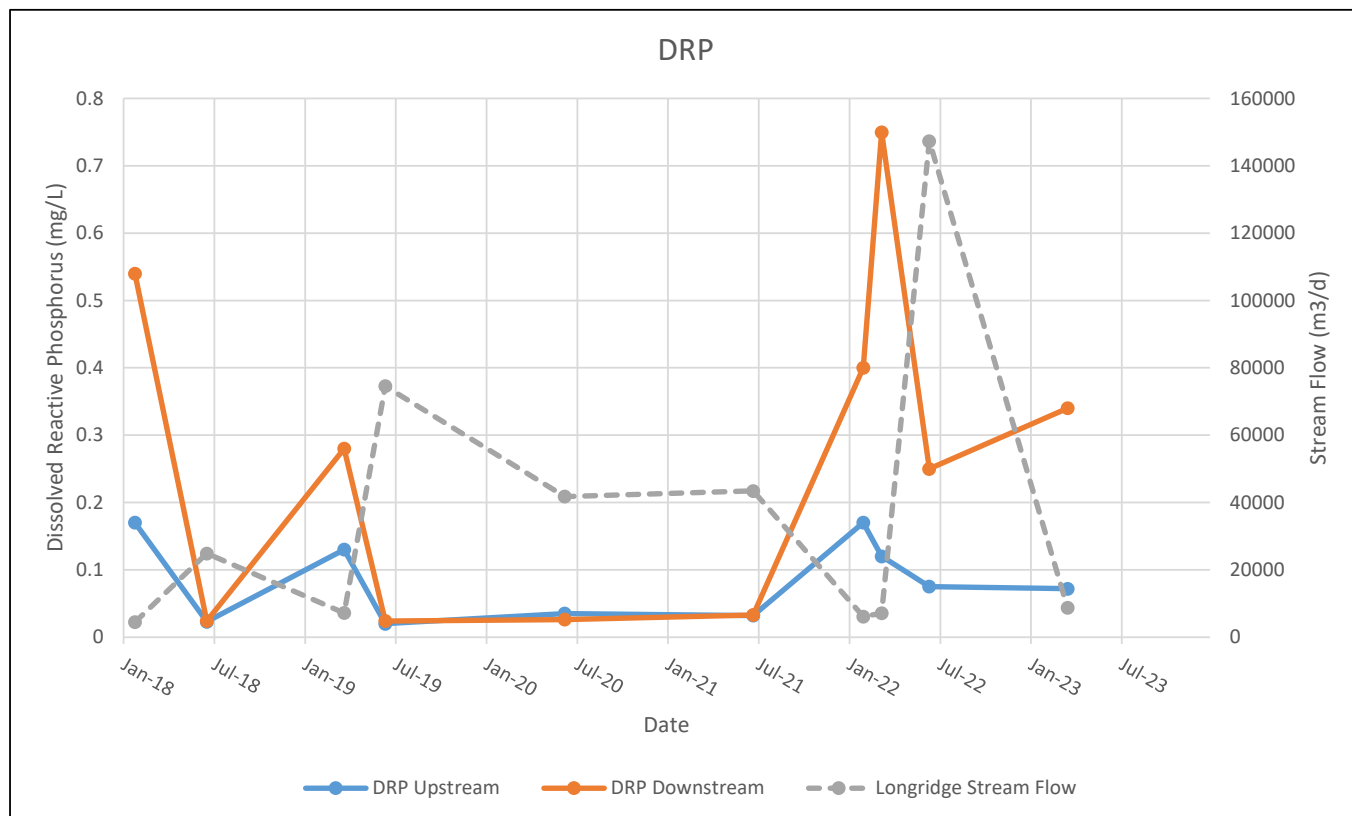


Figure 16 Upstream-Downstream TON

Total Oxidised Nitrogen ('TON') concentrations upstream and downstream of the discharge location are variable (between <0.10 mg/L and 8.1 mg/L) over the monitoring period presented in Figure 16. Upstream and downstream concentrations exhibit similar concentrations suggesting that the discharge is not a significant contributor to TON concentrations. There is an obvious trend between flow and TON, as flow increases TON is shown to increase and as flow decreases TON decreases suggested catchment surface runoff is a significant contributor to the instream TON concentrations.

2.6.3.4 Dissolved Reactive Phosphorus (DRP)



*The upstream and downstream result for DRP (during the March 2022 sampling event) have been swapped and differ from the analytical certificate due to a potential sampling, naming or laboratory error.

Figure 17 Upstream-Downstream DRP

Measured DRP concentrations upstream and downstream of the discharge location together with stream flow over the monitoring period are presented in Figure 17. There is an obvious pattern of elevated concentrations of DRP downstream of the discharge relative to upstream suggesting the current discharge is a contributor to the instream DRP load.

Peak concentrations are shown to have occurred during low flow periods suggesting the discharge is significantly affecting the instream water quality at these times.

2.6.3.5 Escherichia coli (E.coli)

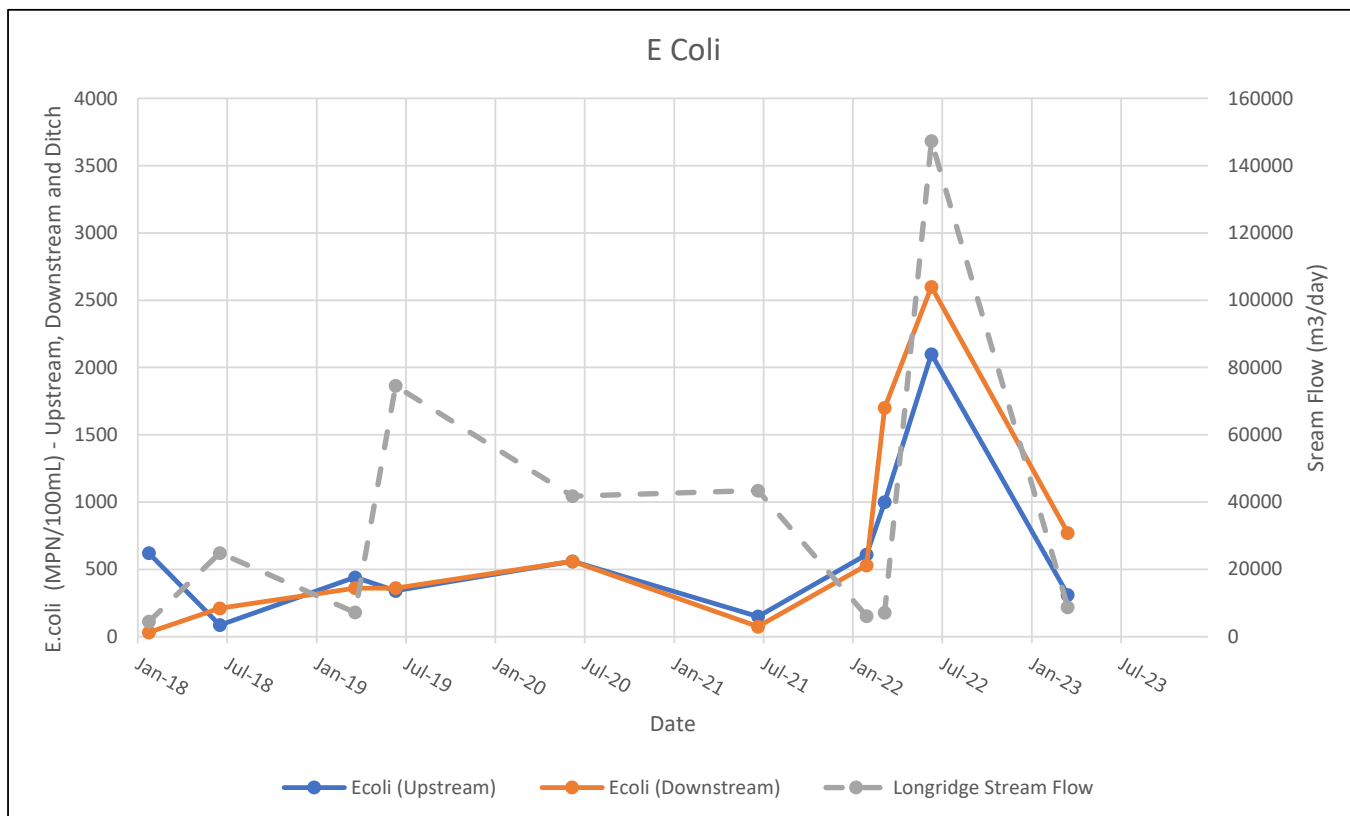


Figure 18 Upstream-Downstream E. coli

E. coli counts are generally measured at similar levels upstream and downstream of the discharge (Figure 18) although recent monitoring data (since January 2022) shows E. coli counts are higher downstream than upstream.

There is no obvious trend between flow and E. coli concentrations until 2022 where E. coli counts appear to be higher with higher flows.

Figure 19 shows the reduction in recorded E. coli counts from the point of discharge to the receiving environment. There is a significant reduction (by several orders of magnitude) from the point of discharge to the downstream sampling location.

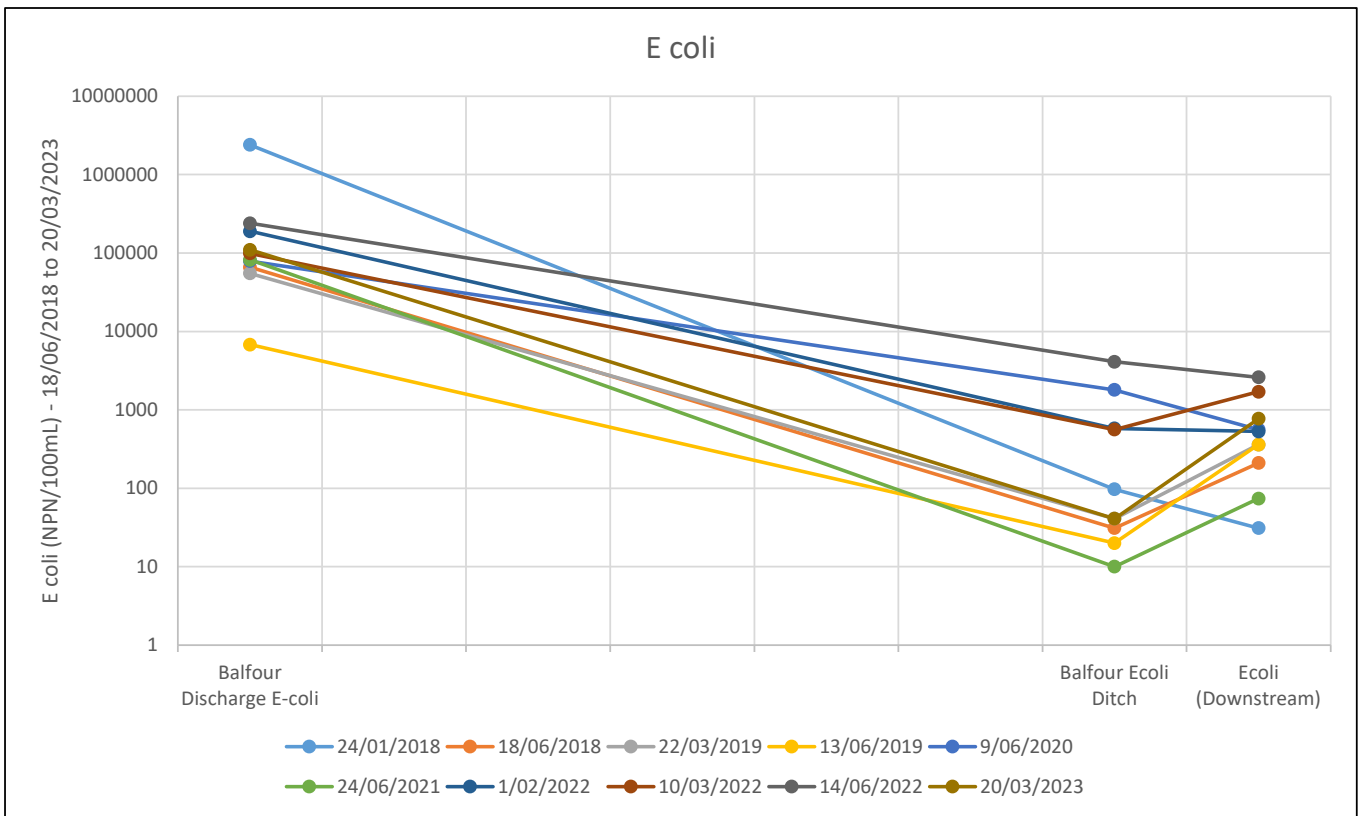


Figure 19 E.coli – Discharge point to Receiving Environment

2.6.3.6 Dissolved Oxygen (DO)

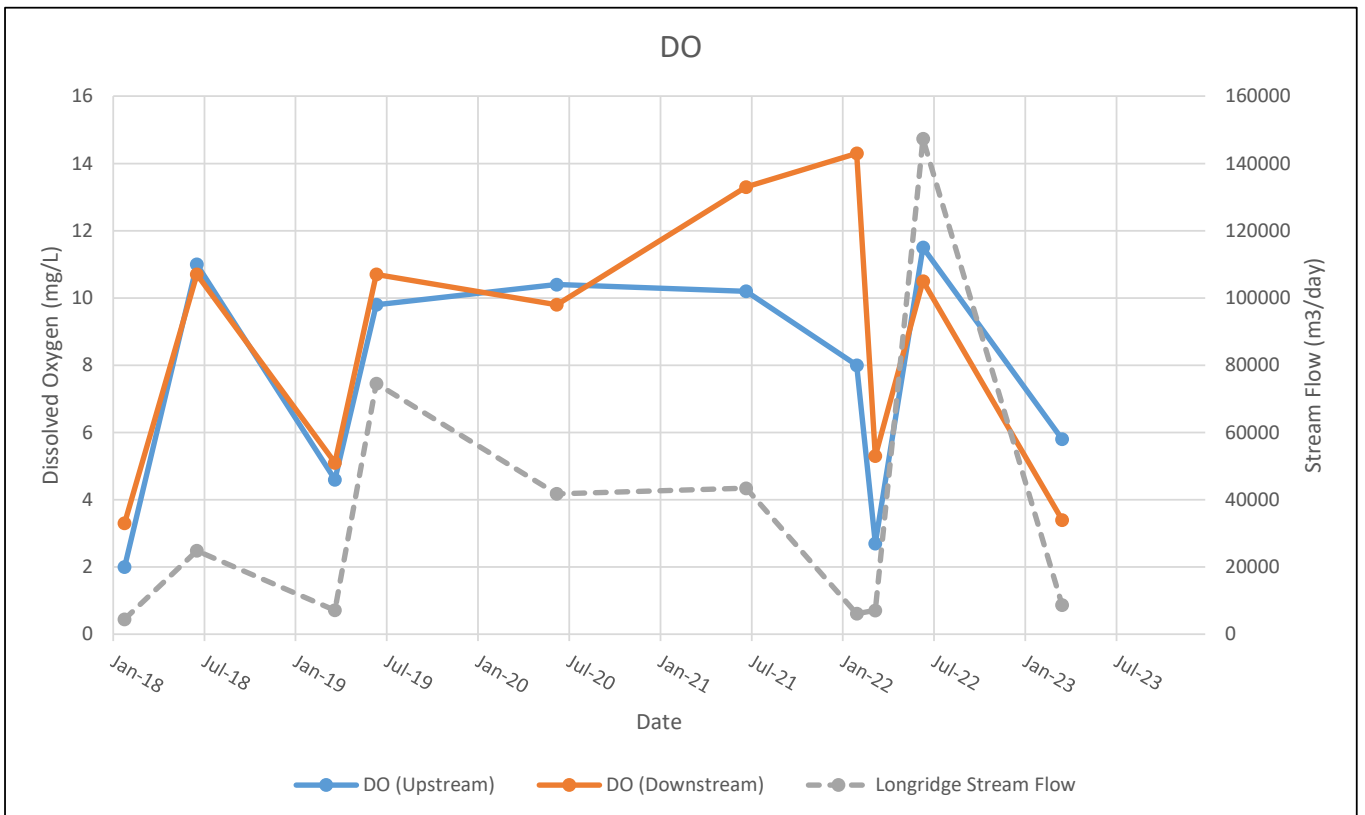


Figure 20 Upstream-Downstream DO

Measured DO concentrations upstream and downstream of the discharge point are typically similar until 2021 where upstream and downstream measurements diverge (Figure 20). This is potentially a function on laboratory measured DO – the solubility of oxygen in water is directly proportional to temperature. So any changes in temperature during transportation could have a significant effect on the laboratory result.

2.6.3.7 Comparison of WQ with the desired NPS attribute state

The water quality data for Balfour WWTP (discharge, weeded drainage channel, downstream and upstream) has been taken (on average) twice-annually from 2018 to 2023, hence there is limited data to determine an accurate NPS attribute state¹. A more extensive Longridge Stream water quality dataset (from Sandstone) has been utilised, where monthly samples have been taken between 2018 – 2023.

The receiving environment within the vicinity of the discharge is classified as Lowland Hard bed in accordance with the relevant planning framework. The attribute state (as defined by Environment Southland 2020² and relevant maximum NPS-FM¹ values associated with these attributes states is outlined in Table 1. Measured ammoniacal N concentrations at the downstream sampling location do not comply with the maximum values to achieve the desired attribute state at this point, but do meet the required attribute state at Sandstone.

Table 1 Receiving Environment Water Quality in Relation to Draft Freshwater Objectives and Southland Attributes³

Parameter	Desired Attribute State	Meeting attribute state	Units	Statistic	Number of Data Points used in Calculation	Maximum Value to Achieve Attribute State ^{1/2}	Longridge (@ Sandstone)
Temperature*	C	No	°C	Max	5	<=18	18.22
Ammoniacal** N	B	Yes	g/m ³	Annual Median	13	<=0.24	0.02
Ammoniacal** N	B	Yes	g/m ³	Annual Maximum	13	<=0.40	0.04
Nitrate N	B	No	g/m ³	Annual Median	13	<=2.4	3.40
Nitrate N	B	No	g/m ³	Annual 95%ile	13	<=3.5	4.78
E. Coli	B	No	cfu/100 mL	Median (5 years)	60	<=130	260
E. Coli	B	No	cfu/100 mL	95 th Percentile (5 years)	60	<=1000	4290
DO	A	N/A	mg/L	7 day mean minimum (1 Nov – 30th April)	N/A	>=8	#
DO***	A	Yes	mg/L	1 day mean minimum (1 Nov – 30th April) ⁴	5	>=7.5	10.5

*The statistic is to be measured over the summer period (1 December to 30 March) and is an average over the five hottest days during this period. Longridge Stream WQ samples were taken monthly and hence there were no continuous readings. Instead, the maximum temperature for samples taken from November 2022 to March 2023 was taken.

**Calculated values not adjusted for pH equivalence

#Data is insufficient to calculate this statistic

***There were not enough Longridge Stream Water Quality samples for this statistic to be performed. Instead, the minimum sample was taken between November 2022 to March 2023.

Shaded cells indicate non compliance with required attribute state

Calculated Actual data is based on previous 12 months of data (unless otherwise specified)

¹ National Policy Statement for Freshwater Management 2020

² Environment Southland. Draft Murihiku Southland Freshwater Objectives. Technical Report November 2020

Based on the data presented in Table 1, ammoniacal N and DO meet the desired draft attribute states for lowland hard bed rivers in the Longridge Stream at the Sandstone location. E.coli and Nitrate N exceed the standards as does temperature. Both temperature and DO assessments are based on very limited data.

2.6.3.8 Water Quality Summary

In summary, the recent monitoring data (ca. last 12 months) suggests that the Balfour WWTP is responsible for a significant proportion of the ammoniacal N and DRP present at the downstream sampling location during low flow summer periods (below the zone of reasonable mixing). It is also evident that DRP is also significantly elevated both upstream of the current WWTP discharge point and within the WWTP discharge itself. Other analytes (nitrate and *E.coli*.) show significant elevated concentrations upstream of the site that are comparable to downstream concentrations (after WWTP discharge and mixing). The results suggest that the Balfour WWTP is not the key driver for elevated in-stream concentrations for these parameters.

In terms of overall river water quality, Environment Southland's State of the Environment Report⁵, classifies the water quality within the Longridge Stream in the vicinity of the current WWTP discharge (Water quality sampling site at Sandstone downstream from current discharge location) as 'very poor' in terms of *E.coli*, 'poor' and 'fair' in terms of nitrate N and ammonia. When compared to the water quality attributes of the ES freshwater standard for lowland hard bed area, the Longridge Stream in its current state is considered to not comply with the standards as outlined in terms of oxygen saturation, total ammonia (at the downstream sampling location but compliant at Sandstone) and faecal coliforms. Oxygen saturation and faecal coliform levels exceed these standards upstream of the WWTP discharge.

The overall water quality in the receiving surface water environment at Longridge Stream is considered poor and the current wastewater discharge is considered to contribute to the poor water quality in the Longridge Stream.

2.6.4 Aquatic and Terrestrial Environment

The Longridge Stream supports a variety of plant and animal life. Waterways play a significant role in the local ecosystem and contribute to the overall biodiversity of the region. The banks of the Longridge Stream are lined with riparian vegetation, which includes a mix of native trees, shrubs, and grasses. The Longridge Stream mainly traverses through farmland and the riparian margin characteristics along the way change depending on the intensity of adjoining farming land use activities. Pasture species may dominate some areas along the stream.

Within the stream itself, various aquatic plant species will thrive when the stream is healthy. These can include submerged plants like water milfoil and pondweed, as well as floating plants like water lilies. The Longridge Stream supports a diverse fish community. Native species such as brown trout, eels, and whitebait (juvenile fish of several species) can be found in parts of the stream. Invertebrates like mayflies, caddisflies, and stoneflies are also found in these types of stream and serve as a vital food source for fish and other organisms.

The riparian vegetation along the Longridge Stream may provide an ideal environment for a variety of bird species. Native birds will likely reside in habitats along the stream, either foraging for food or nesting in the trees and shrubs along the banks. The Longridge Stream and its surrounding areas will likely provide habitat for various mammal and reptile species. These can include native species such as bats, hedgehogs, skinks, and geckos. It should be noted that an ecological survey was not undertaken to definitively identify any species in the stream.

2.6.5 Recreational values

There are sections of the Longridge Stream that may be used by the general public for recreational pursuits, particularly fishing, swimming, rowing and potentially other water related activities. However, the stretch of the Longridge Stream near the wastewater discharge point, may not be used extensively for such pursuits. The surrounding land is predominantly farmland and public access would be restricted to large sections of the stream. The Longridge Stream converges with the Waimea River and Mataura River where recreation activities may be more prevalent.

⁵ Environment Southland. Current Environment State and the "gap" to draft freshwater objectives for Southland. Dec 2019.

2.6.6 Cultural and heritage values

The Longridge Stream has not been identified as having any significant cultural or heritage values based on the information available in the SDP and pSWLP. However, Longridge Stream is a tributary of the Mataura River, which has been identified under a Statutory Acknowledgement. Under section 206 of the Ngāi Tahu Claims Settlement Act 1998 (NTCSA), the Crown acknowledges Te Rūnanga o Ngāi Tahu's statement of Ngāi Tahu's cultural, spiritual, historic, and traditional association to the Mataura River (Schedule 42 of the NTCSA).

Although there is no reference in the district and regional planning framework relating to the Longridge Stream, waterbodies hold significant importance to Māori culture for several reasons, in particular the health and wellbeing of the waterbody and environmental stewardship. The National Policy Statement for Freshwater Management (NPSFM 2020) requires that the health and wellbeing of water is treated as the first priority to give effect to the Te Mana o Te Wai.

Māori have a strong sense of kaitiakitanga, which means guardianship and stewardship of the environment. Water bodies hold immense ecological value and are essential habitats for diverse flora and fauna. Māori actively participate in protecting and restoring waterways, ensuring the health and well-being of these ecosystems for future generations.

In summary, water bodies are important to Māori as they hold deep spiritual and cultural significance, provide sustenance and resources, facilitate cultural practices, and promote environmental stewardship. The connections to water reflect the interconnectedness of Māori people with their natural environment and form an integral part of their identity and way of life.

2.7 Other consents in the area

There do not appear to be any other consents associated with the taking and use of surface water along Longridge Stream. AUTH-206289 is held by the SDC and authorises the discharge of stormwater from the Balfour township into the Longridge Stream. The stormwater is conveyed in conjunction with treated wastewater through the weeded drainage channel prior to discharging into the Longridge Stream (Refer to figure 21).



Figure 21 Balfour Stormwater Connections

3. Description of the activity

SDC is seeking a replacement consent as Consent:201674, is due to expire on 2 February 2024 (Attached as Appendix B). The proposal is to obtain a short-term consent, while further investigation is undertaken to upgrade the Balfour WWTP and potentially convert the discharge method to a predominantly land-disposal system.

The future stages associated with the upgrade and conversion of the Balfour WWTP are been discussed in Section 3.4 and Section 3.5.

Based on GHD's review of the current performance of the Balfour WWTP, it appears that the average daily volumes of wastewater treated by the Balfour WWTP, are much higher than previously estimated. This is caused by significant inflow and infiltration issues (I&I) and poor network conditions.

As part of the proposal and to address the issues above, it is proposed to change the daily maximum flow limit from 250 m³/day to a daily average flow limit of 250 m³/ day. This proposed change is conservative in the sense that it allows for occasional peaks as seen in the WWTP inflow data as shown in Figure 21.

3.1 Balfour Wastewater Treatment Plant

3.1.1 Basis of Design

GHD have developed the basis for design for Balfour's short-term (2028) and long term (2052) wastewater management solution as follows:

- The existing operational flow and capacity demand of the WWTP has been based on the July 2019 and October 2022 flow record period.
- The population growth has been updated and is based on 2006, 2013, and 2018 census data and SDC projections. The updated data is used to ensure the existing WWTP provides sufficient flow and capacity to maintain the operation to a design horizon of 2052.
- The influent wastewater characteristics have been amended based on assumed per capita generation rates.

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

3.1.1.1 Population

Table 2 presents estimates from the Wastewater Activity Management Plan – Part B Asset-based (2018-2028) prepared by SDC in 2008, as well as the population data from the NZ Census 2006, 2013 and 2018.

Table 2 Population Growth

	Wastewater Activity Management Plan Population Estimates	Balfour Population
2006	-	138 (from Census)
2013	126	126 (from Census)
2018	145	117 (from Census)
% growth per annum	+3%	-1.3%
Expected population in 2028 (this consent application)		124
Expected population in 2052		150

3.1.1.2 Wastewater Flows

Wastewater flows are recorded at the inlet pump station at Balfour WWTP, with each of the lift pumps fitted with an electromagnetic flowmeter. Each pipe transfers wastewater flows into the surge chamber above the Imhoff tank,

and the flow rates are used as a proxy for plant discharge flow. The daily wastewater flow record at this flowmeter between July 2019 and October 2022 is shown in Figure 21.

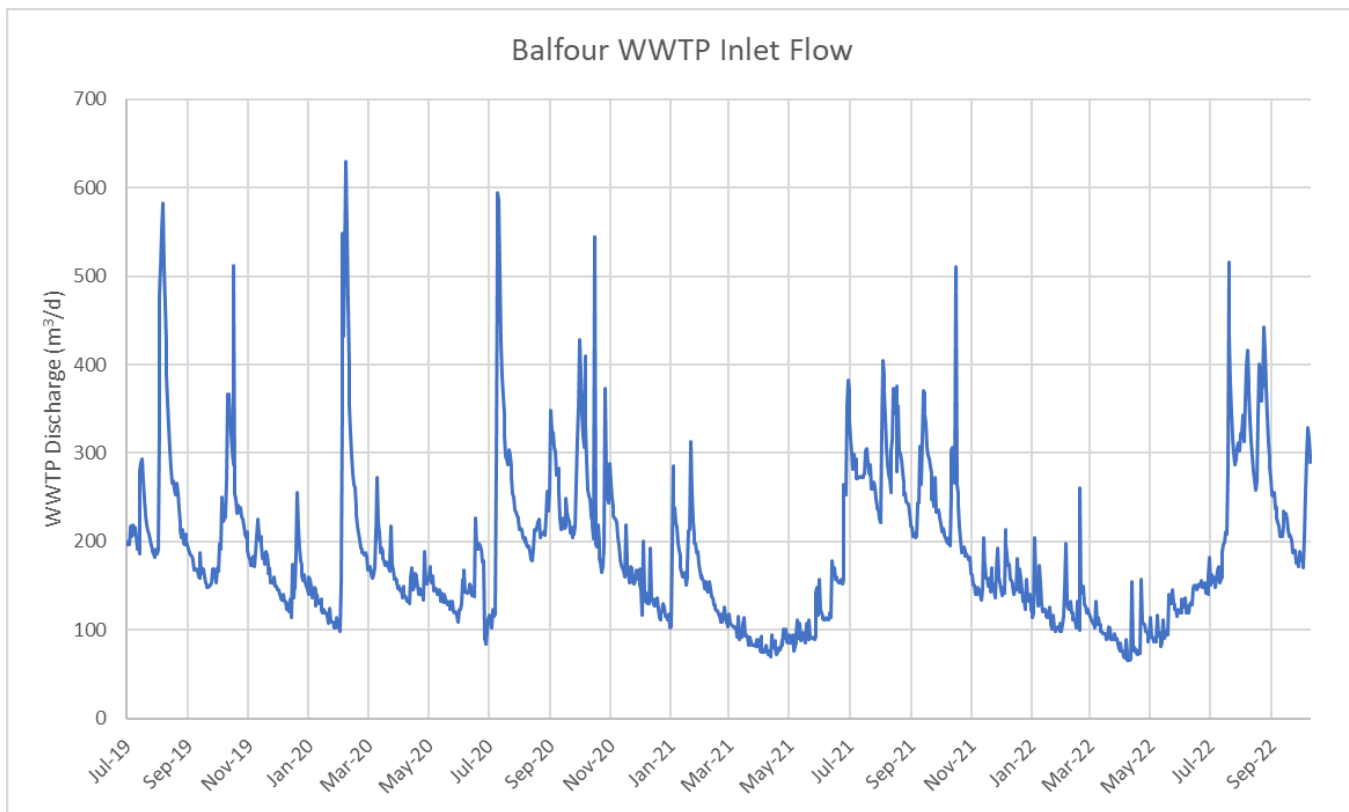


Figure 22 Balfour WWTP Inlet Flow (July 2019 to October 2022)

The following observations were made:

Wastewater inlet flow between July 2019 and October 2022 is representative of the current WWTP flow.

Average Dry Weather Flow (ADWF) is assumed to be the 20th percentile of flow data, 117 m³/day.

ADWF per EP is assumed to be 1000 litres/day estimated from the data above.

Current Average Daily Flow (ADF) is estimated to be 188 m³/day, based on data.

Current Maximum Daily Flow (MDF) is estimated to be 629 m³/day, based on data.

Peak Wet Weather Flow (PWWF) instantaneous is calculated from 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 2028 flow estimates were calculated based on linear extrapolation and existing peaking factors retained.

Table 3 below displays the current estimated wastewater flows and the flow estimates in 2028.

Table 3 Wastewater Flow Estimation (for this consent application)

	Units	Current	2028
Population		117	124
ADWF	m ³ /day	117	124
ADF	m ³ /day	188	198
MDF	m ³ /day	629	664
PWWF	L/s	6.8	7.2

As seen from the table above, there is a provision for a small wastewater flow increase between now and 2028.

3.1.1.3 Influent wastewater characteristics

Wastewater from Balfour 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 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) have been used to estimate the approximate wastewater contaminant loads. The following per capita values were used in the calculation:

- Biochemical Oxygen Demand (BOD₅): 70 g/day
- Total Suspended Solids (TSS): 75 g/day
- Total Kjeldahl Nitrogen (TKN): 18 g/day
- Total Phosphorus (TP): 5 g/day

Table 4 shows the estimated influent contaminant loads in the wastewater for the projected population growth of this consent application.

Table 4 Wastewater Contaminant Loads (for this consent application)

	Units	Current	2028
Population		117	124
Average Daily Flows	m ³ /day	188	198
BOD ₅	kg/d	8	9
TSS	kg/d	8	9
TKN	kg/d as N	2	2
TP	kg/d as P	0.4	0.4

3.1.2 Operation of existing WWTP

Balfour WWTP is located on Kruger Street, Balfour, Southland. The plant is based on solids removal and a biological treatment, comprising the following elements:

- Imhoff tank
- Trickling filter
- Weir tank
- Sludge drying beds

The layout of the Balfour WWTP is shown in Figure 22.



Figure 23 Balfour WWTP Layout

During operation, the wastewater flows to the Imhoff tank, where sedimentation takes place. Solids accumulated as sludge are drawn off from the Imhoff tank and dried in the sludge drying beds prior to offsite disposal. The overflow from the Imhoff Tank gravitates to the trickling filter, where organics are removed. Finally, the treated effluent gravitates to the weir tank, where it is pumped to be discharged into the Longridge Stream via the weeded drainage channel.



Figure 24 Imhoff tank (left tank)



Figure 25 Weir tank situated on ground level attached to trickling filter



Figure 26 Sludge drying beds



Figure 27 Trickling filter

Figure 27 presents a schematic of the process.

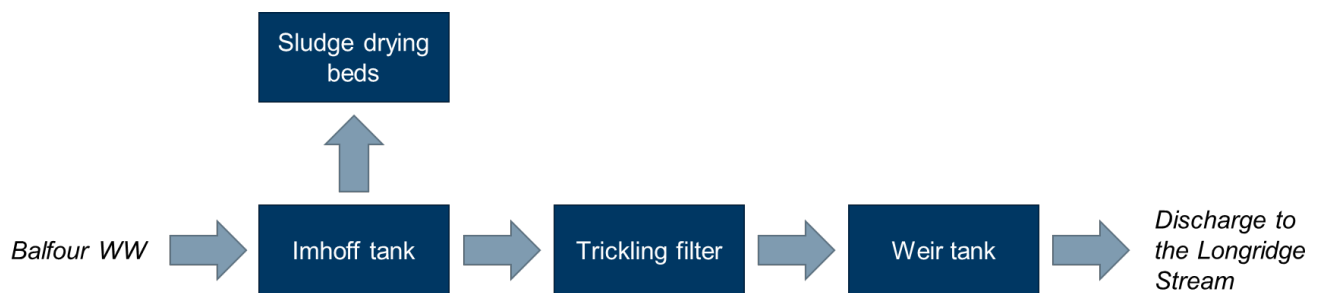


Figure 28 Balfour WWTP Process Schematic

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 inlet pump flowmeters at Balfour WWTP have been used as a proxy for plant discharge flow.

The estimated flows associated with the existing WWTP are summarised in Table 5 below:

Table 5 *WWTP Discharge Flows - Current Flows, Estimated Flows in 2028 (for this consent application) and Current Consented Limits*

	Units	Current flows	Estimated flows in 2028	Current consented limits
Average Daily volume	m ³ /day	188	198	-
Maximum Daily volume	m ³ /day	629	664	250

As seen from above, the estimated average and maximum treated wastewater discharge volume from the Balfour WWTP in 2028 would be approximately 200 and 700 m³/day respectively.

The average daily volume of 250 m³/day will be used as a conservative approach to accommodate flow increases from I&I into the wastewater system as the consented discharge rate going forward.

3.1.3.2 Quality from WWTP

The existing discharge permit requires monitoring of the treated effluent by taking a representative sample of the treated effluent from the treatment plant, the treated effluent from within the weeded drainage channel near the point of discharge, and also of the receiving waters, upstream and 50 m downstream of the point of discharge to the Longridge Stream. Monitoring is required to be completed once during 1st May to 31st August each year and on at least three occasions between 15th November to 15th April each year when the flow in the Waimea Stream, as measured at the Council's monitoring site at Mandeville, falls below 0.34 cumecs (m³/s).

The existing consent requires that the treated wastewater discharged to the Longridge Stream does not exceed the limits summarised in Table 6. To evaluate compliance, Table 6 presents the recent plant performance (Jan 2018 – Jun 2022) against the limits.

Table 6 *Recent Plant Performance Results and Discharge Consent Limits*

Parameter	Unit	Recent Plant Performance (Jan 2018 – Jun 2022)			Current Consent Limit	
		Mean	80%ile	Max	80%ile	Max
BOD ₅	mg/L	10	11	24	25	40
TSS	mg/L	12	10.4	40	25	40
DO	mg/L	5.4	6.8	7.9	-	-
AmmN	mg/L	3.6	3.8	8.3	-	-
TN	mg/L	11	12	17	-	-
TP	mg/L	1.1	1.5	2.4	-	-
E. Coli	MPN/100mL	357,533	210,000	2,400,000	-	-

Moreover, the consent requires that minimum standards for Class D waters are maintained beyond the zone of reasonable mixing, which shall extend from immediately upstream of the discharge point to 50 metres downstream from the discharge point to the Longridge Stream. Also, the permit requires that the total ammoniacal nitrogen in the Longridge Stream shall not be increased by any discharge above the values to be within Australian and New Zealand Environment and Conservation Council (ANZECC) Guidelines for Fresh and Marine Water Quality (October 2000).

3.1.3.2.1 Five-day Biochemical Oxygen Demand (BOD₅)

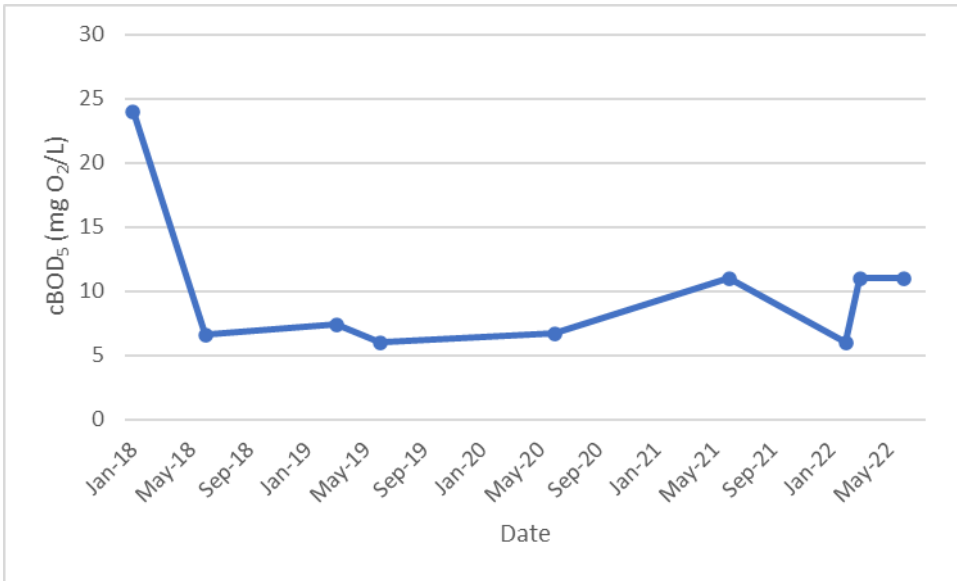


Figure 29 Discharge Biochemical Oxygen Demand

Observation: The above graph (Figure 28) shows that cBOD₅ is generally stable, fluctuating between 5 mg/L and 11 mg/L. There was a spike in January 2018, but it is still under the consent limit.

3.1.3.2.2 Total Suspended Solids (TSS)

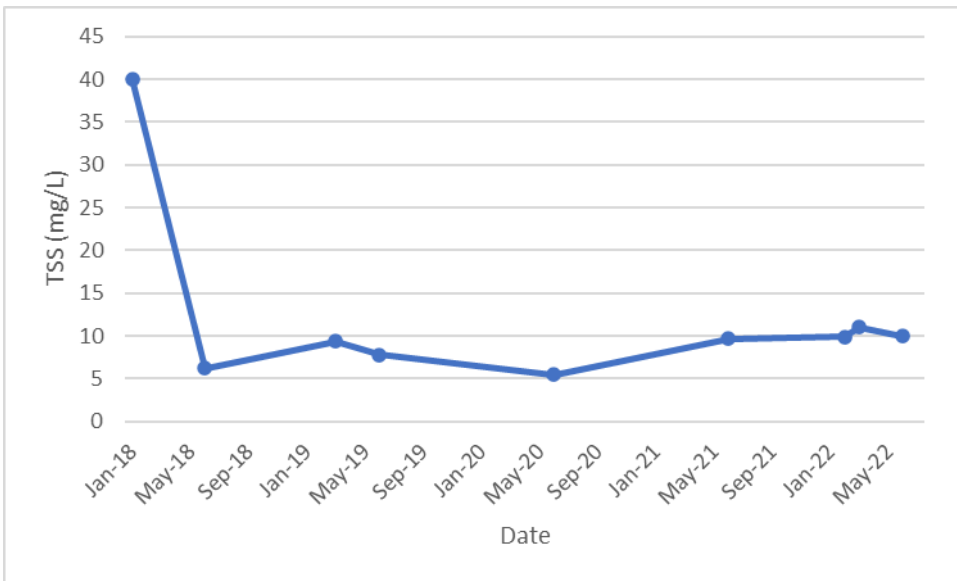


Figure 30 Discharge Total Suspended Solids

Observation: Total Suspended Solids (TSS) fluctuates generally between 5 mg/L and 11 mg/L. Also, there was a significant spike in TSS concentration to 40 mg/L (Jan 2018), but it is still under the consent limit.

3.1.3.2.3 Ammoniacal Nitrogen

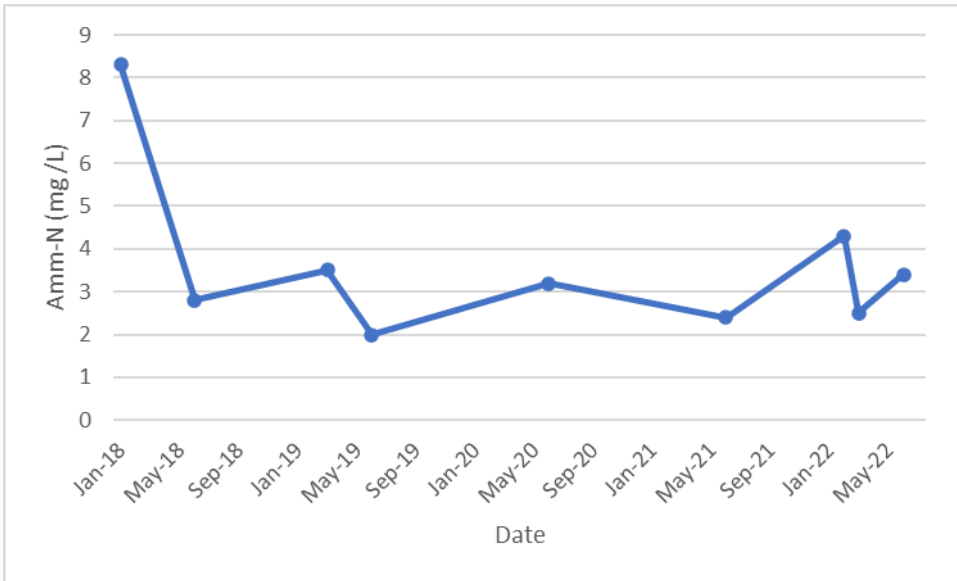


Figure 31 Discharge Ammoniacal Nitrogen

Observation: Ammoniacal Nitrogen has been generally stable, fluctuating between 2 mg/L to 5 mg/L (Figure 30). The effluent ammoniacal nitrogen presents a spike over 8 mg/L in January 2018.

3.1.3.2.4 Escherichia coli (E. coli)

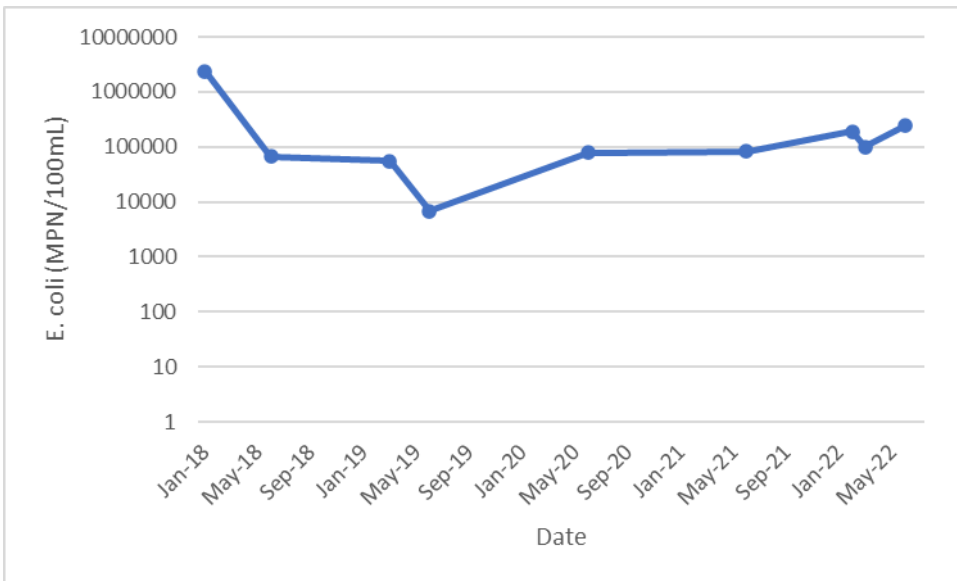


Figure 32 Discharge E. Coli

Observation: E. coli concentrations are variable fluctuating between 7,000 MPN/100 mL and 250,000 MPN/100 mL. There was a significant spike of over 2,000,000 MPN/100 mL in January 2018 (Figure 31).

3.2 Water quality standards and wastewater triggers

3.2.1 Reasonable mixing zone

The pSWLP requires that no discharges to surface water bodies should be allowed that will result in an exceedance of the water quality standards beyond the zone of reasonable mixing, unless it is consistent with the

promotion of the sustainable management of natural and physical resources, as set out in Part 2 of the Resource Management Act 1991, to do so. The reasonable mixing zone is defined as follows in terms of the pSWLP:

Reasonable mixing zone

A zone within which relevant water quality standards may be exceeded but which shall not be larger than:

(a) for river, artificial watercourse and modified watercourse locations with flowing water present at all times:

(i) no longer than 10 times the width of the wetted channel or 200 metres along the longest axis of the zone (whichever is the lesser), and

(ii) occupies no greater than two-thirds of the wetted channel width at the estimated Q95 for that location;

(b) for river, artificial watercourse and modified watercourse locations with intermittent flows, no longer than 20 metres at times of flow and 0 metres at no flow;

(c) when within a drinking water supply zone, or within 250 metres upstream of a drinking water supply site sourced from surface water, identified in Appendix J, 0 metres; or

(d) a distance determined through a resource consent process, having regard to (a) to (c) of this definition.

The existing reasonable mixing zone associated with Consent:202026 extends 50m downstream of the discharge point in the Longridge Stream. The zone was determined through the original resource consent process that was subject to the planning framework relevant when the consent was decided. The original resource consent applications do not provide any relevant details as to how the reasonable mixing zone was calculated.

The definition requires that a zone of reasonable mixing shall be no longer than 10 times the width of the wetted channel for a river, artificial watercourse and modified watercourse locations with flowing water present at all times. The width of the wetted channel in the immediate vicinity of discharge into the Longridge Stream is estimated to vary between approximately 2m and 6m wide (Refer to figure 33).

Based on the definition above, the reasonable mixing zone for the Longridge Stream should be between 20 m and 60 m below the point of discharge.

The pSWLP provides a pathway to determine the distance of the mixing zone through a resource consent process, while having regards to (a) to (c) of the reasonable mixing zone definition. To establish an appropriate mixing zone for Longridge Stream additional information would be required. These details may vary based on flow characteristics, contaminant type and concentration, ecological sensitivity, ambient water quality standards.

The establishment of mixing zones is a complex process that requires a comprehensive understanding of the stream's hydrodynamics, the characteristics of the discharge, and the potential impacts on the environment.

In respect of section (a) to (c) of the reasonable mixing zone definition and in absence of the information described above to establish an appropriate mixing zone distance, the reasonable mixing zone going forward as part of the short term consent should remain at 50m downstream of the discharge point in the Longridge Stream.



Figure 33 Mixing zone width range within Longridge Stream

3.2.2 Current in-stream water quality standards

The Longridge Stream is classified as a “lowland hard bed” surface water body under the Regional Water Plan for Southland as well as the proposed Southland Water and Land Plan. These standards apply to the effects of discharges following reasonable mixing with the receiving waters, unless otherwise stated.

The effects of the discharge have been assessed against the water quality standards for lowland hard bed surface water bodies. The water quality sampling undertaken upstream and downstream of the discharge point in Longridge Stream, in its current state, does not comply with all the required water quality standards beyond the reasonable mixing zone.

The pSWLP requires that water quality must be improved where these standards are not met. In order to achieve the plan objective, the replacement of an existing discharge permit must demonstrate how and by when adverse effects will be avoided where practicable and otherwise remedied or mitigated, so that beyond the zone of reasonable mixing water quality will be improved to assist with meeting those water quality standards.

As previously staged in Section 2 of the report, the focus of the short term consent is to enable the SDC to investigate future options to improve and upgrade the wastewater system to accommodate current and future wastewater demand generated by the Balfour community. The investigation will furthermore consider alternative discharge methods, including land disposal options, which are not covered in this application for resource consent.

However, during the interim period, SDC proposes to install a UV system to reduce E.coli counts in the wastewater discharge. The proposed UV system will be installed within 2 years of the consent being granted. UV is effective at disinfecting wastewater by deactivating or killing microorganisms such as bacteria, viruses, and protozoa. The filter will help reduce the release of harmful pathogens into the Longridge Stream and subsequently reducing the risk of waterborne diseases.

The UV system to be installed in the future will be adequately designed to ensure that the wastewater is treated effectively prior to discharging into the weeded drainage channel. While UV filters do require maintenance, it is worth noting that they generally have lower maintenance requirements compared to other treatment technologies

such as chemical disinfection or membrane filtration. The UV filter is therefore more appropriate for the short term to address E.coli in the discharge.

The conceptual design is underway with the intention to have the UV filtration device installed by no later than December 2025. The SDC proposes the inclusion of a consent condition to require short term improvements. The SDC is to ensure that the system is maintained in accordance with the relevant guidance to meet best environmental standards. There will be no additional short-term upgrades to the Balfour WWTP to improve the overall operation and performance of the treatment system over the proposed five year period.

The proposal will not achieve water quality standards beyond the reasonable mixing zone in the short term. The state of the environment is degraded and significant improvements will be required at the plant to enable water quality standards to be achieved. However, the proposed UV system will mitigate the short term effects of E.coli in the wastewater discharge.

3.2.3 Wastewater trigger values

The proposal is unlikely to meet the water quality standards for Lowland hard bed streams beyond the mixing zone as previously discussed. As an approach to reduce the risk of water quality getting any worst beyond the mixing zone in the Longridge Stream, wastewater trigger values are proposed to manage the quality of the treated wastewater being discharged. The trigger values specified below are based on the actual performance of the existing WWTP following treatment, with the added expectation that there will lower E. coli counts in the discharge following the installation of the proposed UV treatment system.

The consent holder is currently required to monitor the wastewater discharge by taking representative samples of the treated wastewater from the Balfour WWTP. The current monitoring regime requires the consent holder to undertake monthly samples during the period 1 November to 31 March each year, and at least once during the period 1 June to 31 August each year.

The monitoring regime is not providing adequate information and a sampling regime, requiring representative samples of the treated wastewater from the Balfour WWTP once per month for the duration of the consent. The discharge and the receiving water samples must be taken at about the same time, within a one hour period, on each monitoring occasion.

In terms of the overall operation of the site and to reduce the risk of water quality getting worse within the receiving environment, the treated wastewater from the WWTP, will be managed in such a way to maintain the following mean concentration trigger levels set out in Table 7.

Table 7 Proposed Discharge quality triggers

Parameter	Mean Concentration trigger*
BOD ₅ (g/m ³)	30
Total Suspended Solids (g/m ³)	50
Dissolved Reactive Phosphorus (g/m ³)	3
Ammoniacal Nitrogen – N (g/m ³)	15
E.coli (cfu/100mL) prior to UV installation ⁶	500,000
E.coli (cfu/100mL) after UV installation	10,000

**For the purposes of this consent, the mean shall be from the last four rolling samples taken at the WWTP prior to discharging into the weeded drainage channel.*

⁶ This value will only apply until such a time when the proposed UV treatment system has been installed by SDC and is operational.

Where any of the wastewater trigger values have been exceeded, ES will be notified and additional monitoring will be required to determine if there is a trend in the higher concentration levels or whether the spike was a one off occurrence and there is no actual issue with the overall WWTP performance. The notification will be in writing and the SDC will report the sampling date and method, results and analysis, potential reason for concentration trigger exceedance and any actions required or taken to restore concentration levels as soon as reasonably practicable.

The actions will be developed following monitoring to establish the appropriate response needed to restore concentrations to below the trigger levels.

3.3 Water quality monitoring

Water quality is currently sampled at various locations to determine the impact of the discharge into Longridge Stream. The existing consent requires that the consent holder monitor the wastewater discharge and its effects on the receiving environment by taking representative sample of the treated wastewater from:

- the treatment plant
- within the weeded drainage channel near the point of discharge; and
- the receiving waters, upstream and downstream of the point of discharge to the Longridge Stream.

The current monitoring regime is limited in its ability to provide clear understanding of the potential impact the discharge is having on the receiving environment. Sampling is only required once during the period of 1 May to 31 August each year and on at least three occasions during the period 15 November to 15 April each year, when the flow in the Waimea Stream, as measured at the Council's monitoring site at Mandeville, falls below 0.34 cumecs.

The monitoring data available to support the short term application for resource consent (Refer to Appendix C) was very limited (Approx. 1-2 data point/s per year) to enable a comprehensive analysis. There also appears to be other factors influencing the concentration loads in the treated wastewater when measured between the Balfour WWTP and the weeded drainage channel near the point of discharge to Longridge Stream. This is likely a dilution effect occurring after treated wastewater mixes with stormwater (community stormwater and from farms) flowing into the wastewater drainage channel. Further monitoring will be required to fully understand the impact of these other identified dilutions sources and inform future treatment and discharge options to support the long term consent.

The SDC is therefore committed to improve the robustness of the existing monitoring regime and enable a comprehensive analysis on the treated wastewater and effects on the receiving environment going forward. This will require that wastewater discharge and its effects on the receiving environment is monitored, by taking representative sample of the treated wastewater from:

- Inlet at WWTP (A)
- Outlet at WWTP (B)
- Within the Weeded Drainage Channel near the point of discharge to the Longridge Stream; (C)
- Within the Weeded Drainage Channel upstream the point of discharge to the Longridge Stream; (D)
- The receiving waters, upstream and 50m downstream of the point of discharge to the Longridge Stream (E)

Sampling will be required once per month for the entire duration of the consent. The monitoring should preferably be taken during low flow periods where possible i.e when the flow in the Waimea Stream, as measured at the Council's monitoring site at Mandeville, falls below 0.34 cumecs. To ensure adequate information is obtained from the monitoring regime, SDC will maintain regular sampling as required regardless of the flow in the Waimea Stream. The relevant analytes have been described in Section 7.



Figure 34 Recommended sampling locations (indicative)

3.4 Short Term Improvements

GHD is currently investing alternate methods to improve the Balfour WWTP over the long term period, refer to Section 3.5 for more details. However, in the interim period, SDC is undertaking further investigation to commit to short term improvements, which may be including, but not be limited to, the following methods:

- a. Collation and updating of Operations and Management Plan (O&M Plan)
- b. Investigate and commence wastewater network remedial works to reduce I&I
- c. Install additional flow balancing to handle peak wet weather flows
- d. Install UV system to improve E. coli in the wastewater discharge
- e. Commence riparian planting along the entire length of the wastewater drainage channel
- f. Liaison with neighbouring farms to create a stock exclusion zone

Operation and Management Plan

The wastewater scheme will be maintained in accordance with a proposed Operations and Management Plan (O & M Plan) to ensure the desired performance is achieved. The O & M Plan sets out specific guidance in terms of describing the various treatment process steps, how the wastewater treatment system will be operated and maintained and outline contingency measures to handle emergency events.

In addition, a log providing details around any inspections and works carried out on the treatment system must be maintained.

It is envisaged that this will be updated within 6 months after the new consent is granted.

Investigation and physical remedial works to wastewater network

Following the initial options assessment, SDC commenced a CCTV exercise to examine the condition of the wastewater network. Subsequently SDC committed to replace a significant proportion of the wastewater pipework that deemed to be defective or causing significant I&I issues, in FY 2023-24. SDC has estimated that as the remedial works cover the publicly owned sections of the wastewater network, the magnitude of I&I reduction could

only be in the order of 10-15%. However, the extremely high flow peaks observed in the past might be significantly reduced.

The progress of this will be included as part of the annual report.

Installation of additional flow balance tanks

It is understood that the Imhoff Tank could be overwhelmed with peak wet weather flows at times. As seen in Figure 33, the incoming wastewater could reach 300 m³/day or higher comparing the average flow of 180 m³/day. Installing additional flow balance tanks to provide temporary storage, which can be returned when there is a capacity in the treatment plant.

The exact configuration of flow balancing tanks is being investigated, and the installation will be completed within 24 months after the new consent is granted.

Riparian planting in the channel and livestock exclusion from the water

Riparian planting will improve nutrients and sediment capture in the channel, leading to better water quality downstream and the receiving environment (the Longridge Stream). Moreover, SDC will liaise with neighbouring farms to keep livestock out of the drainage channel and agree a setback distance for the livestock away from the water.

All the above measures will provide incremental improvements of the wastewater quality in the Longridge Stream as well as the wastewater drainage channel.

Installation of a new UV for disinfection

E. coli levels in the treated effluent is approximately 3.5×10^4 on average, and elevated E. coli level is found in the downstream samples. SDC proposes to install UV disinfection as part of the future plant improvement. The UV installation could be in the form of a temporary unit relocated from another site, or a new unit as part of the future permanent plant upgrades. The scope of plant improvement is currently being reviewed, and the findings and recommendations will be communicated to ES in the near future.

3.5 Long Term Improvement

As described in Section 3, the short term consent is mainly focussed on maintaining the status quo and to continue the discharge of treated wastewater, with minor improvements resulting incremental reductions of contaminants discharging into the Longridge Stream over the course of the short term consent period.

SDC has recently commenced their investigations to identify alternative treatment and discharge methods to upgrade the Balfour WWTP. There was an option to pump the wastewater to Lumsden or retrofitting the existing network with low pressure sewer, which was not supported following consultation with stakeholders. Further options will be investigated and considered as part of the long term solution.

SDC is actively looking for suitable land based discharge methods to accommodate the disposal of treated wastewater. The land options will undergo detailed field investigations as the first step towards upgrading the overall operation and performance of the existing WWTP. To accompany the land-based discharge investigation, the existing treatment plant will likely be replaced at the current site location or moved to an alternative site outside of Balfour.

The chosen option will result in higher quality of treated effluent that is suitable for a land-based discharge method, which will subsequently form part of the long-term consent.



Figure 35 *Imhoff tank wet weather overflow*

4. Resource Consent Requirements

4.1 Proposed Southland Water and Land Plan (pSWLP)

The pSWLP was made partially operative following a council meeting in January 2021.

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.

Rule 33A (Sixth Interim decision 23 March 2023) is now treated as operative as confirmed with ES as all submissions in opposition and appeals have been determined.

CV – Sixth Interim Decision

Rule 33A⁷⁶ – Community sewerage schemes (discharge to water) ~~{Consent Orders}~~

- (a) The discharge of effluent or bio-solids from a community sewerage scheme into water in a river, lake, artificial watercourse, modified watercourse or natural wetland where the Appendix E – Receiving Water Quality Standards are met and the discharge does not reduce the water quality below those standards at the downstream edge of the reasonable mixing zone discretionary activity;
- (b) The discharge of effluent or bio-solids from a community sewerage scheme into water in a river, lake, artificial watercourse, modified watercourse or natural wetland where Rule 33A(a) is not met the discharge is a non-complying activity.

The proposal seeks to replace the existing discharge permit. The Water Quality Standards (Appendix 8 of the pSWLP) cannot be met and the discharge reduces the water quality below those standards at the downstream edge of the reasonable mixing zone.

The activity does therefore not comply with Rule 33A(a) and is therefore a non-complying activity pursuant to Rule 33A(b) of the pSWLP. As such the following consent is required:

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

4.2 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.

The rule framework in the RWPS is no longer applicable to the proposal as the relevant rule in the pSWLP can be treated as operative and is used to determine the activity status.

4.3 Summary

The activity must be classified as a **Non-Complying Activity pursuant to Rule 33A(b) of the pSWLP (sixth Interim decision 23 March 2023)**. 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 Longridge Stream. 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 non-complying activity, there are no specific matters that must be addressed in this assessment of effects. Guidance has been taken from the following provisions:

Regional Fresh Water Plan for Southland

Objectives

- Objective 2, 3, 4 and 10 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, 7, 8 and 9 associated with meeting regional plan water quality standards, encouraging best management practices to manage water quality in surface water bodies and encouraging discharges at times of high flow to improve the assimilation of contaminants.

Proposed Southland Water and Land Plan:

Objectives

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

Policies

- Policy 15B, 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

There are obvious benefits to the Balfour community of having an operating and efficient wastewater treatment plant. SDC and the urban Longridge community rely on the wastewater treatment and disposal system to function sustainably and to maintain public health standards. An inability to continue to operate the wastewater treatment plant would have significant consequences on the wellbeing of the community, and on their health and safety. This is recognised in the Regional Policy Statement with the inclusion of the Plant as “regionally significant infrastructure”.

The short-term consent is to maintain the status quo in terms of the existing operation and water quality in the Longridge Stream. As part of the consent application, the SDC does however propose to make a number of short term improvements which will likely improve the quality of discharge and the receiving environment. The short term methods have been discussed in Section 3.4. Based on discussions with stakeholders and Iwi, it is agreed that the most pragmatic approach would be to re-consent the discharge to continue in the short term, while work is underway to upgrade the Balfour WWTP and progressively convert the discharge from the WWTP to a suitable land disposal area.

The long term consent will ultimately result in a reduction of the adverse effects of discharges on surface water quality by removing the discharge from surface water altogether. The utilisation of land treatment where the discharge can be undertaken in a sustainable manner and without significant adverse environmental effects is the preferred method. The removal of the discharge from Longridge Stream will ultimately improve the degraded state

of water quality. The long term solution may require discharges to the Longridge Stream during winter under extreme instances of prolonged rain when the discharge to land will be unachievable. The long term consent will be submitted to ES once more detailed land investigations have been conducted to determine the suitability of the proposed land. The land investigations have not yet commenced but will shortly be underway. The construction phase of the project will take approximately 2 years to complete once the future system designs have been completed. This will likely require significant modifications or a replacement of the existing wastewater treatment system prior to land disposal.

The existing Balfour WWTP has had issues complying with the daily discharge volume and it has been determined that this is primarily caused by the infiltration of other unaccounted sources i.e stormwater and wastewater system discharges upstream of the Balfour WWTP. The SDC has already implemented a Stormwater and Infiltration Program (SIP) with the aim of reducing infiltration of other sources entering the wastewater reticulation system which subsequently end up at the Balfour WWTP. The SIP also surveyed reticulated stormwater networks within various catchments of Balfour to identify any issues.

Enhancing the wastewater drainage channel and riparian planting will not only be beneficial to the community, but also to the wider environment and from a cultural perspective. These wetland species, along with the complex interactions of microorganisms and the physical properties of wetland ecosystems, can help in the natural treatment of nutrients and contaminants in wastewater.

Overall, the project achieves a sustainable balance in enabling the community to provide for its wellbeing into the future while maintaining the environment.

5.2 Actual or potential effects on surface water quality and biodiversity

5.2.1 Effects on surface water quality

Water quality sampling data (refer to Section 2.5) shows that water quality in the Longridge Stream is generally poor upstream and downstream of the discharge point. Monitoring shows that the Balfour WWTP is contributing to the overall decline of water quality in Longridge Stream particularly in terms of Ammoniacal-N, E.coli and Dissolved Reactive Phosphorus.

Excessive concentrations of ammoniacal N will cause water hypoxia and can result in acute and chronic effects on instream ecology. Excessive levels of DRP can promote algae growth in water bodies and may increase the risk of harmful algal blooms. This can lead to a variety of water-quality problems, including low dissolved oxygen concentrations, which can cause harm to the overall health of the waterbody. Elevated levels of E. Coli in the water increase the risk of waterborne disease transmission. If the contaminated water is used for drinking, recreational activities, or irrigation, it can pose a health hazard to humans and animals who rely on the water resources.

In order to protect the overall health of the waterbody, the effects of the discharge beyond the zone of reasonable mixing must be managed. These were assessed and it was determined that, in its current state, the Longridge Stream does not comply with all of the required water quality standards in terms of oxygen saturation, total ammonia (at the downstream sampling location but compliant at Sandstone) and faecal coliforms. It is noted that oxygen saturation and faecal coliform levels exceed these standards upstream of the WWTP discharge as well. The 5 year median trends of water quality samples (based on LAWA⁷) taken in Longridge Stream at Sandstone, indicates that E.coli, suspended fine sediments, ammoniacal N, nitrate nitrogen, phosphorus and DRP levels are poor with trends not showing any likely improvement in the short term.

The discharge of treated wastewater into the Longridge Stream is adversely affecting aspects of water quality as suggested by the water quality sampling. The current water quality trends will likely improve over the short-term period with the changes being proposed in the short-term to upgrade the treatment system. The short term improvements involve the installation of a new UV treatment system, enhancement of vegetation in the riparian margins of the drainage channel to improve wastewater treatment, installation of balance tanks on site to address wet weather overflows, implementation of stock exclusion zones, and reduction of I&I by 10% to 15 % over the

⁷ <https://www.lawa.org.nz/explore-data/southland-region/river-quality/mataura-river/longridge-stream-at-sandstone/>

next 10 year period. All these improvements collectively should see an improvement in discharge water quality and overall loading into the receiving environment.

In addition to the above, SDC is aiming to ensure that best environmental practices will be achieved at the plant from an operational and management perspective. As such, the Balfour WWTP will be managed in accordance with an updated O & M Plan. To ensure the existing system maintains the status quo, wastewater trigger levels will be adopted in the proposed monitoring regime with a requirement to act. The consent holder will be required to notify the regional council when any exceedance occurs and provide details of the potential cause and any immediate actions implemented to resolve the exceedance. The purpose of this process is to determine if there are any additional issues unaccounted for beyond the anticipated performance levels that requires urgent remediation.

As previously mentioned, the SDC has also implemented a Stormwater and Infiltration Program (SIP) with the aim of reducing inflow and infiltration (I&I) entering the Longridge wastewater reticulation system which subsequently end up in Longridge Stream. SDC has also carried out surveys of its reticulated stormwater network within various catchments to identify cross-connections, and physical testing and die testing around council properties to identify I&I sources. The SIP is aimed to reduce inflow and infiltration arising from council owned properties and infrastructure by 10-15%.

Based on the above assessment, the effects of the discharge, beyond the zone of reasonable mixing, will continue to not meet all the prescribed regional plan water quality standards for lowland hard bed water bodies in the short term. However, the intention is to maintain the existing performance of the Balfour WWTP by applying best management practices through implementation of the O&M Plan and reduce inflow to the system through the implementation of a SIP whilst investing and designing the scheme long-term land disposal solution.

In summary, the discharge of treated wastewater to the Longridge Stream is and will continue to have an adverse effect on water quality that is considered to be more than minor, however with the proposed mitigation measures the discharge is not anticipated to result in any further degradation of water quality in Longridge Stream in the short term and should show some improvement.

5.2.2 Effects on biodiversity and aquatic ecology

The current discharge is likely affecting aquatic ecosystems in Longridge Stream. Based on the water quality sampling, the overall water quality in the receiving surface water environment at Longridge Stream is considered poor and the current wastewater discharge is considered to contribute to the poor water quality in the Longridge Stream. As previously mentioned, the wastewater discharge contributes elevated concentrations of Ammoniacal Nitrogen, E.coli and Dissolved Reactive Phosphorus into Longridge Stream. The discharge is one (of potentially many contributors) to the degraded water quality in Longridge Stream.

The water quality in Longridge is poor and further contribution of contaminants will enrich nutrients. When present in excessive amounts, they can cause eutrophication. Elevated levels of Ammoniacal nitrogen and dissolved reactive phosphorus can contribute to the growth of algae and aquatic plants in the Longridge Stream. Algal blooms and excessive plant growth can reduce light penetration, lower dissolved oxygen levels, and disrupt the balance of the aquatic ecosystem.

Discharging treated wastewater into the Longridge Stream can also alter the physical and chemical characteristics of the receiving water. Changes in temperature, pH, and nutrient levels can impact the habitat suitability for certain organisms. Aquatic organisms may be sensitive to these changes, and if the discharged water is significantly different from the stream's natural conditions, it can disrupt their reproductive cycles, migration patterns, and overall habitat preferences.

Suspended solids in the discharge may affect water clarity, light penetration, and the health of benthic organisms in Longridge Stream. The water quality samples indicated that Total Suspended Solid (TSS) concentrations upstream and downstream of the discharge location are variable (between < 2.5 mg/L and 40 mg/L) over the monitoring period presented (Figure 12). There was no clear relationship found between upstream and downstream TSS concentrations and/or stream flow. The water clarity within Longridge Stream was overall poor when visited on 5 July 2023. It was however evident that the discharge, following final treatment in the weeded drainage channel, was in a better state when compared with the Longridge Stream as the discharge clarity was perfectly clear. Demonstrating that the weeded drainage channel is effective in removing contaminants.

In relation to the overall health and wellbeing of the Longridge Stream, the 5 year median trends as per the Macroinvertebrate Community Index (MCI) (based on LAWA⁸) taken in Longridge Stream at Sandstone scores 81.0. The national bottom line: MCI score is 90. This shows that macroinvertebrate community are indicative of severe organic pollution or nutrient enrichment and is currently in the Attribute band D. The trend furthermore shows that the state is likely degrading with MCI scores between 2017 and 2021 fluctuating between 80 and 85. Based on the results the stream health is overall considered poor and is not likely to improve in the short term.

As previously noted, the wastewater drainage channel will furthermore be enhanced with the addition of suitable wetland species within the riparian margins and bed of the drainage channel. Several wetland species are known for their ability to treat nutrients and contaminants in wastewater. The following wetland species will be beneficial for treating nutrients and contaminants in the wastewater and will be considered as part of the short term improvements:

- Raupo (*Typha orientalis*): Raupo is a wetland plant that is effective in nutrient removal, particularly nitrogen and phosphorus. It can help in treating wastewater by absorbing and assimilating these nutrients.
- Jointed rush (*Juncus articulatus*): Jointed rush is another wetland species commonly found in Southland. It can contribute to nutrient removal and assist in the treatment of wastewater.
- Carex species: Various Carex species, such as Carex secta (tall sedge) and Carex geminata (creeping sedge), are native to wetlands in Southland. These species can help in nutrient uptake and removal from contaminants in wastewater.
- Gahnia species: Gahnia species, such as Gahnia pauciflora and Gahnia setifolia, are native to wetlands in New Zealand, including the Southland region. They have the potential to assist in the removal of nutrients and contaminants from wastewater.
- Phormium tenax (New Zealand flax): Phormium tenax is a common wetland species found in Southland. It can aid in the removal of nutrients and contaminants from wastewater due to its robust root system.

The enhancement will also improve biodiversity and ecosystem health and will play a vital role in water purification by filtering pollutants and trapping sediments. The enhancement will contribute to the conservation and restoration of biodiversity, aligning with mana whenua's commitment to ecological stewardship and intergenerational sustainability. Additionally, wetland management practices and ongoing monitoring will be necessary to ensure optimal performance in wastewater treatment and protocols will be included in the O & M Plan.

Based on the above assessment, the discharge of treated wastewater into the Longridge Stream is and will continue in the short-term to have an adverse effect on aquatic ecology and the effect is considered to be more than minor. However, with the implementation of mitigation measures proposed the discharge is not anticipated to result in any further degradation to the Longridge Stream ecological health in the short term and should provide some improvement.

5.2.3 Other river users

The land adjacent to the stream is predominantly agricultural and there are no known bathing spots in the Longridge Stream. Given the modified nature and low flow characteristics of the stream during dry summer months, it does not support a wide variety of sport fishing opportunities. The stream is heavily polluted with high pathogen and nutrient levels. The ecological assessment suggested that the stream contains low ecological health conditions both up and downstream. It is therefore considered very unlikely that the Longridge Stream is used for mahinga kai or food gathering purposes. The Longridge Stream does not appear to support any other recreational activities i.e. hiking, swimming, camping or kayaking. Access to the Longridge Stream is also limited.

The contaminant concentrations in the wastewater discharge will likely reduce after thorough mixing of water in the Longridge Stream before reaching the Waimea River and Maitai River. Water quality data taken from the Longridge Stream at Sandstone, shows water quality is still in a degraded stage but does show some improvements. However, given contaminants from the WWTP are being discharged into an already degraded stream with a poor ecological health status and high risk of causing human health issues, the effects on other users in Longridge Stream are considered to be more than minor.

⁸ <https://www.lawa.org.nz/explore-data/southland-region/river-quality/maitai-river/longridge-stream-at-sandstone/>

Based on the above assessment, the current state of the Longridge Stream will likely discourage any potential recreational or other uses of the stream but this cannot be confirmed. The downstream environment is adversely affected by the discharge and the water quality standards are not being met with high contributions of ammoniacal nitrogen, E.coli and DRP in the discharge. Given there is no certainty around the use of Longridge Stream downstream of the discharge point, the potential and actual adverse effects are considered to be more than minor.

5.2.4 Animal and human health risks

Wastewater can have negative effects on human health if exposed to high concentrations of contaminants. Some of the possible health risks associated with exposure to untreated or poorly treated wastewater include:

- **Infections:** Wastewater can contain harmful bacteria, viruses, and parasites that can cause gastrointestinal infections, skin infections, respiratory infections, and other health problems.
- **Toxic substances:** Wastewater often contains toxic chemicals, such as heavy metals, pesticides, and pharmaceuticals, which can accumulate in the environment and pose health risks to humans.
- **Waterborne diseases:** Wastewater can contaminate drinking water sources and lead to outbreaks of waterborne diseases, such as cholera, typhoid fever, and dysentery.

In terms of overall river water quality, Environment Southland's State of the Environment Report⁹, classifies the water quality within the Longridge Stream in the vicinity of the current WWTP discharge (Water quality sampling site at Sandstone downstream from current discharge location) as 'very poor' in terms of *E.coli*, 'poor' and 'fair' in terms of nitrate N and ammonia.

E.coli counts are generally measured at similar levels upstream and downstream of the discharge (Figure 18) although recent monitoring data (since January 2022) shows *E.coli* counts are higher downstream than upstream. There is no obvious trend between flow and *E.coli* concentration until 2022 where *E.coli* count appear to be higher with higher flows. Figure 19 shows the reduction in recorded *E.coli* counts from the point of discharge to the receiving environment. There is a significant reduction (by several orders of magnitude) from the point of discharge to the downstream sampling location.

The water quality standards for lowland hard bed rivers require that the concentration of faecal coliforms not exceed 1,000 coliforms per 100 millilitres below the edge of reasonable mixing. Longridge Stream 50m below the reasonable mixing zone recorded just under 1000 MPN/100mL in January 2023. There have been recordings over the last two years where concentration of faecal coliforms exceeded 2,500MPN/100mL. The Freshwater Objectives for Southland set a desired attribute B state in terms of *E.coli* (95th Percentile (5 years)), which is also not being achieved downstream of the discharge.

There is no certainty around the extent of use of the Longridge Stream by human and animal activities i.e. mahinga kai or stock drinking water. To minimise risk to human exposure, signage has been placed near the weeded drainage channel and will be maintained to inform the public of the discharge of treated wastewater and associated health risks. The sign includes a contact number for the consent holder. The proposed short-term improvements will collectively result in an improvement in discharge water quality and overall loading into the receiving environment. These measures will minimise the risk on human and animal health but will not completely remove the risk.

Given the high concentrations of *E.coli* discharged into the Longridge Stream and considering the overall water quality in terms of *E.coli* is classified as being very poor as per the ES SoE Report, the actual and potential adverse effects on public and human health are considered to be more than minor.

5.3 Actual or potential effects on tangata whenua values

Te Mana o Te Wai is recognised by tangata whenua and is about recognising the vital importance of clean, healthy water for maintaining the health of our waterbodies, freshwater ecosystems and the communities that rely upon them for their sustenance and wellbeing.

The Longridge Stream has not been identified as having any particular cultural significance, however the stream eventually merges with the Mataura River, which is classified as a Statutory Acknowledgment Area. Although the

⁹ Environment Southland. Current Environment State and the "gap" to draft freshwater objectives for Southland. Dec 2019.

wastewater is not directly discharging into the Mataura River, the evidence suggests that the wastewater discharge is adversely affecting water quality and ecological health in the downstream environment, which subsequently enters the Mataura River. The Mataura River convergence point is approximately 30km downstream of the discharge point but when considering cumulative effects the wastewater contributes to the degraded surface water network.

The overarching direction by Iwi is that wastewater should not be discharged directly into surface water and land disposal systems should be promoted in the first instance. This is mainly because of the sensitivity of the waterbody compared to a land disposal system. Land disposal systems may however still result in the potential for leaching where contaminants may enter groundwater. However, the effects associated with land disposal systems are significantly less than discharging treated wastewater directly into surface water as there is a multibarrier approach to reduce and minimise contaminants.

The SDC is also committed to enhance the full length of the wastewater drainage channel by planting suitable wetland species to treat the wastewater by filtering pollutants and trapping sediments. The intention is to improve biodiversity and ecosystem health in the short term by reducing the impact of the discharge on the receiving waterbody as much as reasonable practicable. The enhancement of vegetation in the channel is considered to be representative of a holistic approach that respects the cultural, spiritual, and ecological values cherished by mana whenua.

This short term consent will however allow SDC to undertake detailed land investigations, design the Balfour WWTP upgrades and construct the land disposal infrastructure. The detailed information will support the long-term consent application to convert the discharge to a land-based application system. The construction period to install the upgrades, pipeline and additional irrigation infrastructure will occur over a two-year period. This approach has been discussed with Te Ao Marama Inc and SDC is committed to ongoing engagement during the development of the long term solution.

Based on the above assessment, the short term improvements will likely result in improvements, however given the degraded nature of Longridge Stream and the continuation of the discharge over the course of the next five year period, the potential and actual adverse effects on tangata whenua values is considered to be minor.

5.4 Actual or potential cumulative effects

There is evidence of I & I from sources upstream of the Balfour WWTP, causing non-compliance issues with the consented discharge volumes. Although the SDC is proactively working to rectify the problem by reducing I & I, these sources may potentially introduce additional contaminant concentrations (i.e hydrocarbons, heavy metals) into the Balfour WWTP, which subsequently discharges into the stream and potentially harms the health and wellbeing of the waterbody. Although the trickling filters and weeded drainage channel may treat the contaminants to some extent, the effectiveness of these processes can also depend on other factors such as the concentration and water conditions, and the presence of other contaminants that may interfere with the treatment process. As such, they may not be the most efficient or reliable treatment option for these types of contaminants.

The Longridge Stream flows along the eastern boundary of Balfour township which potentially introduces various other contaminants to the stream (hydrocarbons, heavy metals, Ecoli and various) as a result of stormwater runoff from properties, passive discharges into groundwater hydraulically connected to surface water and stormwater drains discharging directly into the Longridge Stream. In addition, the Longridge Stream flows through a vast area of agricultural land, which also introduces various other contaminants typically related to farming land use activities (nutrients and pathogens). These include passive discharges where nitrogen and pathogens may enter groundwater and surface water, or where stock have access to the Longridge Stream introducing phosphorus. Other contaminants may enter the watercourse from windborne contaminants i.e. effluent applicators where appropriate setbacks are not maintained.

As discussed in Section 2.6 of this report, water quality in the Longridge Stream is poor overall. The recent monitoring data (ca. last 12 months) suggests that the Balfour WWTP is responsible for a significant proportion of the ammoniacal N and DRP present at the downstream sampling location, especially during low flow summer periods (below the zone of reasonable mixing). However for other contaminants of concern, e.g. DRP, nitrate and *E.coli*, are also significantly elevated upstream of the discharge point and that are comparable to downstream concentrations (after WWTP discharge and mixing). The results suggest that the Balfour WWTP is not the key driver for elevated in-stream concentrations of these parameters.

The discharge contributes a small proportion of flow relative to the overall flow of the Longridge Stream, however the water quality samples have indicated that certain contaminants within the discharge is elevated. The water quality samples taken upstream of the discharge point have also shown that water quality is in a poor and degraded state. This means that other sources of contamination upstream of the discharge point is having a significant impact on the health and wellbeing of the waterbody. When considering the cumulative impact on the environment, the discharge contributes to the degradation of water quality within the Longridge Stream. As such, the discharge in combination with other discharges, as described above, is having a greater impact on the overall water quality in Longbridge Stream.

Based on the above its considered that the actual and potential cumulative effects will be more than minor on the environment and minor on any other person using the Longridge Stream.

5.5 Overall AEE conclusion

The proposal has assessed the actual and potential impact of the short term discharge on a wide range of environmental aspects and the potential impact on specific users of the Longridge Stream. The following is a summary of the key points addressed in the assessment:

- The overall water quality in the receiving surface water environment at Longridge Stream is considered poor and the health and wellbeing of aquatic ecology is potentially affected by the discharge.
- Monitoring shows that the Balfour WWTP is contributing to the overall decline of water quality in Longridge Stream particularly in terms of Ammoniacal-N, E.coli and Dissolved Reactive Phosphorus.
- The current water quality trends will likely improve over the short-term period with the changes being proposed in the short-term to upgrade the treatment system, in particular wet weather overflows.
- The enhancement of the drainage channel will also improve biodiversity and ecosystem health in the stream and will play a vital role in water purification by filtering pollutants and trapping sediments.
- The SDC implemented a Stormwater and Infiltration Program (SIP) with the aim of reducing inflow and infiltration (I&I) entering the Longridge wastewater reticulation system by 10% - 15%.
- The SDC is aiming to ensure that best environmental practices will be achieved at the plant from an operational and management perspective by updating the O & M Plan of the WWTP.
- The stream has low ecological health conditions both up and downstream. It is therefore considered very unlikely that the Longridge Stream is used for mahinga kai or food gathering purposes.
- The current state of the Longridge Stream will likely discourage any potential recreational or other uses of the stream, but this cannot be confirmed so there may be a potential risk on human health. Signage will be maintained in the weeded drainage channel.
- The Longridge Stream flows through a predominantly farming environment and there are various other sources of contaminants entering the waterbody impacting water quality and ecology.

The assessment indicates that overall, the potential effects from the treated discharge into the Longridge Stream results in adverse effects on the receiving environment that are more than minor. This is due to the degree of treatment employed, generally high levels of anticipated contaminants and the sensitive environmental setting.

6. Statutory Assessment

The Resource Management Act (RMA) provides the framework for all resource utilisation in New Zealand. When making a determination on a resource consent under the RMA, a consent authority is required to have regard 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 Part 2 - Purpose and Principles

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.

The purpose of the RMA as set out in Section 5 is to promote the sustainable management of natural and physical resources. 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.

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 in the application since the Mataura River has been identified as a Statutory Acknowledgement that identifies Te Rūnanga o Ngāi Tahu's cultural and spiritual associations with the river. The Longridge Stream is a tributary of the Mataura River, via the Waimea River. The Longridge Stream is influenced by stormwater from various land use activities and is impacted significantly by farming land use activities. There are no known sensitive Rūnanga values associated with the Longridge Stream based on information available in the RWPS or pSWLP. There are furthermore no areas containing significant indigenous vegetation and significant habitats of indigenous fauna along the margins of the Longridge Stream where the discharge occurs. There is an understanding of the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga which will be discussed with Te Ao Marama Inc through the consenting process.

Section 7 of the RMA provides a list of further matters that particular regard must be given to in relation to managing the use, development, and protection of natural and physical resources. Of relevance to the proposal, particular regard has been given to kaitiakitanga and the 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 ongoing with Te Ao Marama Inc regarding the proposed short term consent and long term strategy. Initial discussions were carried out with Te Ao Marama Inc, on behalf of the respective Rūnanga regarding the consent renewal and long term solution. When further information is available, Rūnanga would welcome the opportunity to receive this information to ensure that kaitiakitanga is at the centre of a robust consultation and decision making process. Consultation will be ongoing with Te Ao Marama Inc and any further comments will be provided to ES.

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 Longridge Stream over the next 5 years while SDC design and implement the long term strategy. Monitoring and reporting are required to ensure the health of the waterbody is monitored and maintained. The WWTP will be managed in accordance with best practice prescribed in an Operations and Management Plan, setting out the relevant processes required to maintain current treatment standards prior to discharging into the Longridge Stream. The Mataura River, downstream of the discharge point via the confluence with the Waimea River, has been identified as a Statutory Acknowledgment and consultation with Te Rūnanga o Ngāi Tahu and the relevant Rūnanga will be ongoing to seek their feedback on the application. The proposal is considered to be in accordance with the principles of the Treaty of Waitangi.

The application has been assessed against the relevant planning provisions and it is 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. SDC is currently in the design phase of the wider project to improve the WWTP treatment system and in the process of finding suitable land area to accommodate future land disposal. In the short term SDC have committed to installing an additional UV treatment system which will

significantly reduce E.coli counts in the load discharging into Longridge Stream. The SDC will submit a future long term consent in line with the proposed timeline given in Section 3.5, once the details for a land disposal system have been confirmed.

6.2 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.

A 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 proposed 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. This application has been prepared in accordance with Section 88 and the fourth schedule of the RMA.

6.3 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:

- 1(a) any actual or potential effects on the environment of allowing the activity;
- 1(ab) 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
- 1(b) any relevant provisions of—
 - a) a national environmental standard:
 - b) other regulations:
 - c) a national policy statement:
 - d) a New Zealand coastal policy statement:
 - e) a regional policy statement or proposed regional policy statement:
 - f) a plan or proposed plan; and
- 1(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.

In accordance with s104(a), the actual or potential effects on the environment of the activity have been assessed in section 5 of this report and are considered to be more than minor on the environment and minor on any person. The application has had regard to a number of planning provisions, other matters and to the Water Services Act to determine the application as set out in the following sub-sections.

6.3.1 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.

In accordance with the WSA, the discharge from a WWTP is defined as part of a wastewater network. 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 WSA) won't commence until late 2023. Therefore, there aren't currently any wastewater environmental performance standards that must be considered under s.104 of the RMA.

6.3.2 National Policy Statement for Freshwater Management 2020 (NPS-FM)

The National Policy Statement for Freshwater Management 2020 (NPS-FM) came into effect on 3 September 2020 (amended in February 2023) 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 NPS-FM objective and policies given in Table 8.

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

Comment: Water quality in the Longridge stream is generally very poor as discussed previously. Sampling taken upstream and downstream of the discharge point indicate that the plant is contributing to declining water quality in the Longridge Stream. In particular, the plant is mainly contributing Ammoniacal Nitrogen, Dissolved Reactive Phosphorus and E.coli. The water quality assessment in Section 5.2 revealed generally poor-quality biological communities reside upstream and downstream of the discharge point within the Longridge Stream. The discharge is evidently contributing to the already deteriorating health and well-being of Longridge Stream and associated freshwater ecosystems.

The proposal will enable SDC to discharge into Longridge Stream for a maximum term of five years. This will allow SDC to finalise the long-term detailed designs to upgrade the Balfour WWTP and convert the disposal system to a land based disposal scheme. The short-term consent does not fully align with the first priority of the NPS-FM, given the discharge will continue into the already degraded Longridge Stream. There are a number of short term improvements proposed over the short term to improve the discharge which should also improve the quality of the receiving environment. This includes a UV treatment system and enhancement of the drainage channel in particular. Monitoring and reporting requirements have also been reinforced to provide a clearer picture to ES of the impact on Longridge Stream, which will furthermore inform the long-term strategy scheme designs.

When the consent authority determines the application, the substantive decision must rather be focussed on the long-term solution and benefits associated with the new Balfour WWTP and land disposal system. The new wastewater scheme for Balfour will be designed to be consistent with the outcomes of the NPS-FM, with the main priority being to protect the health and well-being of water bodies and freshwater ecosystems. The SDC is currently in the design phase and investigating several locations on a case-by-case basis, which will determine if any potential land disposal areas are suitable to attenuate and further treat any remaining contaminants that may enter groundwater or connected surface water.

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

Comment: The Balfour WWTP has been in operation since 1963 providing essential wastewater treatment services to the local Balfour community. There are no identified bathing sites or swimming areas near the discharge point at the Longridge Stream, or downstream of the discharge site. Signs have also been provided on site to warn the public against attempting to use the stream for recreational activities or access in that area given the potential health risks associated with the contaminated discharge. There are no other identified water users within the mixing zone, or further downstream up to the point where the stream converges with the Waimea River. However, given the overall poor quality of the Longridge Stream not meeting national bottom lines and the uncertainty around other potential unidentified recreational or cultural uses of Longridge Stream, there is a potential health risk associated with water contact or incidental ingestion.

(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 wastewater discharge into the Longridge Stream does contribute to the overall poor health and wellbeing of the waterbody and potentially effects the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future. However, wastewater infrastructure and treatment systems are essential to support the growing populations within Balfour and to provide for economic development. SDC will shortly get land investigations and detailed designs underway to convert the system to a land disposal system in the future. Significant investment and resources are required to implement any proposed changes which are anticipated to happen over the next five years.

Table 8 Assessment against NPS-FM

Objective	Policy	Comment
<p>(1) The objective of this National Policy Statement is to ensure that natural and physical resources are managed in a way that prioritises:</p> <p>(a) first, the health and well-being of water bodies and freshwater ecosystems</p> <p>(b) second, the health needs of people (such as drinking water)</p> <p>(c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.</p>	<p>Policy 1: Freshwater is managed in a way that gives effect to Te Mana o te Wai.</p>	<p>The approach taken to apply for a short-term consent while land investigations and detailed designs get underway for the new Balfour WWTP in the near future. This was agreed with stakeholders to be the most pragmatic solution. The short-term consent does not completely align with the desired outcomes of Te Mana o te Wai as noted above, however the short-term consent is essential to allow SDC to continue the discharge while working towards the long-term solution desired outcome. The proposal will result in some short term improvements as previously discussed. The long-term solution will be consistent with the desired outcomes of Te Mana o te Wai as the disposal of treated wastewater will be primarily land based.</p>
	<p>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.</p>	<p>The existing discharge permit is due to expire and SDC consulted with various stakeholders to find a pragmatic approach to reconsult the Balfour WWTP for an additional term of five years. Longridge Stream is in a poor state from a water quality as well as biodiversity</p>

		<p>point of view. The AEE acknowledges the impact of the Balfour WWTP discharge on the receiving environment. The long term solution, as agreed with stakeholders, will focus on reducing the impact of the discharge on the receiving environment and at a catchment scale.</p>
	<p>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 water bodies and freshwater ecosystems is maintained and (if communities choose) improved.</p>	<p>The health and wellbeing of the Longridge Stream is degraded upstream and downstream of the Balfour WWTP discharge point and not meeting desired attributes states. Monitoring shows that the discharge does contribute to further degradation of water quality and biodiversity of the stream. The purpose of the short term consent is to continue the current operation and performance of the WWTP, until the long term solution can be implemented within the next five years. The recommended option for disposal as discussed with stakeholders would be primarily land based and will lead to an improvement in the health and well-being of the Longridge Stream, including Waimea and Maitara Rivers respectively in the near future.</p>
	<p>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.</p>	<p>SDC is currently required to provide a report to ES assessing the operation and performance of the WWTP and the impact of the discharge on water quality in the Longridge Stream every 5 years. Going forward the reporting requirements will be more intensive with annual reporting required to update the council on the overall performance of the WWTP. In addition, SDC proposes to undertake intensive monitoring, assessing biodiversity values in the stream and compliance with associated water quality standards for lowland hard bed streams within 12 months following granting of consent. SDC also proposes to implement an Operations and Management Plan describing the various process and monitoring requirements. Accidental spillage and emergency protocols have been proposed to manage and report spills associated with dry weather or wet weather overflows.</p>

		The long-term solution will take action to reverse deteriorating trends in Longridge Stream. This can however not be achieved as part of the short-term consent.
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The proposed short-term continuation of the current activity to discharge to the Longridge Stream overall does not align with the objectives and policies of the NPS-FM, however the long-term strategy which is to be implemented during the short-term consent term will.

6.3.3 Environment Southland - Regional Policy Statement (RPS)

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 is not completely aligned with the policies and objectives. Consultation is currently ongoing with Te Ao Marama Inc, on behalf of the relevant Rūnanga, who have been engaged as part of the process to reconsent the existing Balfour WWTP for a term of 5 years.
Objective TW.3 Mauri and wairua are sustained or improved where degraded, and mahinga kai and customary resources are healthy, abundant and accessible to tangata whenua.	Policy TW.4 When making resource management decisions, ensure that local authority functions and powers are exercised 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.	The intention of the resource consent is to maintain the status quo for up to 5 years. Consultation with Te Rūnanga o Ngāi Tahu and the relevant Rūnanga will be ongoing as part of the process to ensure the proposal has appropriate regard to tangata whenua values.
Chapter 4: Water		
Objective WQUAL.1 Water quality in the region:	Policy WQUAL.1 Identify values of surface water and manage discharges and land use activities to maintain or improve water quality to ensure freshwater	The Balfour WWTP will be managed in accordance with an Operations and Management Plan which will set out specific processes to ensure that

<p>(a) safeguards the life-supporting capacity of water and related ecosystems;</p> <p>(b) safeguards the health of people and communities;</p> <p>(c) is maintained, or improved in accordance with freshwater objectives formulated under the National Policy Statement for Freshwater Management 2014;</p> <p>(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.</p>	<p>objectives in freshwater management units are met.</p> <p>Policy WQUAL.2</p> <p>Maintain or improve water quality, having particular regard to the following contaminants:</p> <p>(a) nitrogen;</p> <p>(b) phosphorus;</p> <p>(c) sediment;</p> <p>(d) microbiological contaminants.</p> <p>Policy WQUAL.5</p> <p>Improve water quality by specifying targets to improve water quality within those water bodies within defined timeframes.</p>	<p>the treatment system is working as intended.</p> <p>The existing consent imposed very limited parameters to maintain water quality. The new consent application proposes a more robust monitoring regime and sets specific triggers for a range of contaminants in the discharge that lead to further action if exceeded. In particular, BOD5 (g/m3), Suspended Solids (g/m3), Dissolved Reactive Phosphorus (g/m3), Ammoniacal Nitrogen – N (g/m3), E.Coli (cfu/100mL) levels must be maintained to prevent any further reduction in water quality. Short term improvements to the WWTP will be made within two years of the consent being granted.</p> <p>Water quality standards below the reasonable zone of mixing have been proposed in accordance with the pSWLP. These water quality standards were developed to maintain intrinsic values of ecosystems, the health of the waterbody and enhance the quality of the environment.</p> <p>The water quality in Longridge Stream is generally in a poor state. The long-term strategy for Balfour WWTP will ensure that treated wastewater is progressively removed from the stream and discharged onto land once the new long-term resource consent application has been granted.</p>
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Chapter 6: Biodiversity

<p>Objective BIO.2</p> <p>Maintain indigenous biodiversity in Southland and protect areas of significant indigenous vegetation and significant habitats of indigenous fauna for present and future generations.</p>	<p>Policy BIO.4</p> <p>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.</p> <p>Policy BIO.8</p>	<p>The site is not within protected areas of significant indigenous vegetation and significant habitats of indigenous fauna. The Longridge Stream has been modified and the river margins are intensively farmed. The proposal will maintain the current state of any indigenous habitats within the stream.</p> <p>Te Ao Marama Inc have been engaged in the discussions to date regarding the re consenting of Balfour WWTP. Consultation is</p>
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	<p>Recognise the role of tangata whenua as kaitiaki, by providing for:</p> <p>(a) tangata whenua values and interests to be incorporated into the management of indigenous biodiversity;</p> <p>(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;</p> <p>(c) active involvement of tangata whenua in the protection of cultural values associated with indigenous biodiversity;</p>	<p>continuing with tangata whenua to ensure cultural values and interests are considered as part of the long-term strategy.</p>
Chapter 9: Air Quality		
<p>Objective AQ.1</p> <p>Enable the discharge of contaminants into air while managing the adverse effects of those contaminants on human health and wellbeing, and the environment.</p>	<p>Policy AQ.1</p> <p>Avoid, remedy or mitigate the adverse effects of discharges of contaminants to air on human health, cultural and amenity values and the environment.</p>	<p>Under normal operational conditions the WWTP and associated discharge is unlikely to result in adverse effects on air quality (odour). In the unlikely event abnormal operational conditions arose, such as if the ponds became anaerobic, the O&M plan will prescribe responses/actions to be taken in such events to manage any potential odorous discharges.</p>

The proposed short-term continuation of the current activity to discharge to the Longridge Stream does not align with all the RPS objectives and policies (in particular Chapter 4), however the long-term strategy which is to be implemented during the short-term consent term will achieve this.

6.3.4 Regional Water Plan for Southland (RWPS)

The Regional Water Plan for Southland (RWPS) 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
<p>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.</p>	<p>Policy 1 - Recognise the differing characteristics of each water body class, including lowland hard bed.</p>	<p>While the discharge is not avoidable, the existing treatment system was originally designed to reduce concentration levels of harmful contaminants entering the stream. The Longridge Stream is currently in a poor state and some water quality standards for lowland</p>

<p>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, Ngāi Tahu cultural values and the natural character of the water body.</p>		<p>hard bed streams are not being achieved beyond the point of reasonable mixing.</p> <p>Short term improvements have been proposed to minimise the impact of the discharge on the Longridge Stream. This will include a UV treatment system and enhancements within the drainage channel to improve the quality of the discharge by trapping sediments and removing nutrients and contaminants.</p> <p>The long-term solution will however significantly improve the state of the waterbody as the discharge of treated wastewater will progressively be reduced into the stream and primarily discharged onto land in an appropriate location.</p>
	<p>Policy 3 - Allow no discharges to surface water bodies that will result in degradation of the water quality beyond a zone of reasonable mixing.</p>	<p>The discharge is contributing to the deteriorating state of the Longridge Stream. Water quality standards beyond the mixing zone are also not achieved. Reconsenting the current Balfour WWTP discharge will only be for a five-year duration, which will enable the SDC time to finalise the detailed designs for the new WWTP and predominant effluent land application system which will ultimately meet the intent of Policy 3 in the near future.</p>
	<p>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.</p>	<p>The existing discharge does result in an exceedance of some water quality standards beyond the reasonable zone of mixing for lowland hard bed streams. As previously mentioned, the short term content provides for a more robust monitoring regime and the high risk contaminants will be closely managed to prevent further degradation of water quality caused by the WWTP. The discharge in the short term cannot be avoided, however the long term solution will meet the intent of Policy 4 in the near future.</p>
	<p>Policy 6 - Encourage best management practices to:</p>	<p>The exiting WWTP was designed to provide adequate treatment of wastewater prior to discharging into</p>

	<ul style="list-style-type: none"> • Reduce faecal contaminant inputs • Reduce nutrient inputs • Avoid or reduce discharges that increase BOD • Reduce contaminants that alter water colour and clarity 	<p>the Longridge Stream. The current treatment system is however outdated and significant improvements will likely be required before the status quo can be improved. The receiving environment is also challenged with low flow conditions in the summer months when there is less mixing of waters to reduce the concentration of contaminants in the discharge. Minor improvements will be installed at the WWTP to treat E.coli. The Longridge Stream is generally in a poor state already and the discharge is contributing to the decline of water quality and aquatic health. The SDC is committed to improving the wastewater scheme which will be upgraded in accordance with best management practice to address the issues in Longridge Stream. This process will however take time to design and install and forms part of the long term solution.</p>
	<p>Policy 7 - Prefer discharges to land over discharges to water where this is practicable, and the effects are less adverse</p>	<p>Treated wastewater from the WWTP is currently discharged into the Longridge Stream via a weeded drainage channel. The SDC is currently investigating further upgrades suitable for the Balfour WWTP and with the intention to convert the discharge onto land predominantly. The process will however take time and a consent duration of five years is sought to allow this to happen.</p>
	<p>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.</p>	<p>The Longridge Stream is a relatively small waterbody compared with the Waimea River or Mataura River. The stream struggles to dilute contaminants during the summer months when the flow is low. The discharge cannot be avoided as there is currently no alternative location to the discharge. The existing treatment system minimises the effects on water quality as much as physically possible within its current capacity. The system would require major upgrades to reduce the</p>

		effects, hence why a land disposal system will be the focus of the long term strategy.
	<p>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:</p> <ul style="list-style-type: none"> • Aquatic ecosystem values in area • Need for fish passage • Users of the water body, adjacent to and downstream of discharge 	Refer to section 3.2.1 for further discussion.
	Policy 10- Promote, where appropriate, the use of diffusers for point source discharges into water.	The Balfour WWTP discharges treated wastewater into the Longridge Stream via a weeded drainage channel.

The proposed short-term continuation of the current activity to discharge to the Longridge Stream does not align with all the RWP objectives and policies, however the long-term strategy which is to be implemented during the short-term consent term will achieve this.

6.3.5 Proposed Southland Water and Land Plan (pSWLP)

The Proposed Southland Water and Land Plan (pSWLP) 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
<p>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.</p> <p>Objective 2 - The mauri of water provides for te hauora o te taiao (health and mauri of the environment), te hauora</p> <p>Objective 6 - Water quality in each freshwater body,</p>	<p>Policy 1 – Enable papatipu rūnanga to participate</p> <p>Policy 2 – Take into account iwi management plans</p>	<p>Consultation with Te Ao Marama Inc is ongoing to ensure participation and consideration of the relevant iwi management plans are given to the proposed short and long-term solutions for Balfour WWTP. Based on our assessment of the receiving environment, the site does not appear to affect any tōpuni (landscape features of special importance or value), nohoanga (campsite), mātaītai (marine area) or taiāpure to Te Rūnanga o Ngāi Tahu and the (coastal fishing) are relevant papatipu rūnanga. The Mataura River has been identified as a Statutory Acknowledgement Area,</p>

<p>coastal lagoon and estuary will be:</p> <p>a. maintained where the water quality is not degraded; and</p> <p>b. improved where the water quality is degraded by human activities.</p>		which may be impacted as a result of cumulative effects.
	Policy 14 – Preference for discharges to land	Treated wastewater from the WWTP is currently discharged into the Longridge Stream. The short term consent seeks authorisation to continue the discharge for a maximum term of 5 years while the SDC investigates potential options to upgrade the wastewater scheme and convert the discharge to land predominantly. Work is currently underway by the SDC to identify potential options that may be suitable to accommodate the discharge of treated wastewater and thus work toward fulfilling the intent of Policy 14.
	Policy 15B– Improve water quality where standards are not met.	Water quality measured below the zone of reasonable mixing is currently not meeting the lowland hard bed streams water quality standards set out under the provision of the pSWLP. The proposal will however improve the robustness of the monitoring regime and includes specific triggers and actions to manage the quality of the discharge to ensure that water quality in the Longridge Stream is maintained and not getting any worse. In addition, the SDC is committed to installing a UV treatment system within the next 2 years to reduce E.coli concentrations within the overall loading rate discharged into the Longbridge Stream. Other short term improvements include enhancement of the drainage channel, reducing I&I, addressing the wet weather overflows and updating the O & M Plan. The combination of improvements should likely result in an improvement of the WWTP and the quality of the discharge.
	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 major changes to

		the performance of the WWTP until SDC have finalised the long term solution.
	Policy 32 – Protect significant indigenous vegetation and habitat	The Longridge Stream is heavily influenced by farming and discharge activities affecting water quality and biodiversity. The stream does not contain any significant indigenous vegetation and habitats upstream or downstream of the discharge point. This is likely the result of the already degraded state and poor water quality and ecological health. The discharge from the WWTP contributes to the declining water quality which subsequently effects terrestrial and aquatic biodiversity within the stream.
	Policy 44 – Implementan Te Mana o te Wai	The Longridge Stream has been heavily affected by human activities and is overall considered to be in a polluted state given the poor water quality. The proposal has been assessed against the hierarchy of obligations and Te Mana o te Wai and does not currently place the health and wellbeing of the waterbody first. As previously mentioned, the discharge is unavoidable in the interim period until the long-term solution can be implemented. The intention is to upgrade the Balfour WWTP in the next five years and convey the discharge predominantly onto land. The long term solution will have the values associated with Te Mana o te Wai at the forefront of the detailed design.

The proposed short-term continuation of the current activity to discharge to the Longridge Stream does not align with all the pSWLP objectives and policies, however the long-term strategy which is to be implemented during the short-term consent term will achieve this.

6.3.6 Other relevant matters for consideration by the consent authority

Section 104 of the RMA requires that the consent authority must have regard to any other matters relevant and reasonably necessary to determine the application.

6.3.6.1 Ngāi Tahu Fresh Water Policy

This document has been prepared by Te Rūnanga o Ngāi Tahu as its Freshwater Policy Statement. Its focus is the management of the freshwater resource within the rohe of Ngāi Tahu. As water is central to all life, and as a taonga provided by Maori ancestors, the present generation of Ngāi 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 the activities that cause such effects.

Water quality in Longridge Stream is overall poor and the mauri is already adversely affected as a result of upstream discharges i.e. farming and stormwater into the stream. Based on water quality sampling taken over the years, it is evident that the Balfour WWTP does however contribute to the further degradation of the stream. The main concerns with regard to water quality are during the summer months when the flow reduces and subsequently the mixing of contaminants with water reduces. The proposal will maintain the current discharge quality until the long-term solution can be implemented. The desired long term outcome would be to avoid discharging contaminants into the Longridge Stream which will contribute to the restoration of the mauri of freshwater resources.

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 health and wellbeing of the Longridge Stream is poor and mahinga kai habitats and populations are under pressure. The ecology assessment in Section 5.2.2 found that the health index scores at all sites (upstream and downstream of the discharge point) were lower than ES's 'lowland hard bed' macroinvertebrate community standards at Sandstone monitoring site. Healthy mahinga kai habitats will therefore not be prevalent within the Longridge Stream as the discharge from the Longridge wastewater treatment system will adversely affect aspects of the biological communities of Longridge Stream. The proposal will not restore mahinga kai populations and habits in the short term while the discharge continues. Short term improvements may however minimise the impact on mahinga kai values.

Summary

The proposal is overall not aligned with the objectives and policies of the Ngāi Tahu Fresh Water Policy, however it is anticipated the long-term strategy will address many of these.

6.3.6.2 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 proposal requires the discharge of treated wastewater into the Longridge Stream to continue for another five years while work is underway by the SDC to investigate options for a new Balfour WWTP and land-based disposal system. Te Ao Marama Inc were previously engaged as part of long term discussions. The resource consent application will also be formally referred to Te Ao Marama Inc for final comment which will be provided to ES upon receipt.

Summary

The proposal is generally aligned with the objectives and policies of Te Whakatau Kaupapa O Murihiku.

6.3.6.3 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 in the stream. The proposal involves the discharge of treated wastewater to water for a maximum duration of five years. There is a robust monitoring programme which is required to monitor the effects on the receiving environment. Longridge Stream is currently not meeting water quality standards and it is evident that the discharge is also influencing the overall health and wellbeing of the waterbody. In addition, an Operations and Management Plan will be implemented going forward, which sets out system performance requirements and more stringent restrictions to manage contaminant concentrations in the discharge to prevent further degradation of the stream beyond the mixing zone.

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.*

Comment:

As previously mentioned, the short term proposal is to allow SDC more time to investigate options for a new Balfour WWTP and to move to a predominantly land based disposal system. In the short term the effects on the receiving environment will not change significantly to protect or enhance the mauri, or life supporting capacity of freshwater resources. The proposal was initially discussed with Te Ao Marama Inc as they are one of the iwi partners. The resource consent application has also been provided to Te Ao Marama Inc for comment which will be provided to ES in upon receipt. In the long term, the wastewater scheme will be able to achieve and promote the management of freshwater according to the principle of ki uta ki tai.

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 Longridge Stream. The proposal is to consent the discharge for another five years while investigations are underway to upgrade the Balfour WWTP and finding alternative discharge locations. As previously mentioned, the proposal will improve the monitoring program to enable a better understanding of the potential effects on an annual basis. The proposal does however not involve any major upgrades to the treatment system in the interim period, apart from a new UV treatment system to be installed in the next 2 years. In addition, more stringent management measures i.e wastewater trigger levels for contaminants of concern, have been proposed to maintain the discharge into the Longridge Stream. The triggers have been based on the current operation when the wastewater system is meeting performance requirements.

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 discharge point 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 overall health and wellbeing of the waterbody is generally poor and the discharge from the WWTP has an effect on the stream below the discharge point. Water quality upstream and downstream of the discharge point does currently not meet the lowland hard bed water quality standards set out in the proposed Water and Land Plan. Work is underway to redirect the discharge to land predominantly, however this will take time and the SDC is committed not to cause unreasonable delay in designing the new Balfour WWTP and disposal system.

Summary

The proposal is overall not aligned with the objectives and policies of the Te Tangi a Tauira Iwi Plan.

6.3.6.4 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 Maitara was an important mahinga kai, noted for its indigenous fishery. The Maitara 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 Maitara, 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 Maitara 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.”

Although the discharge is not directly into the Maitara River, the Longridge Stream is a tributary of the Maitara River via the Waimea River confluence. The inclusion of the wider receiving environment in the assessment is considered appropriate given the direct impact the Balfour WWTP discharge has on downgradient waterbodies when considering overall cumulative effects. Te Ao Marama Inc were previously consulted and the resource consent application will be provided to them for final comment. Feedback will be provided to ES upon receipt.

6.4 Section 104B

The proposal has been assessed as a Non Complying activity pursuant to Rule 2 of the RWPS. Refer to Section 4.3 of this report complete rule assessment.

Section 104B of the RMA relates to the determination of applications for discretionary or non-complying activities.

Section 104B states:

“After considering an application for a resource consent for a discretionary activity or non-complying activity, a consent authority—

(a) may grant or refuse the application; and

(b) if it grants the application, may impose conditions under section 108”

Based on consultation with ES, it has been agreed that the most pragmatic approach would be to re-consent the discharge for a maximum term of five years while the SDC finalises the new Balfour WWTP and land disposal system detailed designs and implements the new scheme. In the interim, the discharge is unavoidable as there is currently no alternative wastewater scheme for the Longridge township. This application proposes a range of consent conditions reflecting the existing operation with some changes made to improve the monitoring regime and overall management of the wastewater scheme's operation to ensure performance objectives and targets will be achieved.

6.5 Section 104D

Section 104D of the RMA relates to particular restrictions for non-complying activities.

Section 104D states:

“Despite any decision made for the purpose of notification in relation to adverse effects, a consent authority may grant a resource consent for a non-complying activity only if it is satisfied that either—

(2) the adverse effects of the activity on the environment (other than any effect to which section 104(3)(a)(ii) applies) will be minor; or

(b) the application is for an activity that will not be contrary to the objectives and policies of—

(i) the relevant plan, if there is a plan but no proposed plan in respect of the activity; or

(ii) the relevant proposed plan, if there is a proposed plan but no relevant plan in respect of the activity; or

(iii) both the relevant plan and the relevant proposed plan, if there is both a plan and a proposed plan in respect of the activity.

(2) To avoid doubt, section 104(2) applies to the determination of an application for a non-complying activity.

The assessment of effects has demonstrated that the activity will likely have more than minor effects on the receiving environment. This is due to the fact that water quality in the Longridge Stream is already in a degraded state and that the health and well-being of stream will not likely improve significantly over the course of the next 5 year period. The SDC is currently investigating options to upgrade the treatment system and dispose wastewater.

The policy assessment found that the proposal is consistent with some policies but may contravene other policies when the short-term outcome is considered in isolation. The policy assessment emphasises that the focus should rather be on the wider scope of the project (considering short term and long-term solution).

As such, when considering the existing treatment plant and desired outcomes for the Balfour WWTP, the proposal (over the five year period) cannot immediately achieve the direction of the planning framework, however when considered in the context of the whole project with long term consent to follow, the proposal is considered consistent with the objectives and policies of the relevant regional policy statements and plans.

The application may be accepted and processed as a non – complying activity by Environment Southland, as the activity will overall not be contrary to the objectives and policies of both the relevant plan and the relevant proposed plan.

6.6 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 and Section 2.6 of this document. Water quality within the Longridge Stream is already in a degraded state and biodiversity health is poor throughout the stream. SDC is proposing to replace the existing resource consent for an additional duration of five years, while the long-term solution is investigated and designed. Until this work has been completed and the disposal system converted to a predominantly land-based disposal system, treated wastewater from the Balfour WWTP will continue to be discharged to the Longridge Stream. SDC is expecting to get works underway within the next five years to upgrade the new WWTP. There are no alternatives considered suitable for the next five-year period. The proposed long-term solution has been discussed and agreed with stakeholders as the most pragmatic outcome for the Balfour WWTP. There are no possible alternative methods of discharge, including discharge into any other receiving environment that are feasible from an environmental standpoint before the investigations have been completed to inform future options for treatment and disposal. The SDC confirmed that some funding for the upgrades for Balfour WWTP have been approved in the Long Term Council Community Plans (LTCCP).

6.7 Section 107

Section 107 states:

(1) 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; or

(ba) the dumping in the coastal marine area from any ship, aircraft, or offshore installation of any waste or other matter that is a contaminant,—

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.

(2) A 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.

6.8 Section 107(1)

The Balfour WWTP discharges contaminants into the Longridge Stream and monitoring records have shown that after reasonable mixing (50m downstream of the discharge point), the contaminants discharged (either by itself or in combination with the same, similar, or other contaminants or water) do not give rise to the following effects in the receiving waters:

- any conspicuous oil or grease films, scums or foams, or floatable or suspended materials
- any conspicuous change in the colour or visual clarity
- any emission of objectionable odour
- the rendering of fresh water unsuitable for consumption by farm animals

Based on the water quality assessment in Section 5.2 and in respect of the contribution of the wastewater discharge into the Longridge Stream, there is a potential that the discharge is having significant adverse effects on aquatic life.

6.9 Section 107(2)

Whether or not a discharge meets one of the limbs of section 107(2) is a case-specific assessment, however the recent Environment Court decisions for Shannon Wastewater¹⁰ and Pahiatua Wastewater¹¹ provide useful guidance on the factors that decision makers will consider in scenarios similar to the current one. In the 2015 Shannon Wastewater decision, the Environment Court accepted that continuing to discharge to the Oturu Stream for two years was "temporary" in terms of section 107(2)(b)¹². Furthermore, the Court considered that the "exceptional circumstances" limb of section 107 was also met because there was no practicable alternative to continued discharge to the Stream while the other works were carried out, and allowing the continued discharge for two years.

The Balfour WWTP was originally consented in 1963 and has been operating for the last 60 years. The planning framework under which the activity was initially determined, predates modern policy direction under the NPS-FM, RWPS and PSLWP. In accordance with the current planning framework, there is a strong focus on Te Mana o Te Wai and the protection of the health and well-being of water bodies and freshwater ecosystems as a first priority. Based on the assessment against the NPS-FM in Section 6.3.2 of this report, the proposed short-term continuation of the current activity to discharge to the Longridge Stream overall does not align with the objectives and policies of the NPS-FM, however the long-term strategy which is to be implemented during the short-term consent term will achieve the desired outcome.

SDC is committed to the long term solution and is expecting to finalise the investigations of the Balfour WWTP upgrades and land disposal system within the next five years. The preparation of the long term consent will be undertaken in parallel with the design schedules of the future system and will be submitted to ES in the second half of 2025. The SDC is anticipating construction to start once the long term consent has been granted and aims to have the majority of the disposal fields operational during the short term consent period of five years. The short term consent is imperative to allow the discharge to continue while SDC carries out the works required to design and implement the much needed changes to the wastewater scheme.

Based on consultation with ES, the recommended option was to focus on the long-term solution and invest in upgrading the wastewater scheme to a predominant land disposal system as this will result in greater environmental outcomes. Short term solutions were not initially considered during the inception stage of the project. However, the SDC has since committed to the installation of a UV treatment system within 2 years after granting the consent. The overarching direction for Balfour WWTP is to implement the long term solution as soon as possible to prevent any further delays in getting the discharge out of Longridge Stream.

The proposal is intended to allow the discharge to continue for a short term period while SDC is committed to expedite the process and bring forward the engineered design and construction stages so the disposal fields will be largely operational within the next 5 years. The Balfour WWTP is a key priority for SDC and the long term consent will significantly reduce the adverse visual clarity and aquatic ecology effects of the discharge to the Longridge Stream. There are some short term practicable solutions to improve the WWTP in the interim period which may include UV treatment, updated O & M Plan, planting in the riparian margins, reducing I & I and addressing wet weather overflows.

The proposal justified that exceptional circumstances may apply to this proposal given Balfour WWTP provides for basic community sanitation needs and has been discharging to the Longridge Stream since 1963. There are furthermore no alternative wastewater schemes to treat wastewater for the Longridge community during the short term period proposed. As such, the proposal is therefore consistent with section 107 of the RMA and the consent can be granted for a short-term period under exceptional circumstances while further investigation, detailed designs and construction progresses over the course of the next five year period.

¹⁰ Re Horowhenua District Council [2015] NZEnvC 45.

¹¹ Rangitāne o Tamaki nui-a-Rua Incorporate v Manawatu-Wanganui Regional Council [2021] NZEnvC 51 (first interim decision), [2021] NZEnvC 85 (second interim decision) and [2021] NZEnvC 106 (final decision).

¹² Re Horowhenua District Council [2015] NZEnvC 45 at [90].

6.10 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 7.

6.11 Section 123

The SDC seeks a five-year consent duration to allow the discharge into Longridge stream to continue while further investigation and detailed designs to upgrade the Balfour WWTP and convert the discharge to a land disposal system.

To determine the term of resource consent, consideration must be given to the relevant planning framework. Policy 40 of the pSWLP 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 consent application has provided sufficient information to understand the nature, scale, duration and frequency of the adverse effects from the activity on the environment. The AEE has determined that the Balfour WWTP discharge into the Longridge Stream does contribute to the already degraded water quality and biodiversity health. Although the consent application is not completely aligned with tangata whenua values and Ngāi Tahu indicators of health, the stakeholders agreed that SDC seek a short-term consent to allow the discharge to continue until the long-term solution can be implemented as the most pragmatic approach. During this time the SDC will commit to a number of short term improvements to the WWTP which should result in some improvements to the overall quality of the discharge into the Longridge Stream.

The proposed five-year consent duration will however align more favourably with the timing of development of Freshwater Management Units (FMU) and the council's implementation of the revised planning frameworks established to give effects to the provisions of the NPS-FM. Five years will furthermore provide SDC with an opportunity to better understand future FMU water quality targets and objectives which will subsequently inform the detailed design of the new WWTP and the location of the predominant land disposal system. The SDC have had some issues with complying with consent conditions, however measures have been proposed to improve the overall operation and performance of the wastewater to ensure better management of the consent conditions.

In addition to the above, the SDC is actively pursuing the long-term solution and intends further investigation and detailed designs of the treatment system to be completed as soon as possible. Further land investigations will also need to be carried out once suitable land is identified to accommodate land disposal. This will also require consultation with prospective landowners and further assessments will be carried out on a case-by-case basis to ensure the areas identified are suitable and not near any sensitive receptors.

Based on the above assessment, the proposed consent duration of 5 years is considered reasonable taking into account SDC's commitment to achieve the desired outcomes of the long-term solution.

7. Proposed conditions of consent

SDC are seeking some adjustments to the suite of consent conditions currently authorising the activities of the Balfour WWTP. The following will be applied to the proposed short-term content, with newly proposed management and monitoring requirements.

Consent Purpose

1. This consent authorises the discharge of treated wastewater, at an average flow of 250 m³/day, to the Longridge Stream through weeded drainage channel, at about map reference NZTM2000 1258033E - 4913911N, as shown on Plan XXX, which forms part of this resource consent.

Advice notes Compliance with the average daily flow volume is determined by calculating the annual volume (1 January – 31 December) and dividing the aggregate volume by 365 days.

2. This consent does not authorise the disposal of sludges or untreated wastewater or waste collected from any point in the reticulation system.

Monitoring Requirements

3. The consent holder shall monitor the wastewater discharge and the receiving environment, as shown on Plan XXX, as follows:
 - a. by taking representative samples from the following locations:
 - i. the inlet to the Wastewater Treatment Plant
 - ii. the outlet from the Wastewater Treatment Plant,
 - iii. the Weeded Drainage Channel (Nearest to Balfour WWTP)
 - iv. the Weeded Drainage Channel (Nearest to Longridge Stream)
 - v. The receiving waters, directly upstream and 50m downstream of the point of discharge to the Longridge Stream.
 - b. the frequency of the samples from the identified locations in Condition 3(a)(i) to (3)(a)(v) shall be taken:
 - i. once a month for the first six months of the consent period; then
 - ii. once during the period 1 May to 31 August each year; and
 - iii. once during the period 1 September to 30 October each year; and
 - iv. on at least three occasions during the period 1 November to 30 April each year.
 - c. The samples from the locations identified in Condition 3(a)(i) and Condition 3(a)(ii), will be analysed and sampled for the following:
 - i. pH (recommended in-situ measurement)
 - ii. Temperature (recommended in-situ measurement)
 - iii. Electrical Conductivity
 - iv. Dissolved Oxygen concentration
 - v. Carbonaceous Biochemical Oxygen Demand (cBOD₅) concentration
 - vi. Total Suspended Solids concentration
 - vii. E. Coli concentration
 - viii. Nitrate Nitrogen concentration
 - ix. Total Ammoniacal Nitrogen concentration

- x. Total Nitrogen concentration
 - xi. Dissolved Reactive Phosphorus concentration
 - xii. Total Phosphorus concentration; and
- d. The samples from the locations identified in Condition 3(a)(iii) to Condition 3(a)(v), will be analysed and sampled for the following:
- i. pH (recommended in-situ measurement)
 - ii. Temperature (recommended in-situ measurement)
 - iii. Electrical Conductivity
 - iv. Dissolved Oxygen concentration
 - v. Total Suspended Solids concentration
 - vi. Turbidity
 - vii. E. Coli concentration
 - viii. Nitrate Nitrogen concentration
 - ix. Total Ammoniacal Nitrogen concentration
 - x. Total Nitrogen concentration
 - xi. Dissolved Reactive Phosphorus concentration
 - xii. Total Phosphorus concentration.

Advice Note: The wastewater discharge and receiving water samples shall be taken at about the same time, ca. within a one-hour period, on each monitoring occasion. The monthly samples should where possible, be taken when the flow in the Waimea Stream, as measured at the Councils monitoring site at Mandeville, falls below 1 cumecs and provided there is a sufficient flow in Longridge Stream to undertake sampling.



Figure 36 Proposed Monitoring locations

4. The monitoring specified in Condition (3) will conform with the following requirements:
 - a. The discharge and receiving water samples will be taken at about the same time, with a one hour period, on each monitoring occasion.
 - b. sample collection, preservation and analysis, shall be carried out in accordance with the monitoring occasions specified in Condition (3)(b) are to be at least 21 days apart
 - c. the most recent edition of APHA "Standard Methods for the Examination of Water and Wastewater".
 - d. the monitoring and analyses are to be carried out by a laboratory with IANZ registration or equivalent, or as agreed to, in writing, by the Council's Director of Environmental Management
 - e. the results of analysis, carried out in accordance with Condition (3), shall be supplied to the Council no later than 30 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.

Wastewater Trigger Levels

5. The discharge of treated wastewater from the Balfour Wastewater Treatment Plant at the location specified in Condition 3(a)(ii):
 - a. must be monitored in accordance with Condition (3)(b) and Condition (3)(c) and the results analysed against the following mean concentration trigger levels:
 - i. BOD5 – 30 g/m³
 - ii. Suspended Solids – 50 g/m³
 - iii. Dissolved Reactive Phosphorus – 3 g/m³
 - iv. Ammoniacal Nitrogen – 15 g/m³
 - v. E.Coli – 500,000 cfu/100mL (Prior to UV installation)*
 - vi. E.Coli – 10,000 cfu/100mL (After UV installation)
 - b. in the event of any exceedance of the mean concentration trigger levels stipulated in Condition (5)(a),
 - i. the wastewater discharge must be monitored at least once every seven days for one month; and
 - ii. a report must be submitted to the Southland Regional Council's Manager of Environmental Compliance within 20 working days and include the following details:
 1. Sampling date and method
 2. Sampling results and analysis
 3. Potential reason for concentration exceedance
 4. Any actions required or taken to restore treatment performance

Advice Note: For the purposes of this consent, the mean concentration shall be from the last four rolling samples taken post treatment of wastewater at the Balfour WWTP.

* This E.coli value only applies until the proposed UV Treatment system is operational and will then be replaced by the E.coli value in Condition 5(a)(vi) for the remainder of the consent duration.

Water Quality Standards

6. The consent holder shall monitor and analyse the change in effect of the discharge against the following water quality standards in the Longridge stream (Classified as lowland hard bed):
 - a. 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; and
 - b. when measured outside of the zone of reasonable mixing:
 - ii. The temperature of the water:
 1. shall not exceed 23°C;

2. the daily maximum ambient water temperature shall not be increased by more than 3°C when the natural or existing water temperature is 16°C or less, as a result of any discharge;
 3. if the natural or existing water temperature is above 16°C, the natural or existing water temperature shall not be exceeded by more than 1°C as a result of any discharge; and
- iii. The pH of the water shall be within the range 6.5 to 9, and there shall be no pH change in water due to a discharge that results in a loss of biological diversity or a change in community composition;
 - iv. The change in sediment cover must not exceed 10%;
 - v. The concentration of dissolved oxygen in water shall exceed 80% of saturation concentration;
 - vi. When the flow is below the median flow, the visual clarity of the water shall not be less than 1.6 metres, except where the water is naturally low in clarity as a result of high concentrations of tannins, in which case the natural colour and clarity shall not be altered¹³;
 - vii. The concentration of total ammonia shall not exceed the values specified in Table 12 “Ammonia standards for Lowland surface water bodies”;
 - viii. For the period 1 November through to 30 April, filamentous algae of greater than 2 cm long shall not cover more than 30% of the visible stream bed. Growths of diatoms and cyanobacteria greater than 0.3 cm thick shall not cover more than 60% of the visible stream bed¹⁴;
 - ix. Biomass shall not exceed 35 grams per square metre for either filamentous algae or diatoms and cyanobacteria¹⁵;
 - x. Chlorophyll a shall not exceed 120 milligrams per square metre for filamentous algae and 200 milligrams per square metre for diatoms and cyanobacteria¹⁶;
 - xi. The Macroinvertebrate Community Index shall exceed a score of 90 and the Semi-Quantitative Macroinvertebrate Community Index shall exceed a score of 4.5;
 - xii. There shall be no bacterial or fungal slime growths visible to the naked eye as obvious plumose growths or mats;
 - xiii. The concentration of faecal coliforms shall not exceed 1,000 coliforms per 100 millilitres; and
 - xiv. Fish shall not be rendered unsuitable for human consumption by the presence of contaminants.
- c. The monitoring and analysis undertaken under this condition shall be in accordance with the requirements set out in Condition (3)(c) and Condition (3)(d) and the findings shall be reported to the Southland Regional Council's Manager of Environmental Compliance in accordance with Condition (20).

Advice Note 1: *For the purpose of this condition, the zone of reasonable mixing in the Longridge stream shall extend directly upstream of the discharge point to 20 metres downstream of the discharge point.*

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*

¹³ Visual clarity is assessed using the black disc method or other comparable method employed by Environment Southland.

¹⁴ Applies to the part of the bed that can be seen from the bank during summer low flows or walked on.

¹⁵ Expressed in terms of reach biomass per unit of exposed strata (i.e., tops and sides of stones) averaged across the full width of the stream or river

¹⁶ Expressed in terms of reach biomass per unit of exposed strata (i.e., tops and sides of stones) averaged across the full width of the stream or river

Monitoring Standard (NEMS) and analyses to be carried out by a laboratory with International Accreditation New Zealand (IANZ) registration or equivalent.

Table 12 Ammonia standards for Lowland surface water bodies¹⁷

Total Ammoniacal Nitrogen Freshwater Trigger Values in mg/m ³ at different pH (Temperature is not taken into account)	
Ph	NH ₄ ⁺ - 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

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

Longridge Stream Survey

7. The consent holder shall undertake a biological survey of Longridge Stream to assess the wastewater discharge and its effects on the receiving waters, as follows:
 - a. The survey shall be undertaken

¹⁷ Source - Australian and New Zealand Environment and Conservation Council (ANZECC) October 2000: Australian and New Zealand Guidelines for Fresh and Marine Water Quality

- i. within 12 months following grant of consent, between the months of January and March.
 - ii. at a time when the flow conditions in Longridge stream is low, for a period of at least twenty consecutive days.
 - iii. at two sites, one 5m above and one at least 20 metres below the discharge point but within the mixing zone, as shown on Plan XXX, which forms part of the resource consent.
- b. The following parameters are to be surveyed in Longridge Stream at the locations specified in Condition (7)(a)(iii), upstream and downstream of the discharge point:
 - i. Macroinvertebrates.
 - ii. Periphyton.
 - iii. Sediment.
 - iv. Biomass.
- d. The methodology for this monitoring regime shall be submitted to the consent authority for approval prior to the monitoring commencing.

Advice note: *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.*

- 8. The consent holder shall submit a report to the Southland Regional Council's Manager of Environmental Compliance within 20 working days of the completion of the required field work described in Condition (7). This report shall include but not be limited to the following details:
 - a. Description of survey sites
 - b. Survey and analysis technique
 - c. Assessment against wastewater triggers and water quality standards
 - d. Assessments of water quality, sediment, periphyton, and benthic macroinvertebrates
 - e. Assessment against previous biological surveys and identification of trends.

Operation and Management of the WWTP

- 10. The consent holder shall maintain a flow meter at the Balfour WWTP to measure wastewater influent volumes.
- 11. The consent holder shall maintain signage in a prominent place near the outfall to Longridge Stream informing the public of the discharge of treated wastewater and associated health risks. The sign shall include a contact number for the consent holder.
- 12. The consent holder shall maintain the wastewater drainage channel, to which the treated wastewater is discharged, in its existing weeded condition. Any maintenance of the wastewater drainage channel shall be carried out in consultation with the Southland Regional Council's Manager of Environmental Compliance.
- 13. The Consent Holder shall prepare an Operations Management Plan (OMP) for the WWTP. All future scheme operations and maintenance activities will be included in the OMP and adhere to the OMP. The purpose of the OMP is to outline the operation and maintenance of the Balfour WWTP and wastewater discharge systems. The OMP will clearly outline the operation and maintenance of the Balfour WWTP and wastewater treatment and disposal systems, including:
 - a. A description of the system's operating procedures (including manufacturer's specifications);
 - b. Roles and responsibilities for on-site activities and on-site staff training procedures.

- c. Condition inspection and maintenance schedules (including manufacturer's specifications) for all plant infrastructure, including but not limited to; pumps, flow meters, valves.
- d. Operational and compliance monitoring procedures.
- e. A description of 'normal operating conditions'.
- f. A protocol for odour management including:
 - i. A description of the treatment and disposal system components and their operation relevant to the management of odours.
 - ii. Routine odour monitoring.
 - iii. Complaints receipt, investigation and reporting procedures.
 - iv. Contingency measures to manage adverse odours.
- g. Procedures for dealing with emergency discharge events, treatment failures or exceedance of trigger values.
- h. Description of wetland management practices associated with the wastewater drainage channel and ongoing monitoring requirements

Accidental Discharge Protocol

14. In the event of an accidental or emergency discharge of partially treated or untreated wastewater to land or water, the consent holder (or the consent holder's agent) shall notify, within 24 hours the following parties:

- a. Southland Regional Council's Manager of Environmental Compliance
- b. Te Ao Marama Inc

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.*

15. When informing Environment Southland of any accidental or emergency discharge of wastewater to land or water, as specified in Condition (15), 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 accidental discharge.

Complaints

16. 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 complaint.

Annual Reporting

17. The consent holder shall submit an annual report to the Southland Regional Council's Manager of Environmental Compliance 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 comparison to WWTP system capacity.
- b. Assessment of sampling data and comparison between upstream and downstream monitoring sites in the Longridge Stream;
- c. Assessment against water quality standards for "lowland hard bed" beyond the mixing zone and wastewater trigger levels;
- 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 any improvement of the WWTP;
- h. Description of any accidental or emergency discharges and actions taken;
- i. Summary of results associated with short term improvements completed
 - 1. Operation and Management Plan
 - 2. Investigation and physical remedial works to wastewater network
 - 3. Installation of additional flow balance tanks
 - 4. Riparian planting in the channel and Livestock exclusion from the water
 - 5. Installation of a new UV for disinfection
- j. Summary of any complaints associated with the WWTP or discharge to Longridge Stream.

Advice note: The reporting year starts 1 January and finishes 31 December of each year.

Short term improvements

- 21. The Consent Holder shall undertake a comprehensive evaluation of available short term options for improving the condition and performance of the Balfour WWTP.

Advice Note: *Short term options comprise of solutions discussed in the application for resource consent (dated 2 August 2023) to improve the condition and performance of the Balfour WWTP.*

- 22. The Consent Holder shall provide Environment Southland with 6 monthly updates in writing detailing progress made towards the short term options.
- 23. The consent holder shall document these options in a report. The report shall be provided to Environment Southland within 12 months of the consent being granted. The report shall include an implementation timeline setting out key milestones for the construction of the preferred option.
- 24. The Consent Holder shall complete the installation of the preferred option(s) within 24 months after the consent has been granted and notify Environment Southland once completed.

8. 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.

In addition, the SDC have had initial discussions about the long term proposal with Te Ao Marama Inc, who speaks on behalf of the following Rūnanga within Southland:

- Te Rūnanga O Awarua;
- Te Rūnanga O Hokonui; and
- Te Runaka O Waihopai.

Further consultation will get underway with Te Ao Marama Inc to discuss long term options regarding the improvement of the Balfour WWTP and alternative land disposal once the options assessment has been completed. Additional feedback will be provided to ES upon receipt.

There has been no further consultation with any other stakeholders of potentially affected parties about the short- or long-term proposal to improve Balfour WWTP and assessing alternative discharge methods.

9. Notification

9.1 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 Table 13 below:

Table 13 Public notification assessment

(Step 1) A consent authority must notify an application if:	
Public notification is required under Section 95C (public notification after request for further information or report); The applicant requests public notification; or The application has been made jointly with an application to exchange recreation reserve land.	Public notification is requested by SDC. The application does not include any exchange of recreation reserved land.
(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 restricted discretionary, discretionary, or non-complying activity, but only if the activity is a boundary activity.	The application is not subject to a rule or NES that precludes public notification, is not for a controlled activity, 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 The adverse effects of the proposal overall will be more than minor on the environment as discussed in section 5 of this report. There are no special circumstances that exist to justify the public notification of this application.

Having undertaken the section 95A public notification tests, the following conclusions are reached:

- Under step 1, SDC requests public notification
- Under step 2, there is no rule or NES that specifically precludes public notification of the activities, and the application is for an activity other than those specified in section 95A(5)(b).
- Under step 3, public notification is required as it is considered that the activity will have adverse effects on the environment that are more than minor as per the matters specified in section 95A(8)b) and 95D, albeit the effects will be maintained to avoid further degradation and short-term.
- Under step 4, there are no special circumstances however the effects of the proposed activity,

It is, therefore, requested that this application be processed on a notified basis.

10. Conclusion

The SDC seeks resource consent from ES in accordance with Section 88 of the RMA to replace Consent No:201674 relating to the existing Balfour WWTP, which is due to expire on 2 February 2024.

The SDC furthermore seeks approval and confirmation from ES to lawfully continue operation under the existing resource consent in accordance with Section 124 of the RMA while the proposed short-term consent (5-year consent duration) is being processed and determined by ES.

The application to replace Consent: 202026 will be assessed as a new activity against the provisions of the operative and proposed regional plans (RWPS and pSWLP) to determine the actual or potential adverse effects on the receiving environment.

The effects of the discharge have been assessed against the water quality standards for lowland hard bed surface water bodies. The water quality sampling undertaken upstream and downstream of the point of reasonable mixing shows that the Longridge Stream, in its current state, does not comply with all of the required water quality standards. Based on water quality sampling in the stream and considering the ecology assessment, the discharge of treated wastewater from the Balfour WWTP is adversely affecting aspects of the biological communities of Longridge Stream and is overall not compliant with the lowland hard bed biological water quality standards.

The overall water quality in the receiving surface water environment at Longridge Stream is considered poor. The recent monitoring data suggests that the Balfour WWTP is responsible for a significant proportion of the ammoniacal nitrogen and DRP present at the downstream sampling location during low flow summer periods. E.coli counts in the discharge is considerably high in the discharge and within the upstream and downstream environment. The assessment concludes that the potential effects on the environment is caused by existing discharge and thus the proposed continuation of this activity over the short-term are more than minor. The proposal does not align with the relevant objectives and policies of the respective planning frameworks relevant within Southland as assessed in Section 6.

There will be a number of short term improvements within the next two year period, however SDC is committed to the long term solution and proposes to undertake further investigations to determine the future of the Balfour WWTP. This will include a detailed assessment associated with the treatment system and proposed land disposal. Construction will get underway immediately after the long term consent is granted, with the expectation that at least most of the disposal field will be in operation within the next 5 year period. The long-term solution will significantly improve the environmental conditions in the Longridge Stream once the wastewater is predominantly discharged to land. The short term consent is therefore imperative to the project as this allows SDC to finalise designs and construct the future land disposal system.

Given the assessment in this application, SDC requests that the application be publicly notified pursuant to Section 95A(3)(a) of the RMA

Appendices

Appendix A

Certificate of Title

Terranet document ordering service

Certificate of Title with diagram: GN275277

Billing Code: 12591238-VO1- short term Cons

CoreLogic Reference: 3144369/1

Processed: 25 July 2023

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0722001 C116) 6B/1101 issued for Section
27.7.1981) 1246 Block XXXII Hokonui District
Wabrod
A.L.R.

072201.1 C116) 6B/1102 issued for Section 1242
27.7.1981) Block XXXII Hokonui District
Wabrod
A.L.R.

072202.1 C116) 6B/1103 issued for Section 1247
27.7.1981) Block XXXII Hokonui District
Wabrod
A.L.R.

072590.1 C116) 6B/1118 issued for Section 1240
5.8.1981) Block XXI Hokonui District
Wabrod
A.L.R.

072593.1 C116) 6B/1119 issued for Section 1248
5.8.1981) Block XXXI Hokonui District
Wabrod
A.L.R.

085227.1 C116) C.T. 6C/676 issued for
23.7.1982.) Section 1249 Block XXXII and
Section 1252 Block XXXI
Hokonui District.
Wabrod

Part of Section 247 Block LVIII Hokonui
Survey District (7504m²) is now known as
Section 1388 Block 57 Hokonui Survey District
See New Appellation 087096.1.
Wabrod
A.L.R.

088005.1 C116) C.T. 6C/963 issued for Section
12.10.1982.) 1388 Block LVIII Hokonui
District.
Wabrod
A.L.R.

Parts Sections 55, 139 and 247 Block LVIII and
parts sections 56 and 125 Block LXVIII Hokonui
District are now known as Sections 1297 (2.2590 ha)
1298, (4779m²) 1299, (7677m²) 1300 (3.1295 ha)
1301 (1.8380 ha) 1302 (3814m²) 1303 (2.1726 ha)
1304 (5215m²) 1305 (1043m²) 1309 (1.4891 ha)
and 1339 (1.2428 ha) Block LVIII and Sections
1306 (7.0060 ha), 1307 (8715 m²) 1308 (2886 m²)
1340 (1.4795 ha) and 1341 (2.0110 ha) Block
LXVIII Hokonui District
See New Appellation 074665.1
Wabrod
A.L.R.

087353.1 C116) C.T. 6C/908 issued for Section
22.9.1982) 1305 BLOCK LVIII HOKONUI DISTRICT
Wabrod
A.L.R.

C116 092118.1) CT 6D/315 issued for Section
1.3.1983) 1257 Block XXX Hokonui District
Wabrod
D.L.R.

093247.1 C116) CT 6D/393 issued for Section
6.4.1983) 1301 Block LVIII Hokonui
District
Wabrod
D.L.R.

032341.1 C116) CT 5D/44 issued for Section
093894.1 C116) CT 6D/444 issued for Section
26.4.1983) 1183 Block XXXI Hokonui District
Wabrod
D.L.R.

094648.1 C116) CT 6D/505 issued for Section
18.5.1983) 1302 Block LVIII Hokonui
District
Wabrod
D.L.R.

095304.1 C116) CT 6D/596 issued for Sections
9.6.1983) 1359 and 1382 Block V Hokonui
District
Wabrod
D.L.R.

104497.1) D.P.L. 7A/442 issued for Sections
6.3.1984) 1299 Block LVIII Hokonui
District
Wabrod
D.L.R.

104497.2) D.P.L. 7A/443 issued for Sections
6.3.1984) 1306 and 1341 Block LXVIII
Hokonui District
Wabrod
D.L.R.

120160.1 C116) CT 7B/882 issued for Section 1298
4.7.1985) and 1300 Block LVIII Hokonui
District
Wabrod
D.L.R.

075963.1 C116) 6B/1383 issued for Section 1303
30.10.1981) Block LVIII Hokonui District
Wabrod
A.L.R.

075964.1 C116) 6B/1384 issued for Section 1304
30.10.1981) Block LVIII Hokonui District
Wabrod
A.L.R.

077202.1 C116) 6B/1462 issued for Section 1308
30.11.1981) Block LXVIII and Section 1309
Block LVIII Hokonui District
Wabrod
A.L.R.

077204.1 C116) 6B/1464 issued for Section 1258
30.11.1981) Block XXX Hokonui District
Wabrod
A.L.R.

077601.1 C116) 6B/1488 issued for Section 1307
9.12.1981) Block LXVIII Hokonui District
Wabrod
A.L.R.

Gazette Notice 275277 (Memorials Continued)

The land 38thly and 39thly described herein is now known as Sections 1253 (3.5796 ha), 1254 (4.7071 ha), 1255 (1.2684 ha) and 1256 (1.1588 ha) Block XXX Hokonui District. 14.11.1979 at 2.08 p.m. See New Appellation 052476.1

A.L.R.

The land 40thly, 41stly, 42ndly and 43rdly described herein is now known as Sections 1257 (7.2423 ha), 1258 (1.4062 ha) and 1281 (6.3849 ha) Block XXX Hokonui District. 14.11.1979 at 2.08 p.m. See New Appellation 052476.2

A.L.R.

The land 28thly described herein is now known as Section 1246 (1.6345 ha) Block XXXII Hokonui District.

The land 29thly described herein is now known as Sections 1247 (4213 m²) and 1243 (4048 m²) Block XXXII Hokonui District. 23.11.1979 at 10.07 a.m. See new Appellation 052765.1

A.L.R.

The land 30thly described herein is now known as Sections 1249 (6479 m²) Block XXXII Hokonui District.

The land 31stly described herein is now known as Sections 1250 (3239 m²) and 1279 (1214 m²) Block XXXII Hokonui District. 23.11.1979 at 10.07 a.m. See New Appellation 052765.2

A.L.R.

The land 2ndly and 3rdly described herein is now known as Sections 1251 (906 m²) and 1252 (3718 m²) Block XXXI Hokonui District. 23.11.1979 at 10.07 a.m. See New Appellation 052765.3

A.L.R.

053832.1 C116) 6A/843 issued for Section 1289 21.12.1979) Block XLI Hokonui District

A.L.R.

053833.1 C116) 6A/844 issued for Section 1290 21.12.1979) Block LI Hokonui District

A.L.R.

* 053835.1 C116) 6A/846 issued for Section 1243 21.12.1979) Block XLI Hokonui District

A.L.R.

* 053834.1 { 6A/845 issued for section 21/12/1979 } 1291 Block LI Hokonui Dist.

D.L.R.

055132.1 C116) 6A/1063 issued for Section 1254 21.2.1980) Block XXX Hokonui District

A.L.R.

055133.1 C116) 6A/1064 issued for Section 21.2.1980) 1255 Block XXX Hokonui District

A.L.R.

057583.1 C116) 6A/1342 issued for 14.5.1980) Sections 1286 and 1287 Block XXI HOKONUI DISTRICT

A.L.R.

057584.1 C116) 6A/1343 issued for 14.5.1980) Section 1288 Block XXII HOKONUI DISTRICT

A.L.R.

057585.1 C116) 6A/1340 issued for 14.5.1980) Section 1256 Block XXX HOKONUI DISTRICT

A.L.R.

059540.1 C116) 6B/30 issued for 11.7.1980) Section 1251 Block XXXI Hokonui District

A.L.R.

059214.1 C116) 6B/7 issued for 3.7.1980) Section 1279 Block XXXII Hokonui District

A.L.R.

059215.1 C116) 6B/6 issued for 3.7.1980) Section 1250 Block XXXII Hokonui District

A.L.R.

The land 13thly described herein is now known as Section 1313 Hokonui District 8.12.1980 at 9.34 a.m. See New Appellation 064671.1

A.L.R.

065459.1 C116) 6B/508 issued for 6.1.1981) Section 1253 Block XXX Hokonui District

A.L.R.

C116 066162.1) CT 6B/608 issued 4.2.1981) for Section 1313 Block LVIII HOKONUI DISTRICT

D.L.R.

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284550 Gazette Notice declaring Section 1171 to be set apart for road - 29.8.1974 at 2.15pm

A.L.R.

032304.1 C116)
17.2.1978)

Ct 5D/20 issued for Section 1182 Block XXXI Hokonui District

284551 Gazette Notice declaring Section 1180 to vest in the Chairman Councillors and Inhabitants of the County of Southland - 29.8.1974 at 2.15 p.m.

John Redden
D.L.R.

A.L.R.

284579 C116) CT 4A/1139 issued for Section 1174
30.8.1974) Block XXXI Hokonui

John Redden
D.L.R.

Part of Section 120 Block XXII Hokonui District is now known as Section 1278 Block XXII Hokonui District
N.A. 042498.1 (3.5947 ha)

A.L.R.

286902 C116) Ct 4A/1409 issued for Section 1170
20.11.1974) Block XXXI Hokonui District

John Redden
D.L.R.

043790.1 C116) Ct 5D/1116 issued for Section
20.2.1979) 1278 Block XXII Hokonui District

John Redden
D.L.R.

Part of Section 199 Block XXXII herein is now known as Section 1182 to 1185 inclusive - Block XXXI Hokonui District -
NA 287390 - 6.12.1974

A.L.R.

044150.1 Freehold Certificate) 5D/1158 issued
2.3.1979) for Section 1173
Block XXX
Hokonui District
herein

A.L.R.

000287.1 Gazette Notice setting apart Section 1176 herein as a reserve for community purposes and vests the reserve in the Chairman Councillors and Inhabitants of the County of Southland in Trust - 17.4.1975 at 10.23 a.m.

A.L.R.

00717.2 C116) Ct 5A/410 issued for Section 1177
2.5.1975) Block XXXI Hokonui District

John Redden
D.L.R.

The land 26thly and 27th described herein is now respectively known as Sections 1242 Block XXXII (2.1137 ha) and 1243 Block XLI (2.3964 ha) Hokonui District.
See New Appellation 046738.1

A.L.R.

012182.1 C116) Ct 5B/440 issued for Section 1175
12.5.1976) Block XXXI Hokonui District

John Redden
D.L.R.

The land 22ndly, 23rdly, 24thly and 25thly described herein is now known as Section 1289 Block XLI (2.31 ha) and Section 1290 Block LI Hokonui District and the land described is now known as Section 1291 Block LI Hokonui District

A.L.R.

017417.1 C116) Ct 5B/1011 issued for Section 1184
5.10.1976) Block XXXI Hokonui District

John Redden
D.L.R.

018530.1 C116) Ct 5B/1151 issued for Section 1185
9.11.1976) Block XXXI Hokonui District

John Redden
D.L.R.

051099.1 Gazette Notice declaring Section 117 herein to be set apart as a reserve for local purpose. (site for plunket rooms)
- 1.10.1979 at 2.24 p.m.

A.L.R.



New Zealand Railways

Land Division
Private Bag
Wellington, New Zealand

Telephone 47-800
Extension 8830
Mr Ross

Our Reference
Your Reference L.O.27995/100

Date 15 October 1973.

The District Land Registrar,
Land & Deeds Registry,
Private Bag,
DUNEDIN.

DECLARING LAND ACQUIRED FOR GOVERNMENT WORK (WAIMEA
PLAINS RAILWAY) AND NOT NOW REQUIRED FOR THAT
PURPOSE TO BE CROWN LAND

By a Declaration published in N.Z. Gazette 20 September 1973
p.87 Page 1798, all those pieces of railway land in Hokonui Survey
District comprising 358A. 3R. 12.11. (145,229 ha) was declared Crown
land.

A Gazette extract of the Declaration is enclosed, together with
copies of plan Nos. L.O.26486 and 27630 (L.O.8258 and 8428 - 8449).

Part Section 129 is shown as L.O. plan 27360 this should read
L.O. plan 27630.

Certificates of Title 29/264, 29/266, 29/269, 29/271, 29/272,
31/101, 31/102, 31/103 and 40/239 are also attached for cancellation.

Will you please register the Declaration and advise me the
registered number.

G.O. Reid,
DIRECTOR.
Pr:

*and Dave's please
register promptly
BE 71*

Declaring Land Acquired for a Government Work (Waimea Plains Railway) and Not Now Required for That Purpose to be Crown Land

PURSUANT to section 35 of the Public Works Act 1928, the Minister of Railways hereby declares the land described in the Schedule hereto to be Crown land, subject to the Land Act 1948, as from the 24th day of September 1973.

SCHEDULE

SOUTHLAND LAND DISTRICT—SOUTHLAND COUNTY

ALL those pieces of land situated in Hokonui Survey District and described as follows:

A. R. P.	Metric	Railway Land Being	Block	L.O. Sheet Plan No.	S.O. Plan No.	Coloured	Gazette	Page	Proc. No.	C.T. Reference
2 3 23	1.1710 ha	Part Railway Reserve; part Lots 1, 5, and 6, Block III, D.P. 67; part Lot 1, S.O. 2779	XXI	26486	8258	Blue	1885 1031			
0 0 22.7	574 m ²	Part Railway Reserve; part Lot 1, S.O. 2779	XXI	26486	8258	Blue	1906 2282			
1 0 0	4046 m ²	Part Section 199	XXI	26486	8258	Blue	1885 1031			Part 29/269
15 2 28.3	6.3442 ha	Part Section 56	IXVIII	27630	6 8428	Green	1906 2282			
11 1 20.6	4.6048 ha	Parts Sections 56 and 125	IXVIII	27630	7 8429	Green				Bal: 29/269
					8 8430					
					9 8431					
1 2 12	6373 m ²	Part Section 56	IXVIII	27630	9 8431	Green, edged green	1920 2533		1396	
23 1 14.3	9.4451 ha	Part Sections 55 and 139	IXVIII	27630	10 8432	Green				AH 31/102
					11 8433					
2 2 25.1	1.0752 ha	Part Section 247	LVIII	27630	11 8433	Green				Part 31/101
5 2 12.9	2.2584 ha	Part Section 247	LVIII	27630	11 8433	Green				Part 31/101
0 0 23.4	591 m ²	Part Section 247	LVIII	27630	11 8433	Green				Part 31/101
1 1 13.4	5397 m ²	Part Section 182	LVIII	27630	12 8434	Green				Part 31/101
0 0 6.7	4216 m ²	Closed road	LVIII	27630	12 8434	Green, edged green				All 40/239
5 3 21.2	2.3805 ha	Part Section 182	LVIII	27630	12 8434	Green				Part 31/101
0 0 20.5	518 m ²	Part Section 182	LVIII	27630	12 8434	Green, edged green				Bal: 31/101
13 3 17.4	5.6084 ha	Part Section 204 and part Section 183	LI	27630	12 8434	Green				Part 29/264
					13 8435					
8 1 18	3.3841 ha	Part Railway Reserve	LI	27630	13 8435	Green, edged green				
1 2 35.6	6970 ha	Part Section 119	LI	27630	14 8436	Green				Part 29/264
2 1 25.7	9755 m ²	Part Section 119	LI	27630	14 8436	Green				Bal: 29/264
9 0 31.4	3.7247 ha	Part Railway Reserve	LI	27630	14 8436	Green, edged green				
19 1 21.2	7.8438 ha	Part Railway Reserve	LI	27630	14 8436	Green				
9 2 24	3.9072 ha	Part Railway Reserve	LI	27630	15 8437	Green, edged green				
1 1 0 13	4.4844 ha	Section 559	LI	27630	15 8437	Green	1888 564			
10 0 35.1	7.1432 ha	Part Railway Reserve	LI	27630	15 8437	Green				
5 1 27.7	2.1946 ha	Part Section 507	XLI	27630	16 8438	Green, edged green				Part 29/266
5 0 29.7	2.1937 ha	Part Railway Reserve	XXXII	27630	16 8438	Green				
5 3 27.8	2.3972 ha	Part Section 508	XLI	27630	17 8439	Green				Bal: 29/266
4 0 3 3	6326 ha	Part Railway Reserve	XXXII	27630	17 8439	Green, edged green				
2 0 6.2	8250 m ²	Part Section 509	XXXII	27630	17 8439	Green				Part 31/103
1 2 16.1	6477 m ²	Part Section 509	XXXII	27630	18 8440	Green, edged green				Part 31/103
1 0 16.1	4454 m ²	Part Section 509	XXXII	27630	18 8440	Green, edged green				Part 31/103
6 3 7.7	2.7511 ha	Part Section 509 and part Section 199	XXXI	27630	18 8440	Green				Part 31/103
0 0 16	404 m ²	Closed road	XXXI	27630	18 8440	Green	4928 607	2133		Part 31/103
3 0 37.4	1.3086 ha	Part Section 199	XXXI	27630	18 8440	Green, edged green				
0 2 10.1	2278 m ²	Part Railway Reserve	XXXI	27630	19 8441	Green				
4 1 33.8	1.8054 ha	Part Section 109	XXXI	27630	19 8441	Green, edged green				Bal: 31/103
1 2 31.4	6864 m ²	Part Railway Reserve	XXXI	27630	19 8441	Green				
20 2 6 8	3.1132 ha	Part Railway Reserve	XXX	27630	20 8442	Green				
4 1 38 2	4.760 ha	Part Section 129	XXX	27630	20 8442	Green, edged green				Part 29/274
18 3 20	7.6384 ha	Part Railway Reserve	XXX	27630	21 8443	Green				
12 2 2 5 4	0.645 ha	Part Section 561	XXX	27630	21 8443	Green, edged green	1936 1876	1873		
0 0 0	0 ha	Part Section 561	XXX	27630	21 8443	Green, edged green	1914 2377	1296		
4 3 1 3	3.260 ha	Part Section 561	XXX	27630	21 8443	Green, edged green	1898 4	64 p		
31 3 33	12.9322 ha	Parts Sections 120 and 535 and part Section 120	XXX	27630	22 8444	Green, edged green				Bal: 29/271
					23 8445					
					24 8446					
3 2 11.1	1.4444 ha	Part Railway Reserve, Block IV, Village of Longridge	XXII	27630	24 8446	Green, edged green				
3 2 17	1.4594 ha	Section 36, Block IV, Village of Longridge	XXII	27630	24 8446	Green	1913 3400	2133		
8 1 37.9	3.4345 ha	Part Section 158	XXII	27630	24 8446	Green				Part 29/272
10 0 23.8	4.1070 ha	Part Sections 45 and 534	XXII	27630	24 8446	Green				Part 29/272
9 1 7 5	3.7623 ha	Part Railway Reserve	XXII	27630	25 8447	Green, edged green				
17 1 8	7.0010 ha	Part Section 195 and part Section 533	XXII	27630	25 8447	Green				Bal: 29/272
					26 8448					
					27 8449					
6 3 6.7	2.7485 ha	Part Railway Reserve	XVI	27630	27 8449	Green, edged green				

As the same are more particularly delineated on the plans marked and coloured as above mentioned and deposited in the office of the Minister of Railways at Wellington.

Dated at Wellington this 12th day of September 1973.

(N.Z.R. L.O. 27995/95)

F. M. McGUIGAN, Minister of Railways.

C.T. issued

C.T. 158

should be 27830

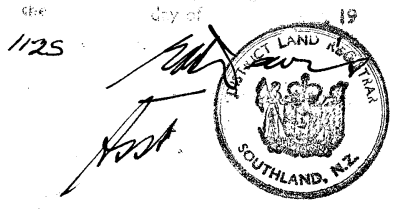
NAD 4 24 79

1145 2281 ha

37

1001
275277

Sazette Notice
Entered in the Register Book
31/103, 29/269, 31/102, 101, 29/271, 272
40/235
Proc 1246 1673, 64, Proc 1396



1125

*For these materials typed
in the correct order see attached
memorial book. fd.*

The various S.O. plans referred to herein are filed with Railway Procs and labelled Waimea Branch Railway

Part of sections 199 Block xxxi and section 509 Block xxxii are now known as sections 1170, 1171, 1172, 1173, 1174, 1175, 1176 and 1177 Block xxvi Hokonui Survey District. See Appell. Appellation 281915. ✓

005R

GN
N2R
11:25am
Nil
6016

284550 Gazette Notice declaring Section 1171 to be set apart for road 29.8.1974 at 2.15p.m.

284551 Gazette Notice declaring Section 1180 to vest in the Chairman Councillors and Inhabitants of the County of Southland 29.8.1974 at 2.15p.m. - a road

Part of Section 199 Block XXXII herein is now known as Sections 1182 to 1185 inclusive. ~~Blk XXXI~~ Hokonui Dist NA 287390 - 6.12.1974

000287.1 Gazette Notice setting apart Section 1176 herein as a reserve for community purposes and vests the reserve in the Chairman Councillors and Inhabitants of the County of Southland in trust. 17.4.1975 at 10.23am.

Part of Section 120 Block XXII Hokonui District is now known as Section 1278 Block XXII Hokonui District N.A. 042498.1 (3.5947 ha)

DM 150.1 Freehold Certificate 50/1158 issued for Section 1173 Block XXXI Hokonui District herein

The land 26thly and 27th described herein are now respectively known as Sections 1242 Block XXXII (2.1137 ha) and 1243 Block XLI (2.3964 ha) Hokonui District. See New Appellation 046738-1.

The land 23rdly, 24thly and 25thly described herein is now respectively known as Sections 1289 Block XLI (2.31 ha) and Section 1290 Block LI Hokonui District and the land 27thly described is now known as Section 1291 Block LI Hokonui Dist.

051099.1 Gazette Notice declaring Section 1172 herein to be set apart as a reserve for local purpose. (site for plunket rooms) 1.10.1979 at 2.24 p.m.

Part of the land 50thly described herein is now known as Sections 1286 (1.4923 ha) and 1287 (1.4830 ha) Block XLI and Section 1288 (3.2670 ha) Hokonui District 18.10.1979 at 2.36 p.m. See New Appellation 051653.1

The land 51stly described herein is now known as sections 1240 and 1241 Hokonui District - N/A 051653.2

Terranet document ordering service

Certificate of Title with diagram: 6B/1118

Billing Code: 12591238-VO1- short term Cons

CoreLogic Reference: 3144368/1

Processed: 25 July 2023

Sourced from Terranet, a CoreLogic solution. For any queries about this document or this service please call 0800 355 355 or email documentordering@corelogic.co.nz.



**RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy**




R.W. Muir
Registrar-General
of Land

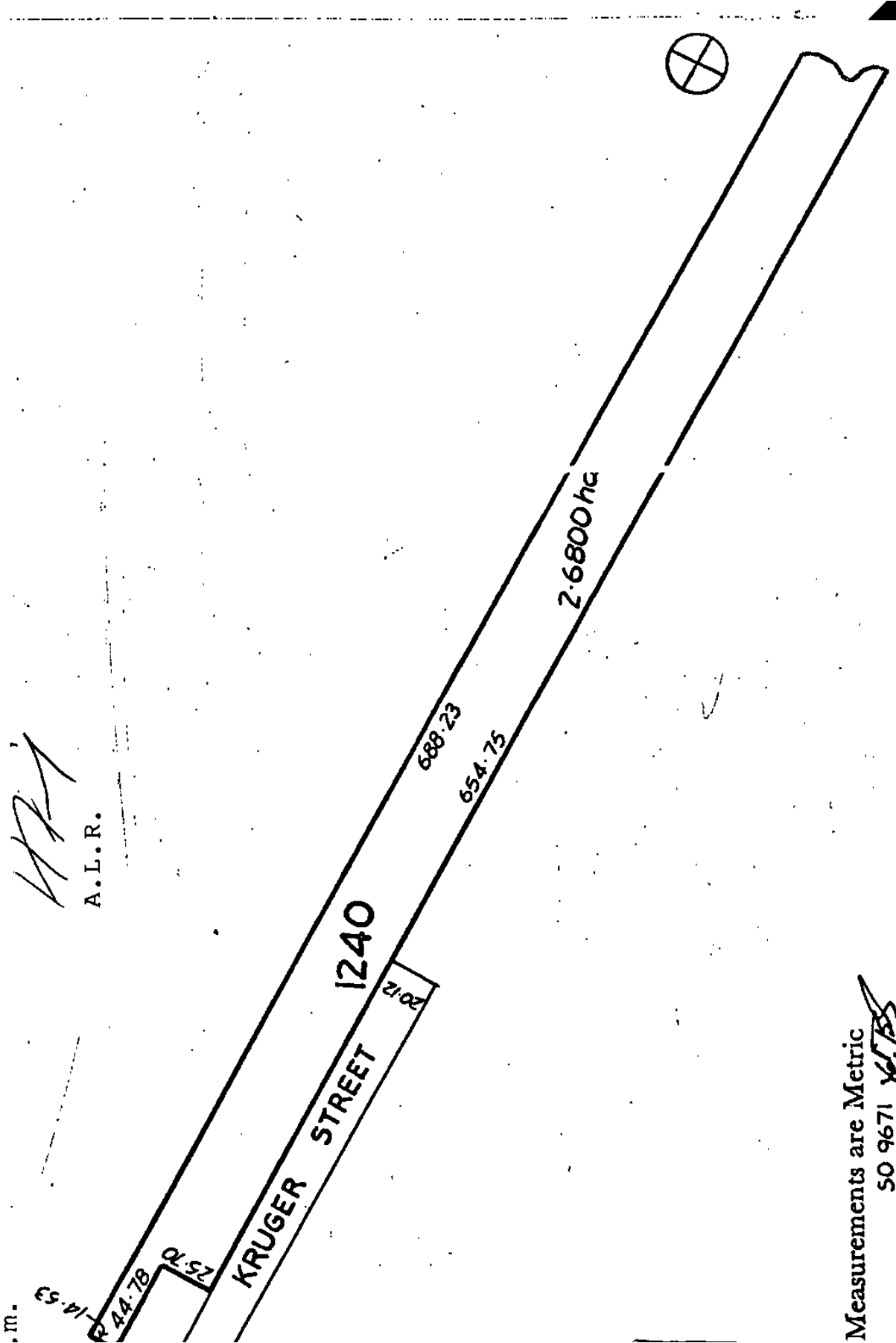
Identifier **SL6B/1118**
Land Registration District **Southland**
Date Issued 05 August 1981

Prior References
GN 275277

Estate Fee Simple
Area 2.6800 hectares more or less
Legal Description Section 1240 Block XXI Hokonui Survey
District

Registered Owners
Southland District Council

Interests
Subject to Section 8 Mining Act 1971
Subject to Section 168A Coal Mines Act 1925



Handwritten signature

A.L.R.

Measurements are Metric
SO 9671 *Y.G.P.S.*

Appendix B

Consent:201674



Application No: S122-002
Consent No:201674

Cnr North Road and Price Street
(Private Bag 90116)
Invercargill

Telephone (03) 215 6197
Fax No. (03) 215 8081
Southland Freephone No. 0800 76 88 45

Discharge Permit

Pursuant to Section 105(1) of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council (the "Council") to **Southland District Council** (the "consent holder") of **P O Box 903, Invercargill** from **2 February 2004**.

Please read this Consent carefully, and ensure that any staff or contractors carrying out activities under this Consent on your behalf are aware of all the conditions of the Consent.

Details of Permit

Purpose for which permit is granted:	To discharge treated wastewater to water
Location	- site locality - map reference - receiving environment - catchment
	Balfour E44:679-758 Longridge Stream via a weeded ditch Mataura
Legal description of land at the site:	Sec 1240 Blk XXI Hokonui SD
Expiry date:	2 February 2024

Schedule of Conditions

Term and Purpose

1. The consent period is 20 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).

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the Southland Regional Council

2. This consent authorises the discharge of up to 250 m³/day of treated wastewater to the Longridge Stream, via a weeded ditch, at about map reference NZMS 260 E44:679-758.
3. This consent does not authorise the disposal of sludges or untreated sewage or wastes collected from any point in the reticulation or treatment systems.
4. In the event of an emergency or accidental discharge of sewage or partially treated sewage to land or water, the consent holder shall, without undue delay, notify both the Medical Officer of Health (or Health Protection Officer) and the Council's Director of Environmental Management.

Receiving Water Limits

5. The following standards apply as a result of the exercise of this consent, beyond the zone of reasonable mixing, which shall extend from immediately upstream of the discharge point to 50 metres downstream from the point of discharge to the Longridge Stream:
 - (i) "D" classification standards for the Longridge Stream, as detailed in Appendix 1 to this consent, apply beyond the zone of reasonable mixing;
 - (ii) the concentration of total ammoniacal nitrogen shall not be increased above the values tabled in Appendix 2 of these conditions, at the appropriate pH, as a result of any discharge made pursuant to this consent.

Effluent Limits

6. The effluent discharge shall conform with the following limits:
 - (i) the carbonaceous BOD₅ concentration of the discharge shall be consistently maintained at or below 25 g/m³ and shall not exceed 40 g/m³;
 - (iii) the total suspended solids concentration of the discharge shall be consistently maintained at or below 25 g/m³ and shall not exceed 40 g/m³.

Note: For the purposes of this consent condition, consistently maintained shall be when 4 out of 5 consecutive samples taken do not exceed the stated value.

Monitoring

7. The consent holder shall monitor the wastewater discharge and its effect on receiving waters, as follows:
 - (i) by taking a representative sample of:
 - (a) the treated effluent from the treatment plant;
 - (b) the treated effluent from within the ditch near the point of discharge; and
 - (c) the receiving waters, upstream and 50 metres downstream of the point of discharge to the Longridge Stream.

- (ii) the samples shall be taken:
- (a) once during the period 1 May to 31 August each year;
 - (b) on at least three occasions during the period 15 November to 15 April each year, when the flow in the Waimea Stream, as measured at the Council's monitoring site at Mandeville, falls below 0.34 cumecs.
- (iii) the samples from the treatment plant and the ditch, near the discharge point, shall be analysed for:
- Electrical Conductivity
 - Carbonaceous Biochemical Oxygen Demand (BOD₅) concentration
 - Total Suspended Solids concentration
 - *E. coli* concentration
 - Total Ammoniacal Nitrogen concentration
 - Total Nitrogen concentration
 - Total Phosphorus concentration
 - Dissolved Oxygen (DO)
- (iv) the samples from the receiving water shall be analysed for:
- Electrical Conductivity
 - Carbonaceous Biochemical Oxygen Demand (BOD₅) concentration
 - Turbidity
 - *E. coli* concentration
 - Total Ammoniacal Nitrogen concentration
 - Nitrate Nitrogen concentration
 - Dissolved Reactive Phosphorous concentration
 - Dissolved Oxygen
8. The monitoring specified in Condition 7 shall conform to the following:
- (i) the discharge and receiving water samples shall be taken at about the same time, within a one hour period, on each monitoring occasion;
 - (ii) effluent and receiving water sample collection, preservation and analysis shall be carried out in accordance with the most recent edition of APHA "Standard Methods for the Examination of Water and Wastewater";
 - (iii) effluent and receiving water monitoring and analyses shall be carried out by a laboratory with IANZ registration or equivalent, or as agreed to, in writing, by the Council's Director of Environmental Management;
 - (iv) the consent holder shall report the results of analysis to the Council's Environmental Compliance Manager no later than 30 working days from the end of the month in which each sample is taken. The methods of analysis are to be specified with the results.

Reporting

9. Three years after the granting of this resource consent, and thereafter every five years, the consent holder shall provide a written report to the Southland Regional Council and the parties listed in Appendix 3 of this consent:
- (i) assessing the operation and performance of the Balfour Wastewater Treatment Plant and the results of all monitoring undertaken in association with this resource consent;
 - (ii) reviewing any proven and practical technological developments in the reduction or mitigation of the wastewater discharge, including any alternate methods of disposal, and the costs and benefits of these advances; and
 - (iii) detailing any measures that have been taken by the consent holder to improve the quality, or to mitigate the effects, of the discharge authorised by this consent.

Maintenance

10. The operation and maintenance of the treatment system shall be supervised by a person qualified in wastewater treatment, the minimum level of qualification to be a “C” grade wastewater certification or its equivalent.
11. 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 Director of Environmental Management.
12. The consent holder shall maintain the ditch, to which the treated wastewater is discharged, in its existing weeded state. Any maintenance of the ditch shall be carried out in consultation with the Councils Director of Environmental Management.

Complaints

13. The consent holder shall notify the Council’s Director of Environmental Management, in writing, of any complaints received about the sewage treatment and disposal system and the actions taken in response to each complaint, within 48 hours of receipt of the complaint.

Consent Charges

14. The consent holder shall pay annual administration and monitoring charges to the Southland Regional Council, collected in accordance with Section 36 of the Resource Management Act, payable in advance on the first day of July each year.

Review of Conditions

15. The Southland Regional Council may serve notice on the applicant in accordance with Sections 128 and 129 of the Act, in the third year of granting this permit, to review

conditions of this permit as a result of information provided through the reporting requirements of condition 9 of this consent.

16. The Southland Regional Council may serve notice, as a result of information received in accordance with the conditions of this permit, and in accordance with Sections 128 and 129 of the Act, in the month of September each year, of its intention to review the conditions of the consent for the purposes of:
- (i) dealing with any adverse effect on the environment which may arise from the exercise of the consent;
 - (ii) complying with the requirements of a regional plan; or
 - (iii) compliance with consent conditions, in particular DO and Ammoniacal Nitrogen levels.

for the **Southland Regional Council**

W J Tuckey
Director of Environmental Management

Appendix 1
Standards for Class D Waters

The quality of Class D waters shall conform to the following requirements:

- a) The natural water temperature shall not be changed by more than 3 degrees Celsius.
- b) The acidity or alkalinity of the waters as measured by the pH shall be within the range of 6.0 to 9.0 except when due to natural causes.
- c) The waters shall not be tainted so as to make them unpalatable, nor contain toxic substances to the extent that they are unsafe for consumption by farm animals, nor shall they emit objectionable odours.
- d) There shall be no destruction of natural aquatic life by reason of a concentration of toxic substances.
- e) The natural colour and clarity of the waters shall not be changed to a conspicuous extent.
- f) The oxygen content in solution in the waters shall not be reduced below 5 milligrams per litre.

Appendix 2

Total Ammoniacal Nitrogen Freshwater Trigger Values

Total Ammoniacal Nitrogen Freshwater Trigger Values in mg/m ³ at different pH (Temperature is not taken into account)	
pH	NH ₄ ⁺ -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	2380
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

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

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the Southland Regional Council

Appendix 3
Parties to be Notified
(in accordance with Condition 17 of this consent)

- B J McGarvie & C F Williams, P O Box 50, Balfour
- Area Manager (Murihiku), Department of Conservation, P O Box 743, Invercargill
- Te Ao Marama Inc, P O Box 990, Invercargill



801/002762-11

29 November 2002

Stephen West
Environment Southland
Private Bag 90116
INVERCARGILL

PAID
\$ 300.00

17292

Dear Stephen

Resource Consent Application for the Balfour Wastewater Treatment Plant

Please find attached an application for the renewal of the resource consent for this plant. Copies of this documentation have been circulated to a number of affected parties for comment.

Yours sincerely
MWH NEW ZEALAND LTD

Simon Beale

Copy to: John Cocks, MWH New Zealand Ltd, PO Box 4, DUNEDIN
Enc: \$300 Application Fee

lwest03.doc



MWH

MONTGOMERY WATSON HARZA

Southland District Council

**Balfour Wastewater Treatment
System**

**Resource Consent Application
and Supporting AEE**

November 2002



MWH

MONTGOMERY WATSON HARZA

This report has been prepared solely 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 or to fulfil a legal requirement.

Quality Assurance Statement	
MWH New Zealand Ltd 106 Gorge Road PO Box 649, Queenstown Ph 03-442 7762 Fax 03-442 6958	Prepared by: Simon Beale <i>S Beale</i>
	Reviewed by: David Stewart and Carmen Taylor <i>David J. Samsonville</i>
	Approved for issue by: Project Manager

Southland District Council

Balfour Wastewater Treatment System Resource Consent Application and Supporting AEE

Contents

Form 5 of the Resource Management Act

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1.1	Background	1
1.2	Purpose of the AEE	1
1.3	Structure of the AEE	1
2.	The Balfour Wastewater Treatment System	2
2.1	Location.....	2
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Form 5 of the Resource Management Act

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

To: Environment Southland

We: Southland District Council
PO Box 903
INVERCARGILL

apply for the resource consent described below:

1 The names and addresses of the owner and occupier which this application relates are:

Owner: Southland District Council
Occupier: Southland District Council

2 The location to which this application relates is:

Near Balfour in northern Southland.

Grid reference: NZMS260 E44 679:758

Legal description: Lot 10 DP 2629 Block XXI, Hokonui SD.

3 The type of resource consents sought are:

Discharge permit to discharge up to 250 m³/day of treated wastewater to a weeded ditch and hence into Longridge Stream for a term of 35 years from 3 June 2003.

4 A description of the activities to which the application relates is:

Discharge of treated effluent from the Balfour Wastewater Treatment Plant to Longridge Stream via a 500 metre long weeded ditch. The treatment plant receives wastewater via a gravity fed reticulation system linked to 108 properties in the Balfour area (refer Section 2 of the AEE).

5 The following additional resource consents are required in relation to this proposal and have or have not been applied for:

N/A.

6 Attached is an assessment of any effects that the proposed activity may have on the environment in accordance with Section 88 of, and the Fourth Schedule to, the Act.

7 Attached is information (if any), required to be included in the application by the district or regional plan or regulations.



MWH

MONTGOMERY WATSON HARZA

8 [Not applicable as this application is not for a subdivision consent].

9 [Not applicable as this application is not for a reclamation consent].

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

2-12-2002
.....

Date

Address for Service:
Southland District Council
c/- MWH New Zealand Limited
PO Box 649
QUEENSTOWN

Attention: Simon Beale

Telephone No. 03-442 7762
Fax No. 03-442 6958

1. Introduction

1.1 Background

The Southland District Council (SDC) provides sanitary works for the treatment of wastewater within its District. The SDC is the owner and operator of the Balfour Wastewater Treatment System (BWTS), treating wastewater from Balfour.

The existing treatment plant facilities and the reticulation system were constructed in 1963. Subsequent upgrades have included the installation of pumps in 1988 and 1999 and a telemetry system and new switchboard in 1995.

1.2 Purpose of the AEE

The SDC is responsible for ensuring that the specified works is operating within its legal requirements, including the provisions of the Resource Management Act 1991 (RMA). This application is for a discharge permit for the discharge of treated wastewater from the treatment plant to Longridge Stream via a weeded ditch. The RMA requires the preparation of an Assessment of Effects on the Environment (AEE) supporting such resource consent application(s) for the operation of the BWTS.

The AEE has been prepared in accordance with the Fourth Schedule of the RMA. It includes an assessment of the actual and potential effects of the wastewater treatment system and the ways in which any adverse effects from the existing operation can be “avoided, remedied or mitigated”. The AEE focuses on the effects of the discharge of treated wastewater on Longridge Stream.

1.3 Structure of the AEE

The structure of this document has been prepared to facilitate an understanding of the BWTS.

- **Section 1** introduces the proposal and sets the overall theme to this document;
- **Section 2** summaries the statutory framework and in particular the legislative requirements;
- **Section 3** describes the operation and nature of the BWTS;
- **Section 4** describes environmental setting within which the BWTS is located and operated;
- **Section 5** describes the actual and potential effects of the operation of the BWTS;
- **Section 6** discusses the alternative methods of treatment considered for the BWTS;
- **Section 7** outlines the consultation undertaken with the key stakeholders during the preparation of this document; and
- **Section 8** lists the measures proposed to avoid, remedy and mitigate adverse environmental effects arising from the operation of the BWTS.

2. The Balfour Wastewater Treatment System

2.1 Location

The BWTS is located on the eastern outskirts of Balfour adjacent to a large sports ground and tennis court. Access to the site is provided via Kruger Street off SH 94 (refer Figure 1).

2.2 Ownership

The plant and the weeded ditch is sited on land owned by the Southland District Council. It is defined in the Southland District Council District Plan as the Balfour Sewage Treatment Pond on planning map 40.

2.3 Existing Wastewater Treatment System

Wastewater is reticulated to the BWTS from 108 properties in the Balfour township and is predominantly domestic in nature. The wastewater is treated by Imhoff tank, trickling filter and humus tank. Sludge is drawn from the Imhoff tank and dried for disposal.

The gravity wastewater reticulation system serves all of Balfour and consists of service connections, mains, manholes and cleaning eyes. The sewer gravity mains are made of concrete pipes while the lateral connections consist of earthenware pipes.

A single pump station is located in the grounds of the treatment plant and services the entire reticulated system. The pump station has been converted to a wet well type, with submersible pumps located in the wastewater. The pumps elevate the wastewater to the surge chamber above the Imhoff tank, which then gravitates through the treatment plant to the outlet.

The pump station is connected to Council's SCADA network, which monitors pump functions.

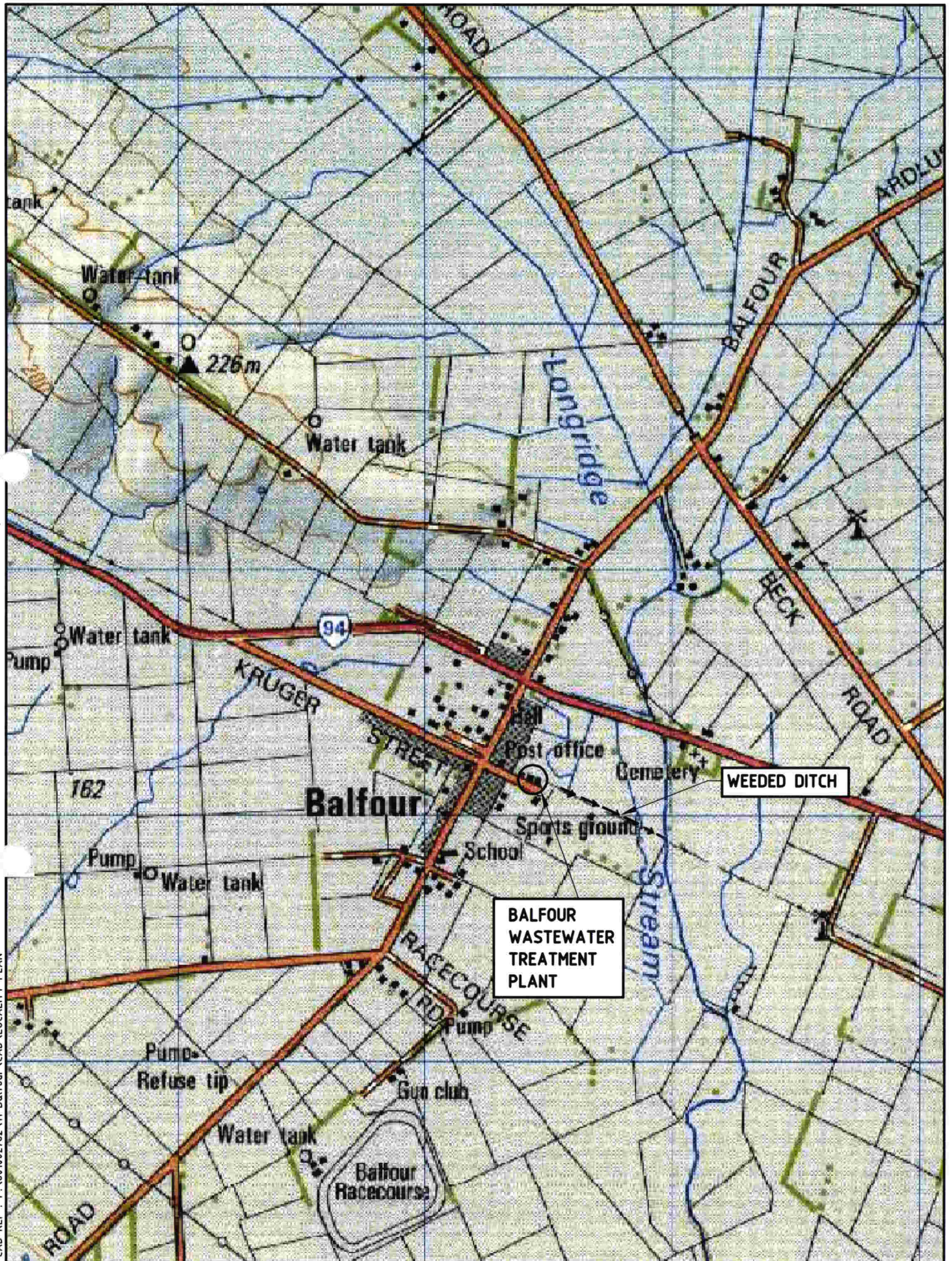
The average dry weather inflow into the BWTS is 40 m³ and the peak wet weather inflow is approximately 150 m³/day or 35 m³/hour. The dry weather flow is derived from a usually resident population of 138 (2001 census). The population recorded after the 1991 census was 147.

The existing discharge is permitted by Southland Regional Council's Consent N^o 92186 (refer Appendix 2). The discharge permit was granted in 3 June 1993 and expires on 2 June 2003.

Analysis of wastewater sampled from the treatment plant discharge on a monthly basis over the period of January 1997 to June 2002 shows that the concentration of BOD₅ rarely exceeded the limit of 30 g/m³ imposed by the consent condition. Analysis of samples extracted from the receiving environment, Longridge Stream, on a quarterly basis over the same period, indicate that the discharge is not having any significant effect on water quality beyond the mixing zone (refer Appendix 3).

DO NOT SCALE - IF IN DOUBT, ASK ORIGINAL SIZE A4

CAD REF : P:\801002762\11 Balfour\CAD\LOCALITY PLAN



SCALES : 1:1000		
DESIGNED	INIT	DATE
DRAWN	PKS	11/02
CHECKED	SHB	11/02
APPROVED		

FIGURE 1
LOCALITY PLAN

 MONTGOMERY WATSON HARZA	Status Stamp	Job No.	Sheet No.	Rev.
	Date Stamp	801/002762-11	L01	

3. Legislation, Policy and Guidelines

3.1 Resource Management Act 1991

The overriding purpose of the Resource Management Act (RMA) enacted in 1991 “*is to promote the sustainable management of natural and physical resources*”. Part II of the RMA, sections 5 to 8, outlines the broader principles that are to be considered for any resource use, development or protection.

Any activity can either be authorised by a rule, either in a regional plan or district plan, or through a resource consent or granting a notice of requirement for a designation.

Resource consent applications must be prepared in accordance with S.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.

When considering resource consent applications, the consent authority must primarily consider Part II of the RMA, while Section 104 outlines matters the Council must consider.

3.2 Environment Southland - Regional Policy Statement for Southland

The Southland Regional Council’s Regional Policy Statement (RPS) became operative in December 1997. The RPS sets the direction for the future management of all of Southland’s significant resource management issues which includes land, water, air, the coast, built environment, biota, natural hazards, energy and wastes.

For all resource management issues identified in the RPS, a consistent policy is “*To recognise and provide for the relationship Maori and their culture and traditions*” with respect to each particular resource.

Other objectives of relevance to this application are:

“Water

Objective 4.1 - To sustain the quantity of the Region’s water resources so as to:

- i. meet the needs of a range of uses, including the reasonably foreseeable needs of future generations;*
- ii. safeguard the life-supporting capacity of water and related ecosystems.*

Objective 4.2 - To manage the use and development of water and land resources so as, wherever practicable, to maintain and enhance flow regimes.

Water Quality

Objective 5.1 - To sustain the quality of the Region's water resources so as to:

- i. meet the needs of a range of uses, including the reasonably foreseeable needs of future generations;*
- ii. 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 possible enhanced.

Objective 5.4 - To recognise the relationship of Maori with water.

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."

This application is consistent with the identified objectives and policies of the RPS.

3.3 Environment Southland - Proposed Freshwater Plan for Southland

The purpose of the Plan is to promote the sustainable management of Southland's rivers, lakes and freshwater resources. The Plan is also aimed at enabling the use and development of fresh water where this can be undertaken in a sustainable manner.

This resource consent application affects Longridge Stream, a hill country water body (defined in the Plan as having a source from an average catchment elevation greater than 200 metres MSL) and is therefore governed by Objective 2 of the Plan. It states that the quality of hill country waters should not be allowed to deteriorate any further and that steps are taken to improve the water quality so that it is considered suitable for contact recreation. The objective promotes, in part, safeguarding the life supporting capacity of water and ecosystems and meeting the reasonably foreseeable needs of future generations.

In terms of Rule 2 of the Plan, the discharge of any contaminant into the water or beds of hill country rivers and lakes is a restricted discretionary activity. In exercising its discretion, the Council shall consider among other things; the adverse effects of the discharge on the ability of the water body to achieve Objective 2, including the rate of discharge in relation to the dilution capacity of the receiving environment.

Water quality monitoring undertaken to date (refer Section 4.3) indicates that the discharge of treated effluent from the BWTS is having no more than a minor effect on downstream water quality at 50 metres downstream from the discharge point. It is therefore consistent with Objective 2 of the Plan and generally in compliance with the standards outlined in Rule 2. Analysis of invertebrate communities recently sampled in Longridge Stream (refer Section 5.3.2) indicate that the discharge

is having no more than a minor effect on the life supporting capacity of Longridge Stream and is not resulting in the loss of community diversity or a significant change in community composition.

3.4 Southland District Council District Plan

The BWTS is defined in the Plan as the Balfour Sewage Treatment Pond on planning map 40.

The following objectives in the District Plan are considered relevant to this application:

Manawhenua Issues

Objective MAO.5 Wai (Water) - To recognise the significance of water to Kai Tahu traditions and culture and to provide for such traditions and culture where practicable and appropriate.

Objective MAO.6 Mahika Kai (Places Where Food is Procured) - To recognise the importance of mahika kai to Kai Tahu by, where possible, maintaining and enhancing mahika kai, and access to those traditional resources.

Public Networks and Utilities

Objective PWN.1 - to maintain the amenity values of the District by ensuring that any actual or potential adverse effects of public works and utilities are avoided or mitigated to the most practicable extent.

3.5 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. Te Whakatau Kaupapa O Muirhiku identifies values, objectives, policies and outcomes sought by the takata whenua of Murihiku.

4. Environmental Setting

4.1 Adjacent Land Use

The BWTS is situated at the eastern end of Kruger Street on the outskirts of Balfour opposite the town's sports ground. The BWTS discharges to a 500 metre long weeded ditch that extends across an area of improved pasture grazed by sheep. The farm house, owned by BJ McGarvie and CF Williams, located beyond the end of Kruger Street is approximately 100 metres away from the weeded ditch and 200 metres from the BWTS. A scout hall is situated next to the BWTS and several houses are located diagonally opposite the plant across Kruger Street.

4.2 Climate

The climate information for the Balfour area is derived from "Summaries of Climatological Observation to 1980" produced by the New Zealand Meteorological Service in 1983 for the Gore Station (I68192). Over the period 1971-1980 mean annual rainfall was 918 mm. This consisted on average of 142 rain days (over 1mm) per annum spread throughout the year. The maximum 1 day rainfall event recorded over this period was 94 mm. Temperatures ranged from -5.6°C to 30.6°C with the mean annual average being 9.7°C . The average daily temperature range was in the order of 8.9°C .

4.3 Water Quality

Water quality monitoring of Longridge Stream has been undertaken on a two monthly basis from late 1996 to mid April 2002 and has involved the collection and analysis of water samples from 50 metres upstream and 50 metres downstream of the outfall (refer Appendix 3).

With the exception of two occasions (14 January 1999 and 28 October 1999), the dissolved oxygen content of the waters downstream of the outfall was not reduced below 5 milligrams per litre and on the remaining sampling occasions the reduction in DO was relatively minor. The pH of the waters upstream and downstream of the outfall were within the range of 6.0 to 9.0 while the difference in temperature between the sampling sites was no more 0.5°C . An increase in the concentration of ammoniacal nitrogen and dissolved reactive phosphorous was evident between the upstream and downstream sampling sites on several sampling occasions in 1998 and 1999.

4.4 Aquatic Ecosystems

Longridge Stream in the vicinity of the discharge point consists of a series of riffles and runs over a bed of small to medium sized cobbles. The majority of the larger cobbles and small round rocks are covered in diatom films such as the genus *Melosira*.

The bed of the stream varies in width from 2 to 3 metres with overhead cover provided by willow trees located alongside and upstream of the discharge point. The stream below the discharge point is

devoid of overhead cover and is more akin to a large farm drain, as illustrated in the site photographs (refer Appendix 1).

Macrophytes such as monkey musk and watercress cover much of the bed of the ditch while clumps of rushes and cutty grass are common along the water edge. These merge with rank swards of cocksfoot, Yorkshire fog, brown top, and exotic herbs such as hairy buttercup and dock that cover the steep banks of the ditch.

Based on analysis of kick net samples collected 50 metres upstream and 20 metres and 100 metres downstream of the discharge point, the macroinvertebrate communities inhabiting the streambed are dominated by the common mayfly (*Deleatidium* sp.), riffle beetles (*Elmidae* sp.) and pond snails (*Potamopyrgus antipodarum*) at all locations (refer Appendix 4). Chironomids were also common and were particularly abundant within twenty metres below the discharge. These communities are typical of those found in stoney stream in Southland (Ryder Consulting 2002).

4.5 Terrestrial Ecosystems

The area has been extensively modified for agricultural purposes and is characterised by introduced plants associated with intensively managed farmland. Along the riparian margins of Longridge Stream the vegetation and associated habitats feature willow tree and gorse bush cover while pasture grasses and patches of exotic herbs such as hairy buttercup and dock form the ground cover up to the stream edge.

The Conservation Management Strategy for Mainland Southland-West Otago indicates that no sites of conservation interest occur in the area.

4.6 Social Environment

Balfour is a small town servicing the surrounding rural area. It has a range of amenities, including a hotel, shop, hall, garage, bowling club, a primary school and a large sports field. The latter provides the main focus for recreational activity in the local area.

4.7 Cultural Setting

Maori started exploring the southern regions of New Zealand approximately 800 years ago. The two canoes to which southern Maori trace their ancestry are Takitimu and Araiteuru. Te Rapuwai and Waitaha were the names of the early Maori tribes. Kati Mamoe followed around the 1500s and Kai Tahu around the 1600s. These early Maori were hunter-gatherers who moved with the seasons to utilise the various available mahika kai resources of the region's waterways and terrestrial environment.

The Balfour area would have been traditionally used over the summer months for food gathering, with journeys being made from villages on the southern coast. This is evidenced by the scattered remains of ovens, shelters, adze find spots and other artefacts occurring over the area, (refer Te Whakatau Kaupapa o Murihiku).

European settlement was based on developing the area for agricultural purposes, through the conversion of the extensive tracts of native forest to grazing land. Today land surrounding Balfour is intensively managed for sheep, beef, dairy and deer farming.

5. Assessment of Effects on the Environment

5.1 Effects on Amenity, Economic and Social Values

5.1.1 Perception

Wastewater facilities, such as the BWTS, are often perceived as Locally Undesirable Land Uses (LULU's), especially if treating domestic wastewater. However, it should be recognised that people produce waste and the proper management of wastewater is necessary for the general good of the community and the environment.

5.1.2 Visual Effects

The area in the vicinity of the BWTS and the weeded ditch possesses moderate visual appeal. The relatively small size of the treatment plant site which include the tanks and associated structures, do not unduly impose visually on the surrounding urban and rural environment. The presence of the weeded drain near the town is compatible with the rural surrounds in view of the prevalence of farm drains across the Waimea Plains.

The western boundary of the treatment plant site is obscured from the adjacent property by a radiata pine shelterbelt.

5.1.3 Air Emissions - Odour

Malodorous discharges to air can be an all too frequent feature of wastewater treatment facilities. The potential to produce nuisance odour is therefore something that needs to be managed. Good operation and management of the site should mean that odour nuisance is not a problem.

In addition, odour nuisance can be dependent on geographic location. Odour can be diluted by wind. The worst conditions for odour nuisance are stable weather conditions with low wind speed. To date, no complaints have been received from local residents.

5.2 Effects of Treated Effluent Discharge on Longridge Stream

5.2.1 Water Quality

Analysis of water samples taken from Longridge Stream, upstream and downstream of the discharge from late 1996 to early 2002, (refer Appendix 3) show no significant variations in the quality of water. The water quality of Longridge Stream beyond the 50 metre mixing zone falls within the minimum standards for Class D Waters and the more stringent standards specified under Rule 2 of the Proposed Regional Fresh Water Plan for Southland. Non compliance with the standards occurred on two occasions in 1999 (out of a total of 19 samples analysed over the sampling period) when dissolved oxygen levels at 50 metres downstream of the discharge dropped below 5 mg/l. Dissolved oxygen levels measured at the sampling site below the discharge point were generally above 9.5 mg/l.

The pH of the waters upstream and downstream of the outfall were within the range of 6.0 to 9.0 while the difference in temperature between the sampling sites was no more than 0.5 °C. An increase in the concentration of ammoniacal nitrogen and dissolved reactive phosphorous was evident between the upstream and downstream sampling sites on several sampling occasions in 1998 and 1999 (refer Appendix 3). However these downstream readings fall within the ANZECC guidelines for aquatic ecosystems.

Overall, the water quality in Longridge Stream at 50 metres below the discharge point, based on these monitoring results to date, confirms that the discharge meets the minimum standards for Class D waters as required by Environment Southland's Regional Plan (refer Appendix 5). The water quality results are also generally in compliance with the standards outlined in Rule 2 of the Proposed Freshwater Plan for Southland concerning discharges into hill country and some Stewart Island Waters (refer Appendix 6).

It is therefore reasonable to state that the effect of the discharge of treated effluent from the BWTS on water quality within Longridge Stream is no more than minor.

5.2.2 Effects on Benthic Invertebrates

The aquatic invertebrate assessment undertaken by Ryder Consulting Limited, appended as Appendix 4, concludes... "There is some evidence for a mild effect of the Balfour sewage treatment plant discharge on the invertebrate communities of Longridge Stream. This effect is largely reflected in decreased densities of invertebrates overall, but an increase in the proportion that are tolerant of lower quality habitat. However the persistence downstream of even relatively sensitive invertebrates suggests that the effect is relatively minor."

This finding is based on lower semi-quantitative MCI (SQMCI) scores for the kicknet samples taken downstream of the discharge point compared to those taken upstream of the discharge point. It is interesting to note that the SQMCI scores were lower for the kicknet sampling sites at 100 metres downstream of the discharge point compared to the site at 20 metres, which lies within the mixing zone.

5.3 Effects on Cultural Values

Te Whakatau Kuapapa o Murihiku provides a comprehensive list of archaeological sites in Southland (listed in Appendix B of the document). A review of the list shows that no such sites occur in the vicinity of the weeded ditch or discharge point. It is recognised however that the database may not necessarily provide a complete picture of archaeological sites or wahi taonga (special places) in the immediate area.

The maintenance of water quality and quantity are paramount resource management issues to Ngai Tahu. Te Whakatau Kuapapa o Murihiku states that:

"Ngai Tahu resource management is primarily focussed on the ethic of sustainability and the long term welfare of the environment, and therefore the long term welfare of the people within that environment... To this end, the utmost effort must be made to maintain and increase the quality and

quantity of water in all waterways. Further deterioration, of either water quality or quantity is unacceptable to Ngai Tahu.”

The Southland District Council has progressively improved the standard of wastewater treatment in the Balfour area through construction and operation of the BWTS in 1963 and through several recent upgrades, as discussed in Section 2.3. The results of water quality monitoring and a recent analysis of macroinvertebrate communities indicate that the discharge is having no more than a minor effect on Longridge Stream and is not contributing to a further deterioration of the receiving environment.

5.4 Effects on Groundwater Resources

Although there is likely that there is a certain degree of infiltration occurring along the weeded ditch, this does not pose an issue in terms of groundwater contamination. No recorded groundwater abstraction occurs in the vicinity of the weeded ditch or Longridge Stream, although three bores exist within Balfour township up gradient of the BWTS (Environment Southland 2002).

5.5 Risk Assessment

Although having a low risk of occurrence, natural hazards such as earthquakes and flooding need to be given due consideration. Such risks could result in potential adverse environmental effects not to mention disruptions to the community, especially if damage to the BWTS results.

The potential impact of earthquakes, flooding and other natural hazards can be minimised by ensuring that all facilities, particularly any upgrades and/or extensions are designed to meet current guidelines, eg. earthquake standards.

Any potential failure in the BWTS due to electrical or mechanical problems would occur at the pump station. The pump station has dual pumps with one unit on standby should the duty pump fail to operate.

In the event of a complete failure (eg through a power outage), the pump well would fill and overflow through a screen to an overflow well. When full, the overflow well would discharge to farmland away from the township. The well's high level alarm would however be activated before there is any discharge to the overflow well, as there is a battery backup to the SCADA monitoring equipment. Although there have been no emergency discharges from this pump station, calcium hypochlorite is kept on hand for sewage disinfection.

A number of operators for this scheme are located within relatively close proximity of the BWTS. With continuous alarm monitoring and the availability of operations staff, there is very little likelihood of a discharge causing problems from the Balfour pump station.

6. Alternative Treatment Measures

The BWTS is regarded as the best practicable community funded option for the treatment of Balfour's domestic wastewater. Other alternatives such as land disposal and more elaborate treatment facilities are considered impractical given the cost factor and hence the local communities ability to fund these.

The monitoring results indicate that the current level of treatment provided by the plant and the weeded ditch provides an acceptable level of treatment and maintaining the minimum standards for Class D waters in Longridge Stream (refer Section 5.4.1). Notwithstanding this, it is proposed that water quality in Longridge Stream will continue to be monitored on a two monthly basis to ensure the treatment process is maintaining the required wastewater quality.

7. Consultation Undertaken

The following are considered to be affected parties in terms of this proposal. They are:

- BJ McGarvie and CF Williams;
- PW & EM Eaton;
- RF, B& ARL McKee;
- AG Whiteley;
- Balfour Sports Ground Association;
- The Southland Fish and Game Council;
- Department of Conservation;
- Te Ao Marama Incorporated;
- Te Runanga o Hokonui;
- Public Health South.

Copies of the resource consent documentation will be sent to the affected parties in early December 2002 for comment. Written approvals will be sought to the renewal of the resource consent for the BWTS.

8. Proposed Measures to Avoid, Remedy and Mitigate Adverse Effects

The measures that have the potential to “avoid, remedy or mitigate” the adverse effects of the discharge of treated effluent from the BWTS on Longridge Stream are summarised as follows:

- Undertake water quality monitoring of the discharge and the receiving waters in Longridge Stream on an quarterly / annual basis?
- Undertake appropriate remedial actions should environmental monitoring show non compliance with water quality standards for Class D waters at the sampling site downstream of the discharge point so as to improve the quality of the treated wastewater discharged to Longridge Stream.

References

Department of Conservation (1996) *Conservation Management Strategy for Southland/West Otago*.

New Zealand Meteorological Service *Summaries of Climatological Observations to 1980*, NZ Met. Service Miscellaneous Publication 177.

Southland District Council (2001) *Balfour Asset Management Plan – Water, Sewerage, Stormwater*.

Southland Regional Council (1997) *Microbial Monitoring in Southland. Results from fresh water and coastal monitoring*. SRC Publication No. 77.

Statistics New Zealand (1997) *1996 Census of Population and Dwellings*.

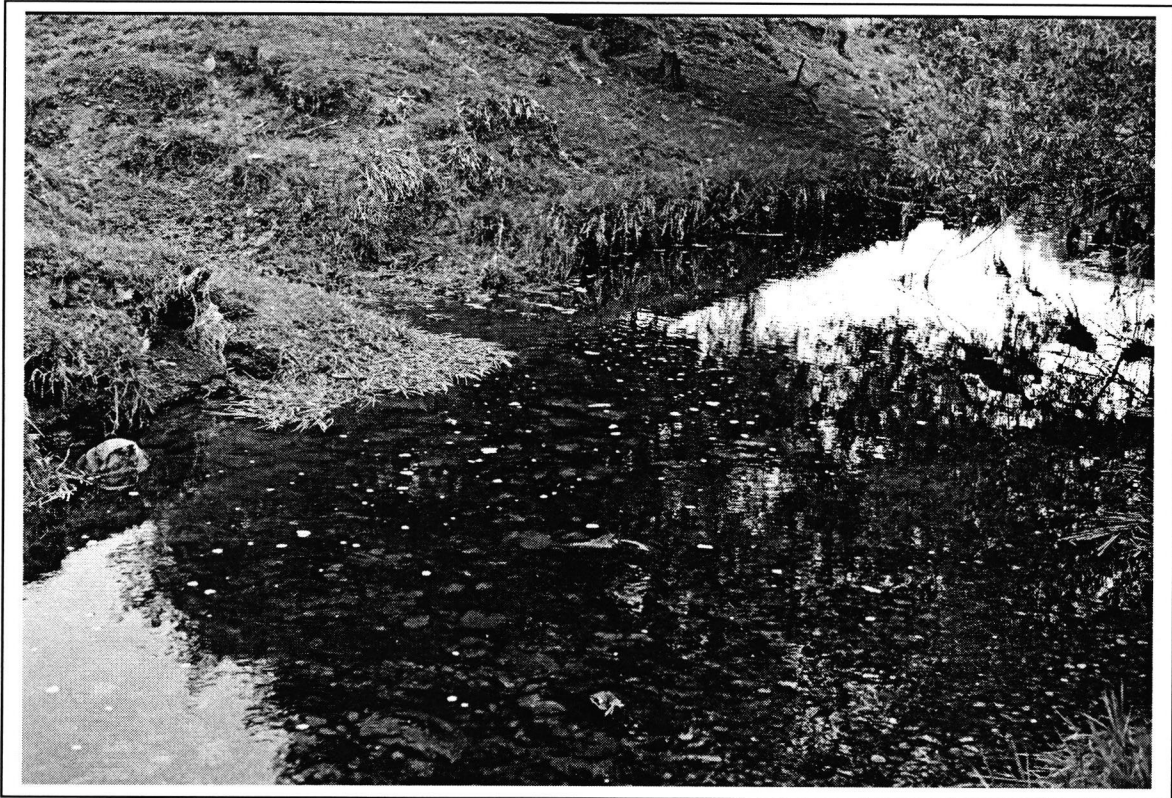
Appendix 1: Site Photographs



Weeded ditch below treatment plant looking towards Longridge Stream



Weeded ditch near discharge point to Longridge Stream



Longridge Stream and weeded ditch discharge point



Longridge Stream 100 metres downstream of discharge point. Macroinvertebrate sampling site (adjacent to large gorse bush).



MWH
MONTGOMERY WATSON HARZA

Southland District Council
Balfour Wastewater Treatment System
Resource Consent Application & Supporting AEE

Appendix 2: Resource Consent 92186

SOUTHLAND REGIONAL COUNCIL

Private Bag 90116
Telephone (03) 215-6197
Fax No. (03) 215-8081

SOUTHLAND
DISTRICT COUNCIL

24 JUN 1993

FILE No. 5214/211

Cnr North Road and Price Street
Waikiwi
Invercargill

DISCHARGE PERMIT

Pursuant to Section 105(1) of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council

to Southland District Council (called the "consent holder")
of P O Box 903, Invercargill
from 23 June 1993.

DETAILS OF PERMIT

Purpose for which permit is granted :-	To discharge treated sewage
Location	- site locality :- Balfour
	- map reference :- E44:679:758
	- source/receiving waters :- Longridge Stream
	- catchment :- Mataura
Legal description of land at site :-	Lot 10 DP 2629 Block XXI Hokonui Survey District
Maximum rate - cubic metres / day :-	250
Expiry date :-	2 June 2003

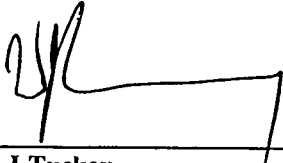


SCHEDULE OF CONDITIONS

1. The rights, powers and privileges conferred by this consent shall continue in force for a period of 10 years from the date of granting.
2. This consent permits the discharge of treated liquid effluent. It does not authorise the disposal of sludges or untreated sewage, or wastes collected from any point in the reticulation or treatment systems.
3. The operation and maintenance of the treatment system shall be supervised by a person qualified in wastewater treatment, the minimum level of qualification to be a "C" grade wastewater certificate or its equivalent.
4. The Consent Holder shall maintain a log of inspections and works carried out on the treatment system, and make the log available to the Council's Director of Planning and Resource Management or his representative on request.
5. (i) The Consent Holder shall pay the Southland Regional Council an administration charge of \$50 plus GST (or other figure set by Special Order under the Act) in advance, payable on the first day of July each year.

- (ii) The exercise of the consent shall also be monitored in accordance with the Council's Special Order for consent monitoring, the cost of which is fixed in that order and payable by the Consent Holder.
6. In the event of an emergency or accidental discharge of sewage or partially treated sewage from any part of the reticulation or treatment system the consent holder shall notify without undue delay both the Medical Officer of Health (or Health Protection Officer) and the Council's Director of Planning and Resource Management.
7. The Council may, as a result of the information and/or monitoring data received in accordance with the conditions of this permit and in accordance with Section 128 and 129 of the Act, serve notice of its intention to review the conditions of the permit, to assess their appropriateness, and/or to deal with any adverse effects on the environment which may arise from the exercise of this consent.
8. The minimum standards for Class D waters as required by the Council's Regional Plan and described in the Fourth Schedule of the former Water and Soil Conservation Act 1967 shall apply in respect of the exercise of this permit beyond 50m from the point of discharge from the weeded ditch to the Longridge Stream.
9. The carbonaceous BOD₅ concentration of the effluent taken as it leaves the sewage treatment plant shall not exceed 30 g/m³.
10. The suspended solids concentration of the effluent taken as it leaves the sewage treatment plant shall not exceed 30 g/m³.
11. The Consent Holder or its agent shall:
- (i) take one grab sample of effluent from the plant each month and have it analysed for carbonaceous BOD₅ and suspended solids concentrations.
- (ii) take grab samples at 3 monthly intervals of the receiving waters above and 50 metres below the point of discharge to the Longridge Stream and have it analysed for pH, conductivity, temperature, and dissolved oxygen concentration.
- (iii) provide copies of the results of all the above analyses to the Southland Regional Council by the last working day of the months of January, April, July and October.
12. All analyses undertaken as per Condition (10) of this consent shall be carried out in accordance with the latest edition of APHA "Standard Methods for the Examination of Water and Wastewater".
13. The Consent Holder shall maintain the first 60 metres of the ditch to which the treated sewage is discharged in a weeded state. Any maintenance of this portion of the ditch shall be carried out in consultation with the Council's Director of Planning and Resource Management.
14. The Consent Holder shall consult with the Manager of the Southland Fish and Game Council over any maintenance of the weeded ditch beyond 60 metres from the point of discharge of the treated sewage.

For: **THE SOUTHLAND REGIONAL COUNCIL** on the 9 June 1993.



W J Tuckey
DIRECTOR OF PLANNING AND RESOURCE MANAGEMENT



MWH
MONTGOMERY WATSON HARZA

Southland District Council
Balfour Wastewater Treatment System
Resource Consent Application & Supporting AEE

Appendix 3: Physio-Chemical Monitoring Results

Balfour Sewerage Scheme - Plant

Environmental Monitoring

Plant Outfall

Sampling Frequency: MONTHLY

Consent No: 92186

ENS File: S122-002

SDC File: 52/4/2/4

Date sampled	Lab Ref	BOD5 g/m3	Ammoniacal N g/m3-N	TSS g/m3	pH	Temp °C	Cond mS/cm@25°C
LIMIT		Max. 30		Max. 30			
10-Jan-97	ICC	21		17			
22-Jan-97	SRC	8	3.9	10	7.1	14.5	0.230
14-Mar-97	ICC	13		10			
11-Apr-97	SRC	7	0.2	9	7.1	13.8	0.208
17-Apr-97	ICC	15		16			
12-Jun-97	ICC	31		21			
11-Jul-97	ICC	2		8			
24-Jul-97	SRC	10	2.6	14	7.2	8.0	0.225
11-Sep-97	ICC	6		9			
10-Oct-97	ICC	17		8			
11-Dec-97	ICC	15		14			
7-Jan-98	SRC	10	2.7	18	7.0	14.3	0.217
8-Jan-98	ICC	12		19			
13-Mar-98	ICC	14		6			
9-Apr-98	ICC	6		8			
22-Apr-98	SRC	7	1.7	14	6.8	11.9	0.191
11-Jun-98	ICC	5		12			
22-Jul-98	ICC	9		16			
24-Jul-98	ICC	9		10			
10-Sep-98	B2010	16		8			
9-Oct-98	B2064	16		21			
28-Oct-98	SLD982022	14	2.6	18	6.9	11.3	0.210
10-Dec-98	B2127	13		9			
14-Jan-99	B2169	31		24			
14-Jan-99	SLD990065	34	7.6	29	7.2	17.1	0.223
18-Mar-99	B2285	41		36			
8-Apr-99	B2329	19		20			
21-Apr-99	SLD991208	32		28		14.3	
2-Jun-99	B2431	2		2			
28-Jul-99	SLD992326	35		32		9.2	
1-Sep-99	B2577	5		7	6.8		
28-Oct-99	992882	16		14			
3-Nov-99	B2721	10		8			6.940
1-Dec-99	B2778	5		8			
12-Jan-00	20000091	9		13			
8-Feb-00	B2939	8		10			
1-Mar-00	B2986	80		69			
17-Apr-00	20001314	39		32			
10-May-00	B3140	19		17			
7-Jun-00	B3172	11		11			
19-Jul-00	20002364	12		12		7.0	
3-Aug-00	B3316	11		10			
6-Sep-00	B3341	12		11			
19-Oct-00	20003146	13		13		10.9	
8-Nov-00	B3548	10		13			
7-Dec-00	B3612	36		23			
5-Feb-01	B3843	27		19			
24-Jan-01	20010393	13		22			
28-Feb-01	B3848	24		16			
3-May-01	B4056	21		12			
13-Jun-01	B4129	9		7			
25-Jul-01	200112696	35		23		7.8	

Date sampled	Lab Ref	BOD5 g/m3	Ammoniacal N g/m3-N	TSS g/m3	pH	Temp °C	Cond mS/cm@25°C
8-Aug-01	B4223	5		3			
5-Sep-01	B4327	7		9			
10-Oct-01	B4422	5		21			
7-Nov-01	B4493	7		9			
5-Dec-01	B4549	11		9			
23-Jan-02	20020289	19		14		16.6	
7-Feb-02	B4730	12		9			
7-Mar-02	B4805	10		10			
7-Mar-02	20020983	8		12		15.0	
15-Apr-02	20021677	18		16			
5-Jun-02	B5011	3		7			

Balfour Sewerage Scheme - Longridge Stream

Environmental Monitoring

50m upstream and 50m downstream of outfall

Sampling Frequency: 2mths/quarter

Consent No: 92186

ENS File: S122-002

SDC File: 52/4/2/4

Date sampled	Lab Ref	DO g/m ³		D.R. P g/m ³ -P		Ammoniacal N g/m ³ -N		pH		Temp °C		Cond mS/cm@25°C	
		US	DS	US	DS	US	DS	US	DS	US	DS	US	DS
LIMIT		Min. 5						range 6.0 - 9.0		change < 3°C			
13-Dec-96								8.4	7.7			182.000	188.000
22-Jan-97	SRC	9.60	9.50		0.057	0.069	0.023	7.6	7.7	12.7	12.7	0.158	
14-Mar-97								8.3	7.6			0.182	0.211
11-Apr-97	SRC	9.30	9.40		0.110	0.048	0.050	7.1	7.1	10.4	10.4	0.158	0.158
12-Jun-97								7.8	7.7			0.204	0.181
24-Jul-97	SRC	11.50	11.60		0.037	0.032	0.033	7.2	7.2	5.4	5.3	0.169	0.170
11-Sep-97								7.3	7.3			0.197	0.188
11-Dec-97								7.5	7.4			0.203	0.208
7-Jan-98	SRC	11.30	11.70		0.180	0.016	0.014	8.3	8.2	15.9	15.9	0.179	0.180
13-Mar-98								7.3	7.2			0.187	0.197
22-Apr-98	SRC	13.00	12.60		0.140	0.012	0.560	7.9	7.8	7.6	7.8	0.169	0.169
11-Jun-98								7.6	7.6			0.174	0.183
10-Sep-98	B2010							7.3	7.3			0.169	0.172
28-Oct-98	SLD982023	10.60	10.50	0.034	0.060	0.013	0.046	7.6	7.1	12.4	12.1	0.178	0.297
10-Dec-98	B2127							7.3	7.4			0.203	0.232
14-Jan-99	SLD990066	7.60	4.20	0.230	0.630	0.081	1.500	7.7	7.2	18.3	17.9	0.218	0.222
18-Mar-99	B2285							6.8	6.6			0.270	0.258
21-Apr-99	SLD991209	10.90	10.70					7.8	7.6	12.1	12.1	0.172	0.174
2-Jun-99	B2431							7.3	7.2			0.192	0.187
28-Jul-99	SLD992327	11.70	11.80					6.9	6.9	4.8	4.8	0.172	0.173
1-Sep-99	B2577							7.5	7.5			0.184	0.179
28-Oct-99	992883	9.00	0.18	8.6				7.6	8.6			0.181	0.182
1-Dec-99	B2778							7.3	7.1			0.184	0.183
12-Jan-00	20000092	12.90	11.80					8.8	8.0	18.0	18.0	0.183	0.191
1-Mar-00	B2986							7.4	6.7			0.205	0.223
17-Apr-00	20001315	17.40	12.30					9.7	7.8	12.5	12.0	0.185	0.192
7-Jun-00	B3172							6.8	7.0			0.167	0.166
19-Jul-00	20002365	13.90	13.70					7.5	7.5	1.1	1.1	0.194	0.196
6-Sep-00	B3341							8.6	8.2			0.395	0.194
19-Oct-00	20003147	12.20	11.60					7.6	7.4	11.6	11.6	0.175	0.176
7-Dec-00	B3612							7.8	7.5			0.182	0.184
24-Jan-01	20010394	9.90	8.90					8.0	7.6	14.8	15.2	0.200	0.203

Date sampled	Lab Ref	DO g/m ³		D.R. P g/m ³ -P		Ammoniacal N g/m ³ -N		pH		Temp °C		Cond mS/cm@25°C	
		US	DS	US	DS	US	DS	US	DS	US	DS	US	DS
28-Feb-01	B3848							7.8	7.4			0.189	0.188
13-Jun-01	B4129							6.9	7.0			0.211	0.213
25-Jul-01	20012697/8	12.70	12.60					7.6	7.4	5.4	5.4	0.216	0.216
5-Sep-01	B4327							7.3	7.2			0.210	0.210
10-Oct-01	B4422							7.1	7.1			0.182	0.171
23-Jan-02	20020290/1	11.40	12.40					8.6	8.4	18.3	18.5	0.185	0.185
7-Mar-02	B4805							7.9	7.6			0.174	0.177
7-Mar-02	20020984/5	9.50	9.50					8.0	7.7	12.8	12.8	0.170	0.173
15-Apr-02	20021678/9	14.60	14.00					9.2	8.9	12.4	12.4	0.179	0.181



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Balfour Wastewater Treatment System
Resource Consent Application & Supporting AEE

Appendix 4: Aquatic Invertebrate Assessment



Aquatic Invertebrate Assessment

Results for Longridge Stream, October 2002

Prepared for

Montgomery Watson Harza

By

R.M.Thompson, BSc (Hons), PhD and B.G.Ludgate, MSc.

Ryder Consulting Ltd.

October 2002

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Introduction:

The following report describes the methods used in processing macro-invertebrate samples gathered by Montgomery Watson Harza in October 2002. Summaries of invertebrate species found and preliminary analysis and interpretation provided.

Methods:

Sample Processing and Sample Analysis:

Samples were sieved through a 600µm sieve to remove fine material and ethanol residual. Contents of the sieves were then placed in a white tray and macroinvertebrates removed. The macroinvertebrate samples were then identified under dissecting microscope (10-40X) and binocular microscopes (100-400X) using criteria from Winterbourn *et al.* (2000).

Data Analysis:

In addition to invertebrate density (number of individuals per sample) and number of taxa (different types of invertebrate groups), the Macroinvertebrate Community Index (MCI) and Semi-Quantitative MCI (SQMCI) (Stark 1993) were calculated. The MCI uses the occurrence of specific macroinvertebrate taxa to determine the level of organic enrichment in a stream.

$$\text{MCI} = \left(\frac{\sum \text{of taxa scores}}{\text{Number of scoring taxa}} \right) \times 20$$

A site score is obtained by summing the scores of individual taxa and dividing this total by the number of taxa present at the site. Taxon scores are between 1 and 10, with low scores indicating high tolerance to organic pollution and high scores indicating the taxa that will only be found in "pristine rivers" (Stark 1993). The SQMCI is similar, but scales the individual taxa scores based on how common the taxa are. A five-point scale of coded abundances is used (i.e. rare = 1-4 animals per sample, common = 5-19, abundant = 20-99, very abundant 100-499, very very abundant = >500). These metrics can be interpreted in the context of national standards and can be used to assess habitat quality (Table 1). Often a more useful approach however is to use the MCI and SQMCI to compare the

invertebrate communities upstream and downstream of an impact such as a discharge.

Table 1: *Interpretation of metrics used to assess invertebrate communities in stony streams (after Stark 1993).*

Interpretation	MCI	SQMCI
Clean water	>120	>6
Doubtful quality or possible mild pollution	100-119	5-5.99
Probably moderate pollution	80-99	4-4.99
Probable severe pollution	<80	<4

Differences between number of taxa, density, MCI and SQMCI above and below the discharge were analysed using one factor analysis of variance. In analyses of this type a 'p' value of <0.05 indicates a significant difference between the results from the different locations.

Results and Discussion:

Invertebrate densities (number per sample) were highest above the discharge, although variability was generally high (Table 2, Figure 1). Analysis of variance found that there were significantly more invertebrates in samples from above the discharge than from those below it ($F_{2,6}=7.36$, $p=0.02$, Scheffes post-hoc tests).

The number of taxa found above and below the discharge was near to the average for New Zealand rivers (14 taxa, Quinn and Hickey 1990) (Table 2). There was no evidence for lower numbers of taxa below the discharge ($F_{2,6}=0.43$, $p=0.67$), with the lowest number of taxa found at a control location (C2) and at two locations twenty metres below the discharge (Table 2, Figure 1). The third sample from twenty metres below the discharge had the highest number of taxa.

Table 2. Number of invertebrates per sample found in samples taken from Longridge Stream in October 2002. Samples marked C# are from upstream of the Balfour sewage treatment plant discharge, while those marked 20T# and 100T# are from 20 and 100 metres downstream of the discharge respectively.

TAXON	MCI score	C1	C2	C3	20 T1	20 T2	20 T3	100 T1	100 T2	100 T3
COLEOPTERA										
Elmidae	6	445	270	273	190	112	144	99	122	86
CRUSTACEA										
Ostracoda	3	1					2	3		2
<i>Phreatoicus typicus</i>	5						1	1		
DIPTERA										
<i>Aphrophila</i> species	5	3				2	2	8	4	4
<i>Austrosimulium</i> species	3	3	3	1	2	1	1		1	
Chironomidae	2	16	6	10	25	64	34	39	10	27
EPHEMEROPTERA										
<i>Deleatidium</i> species	8	102	48	149	58	74	92	84	61	48
MEGALOPTERA										
<i>Archichauliodes diversus</i>	7				1					
MOLLUSCA										
<i>Physa</i> species	3	1					2	1	2	
<i>Potamopyrgus antipodarum</i>	4	147	173	467	23	38	104	224	179	218
<i>Sphaerium novaezelandiae</i>	3	1		1						
OLIGOCHAETA	1	3	2	2	15	6	3	8	4	5
TRICHOPTERA										
<i>Aoteapsyche</i> species	4			3				1	1	
<i>Hudsonema amabile</i>	6	1	1	1			1	3	2	3
<i>Hydrobiosis umbripennis</i> group	5	4	2	9	1	6	4	8	3	1
<i>Psilochorema</i> species	8		1	4	1	2	8	4	2	2
Number of invertebrates		727	506	920	316	305	398	483	391	396
Number of taxa		12	9	11	9	9	13	13	12	10
MCI		82	96	91	98	93	91	92	92	96
SQMCI		5.9	5.2	5.9	5.4	5.4	5.0	4.4	5.2	4.4
Average MCI			89			94			93	
Average SQMCI			5.6			5.2			4.7	

The invertebrate community was numerically dominated by the common mayfly *Deleatidium*, riffle beetles (Elmidae) and pond snails (*Potamopyrgus antipodarum*) at all locations. Chironomids were also common, and were particularly abundant twenty metres below the discharge. Communities of this type are typical of those found in stony streams in Southland (Southland Regional Council 1999), and contain members of a generalist core of species which are present in New Zealand streams unless conditions are particularly extreme (Harding and Winterbourn 1995). A variety of other taxa were present, but were rarely common.

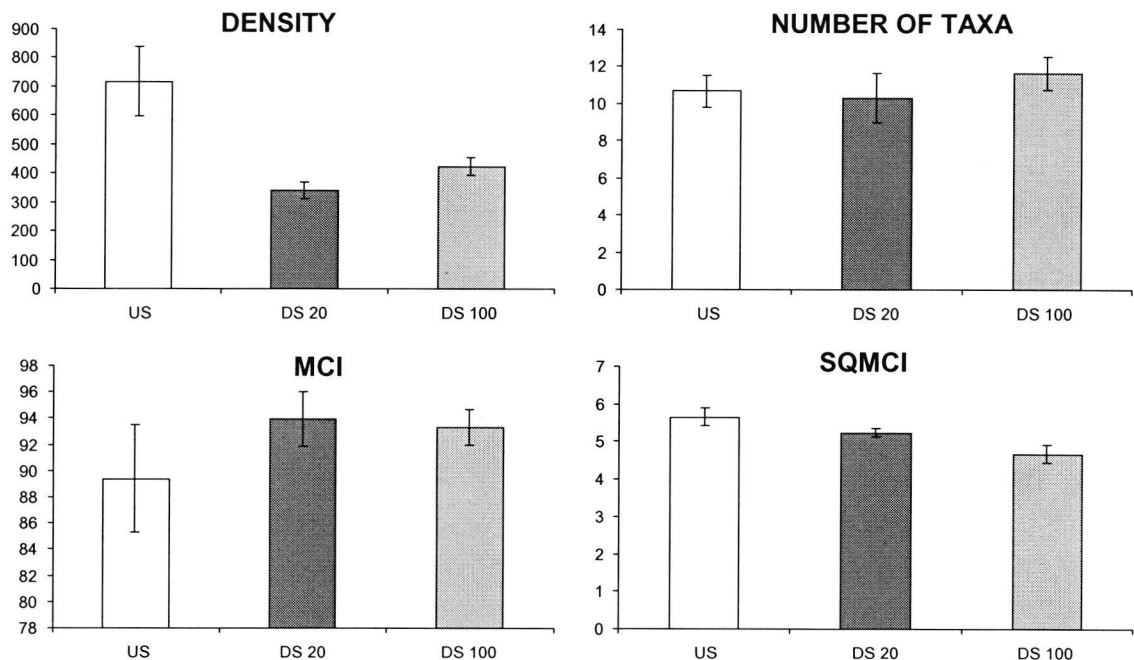


Figure 1: Values for invertebrate metrics from sites on Longridge Stream above (US) and downstream 20 metres (DS 20) and 100 metres (DS 100) of the Balfour sewage treatment plant discharge.

Most of the species present had intermediate MCI scores, although high scoring taxa (*Deleatidium*, *Psilochorema* spp.) and low scoring taxa (chironomids and oligochaetes) were also present (Table 2). MCI scores indicated probable moderate pollution (Table 1), consistent with slight eutrophication at all of the locations. MCI scores were no different between the control and the downstream sites ($F_{2,6}=0.81$, $p=0.49$) (Figure 1). SQMCI scores were lower downstream (Figure 1), with significantly lower scores moving from the Control to the 20m site

and from the 20m site to the 100m site (Figure 1) ($F_{2,6}=5.62$, $p=0.04$, Scheffes post-hoc test). This decline appears to be largely due to the increased density of low scoring taxa (particularly chironomids) and lower numbers of *Deleatidium*, which is high scoring. These results are consistent with a mild eutrophication effect. However the persistence of taxa which are intolerant of poor quality habitat (e.g. *Psilochorema* and *Deleatidium*) downstream of the discharge suggests that any effect is relatively minor.

There is some evidence for a mild effect of the Balfour sewage treatment plant discharge on the invertebrate community of Longridge Stream. This effect is largely reflected in decreased densities of invertebrates overall, but an increase in the proportion that are tolerant of lower quality habitat. However the persistence downstream of even relatively sensitive invertebrates suggests that the effect is relatively minor.

References:

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Stark, J.D. 1993: Performance of the Macroinvertebrate Community Index: effects of sampling method, sample replication, water depth, current velocity, and substratum on index values. *New Zealand Journal of Marine and Freshwater Research* **27**: 463-478.

Winterbourn, M.J., Gregson, K.L.D. and Dolphin, C.H. 2000: Guide to the aquatic insects of New Zealand. *Bulletin of the Entomological Society of New Zealand* **13**.



Appendix 5: Water Quality Standards for Class D Waters

The quality of Class D waters shall conform to the following requirements:

- a) The natural water temperature shall not be changed by more than 3 degrees Celsius.
- b) The acidity or alkalinity of the waters as measured by the pH shall be within the range of 6.0 to 9.0 except when due to natural causes.
- c) The waters shall not be tainted so as to make them unpalatable, nor contain toxic substances to the extent that they are unsafe for consumption by farm animals, nor shall they emit objectionable odours.
- d) There shall be no destruction of natural aquatic life by reason of a concentration of toxic substances.
- e) The natural colour and clarity of the waters shall not be changed to a conspicuous extent.
- f) The oxygen content in solution in the waters shall not be reduced below 5 milligrams per litre.

Appendix 6 Water Quality Standards - Rule 2 of the Proposed Regional Fresh Water Plan for Southland

Water quality shall be managed to meet the standards listed below, after reasonable mixing of any contaminant or water within the receiving water and disregarding the effect of any natural perturbations that may affect the water body:

1. The water shall not be altered in those characteristics that have a direct bearing upon cultural or spiritual values.
2. No deterioration to existing trophic state.
3. Temperature of the waters shall not be changed by more than 2°C or altered to exceed 20°C daily maximum temperature.
4. There shall be no measurable pH change and/or discharge of a contaminant into water that results in a loss of biological diversity or a change in community composition.
5. There shall be no desirable biological growths, including sewage fungus or excessive filamentous green algae.
6. Oxygen in solution in waters shall not be reduced below 9.5 mg/l.
7. Visual clarity shall not be decreased by more than 20% and turbidity shall not increase by more than 20%.
8. The water shall not be rendered unsuitable for bathing by the presence of contaminants and indicators of health risk should not increase by more than 20%.
9. Fish and other aquatic organisms shall not be rendered unsuitable for human consumption by the presence of bacteriological or chemical contaminants.
10. Waters and bed sediments shall not contain contaminants at levels that would potentially harm humans, domestic animals, including stock, or aquatic life.
11. Waters shall not emit any objectionable odours.

Appendix C

Monitoring Data

Balfour Wastewater Laboratory Results-2018 to Date

	Units	mg/L	mg/L	uS/cm	mg/L	mg/L	pH Unit	mg/L	mg/L	mg/L	mg/L	NTU	MPN/100mL
Discharge	Date	AN	CBOD5	Conductivity	DO	DRP	pH	TN	TON	TP	TSS	Turbidity	E-coli
	24/01/2018	8.3	<24	328	1.2		7.19	17		2.4	40	2.0	2400000
	18/06/2018	2.8	6.6	208	7.9		6.85	9.4		0.66	6.2	4.1	66000
	22/03/2019	3.5	7.4	235	4.8			9.6		0.91	9.4	4.0	55000
	13/06/2019	2	6	205	6.8			12		0.61	7.8	8.5	6800
	9/06/2020	3.2	6.7	228	5.7		7.23	12		1.7	5.5	7.0	79000
	24/06/2021	2.4	11	224	6.9			11		0.84	9.7	3.3	82000
	1/02/2022	4.3	<6	286	4			12		1.3	9.9	2.8	190000
	10/03/2022	2.5	11	214	4.6		6.98	8.9		0.89	11	6.0	99000
	14/06/2022	3.4	11	215	6.4		7.01	9.6		0.88	10	19.0	240000
	20/3/2023	7.5	10	298	1.3		7.08	12		1.8			110000

Ditch	Date	AN	CBOD5	Conductivity	DO	DRP	pH	TN	TON	TP	TSS	Turbidity	E-coli
	24/01/2018	8.6	<6	250	<0.5		6.61	8.9		4.5	33	2.2	97
	18/06/2018	0.02	<2.0	194	1.9		6.45	4.1		0.19	<5.0	3.2	31
	22/03/2019	4.4	<2.0	240	10.7			5.6		2	6.3	5.1	41
	13/06/2019	0.03	<2.0	172	2.9			4		0.13	7.6	8.7	20
	9/06/2020	2	<2.0	212	4.5		7.07	4.4		0.35	6.4	6.5	1800
	24/06/2021	0.33	<2.0	198	3.6			4.6		0.34	<2.5	3	<10
	1/02/2022	1.4	4.7	206	10.7			4.1		1.1	19	3.7	580
	10/03/2022	0.26	<4.0	216	4.6		7.38	1.7		0.18	<2.5	4.8	560
	14/06/2022	0.73	<2.0	173	7.2		6.65	3.8		0.23	5	19	4100
	20/3/2023	4.4	<2.0	249	1.9		6.84	5.6		1.6			41

Upstream	Date	AN	CBOD5	Conductivity	DO	DRP	pH	TN	TON	TP	TSS	Turbidity	E-coli
	24/01/2018	0.04	<2.0	209	2	0.17	6.98		<0.01		40	2	620
	18/06/2018	0.04	<2.0	242	11	0.023	7.16		8.1		6.2	4.1	86
	22/03/2019	0.1	<2.0	200	4.6	0.13	7.24		0.36		9.4	4	440
	13/06/2019	0.06	<2.0	238	9.8	0.02	7.04		5.5		7.8	8.5	340
	9/06/2020	0.04	<2.0	220	10.4	0.035	7.25		5.6		5.5	7	560
	24/06/2021	0.04	<2.0	239	10.2	0.032	7.16		2.4		9.7	3.3	150
	1/02/2022	0.3	<2.0	231	8	0.17	7.39		1.7		9.9	2.8	610
	10/03/2022	4.5	>8.4	237	2.7	0.75	7.06		0.37		11	6	1000
	14/06/2022	0.1	2.1	227	11.5	0.075	6.92		5.7		10	19	2100
	20/3/2023	0.03	<2.0	256	5.8	0.072	7.33		0.66		<6.8	1.4	310

Downstream	Date	AN	CBOD5	Conductivity	DO	DRP	pH	TN	TON	TP	TSS	Turbidity	E-coli
	24/01/2018	1.8	2.2	217	3.3	0.54	6.9		0.05		33	2.2	31
	18/06/2018	0.05	<2.0	244	10.7	0.024	7.14		4.9		<5.0	3.2	210
	22/03/2019	0.51	<2.0	207	5.1	0.28	7.15		0.47		6.3	5.1	360
	13/06/2019	0.06	<2.0	234	10.7	0.024	7.01		5.4		7.6	8.7	360
	9/06/2020	0.06	<2.0	219	9.8	0.026	7.26		5.5		6.4	6.5	560
	24/06/2021	0.04	<2.0	238	13.3	0.033	7.21		3.1		<2.5	3	74
	1/02/2022	0.44	<2.0	217	14.3	0.4	9.03		1.7		19	3.7	530
	10/03/2022	0.57	<2.0	218	5.3	0.12	7.24		0.28		<2.5	4.8	1700
	14/06/2022	0.1	2	226	10.5	0.25	6.9		5.5		5	19	2600
	20/3/2023	1.5	<2.0	249	3.4	0.34	7.09		0.87		19	3.4	770



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