

Your ref: APP-20232970
Our ref: 12553730

24 May 2023

Ryan Hodgson
Southland District Council
Cnr Price St & North Rd
Invercargill
9840

APP-20232970 – Edendale - Wyndham WWTP Section 92 Response

Dear Ryan,

In response to your email dated 27 March 2023, which requested further information in accordance with Section 92 of the Resource Management Act, 1991.

I appreciate the opportunity to provide the requested information and address the questions you had regarding the Edendale Wyndham WWTP and to obtain a better understanding of the potential effects.

In compliance with Section 92 of the Resource Management Act, I hereby provide the requested information and address each point raised in your request as follows:

1. Policy and Rule Assessments

Question 1:

Please provide either:

- I. a complete and thorough explanation along with supporting evidence that confirms existing water quality of the Mataura River upstream of the discharge meets water quality standards in accordance with Policy 15A of the pSWLP and Rule 1 of the RWP. Or;
- II. please confirm that water quality standards are not met and provide an assessment against rule 2 (RWP) and/or Policy 15B (pSWLP).

I am requesting this information to confirm whether rule 1 or 2 applies in the RWP and whether Policy 15A or 15B applies in the pSWLP. It is also worth noting that the application suggests upstream water quality standards are not always met as *E. Coli* data results sometimes exceeds 1,000 MPN/100mL. This suggests that at the very least, policy 15B (pSWLP) applies and not policy 15A (pSWLP).

It has been determined that the discharge meets water quality standards. As such, Rule 1 of the RWP has been assessed which relates to Discharges to surface water bodies that meet water quality standards.

“Except as provided for elsewhere in this Plan or in any other Southland Regional Council regional plan, the discharge of any:

- a. *contaminant or water into a surface water body; or*
- b. *contaminant onto or into land in circumstances where it may enter a surface water body*

is a discretionary activity provided the following condition is met:

- i. the discharge does not reduce the water quality below any standards set for the relevant water body in Appendix G “Water Quality Standards” after reasonable mixing.”

The discharge of any contaminants or water into a surface water body is considered a discretionary activity as the discharge does not exceed Water Quality Standards. Appendix 8 of the RWP sets out the Receiving Water Quality Standards for the Mataura 3. The Appendix specifically states in the introduction section that these standards apply to the effects of discharges following reasonable mixing with the receiving waters, unless otherwise stated. As such, the assessment against Rule 1 must consider if the discharge reduces water quality standards after reasonable mixing and is not based on whether existing water quality upstream of the discharge point meets water quality standards. If this was the case, it would be meaningless in assessing the rule framework as any proposed activities would be classified non-compliant by default if the water quality standards at any point in a water body were already exceeded.

In terms of assessing Rule 1 of the RWP, assessing water quality upstream of the discharge is not relevant to determine if water quality standards are met for the waterbody. The assessment should be based on the effects of discharges following reasonable mixing with the receiving waters to determine if water quality standards for the Mataura 3 will be exceeded. Based on Figure 1, the E. coli counts upstream and downstream of the discharge point generally follow similar trends. The contribution of the discharge volume relative to the flow in the Mataura River will result in immeasurable effects on water quality following reasonable mixing with the receiving waters. The effects of the discharge will therefore not cause an exceedance of the Mataura 3 Water Quality Standards for E.coli. Refer to the response to Question 6 for more detail.

Based on the above assessment, the discharge of contaminants into surface water from a community sewage scheme pursuant to Rule 1 of the RWPS is a discretionary activity. The application for resource consent is therefore assessed against policy 15A of the pSWLP requiring water quality is maintained. Its noted that water quality below the zone of reasonable mixing meets water quality standards for E.coli and will be maintained over the next 5 year period. The application demonstrated that the adverse effects of the discharge are mitigated to reduce concentration loads as the current consented limit of 6,000MPN/100ml will be reduced to 1,000MPN/100ml based on an average count.

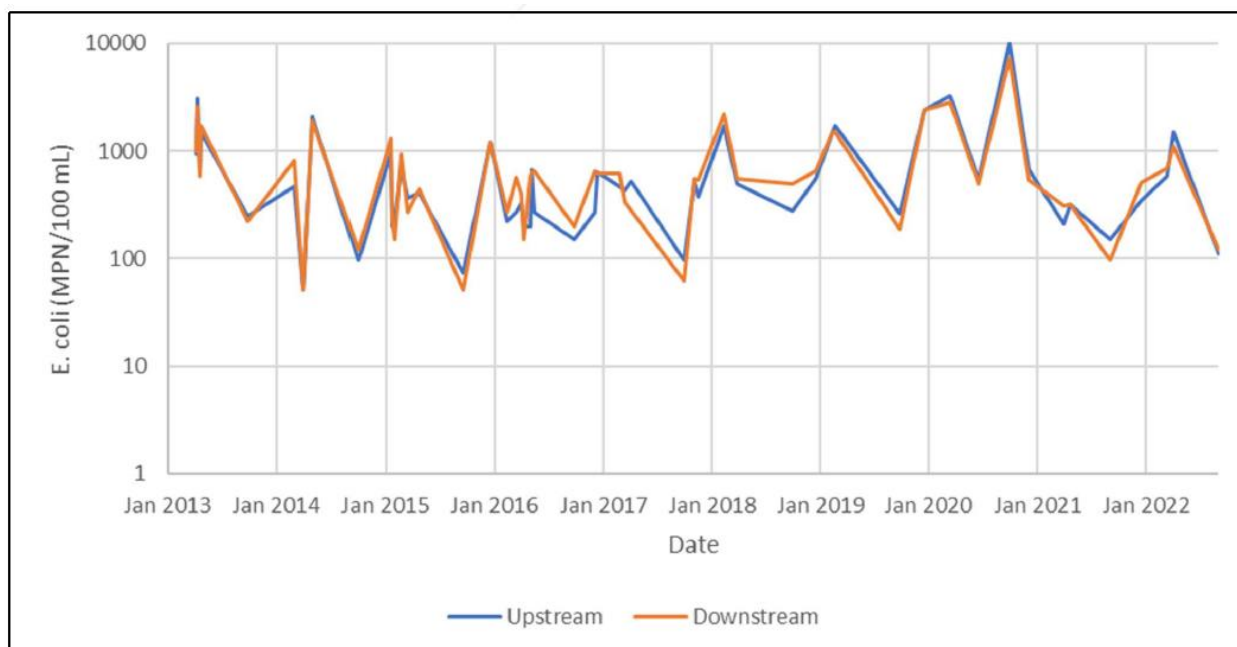


Figure 1 Upstream – Downstream E.coli in Mataura River

Question 2:

Please provide an updated rule assessment against rules 1 or 2 of the Regional Water Plan (RWP) or provide a replacement application document with the correct rule references.

I am requesting this information because rule 2(b) only applies to the discharge from Alliance Lorneville plant to the Makarewa River.

The application for resource consent stated that a discharge permit for the discharge of contaminants into surface water from a community sewage scheme is sought pursuant to Rule 2 of the RWPS as a discretionary activity. Based on the assessment provided above in relation to Question 1, it has been determined that the proposal will infact comply with Rule 1 of the RWP as a discretionary activity. This is because the effects of the discharge do not reduce the water quality below the water quality standards set for the relevant water body in Appendix G below the mixing zone.

The rules assessment in Section 4.1 of the Resource Consent Application dated 9 March 2023 is to be updated and replaced by this response. Resource consent is therefore sought for the following activity under the RWP:

- Discharge permit for the discharge of contaminants into surface water from a community sewage scheme pursuant to Rule 1 of the RWPS as a discretionary activity.

Question 3:

Please provide justification with supporting legal evidence/case law for why the activity should be classified as a discretionary activity under the RWP and not a Non-Complying activity under the pSWLP.

I am requesting this information because prioritizing the discretionary status under the operative plan over the Non-Complying status under rule 33A in the pSWLP conflicts with section 87A(5) of the RMA.

Section 87A of the RMA typically describes different classes of activities under the RMA, regulations (including a national environmental standard), a plan, or a proposed plan. Subpart 7 of the RMA relates to the legal effects of rules and how to determine the activity status. Sections 86B to 86G therefore specifies when a rule in a proposed plan has legal effect and when it can be treated as partially operative or operative.

Rules in plan changes have legal effect at different points in time under section 86B of the RMA. The most common time is when a decision on submissions on the proposed rules is made and publicly notified under clause 10(4) of Schedule 1. However, pursuant to Section 86B(3), a rule in a proposed plan has immediate legal effect if the rule protects or relates to water, air, or soil. As such, Rule 33A in the pSWLP has immediate legal effect. As such, the application must be considered against the operative and proposed plan changes.

Rule 33A in the pSWLP is currently under appeal and referred to the Environment Court (ENV-2018-CHC-31). The notice of appeal was made on 16 May 2018 between Gore District Council, Southland District Council and Invercargill City Council (Territorial Authorities) and Southland Regional Council (Environment Southland). The appeal was against the proposed plan classifying all discharges to water from a community sewage scheme as noncomplying activities.

The relief sought by the appellant was to rather differentiate between treated and untreated sewage as they have different environmental effects on the environment. As such the proposed plan should insert a new sub rule classifying that the discharge of treated effluent from a community sewage scheme into water in a river, lake, artificial watercourse, modified watercourse or natural wetland as a **discretionary activity**. It was noted that the differentiation would better implement the relevant objectives and policies of the pSWLP.

Rule 33A in the pSWLP is still under appeal and has not yet been resolved by the Environment Court. The activity status has been weighed against the operative and proposed plans and matters set out under Section 104 of the RMA. Based on my assessment I considered that the discretionary activity status outweighs that of non-complying activity status. This is because the proposed activity is aligned with the objectives and policies of the pSWLP as the current discharge is treated and will maintain water quality.

The activity must therefore be treated under the status of the operative rule as a **discretionary activity**.

2. Reasonable Mixing Zone

Question 4:

Please either:

- I. justify how 425m can be considered as the reasonable mixing zone given the definition for the 'reasonable mixing zone' in the pSWLP limits it to a maximum of 200m (note that (d) in the definition enables a distance to be determined through a resource consent process having regard to (a) to (c) of the definition). Or;
- II. adjust the proposal to incorporate the parameters of the mixing zone in accordance with the definition of the 'reasonable mixing zone' in the pSWLP.

I am requesting this information because that application did not indicate how the proposed mixing zone has been determined according to the definition of the reasonable mixing zone in the pSWLP. If, in response to this question, the mixing zone is reduced, please update the AEE accordingly.

The zone of reasonable mixing applied for in the original resource consent application was initially 300m downstream of the Edendale Wyndham Bridge. Fonterra already held a discharge permit at this stage, which had set the mixing zone at 400m below their effluent outfall extending beyond the bridge. Given the overlap between the respective mixing zones, the mixing zone for SDC was subsequently consented at 425m downstream of the Edendale Wyndham Bridge. This was to accommodate the overlap between Fonterra and SDC in order to allow for reasonable mixing to measure against the water quality standards.

The renewal application did not propose any changes to the consented distance of the mixing zone downstream of the discharge point, as this was purposefully established to accommodate the overlap between Fonterra and SDC mixing downstream of the bridge. It's noted that Fonterra has recently applied to renew their existing resource consent to discharge into the Mataura River. The renewal application (APP-20222742) furthermore proposed a mixing zone of 200m, giving effect to mixing zone regulations proposed in the pSWLP (i.e., ≤200 m length). This means there will be no overlap of mixing zones with SDC.

Given the proposed reduction in Fonterra's mixing zone, SDC is also able to reduce the existing mixing zone in accordance with the definition of the 'reasonable mixing zone' in the pSWLP. As such, SDC proposes to amend the application to accommodate a mixing zone of 200m downstream of the Edendale – Wyndham Bridge in the Mataura River. Given the high flow in the Mataura River relative to the small contribution of wastewater discharged, the proposal will continue to meet water quality standards for Mataura 3 beyond the zone of reasonable mixing.

Refer to the additional assessment in Question 6, justifying why the wastewater discharge, in particular E.coli, does not contribute significantly to the overall concentrations of water quality in the Mataura River. This is also the case for other contaminants of concern in the Mataura River as the discharge is not expected to have any measurable impact on the instream concentration beyond the zone of mixing. The proposed mixing zone of 200m downstream of the bridge is considered reasonable to give effect to the pSWLP definitions and will be consistent with the policy direction.

3. Water Quality Assessment

Question 5:

Explain along with supporting evidence that demonstrates how the proposed discharge will meet the National Objectives Framework of the National Policy Statement for Freshwater Management 2020 (NPS-FM), and how it will maintain or improve water quality in accordance with subpart 3.24 of the NPS-FM, policies 3, 5 and 13 of the NPS-FM 2020, and Policy 15A/15B of the pSWLP.

I am requesting this information because the application did not adequately address how these policies are being met now and in the future and how water quality will be maintained or improved given the proposed increasing discharge rates and contaminant loads.

The receiving environment within the vicinity of the discharge is classified as Lowland Soft Bed in accordance with the relevant planning framework. The attribute state (as defined by Environment Southland (2019)¹ and relevant maximum NPS-FM values associated with these attribute states is outlined in Table 1.

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

Parameter	Desired Attribute State ²	Meeting attribute state	Units	Statistic	Number of Data Points used in Calculation	Maximum Value to Achieve Attribute State	Upstream Actual	Downstream Actual
Ammoniacal** N	C	yes	g/m ³	Annual Median	5	<=1.3	0.04	0.03
Ammoniacal** N	C	yes	g/m ³	Annual Maximum	5	<=2.2	0.118	0.122
Nitrate N*	C	yes	g/m ³	Annual Median	5	<=6.9	1.0	1.0
Nitrate N*	C	yes	g/m ³	Annual 95 th ile	5	<=9.8	1.5	1.5
E. Coli*	B	no	cfu/100 mL	Median (5 years)	24	<=130	510	540
E. Coli*	B	no	cfu/100 mL	95 th Percentile (5 years)	24	<=1000	3300	2800
DO	A	yes	°C	7 day mean minimum (1 Nov – 30 th April)	NA	>=8	#	#
DO	A	yes	°C	1 day mean minimum (1 Nov – 30 th April)	3	>=7.5	7.6	8.1

*Attribute state should be determined by using a minimum of 60 samples over a maximum of 5 years (the calculated value is based on only 24 distinct samples over the last five years)

**Calculated values not adjusted for pH equivalence

#Insufficient data to calculate

Shaded cells indicate non compliance with required attribute state

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

Based on the data presented in Table 1, ammoniacal N, Nitrate and DO and Nitrate are meeting the draft attribute states for lowland soft bed rivers in the upstream and downstream sampling locations as defined in the Environment Southland Developing Draft Freshwater Objectives for Southland, with the exception of E.coli. Based on the sampling undertaken upstream and downstream of the discharge point (refer to Figure 1), the E.coli counts are quite similar when considering trends over time. Based on the above, and the small overall influence of the treated wastewater discharge (in terms of volume) on the receiving environment (Refer to Question 6), it is unlikely that the WWTP discharge (current and/or proposed) is significantly impacting receiving environment water quality. With the installation of the proposed filtrations system the expectation is that the quality of the discharge will improve prior to discharging to the Mataura River. The proposal also

¹ Environment Southland. Developing Draft Freshwater Objectives for Southland. Technical Report September 2019/

provides discharge limits in relation to E.coli counts of 1,000 MPN/100ml. This is a significant improvement compared with the existing discharge permit authorising an E.coli count of 6,000MPN/100ml in the wastewater.

When considering the overall desired state for low land soft bed rivers in southland, the Mataura River in its current state does not meet all of the desired National Objective Framework attributes for rivers. Based on the assessment, the Mataura River (at the upstream and downstream locations) will likely be classified an “E” attribute band given the high recorded counts of Ecoli.

National Objective Framework

When considering a resource consent application, the consent authority must have regard to any relevant provisions of a national policy statement or any other matter considered relevant and reasonably necessary to determine the application. The National Objectives Framework of the National Policy Statement for Freshwater Management 2020 (NPS-FM) sets national bottom lines which is more restrictive than the currently water quality limits in the operative and proposed plan changes. Council must amend existing planning frameworks to give effect to the NPS-FM 2020 and must be publicly notified by no later than 31 December 2024.

Subpart 3.24 of the NPS-FM is part of the National Objectives Framework (NOF) and sets out specific requirements for council to included and implement in regional plans to ultimately protect rivers within their regions. This subpart specifically requires that the loss or river extent and values is avoided, unless there is a functional need for the activity in that location or the effects are managed by applying the effects management hierarchy. The RWP and pSWLP does not give effect to the subclause, however Section 104 of the RMA requires council to have regards to relevant provisions of a National Policy Statement. Given this requirement under Section 92 of the RMA, we have assessed the NOF by having regards to the provisions.

The continuation of the wastewater discharge to the Mataura River does contribute contaminant mass to an extent that impacts overall water quality and ecological values (refer Question 6 and 9). There are various other discharges upstream of the wastewater outfall at Edendale – Wyndham bridge that contribute to the cumulative loading of the river, however, the contribution of treated wastewater from the Edendale / Wyndham WWTP relative to the flow of the Mataura River is considered negligible. As such, given the nature of the discharge, there is a potential risk that river values may be impacted when considering cumulative effects of the discharge which cannot be avoided in the short term.

Where proposed activities have an impact and the effects cannot be avoided, the council may consider if there is a functional need for the activity. Functional need is defined by the NPS-FM as the need for a proposal or activity to traverse, locate or operate in a particular environment because the activity can only occur in that environment. The purpose of the short-term consent is to allow the discharge to continue over the next five years while SDC finds an alternative solution to upgrade and improve the overall performance of the WWTP. As part of this process, alternative disposal methods and locations are also being considered. At this stage the discharge activity can only occur in the current environment until an alternative solution can be implemented.

Based on the assessment above, there is a functional need for the Edendale – Wyndham discharge to the Mataura River over the course of the next five-year period. In addition to the above, the proposal is in accordance with the effects management hierarchy. As previously mentioned, the adverse effects cannot be avoided as there is a functional need to continue the discharge in the short term. The water quality assessment concluded that the discharge would continue to meet Water quality Standards. Given the scale and significance of the effects, there is no further need for any remediation, offsetting or compensation to manage adverse effects.

National Policy Statement

The policies referenced in the Section 92 generally applies to the following:

- management of freshwater in an integrated way that considers the whole catchment including the effects on the receiving environment;
- management of the activities through a NOF to ensure degraded waterbodies are improved and all water bodies are maintained ; and

- the condition of waterbodies and freshwater ecosystems is monitored over time and action is taken where freshwater is degraded and to reverse deteriorating trends.

As previously mentioned, the effects of the discharge following reasonable mixing with the receiving waters meets the water quality standards. The assessment in Question 6 furthermore demonstrates that the proposed increase in discharge volume is not expected to result in an increase in mass load to the receiving environment. As such, there is not expected to be a measurable impact on instream ecology and aquatic organisms as a result of this increased discharge. In addition, the proposal also meets the requirements set out under the Water Conservation Order for the Mataura River. Adhering to both these standards ensures that water quality is managed in an integrated manner at a regional and national level when considering the wider catchment and the receiving environment.

Environment Southland is developing Freshwater Objectives for rivers in Southland in order to give effect to the NPS-FM by 31 December 2024. At this point in time the freshwater objectives have not been given effect to under the regional planning framework. As such, the proposal has had regards to the NOF and will ensure that the Mataura River maintains water quality downstream of the discharge point. As previously mentioned, the discharge volume in combination with the proposed increase, will result in an immeasurable impact on the Mataura River. SDC is committed to continue monitoring the condition of the Mataura River. The existing consent requires that SDC will survey macroinvertebrate fauna and periphyton in the receiving water. This will also be continued as part of the new consent monitoring regime which will be reported to ES.

Based on the above assessment, it has been demonstrated that the discharge in the short term period will be consistent with the policies of the NPS-FM.

Proposed Southland Land and Water Plan

The policies referenced in the Section 92 request generally apply to the following:

- Policy 15A - Maintain water quality where standards are met; and
- Policy 15B - Improve water quality where standards are not met.

In this instance, Policy 15A of the pSLWP would apply to the proposal, which is not to ensure water quality is maintained. The water quality standards apply to the effects of discharges following reasonable mixing with the receiving waters. The proposed discharge of wastewater, in combination with the proposed increase, will continue to meet the standards as demonstrated in previously. The application is for a replacement of an expiring discharge permit and the following measures have been proposed to avoid, remedy or mitigate adverse effects to ensure water quality standards will continue to be met:

- The discharge permit will limit the discharge volume at an average daily flow of 450 m³ / day and a maximum daily rate of 700 m³ / day
- Water quality beyond the mixing zone (200m downstream) shall meet the water quality standards for the Mataura 3 River and WCO for Mataura River.
- Monitoring macroinvertebrate fauna and periphyton in the receiving water to ensure compliance with Mataura 3 water quality standards beyond the mixing zone.
- Continuous monitoring of system performance to ensure discharge limits in terms of BOD₅, Suspended Solids, Dissolved Reactive Phosphorus, Ammonia and E.Coli does not deteriorate.
- Implementation of the O&M Plan to ensure operational and management procedures are in accordance with best practices and the scheme is operating to achieve intended performance rate.

There is a functional need for the discharge to continue over the course of the next 5 year period until a solution is finalised by SDC to improve and upgrade the Edendale – Wyndham WWTP. The discharge cannot be avoided in the interim period as there are no alternative discharge options or treatment facilities within proximity to Edendale and Wyndham communities. Transferring the wastewater to a different location to undergo treatment will take significant time and resource. The mitigation measures proposed are considered adequate to maintain water quality in the Mataura River over the next five years until a final solution can be implemented by SDC. The options going forward will see overall improvement in the performance of the existing Edendale – Wyndham WWTP.

Based on the above assessment, it has been demonstrated that the discharge in the short term period will be consistent with the policies of the pSLWP.

Question 6:

Please either:

- I. provide a complete and thorough explanation along with supporting evidence that confirms contaminant loads in the Mataura River will not increase despite the proposed 70% increase in the proposed discharge from the current consented discharge volume (450m³/day compared to 264m³/day average daily flow). Or;
- II. confirm that contaminant loads will increase downstream and justify why this is acceptable according to the relevant policies and direction of the pSWLP and NPS-FM to reduce contaminant loads in degraded water bodies, with particular regard given to E. Coli loads.

I am requesting this information because paragraph 2 of section 5.2.1 in the application states that contaminant concentrations and contaminant loadings show not obvious change. However, evidence with regard to contaminant 'loadings' were not present in the application. Furthermore, the condition of the Toetoes estuary downstream of the discharge may further deteriorate as a result in any increase in contaminant loadings.

The current maximum consented discharge E.Coli load based on an average count of 6,000 MPN/100 mL and a maximum discharge volume of 264 m³/day is 1,584,000 n/day. Based on the proposed consented average limit of 1,000 MPN/100 mL and average discharge volume of 450m³/day, the maximum potential daily loading limit reduces to 450,000 n/day – a threefold decrease compared to the current potential load (Table 2). This will ensure that the proposed discharge will not result in increased loading and/or further degrade the receiving environment relative to its current state.

The total contribution of the discharge flow at 450 m³/day is considered insignificant in terms of the receiving environment and would account for <0.01 % of the average flow within the Mataura River at the point of discharge. Upstream E.Coli counts are often elevated above the limits outlined in pSWLP (E.Coli limit of 1,000 MPN/100 mL). Based on the very small proportion (of WWTP discharge) relative to the river flow and proposed consented discharge limits below recorded E.Coli counts upstream of the discharge, the discharge will not impact the water quality (in terms of E.Coli) within the receiving environment.

Table 2 Calculated E.Coli Loading

	Average E.Coli limit (Average over 4 consecutive Samples)	Average Discharge Volume	Maximum average total E.Coli Daily Load
	MPN/100 mL	m ³ /day	n/day
Consented Average	6,000	264 (actual: 422)	1,584,000
Proposed	1,000	450	450,000

Other discharged contaminants are not considered to be significantly elevated within the receiving environment (in relation to the standards as defined in the pSWLP) and the continuation to the discharge is not expected to have a measurable impact on the instream concentration beyond the zone of mixing. The effect on the receiving water quality due to the proposed discharge is illustrated by undertaking a mass balance on the proposed discharge (at maximum discharge volumes and compliance limits) and current upstream water quality (averaged monitoring data between September 2017 and September 2022). As is illustrated in Table 3, the effect of the proposed discharge on the downstream water quality (assuming average flows since September 2017) is not noticeable within the mass balance calculation with the calculated downstream concentrations matching the up-stream concentrations.

Table 3 Mass Balance Calculation

Parameter	Units	Upstream	Discharge	Downstream
Volume	m ³ /day	5,738,200	450	5,738,650
TSS	g/m ³	11	70	11

Parameter	Units	Upstream	Discharge	Downstream
DRP	g/m ³	0.1	4.0	0.1
Ammoniacal N	g/m ³	0.05	15.0	0.05
Total Nitrogen*	g/m ³	1.2	30.5	1.2
E. Coli	cfu/100 mL	1468	1000	1468
Temperature*	°C	14	15	14

4. Monitoring of Wastewater

Question 7:

Please justify why the discharge volume should be measured prior to entry into the wastewater treatment system rather than just prior to discharging into the Mataura River, or as it leaves the wastewater treatment system.

I am requesting this information because I believe there is potential for there to be a discrepancy in the actual volume discharged into the river and the volume that goes into the wastewater treatment system through possible system leaks, infiltrations, or any other reason.

From the site visit conducted in August 2022, it is understood that the discharge flowmeter (adjacent to the UV disinfection) has been out of service for an extended period even before Southland District Council took back the operation and maintenance responsibilities in mid-2021. Hence, for the purpose of the technical assessments completed to-date, the flowmeter upstream of the vermiculture beds has been used to approximate the discharge volume.

There is minimal water loss or gain in the vermiculture beds and the effluent tank, at most rainwater may only increase the discharge volume slightly due to the beds and the effluent tank (total surface area ~ 1500 m²), e.g. 20mm rainfall would at most add 30 m³/day. Moreover, site stormwater does not drain into the effluent pump station. As such, having the wastewater measured prior to entry into the wastewater would be considered reasonable in the interim period given the circumstances and potential for slight increase in overall wastewater volumes treated. This slight change in volume would not impact compliance with the proposed daily and average limits.

It is anticipated that the future plant augmentation work will result in a flowmeter replacement in a suitable location, hence the new flowmeter will monitor the discharge volume directly in future post treatment. The flowmeter will be installed within 12 months following grant of consent.

5. Consent and discharge limits

Question 8:

Please explain how E.Coli and DRP will remain within the proposed consented limits given previous exceedances and/or provide any mitigations that could be used to reduce these instances and provide an indication of expected frequency of any exceedances.

I am requesting this information in order to understand whether the activity will be able to meet the proposed consent conditions and whether the proposed consent conditions are sufficient to ensure adverse effects on the receiving environment are avoided, remedied or mitigated.

The wastewater under the current plant configuration have generally complied with the consent limits in the last 2 to 3 years, as illustrated in Figures 13 and 19 of the AEE. The figures in the AEE depict the mean concentration as per the consent conditions and the actual concentrations of the wastewater sampled. To determine compliance with the consented limits, the wastewater discharge must not exceed the maximum mean concentrations set out in the consent Condition 13. It is noted that the mean shall be from any four

consecutive samples taken. The compliance with the mean concentrations has been set out in Table 4 and where based on four consecutive samples taken between September 2017 and September 2022.

Table 4 Recent Plant Performance Results and Consent Limits

Parameter	Unit	Sept 17-Sept 22 data (average)		Current Limit (average)
		Mean	95%ile	
BOD ₅	g/m ³	10	21	30
TSS	g/m ³	17	46	70
Dissolved Reactive Phosphorus (DRP)	g/m ³	2.5	4.2	4
AmmN	g/m ³	8.7	15	15
TN	g/m ³	30	40	No limit
E. Coli	cfu/100mL	1696*	16,000	6,000

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

The options investigated by GHD would entail a filtration step which would allow coagulant dosing for phosphorus removal and the filtration step would improve suspended solids removal, which will also improve UV disinfection efficacy. The additional filtration will ultimately improve the quality in the discharge and further reduce the likelihood of any unforeseen exceedance of consent limits.

Furthermore, conditions of consents have been proposed to ensure that SDC shall maintain an Operations and Management Plan (O & M Plan) for the Wyndham – Edendale wastewater treatment system. SDC plans to update the O&M plan in the next 3 months and update procedures as necessary to ensure regular inspections and sampling occurs to ensure compliance with the consent.

6. Instream ecology and aquatic values

Question 9:

Please explain the potential and actual effects of the activity on instream ecology and aquatic organisms from the proposed discharge, having particular regard to the propose significant increase *in the discharge compared to the current consented volume and the subsequent increase in contaminant loads on the downstream aquatic environment. Additionally, please reference periphyton and macroinvertebrate monitoring data (including the most recent data which was not presented in Appendix B of the application) to support the assessment of adverse effects on instream ecology and aquatic organisms.*

Section 5.2.4 within the application discusses potential effects on instream ecology and aquatic organisms. It also identifies relevant water quality issues in the receiving environment. However, it does not link the potential effects on instream ecology and aquatic organisms from the proposed discharge.

The latest ecological survey (Ryder, 2021³) concludes that the discharge from the Wyndham and Edendale wastewater treatment system was not adversely affecting the local periphyton and benthic macroinvertebrate communities of the Mataura River.

As outlined in Question 6, the proposed increase in discharge is not expected to result in an increase in mass load to the receiving environment. The total contribution of the discharge flow is also considered insignificant. Based on a discharge volume of 450m³/day, this would account for <0.01 % of the average flow within the Mataura River. There is therefore not expected to be an impact of the instream ecology and aquatic organisms as a result of this increased discharge.

³ Ryder 2021. Wyndham and Edendale Wastewater Treatment System Discharge. Periphyton and Macroinvertebrate Survey: Mataura River. April 2021.

7. Discharge quality data

Question 10:

Section 3.1.3 provides discharge quality data in a graphic form. Please also provide this data in a numerical form.

The data used to present the discharge quality in Figures 13 and 19 of the AEE have been included in Appendix A in numerical format and have also been attached to the email in electrical format in an Excel Workbook (XLSX) format.

We trust that the above information is sufficient to address the matters raised and that the processing of this application can now proceed.

Regards



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