

Porirua Wastewater Treatment Plant Annual Report 2023-2024

WGN200029 [36816]



Porirua Wastewater Treatment Plant Annual Report 2023-2024

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
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1	Final Report	Steph Davis (Ecologist)	24/09/24				




Porirua Wastewater Treatment Plant Annual Report 2023-2024

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1 Introduction

The Porirua Wastewater Treatment Plant (WWTP) is located in Titahi Bay, Porirua. It serves the area from Northern Wellington to Pukerua Bay. The WWTP provides preliminary treatment (screening of incoming solids greater than 2mm), secondary treatment (removal of organic pollutants and separation of sludge from clear wastewater), and tertiary treatment (UV disinfection of micro-organisms). Final effluent is discharge to a coastal outfall located in Rukutane Point.

Prior to the 2023-24 compliance year, the Porirua WWTP operated under three consents under WGN980083:

- [496] To occupy and use the coastal marine area with a concrete deflection wall and outfall structures.
- [1536] To discharge contaminants to air from the Porirua City Council's Wastewater Treatment Plant.
- [33805] To discharge treated effluent from the Porirua City Council's Wastewater Treatment Plant.

WGN980083 [1536] and [33805] expired on June 6, 2020, and new consents for both air and coastal discharges were applied for. Consents WGN200029 [36727] and [36816] were granted and became effective on 14 July 2023. The new consents authorise:

- The discharge of treated wastewater to the coastal marine area from the operation of the Porirua Wastewater Treatment Plant (WGN200229 [36816])
- The discharge of contaminants to air (odour) from the operation of the Porirua Wastewater Treatment Plant (WGN200229)

Condition 19 of (WGN200229 [36816]) requires an annual report to be produced. Wellington Water has engaged Stantec to produce the annual report for the 2023-2024 compliance year.



2 Water Quality Monitoring

Condition 5F(A): The Monitoring Plan shall set out how the monitoring required under conditions 4, 5J(c), 6 to 11, 12C, 12D, 14 to 16, and 28 to 29, and to ensure that compliance with condition 13 of this consent will be delivered.

Condition 5J(C): If the alternate WWTPWG is established in accordance with condition 5I then:

The consent holder shall prepare, implement and review a Monitoring Plan in accordance with conditions 5E and 5F, except that the requirement in condition 5F (b) shall be replaced with the following: i. The consent holder shall engage a suitably qualified coastal ecologist to conduct a visual survey of the quantity and size range of paua, kina and lobster along the six transects used in the Cawthron (2019) ecological survey. The survey shall be undertaken once before the third anniversary of the commencement of the consent and also be included within the scope of any ecological survey undertaken in accordance with condition 28.

Condition 11: All sampling techniques employed in respect of the conditions of this consent shall be acceptable to the Wellington Regional Council. All analyses undertaken in connection with this consent shall be performed by an International Accreditation New Zealand (IANZ) registered laboratory, or otherwise as specifically approved by the Wellington Regional Council.

A Monitoring Plan has been created to satisfy condition 5F(A), described above. This monitoring plan is available on the Porirua WWTP page on the Wellington Water website.¹ This plan sets out the monitoring required of influent, effluent, and receiving waters. It includes details pertaining to condition 5J(c) to engage a suitably experienced coastal ecologist to conduct visual surveys of the coastal marine area (CMA).

Table 2-1 sets out the monitoring required of influent and effluent. Samples are analysed by Eurofins, in accordance with Condition 11.

Table 2-1: Monitoring Schedule of Influent and Effluent for Consent Compliance

Sample Location	Parameter	Type of Sample	Frequency	Limit
Influent	ViralTesting (F-RNA bacteriophage)	Grab	Monthly	NA
Effluent	BOD5	Composite	Daily	Geometric mean <30mg/L Percentile <75mg/L
	Suspended Solids	Composite	Daily	2000 cfu/mL
	Faecal Coliforms	Grab	Daily	NA
	Enterococci	Grab	Daily	NA

¹ The latest version of the Monitoring Plan is available here: [Ver2_Monitoring Plan - Porirua Wastewater Treatment Plant \(wellingtonwater.co.nz\)](https://www.wellingtonwater.co.nz/ver2-monitoring-plan-porirua-wastewater-treatment-plant)



	UV Transmissivity	Grab	Daily	NA
	Total Ammonia Nitrogen	Composite	Weekly	NA
	ViralTesting (F-RNA bacteriophage)	Grab	Weekly	NA
	Nitrate Nitrogen	Composite	Monthly	NA
	Nitrite Nitrogen	Composite	Monthly	NA
	Dissolved Reactive Phosphorous	Composite	Monthly	NA
	Total Nitrogen	Composite	Monthly	NA
	Total Phosphorus	Composite	Monthly	NA
	Total Arsenic	Composite	Monthly	0.023 mg/L
	Total Cadmium	Composite	Monthly	0.055 mg/L
	Total Chromium	Composite	Monthly	0.044 mg/L
	Total Copper	Composite	Monthly	0.013 mg/L
	Total Lead	Composite	Monthly	0.044 mg/L
	Total Mercury	Composite	Monthly	0.001 mg/L
	Total Nickel	Composite	Monthly	0.07 mg/L
	Total Zinc	Composite	Monthly	0.08 mg/L
	Phenol	Composite	Monthly	2.7 mg/L

In addition to the above sampling, representative receiving water samples are collected monthly at the following locations:

- At or about 140 metres generally east of the outfall (41°06'21.85"S, 174°49'46.68"E)
- At or about 200 metres generally southwest of the outfall (41°06'25.03"S, 174°49'16.50"E)
- Titahi Bay at Toms Road (41°06'22.25"S, 174°50'07.03"E)
- Control site (41°05'20.05"S, 174°50'58.56"E)

Figure 2-1 shows the locations of receiving waters sampling points. Table 2-2 summarises the monitoring requirements at each site.



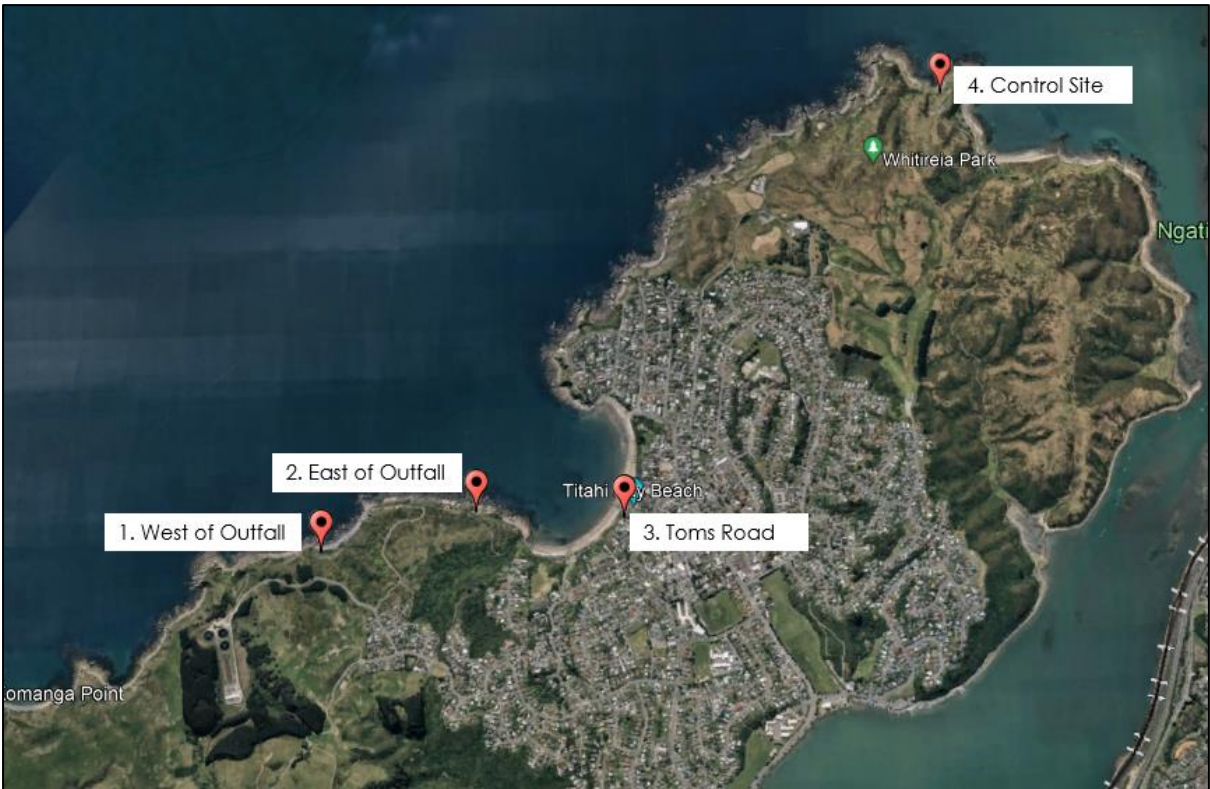


Figure 2-1: Shoreline Monitoring Locations

Table 2-2: Details of Shoreline Monitoring

Sample Location	Parameter
West of Outfall	Enterococci
	pH
	Salinity
	Dissolved Oxygen
	Temperature
	Total Ammonia Nitrogen
	Nitrate Nitrogen
	Nitrite Nitrogen
	Dissolved Reactive Phosphorus
	Total Nitrogen
East of Outfall	Total Phosphorus
Control Site	Wind
	Tide



	Weather
Titahi Bay at Toms Road	Enterococci
	pH
	Salinity
	Dissolved Oxygen
	Temperature
	Wind
	Tide
	Weather

The Kaitiaki Monitoring Programme is yet to be developed. The current monitoring plan is set to be updated with the details of the programme once it has been prepared. Wellington Water will provide an update to Greater Wellington Regional Council on the progress of the Kaitiaki Monitoring Program during monthly meetings.

3 Wastewater Treatment Plant Monitoring

This section summarises monitoring required at the WWTP as per the conditions listed under 5F(A). Each condition is assessed individually.

3.1 Condition 4

The consent holder shall continuously monitor and record the daily volume of the inflow to and effluent from the wastewater treatment plant. The records shall be supplied to the Manager in accordance with conditions 18 and 19, and on request of the Manager.

An electrical issue caused the effluent control metre to go offline, resulting in no effluent readings for from December 2023 to April 2024. Effluent flow calculations from January to April 12, inlet readings from both UV channels (Duron and TAK UV channels) were combined. Readings from the effluent flow meter were used from starting in May, following repair of the flow metre on April 12.

The 12-month daily average flow limit was exceeded on several occasions during the 2023-24 compliance year. Due to the wastewater network dictating the inlet flow rate to the WWTP, occasional exceedances are expected.

Figure 3-1 shows daily influent and effluent flow rates for the 2023/4 compliance year.



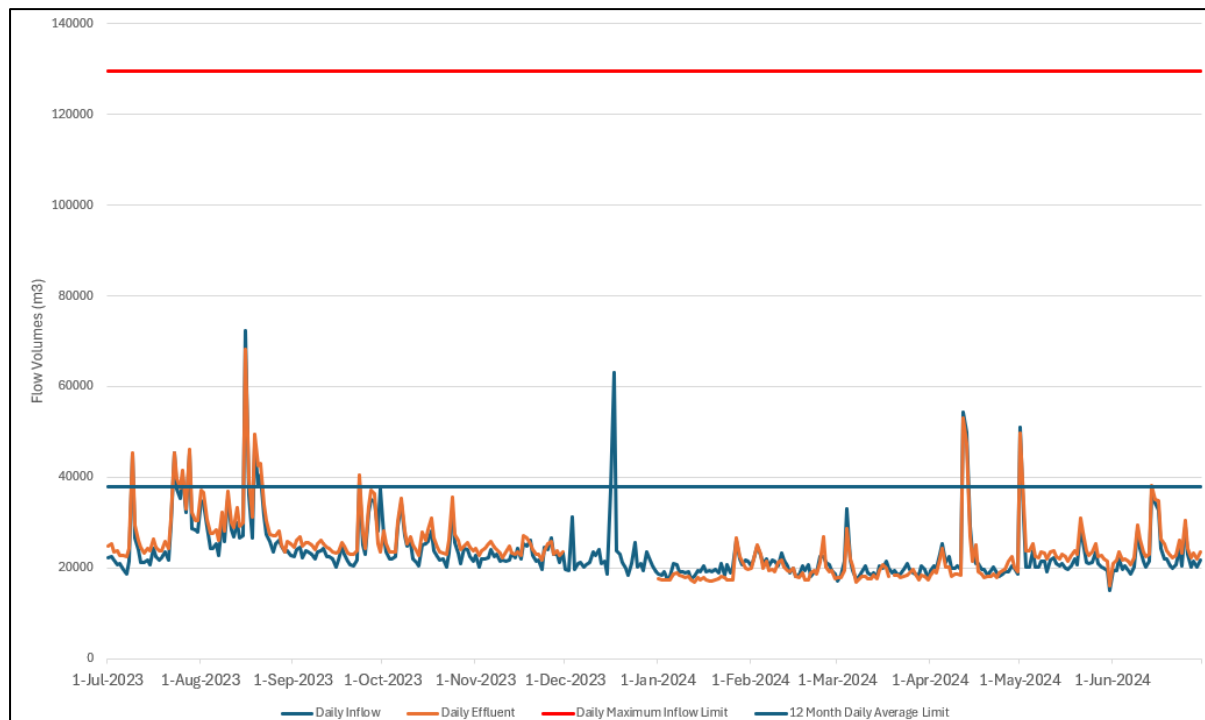


Figure 3-1: Total daily influent and effluent volumes

3.2 Condition 7

The consent holder shall each day, including weekends and public holidays, obtain a representative 24 hour flow-proportioned composite sample of the wastewater from the location identified in accordance with condition 6. This sample shall be analysed for total suspended solids and biochemical oxygen demand.

The results of the analysis required by Condition 7 are reported and assessed under Condition 12.

3.3 Condition 8

The consent holder shall each day, including weekends and public holidays, between the hours of 9am and 5pm, obtain a representative grab sample of the wastewater from the location identified in accordance with condition 6. Prior to certification of the enterococci trigger under condition 21B this sample shall be analysed for UV transmissivity, faecal coliforms and enterococci. Following certification of the enterococci trigger under condition 21B the sample shall be analysed for enterococci and UV transmissivity.

At the time of writing, an enterococci trigger had not been certified. This certification is due by August 1, 2024, according to condition 21B. However, due to the issues encountered in the operation of the UV system, the enterococci trigger is still yet to be determined. The technical expert recommended that further testing is required, and data interrogation is needed before a trigger value can be established. Regional council has been informed regarding this status.



Wastewater samples for the 2023-24 compliance year have been analysed for UV transmissivity, faecal coliforms and enterococci.

Daily enterococci data was not available until August 23, 2023, and UV transmissivity was only sporadically analysed until August 8 due to the delay aligning the sampling requirements from the laboratory with the new requirements of the resource consents. Following these dates, there is daily data available. Figures 3-2 and 3-3 display daily faecal coliform, enterococci, and UVT% results for the 2023-24 compliance year.

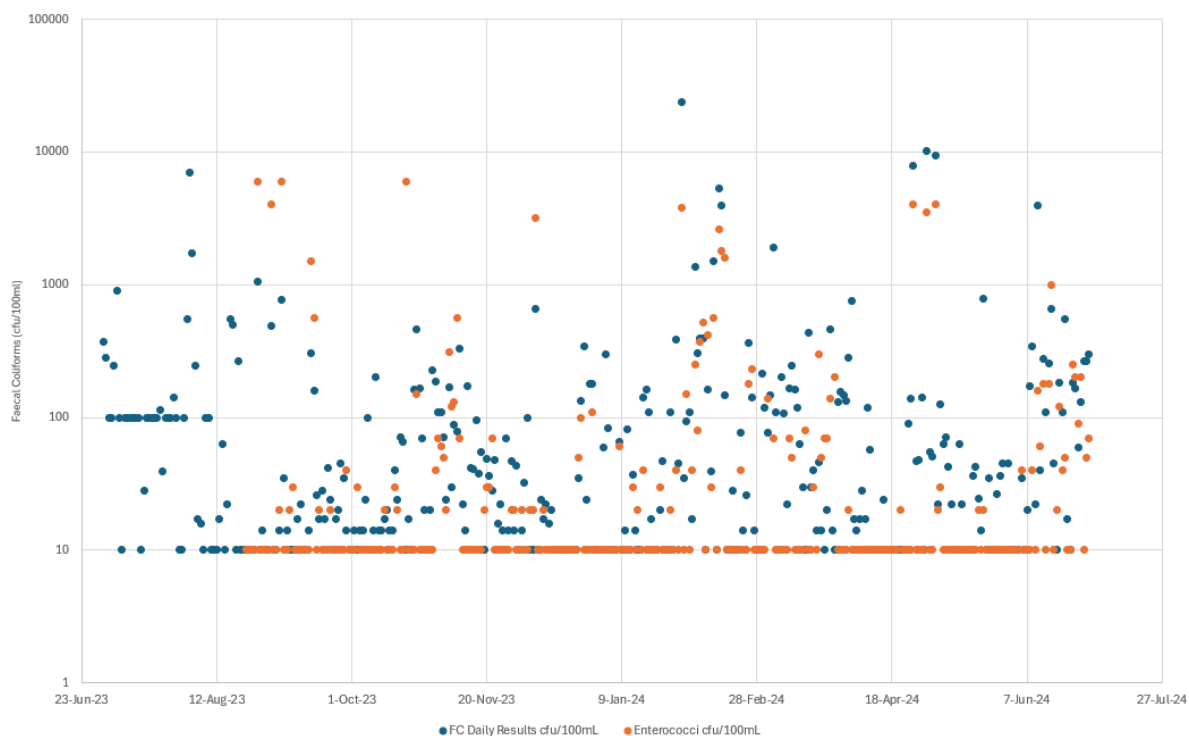


Figure 3-2: Daily faecal coliform and enterococci data on a log(10) scale

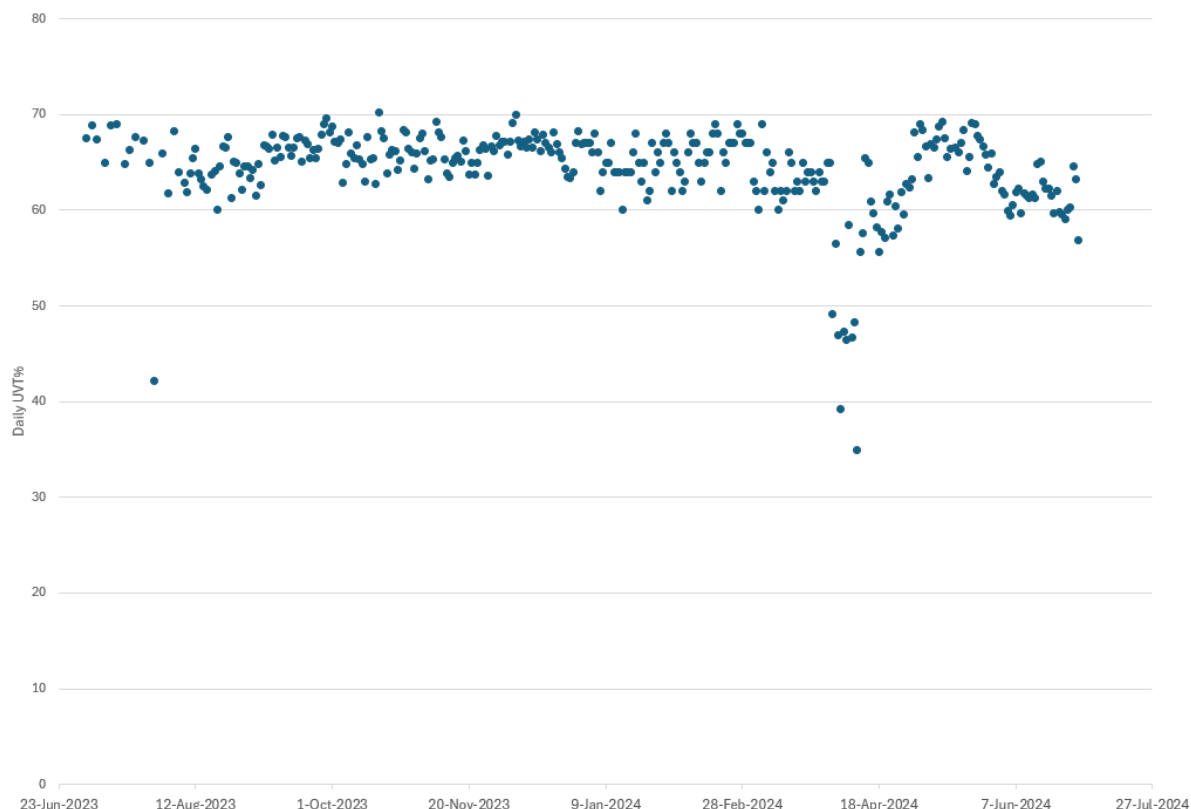


Figure 3-3: Daily UVT%

3.4 Condition 9

9. The consent holder shall on at least one occasion each month, on a normal working day, obtain a representative 24-hour flow-proportioned composite sample of the wastewater from the location identified in accordance with condition 6. This sample shall be collected on the same day as the representative receiving water samples are collected under condition 14. This sample shall be analysed for:

- a) Nitrate Nitrogen
- b) Nitrite Nitrogen
- c) Dissolved Reactive Phosphorus
- d) Total Nitrogen
- e) Total Phosphorus
- f) Total Arsenic
- g) Total Cadmium
- h) Total Chromium
- i) Total Copper
- j) Total Nickel
- k) Total Lead
- l) Total Zinc
- m) Total Mercury
- n) Phenol



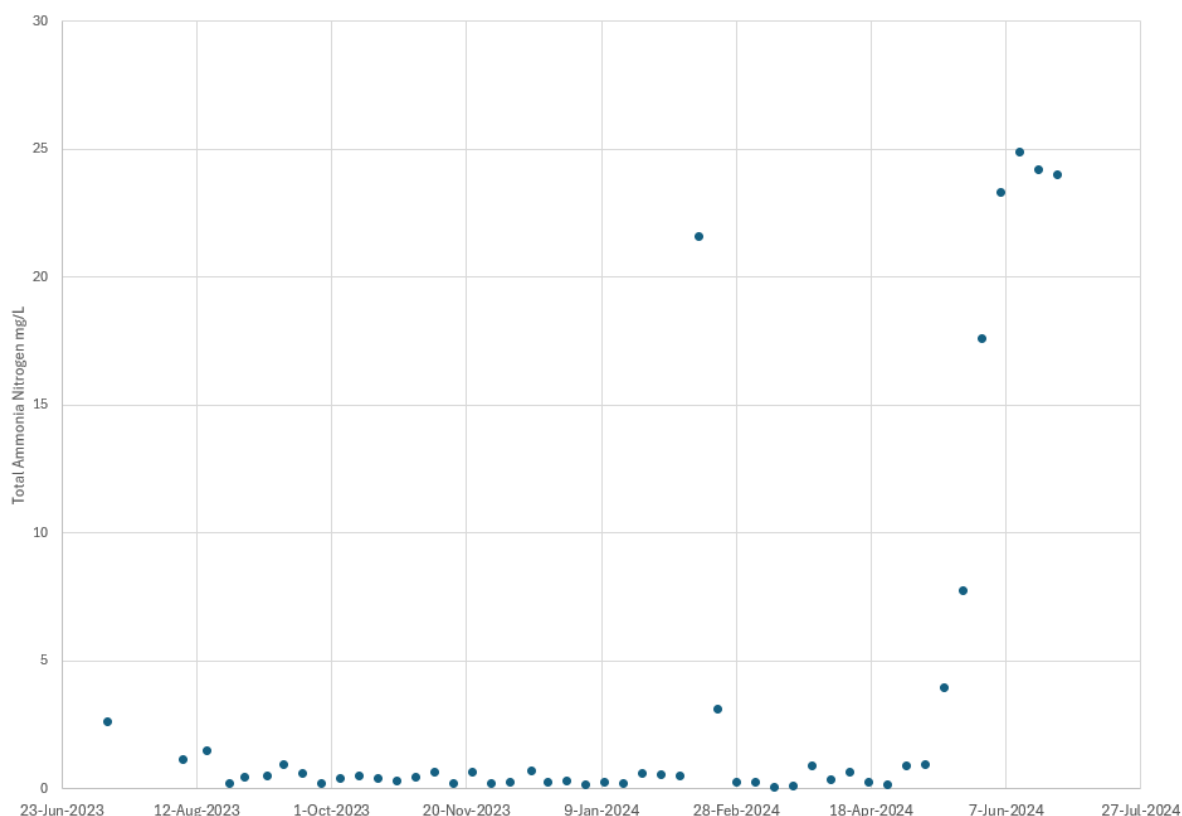
Samples have been taken in accordance with Condition 9. The results are reported and assessed in Condition 12A.

3.5 Condition 9A

The consent holder shall on at least one occasion each week, on a normal working day, obtain a representative 24-hour flow-proportioned composite sample of the wastewater from the location identified in accordance with condition 6. This sample shall be analysed for Total Ammonia Nitrogen.

Weekly testing was not performed during July 2023 as arrangements with the external laboratory were still being undertaken. Weekly testing began in August 2023 and results were mostly consistent, staying under 1mg/L until May 2024, where there was a sudden, steady increase in Total Ammonia Nitrogen concentrations. As per condition 33, results should not exceed 6 mg/L in more than 5 of 26 consecutive wastewater samples. Upon exceedance of this limit in 5 consecutive samples, a monitoring and technology review and report is required to be submitted to the manager within 9 months. This report was triggered in June 2024 and is currently underway.

Figure 3-4 displays weekly Ammonia Nitrogen results between July 2023 and June 2024.



3.6 Condition 10

The consent holder shall:

- a. At least once a calendar month between the hours of 9am and 5pm, obtain a representative grab sample of the influent to the wastewater treatment plant
- b. At least once a week between the hours of 9am and 5pm, obtain a representative grab sample of the wastewater from the location identified in accordance with condition 6.

These samples shall be analysed for a suitable viral indicator, such as F-RNA bacteriophage. The requirement in this condition may be varied by certified updates to the Monitoring Plan under condition 10A.

Condition 10A states the requirement outlined above must be reviewed by June 30, 2024 to determine (among other things) whether the monitoring associated with the viral indicator should be continued, or be replaced by an alternative monitoring schedule. At time of writing, there is no evidence to suggest this review has been undertaken during the compliance year, and whether this data will be reported on in following years.

A miscommunication between Veolia and the external laboratory meant that weekly effluent viral indicator testing was delayed until September 2023, and monthly influent viral indicator testing was not performed during the July-September quarter.

Table 3-1 displays results for the available data under condition 10 for the 2023-24 compliance year.

Table 3-1: Viral indicator analysis summary results

Day	July 2023				August 2023				September 2023			
	Influent Monthly grab		Effluent Weekly grab		Influent Monthly grab		Effluent Weekly grab		Influent Monthly grab		Effluent Weekly grab	
	F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage	
	PFU/l		PFU/l		PFU/l		PFU/l		PFU/l		PFU/l	
26	No sample		No sample		No sample		No sample		No sample		10	
October 2023				November 2023				December 2023				
Influent Monthly grab		Effluent Weekly grab		Influent Monthly grab		Effluent Weekly grab		Influent Monthly grab		Effluent Weekly grab		
F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		
Date	PFU/l	Date	PFU/l	Date	PFU/l	Date	PFU/l	Date	PFU/l	Date	PFU/l	
13/10/2023	1300000	03/10/2023	29	15/11/2023	700000	07/11/2023	370	14/12/2023	1700000	05/12/2023	39	
		10/10/2023	16			14/11/2023	10			12/12/2023	10	
		17/10/2023	120			21/11/2023	270			19/12/2023	1400	
		24/10/2023	49			28/11/2023	25			26/12/2023	10	
		31/10/2023	10									
January 2024				February 2024				March 2024				



Influent Monthly grab		Effluent Weekly grab		Influent Monthly grab		Effluent Weekly grab		Influent Monthly grab		Effluent Weekly grab	
F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage	
Date	PFU/l	Date	PFU/l	Date	PFU/l	Date	PFU/l	Date	PFU/l	Date	PFU/l
07/01/2024	2.00x 10 ⁶	02/01/2024	10	23/02/2024	8.5x 10 ⁵	05/02/2024	110	13/03/2024	1.3X10 ⁶	12/03/2024	39
		09/01/2024	10			13/02/2024	10			19/03/2024	29
		16/01/2024	10			20/02/2024	10			25/03/2024	10
		23/01/2024	110			27/02/2024	120				
		30/01/2024	60								
April 2024				May 2024				June 2024			
Influent Monthly grab		Effluent Weekly grab		Influent Monthly grab		Effluent Weekly grab		Influent Monthly grab		Effluent Weekly grab	
F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage		F-RNA Bacteriophage	
Date	PFU/l	Date	PFU/l	Date	PFU/l	Date	PFU/l	Date	PFU/l	Date	PFU/l
09/04/2024	1.10E+06	2/04/2024	10	21/05/2024	2.20E+07	7/05/2024	20	10/06/2024	2.50E+06	4/06/2024	59
		9/04/2024				14/05/2024	10			11/06/2024	300
		16/04/2024				21/05/2024	10			18/06/2024	10
		23/04/2024				28/05/2024	10			25/06/2024	49
		30/04/2024									

3.7 Condition 12

The quality of the wastewater sampled in accordance with condition 7 of this consent shall not exceed the following limits:

a: Suspended solids – The geometric mean of 90 consecutive daily suspended solid values shall not exceed 30 g/m³ and no more than 10% of 90 consecutive daily values shall exceed 75 g/m³

b: Biochemical oxygen demand – The geometric mean of 90 consecutive daily biological oxygen demand values shall not exceed 30 g/m³ and no more than 10% of 90 consecutive daily values shall exceed 75 g/m³.

The BOD geometric mean and 90day 90th percentile limits were not exceeded during the 2023-24 compliance year. While limits were not exceeded during this compliance year, the geometric mean and 90th percentile are both trending upwards, with steady increases since April 2024. Figure 3-5 summarises these results.

The TSS-geometric mean and 90 day 90th percentile limit were not exceeded during the 2023-24 compliance year. The 90 day 90th percentile steadily increased between April and early June, but remained within consented limits. This steadily decreased again in early June. Figure 2-7 summarises these results.



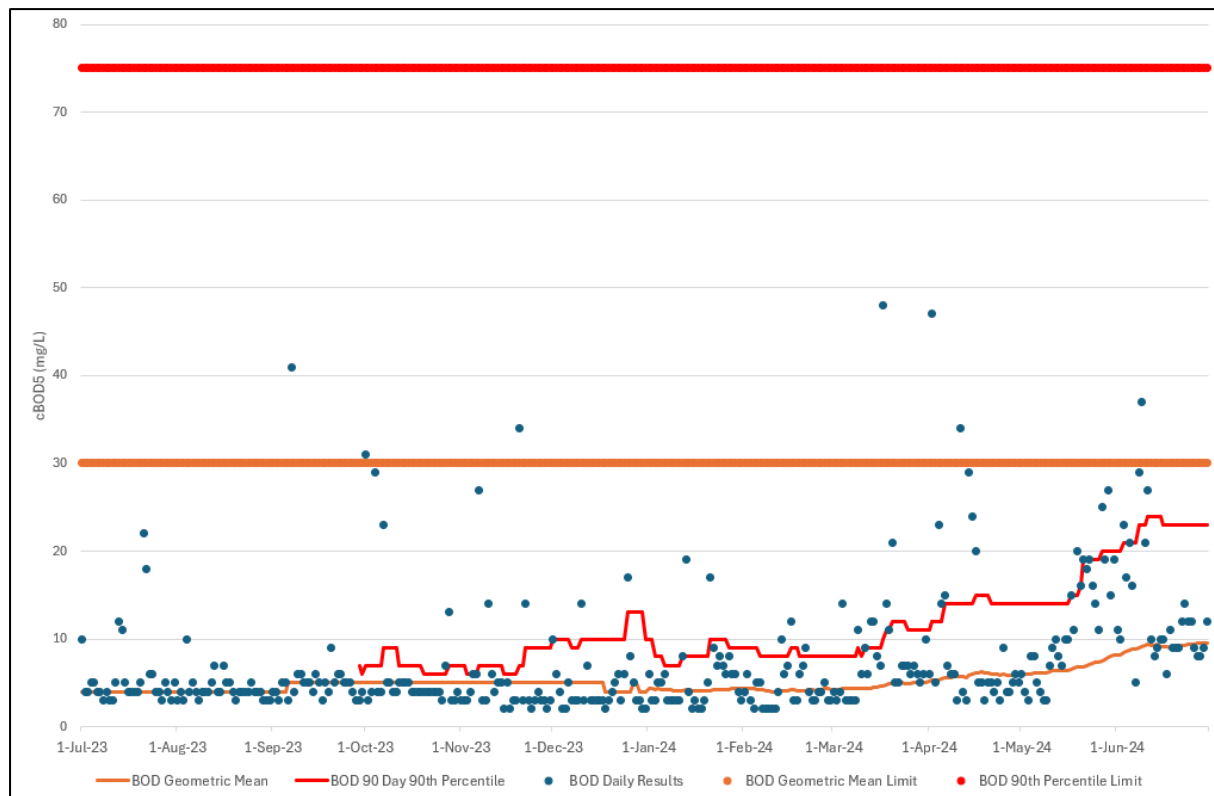


Figure 3-5: Daily treated wastewater cBOD5 (mg/L), 90-day geometric means and 90 day 90th percentiles



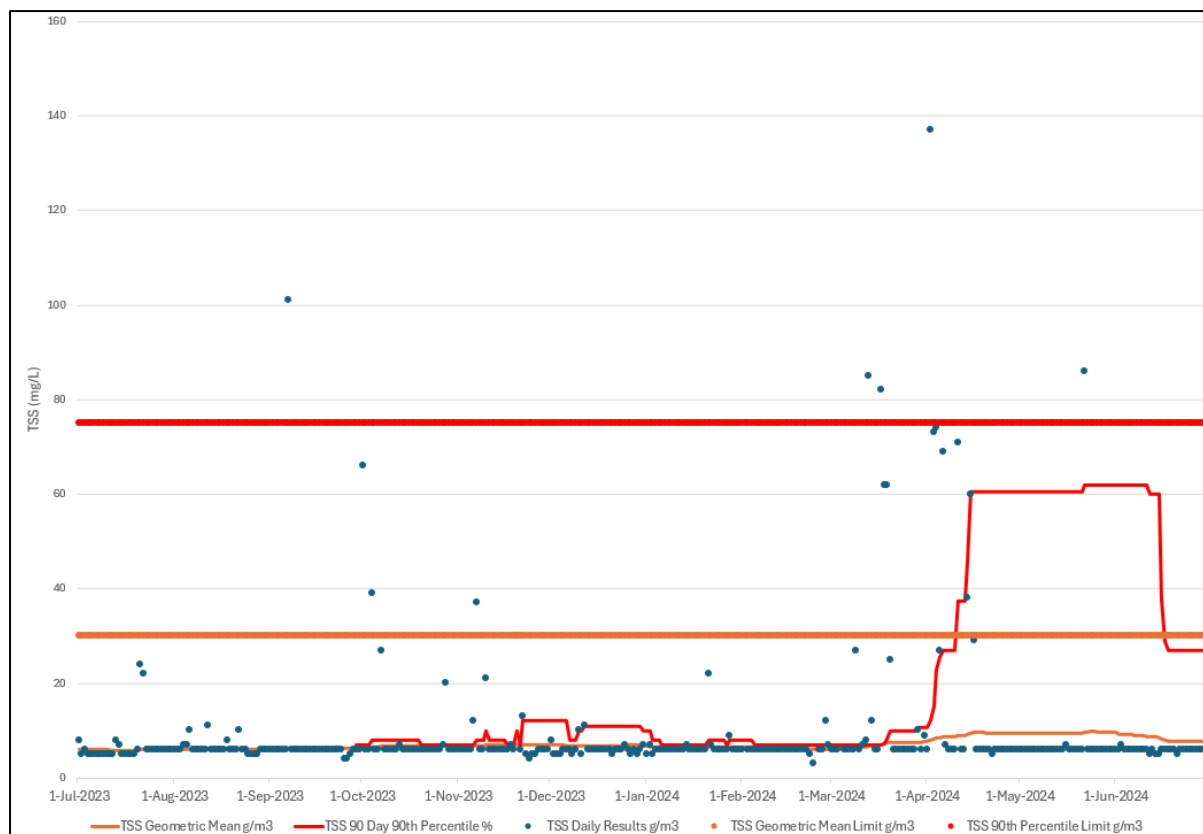


Figure 3-6: Daily treated wastewater TSS (mg/L), 90-day geometric mean and 90-day 90th percentile

3.8 Condition 12A

Concentrations of metals and other compounds in the sample required under condition 9 shall not exceed:

Metals/metalloids and phenols

- Total Arsenic 0.023 g/m³
- Total Cadmium 0.055 g/m³
- Total Chromium 0.044 g/m³
- Total Copper 0.013 g/m³
- Total Nickel 0.07 g/m³
- Total Lead 0.044 g/m³
- Total Zinc 0.08 g/m³
- Total Mercury 0.001 g/m³
- Phenol 2.7 g/m³

The July 2023 monthly 24-hour composite sample was tested in accordance with the previous resource consent, so not all data points are available. No compounds exceeded consented limits. The Australia and New Zealand Guidelines (2018) for marine have been used for comparison².

² Australia and New Zealand Guidelines for Freshwater and Marine Water Quality (2018); these relate to marine water quality rather than discharge quality



Wastewater concentrations of copper, nickel, and zinc are marginally higher than the ANZG marine water guidelines in several samples, however after an initial 10-fold mixing with receiving waters the guidelines would be comfortably achieved. Table 3-2 summarises metal concentrations for the 2023-24 compliance year.

Table 3-2: Wastewater metal concentration summary 2023-24 compliance year

Compound	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	June-24	ANZG (2018) DGVs
Total Arsenic	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	
Total Cadmium	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
Total Chromium	0.001	0.002	0.002	0.002	0.001	0.006	0.001	0.001	0.002	0.001	0.002	0.001	0.0044
Total Copper	0.002	0.006	0.005	0.002	0.002	0.004	0.002	0.002	0.002	0.002	0.002	0.002	0.0013
Total Nickel	0.005	0.022	0.019	0.026	0.001	0.014	0.018	0.02	0.001	0.019	0.019	0.001	0.007
Total Lead	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0044
Total Zinc	0.001	0.001	0.001	0.001	0.014	0.001	0.001	0.001	0.021	0.001	0.001	0.016	0.015
Total Mercury	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001
Phenol	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Nitrate Nitrogen		1.76	1.28	0.41	2.15	0.05	0.26	1.64	1.24	1.54	3.07	3.8	
Nitrite Nitrogen		0.03	0.08	0.08	0.03	0.01	0.11	0.17	0.06	0.23	0.31	0.49	
Dissolved Reactive Phosphorus		1.54	2.34	1.83	2.18	2.11	3.44	2.57	3.54	1.82	2.35	1.45	
Total Nitrogen		3.66	2.97	1.97	2.29	2.02	63.2	3.27	5.26	1.65	13.39	26.6	
Total Phosphorus		2.8	2.65	2.3	2.38	2.33	7.38	3.62	3.59	1.85	2.14	1.89	

3.9 Condition 12C

The consent holder shall maintain a UV Transmissivity monitoring probe in the Duron UV system. The probe shall be linked to the treatment plant's SCADA system, with records of the hourly average UV transmissivity kept by the consent holder based on values observed at 5-minute intervals.

UVT was monitored in accordance with condition 12C. Figure 3-7 displays this data in comparison with the 45% consent limit.



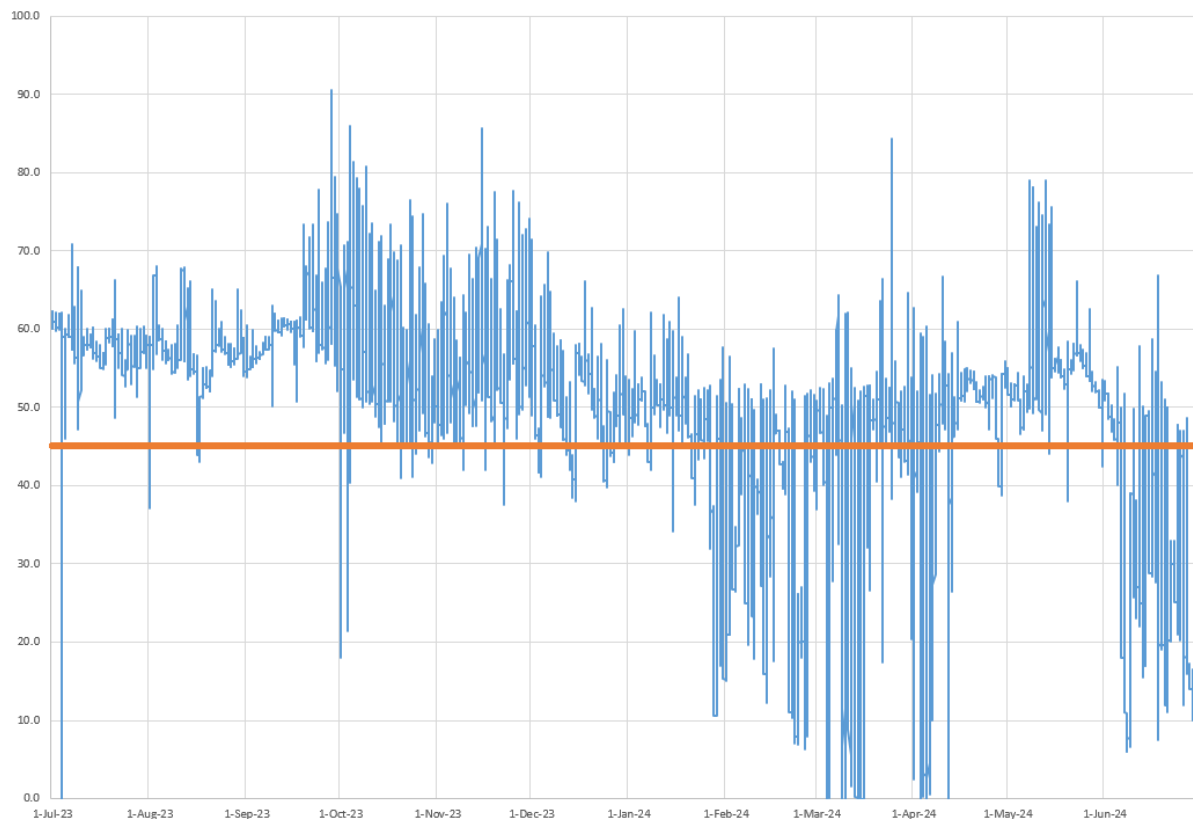


Figure 3-7: Hourly UVT average

3.10 Condition 12D

If the hourly average UV transmissivity recorded in accordance with 12C reduces below 45% then the consent holder shall:

- a. Notify the Manager as soon as practicable; and
- b. Initiate an investigation that meets the following requirements.

The investigation shall:

- i. Be undertaken by a suitably qualified and experienced professional.
- ii. Consider the results of the suspended solids monitoring, UV transmissivity from the daily grab samples, and other relevant plant performance measurements routinely taken by the consent holder.
- iii. Assess the likely cause of the UV transmissivity reducing below 45%.
- iv. If considered necessary, recommend further investigations, improvements, operational actions (including changes to the OMCP) or upgrades to reduce the risk of similar UV transmissivity records occurring in the future.
- v. Include an implementation programme for the recommendations, if any, set out in accordance with (iv).
- vi. Within 10 working days of the hourly average UV transmissivity falling below 45%, the consent holder shall inform the Manager of the outcomes of the investigation and which of the recommendations made in accordance with (iv) and (v) above it proposes to implement or has already implemented.

The UVT hourly average fluctuated between periods of compliance and non-compliance during the 2023-24 compliance year. It was observed that the readings were not reliable, however, with



significant erratic fluctuations since September 19, 2023. The instrument supplier did an on-site investigation and recommended improvements such as installing the instrument in a horizontal position which might provide a more representative reading. A cleaning method based on air scouring was also suggested.

The June monthly report suggested the investigation into the issue is still ongoing, but one possible reason for the constant fluctuations is the unreliability of the Duron UV effluent penstock meant the TAK system was operated during night hours. This report also pointed out that grab samples collected in parallel show values above 45%.

There were a number of occasions between October and June where the UVT% dropped below 45%. However, there was uncertainty around the conditions of the new resource consent, so investigations on these events were not initiated until March 2024.

A summary of the low UVT events during the 2023/24 reporting period is presented in Table 3-3.

Table 3-3: Porirua WWTP 2023-24 Low UTV Incident Summary

Date	Description	Non-Compliance
4 March 2024	Solids carryover	UVT
15 March 2024	UVT Non-Compliance	UVT
16 March 2024	UVT Non-Compliance	UVT
1 April 2024	UVT Non-Compliance	UVT
3 April 2024	UVT Non-Compliance	UVT
4 April 2024	UVT Non-Compliance	UVT
5 April 2024	UVT Non-Compliance	UVT
6 April 2024	Solids carryover	UVT
7 April 2024	UVT Non-Compliance	UVT
9 April 2024	UVT Non-Compliance	UVT
12 April 2024	UVT Non-Compliance	UVT
13 April 2024	UVT Non-Compliance	UVT
28 April 2024	UVT instrument offline (Duron Unit running on business hours only)	UVT
29 April 2024	UVT instrument offline (Duron Unit running on business hours only)	UVT

Veolia Incident Investigation Reports for these events are available on the Porirua WWTP website³.

³ All incident reports are available under 'More Documents Here' [Porirua Wastewater Treatment Plant \(wellingtonwater.co.nz\)](https://www.wellingtonwater.co.nz)



3.10.1 Causes and Remedial Measures

The solids carryover events were due to high mixed liquor suspended solids (MLSS) concentrations in the aeration basin, which resulted in overloading of the secondary clarifiers (indicated by high sludge blanket levels inside the clarifiers). The target MLSS concentration in the aeration basin is 3,500 mg/L to avoid solids carryover events. MLSS concentrations during solids carryover events varied from 40% to 70% above the target.

The underlying issue causing high MLSS concentrations is the unreliable solids handling system. It is critical to the wastewater treatment process that solids are continuously removed from the aeration basin, thickened, dewatered, and trucked to landfill on a reliable basis. Numerous issues within the solids handling system make this difficult to achieve. The issues previously identified with the solids handling system are:

- Poor thickener solids capture and thickening performance.
- Lack of redundancy for both the thickening and dewatering equipment.
- Insufficient sludge cake storage which limits available dewatering hours.
- Limited ability of Spicer landfill to accept the required quantities of dewatered sludge.

Wellington Water are aware of these issues and have commenced a solids handling upgrade (SHU) project to address them (with the exception of the landfill limitation). The SHU is currently in the detailed design phase and the current programme for commissioning the SHU is 2028.

In the meantime, Wellington Water are investigating interim measures to improve the reliability of the solids handling system until the SHU is commissioned. A report on the interim measures is expected to be completed this year.

3.10.2 UV Disinfection Emergency Backup Power

Wellington Water have initiated a project to install a backup power supply for Porirua WWTP's UV system.

A supplier has recently been selected for a 200KVA generator. Physical works scheduled is yet to be advised once the contract is finalised.



3.11 Condition 35A

If:

- a. Prior to certification of the enterococci trigger under condition 21B, monitoring undertaken in accordance with condition 8 identifies that the concentration of faecal coliforms in the treated wastewater has exceeded 2,000 cfu per 100 millilitres on 2 or more consecutive days; or
- b. Following certification of the enterococci trigger under condition 21B, monitoring undertaken in accordance with condition 8 identifies that the enterococci concentration in the treated wastewater has exceeded the enterococci trigger value set in accordance with condition 21B on 2 or more consecutive days, then the consent holder shall:
 - i. Notify the Manager as soon as practicable after receipt of results showing that the faecal coliforms or enterococci trigger has been exceeded for 2 consecutive days and
 - ii. Initiate an investigation that meets the following requirements.
The investigation shall:
 - c. Be undertaken by a suitably qualified and experienced professional.
 - d. Consider the results of the UV transmissivity monitoring undertaken in accordance with condition 8.
 - e. Assess the likely cause of the exceedance of the faecal coliforms or enterococci trigger value.
 - f. If considered necessary, recommend further investigations, improvements, operational actions or upgrades to reduce the risk of similar exceedances of the trigger value occurring in the future.
 - g. Include an implementation programme for the recommendations, if any, set out in accordance with (f). Within 1 calendar month of the receipt of results showing that the faecal coliforms or enterococci trigger has been exceeded for 2 consecutive days, the consent holder shall inform the Manager of the outcomes of the investigation and which of the recommendations made in accordance with (f) and (g) above it proposes to implement.

Figure 3-8 summarises faecal coliform monitoring between July 2023 and June 2024. The faecal coliform results reported under Condition 8 exceeded 2,000 cfu per 100 millilitres on the 14th and 15th of February 2024. An investigation was completed on the 7th of March and submitted to WWL. This investigation found the most likely cause for the exceedance was an error in sampling and timing of sample collection. The investigation report can be found on the Wellington Water website within the Porirua Wastewater Treatment Plant page under the sub heading Incident Reports.⁴

⁴ [Incident Investigation \(wellingtonwater.co.nz\)](https://www.wellingtonwater.co.nz/incident-investigation)



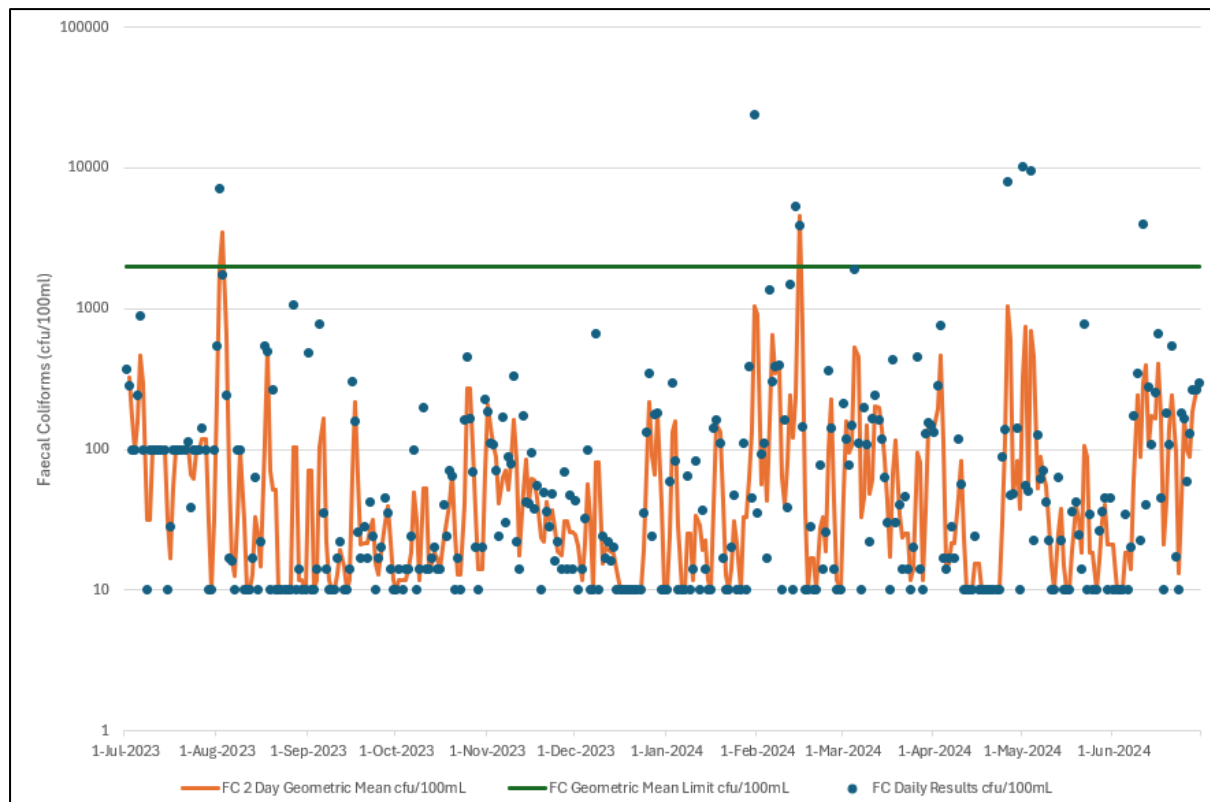


Figure 3-8: Summary of daily faecal coliform results (cfu/100ml) on a $\log(10)$ scale

4 Receiving Environment

This section summarises the monitoring completed in the receiving environment.



4.1 Condition 14 and 15

Condition 14: The consent holder shall collect representative receiving water samples from approximately 150 mm below the surface of water that is at least 500mm deep, once each calendar month at the following locations:

- a. At or about 140 metres generally east of the outfall.
- b. At or about 200 metres generally southwest of the outfall.
- c. Titahi Bay Beach generally at Toms Road.
- d. A control site, at a location to the satisfaction of the Manager.

Coordinates for all sampling sites shall also be recorded using a handheld GPS and provided in annual monitoring reports required under condition 19.

For each water sample collected under this condition, the consent holder shall record the site name, date, time, weather, wind, tidal conditions, pH, salinity, dissolved oxygen and water temperature at each sampling location.

Condition 15: The samples collected from sites (a) to (d) in condition 14 shall be analysed for enterococci. In addition, the samples collected from sites (a), (b) and (d) shall be analysed for total ammonia nitrogen, nitrate nitrogen, nitrite nitrogen, dissolved reactive phosphorus, total nitrogen and total phosphorous.

The July 2023 shoreline sampling was performed in accordance with the previous resource consent (WGN980083 [33805]). The sampling locations under the previous consent were different to current sampling locations, so July 2023 sample locations are different to the rest of the compliance year. The months following were sampled as per the new consent. The coordinates of sampling locations are detailed in Section 2 of this report.

Results for this monitoring are summarized below. Samples from the control site were not collected during February and March as there was no access to the control site due to a road closure. Table 4-1 display July 2023 shoreline monitoring results. Tables 4-2 to 4-5 summarise the shoreline monitoring completed during the 2023-24 compliance year. Enterococci cells coloured red exceed acceptable national guidelines values of 280 cfu/100ml.

Table 4-1: Shoreline monitoring results for July 2023

	Te Korohiwa Rocks	200m West of Outfall	200m East of Outfall	Titahi Bay Beach South	Titahi Bay Beach	Mount Cooper	Control
Date	10/07/2024	10/07/2024	10/07/2024	10/07/2024	10/07/2024	10/07/2024	10/07/2024
Enterococci (cfu/100mL)	130	10	10	10	30	20	10
Faecal Coliforms (cfu/100mL)	40	10	10	260	10	160	10



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Table 4-2: 140m generally eastwards of the outfall monthly shoreline sampling results

Date	Total Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Dissolved Reactive Phosphorus	Total Nitrogen	Total Phosphorus	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.
dd/mm/yyyy	g/m3	g/m3	g/m3	g/m3	g/m3	g/m3	cfu/100mL	-	g/m3	g/m3	C
29/08/2023	0.01	0.1	0.1	0.09	0.23	0.034	10	8.1	35	10	11.8
25/09/2023	0.02	0.1	0.1	0.01	0.25	0.021	60	8.0	36	10	13.0
13/10/2023	0.01	0.1	0.1	0.012	0.210	0.1	20	8.36	35	10.59	14.2
15/11/2023	0.59	0.1	0.01	0.076	1.13	0.048	10	8.19	35	10.19	15.9
05/12/2023	0.03	0.01	0.1	0.012	0.610	0.05	10	8.29	35	12.85	15
17/01/2024	0.170	0.10	0.1	0.05	0.068	0.075	10	8.46	33	10.99	22.2
26/02/2024	0.36	0.1	0.1	0.005	0.14	0.012	10	7.7	38	9	17.5
25/03/2024	0.21	0.1	0.1	0.05	0.47	0.05	20	7.9	39	10	17.3
05/04/2024	0.05	0.1	0.1	0.015	0.18	0.05	10	8.3	38	10	16.8
04/05/2024	0.29	0.1	0.1	0.03	0.11	0.08	10	8.31	38	11.21	15.4
05/06/2024	-	0.01	0.01	-	0.142	0.003	10	8.04	38	11.78	11.8

Table 4-3: 200m generally south-westwards of the outfall monthly shoreline sampling results

Date	Total Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Dissolved Reactive Phosphorus	Total Nitrogen	Total Phosphorus	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.
dd/mm/yyyy	g/m3	g/m3	g/m3	g/m3	g/m3	g/m3	cfu/100mL	-	g/m3	g/m3	C
29/08/2023	0.01	0.1	0.1	0.066	0.27	0.084	10	8.1	34	10	12.0
25/09/2023	0.06	0.1	0.1	0.021	0.41	0.063	130	8.0	35	10	12.8
13/10/2023	0.01	0.1	0.1	0.054	0.2	0.1	50	8.3	34	10.54	14.5
15/11/2023	0.02	0.1	0.01	0.033	0.610	0.051	10	8.32	35	10.22	16.1
05/12/2023	0.01	0.01	0.01	0.020	0.520	0.024	10	8.31	35	12.19	15.8
17/01/2024	0.13	0.10	0.1	0.028	0.59	0.084	30	8.35	33	13.11	22.1
26/02/2024	0.34	0.01	0.01	0.015	0.15	0.038	10	7.69	38	9	17.8
25/03/2024	0.2	0.1	0.1	0.045	2.31	0.1	300	7.4	38	9	17.8
05/04/2024	0.05	0.1	0.1	0.068	0.310	0.11	320	8.1	38	10	18
04/05/2024	0.03	0.1	0.1	0.025	0.19	0.14	10	8.25	38	11.28	15.8
05/06/2024	-	0.01	0.01	-	0.131	0.05	10	8.17	37	10.73	13



Table 4-4: Titahi Bay monthly shoreline sampling results

Date	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.
dd/mm/yyyy	cfu/100mL	-	g/m3	g/m3	C
29/08/2023	70	7.8	36	10	12.3
25/09/2023	10	8.0	35	10	13.2
13/10/2023	10	8.31	35	10.5	14.9
15/11/2023	10	8.21	36	10.25	15.7
05/12/2023	10	8.24	35	12.71	15.8
17/01/2024	10	8.41	35	9.38	22.42
26/02/2024	10	7.6	38	9	28.5
25/03/2024	120	8	39	10	17.5
05/04/2024	30	8.2	37	10	17.3
04/05/2024	10	8.26	38	10.88	15.2
05/06/2024	10	8.12	38	11.85	11.3

Table 4-5: Control site monthly shoreline sampling results

Date	Total Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Dissolved Reactive Phosphorus	Total Nitrogen	Total Phosphorus	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.
dd/mm/yyyy	g/m3	g/m3	g/m3	g/m3	g/m3	g/m3	cfu/100mL	-	g/m3	g/m3	C
29/08/2023	0.01	0.1	0.1	0.006	0.26	0.019	10	8.2	34	10	11.5
25/09/2023	0.03	0.01	0.1	0.005	0.44	0.015	140	7.9	36	9	12.9
13/10/2023	0.01	0.1	0.1	0.008	0.2	0.1	10	8.32	34	10.59	14.8
15/11/2023	0.01	0.1	0.1	0.007	0.560	0.025	10	8.41	35	10.61	16.4
05/12/2023	0.01	0.01	0.01	0.009	0.5	0.050	10	8.29	35	12.5	16.1
17/01/2024	0.15	0.10	0.1	0.005	0.59	0.046	10	8.36	33	10.69	22.5
26/02/2024	-	-	-	-	-	-	-	-	-	-	-
25/03/2024	-	-	-	-	-	-	-	-	-	-	-
05/04/2023	0.01	0.1	0.1	0.005	0.146	0.05	10	7.9	38	10	17.9
04/05/2024	0.03	0.1	0.1	0.002	0.26	0.03	10	8.026	38	12.82	15.6
05/06/2024	-	0.01	0.01	-	0.143	0.05	10	8.14	38	11.87	12.6



4.2 Condition 16

In the event of an incident notified under condition 22A and / or a discharge of partially treated wastewater, the consent holder shall:

- a. Notify the Manager as soon as practicable of the timing of the discharge, and the reason for the incident and / or the partially treated discharge.
- b. Take samples at the locations specified in condition 14 as soon as it is safe to do so, within 24 hours of the discharge commencing, and also approximately 48 hours after the discharge commenced, if it is safe to do so.
- c. Analyse the samples in accordance with condition 15
- d. Assess compliance with condition 13.

Table 4-5 summarises incidents notified under condition 22A. Sampling in accordance with conditions 14 and 15 were collected following discharge events, as specified in condition 16. Full monitoring results are in Appendix B. Enterococci levels were above acceptable national guideline values of 280cfu/100ml on 10 occasions in the 2023-24 compliance year.

Monitoring following the unconsented discharge on August 1, 2023, were tested under the previous consent conditions. This means conditions 14 was met under the current consent, but not condition 15. This was due to the new testing regime required under the new consent still be finalised with the external laboratory. All unconsented discharges following the August 1 event were tested under the requirements of the new consent conditions.

Part D of condition 16 required an assessment of compliance with condition 13. Discharges occurring during the July-September reporting period resulted in no effects listed under condition 13.

Discolouration to the coastal marine area around the Rukutane Point outfall was noted on the 4th, 15th, and 16th of March plus the 6th, 7th, and 12th of April. No odour was reported in conjunction with the discolouration. It is likely the effects to the receiving environment were minor, and monitoring results showed parameters returning to normal levels within days of the discharge ceasing.

Table 4-6: Notifiable incidents triggering shoreline monitoring during the 2023-24 compliance year⁵

Date	Event Description	Actions
01/08/2023	UV Bypass due to maintenance of bypass valve	Notifications submitted to GWRC. Shoreline sampling initiated
26/09/2023	Undisinfected effluent due to power fluctuation	Notifications submitted to GWRC. Shoreline sampling initiated
02/10/2023	Partially treated discharge due to mechanical failure	Notifications submitted to GWRC. Shoreline sampling initiated

⁵ Incident reports are available on the Porirua WWTP page of the Wellington Water website: [Porirua Wastewater Treatment Plant \(wellingtonwater.co.nz\)](https://www.wellingtonwater.co.nz)



Date	Event Description	Actions
9/11/2023	Undisinfected effluent discharge due to power outage	Notifications submitted to GWRC. Shoreline sampling initiated
8/12/2023	Undisinfected effluent discharge due to power outage	Notifications submitted to GWRC. Shoreline sampling initiated
04/03/2024	Solids carryover	Notifications submitted to GWRC. Shoreline sampling initiated
16/03/2024	UVT Non-compliance	Notifications submitted to GWRC. Shoreline sampling initiated
06/04/2024	Solids carryover	Notifications submitted to GWRC. Shoreline sampling initiated
07/04/2024	UVT Non-compliance	Notifications submitted to GWRC. Shoreline sampling initiated
12/04/2024	UVT Non-compliance	Notifications submitted to GWRC. Shoreline sampling initiated
01/05/2024	Visible discolouration to the CMA	Notifications submitted to GWRC. Shoreline sampling initiated
05/06/2024	Unconsented discharge due to power outage	Notifications submitted to GWRC. Shoreline sampling initiated
16/06/2024	Unconsented discharge due to power outage	Notifications submitted to GWRC. Shoreline sampling initiated
17/06/2024	Partially treated unconsented discharge due to power outage	Notifications submitted to GWRC. Shoreline sampling initiated

4.3 Condition 28 and 29

Condition 28: The consent holder shall commission an ecological survey of the receiving waters for the discharge. The survey shall involve the collection of information on the biota of the intertidal and shallow-subtidal habitats adjacent to the existing outfall at Rukutane Point, at Round Point to the west of the existing outfall, and at a reference location 300m east of the existing outfall. The survey methods should be comparable with those used for the ecological survey included as Appendix F in the application. The results of the survey shall be incorporated into a report prepared by a suitably qualified and experienced coastal ecologist.

Condition 29: A survey and report required under condition 28 shall be completed and submitted to the Manager:

- a. Between the 8th and the 9th anniversary of the commencement of this consent; and
- b. Between the 14th and the 15th anniversary of the commencement of this consent.

No ecological survey was required during the 2023-24 compliance year, as per condition 29.

5 Community Liaison Group

The Community Liaison Group (CLG) consists of the following parties:



- Representatives of Te Rūnanga o Ngāti Toa Rangatira.
- Representatives of Wellington Regional Council.
- Representatives of Regional Public Health.
- A representative of Te Awarua o Porirua Harbour and Catchments Community Trust.
- A representative of the Titahi Bay Residents' Association.
- A representative of the Titahi Bay Community Group.
- A representative of the neighbouring landowners and residents.

The CLG meets annually, or as required for events that occur at the WWTP. The annual meeting allows information to be shared between group members, and subsequently the wider community. The CLG met with the WWTP Working Group (WWTPWG) on December 13, 2023. Meeting minutes are attached in appendix C.

6 Complaints Register

There were three wastewater discharge complaints, and 12 odour complaints registered during the 2023-24 compliance year. Both registers are available online⁶, and in Appendix D.

7 Conclusion

The 2023-24 compliance year saw the transition to operation under a new consent. The previous consent (WGN980083) had been effective from July 2000, and expired July 2020. A new consent (WGN200029) was granted and became effective from July 14, 2023. The period between July 2020 and July 2023 operated under the conditions of WGN980083.

The transition, and the timing of commencement of the new consent meant that sampling in July 2023 was completed under the conditions of the previous consent. This meant non-compliance with some conditions in the new consent. Further to this, there were delays and miscommunications with external laboratories around the new sampling required under the new consent, furthering non-compliance. This transitional period led to non-compliance with the following consent conditions:

- Condition 8
- Condition 9A
- Condition 10

⁶ Complaints Registers available here: [Porirua Wastewater Treatment Plant \(wellingtonwater.co.nz\)](https://www.wellingtonwater.co.nz/porirua-wastewater-treatment-plant)



- Condition 12A
- Condition 14
- Condition 16

By September 2023, routine monitoring that aligned with the new consent conditions had been established, and conditions were met for the remainder of the compliance year. The consistency in monitoring from September 2023 onwards provides a positive outlook for the 2024-25 compliance year, with these conditions likely to be met in terms of monitoring requirements from the offset.

Monitoring of the receiving environment was completed under previous consent conditions, and results provided showed compliance with that consent. It is therefore unlikely that the instance of non-compliances described above had a negative impact on the receiving environment.

Sustained issues with the Duron UV penstock, and the solids handling system saw frequent instances of non-compliance with condition 12C, as UVT dropped below the consented 45% limit. Each instance of UVT drop below 45% was followed by notification to GWRC, and investigations into the causes of the drop. As this issue persisted through the compliance year, some investigations are still ongoing.

Minor non-compliances were also noted under condition 4 and condition 35A. Occasional daily exceedances in effluent discharge limits are reported to be excepted by stakeholders given the plant is dictated by the wastewater network. Faecal coliforms exceeded 2000 cfu per 100ml on February 14 and 15 2024. This was the only instance of non-compliance under condition 35A in the 2023-24 year, and an investigation into the incident occurred as soon as possible.



8 Appendices

Appendix A Compiled WWTP Monitoring Data

Date	Daily Inflow	Daily Effluent	FC Daily Results	Enterococci	UVT	Total Ammonia Nitrogen	TSS Daily Results	BOD Daily Results
	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
7/1/2023	22221	24755	374	-	67.5	-	8	10
7/2/2023	22501	25220	283	-		-	5	4
7/3/2023	21839	23617	100	-	68.9	-	6	4
7/4/2023	20765	23687	100	-		-	5	5
7/5/2023	20920	22857	245	-	67.4	-	5	5
7/6/2023	19585	22782	894	-		-	5	4
7/7/2023	18743	22460	100	-		-	5	4
7/8/2023	21446	24256	10	-	65	-	5	3
7/9/2023	45117	45300	100	-		-	5	4
7/10/2023	26603	29319	100	-	68.9	2.6	5	3
7/11/2023	24040	26057	100	-		-	5	3
7/12/2023	21252	24640	100	-	69	-	5	5
7/13/2023	21241	23411	100	-		-	8	12
7/14/2023	21682	24292	100	-		-	7	11
7/15/2023	20714	23822	10	-	64.8	-	5	5
7/16/2023	24243	26412	28	-		-	5	4
7/17/2023	22638	24607	100	-	66.3	-	5	4
7/18/2023	21725	23925	100	-		-	5	4
7/19/2023	22153	23886	100	-	67.6	-	5	4
7/20/2023	23664	25745	100	-		-	6	5
7/21/2023	21729	24365	100	-		-	24	22
7/22/2023	29472	30845	113	-	67.3	-	22	18
7/23/2023	45279	45481	39	-		-	6	6
7/24/2023	37386	39611	100	-	64.9	-	6	6
7/25/2023	35251	37644	100	-		-	6	4
7/26/2023	40100	41606	100	-	42.2	-	6	4
7/27/2023	32281	33081	141	-		-	6	3
7/28/2023	45293	46244	100	-		-	6	5
7/29/2023	28568	32228	10	-	65.9	-	6	4
7/30/2023	28483	30562	10	-		-	6	3
7/31/2023	27891	30410	100	-	61.8	-	6	5
8/1/2023	34708	37042	548	-		-	6	3
8/2/2023	34270	36546	7071	-	68.3	-	6	4



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Date	Daily Inflow	Daily Effluent	FC Daily Results	Enterococci	UVT	Total Ammonia Nitrogen	TSS Daily Results	BOD Daily Results
	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
8/3/2023	29241	30605	1732	-		-	6	3
8/4/2023	24391	27711	245	-	64	-	7	10
8/5/2023	24330	27594	17	-		-	7	4
8/6/2023	25384	28312	16	-	62.9	-	10	5
8/7/2023	22884	26199	10	-	61.9	1.16	6	4
8/8/2023	29877	32172	100	-	63.9	-	6	3
8/9/2023	25857	28043	100	-	65.5	-	6	4
8/10/2023	35469	36890	10	-	66.4	-	6	4
8/11/2023	28291	29950	10	-	63.9	-	6	4
8/12/2023	26784	28877	10	-	63.2	-	11	5
8/13/2023	30001	33248	17	-	62.5	-	6	7
8/14/2023	26658	29246	63	-	62.1	-	6	4
8/15/2023	27096	30068	10	-		-	6	4
8/16/2023	72229	68111	22	-	63.7	1.49	6	7
8/17/2023	36133	39825	548	-	64.1	-	6	5
8/18/2023	26590	31157	500	-	60	-	8	5
8/19/2023	46846	49542	10	-	64.6	-	6	4
8/20/2023	38018	42561	265	-	66.7	-	6	3
8/21/2023	40378	43105	10	10	66.6	-	6	4
8/22/2023	31578	34122	10	10	67.6	-	10	4
8/23/2023	27516	30457	10	10	61.3	-	6	4
8/24/2023	25820	27299	10	10	65.1	0.22	6	4
8/25/2023	23561	27143	10	6000	65	-	5	5
8/26/2023	25438	27173	10	10	63.8	-	5	4
8/27/2023	26097	28237	1066	10	62.1	-	5	4
8/28/2023	24784	25202	10	10	64.6	-	5	4
8/29/2023	23489	23466	14	10	64.6	-	6	3
8/30/2023	23888	25736	10	4000	63.4	0.46	6	3
8/31/2023	22839	25411	10	10	64.2	-	6	3
9/1/2023	22636	24576	490	10	61.5	-	6	4
9/2/2023	24120	26160	10	20	64.8	-	6	4
9/3/2023	24652	26988	10	6000	62.6	-	6	3
9/4/2023	22216	24786	14	10	66.8	-	6	5
9/5/2023	23918	25671	775	10	66.7	-	6	5
9/6/2023	23531	25569	35	20	66.4	-	6	3
9/7/2023	23007	25036	14	30	67.9	0.5	101	41
9/8/2023	21953	23939	10	10	65.2	-	6	4
9/9/2023	23576	25442	10	10	66.6	-	6	6
9/10/2023	23864	26096	10	10	65.6	-	6	6



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Date	Daily Inflow	Daily Effluent	FC Daily Results	Enterococci	UVT	Total Ammonia Nitrogen	TSS Daily Results	BOD Daily Results
	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
9/11/2023	24270	25409	17	10	67.8	-	6	5
9/12/2023	22611	24551	22	10	67.6	-	6	5
9/13/2023	22618	24233	10	10	66.5	0.94	6	5
9/14/2023	21904	23531	10	1500	65.7	-	6	4
9/15/2023	20306	23304	14	560	66.5	-	6	6
9/16/2023	21864	23570	303	10	67.5	-	6	5
9/17/2023	24461	25590	158	20	67.7	-	6	3
9/18/2023	23074	24929	26	10	65.1	-	6	5
9/19/2023	21575	23190	17	10	67.3	-	6	4
9/20/2023	20718	22944	28	10	66.9	0.59	6	9
9/21/2023	20343	22959	17	20	65.5	-	6	5
9/22/2023	21760	23887	42	10	66.3	-	6	6
9/23/2023	39053	40542	24	10	65.5	-	6	6
9/24/2023	25150	27523	10	10	66.4	-	6	5
9/25/2023	23094	24389	17	10	67.9	-	4	5
9/26/2023	32186	33517	20	10	69	-	4	5
9/27/2023	35178	37189	45	40	69.6	0.22	5	4
9/28/2023	34473	36449	35	10	68.1	-	6	3
9/29/2023	28064	25355	14	10	68.8	-	6	3
9/30/2023	37373	23587	10	10	67.2	-	6	4
10/1/2023	27164	28055	10	30	67	-	66	31
10/2/2023	23646	25216	14	10	67.4	-	6	3
10/3/2023	21905	23580	10	10	62.9	-	6	4
10/4/2023	21951	23460	14	10	64.8	0.38	39	29
10/5/2023	22464	23454	14	10	68.1	-	6	4
10/6/2023	29160	30148	24	10	65.9	-	6	4
10/7/2023	34228	35277	100	10	65.4	-	27	23
10/8/2023	27110	28202	10	10	66.8	-	6	5
10/9/2023	24706	25434	14	10	65.3	-	6	5
10/10/2023	25632	26832	200	10	64.8	-	6	4
10/11/2023	21985	25079	14	20	63	0.49	6	4
10/12/2023	21323	23913	14	10	67.6	-	6	5
10/13/2023	20338	22816	17	10	65.3	-	7	5
10/14/2023	24966	27929	20	10	65.5	-	6	5
10/15/2023	25266	26211	14	30	62.8	-	6	5
10/16/2023	25737	28438	14	20	70.2	-	6	4
10/17/2023	28039	31060	40	10	68.2	-	6	4
10/18/2023	23783	26705	24	10	67.5	0.39	6	4
10/19/2023	22399	24622	71	6000	63.9	-	6	4



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	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
10/20/2023	21873	23455	65	10	65.8	-	6	4
10/21/2023	21908	23165	10	10	66.3	-	6	4
10/22/2023	20244	23048	17	10	66.2	-	6	4
10/23/2023	23170	26143	10	150	64.2	-	6	4
10/24/2023	32610	35551	161	10	65.2	-	6	4
10/25/2023	25541	27295	458	10	68.4	0.32	6	4
10/26/2023	23260	26081	164	10	68.1	-	6	3
10/27/2023	21057	23965	69	10	66.4	-	7	7
10/28/2023	24380	24868	20	10	66.1	-	20	13
10/29/2023	23946	25492	10	10	64.3	-	6	3
10/30/2023	22516	24529	20	40	65.9	-	6	3
10/31/2023	21388	23760	228	70	67.5	-	6	4
11/1/2023	22877	24302	187	60	68	0.43	6	3
11/2/2023	20242	22833	110	50	66.2	-	6	3
11/3/2023	22073	23777	109	20	63.2	-	6	3
11/4/2023	22057	24315	71	310	65.2	-	6	4
11/5/2023	22144	25411	24	120	65.3	-	6	6
11/6/2023	24068	25885	169	130	69.3	-	12	6
11/7/2023	22441	24589	30	560	68.1	-	37	27
11/8/2023	22906	23959	88	70	67.7	0.63	6	3
11/9/2023	21378	23406	79	10	65.3	-	6	3
11/10/2023	21837	22348	332	10	63.8	-	21	14
11/11/2023	21497	23572	22	10	63.5	-	6	6
11/12/2023	21774	24730	14	10	65	-	6	4
11/13/2023	23374	23270	173	10	65.5	-	6	5
11/14/2023	22310	23143	42	10	65.7	-	6	5
11/15/2023	24271	23478	41	10	65.1	0.19	6	2
11/16/2023	22045	22878	95	10	67.3	-	6	5
11/17/2023	25370	27260	38	20	66.2	-	6	2
11/18/2023	24699	26508	55	30	63.7	-	7	3
11/19/2023	26095	25304	10	30	65	-	6	3
11/20/2023	22735	24121	49	70	63.7	-	30	34
11/21/2023	21578	22975	36	10	64.9	-	6	3
11/22/2023	21858	23119	28	10	66.3	0.63	13	14
11/23/2023	19654	21689	48	10	66.8	-	5	3
11/24/2023	24626	23791	16	10	66.4	-	4	2
11/25/2023	24008	25311	22	10	63.6	-	5	3
11/26/2023	26504	25787	14	10	66.7	-	5	4
11/27/2023	23095	22980	69	20	66.2	-	6	3



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	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
11/28/2023	22972	23715	14	20	67.8	-	6	3
11/29/2023	21260	22734	47	10	66.8	0.2	6	2
11/30/2023	23208	23472	14	10	67.2	-	6	3
12/1/2023	19674	-	43	20	67.1	-	8	10
12/2/2023	19559	-	10	10	65.8	-	5	6
12/3/2023	31265	-	14	10	67.1	-	5	4
12/4/2023	19690	-	32	20	69.1	-	5	2
12/5/2023	20925	-	100	20	70	-	6	2
12/6/2023	21165	-	10	3200	67.3	0.27	6	5
12/7/2023	20230	-	10	10	66.7	-	6	3
12/8/2023	20756	-	663	10	67.1	-	5	3
12/9/2023	21260	-	10	20	66.5	-	6	3
12/10/2023	23608	-	24	10	67.4	-	10	14
12/11/2023	22677	-	17	10	66.5	-	5	3
12/12/2023	23933	-	22	10	68.1	-	11	7
12/13/2023	20872	-	16	10	67.4	-	6	3
12/14/2023	21387	-	20	10	66.2	0.71	6	3
12/15/2023	18622	-	10	10	67.9	-	6	3
12/16/2023	37246	-	10	10	67	-	6	3
12/17/2023	62998	-	10	10	66.6	-	6	3
12/18/2023	23747	-	10	10	66.1	-	6	2
12/19/2023	23063	-	10	10	68.1	-	6	3
12/20/2023	21293	-	10	10	66.9	0.24	6	4
12/21/2023	19949	-	10	10	66.1	-	5	5
12/22/2023	18345	-	10	50	65.5	-	6	6
12/23/2023	20936	-	10	100	64.3	-	6	3
12/24/2023	25647	-	35	10	63.5	-	6	6
12/25/2023	20289	-	134	10	63.4	-	7	17
12/26/2023	21074	-	346	10	64	-	6	8
12/27/2023	19561	-	24	110	67	0.29	5	5
12/28/2023	23579	-	179	10	68.3	-	6	3
12/29/2023	22223	-	180	10	66.9	-	5	3
12/30/2023	20397	-	10	10	67	-	6	2
12/31/2023	19239	-	10	10	67	-	7	2
1/1/2024	18771	17670	10	10	67	-	5	6
1/2/2024	18509	17439	59	10	66	-	7	3
1/3/2024	19147	17424	297	10	68	0.14	5	3
1/4/2024	17503	17512	83	10	66	-	6	5
1/5/2024	18063	17410	10	10	62	-	6	5



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	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
1/6/2024	20915	18603	10	60	64	-	6	6
1/7/2024	20627	18796	10	10	65	-	6	3
1/8/2024	19255	18283	65	10	65	-	6	3
1/9/2024	19149	18118	10	10	67	-	6	3
1/10/2024	19001	17956	14	10	64	0.24	6	3
1/11/2024	19206	18218	82	30	64	-	6	3
1/12/2024	17650	17374	10	10	64	-	6	8
1/13/2024	18066	16978	37	20	60	-	6	19
1/14/2024	19454	17855	14	10	64	-	7	4
1/15/2024	19064	17361	10	40	64	-	6	2
1/16/2024	20499	17868	10	10	64	-	6	3
1/17/2024	19183	17446	141	10	66	0.19	6	2
1/18/2024	19558	17053	161	10	68	-	6	2
1/19/2024	19166	17145	110	10	65	-	6	3
1/20/2024	19611	17437	17	10	63	-	6	5
1/21/2024	18867	17714	10	30	65	-	22	17
1/22/2024	21058	18265	10	10	61	-	7	9
1/23/2024	18379	17974	20	10	62	-	6	7
1/24/2024	20816	17435	47	10	67	0.61	6	8
1/25/2024	18907	17362	10	20	64	-	6	7
1/26/2024	20116	17456	10	10	66	-	6	6
1/27/2024	26173	26750	110	40	65	-	6	8
1/28/2024	21928	22563	10	10	67	-	9	6
1/29/2024	20629	21442	390	3800	68	-	6	6
1/30/2024	21732	19852	45	10	67	-	6	4
1/31/2024	21547	19589	24000	150	62	0.56	6	3
2/1/2024	20396	19876.12	35	10	66	-	6	4
2/2/2024	21957	21881.01	93	40	65	-	-	6
2/3/2024	24829	25193.72	110	250	64	-	6	3
2/4/2024	22880	22938.6	17	80	62	-	6	2
2/5/2024	21097	20072.59	1368	370	63	-	6	5
2/6/2024	21956	21562.63	303	520	66	-	6	5
2/7/2024	20492	19422.35	392	10	68	0.52	6	2
2/8/2024	21723	19654.61	395	420	67	-	6	2
2/9/2024	21522	19262.74	10	30	67	-	6	2
2/10/2024	20551	21191.75	162	560	65	-	6	2
2/11/2024	23174	21838.17	39	10	63	-	6	2
2/12/2024	21687	20309.48	1500	2600	65	-	6	4
2/13/2024	20436	19436.2	10	1800	66	-	6	10



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	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
2/14/2024	18957	19216.58	5348	1600	66	21.6	6	6
2/15/2024	19931	19930.2	3924	10	68	-	6	7
2/16/2024	18080	18056.62	146	10	69	-	6	12
2/17/2024	18403	17887.1	10	10	68	-	6	3
2/18/2024	20421	19040.28	10	10	62	-	6	3
2/19/2024	19537	17397.54	28	10	66	-	6	6
2/20/2024	20647	17489.71	10	40	65	-	6	7
2/21/2024	18190	18822.19	10	10	67	3.1	6	9
2/22/2024	19170	19319.63	77	10	67	-	6	4
2/23/2024	19032	18659.42	14	180	67	-	5	3
2/24/2024	22642	21311.46	26	230	69	-	3	3
2/25/2024	22583	26942.8	361	10	68	-	-	4
2/26/2024	21137	20245.98	141	10	68	-	6	4
2/27/2024	20699	19133.03	14	10	67	-	6	5
2/28/2024	19529	19419.24	10	10	67	0.26	12	3
2/29/2024	18573	17603	10	10	67	-	7	3
3/1/2024	17128	17773.41	212	140	63	-	6	4
3/2/2024	18465	17957.51	118	-	62	-	6	3
3/3/2024	21557	19420.88	77	70	60	-	6	4
3/4/2024	32957	28618.27	148	10	69	-	-	14
3/5/2024	21844	21939.96	1897	10	62	-	6	3
3/6/2024	19515	20340.78	110	10	66	0.25	6	3
3/7/2024	17567	16988.22	10	10	64	-	6	3
3/8/2024	17803	17376.84	200	10	65	-	6	3
3/9/2024	19239	18252.08	108	70	62	-	27	11
3/10/2024	20424	18170.89	22	50	60	-	6	6
3/11/2024	18938	17709.24	167	10	62	-	7	9
3/12/2024	18500	17677.1	245	10	61	-	8	6
3/13/2024	18927	18366.44	161	10	62	0.08	85	12
3/14/2024	18210	17588.91	118	10	66	-	12	12
3/15/2024	20468	19487.29	63	80	65	-	6	8
3/16/2024	19849	20766.17	30	10	62	-	6	7
3/17/2024	21508	20076.89	10	10	63	-	82	48
3/18/2024	20074	18266.01	438	30	62	-	62	14
3/19/2024	18915	-	30	10	65	-	62	11
3/20/2024	19561	18456.01	40	300	63	0.13	25	21
3/21/2024	18417	18510.11	14	50	64	-	6	5
3/22/2024	18588	17801.67	46	70	64	-	6	5
3/23/2024	19703	18202.39	14	70	63	-	6	7



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	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
3/24/2024	20900	18426.25	10	140	62	-	6	7
3/25/2024	19758	18802.54	20	-	64	-	6	7
3/26/2024	18882	19753.47	458	200	63	-	6	6
3/27/2024	18562	18554.6	14	10	63	0.94	6	7
3/28/2024	18293	17349.51	10	10	65	-	6	6
3/29/2024	20375	18418.6	130	10	65	-	10	5
3/30/2024	19568	18114.09	155	10	49.20	-	6	6
3/31/2024	17551	17391.6	148	20	56.50	-	9	10
4/1/2024	19369	18378	134	10	46.90	-	6	6
4/2/2024	20573	19449	283	10	39.20	-	137	47
4/3/2024	19848	18867	755	10	47.30	0.37	73	5
4/4/2024	22902	22069	17	10	46.40	-	74	23
4/5/2024	25336	24257	14	10	58.50	-	27	14
4/6/2024	21205	20144	17	10	46.70	-	69	15
4/7/2024	22392	20185	28	10	48.30	-	7	7
4/8/2024	19851	18061	17	10	35.00	-	6	6
4/9/2024	20064	18555	118	10	55.60	-	6	6
4/10/2024	20419	18678	57	10	57.60	0.65	6	3
4/11/2024	19589	18536	10	10	65.40	-	71	34
4/12/2024	54441	53141	10	10	65.00	-	6	4
4/13/2024	49855	47504	10	10	60.90	-	6	3
4/14/2024	29176	27224	10	10	59.70	-	38	29
4/15/2024	23384	21410	24	10	58.20	-	60	24
4/16/2024	20951	25073	10	10	55.70	-	29	20
4/17/2024	21012	19177	10	10	57.70	0.28	6	5
4/18/2024	19596	18731	10	10	57.10	-	6	5
4/19/2024	19740	18025	10	20	60.90	-	6	3
4/20/2024	18353	18271	10	10	61.60	-	6	5
4/21/2024	19334	18154	10	10	57.30	-	6	5
4/22/2024	20157	18795	10	10	60.40	-	5	4
4/23/2024	18838	17782	10	10	58.10	-	6	5
4/24/2024	18150	18949	89	4000	61.90	0.15	6	3
4/25/2024	18711	19548	138	10	59.60	-	6	9
4/26/2024	19173	19752	7937	10	62.70	-	6	4
4/27/2024	19292	21394	47	10	62.40	-	6	4
4/28/2024	20420	22422	48	10	63	-	6	5
4/29/2024	19885	20281	141	3500	68	-	6	6
4/30/2024	18752	19279	10	10	66	-	6	5
5/1/2024	50961	49743	10198	10	69	0.92	6	6



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	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
5/2/2024	31179	34393	55	4000	68	-	6	4
5/3/2024	20147	23848	51	20	67	-	6	3
5/4/2024	20154	23722	9487	30	63	-	6	8
5/5/2024	23846	25227	22	10	67	-	6	8
5/6/2024	20322	22525	126	10	67	-	6	5
5/7/2024	20196	22283	62	10	67	-	6	4
5/8/2024	21526	23626	71	10	69	0.95	6	3
5/9/2024	21594	23188	42	10	69	-	6	3
5/10/2024	19069	22008	22	10	68	-	6	7
5/11/2024	21833	23544	10	10	66	-	6	9
5/12/2024	22263	23892	10	10	66	-	6	10
5/13/2024	20906	22505	63	10	-	-	6	8
5/14/2024	20576	21953	22	10	67	-	6	7
5/15/2024	21053	23061	10	10	66	3.97	6	10
5/16/2024	19972	22626	10	10	67	-	7	10
5/17/2024	19601	21435	10	10	68	-	6	15
5/18/2024	20580	22653	36	20	64	-	6	11
5/19/2024	21875	23878	42	10	66	-	6	20
5/20/2024	20626	22986	24	20	69.1	-	6	16
5/21/2024	28739	30868	14	10	69.0	-	6	19
5/22/2024	25879	27950	782	10	67.8	7.73	86	18
5/23/2024	21121	23678	10	10	67.4	-	6	19
5/24/2024	20928	22785	35	10	66.7	-	6	16
5/25/2024	21236	23639	10	10	65.8	-	6	14
5/26/2024	23564	25213	10	10	64.5	-	6	11
5/27/2024	20918	22560	26	10	65.9	-	6	25
5/28/2024	20240	22707	36	10	62.80	-	6	19
5/29/2024	19904	21884	45	10	63.50	17.6	6	27
5/30/2024	19499	21599	10	10	64.00	-	6	15
5/31/2024	15089	16076	45	10	62.00	-	6	19
6/1/2024	19378	21008	10	10	61.60	-	6	11
6/2/2024	19374	21693	10	10	59.90	-	6	10
6/3/2024	21934	23433	10	40	59.50	-	7	23
6/4/2024	19707	21849	10	10	60.50	-	6	17
6/5/2024	20474	22102	35	10	61.90	23.3	6	21
6/6/2024	19536	21502	10	10	62.30	-	6	16
6/7/2024	18611	20687	20	40	59.70	-	6	5
6/8/2024	20204	22321	173	10	61.80	-	6	29
6/9/2024	28407	29491	346	160	61.50	-	6	37



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Date	Daily Inflow	Daily Effluent	FC Daily Results	Enterococci	UVT	Total Ammonia Nitrogen	TSS Daily Results	BOD Daily Results
	m ³	m ³	cfu/100mL	cfu/100mL	%	mg/L	g/m ³	g/m ³
6/10/2024	24255	26469	22	60	61.30	-	6	21
6/11/2024	21551	23513	3950	180	61.60	-	6	27
6/12/2024	20333	22478	40	10	61.30	24.9	5	10
6/13/2024	21528	23113	277	180	64.80	-	6	8
6/14/2024	36437	38260	110	1000	65.10	-	5	9
6/15/2024	34284	35090	254	10	63.00	-	5	10
6/16/2024	32797	34737	663	20	62.30	-	6	10
6/17/2024	24437	26419	45	120	62.30	-	6	6
6/18/2024	21932	25255	10	40	61.50	-	6	11
6/19/2024	22094	23774	182	50	59.70	24.2	6	9
6/20/2024	20574	22743	110	10	62.00	-	6	9
6/21/2024	20032	22355	548	10	59.80	-	5	9
6/22/2024	20654	22778	17	250	59.60	-	6	12
6/23/2024	23930	25991	10	200	59.10	-	6	14
6/24/2024	20471	23228	182	90	60.10	-	6	12
6/25/2024	29193	30450	164	200	60.30	-	6	12
6/26/2024	23152	24221	59	10	64.60	24	6	9
6/27/2024	20252	22367	130	50	63.20	-	6	8
6/28/2024	21384	23358	265	70	57	-	6	8
6/29/2024	20310	22072	265	-	-	-	6	9
6/30/2024	21780	23489	300	-	-	-	6	12



Appendix B Shoreline Monitoring Results

140m generally eastwards of the outfall											
Date	Total Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Dissolved Reactive Phosphorus	Total Nitrogen	Total Phosphorus	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.
dd/mm/yyyy	g/m3	g/m3	g/m3	g/m3	g/m3	g/m3	cfu/100mL	-	g/m3	g/m3	C
1/08/2023	-	-	-	-	-	-	180	-	-	-	-
2/08/2023	-	-	-	-	-	-	410	-	-	-	-
4/08/2023	-	-	-	-	-	-	40	-	-	-	-
7/08/2023	-	-	-	-	-	-	370	-	-	-	-
27/09/2023	0.02	0.1	0.1	0.019	0.25	0.021	40	8	36	10	12.6
29/09/2023	0.03	0.1	0.1	0.015	0.17	0.043	180	7.9	33	8	13
02/10/2023	0.07	0.1	0.1	0.047	0.67	0.1	10	8.2	34	10.94	11.6
04/10/2023	0.08	0.1	0.1	0.035	0.27	0.1	10	7.9	35	10.73	13.7
09/11/2023	0.060	0.01	0.01	0.005	0.31	0.019	10	8.2	36	10.91	15.3
10/11/2023	0.040	0.01	0.01	0.005	0.53	0.014	10	8.5	36	16.67	15.4
11/11/2023	0.130	0.10	0.10	0.005	0.66	0.047	10	8.0	35	10.31	13.4
08/12/2023	0.110	0.10	0.1	0.1240	0.38	0.151	10	8.27	33	12.3	19.6
09/12/2023	0.080	0.10	0.1	0.2230	0.50	0.250	10	8.17	31	10.43	17.7
10/12/2023	0.160	0.10	0.1	0.0170	0.55	0.076	10	8.03	34	10	16.9
05/03/2024	0.17	0.1	0.1	0.015	0.570	0.081	110	8.26	34	10.02	16.9
06/03/2024	0.26	0.1	0.1	0.010	0.950	0.050	10	8.16	38	9.75	16.7
07/03/2024	0.02	0.1	0.1	0.008	0.500	0.050	30	8.14	34	10.25	16.8
07/04/2024	0.11	0.1	0.1	0.063	0.78	0.07	30	8.1	38	10.15	14.9
08/04/2024	0.02	0.1	0.1	0.012	0.587	0.05	30	8.07	39	10.96	15.7
09/04/2024	0.06	0.1	0.1	0.046	0.328	0.052	60	8.09	38	10.43	16.5
13/04/2024	0.16	0.10	0.10	0.030	0.610	0.155	500	8.26	37	10.21	16.4
14/04/2024	0.11	0.1	0.10	0.024	0.762	0.057	40	8.23	38	10.37	16.1
15/04/2024	0.02	0.1	0.1	0.007	0.272	0.005	10	8.21	39	10.35	16.7
16/04/2024	0.04	0.1	0.1	0.003	0.34	0.05	120	8.17	38	10.35	16.7
02/05/2024	0.01	0.10	0.1	0.009	0.19	0.07	40	8.19	37	10.89	15
03/05/2024	0.02	0.10	0.1	0.009	0.27	0.05	10	8.22	38	10.73	15
06/06/2024	0.01	0.01	0.01	0.027	0.129	0.05	10	8.04	38	11.78	11.8
07/06/2024	0.01	0.01	0.01	0.008	0.155	0.05	10	8.21	38	11.64	13.3
16/06/2024	0.12	0.1	0.1	0.009	0.346	0.05	10	8.21	38	11.54	13.7



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17/06/2024	0.12	0.1	0.01	0.008	0.214	0.05	10	8.17	38	11.32	13.6
18/06/2024	0.12	0.01	0.01	0.009	0.274	0.05	10	8.18	38	11.36	13.4
19/06/2024	0.13	0.1	0.01	0.01	0.320	0.096	10	8.12	38	11.36	12.6
20/06/2024	0.12	0.01	0.01	0.016	0.274	0.073	10	8.16	38	12.13	11.3

200m generally south-westwards of the outfall											
Date	Total Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Dissolved Reactive Phosphorus	Total Nitrogen	Total Phosphorus	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.
dd/mm/yyyy	g/m3	g/m3	g/m3	g/m3	g/m3	g/m3	cfu/100mL	-	g/m3	g/m3	C
1/08/2023	-	-	-	-	-	-	20	-	-	-	-
2/08/2023	-	-	-	-	-	-	50	-	-	-	-
4/08/2023	-	-	-	-	-	-	10	-	-	-	-
7/08/2023	-	-	-	-	-	-	10	-	-	-	-
27/09/2023	0.01	0.1	0.1	0.022	0.2	0.046	220	8	35	10	12.4
29/09/2023	0.02	0.1	0.1	0.063	0.4	0.063	700	7.5	33	10	13.2
02/10/2023	0.11	0.1	0.1	0.39	0.78	0.1	10	8.2	34	10.7	12.8
04/10/2023	0.09	0.1	0.1	0.033	0.16	0.1	10	7.6	35	10.5	13.6
09/11/2023	0.04	0.01	0.01	0.067	0.36	0.093	20	8.0	35	9.41	16.5
10/11/2023	0.05	0.10	0.01	0.044	0.79	0.081	10	8.3	35	12.78	16.4
11/11/2023	0.07	0.10	0.10	0.044	0.56	0.077	10	8.1	35	10.40	13.8
08/12/2023	0.03	0.10	0.1	0.147	0.24	0.050	10	8.31	33	13.9	19.8
09/12/2023	0.07	0.10	0.1	0.227	0.42	0.248	10	8.21	31	10.6	17.6
10/12/2023	0.05	0.10	0.1	0.011	0.26	0.050	10	8.1	34	9.9	17.0
05/03/2024	0.15	0.1	1.0	0.055	0.840	0.173	110	8.28	34	10.13	16.7
06/03/2024	0.25	0.1	0.1	0.023	0.990	0.050	10	8.1	38	10.18	16.0
07/03/2024	0.02	0.1	0.1	0.031	0.610	0.100	10	8.1	34	10.07	17.7
07/04/2024	0.1	0.1	0.1	0.075	0.708	0.054	40	8.07	38	10.27	15.8
08/04/2024	0.1	0.1	0.1	0.077	0.771	0.081	100	8.09	38	10.7	16.6
09/04/2024	0.04	0.1	0.1	0.071	0.296	0.14	70	8.03	38	10.27	17.1
13/04/2024	0.20	0.1	0.1	0.034	0.459	0.047	250	8.21	37	10.42	16.4
14/04/2024	0.01	0.1	0.1	0.047	0.72	0.054	20	8.21	38	10.55	15.0
15/04/2024	0.1	0.1	0.1	0.028	0.183	0.1	10	8.25	38	11.2	16.8
16/04/2024	0.05	0.1	0.1	0.008	0.268	0.1	10	8.22	38	10.47	16.6
02/05/2024	0.03	0.10	0.1	0.013	0.66	0.59	30	8.26	37	10.58	16.5
03/05/2024	0.01	0.10	0.1	0.013	0.20	0.09	10	8.16	38	10.88	15.1



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06/06/2024	1.14	0.01	0.01	0.071	0.853	0.05	10	8.17	37	11.44	14.1
07/06/2024	0.17	0.01	0.01	0.015	0.278	0.05	10	8.38	38	11.3	14.2
16/06/2024	0.44	0.1	0.1	0.023	0.649	0.05	10	8.24	37	11.12	14.4
17/06/2024	0.18	0.1	0.01	0.016			10	8.08	38	11.35	13.5
18/06/2024	0.55	0.1	0.01	0.042	0.802	0.058	10	8.21	37	11.07	13.5
19/06/2024	0.31	0.1	0.01	0.044	0.604	0.187	10	8.29	38	11.78	13.1
20/06/2024	0.31	0.01	0.01	0.032	0.642	0.029	10	8.28	38	11.16	13.2

Titahi Bay					
Date	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.
dd/mm/yyyy y	cfu/100mL	-	g/m3	g/m3	C
1/08/2023	40	-	-	-	-
2/08/2023	520	-	-	-	-
4/08/2023	10	-	-	-	-
7/08/2023	10	-	-	-	-
27/09/2023	60	8.0	35	10	13.5
29/09/2023	340	8.1	34	8	13.0
02/10/2023	10	8.2	36	10.9	12.2
04/10/2023	10	8.1	36	10.5	13.8
09/11/2023	10	8.2	35	11.22	15.8
10/11/2023	10	8.3	36	13.22	15.4
11/11/2023	10	8.1	35	10.41	13.8
08/12/2023	10	8.18	35	9.57	20.7
09/12/2023	10	8.19	34	9.86	17.9
10/12/2023	10	8.01	34	9.97	16.9
05/03/2024	380	8.21	34	9.86	16.9
06/03/2024	20	8.14	38	10.54	15.6
07/03/2024	10	8.27	34	9.79	17.5
07/04/2024	460	8.21	38	10.43	16.5
08/04/2024	10	8.07	38	10.96	15.7
09/04/2024	40	8.1	38	10.47	16.9
13/04/2024	210	8.27	38	9.97	16.6
14/04/2024	80	8.16	38	10.54	15.6
15/04/2024	10	8.17	39	10.73	16.7
16/04/2024	50	8.16	38	11.22	16.4
02/05/2024	10	8.24	38	10.83	15.3



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03/05/2024	10	8.2	38	10.78	15.2
06/06/2024	140	8.24	38	11.71	13.3
07/06/2024	10	8.17	38	11.5	13.6
16/06/2024	10	8.19	38	11.29	13.3
17/06/2024	10	8.16	38	11.41	12.2
18/06/2024	10	8.19	38	11.29	12.4
19/06/2024	10	8.22	38	11.83	11.5
20/06/2024	10	8.22	38	10.95	12.8

Control											
Date	Total Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Dissolved Reactive Phosphorus	Total Nitrogen	Total Phosphorus	Enterococci	pH	Salinity	Dissolved Oxygen	Temp.
dd/mm/yyyy	g/m3	g/m3	g/m3	g/m3	g/m3	g/m3	cfu/100mL	-	g/m3	g/m3	C
1/08/2023	-	-	-	-	-	-	10	-	-	-	-
2/08/2023	-	-	-	-	-	-	310	-	-	-	-
4/08/2023	-	-	-	-	-	-	20	-	-	-	-
7/08/2023	-	-	-	-	-	-	10	-	-	-	-
27/09/2023	0.01	0.1	0.1	0.007	0.079	0.022	10	7.9	36	9	13.2
29/09/2023	0.06	0.1	0.1	0.005	0.439	0.015	300	8.0	33	10	13.6
02/10/2023	0.01	0.1	0.1	0.011	0.26	0.1	20	8.1	35	10.6	12.1
04/10/2023	0.01	0.1	0.1	0.007	0.19	0.1	10	8.1	34	10.6	14.3
09/11/2023	0.02	0.01	0.01	0.008	0.27	0.019	10	8.5	36	13.34	16.8
10/11/2023	0.02	0.10	0.01	0.007	0.85	0.036	10	8.3	36	12.73	15.7
11/11/2023	0.01	0.10	0.10	0.007	0.34	0.021	10	8.2	35	10.43	13.7
08/12/2023	0.01	0.10	0.1	0.006	0.25	0.050	90	8.01	35	13.65	19.6
09/12/2023	0.01	0.10	0.1	0.006	0.61	0.050	10	8.1	34	10.27	18.2
10/12/2023	0.01	0.10	0.1	0.005	0.41	0.050	20	8.13	34	9.85	16.9
05/03/2024	-	-	-	-	-	-	-	-	-	-	-
06/03/2024	-	-	-	-	-	-	-	-	-	-	-
07/03/2024	-	-	-	-	-	-	-	-	-	-	-
07/04/2024	-	-	-	-	-	-	-	-	-	-	-
08/04/2024	0.01	0.1	0.1	0.04	0.269	0.05	10	8.14	38	10.46	16.4
09/04/2024	0.01	0.1	0.1	0.09	0.143	0.025	30	8.05	38	10.35	17
13/04/2024	0.01	0.1	0.1	0.02	0.280	0.025	260	8.32	36	10.72	16.7
14/04/2024	0.01	0.1	0.1	0.005	0.18	0.022	100	8.22	38	10.87	15.6
15/04/2024	0.02	0.1	0.1	0.006	0.185	0.1	10	8.17	37	10.73	16.7



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16/04/2024	0.05	0.1	0.1	0.002	0.455	0.1	280	8.16	38	11.22	16.4
02/05/2024	0.01	0.10	0.1	0.009	0.15	0.05	10	8.3	37	13.25	15.7
03/05/2024	0.01	0.10	0.1	0.009	0.26	0.06	10	8.25	38	11.78	15.2
06/06/2024	0.01	0.01	0.01	0.013	0.175	0.05	10	8.08	38	11.75	13.8
07/06/2024	0.01	0.01	0.01	0.005	0.137	0.05	10	8.11	38	11.81	13.7
16/06/2024	0.12	0.1	0.1	0.008	0.194	0.05	10	8.31	37	11.7	13.7
17/06/2024	0.12	0.1	0.01	0.007	0.306	0.05	10	8.29	38	11.14	13.6
18/06/2024	0.11	0.1	0.01	0.007	0.334	0.066	10	8.41	38	10.18	13.1
19/06/2024	0.29	0.1	0.01	0.002	0.308	0.05	10	8.09	39	11.61	12.1
20/06/2024	0.19	0.1	0.01	0.013	0.285	0.066	10	8.39	38	10.9	12.2



Appendix C Meeting Minutes



Regional Wastewater Services MEETING MINUTES

Date:	13 December 2023
Subject:	Customer Liaison Group meeting – Porirua Wastewater Treatment Plant
Time:	17:30pm
Location:	Te Rauparaha Arena, Meeting room 1
Attendees:	Facilitator – Andrew Freeman GWRC – Amanda O'Brien Veolia – Alex Phelan, Nico Robins WWL – Jeremy McKibbin, Blair Johnson, Joemar Cacnio, Janice Rodenburg, Craig Shuttleworth (Mins) RPH – Mike Fisher Community members and Councillors – Jim Mikoz, Marie Wright, Dan Albert, Michelle Warshawesky, Jenny Jakobs
Apologies:	Graeme Ebbett, Rachael Allen (WCC)

Welcome & Introduction by WWL	Action	Due
<p>Andrew opened with a Karakia welcoming everyone to the meeting advising Health and Safety instructions and emergency evacuation procedures.</p> <p>Round table introductions were conducted by all attendees.</p> <p>Before introducing Joemar to start with his presentation Andrew reminded attendees of the importance of respect and read out the agenda advising that questions would be answered in the later stages of the meeting.</p>		
Plant performance/compliance presentation FY2022/23	Action	Due
<p>Joemar began with a PowerPoint presentation detailing the wastewater treatment process of the Porirua WWTP and the compliance performance. Joemar also detailed some discharges that had occurred in both 22/23 and the current 23/24 year to present and updated on the status of various upgrade projects currently being undertaken at the plant.</p> <p>The presentation continued advising the attendees of the plant's 'Fair' rated performance in relation to the resource consents for the financial year ending 30 June 2023.</p>		
GWRC commentary/feedback	Action	Due
<p>Andrew thanked Joemar for the opening segment and invited Amanda up to offer some thoughts from regional councils' perspective.</p> <p>Amanda explained to the attendees how the regional council had come to the decision to grant the plant's compliance rating as 'Fair' noting they had given the Effluent consent a 'significant non-compliance rating' and that infringements and formal warnings had been issued but the score takes into all consents combined so this balances the good/bad.</p> <p>The new consent performance was acknowledged which came into effect mid-July with Amanda noting a formal warning being issued for missed sampling in the first month due to a communication error and there was ongoing investigations into some recent discharges but no action had been made on these yet. Amanda noted good notifications and communications from</p>		



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WWL during this process and advised that the plant is fully compliant currently with the new air discharge consent.		
New consent update/presentation FY2023/24	Action	Due
Joemar continued the second half of the presentation citing the deliverables that had been achieved under the new consent and the items that were still in progress but on target.		
Questions/Feedback from the Community	Action	Due
<p>Andrew invited members of the community to come forward with any questions they may have about the presentation or the plant itself. The following matters were raised:</p> <ul style="list-style-type: none"> Generator procurement for the UV System and its delay – funding on way in 2024 and it will be future-proofed to cope with forecasted demand Outfall structure, why is it fully compliant rated if elbow is broken? – Based on dispersion modelling reports the replacement is not needed currently - <u>ACTION – WWL to provide reports/plans/pictures to Jim Mikoz</u> UV performance issues – sole focus is compliance and fixing the mechanical issues, when this is sorted the plant may be able to be scored “Good/Very Good”. Both UV systems operational in heavy rain events Alarm/Pager system issues – current pager system is through the cellular network, using Moa Point connection currently but work being done to change to Seaview as this is expected to be more reliable Blower performance and are they adequate size? – Blowers were replaced in 2019, they are adequate size for the plant operating on duty/duty/standby. Solids disposal currently – Disposed at Spicer landfill, no plans to build a SMF at this stage due to huge funding requirements. Population growth, can it cope? – Modelling team within WWL say the plant can cope till 2048, there is also space for a 4th clarifier, should the plant need it. Concern was raised regarding the microbial sampling guidelines with the new consent – WWL understands the concern raised by the community but is required to meet the exact conditions as set out in the consent and must continue to do so. Beach signs/LAWA updates not correlating – Signs are shared with the network for overflows, relies on manual intervention. Agreement that it is a complex issue but consistency between LAWA and signs/messaging is key. <u>ACTION – WWL to look at the current notification procedure around signs to see if it can be improved.</u> Compliments and thanks were passed form the community members for the hard work operating the plant also the notifications, transparency around discharges and the recent website being a step in the right direction. 	WWL	Feb 24
	WWL	Feb 24
Closing comments	Action	Due
<p>Blair thanked all for attending and expressed the importance of being open to the community and the CLG meeting being the right platform to have these discussions.</p> <p>Jeremy also thanked the community for their input and attendance adding these meetings help drive change/funding so that WWL as operators can carry out the upgrades once funding is approved by local councils.</p> <p>Andrew closed the meeting with a Karakia.</p>		
<p>Attachments:</p> <p>Wellington Water Presentation</p>		
MEETING CLOSED 18:55pm		



Appendix D Complaints Register

D.1 Wastewater Discharge Complaints

Date of Complaint reviewed by Wellington Water	Date of Incident	Complaint description/ Characteristics as per the complainant	Duration of the alleged event/incident	Location of the complaint	Cause of the complaint	Remedial actions undertaken
10/04/2024	7/04/2024	On 7/04/2024, the complainant emailed Greater Wellington Regional Council regarding sewage from possibly Porirua Wastewater Treatment Plant going into the ocean near Rukutane point using the FB post uploaded on the Titahi Bay Residents Associations page as reference.	The complaint indicated that there would have been another discharge incident on 7 April 2024. This is still under investigation.	Lodged via Titahi Bay Residents Association's Facebook	Visible discolouration around the coastal marine area and cause is still under investigation.	Investigations underway to determine the cause.
10/04/2024	6/04/2024	On 9/04/2024 at 6.20 pm, a formal complaint was lodged to Greater Wellington Regional Council. The formal complaint was lodged for the discharge captured through video for the discharge that occurred on Saturday 6 April 2024 from the Treatment Plant outlet pipe (600m from Titahi Bay beach).	The discharge started at 2.17pm and lasted for approximately 2 hours and 21 minutes.	Titahi Bay catchment site	Visible discolouration around the coastal marine area and cause is still under investigation.	Investigations underway to determine the cause.
12/04/2024	12/04/2024	On 12/04/2024 at 4.49pm, Wellington Water received notification about a public complaint regarding visible discoloration noticed at Porirua Wastewater Treatment Plant.	The discharge started on at 3.18pm which is still under investigation.	Location details are withheld to avoid a privacy breach.	Visible discoloration around the coastal marine area and cause is still under investigation.	Investigations underway to determine the cause.



D.2 Odour Complaints

Date of Complaint Submitted	Date of Incident	Complaint description/ Characteristics as per the complainant	Wind Direction	Average Wind speed (Km/Hr)	Inlet Tunnel Vent Fan Operation – 24 hr format	Plant Operations
24/02/2024	24/02/2024 – 9:38 am	We received a formal complaint letter from one of the Pikarere farm resident relating to odour.	NW	31.3	OFF	Normal
18/01/2024	18/01/2024 -20:47pm	I would like to know what is been done about the odour at the plant I haven't heard back what the plan is but tonight smells bad last night also and Sunday and Monday.	NW	16.1	OFF : (00.00 – 00:36) , (05:00-23:59) ON : (00:37-04:59)	Normal
08/01/2024	08/01/2024 – 12:19 pm	Have just been to the front gate of the farm and the smell of sewage (human waste) is very strong and frankly unacceptable. Lately in northerly conditions there has been strong odour. What controls are on the fan which I believe is the source of the odour? Does it turn off automatically as proposed in the Update Memo at the meeting at Porirua on26 October. Please let me know what action is currently being taken as the odour/smell is unacceptable and clearly in breach of the conditions of the resource consent. Please treat this email as a formal complaint to be recorded in the complaints register	NW	24.4	OFF : (01:05 – 23:59) ON : (00.00 - 01:04)	Normal
03/01/2024	03/01/2024 – 23:01 pm	last 2 months has been the smelliest the Titahi Bay sewer treatment plant has ever been mainly in the evenings. Tonight was really bad up at my house and 3 nights ago I called Veolia and requested that the tunnel fan be turned off the smell was terrible I don't know what's going on down there but the smell is the worst it's ever been. I understand you have things in future for odour mitigation but I'm not willing to wait I think it is in order to get a mist deodorising machine working immediately. The rules clearly state no objectionable odour to cross the boundary, and it is right up	NW	23.9	OFF	Normal



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Date of Complaint Submitted	Date of Incident	Complaint description/ Characteristics as per the complainant	Wind Direction	Average Wind speed (Km/Hr)	Inlet Tunnel Vent Fan Operation – 24 hr format	Plant Operations
		to my house please come back to me with the solution please.				
15/12/2023	15/12/2023 -16:21 pm	Sewer smell bad again	NW	47.3	OFF	Normal
14/12/2023	14/12/2023 – 20:30 pm	Complainant could smell plant up at his house. Requested the odour assessor to perform assessments in the evening	NW	34.9	OFF	Normal
5/11/2023 - 9.55pm	5/11/2023 - 9.55pm	Smell	NW	20.8	Off (00:00 to 23:06) On (23:07 to 23:59)	Normal
1/11/2023	1/11/2023	Smell	NNW	16	Off	Normal
1/11/2023	31/10/2023	Smell	ESE	18.2	On (0:00 to 4:58) Off (4:59 to 23:59)	Normal
1/11/2023	18/10/2023	Smell	SE (0:00 to 8:35) NW (8:36 to 23:59)	15.1	On (0:00 to 8:35) Off (8:36 to 23:59)	Normal
1/11/2023	14/10/2023	Smell	NW	45.6	Off	Normal
1/11/2023	13/10/2023	Smell	NW	32.9	Off	Normal







Stantec is a global leader in sustainable architecture, engineering, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

