



CHRISTCHURCH

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Christchurch Wastewater Treatment Plant

Quarterly Monitoring Report

May – July 2021

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File: Monitoring Report May - July 2021.docx
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Summary

This report summarises the results of parameters monitored by the Christchurch Wastewater Treatment Plant (CWTP) over the period May to July 2021 in accordance with consent CRC051724.

Consent [CRC051724](#) allows the discharge of treated wastewater from the CWTP Oxidation Ponds into the Pegasus Bay Coastal Marine Area via an ocean outfall.

Of the comprehensive sampling programme required by the consent, all samples were collected during the monitoring period and all monitored parameters achieved the required standards.

Christchurch Wastewater Treatment Plant Contents

Quarterly Monitoring Report

May to July 2021

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1 Outfall Discharge

1.1 Resource Consent Conditions

Consent CRC051724 allows CWTP to discharge up to 518,000 cubic metres per day of treated wastewater from the CWTP Oxidation Ponds at a maximum rate of six cubic metres per second into the Pegasus Bay coastal marine area. Compliance conditions regarding the physical discharge to the estuary are summarised in Table 1.1.1. Daily records of maximum outfall discharge flow rates and volumes are attached as an appendix to this report, and shown in summary in Figures 1.2.1 and 1.2.2.

Table 1.1.1 Pond Discharge Consent Compliance for Monitoring Period CRC051724

Consent Condition	Parameter	Compliance Condition	Compliance			
			May 21	June 21	July 21	Overall
2	Discharge Content	Discharge is only wastewater from the CWTP ponds	☺	☺	☺	☺
3	Discharge Volume	Recorded	☺	☺	☺	☺
4	Discharge Rate	Recorded	☺	☺	☺	☺
9	Outfall Maintenance	Routine maintenance completed and recorded	☺	☺	☺	☺
10	Outfall Condition	Visual inspection of outfall	n/a	☺	n/a	n/a
12	Pumping Pressure for a given flow	Monitored	☺	☺	☺	☺

Key: ☺ Full Compliance ☹ Minor, Isolated or Risk of Non-Compliance ☹ Major or Consistent Non-Compliance

1.2 Comments on Compliance

Flowrate and pressure data were recorded as per consent requirements.

CWTP Ocean Outfall Daily Flow Totals

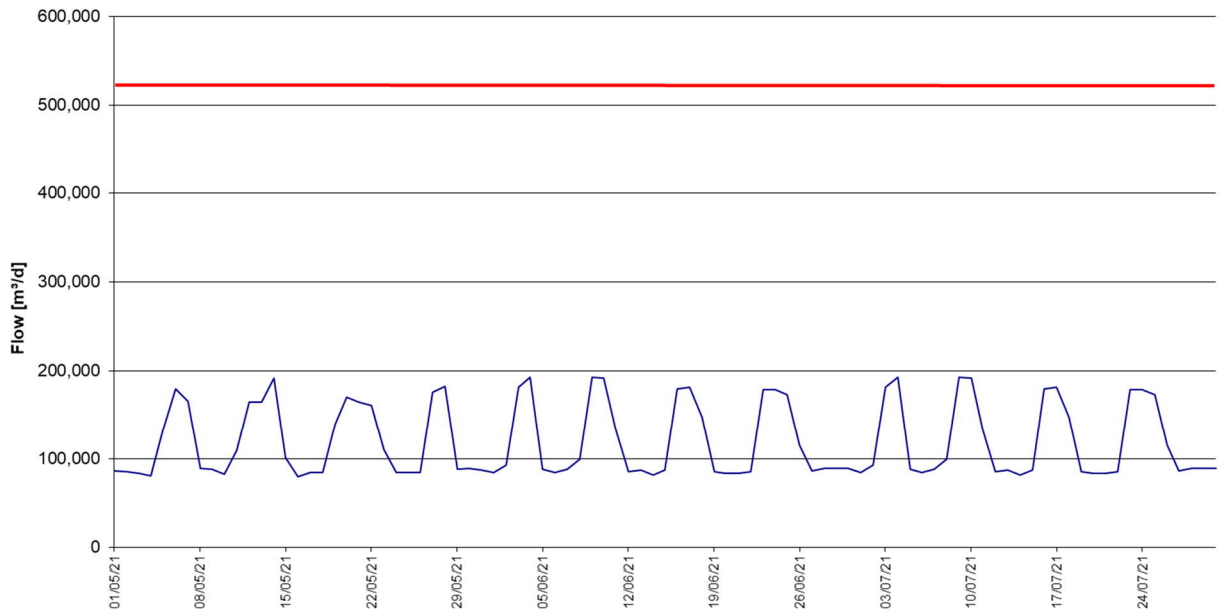


Figure 1.2.1 - Daily Outfall Flow Totals

CWTP Ocean Outfall Peak Discharge Flow Rate (m³/s)

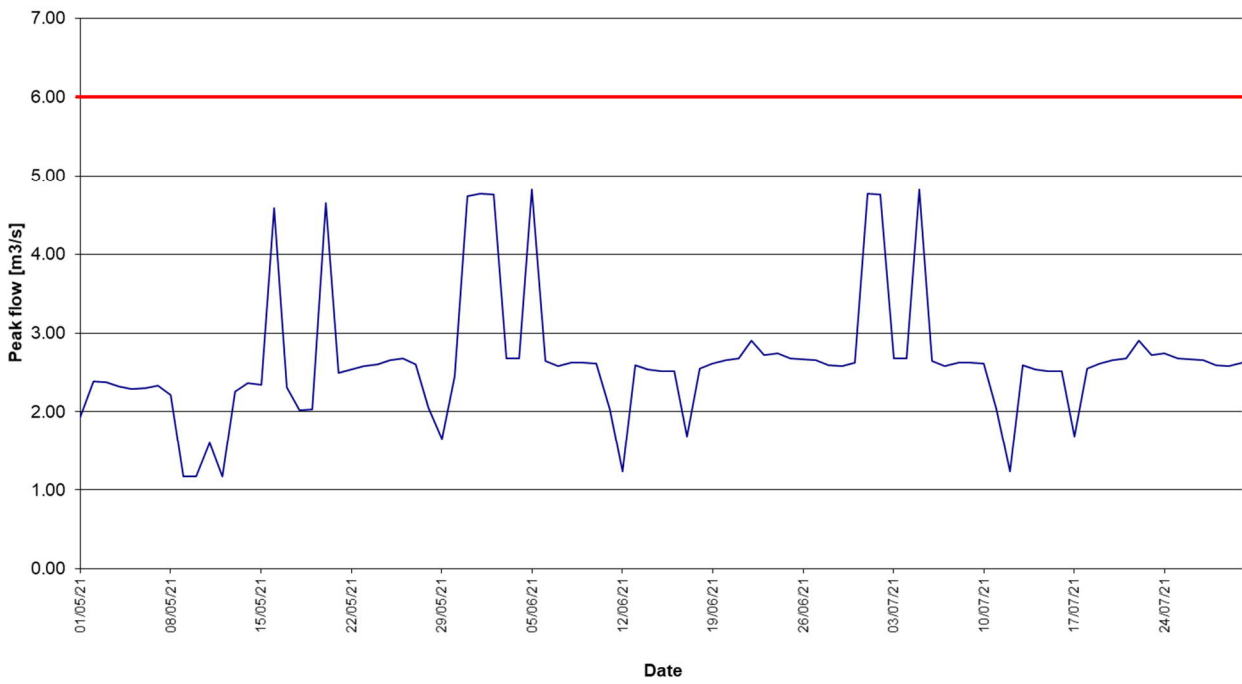


Figure 1.2.2 - Daily Peak Outfall Flows

1.3 Resource Consent Standard Conditions

Conditions 15 and 16 of consent CRC051724 set out concentration standards for a selection of parameters monitored in compliance with condition 13. No more than 16 samples in each rolling 26 week period should exceed the standard value for contaminants listed under condition 15a, and if more than seven from eight consecutive samples should exceed the standard value ECan must be notified within 48 hours. No more than six from eight consecutive samples should exceed the standard value for contaminants listed under condition 16a, and no more than two from eight consecutive samples should exceed the higher value. If more than seven from eight exceed the standard value, or three from eight exceed the higher value, ECan must be notified within 48 hours. Compliance conditions regarding adherence to these standard values are summarised in Table 1.3.1. Analysis results are supplied to Environment Canterbury at quarterly intervals. Contaminant monitoring results for consent CRC051724 are discussed further in Sections 1.4 – 1.9.

Table 1.3.1 Contaminant Limits Consent Compliance November – January 2021 CRC051724

Consent Condition	Parameter	Compliance Condition	Compliance			
			May 21	Jun 21	Jul 21	Overall
15a	Dissolved BOD ₅	Concentration does not exceed 20 g/m ³	☹	☹	😊	😊
	Total Suspended Solids	Concentration does not exceed 50 g/m ³	😊	😊	😊	😊
	Ammoniacal Nitrogen	Concentration does not exceed 40 g/m ³	😊	😊	😊	😊
16a	Faecal Coliforms	Concentration does not exceed 1,000(standard)/5,000(higher) MPN/100mL	😊	☹	😊	😊
	Enterococci	Concentration does not exceed 1,500 MPN/100mL	😊	☹	😊	😊

Key: 😊 Compliance Achieved with no Exceedance of Standard ☹ Compliance Achieved with Occasional Exceedance of Standard
 ☹ Exceedance of Standard resulting in Non-Compliance

1.4 Comments on Compliance

All required samples were collected and analysed

- Overall Compliance for the May – June quarter is good.
- There were two samples during the period that returned non-complaint dissolved BOD **34** mg/L on 5/5/2021 & **23** mg/L on 2/06/2021
- The second occurrence is likely to have been caused by a significant storm event. The exceedance was minor so I have graded overall performance for dissolved BOD as acceptable
- There was one simultaneous occurrence of high (non-compliant) Faecal Coliform and Enterococci on 2nd June. This would have been caused by significant inflows of rainwater into the treatment plant due to the May 30th to June 1st storm event (Approx. 125mm rainfall in total)

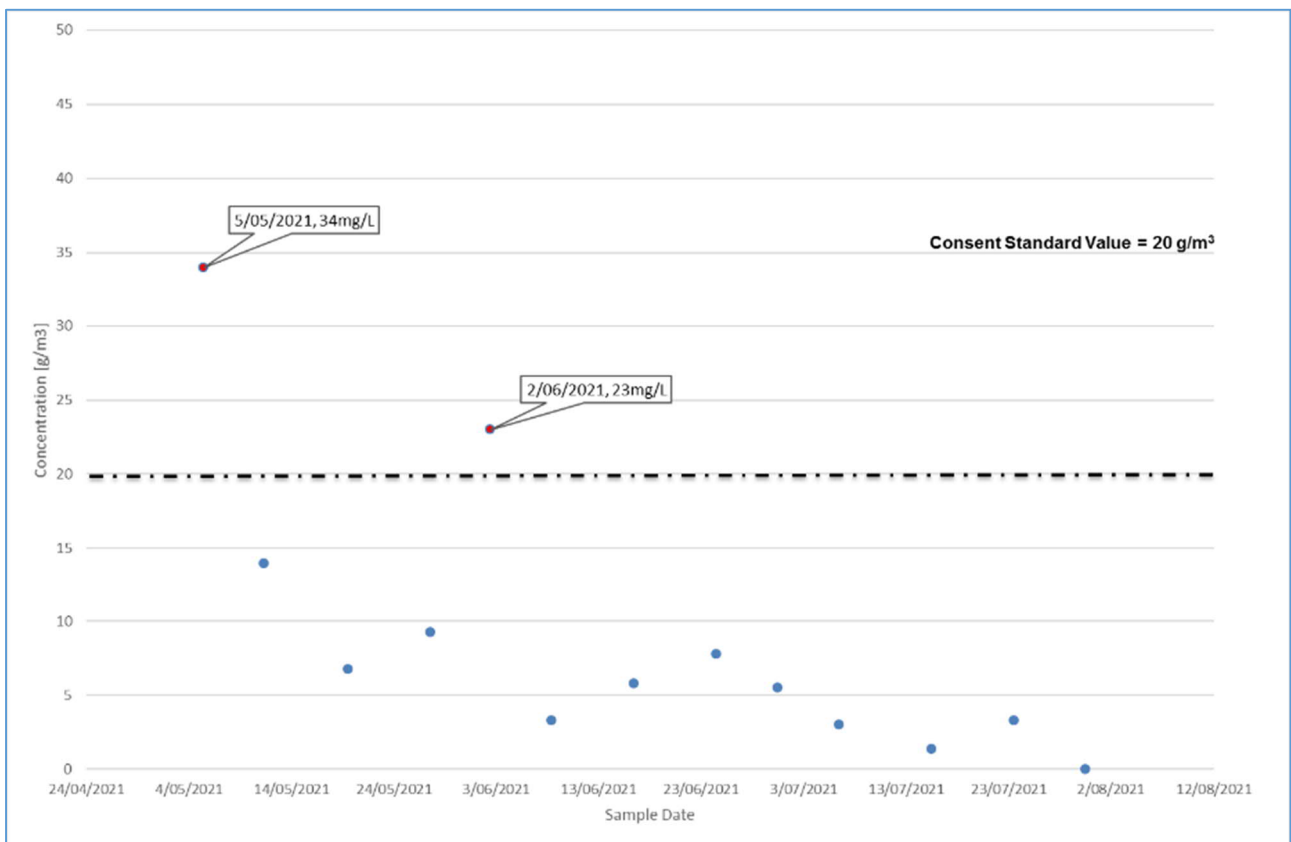
1.5 Dissolved BOD₅ Compliance

- Median dissolved BOD₅ concentration for current reporting period is **6.3 g/m³**
- Median dissolved BOD₅ concentration for the previous period was **18.2 g/m³**
- There was **one** exceedance (34 g/m³) of the dissolved BOD consented limit (20 g/m³) in the current monitoring period

Table 1.5.1 Pond Discharge Dissolved BOD₅

Median Value [g/m ³] Current Monitoring Quarter (May 2021 – July 2021)	6.3	Number of Exceedances Current Monitoring Quarter (May 2021 – July 2021)	1
Median Value [g/m ³] Previous Monitoring Quarter (February 2020 – April 2021)	18.2	Number of Exceedances Previous Monitoring Quarter (February 2020 – April 2021)	4
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	5.95	Number of Exceedances Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	0

1.5.2 Pond Discharge Dissolved BOD₅



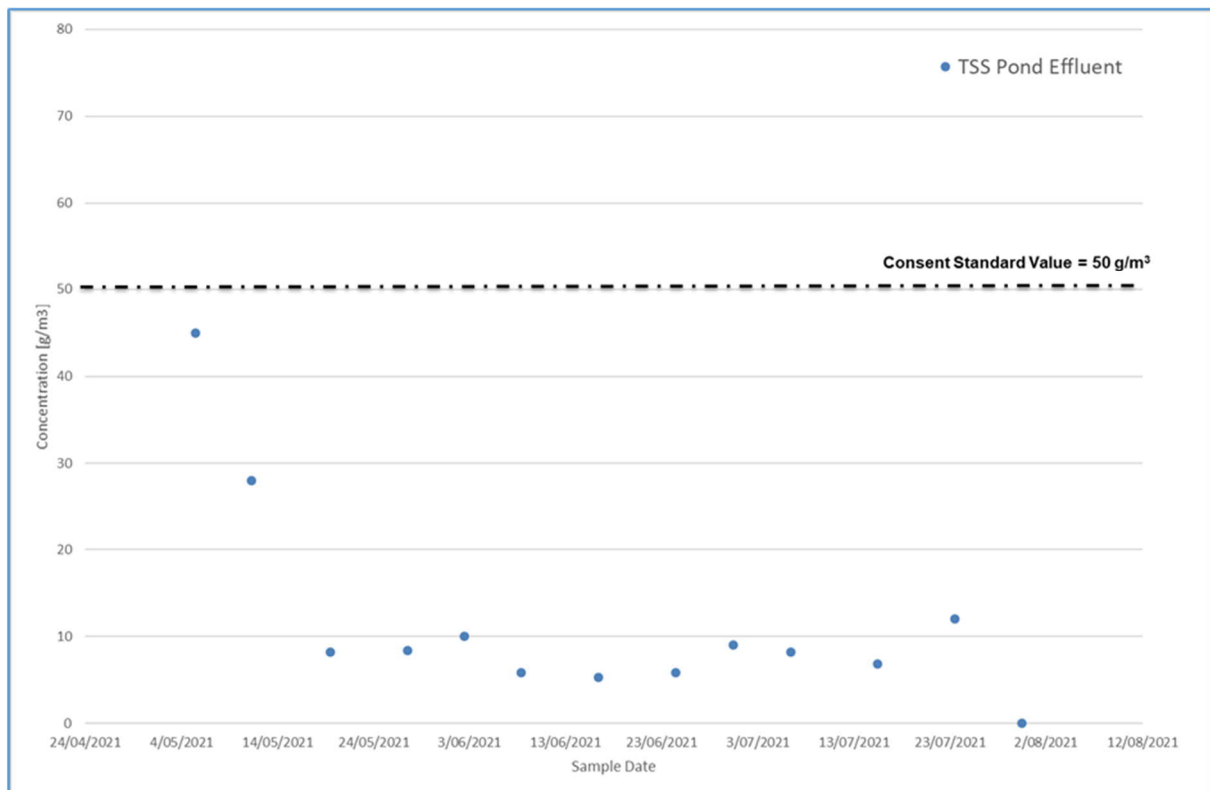
Total Suspended Solids Compliance

- Median total suspended solids concentration for the monitoring period was 8.3 g/m³
- Median total suspended solids concentration for the previous period was 53 g/m³
- There were 0 exceedances of the standard value (50 g/m³) this quarter.

Table 0.1 Pond Discharge Total Suspended Solids

Median Value [g/m ³] Current Monitoring Quarter (May 2021 – July 2021)	8.3	Number of Exceedances Current Monitoring Quarter (May 2021 – July 2021)	0
Median Value [g/m ³] Previous Monitoring Quarter (February 2021 – April 2021)	53	Number of Exceedances Previous Monitoring Quarter (February 2021 – April 2021)	6
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	8.55	Number of Exceedances Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	0

0.2 Pond Discharge Total Suspended Solids



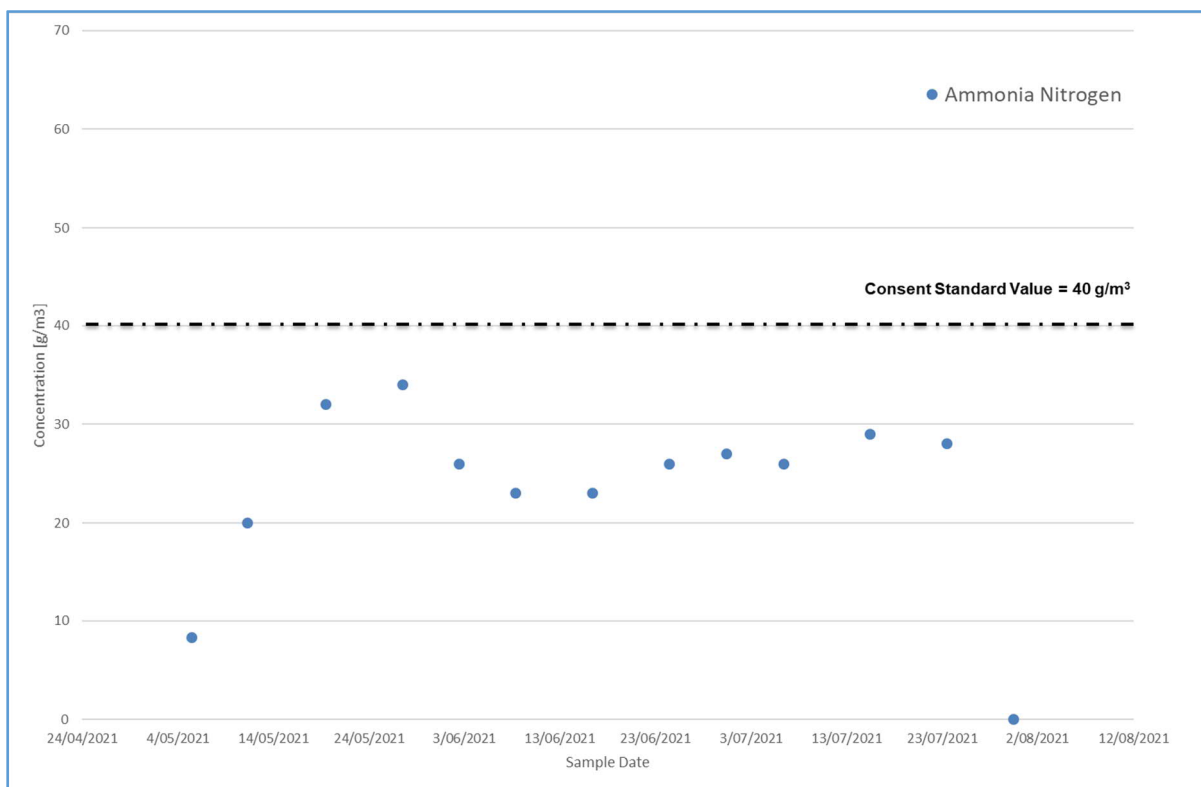
1.6 Ammonia Nitrogen Compliance

- The median total ammonia nitrogen concentration for the current monitoring period is 26 g/m³.
- The median total ammonia nitrogen concentration for the previous monitoring period was 19 g/m³.
- There were zero exceedances of the 40 g/m³ limit.

Table 1.6.1 Pond Discharge Ammoniacal Nitrogen

Median Value [g/m ³] Current Monitoring Quarter (May 2021 – July 2021)	26	Number of Exceedances Current Monitoring Quarter (May 2021 – July 2021)	0
Median Value [g/m ³] Previous Monitoring Quarter (February 2021 – April 2021)	19	Number of Exceedances Previous Monitoring Quarter (February 2021 – April 2021)	0
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	25.5	Number of Exceedances Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	0

1.6.1 Pond Discharge Ammoniacal Nitrogen



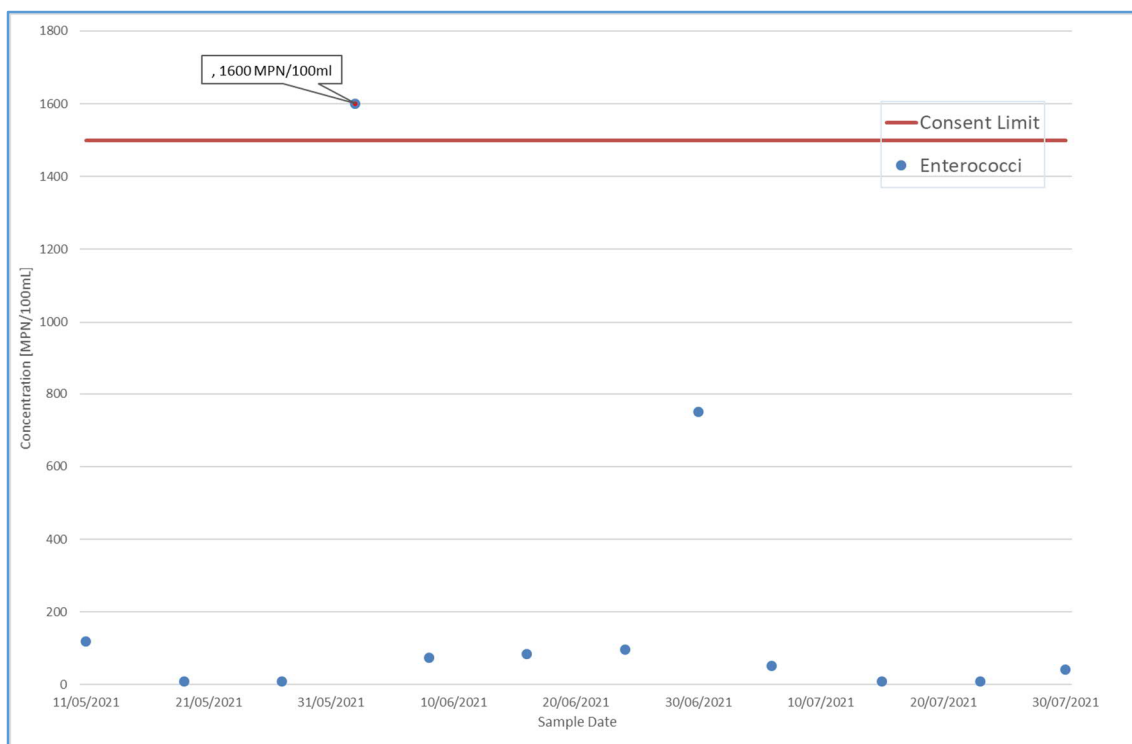
1.7 Enterococci Monitoring

- The median enterococci concentration during the reporting period was 52 MPN/100mL.
- The median enterococci concentration during the reporting period was 50.2 MPN/100mL.
- There was one exceedances of the 1,500 MPN/100ml limit during the reporting quarter (1,600 MPN/100ml on 2nd June. This is likely attributed to the May 30th - June 1st Storm event.

Table 1.7.1 Pond Discharge Enterococci

Median Value [g/m ³] Current Monitoring Quarter (May 2021 – July 2021)	52	Number of Exceedances Current Monitoring Quarter (May 2021 – July 2021)	1
Median Value [g/m ³] Previous Monitoring Quarter (February 2021 – April 2021)	50.2	Number of Exceedances Previous Monitoring Quarter (February 2021 – April 2021)	1
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	72	Number of Exceedances Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	1

1.7.1 Pond Discharge Enterococci



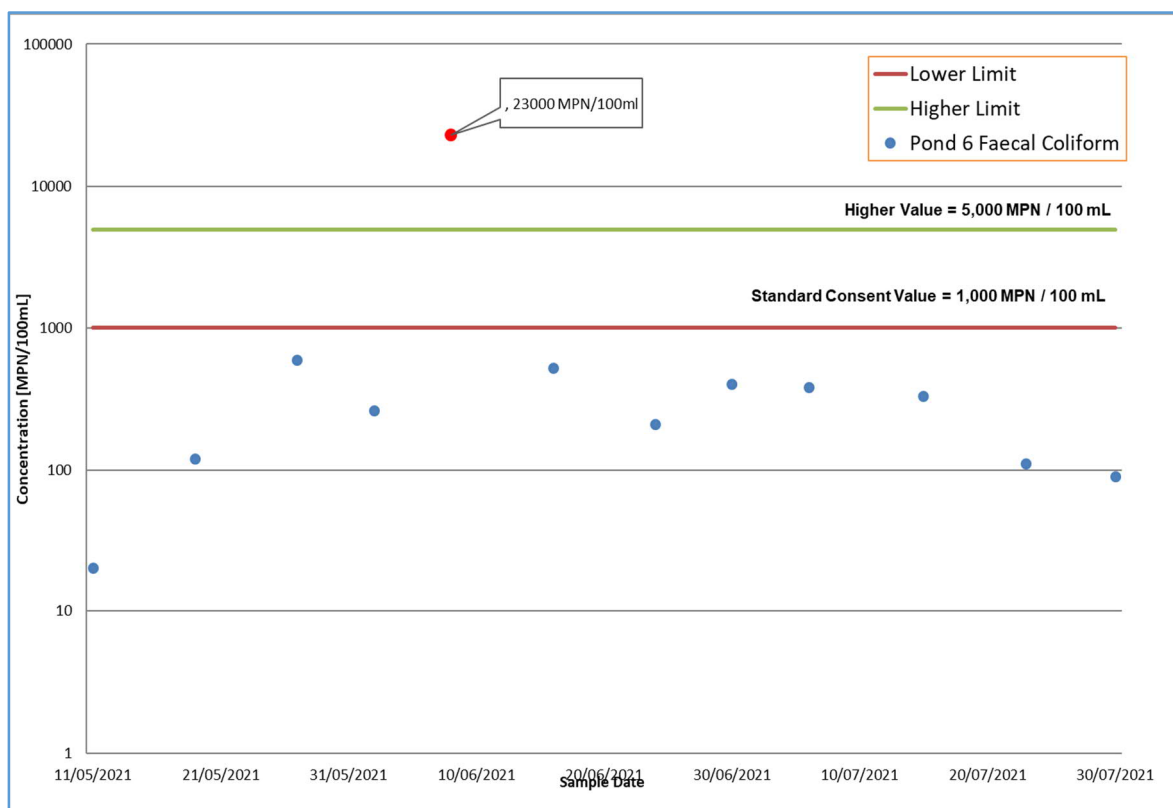
Faecal Coliform Compliance

- The median concentration for the current reporting period is 400 MPN/100 mL
- The median concentration for the previous reporting period was 130 MPN/100 mL
- There was one exceedance of the standard faecal coliform limit (11,000 MPN/100ml on 2nd June. This can be attributed to the May 30th – June 1st storm event

Table 0.1 Pond Discharge Faecal Coliforms

Median Value [g/m ³] Current Monitoring Quarter (May 2021 – July 2021)	400	Number of Exceedances Current Monitoring Quarter (May 2021 – July 2021)	1
Median Value [g/m ³] Previous Monitoring Quarter (February 2021 – April 2021)	130	Number of Exceedances Previous Monitoring Quarter (February 2021 – April 2021)	0
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	160	Number of Exceedances Same Monitoring Quarter of Previous Year (May 2020 – July 2020)	2

0.1 Pond Discharge Faecal Coliforms



Receiving Environment Monitoring in Pegasus Bay

1.8 Water Quality Resource Consent Conditions

All samples were collected and analysed as required by consent condition 18. Samples for condition 18 are collected from South New Brighton Beach at Jellicoe Street, Sumner Beach at the surf club, and New Brighton at the Surf Club. Sampling for condition 22a is done 26 February 2021, and emailed to ECan 21/04/21.

Table 1.8.1 Receiving Environment Water Quality Consent Compliance

Consent Condition	Parameter	Compliance Condition	Compliance
			Feb – Apr 21
18	Faecal Coliforms	Sampled and Analysed	😊
	Enterococci	Sampled and Analysed	😊
22a	Temperature	2 yearly	😊
	DO	2 yearly	😊
	Salinity	2 yearly	😊
	Total Suspended Solids	2 yearly	😊
	Nitrogen Oxides	2 yearly	😊
	Ammoniacal Nitrogen	2 yearly	😊
	Dissolved Reactive Phosphorus	2 yearly	😊
	Chlorophyll-a	2 yearly	😊
	Trace Metals	2 yearly	😊
	Faecal Coliforms	2 yearly	😊
	Enterococci	2 yearly	😊
	Phytoplankton Species	2 yearly	😞

Key: 😊 Full Compliance 😞 Minor, Isolated or Risk of Non-Compliance 😞 Major or Consistent Non-Compliance

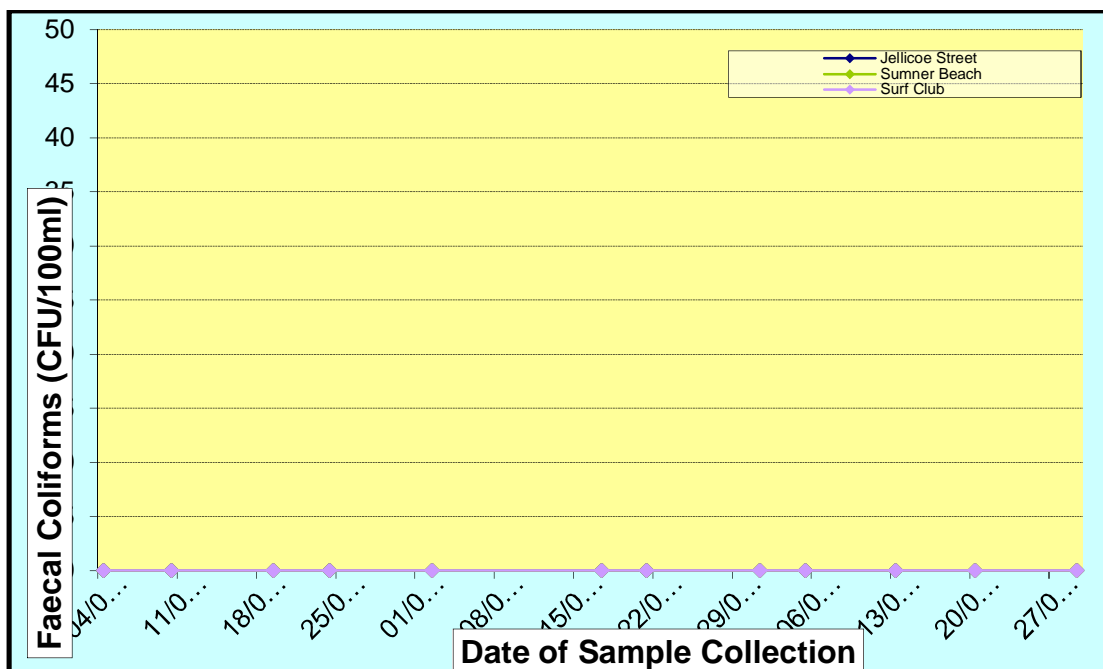
1.9 Comments on Compliance

- All parameters (except Phytoplankton Species) achieved compliance with the consent condition standard.
- Cawthron reported the presence of a potentially toxic cyanobacteria in 2 out of 4 samples.
- A series of questions were raised by ECan as a result of the presence of the cyanobacteria, the list of questions and response to those questions are attached to this quarterly report as an addendum.

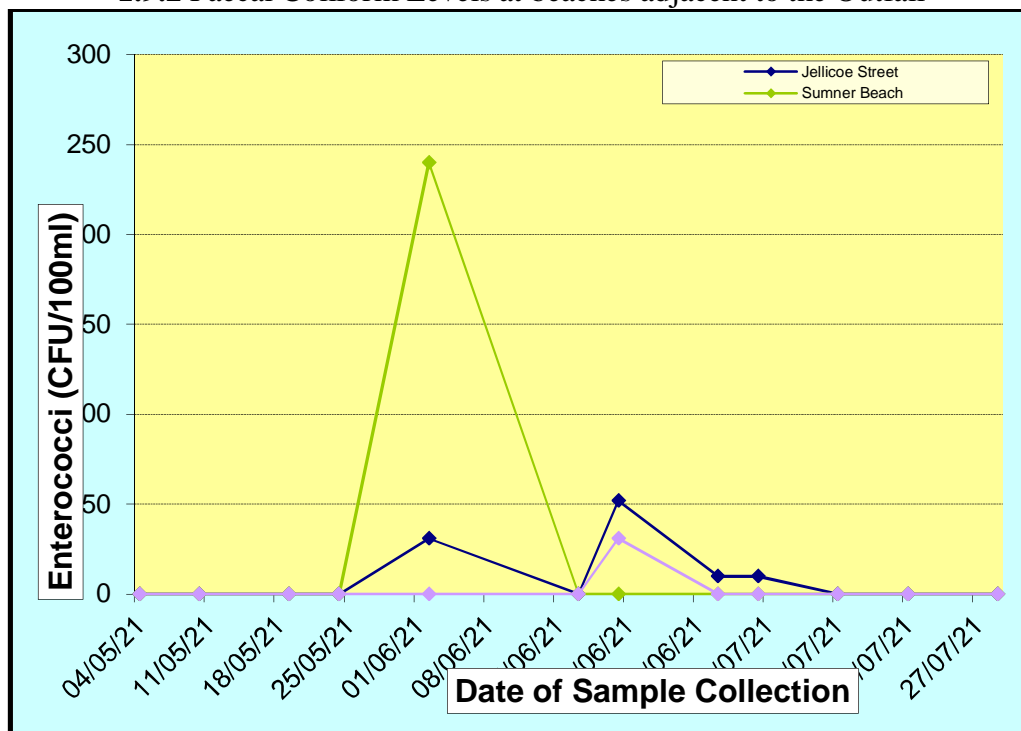
Beach Water Quality Analysis Results

Samples for condition 18 were taken at weekly intervals from the prescribed onshore locations. Results are presented in Figures 2.3.1 and 2.3.2. Any retest results are contained in the data supplied to ECan.

1.9.1 Enterococci Levels at beaches adjacent to the Outfall



1.9.2 Faecal Coliform Levels at beaches adjacent to the Outfall



Other Receiving Environment Analysis

- Consent conditions 23, 25, 26 and 27 call for monitoring of the marine environment around the outfall at various frequencies. These requirements are summarised in Table 2.3.1, the results are attached as an appendix to this report.

- Sampling for Conditions 23 – 26 are next due 2022, while condition 36 is now only undertaken if requested by members of the community.

Table 0.1 Receiving Environment Monitoring Consent Compliance

Consent Condition	Parameter	Frequency	Compliance Condition	Compliance
				May - June 21
23	Marine Sediments	5-yearly	Not monitored this quarter	—
25	Benthic Invertebrates	5-yearly	Not monitored this quarter	—
26	Epibenthic Fauna	5-yearly	Not monitored this quarter	—
27	Shellfish	Quarterly	No Longer Required	😊
29	Complaints	As required	Recorded and reported	😊
31	Report	Quarterly and Annually	Report and information lodged with ecan	😊
36	Community Liaison Group	Annually	Not done this quarter	—

Key: 😊 Full Compliance 😐 Minor, Isolated or Risk of Non-Compliance 😞 Major or Consistent Non-Compliance

1.10 Comments on Compliance

- There was an odour complaint received approx. 2nd May that related to the repainting of the Trickling Filter cover, feedback was received from Ecan and painting was only undertaken when wind conditions were favourable i.e. less likely to affect neighbouring properties
- With respect to condition 27 the data supplied in the last quarterly report confirmed that we have now met the requirement of this condition and are no longer required to undertake shellfish monitoring.