Annual Report

Ocean Outfall, CRC051724 CWTP

1 July 2024 - 30 June 2025



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Introduction

This report summarises the results of parameters monitored by the Christchurch Wastewater Treatment Plant (CWTP) Ocean Outfall over the period 1 July 2024 – 30 June 2025, in accordance with consent **CRC051724**. This consent authorises the discharge of treated wastewater from the CWTP Oxidation Ponds into the Pegasus Bay Coastal Marine Area via an ocean outfall.

The trickling filters at CWTP were destroyed by a fire which broke out on the 1st of November 2021. The trickling filters were a key component of the secondary treatment process at the CWTP, where they had been in operation since early 1978 and were responsible for removing around 60% of the organic matter from the sewage inflow. The plastic filter media provided an ideal environment for bacterial slime to grow and as it grew, it consumed the nutrients in the wastewater. As more flow was pumped into the trickling filters, excess slime was washed off as a floating solid and resulted in removal of up to 95% of BOD and ammonia.

Quarterly reporting

During the quarterly catch up meeting on 26/06/2025 we identified that there was a disconnect between the period covered by the Annual Reports vs the quarterly reports in the text of CRC051724.

- The quarterly report schedule has been based on the date that CRC051724 commenced in May 2006 (reporting periods of May to July, August to October, November to January, and February to April with Quarterly reports due a month later)
- To streamline these dates and avoid confusion, we have agreed with ECAN to change this schedule to align with the annual report, now that the consent is in full swing.

A report covering the two months difference (May and June 2025) between these schedules, was submitted to match bring the quarterly reports to the annual report schedule.

Going forwards, the quarters will be:

- Q1 1 July to 30 September
- Q2 1 October to 30 December
- Q3 1 January to 31 March
- Q4 1 April to 30 June

1. Resource Consent Conditions

1.1 Outfall pipe final discharge and maintenance

Table 1.1.1 Pond Discharge Consent Condition Compliance for Monitoring Period 1 July 2024 – 30 June 2025

Consent Condition	Parameter	Condition Detail	Condition Timeframe Comments		Overall
2	Discharge Content	Discharge is only wastewater from the CWTP ponds	Continuous	ntinuous Discharge is all and only from the CWTP ponds	
3	Discharge Volume	Recorded	Continuous	See figures 1.2.1 and 1.2.2	③
4	Discharge Rate	Recorded	Continuous	See figures 1.2.1 and 1.2.2	\odot
9	Outfall Maintenance	Routine maintenance of the discharge system completed and recorded	Continuous	Discharge system is the pump station, pipeline and diffuser outlets	☺
10	Outfall Condition	Visual inspection of outfall	Five yearly	Completed in March 2021, next due in 2026	(i)
12	Pumping Pressure for a given flow	Monitored at the pump station	Continuous	See figure 1.2.3	©

Key: © Full Compliance

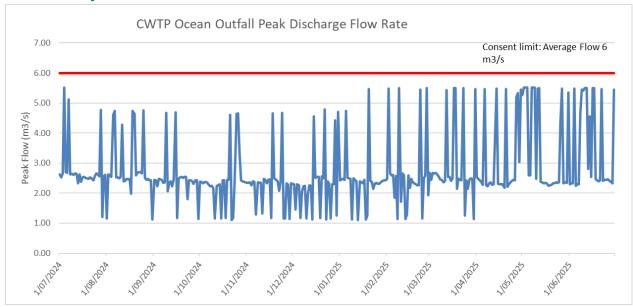
inor, Isolated or Risk of Non-Compliance

Major or Consistent Non-Compliance

CWTP Ocean Outfall Daily Flow Totals Consent limit: 518,000 600000 m3/day 500000 400000 Volume (m3/day) 200000 100000 0 1012024

Figure 1.1.2 - Daily Outfall Flow Totals 1 Jul 2024 - 30 Jun 2025





1.1.4 Comments on Resource Consent Conditions

The ocean outfall pump station has a designed flow rate that is below the peak limit of 6 m3/s. The outfall pipe is sloped down so there is continuous gravity flow. When this flow rate needs to be increased to manage the level of water in the maturation ponds, the pumps are turned on which creates the spikes you can see in the chart.

1.3 Resource Consent Standard Sample Results

Conditions 15a and 16a have notification limits which are trigged when more than 16 values in a rolling six month period exceed the standards for each of the named contaminants.

Table 1.3.1 Contaminant Limits Consent Compliance

Consent Condition	Parameter	Condition Description	July & August 24	Sept and Oct 24	Nov and Dec 24	Jan & Feb 25	March & April 25	May & June 25	Overall
	Dissolved BOD₅	Concentration does not exceed 20 g/m ³	©	©	©	©	©	©	©
15a	Total Suspended Solids	Concentration does not exceed 50 g/m ³	<u></u>	©	©			©	©
	Ammoniacal Nitrogen	Concentration does not exceed 40 g/m ³	<u></u>	\odot	\odot	\odot	\odot	©	©

Key: ³ 0 to 2 Exceedances of Standard ³ 1 to 7 Exceedances of Standard ³ Notification to ECAN required

- Based on the weekly sampling required by Condition 13 of this consent, and taken over a rolling six month period, no more than 16 values in each six named month period shall exceed the following standards for each of the named contaminants:
- In the event that seven values from eight consecutive samples, taken over each eight week period commencing on the first days of January, March, May, July, September, and November of each year during the term of the consent, exceed the standard values, for BOD5 (filtered), total suspended solids and ammoniacal nitrogen, the consent holder shall notify the Canterbury Regional Council within 48 hours of the exceedance

Consent Condition	Parameter	Condition Description	July & August 24	Sept and Oct 24	Nov and Dec 24	Jan & Feb 25	March & April 25	May & June 25	Overall
	Faecal Coliforms 16a	Concentration does not exceed 1,000(standard)	©	©	©	©	©		©
16a		5,000(higher) MPN/100mL	©	©	©	©	©		©
	Enterococci	Concentration does not exceed 1,500 MPN/100mL	\odot	©	©	©	©		©

Key: [⊕]0 Exceedances of Standard [⊕]1 to 2 Exceedances of Standard [⊕]Notification to ECAN required

- Based on the weekly sampling required by Condition 13 of this consent, and taken over each eight week period commencing on the first days of January, March, May, July, September and November of each year during the term of this consent, no more than six values from eight consecutive samples shall exceed the 'Standard Values' and no more than two values from eight consecutive samples shall exceed the 'Higher Values' for faecal coliforms.
- Based on the weekly sampling required by condition 13 of this consent, in the event that the concentration of
 enterococci in two consecutive samples exceeds 1500 enterococci per 100 millilitres the consent holder shall
 notify the Canterbury Regional Council and the Medical Officer of Health for Canterbury within 48 hours of
 detection of this exceedance.

1.3.2 Comments on Resource Consent Standard Conditions

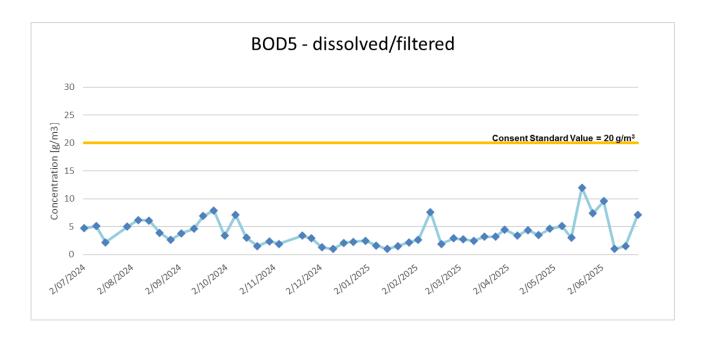
Water quality deteriorated after the total loss of the two trickling filters in the fire of November 2021. In August 2022 a temporary activated sludge plant was brought online and this had a positive effect on the water quality standard.

1.4 Dissolved BOD5 Compliance

Table 1.4.1 Ocean Outfall Discharge Dissolved BOD₅

Median Value [g/m³] Current Monitoring Period (July 2024 - June 2025)	3.2	Number of Exceedances Current Monitoring Period (July 2024 - June 2025)	0
Median Value [g/m³] Previous Monitoring Period (July 2023 - June 2024)	2.2	Number of Exceedances Previous Monitoring Period (July 2023 - June 2024)	0

1.4.2 Ocean Outfall Discharge - Dissolved BOD₅

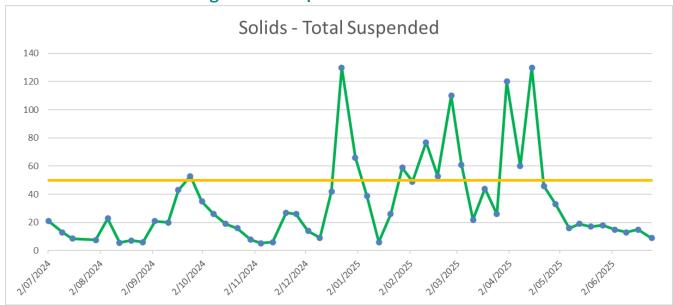


1.5 Total Suspended Solids Compliance

Table 1.5.1 Ocean Outfall Discharge Total Suspended Solids

Median Value [g/m³] Current Monitoring Period (July 2024 - June 2025)	22	Number of Exceedances Current Monitoring Period (July 2024 - June 2025)	11
Median Value [g/m³] Previous Monitoring Period (July 2023 - June 2024)	12.5	Number of Exceedances Previous Monitoring Period (July 2023 - June 2024)	0

1.5.2 Ocean Outfall Discharge Total Suspended Solids



Comment on TSS: Growing population of algae in Oxidation ponds is helping to introduce dissolved oxygen to the ponds. However, their presence can negatively affect levels of total suspended solids, especially in summer months.

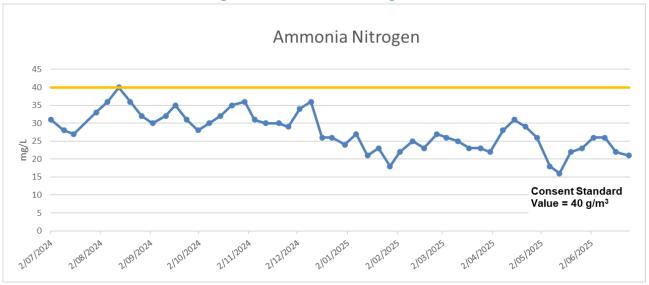
1.6 Ammonia Nitrogen Compliance

Table 1.6.1 Ocean Outfall Discharge Ammoniacal Nitrogen

Median Value [g/m³] Current Monitoring Period (July 2024 - June 2025)	27	Number of Exceedances Current Monitoring Period (July 2024 - June 2025)	0
Median Value [g/m³] Previous Monitoring Period (July 2023 - June 2024)	30	Number of Exceedances Previous Monitoring Period (July 2023 - June 2024)	0

There was zero values exceeding 40g/m3 recorded for current year.

1.6.2 Ocean Outfall Discharge Ammoniacal Nitrogen



1.7 Enterococci Monitoring

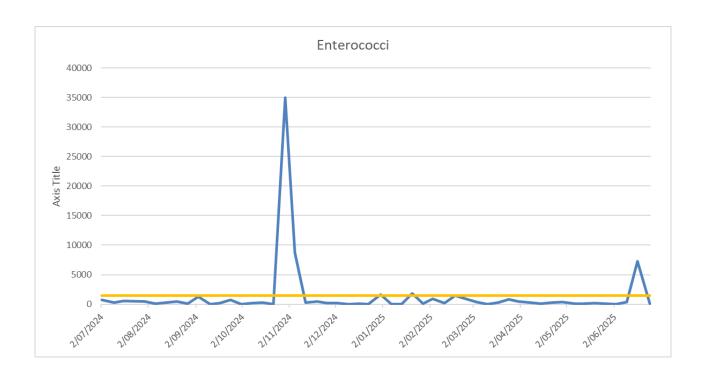
Table 1.7.1 Ocean Outfall Discharge Enterococci

Median Value [MPN/100ml] Current Monitoring Period (July 2024 - June 2025)	265	Number of Exceedances Current Monitoring Period (July 2024 - June 2025)	<mark>1</mark> (5?)
Median Value [MPN/100ml] Previous Monitoring Period (July 2023 - June 2024)	110	Number of Exceedances Previous Monitoring Period (July 2023 - June 2024)	2

There was 1 exceedance of the standard consent value (1,500 MPN/100mL) in the current year.

Comment on Faecal coliform and enterococci: Seasonal pond turnover is naturally common in oxidation ponds during autumn when the weather changes. CWTP has experienced this year the turnover to be more significant than usual due to accumulation of sludge after clarifier seal repair in March 2024. Seasonal heavy rain during late autumn and winter period causes short circuiting in oxidation ponds. Lower intensity of UV light in combination with the higher flow causes occasional faecal coliform exceedances.

1.7.2 Ocean Outfall Discharge Enterococci



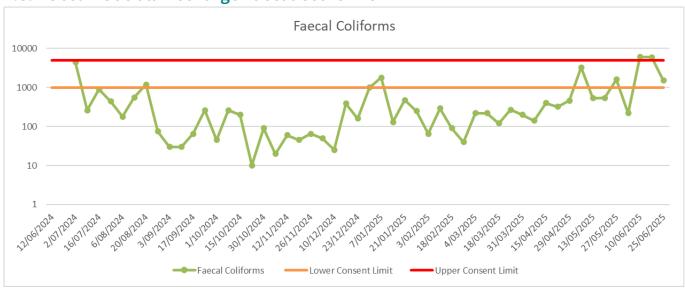
1.8 Faecal Coliform Compliance

Table 1.8.1 Ocean Outfall Discharge Faecal Coliforms

Median Value [MPN/100ml] Current Monitoring Period (July 2024 - June 2025)	170	Number of Exceedances Current Monitoring Period (July 2024 - June 2025)	9
Median Value [MPN/100ml] Previous Monitoring Period (July 2023 - June 2024)	170	Number of Exceedances Previous Monitoring Period (July 2023 - June 2024)	9

There were 9 sample results above the standard consent limit of 1000CFU/100mL, with 2 of those also above the higher consent limit of 5000CFU/100mL. The median for this year is lower than the previous period.

1.8.2 Ocean Outfall Discharge Faecal Coliforms



1.9 Other Pathogenic and Other Contaminants

Condition 13e - Annual Pathogen Monitoring of Ocean Outfall

	Enterovirus Ox Ponds	Adenovirus Ox Ponds	Giardia Ox ponds	Cryptosporidium Ox ponds	Salmonella Ox ponds	Thermotolerant Campylobacter Ox ponds
Unit	pfu10/L	IU/10 L	confirmed cysts/L	confirmed oocysts/L	MPN/100ml	MPN/100ml
17/3/2020	170	4200	6	<0.67	0.9	<0.30
17/4/2023	0	80	<0.67	<0.67	<0.3	0.4
1/5/2024	0	5	<0.67	0.67	<0.3	43
10/4/2025	2	0	0	0	0.9	75

Condition 13f - Six monthly heavy metal monitoring of Ocean Outfall

Date	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
Unit	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
3/04/2025	0.0016	<0.001	0.0014	0.0015	<0.001	0.002	0.014	<0.001
30/01/2025	0.0031	<0.001	0.0021	0.0018	<0.001	0.0024	0.014	<0.00005
9/04/2024	0.0016	<0.001	0.0017	<0.001	<0.001	0.0022	0.0044	<0.00005
9/01/2024	0.0021	<0.001	0.0033	0.002	<0.001	0.0018	0.0084	<0.00005
2/10/2023	0.0031	<0.001	0.019	0.015	0.0042	0.0063	0.062	<0.00005
20/07/2023	0.0026	<0.001	0.0051	0.0034	<0.001	0.002	0.017	<0.00005

Condition 13g - Annual Organochlorine pesticides, organophosphate pesticides, PCBs, and polycyclic aromatic hydrocarbons

Following the trickling filter fire in 2021, CWTP increased the testing frequency to a monthly basis. As the temporary process has since stabilised, the sampling frequency was reduced to the consented annual basis starting in August 2025.

2. Receiving Environment Monitoring in Pegasus Bay

2.1 Water Quality Resource Consent Conditions

Consent conditions 18, 21 and 22 call for monitoring of the marine environment around the outfall at various frequencies and were identified in the AEE. These requirements are summarised in Table 2.3.1. The results are attached to the quarterly reports covering the same period.

Table 2.1.1 Weekly Sampling Beach Water Quality Compliance July 2024 – June 2025

Consent Condition	Location	Parameter	Ju l 24	Aug 24	Se p 24	Oct 24	Nov 24	De c 24	Ja n 25	Feb 25	Mar 25	Apr 25	May 25	Jun 25	Ove rall
18	South New Brighton	Faecal Coliforms	<u></u>	©	\odot	©	\odot	\odot	©		©		©	©	©
18	South New Brighton	Enterococci	<u></u>	©	<u></u>	©	©	\odot	:	©	©	©	©	©	©
18	Sumner Beach	Faecal Coliforms	:	\odot	<u></u>	\odot	<u></u>	<u>:</u>	<u></u>	\odot	<u>:</u>	©	©	\odot	©
18	Sumner Beach	Enterococci	©	\odot	<u></u>	\odot	<u></u>	©	©	\odot		©	©	\odot	<u></u>
18	New Brighton Surf Club	Faecal Coliforms	<u></u>	©	<u></u>	©	©	\odot	<u></u>	©	©	\odot	©	©	©
18	New Brighton Surf Club	Enterococci	©	©	©	©	©	©	©	©	©	©	©	©	©

Key: [⊕]No exceedances of Standard [⊕] Isolated exceedances of Standard [⊕]Notification to ECAN required

Table 2.2.3 Receiving Environment Ocean Water Quality Compliance July 2024 – June 2025

Consent Condition	Parameter	Condition Timeframe	North of the centre	South of the centre	West of inshore end	East of inshore end	Overall
	Temperature	Two yearly	\odot	\odot	\odot	\odot	\odot
	DO	Two yearly	<u></u>	\odot	\odot	\odot	\odot
	Salinity	Two yearly	\odot	\odot	\odot	\odot	\odot
	Total Suspended Solids	Two yearly	©	©	©	©	©
	Nitrogen Oxides	Two yearly	<u> </u>	<u> </u>	<u> </u>	\odot	\odot
22a (last sampled	Ammoniacal Nitrogen	Two yearly	©	©	©	©	
	Dissolved Reactive Phosphorus	Two yearly	©	©	©	©	©
6/3/2023, next due in	Chlorophyll-a	Two yearly	\odot	\odot	\odot	<u></u>	\odot
2025)	Trace Metals (arsenic, cadmium, copper, chromium, lead, nickel and zinc)	Two yearly	☺	☺	☺	☺	©
	Faecal Coliforms	Two yearly	©	©	©	©	©
	Enterococci	Two yearly	\odot	\odot	\odot	\odot	\odot
	Phytoplankton Species	Two yearly	©	©	©	©	©

Key: © Full Compliance

inner: Minor, Isolated or Risk of Non-Compliance

Major or Consistent Non-Compliance

2.2 Beach Water Quality Analysis Results

Samples for condition 18 were taken at weekly intervals from the prescribed onshore locations. The results are presented below. The consent limit for Enterococci is 280/100mL and Faecal Coliforms 43CFU /100mL. The below table describes the notification requirements for any exceedances detected.

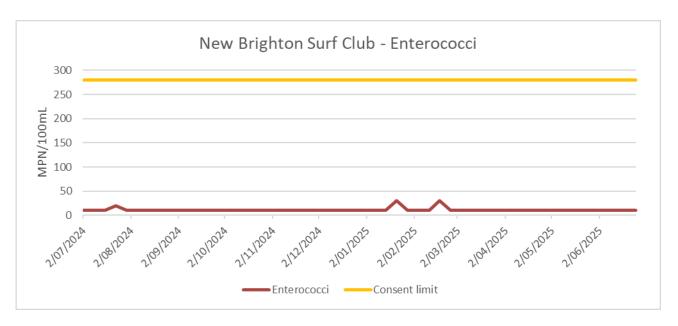
Condition 19 of CRC051724

In the event that the concentration of enterococci in a single sample collected from a site identified in condition 18(a) exceeds 280 enterococci per 100 millilitres, the consent holder shall within 24 hours collect another sample from that site. If the **second sample** also exceeds 280 enterococci per 100 millilitres, the consent holder shall notify the Canterbury Regional Council and the Medical Officer of Health for Canterbury within 48 hours of detection of this exceedence.

Condition 20 of CRC051724

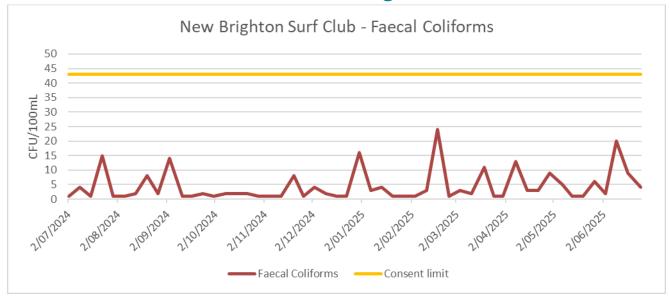
In the event that the concentration of faecal coliforms in a single sample collected from a site identified in condition 18(a) exceeds 43 faecal coliforms per 100 milliletres at a site, the consent holder shall within 24 hours collect another sample from that site. If the **second sample** from that site exceeds 43 faecal coliforms per 100 milliletres, the consent holder shall notify the Canterbury Regional Council and the Medical Officer of Health for Canterbury within 48 hours of detection of this exceedence.

2.2.1 Enterococci Levels at New Brighton Surf Club



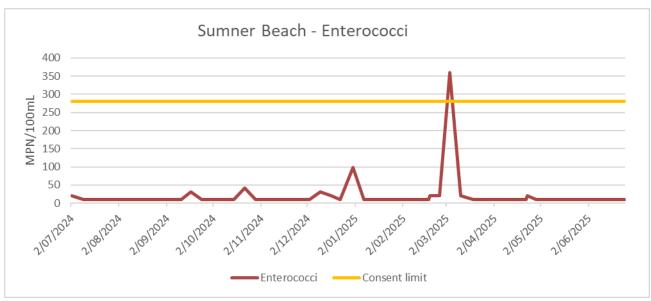
There were no exceedances of the 280MPN/100 mL Enterococci consent limit at New Brighton Surf Club this reporting period.

2.2.1 Faecal Coliform Levels at New Brighton Surf Club



There were no exceedances of the 43CFU/100 mL Faecal Coliform consent limit at New Brighton Surf Club this reporting period.

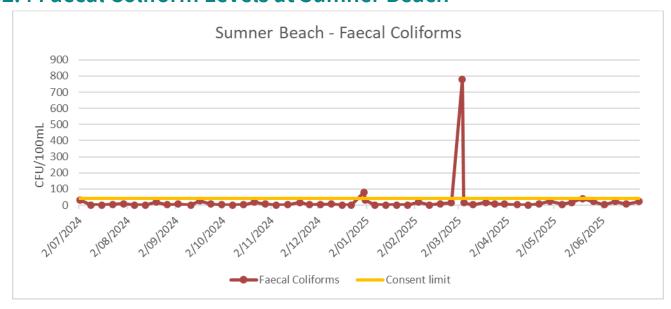
2.2.3 Enterococci Levels at Sumner Beach



There was 1 exceedance of the 280MPN/100 mL Enterococci consent limit at New Brighton Surf Club this reporting period, with a sample result of 360MPN/100 mL returned on 4/3/2025.

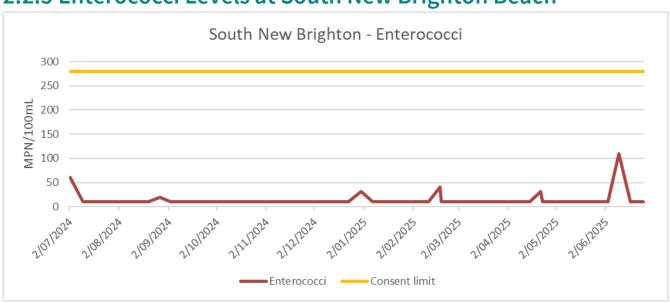
The beach was resampled within 48rs on each occasion, and a compliant sample result below the consent limit was returned.

2.2.4 Faecal Coliform Levels at Sumner Beach



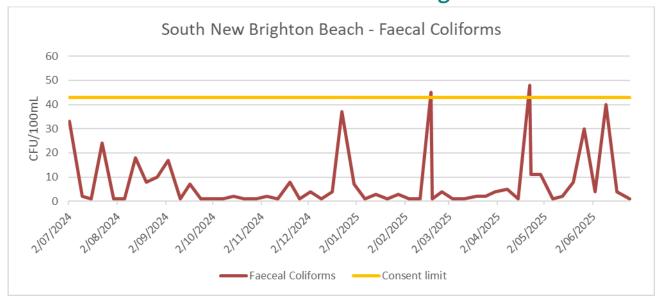
There was 1 exceedance of the 43CFU/100 mL Faecal Coliform consent limit at Sumner Beach this reporting period, with a sample result of 79 CFU returned on 31/12/2024 and 780 CFU/100 mL returned on 4/3/2025.

2.2.5 Enterococci Levels at South New Brighton Beach



There were 0 exceedances of the 280MPN/100 mL Enterococci consent limit at South New Brighton Beach this reporting period.

2.2.6 Faecal Coliform Levels at South New Brighton Beach



There were 4 exceedances of the 43CFU/100 mL Faecal Coliform consent limit at Sumner Beach this reporting period, with sample results of 69CFU/100 mL returned on 25/07/2023, 61CFU/100 mL on 12/12/2023, 420CFU/100 mL on 12/03/2024 and 300CFU/100 mL on 12/06/2024. The beach was resampled within 48rs on each occasion, and a compliant sample result below the consent limit was returned.

2.3 Other Receiving Environment Analysis

Consent conditions 23, 25, 26 and 27 call for monitoring of the marine environment around the outfall at various frequencies and were identified in the AEE. These requirements are summarised in Table 2.3.1. The results are attached to the quarterly reports as required.

Table 2.3.1 Receiving Environment Monitoring Consent Compliance Jul 2024- Jun 2025

Consent Condition	Parameter	Frequency	Compliance Condition	Grade	
23	Marine Sediments	5-yearly	Done 2022, next due 2027	©	
25	Benthic Invertebrates	5-yearly	Done 2022, next due 2027	©	
26	Epibenthic Fauna	5-yearly	Done 2022, next due 2027	©	
27	Shellfish/Tuatua	Ceased	Complied	<u> </u>	
29	Complaints	As required	Recorded and reported	©	
31	Annual Report	Annually	Report and information lodged with ECan	©	
32	Quarterly Report	Quarterly	Report and information lodged with ECan	☺	
34	Management Plan	4 Years post commissioning	Report and information lodged with ECan – done March 2012 - 12/140121	☺	
36	Community Liaison Group	Annually	Scheduled for 8/10/2025	©	

Key: © Full Compliance

interview Minor, Isolated or Risk of Non-Compliance in Major or Consistent Non-Compliance

2.4 Comments on other conditions

Conditions 23 - 26

Sediment, benthic and epibenthic testing was carried out in July 2022. This sampling is next due in 2027.

Condition 27

Shellfish were last sampled and analysed in June 2022. The monitoring required by this condition shall cease two years after commissioning the outfall or after two years of continuous compliance with the standard.

Condition 29

There were no complaints from the public regarding the ocean outfall during the reporting period.

Condition 31 and 32

Annual and quarterly reports have been submitted to Environment Canterbury.

Condition 36

In 2017, Environment Canterbury agreed that due to negligible interest in our community meeting that we could forgo holding it unless requested by the community.

After the fire at the CWTP in 2021, it was decided to restart the Community Liaison Group meetings be held to allay the community concerns regarding the potential odours from the ponds during the coming months.

This meeting was held on 20/09/2023, and the presentation is available on the external CCC website:

https://ccc.govt.nz/services/water-and-drainage/wastewater/treatment-plants/christchurch-wastewater-treatment-plant/community-liaison-group/

In response to the decline in pond health and subsequent odour issues last winter, we implemented a multifaceted communication strategy to keep all parties informed of what work was taking place to improve the functionality of the plant and pond health, and the results of air quality monitoring.

An integral part of this strategy was the establishment of a web page dedicated to the recovery of the wastewater treatment plant fire, as well as Newsline stories, videos, infographics and newsletters that residents could view. This website and newsletters are still being actively maintained.

The next CLG meeting is scheduled for 9/10/2024.