Christchurch City Council

Christchurch Wastewater Treatment Plant

Quarterly Monitoring Report

November – January 2015

CHRISTCHURCH WASTEWATER TREATMENT PLANT · SHUTTLE DRIVE OFF PAGES ROAD

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File: Monitoring Report Nov - Jan 2015

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Summary

This report summarises the results of parameters monitored by the Christchurch Wastewater Treatment Plant (CWTP) over the period November 2014 – January 2015 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.

At 3pm Sunday 7th December the plant discovered a leak in the decommissioned, earthquake-damaged pipes under Cuthbert's Rd. All effluent was contained within the road's kerbing (which drains into the North Toe Drain) and pumped back into the plant. The pipe was subsequently isolated and the leak duration was estimated to be less than 24 hours. Pumps were installed to empty the pipe and eliminate further discharges. The pipes were permanently sealed with concrete 16/01.

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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 CRC051724

Consent Condition	Parameter	Compliance Condition	Compliance			
			Nov 14	Dec 14	Jan 15	Overall
2	Discharge Content	Discharge is only wastewater from the CWTP ponds	J	J	J	J
3	Discharge Volume	Recorded	J	J	J	J
4	Discharge Rate	Recorded	J	J	J	J
9	Outfall Maintenance	Routine maintenance completed and recorded	J	J	J	J
10	Outfall Condition	Visual inspection of outfall	n/a	n/a	n/a	n/a
12	Pumping Pressure for a given flow	Monitored	J	J	J	J

Key: J Full Compliance K Minor, Isolated or Risk of Non-Compliance L Major or Consistent Non-Compliance

1.2 Comments on Compliance

Flowrate and pressure data were recorded as per consent requirements.

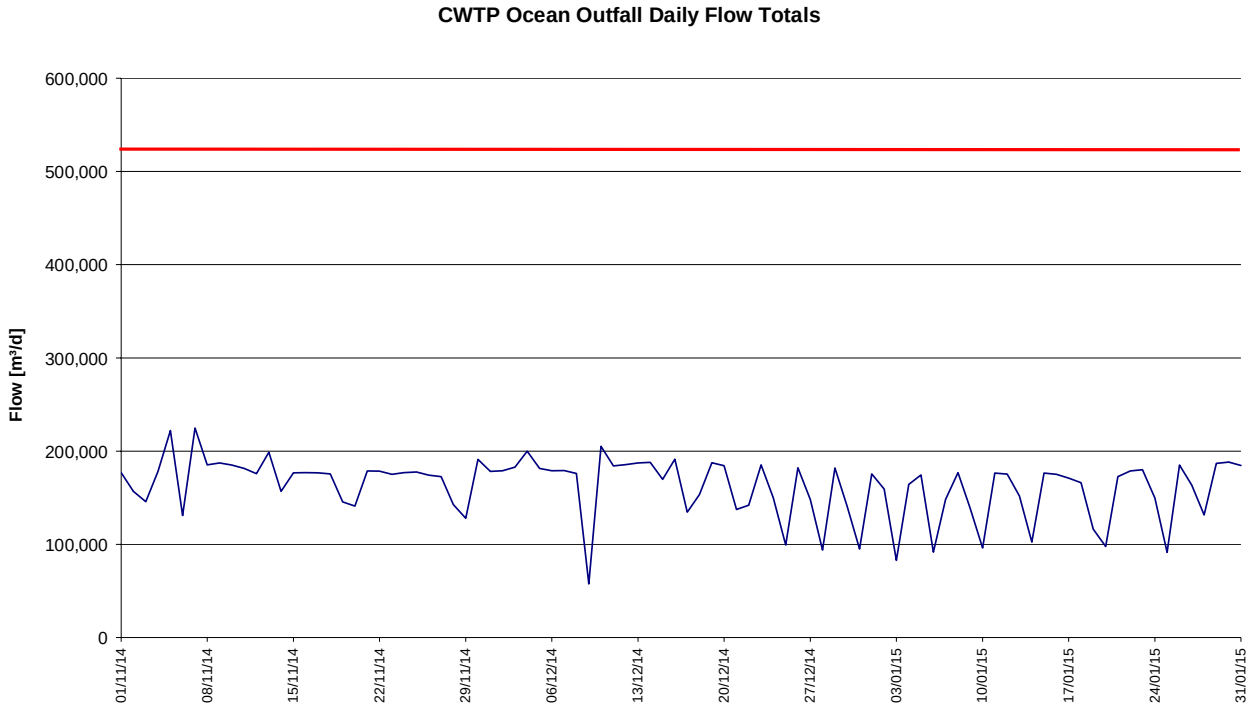


Figure 1.2.1 - Daily Outfall Flow Totals

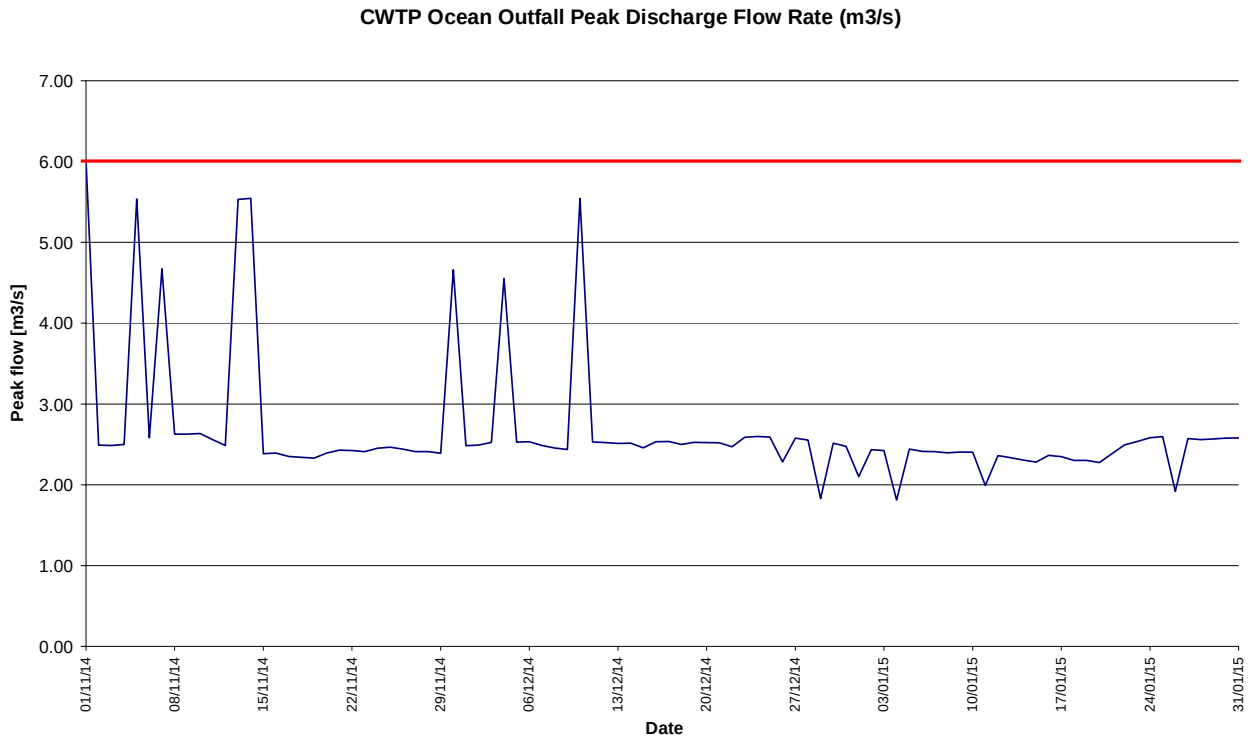


Figure 1.2.2 - Daily Peak Outfall Flows

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 CRC051724

Consent Condition	Parameter	Compliance Condition	Compliance			
			Nov 14	Dec 14	Jan 15	Overall
15a	Dissolved BOD_5	Concentration does not exceed 20 g/m^3	J	J	J	J
	Total Suspended Solids	Concentration does not exceed 50 g/m^3	J	J	J	J
	Ammoniacal Nitrogen	Concentration does not exceed 40 g/m^3	J	J	J	J
16a	Faecal Coliforms	Concentration does not exceed 1,000(standard)/5,000(higher) MPN/100mL	J	J	J	J
	Enterococci	Concentration does not exceed 1,500 MPN/100mL	J	J	J	J

Key: J Compliance Achieved with no Exceedance of Standard K Compliance Achieved with Occasional Exceedance of Standard
L Exceedance of Standard resulting in Non-Compliance

1.4 *Comments on Compliance*

All samples were collected and analysed. None of the samples exceeded trigger levels.

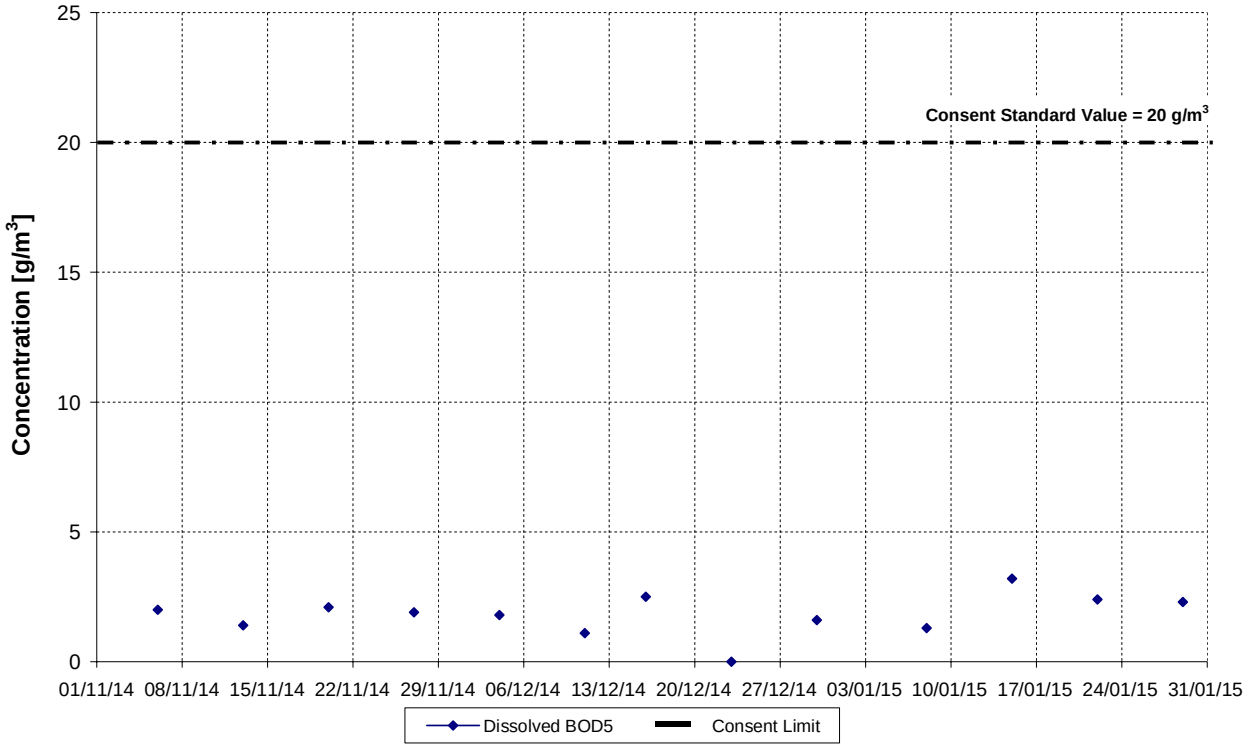
1.5 *Dissolved BOD_5 Compliance*

The median dissolved BOD_5 concentration for the current period was 3.8g/m^3. This is higher than the median concentrations in the previous quarter and higher than the same quarter in 2013. There were no exceedances of the standard value (20.0 g/m^3) in the current monitoring quarter.

Table 1.5.1 Pond Discharge Dissolved BOD_5

Median Value [g/m^3] Current Monitoring Quarter (November 2014 – January 2015)	3.8	Number of Exceedances Current Monitoring Quarter (November 2014 – January 2015)	0
Median Value [g/m^3] Previous Monitoring Quarter (August 2014– October 2014)	1.7	Number of Exceedances Previous Monitoring Quarter (August 2014– October 2014)	0
Median Value [g/m^3] Same Monitoring Quarter of Previous Year (November 2013 – January 2014)	1.5	Number of Exceedances Same Monitoring Quarter of Previous Year (November 2013 – January 2014)	0

1.5.2 Pond Discharge Dissolved BOD_5



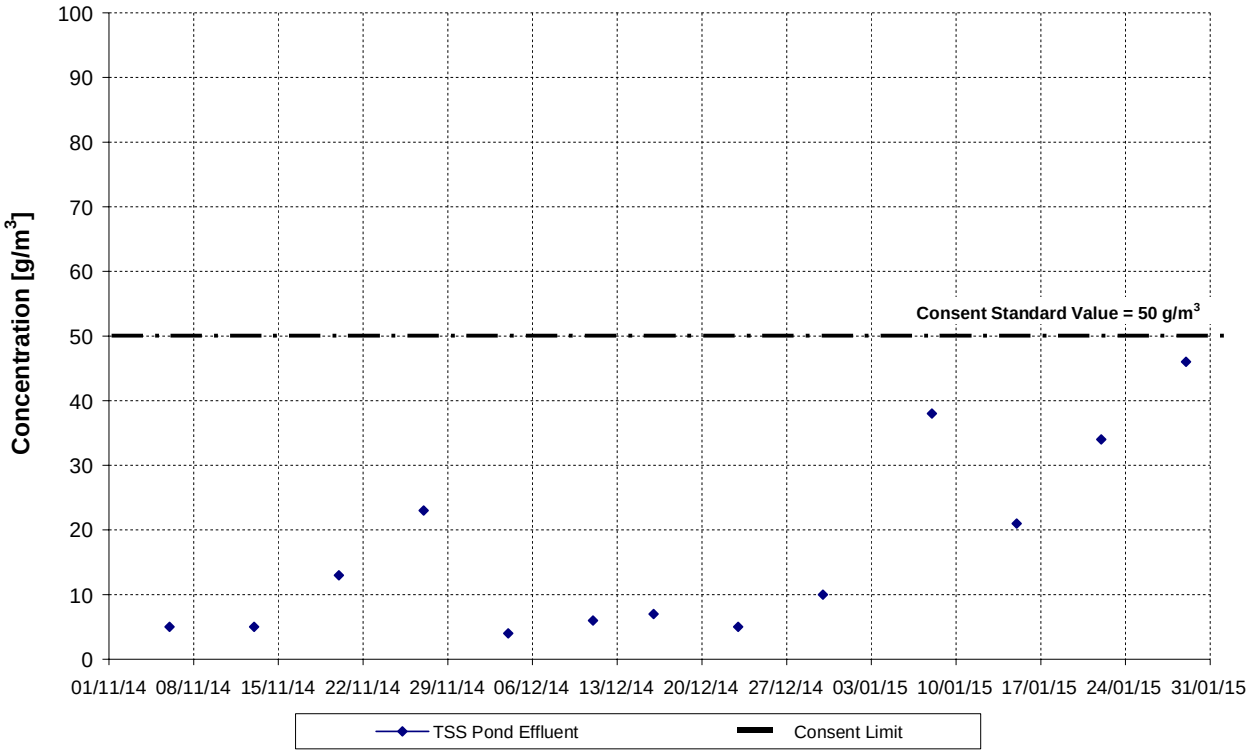
1.6 *Total Suspended Solids Compliance*

The median total suspended solids concentration for the current period was 10g/m^3. This is similar than the previous quarter and lower than the same quarter in 2013. There were no exceedances of the standard value (50 g/m^3).

Table 1.6.1 Pond Discharge Total Suspended Solids

Median Value [g/m^3] Current Monitoring Quarter (November 2014 – January 2015)	10	Number of Exceedances Current Monitoring Quarter (November 2014 – January 2015)	0
Median Value [g/m^3] Previous Monitoring Quarter (August 2014– October 2014)	9	Number of Exceedances Previous Monitoring Quarter (August 2014– October 2014)	0
Median Value [g/m^3] Same Monitoring Quarter of Previous Year (November 2013 – January 2014)	12	Number of Exceedances Same Monitoring Quarter of Previous Year (November 2013 – January 2014)	0

1.6.2 Pond Discharge Total Suspended Solids



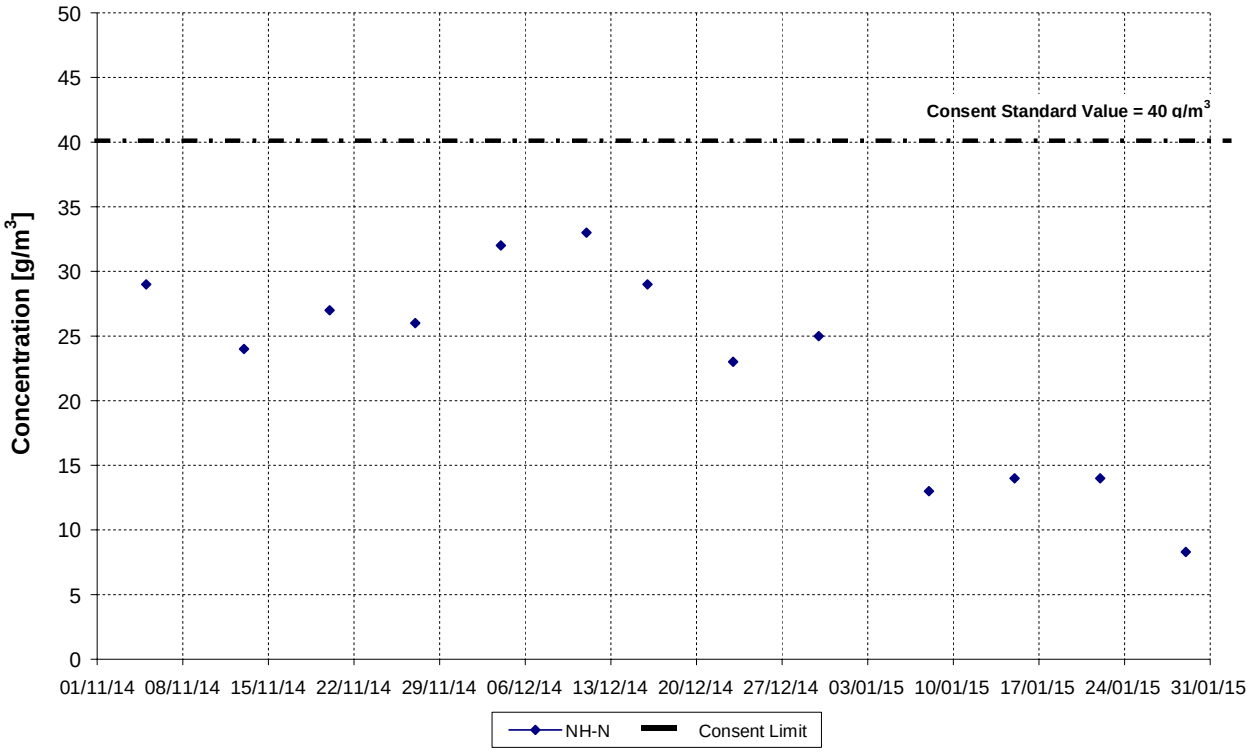
1.7 *Ammonia Nitrogen Compliance*

The median total ammonia nitrogen concentration for the current period was 26 g/m^3. This was similar to the previous quarter and higher than the same quarter last year. There were no exceedances of the 40 g/m^3 limit.

Table 1.7.1 Pond Discharge Ammoniacal Nitrogen

Median Value [g/m^3] Current Monitoring Quarter (August 2014 – October 2014)	25	Number of Exceedances Current Monitoring Quarter (November 2014 – January 2015)	0
Median Value [g/m^3] Previous Monitoring Quarter (May 2013 – July 2014)	26	Number of Exceedances Previous Monitoring Quarter (August 2014– October 2014)	0
Median Value [g/m^3] Same Monitoring Quarter of Previous Year (August 2013 – October 2013)	20	Number of Exceedances Same Monitoring Quarter of Previous Year (November 2013 – January 2014)	0

1.7.1 Pond Discharge Ammoniacal Nitrogen



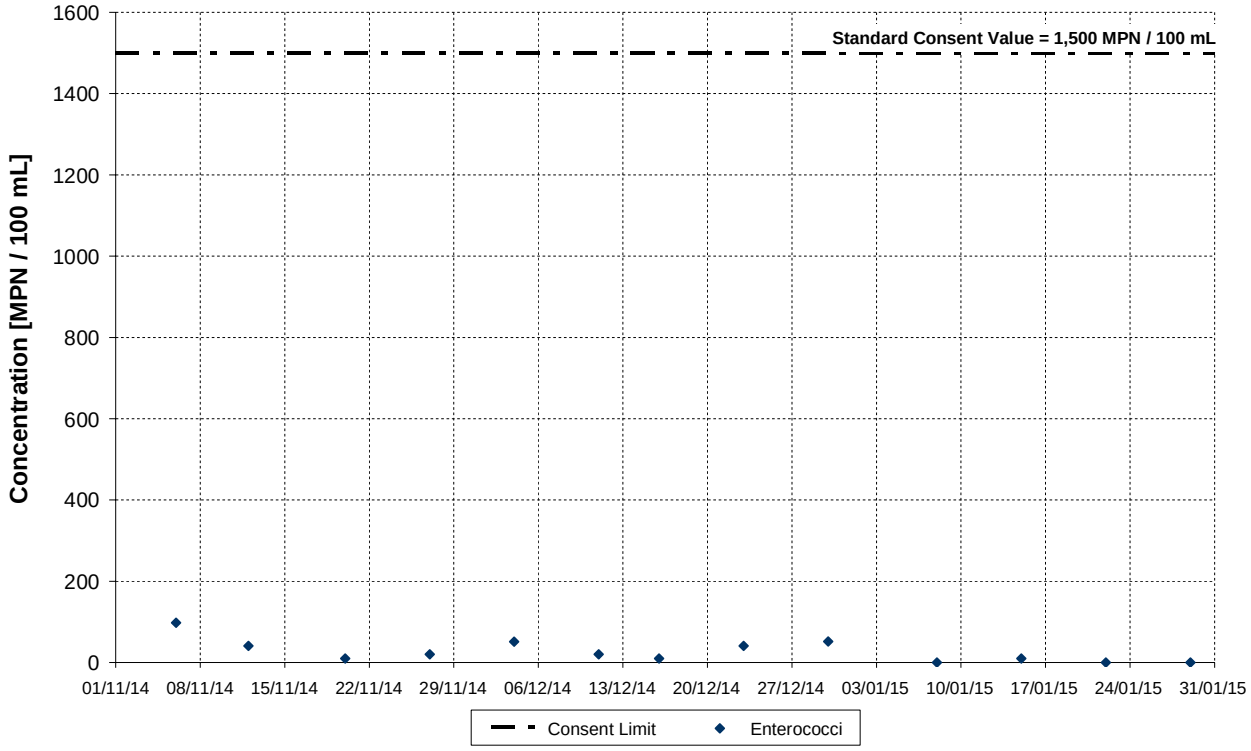
1.8 *Enterococci Monitoring*

The median enterococci concentration in the current reporting period was 91 MPN/100mL. This was higher than previous quarter and higher to the same quarter last year. There were no exceedances of the 1,500 MPN/100ml limit during the reporting quarter.

Table 1.8.1 Pond Discharge Enterococci

Median Value [MPN/100mL] Current Monitoring Quarter (August 2014 – October 2014)	91	Number of Exceedances Current Monitoring Quarter (November 2014 – January 2015)	0
Median Value [MPN/100mL] Previous Monitoring Quarter (May 2013 – July 2014)	86	Number of Exceedances Previous Monitoring Quarter (August 2014– October 2014)	0
Median Value [MPN/100mL] Same Monitoring Quarter of Previous Year (August 2013 – October 2013)	25	Number of Exceedances Same Monitoring Quarter of Previous Year (November 2013 – January 2014)	0

1.8.1 Pond Discharge Enterococci



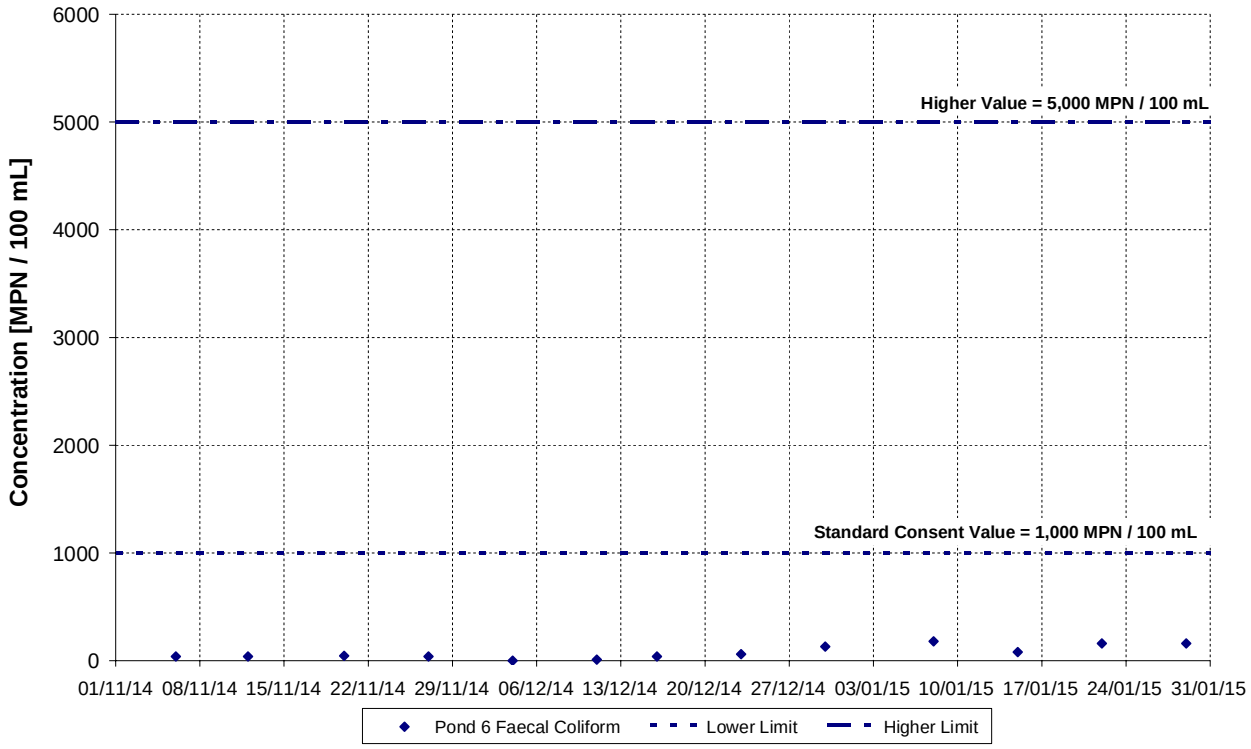
1.9 *Faecal Coliform Compliance*

The median concentration for the reporting period was 53 MPN/100 mL, which is higher than the median for the previous quarter, and lower than the same quarter in 2013. There was no exceedances of the higher value.

Table 1.9.1 Pond Discharge Faecal Coliforms

Median Value [MPN/100mL] Current Monitoring Quarter (August 2014 – October 2014)	53	Number of Exceedances Current Monitoring Quarter (November 2014 – January 2015)	0
Median Value [MPN/100mL] Previous Monitoring Quarter (May 2013 – July 2014)	40	Number of Exceedances Previous Monitoring Quarter (August 2014– October 2014)	0
Median Value [MPN/100mL] Same Monitoring Quarter of Previous Year (August 2013 – October 2013)	70	Number of Exceedances Same Monitoring Quarter of Previous Year (November 2013 – January 2014)	0

1.9.1 Pond Discharge Faecal Coliforms



2 Receiving Environment Monitoring in Pegasus Bay

2.1 *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 not due until Feb/Mar 2015.

Table 2.1.1 Receiving Environment Water Quality Consent Compliance

Consent Condition	Parameter	Compliance Condition	Compliance
			Nov – Jan15
18	Faecal Coliforms	Sampled and Analysed	J
	Enterococci	Sampled and Analysed	J
22a	Temperature	2 yearly	n/a
	DO	2 yearly	n/a
	Salinity	2 yearly	n/a
	Total Suspended Solids	2 yearly	n/a
	Nitrogen Oxides	2 yearly	n/a
	Ammoniacal Nitrogen	2 yearly	n/a
	Dissolved Reactive Phosphorus	2 yearly	n/a
	Chlorophyll-a	2 yearly	n/a
	Trace Metals (arsenic, cadmium, copper, chromium, lead, nickel and zinc)	2 yearly	n/a
	Faecal Coliforms	2 yearly	n/a
	Enterococci	2 yearly	n/a
	Phytoplankton Species	2 yearly	n/a

Kev: J Full Compliance K Minor, Isolated or Risk of Non-Compliance L Maior or Consistent Non-Compliance

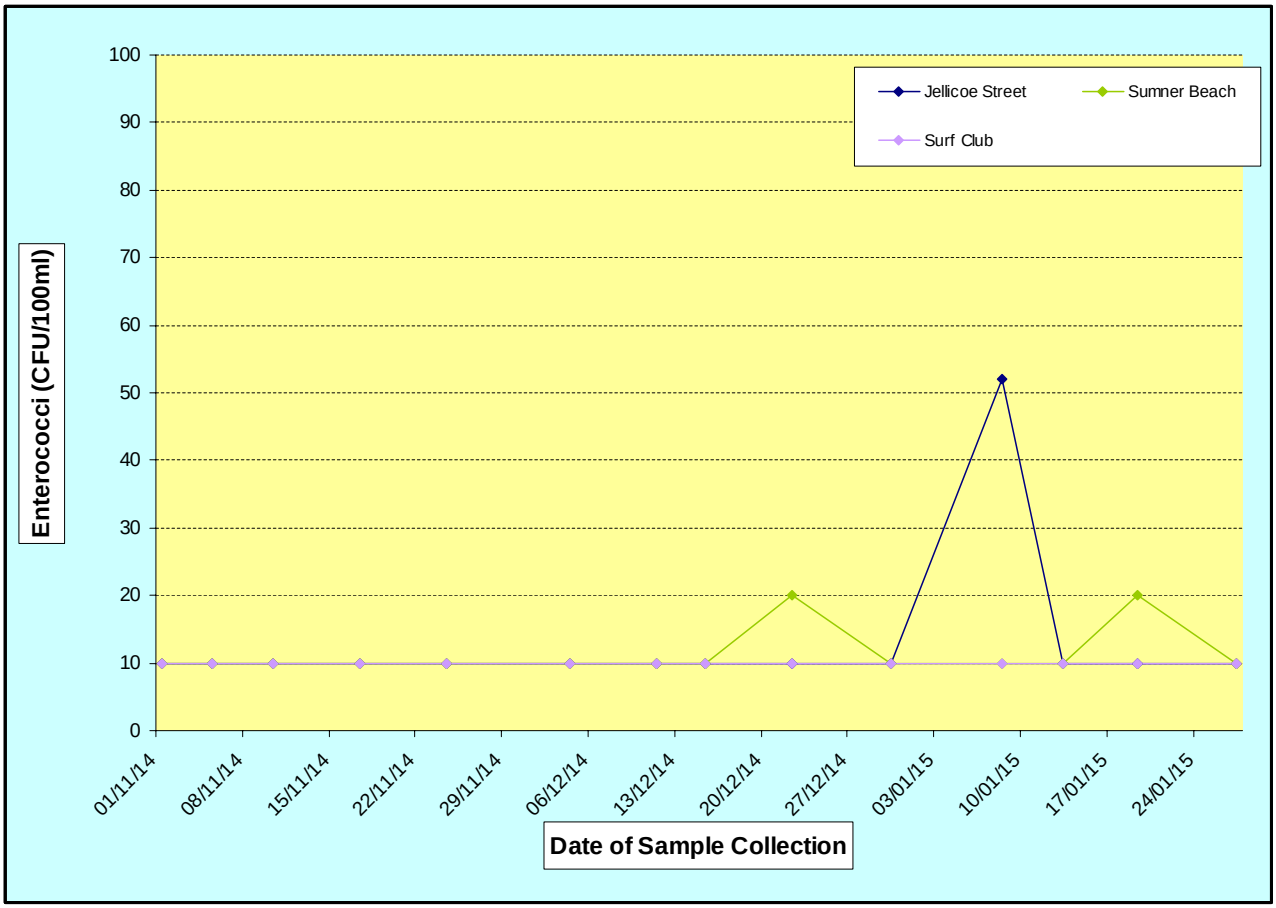
2.2 *Comments on Compliance*

All results for the Pegasus Bay area were within consent for the recording period.

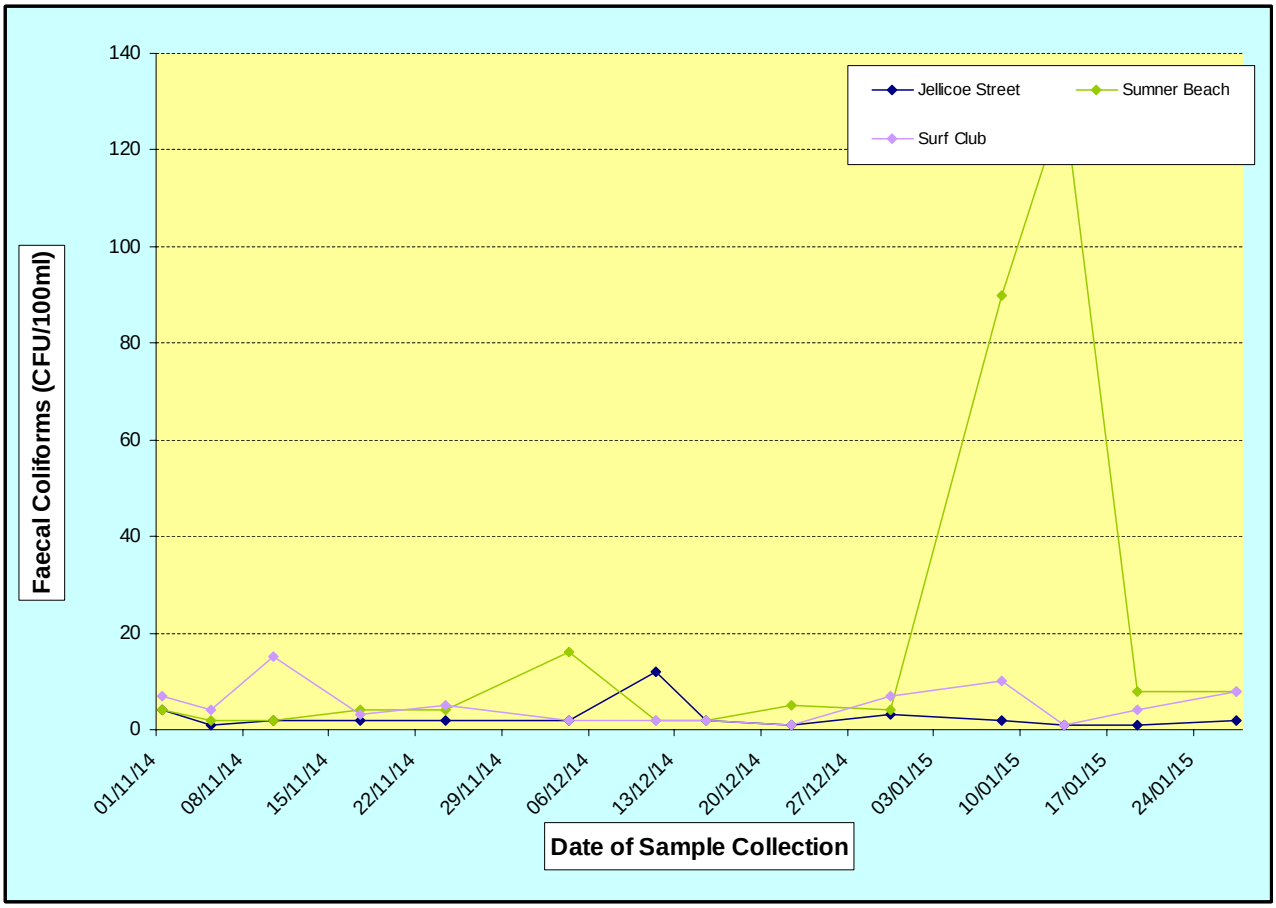
Beach Water Quality Analysis Results

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 appendices.

2.2.1 Enterococci Levels at beaches adjacent to the Outfall



2.2.2 Faecal Coliform Levels at beaches adjacent to the Outfall



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, some of which fall in the current monitoring period. These requirements are summarised in Table 2.4.1, and the results are attached as an appendix to this report. Sampling for Conditions 23 – 26 are due 2017.

Table 2.3.1 Receiving Environment Monitoring Consent Compliance

Consent Condition	Parameter	Frequency	Compliance Condition	Compliance
				Nov – Jan 2015
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	Sampled and Analysed	J
29	Complaints	As required	Recorded and Reported	J
31	Report	Quarterly and Annually	Report and information lodged with ECan	J
36	Community Liaison Group	Annually	Not monitored This Quarter	—

Kev: J Full Compliance K Minor. Isolated or Risk of Non-Compliance L Maior or Consistent Non-Compliance

2.4 *Comments on Compliance*

At 3pm Sunday 7th December the plant discovered a leak in the decommissioned, earthquake-damaged pipes under Cuthbert's Rd. However, the leak was contained and pumped back into the plant because the road drains into the Northern Toe Drain. The pipe was isolated and the leak duration was estimated to be less than 24 hours. Pumps were installed to empty the pipe and eliminate further discharges. The pipes were subsequently plugged 16th January. There has been no more accidental releases since the pipes were plugged.

Shellfish were sampled and analysed. Results were within consent limits and attached.

No complaints regarding the ocean outfall have been received this quarter. This report and supporting documentation will be submitted to Environment Canterbury.