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Christchurch Wastewater Treatment Plant

Quarterly Monitoring Report

August 2013 – October 2013

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Summary

This report summarises the results of parameters monitored by the Christchurch Wastewater Treatment Plant (CWTP) over the period August 2013 to October 2013 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, most samples were collected during the monitoring period and most monitored parameters achieved the required standards.

A project is underway to replace earthquake damaged pond structures by building a new influent structure in Pond 1; this is expected to be completed by the end of 2013.

The stormwater system around the Southern Toe Drain was redesigned by SCIRT as part of earthquake repairs. This, combined with increase groundwater flow, resulting in a much higher dry weather flowrate through the southern toe drain. ECan was notified and has been formally briefed at the regular quarterly liaison meetings. CWTP's consultants has been instructed to increase the capacity of the southern toe drain pump station. The pump station upgrade will be by January 2014.

Christchurch Wastewater Treatment Plant Contents

Quarterly Monitoring Report

August 2013 to October 2013

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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 August 2013 – October 2013 CRC051724

Consent Condition	Parameter	Compliance Condition	Compliance			
			Aug 13	Sep 13	Oct 13	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	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

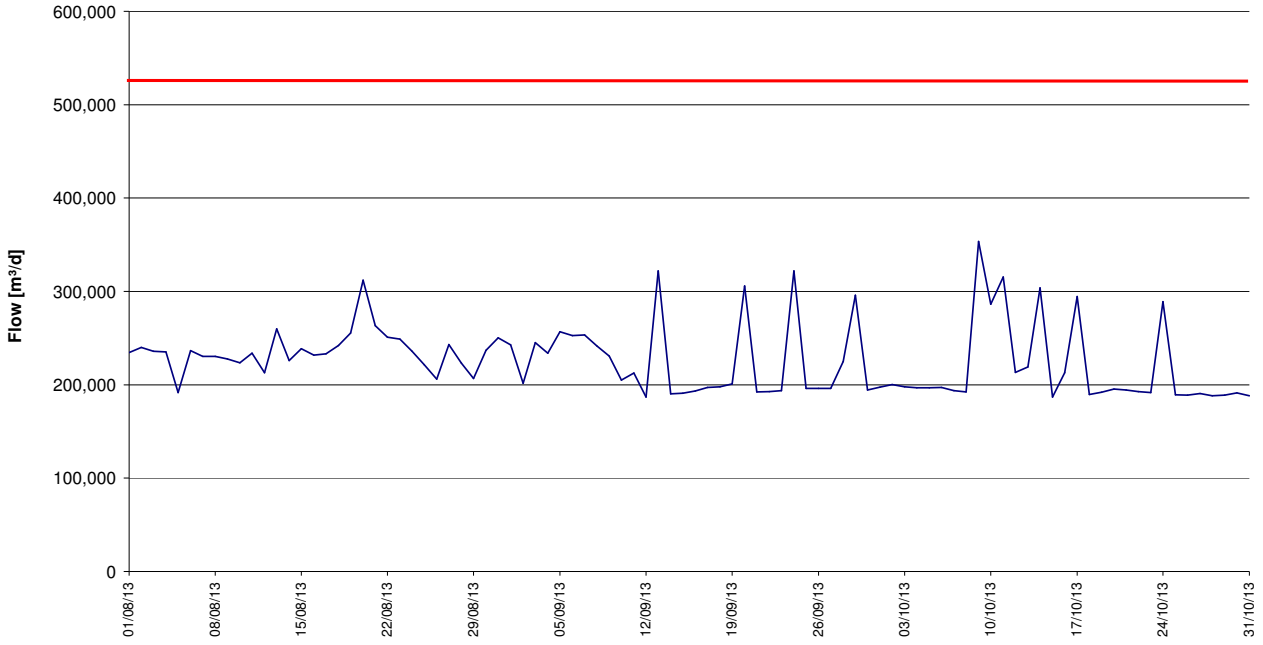


Figure 1.2.1 - Daily Outfall Flow Totals

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

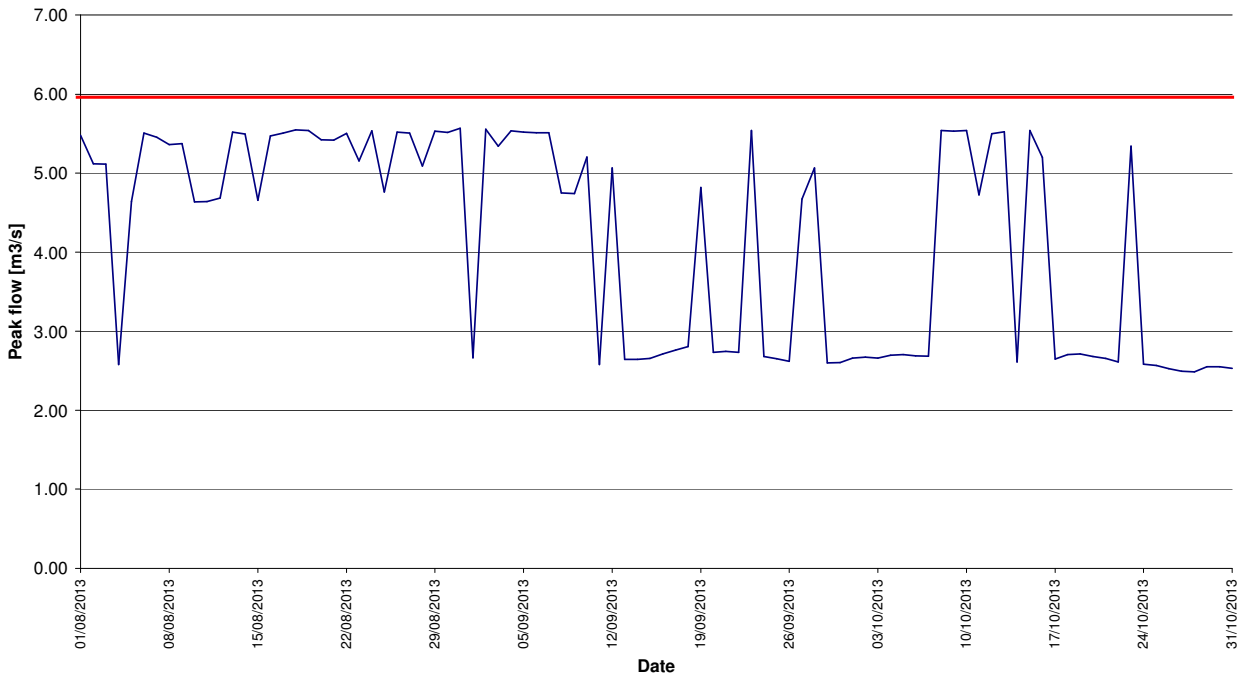


Figure 1.2.2 - Daily Peak Outfall Flows

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 August– October 2013 CRC051724

Consent Condition	Parameter	Compliance Condition	Compliance			
			Aug 13	Sep 13	Oct 13	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

Most samples were collected, although there was an error in laboratory scheduling that resulted in a three week gap between 19/09 – 10/10 for phosphorous, nitrite/nitrates and TKN.

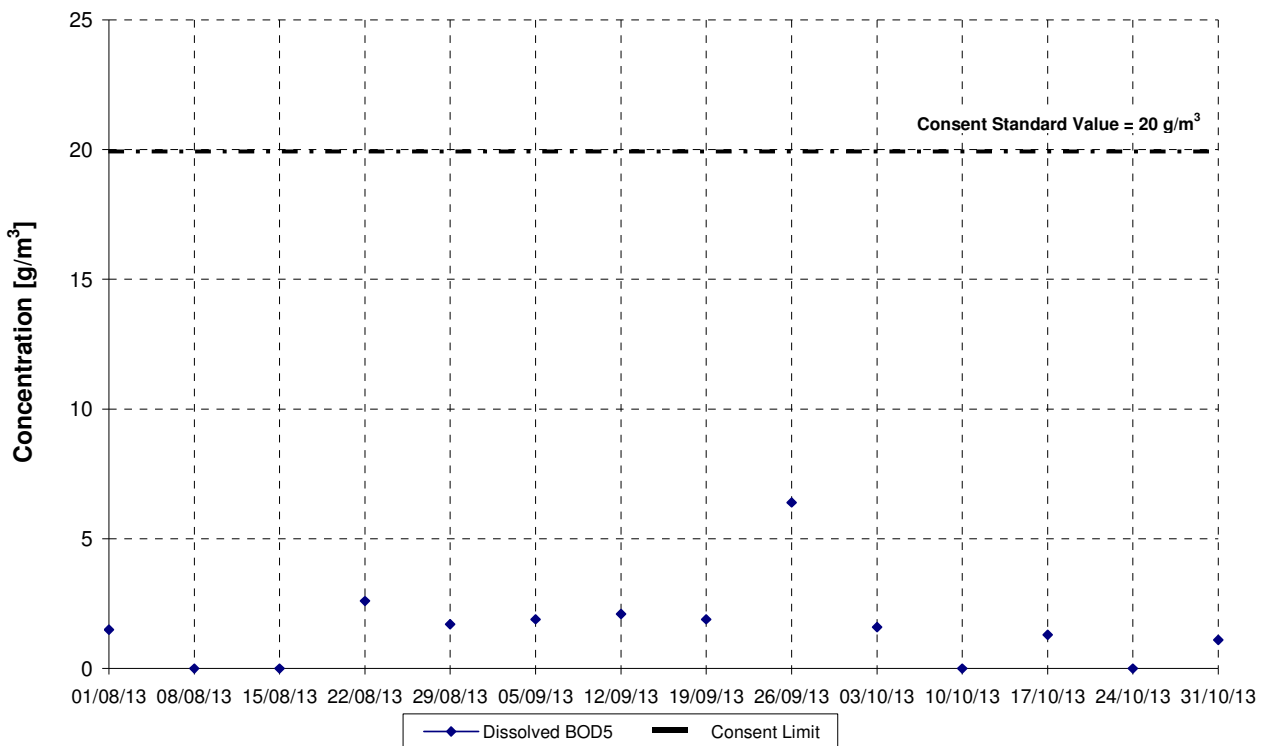
1.5 Dissolved BOD₅ Compliance

The median dissolved BOD₅ concentration for the period August – October 2013 was 1.8g/m³. This is slightly higher than the median concentrations in the previous quarter and lower than the same quarter in 2012. There were no exceedances of the standard value (20.0 g/m³) in the current monitoring quarter.

Table 1.5.1 Pond Discharge Dissolved BOD₅

Median Value [g/m ³] Current Monitoring Quarter (Aug 2013 – Oct 2013)	1.8	Number of Exceedances Current Monitoring Quarter (Aug 2013 – Oct 2013)	0
Median Value [g/m ³] Previous Monitoring Quarter (May 2013 – Jul 2013)	1.7	Number of Exceedances Previous Monitoring Quarter (May 2013 – Jul 2013)	0
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	2.1	Number of Exceedances Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	0

1.5.2 Pond Discharge Dissolved BOD₅



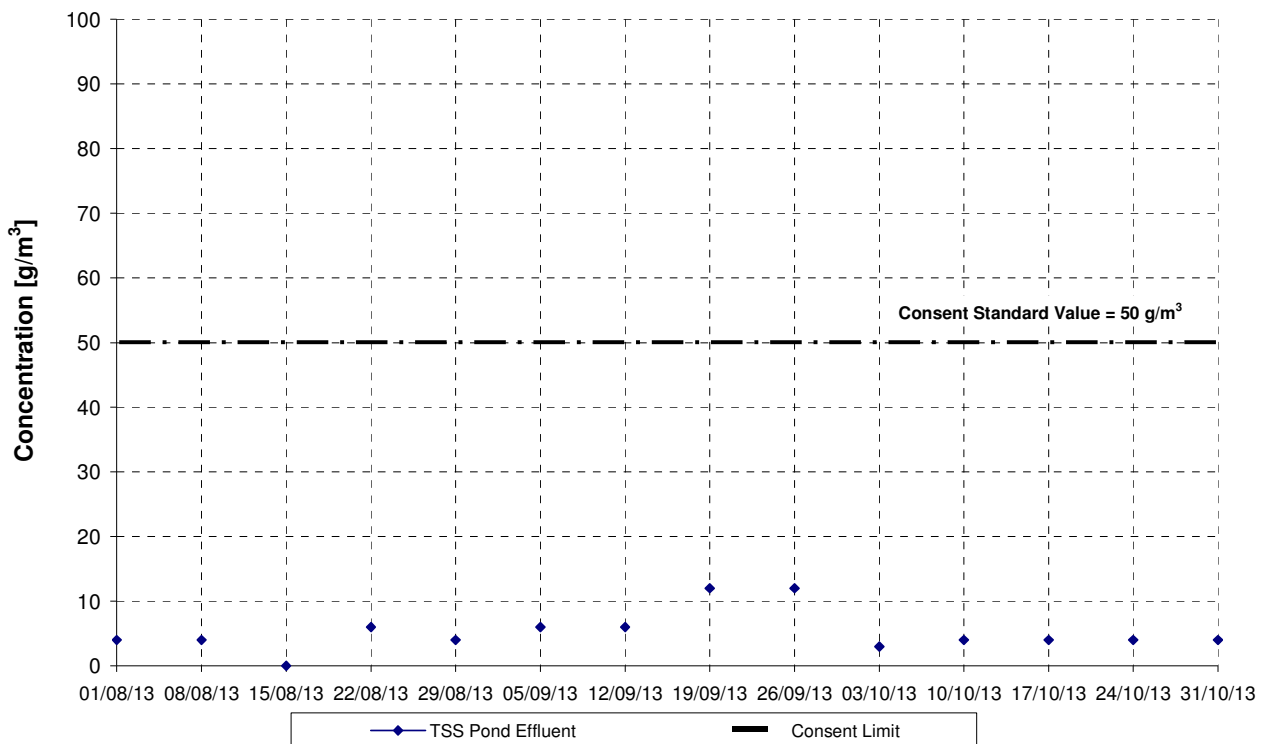
1.6 Total Suspended Solids Compliance

The median total suspended solids concentration for the period August – October 2013 was 4g/m³. This is lower than both the previous quarter and the same quarter in 2012. There were no exceedances of the standard value (50 g/m³).

Table 1.6.1 Pond Discharge Total Suspended Solids

Median Value [g/m ³] Current Monitoring Quarter (Aug 2013 – Oct 2013)	4	Number of Exceedances Current Monitoring Quarter (Aug 2013 – Oct 2013)	0
Median Value [g/m ³] Previous Monitoring Quarter (May 2013 – Jul 2013)	6	Number of Exceedances Previous Monitoring Quarter (May 2013 – Jul 2013)	0
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	29	Number of Exceedances Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	0

1.6.2 Pond Discharge Total Suspended Solids



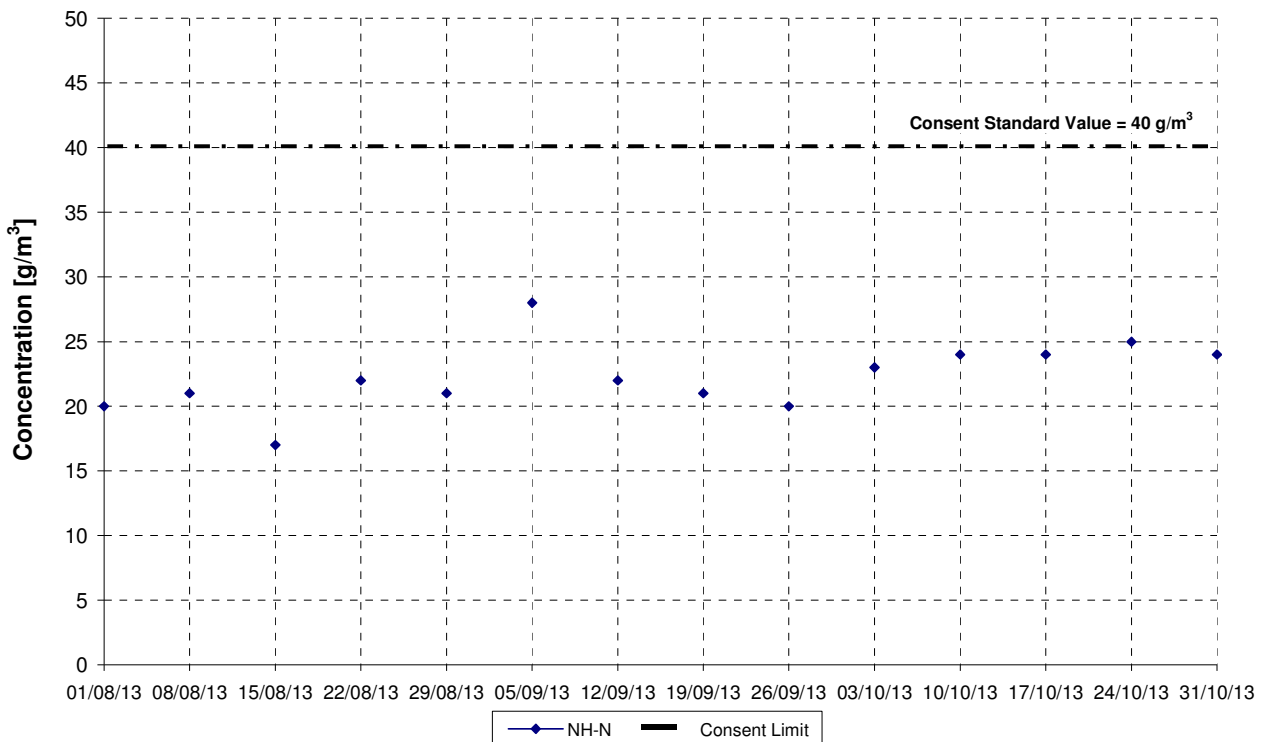
1.7 Ammonia Nitrogen Compliance

The median total ammonia nitrogen concentration for the period August – October 2013 was 22 g/m³. This was similar to the previous quarter and higher than the quarter last year. There were no exceedances of the 40 g/m³ limit.

Table 1.7.1 Pond Discharge Ammoniacal Nitrogen

Median Value [g/m ³] Current Monitoring Quarter (Aug 2013 – Oct 2013)	22	Number of Exceedances Current Monitoring Quarter (Aug 2013 – Oct 2013)	0
Median Value [g/m ³] Previous Monitoring Quarter (May 2013 – Jul 2013)	22	Number of Exceedances Previous Monitoring Quarter (May 2013 – Jul 2013)	0
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	18	Number of Exceedances Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	0

1.7.1 Pond Discharge Ammoniacal Nitrogen



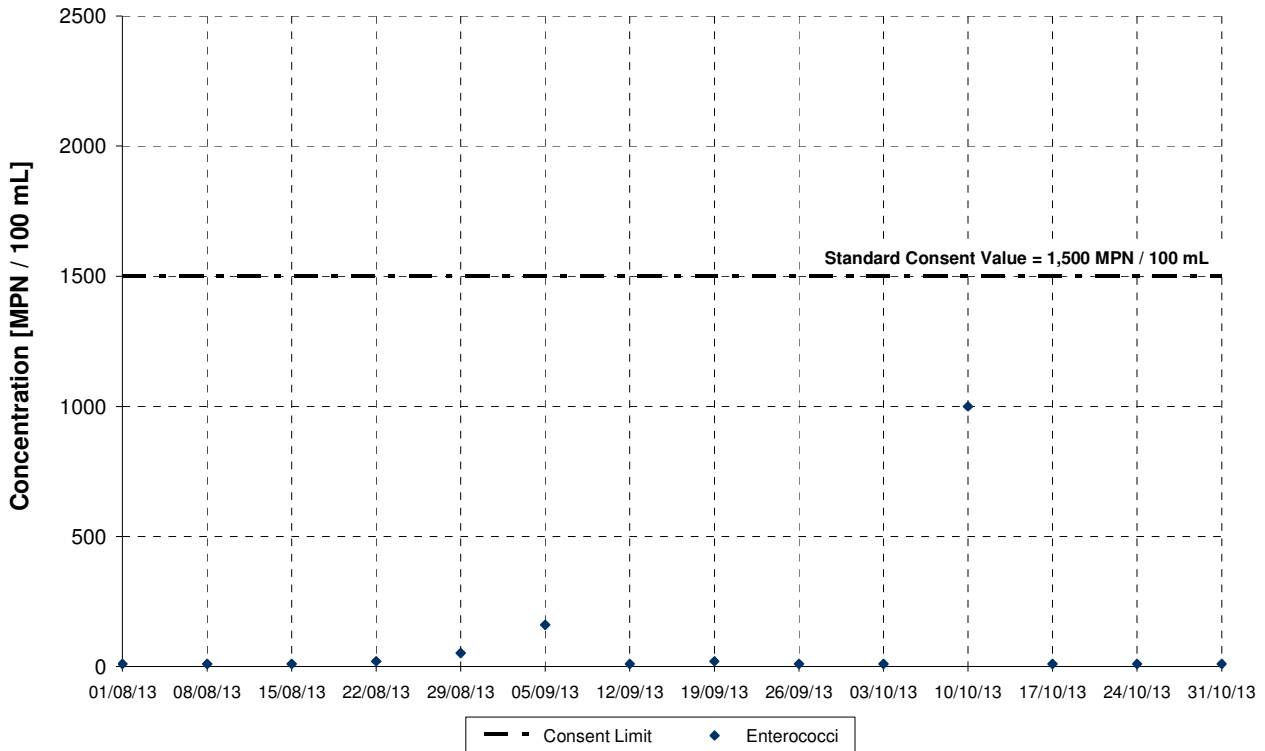
1.8 Enterococci Monitoring

The median enterococci concentration in the August – October 2013 reporting period was 10 MPN/100mL. This was lower than previous quarter and similar to the same quarter in 2012. There were no exceedances of the 1,500 MPN/100ml limit during the reporting quarter.

Table 1.8.1 Pond Discharge Enterococci

Median Value [g/m ³] Current Monitoring Quarter (Aug 2013 – Oct 2013)	10	Number of Exceedances Current Monitoring Quarter (Aug 2013 – Oct 2013)	0
Median Value [g/m ³] Previous Monitoring Quarter (May 2013 – Jul 2013)	110	Number of Exceedances Previous Monitoring Quarter (May 2013 – Jul 2013)	0
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	10	Number of Exceedances Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	1

1.8.1 Pond Discharge Enterococci



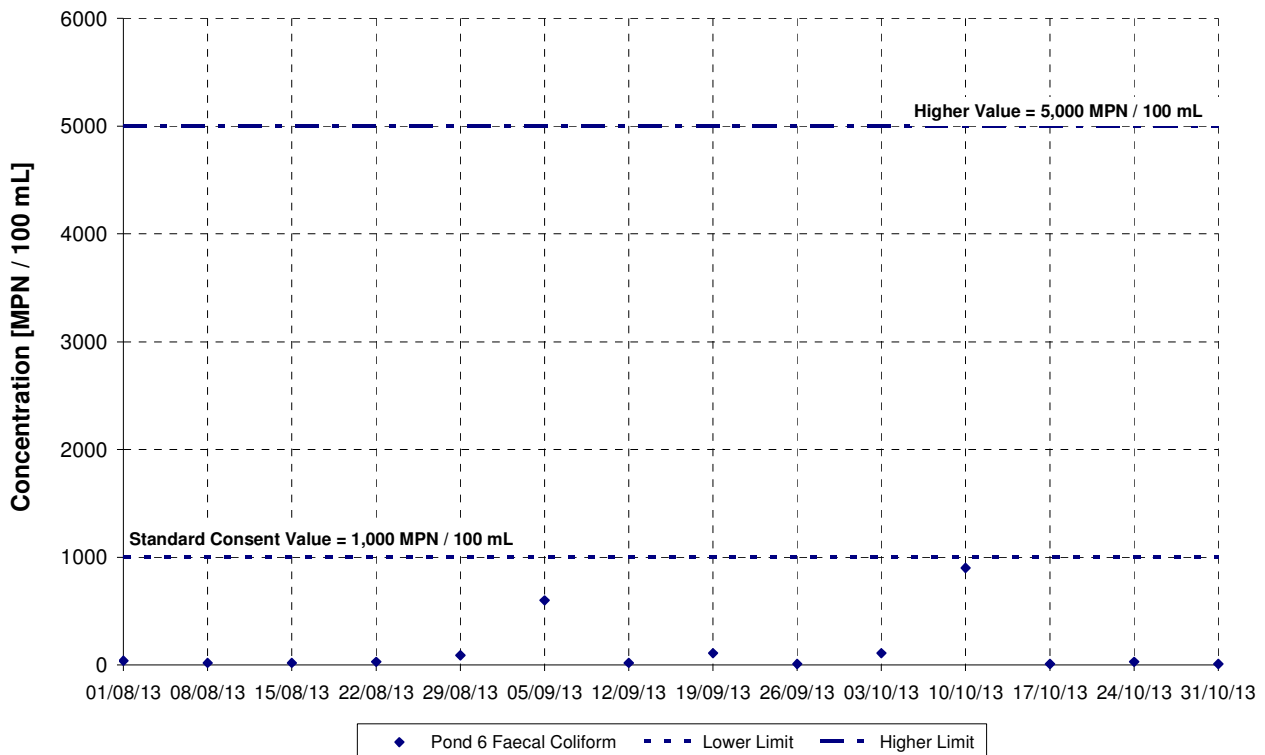
1.9 Faecal Coliform Compliance

The median concentration for the reporting period was 41 MPN/100 mL, which is lower than the median for the previous quarter, and lower than the same quarter in 2012. There was no exceedances of the higher or standard values.

Table 1.9.1 Pond Discharge Faecal Coliforms

Median Value [g/m ³] Current Monitoring Quarter (Aug 2013 – Oct 2013)	41	Number of Exceedances Current Monitoring Quarter (Aug 2013 – Oct 2013)	0
Median Value [g/m ³] Previous Monitoring Quarter (May 2013 – Jul 2013)	150	Number of Exceedances Previous Monitoring Quarter (May 2013 – Jul 2013)	2
Median Value [g/m ³] Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	73	Number of Exceedances Same Monitoring Quarter of Previous Year (Aug 2012 – Oct 2012)	2

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.

Table 2.1.1 Receiving Environment Water Quality Consent Compliance August 2013 – October 2013

Consent Condition	Parameter	Compliance Condition	Compliance
			Aug 13 – Oct 13
18	Faecal Coliforms	Sampled and Analysed	☺
	Enterococci	Sampled and Analysed	☺
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

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

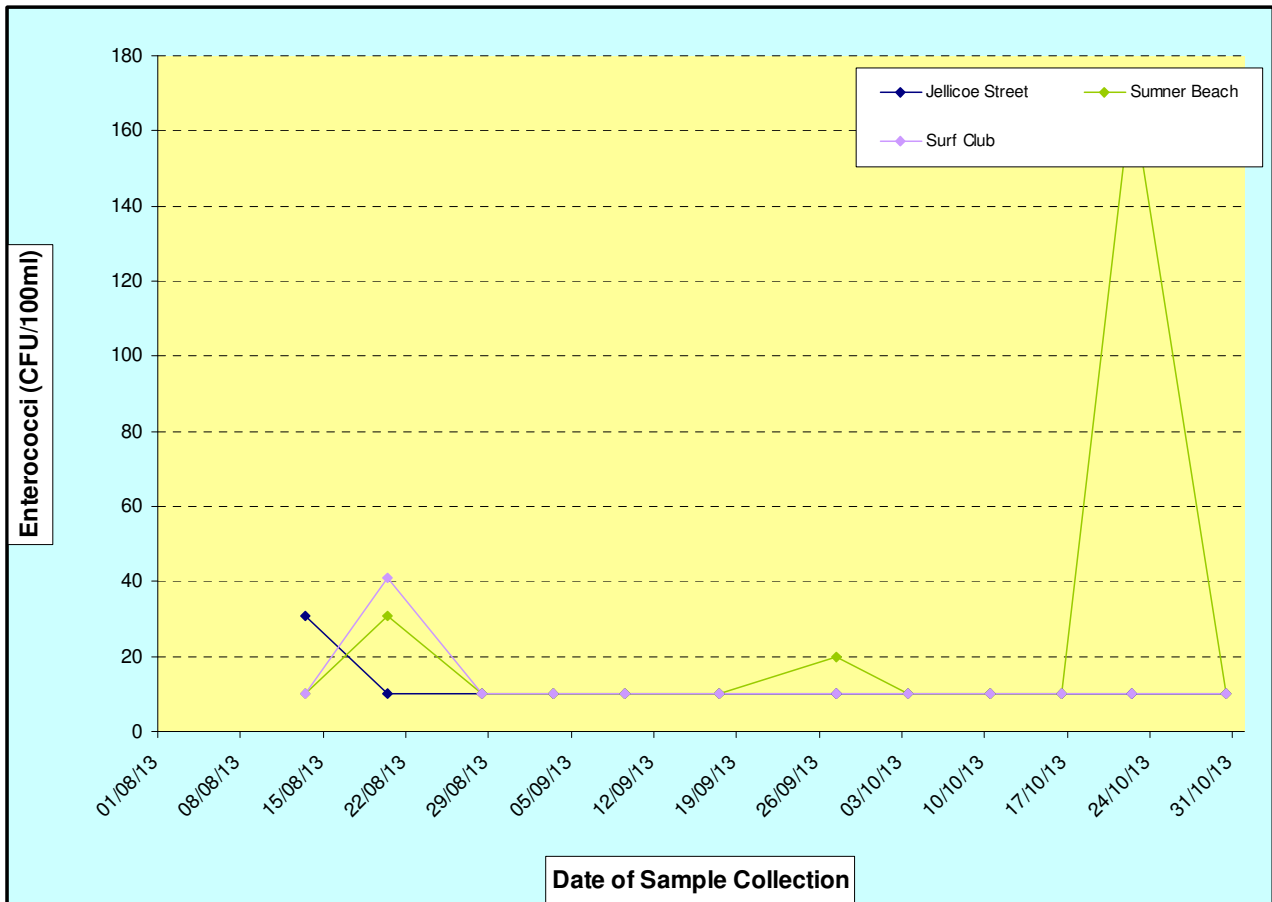
2.2 Comments on Compliance

Most results for the Pegasus Bay area were within consent for August – October 2013. An error in sample collection resulted in no samples being taken for the first week of August.

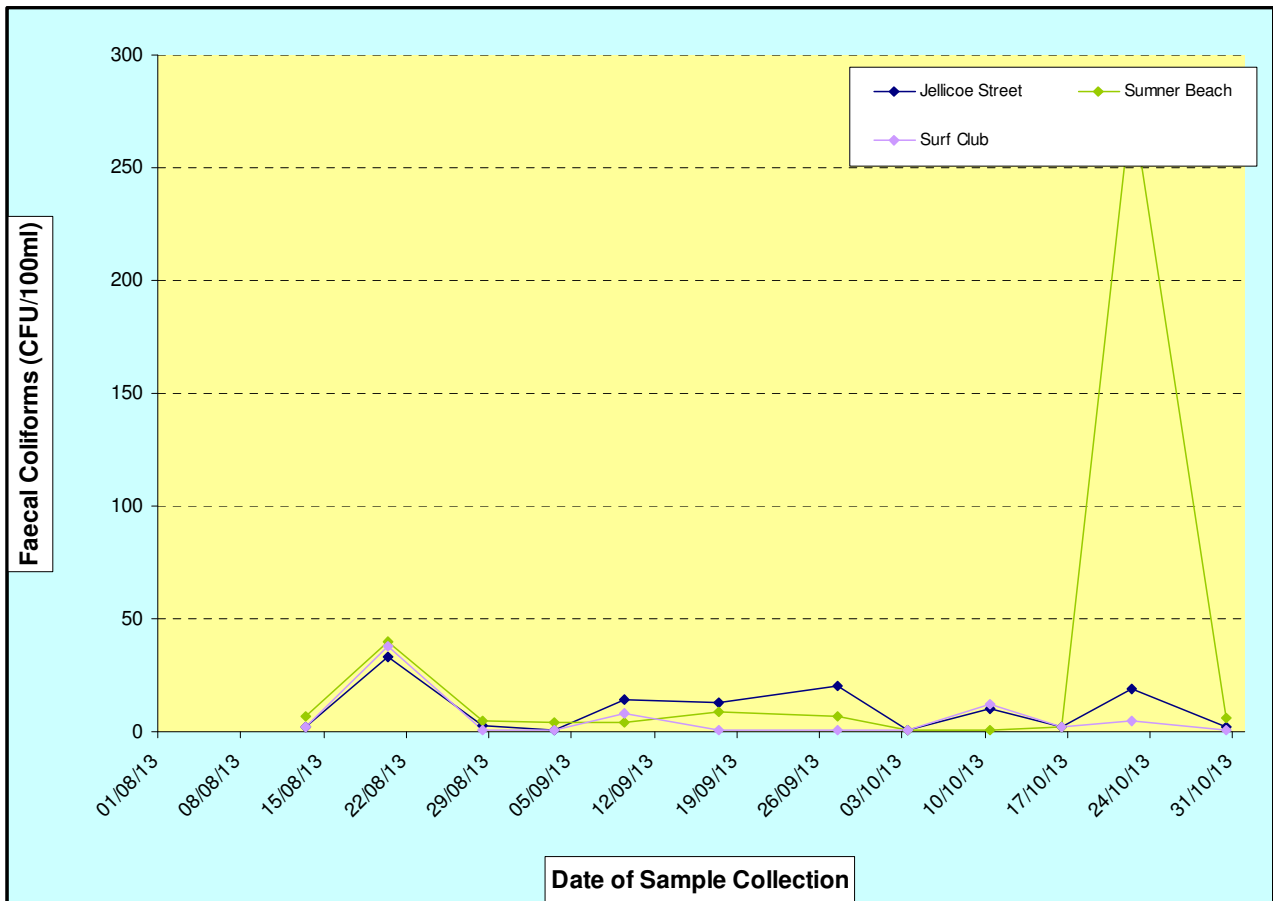
Beach Water Quality Analysis Results

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 August – October 2013 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 August 2013 – October 2013

Consent Condition	Parameter	Frequency	Compliance Condition	Compliance
				Aug 13 – Oct 13
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	☺
29	Complaints	As required	Recorded and Reported	☺
31	Report	Quarterly and Annually	Report and information lodged with ECan	☺
36	Community Liaison Group	Annually	Held and minuted	☺

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

2.4 Comments on Compliance

Repairs to the pond transfer structures under Cuthbert's Road are underway and is expected to continue until the end of 2013. There may be some temporary reduction in plant performance, but CWTP will be working with the project managers to mitigate any impact on the Consent.

Shellfish were sampled, analysed and found to be within consent.

A meeting with members of the Community Liaison Group was held Wednesday 2nd October.

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