



Christchurch Wastewater Treatment Plant

Annual Monitoring Report

July 2016 - June 2017

CHRISTCHURCH WASTEWATER TREATMENT PLANT • SHUTTLE DRIVE OFF PAGES ROAD
PO BOX 73041 • CHRISTCHURCH • NEW ZEALAND • TEL 64-3-941-5701 • FAX 64-3-941-5729

File: CRC051724 Annual Report For Ocean Outfall 2016-2017.doc
Contact: Lee Liaw

Summary

This report summarises the results of parameters monitored by the Christchurch Wastewater Treatment Plant (CWTP) over the period July 2016 – June 2017 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 consents, most samples were collected during the monitoring period and most monitored parameters achieved the required standards. There were two exceedances of the Faecal coliforms standard limit throughout the year, however a breach of consent only occurs when 6 out of 8 samples exceed the standard limit.

Unfortunately weather conditions prevented the consultant undertaking the sediment, benthic and epibenthic testing due in February/March 2017 for conditions 23 – 26 and it is now scheduled for February/March 2018.

Christchurch Wastewater Treatment Plant Contents

Annual Monitoring Report

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1 Outfall Discharge

1.1 Resource Consent Conditions

Table 1.1.1 Pond Discharge Consent Compliance for Monitoring Period July 2016 – June 2017 CRC051724

Consent Condition	Parameter	Compliance Condition	Compliance												
			Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Overall
2	Discharge Content	Discharge is only wastewater from the CWTP ponds	J	J	J	J	J	J	J	J	J	J	J	J	J
3	Discharge Volume	Recorded	J	J	J	J	J	J	J	J	J	J	J	J	J
4	Discharge Rate	Recorded	J	J	J	J	J	J	J	J	J	J	J	J	J
9	Outfall Maintenance	Routine maintenance completed and recorded	J	J	J	J	J	J	J	J	J	J	J	J	J
10	Outfall Condition	Visual inspection of outfall	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	J
12	Pumping Pressure for a given flow	Monitored	J	J	J	J	J	J	J	J	J	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 Resource Consent Conditions

The Ocean Outfall Pumping Station has operated within expected parameters and is comparable with last year's performance. The discharge flows and pressures were recorded as noted in the quarterly reports.

Figure 1.2.1 - Daily Outfall Flow Totals Jul 2016 – Jun 2017

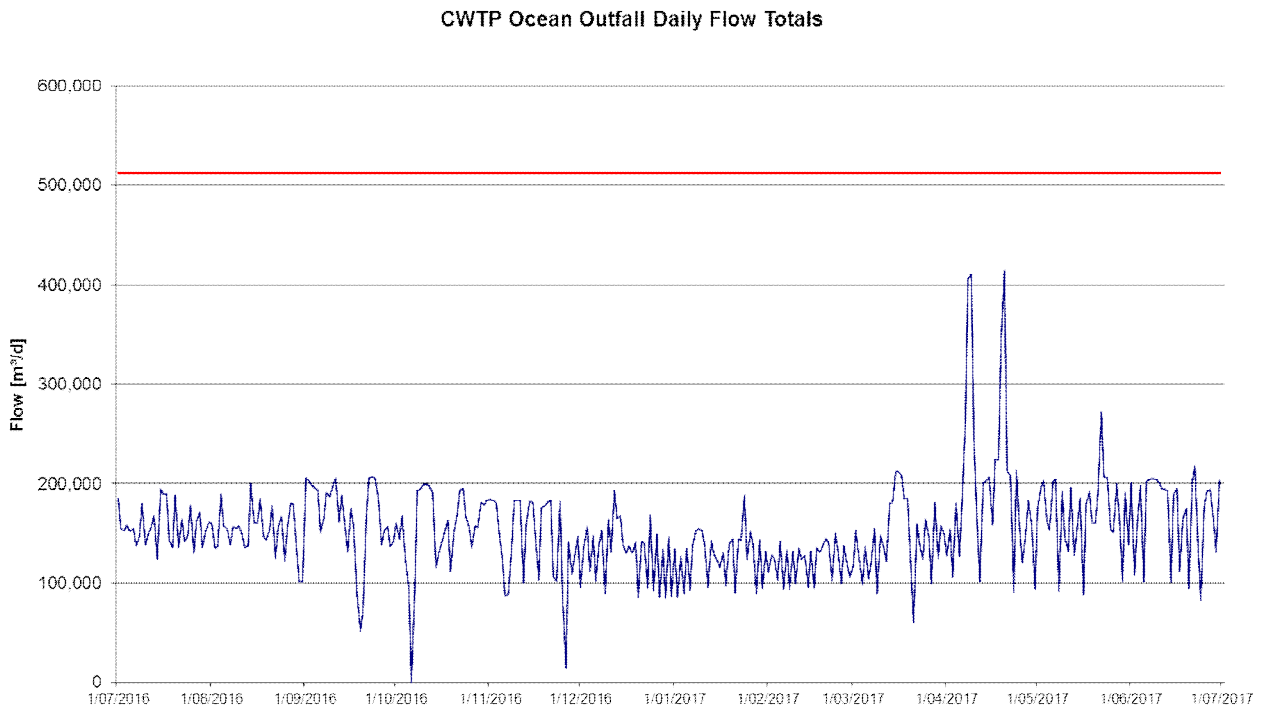
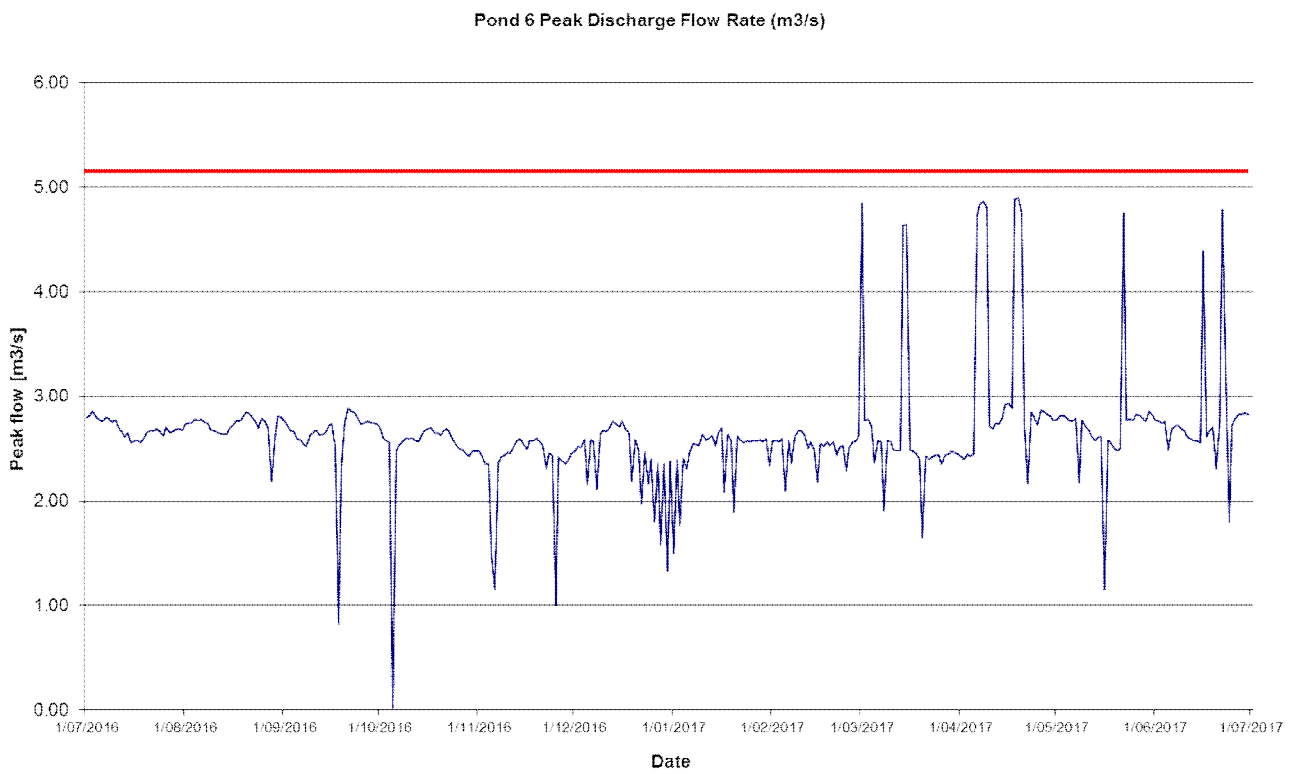


Figure 1.2.2 - Daily Peak Outfall Flows Jul 2016 - Jun 2017



1.3 Resource Consent Standard Conditions

Table 1.3.1 Contaminant Limits Consent Compliance Jul 2016 – Jun 2017 CRC051724

Consent Condition	Parameter	Compliance Condition	Compliance												
			Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Overall
15a	Dissolved BOD ₅	Concentration does not exceed 20 g/m ³	J	J	J	J	J	J	J	J	J	J	J	J	J
	Total Suspended Solids	Concentration does not exceed 50 g/m ³	J	J	J	J	J	J	J	K	J	J	J	J	J
	Ammoniacal Nitrogen	Concentration does not exceed 40 g/m ³	J	J	J	J	J	J	J	J	J	J	J	J	K
16a	Faecal Coliforms	Concentration does not exceed 1,000(standard)/5,000(higher) MPN/100mL	J	J	K	J	J	J	J	K	J	J	J	J	J
	Enterococci	Concentration does not exceed 1,500 MPN/100mL	J	J	J	J	J	J	J	J	J	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 Resource Consent Standard Conditions

In general, the Ocean Outfall Pumping Station has operated within expected parameters and is broadly similar to last year's performance.

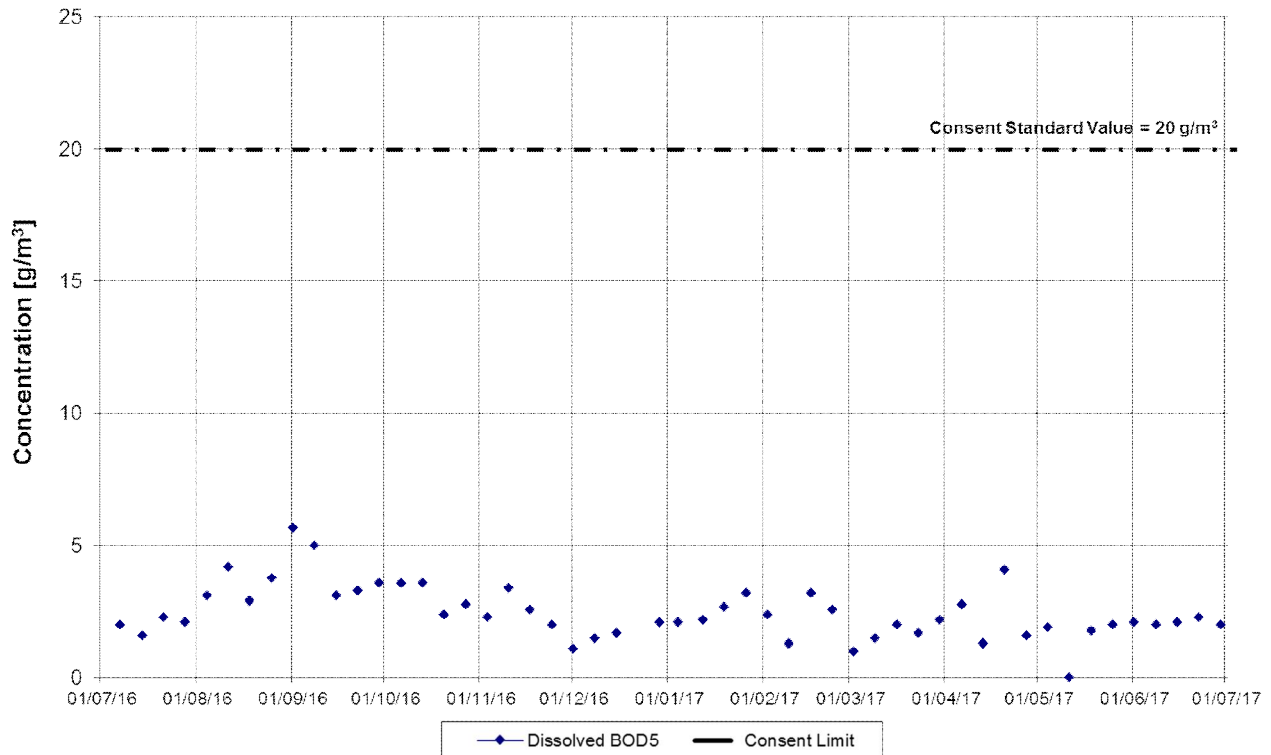
1.5 Dissolved BOD₅ Compliance

Table 1.5.1 Pond Discharge Dissolved BOD₅

Median Value [g/m ³] Current Monitoring Period (July 2016 - June 2017)	2.25	Number of Exceedances Current Monitoring Period (July 2016 - June 2017)	0
Median Value [g/m ³] Previous Monitoring Period (July 2015 - June 2016)	2	Number of Exceedances Previous Monitoring Period (July 2015 - June 2016)	0

There were no values exceeding the 20g/m³ limit recorded for the current year. The median value for the current reporting period was higher than the previous period.

1.5.2 Pond Discharge Dissolved BOD₅



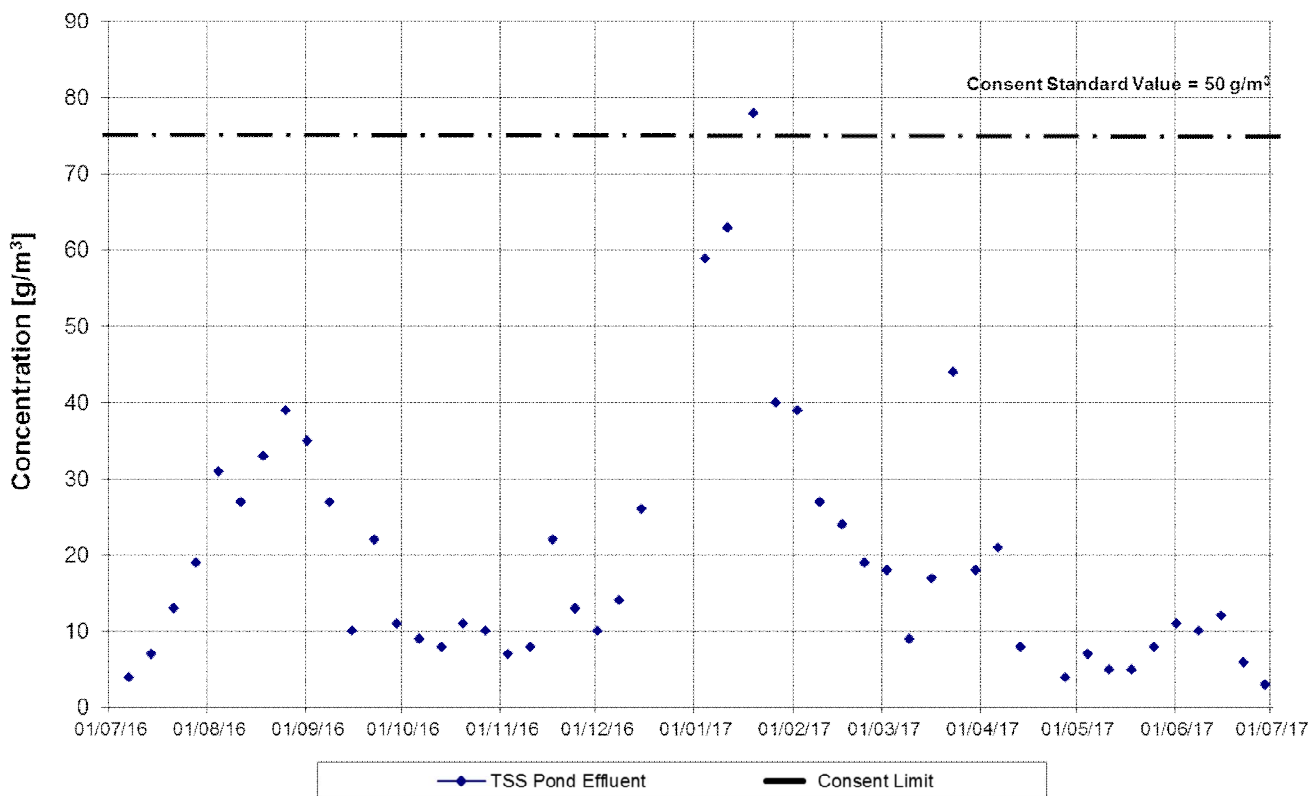
1.6 Total Suspended Solids Compliance

Table 1.6.1 Pond Discharge Total Suspended Solids

Median Value [g/m ³] Current Monitoring Period (July 2016 - June 2017)	13	Number of Exceedances Current Monitoring Period (July 2016 - June 2017)	1
Median Value [g/m ³] Previous Monitoring Period (July 2015 - June 2016)	13	Number of Exceedances Previous Monitoring Period (July 2015 - June 2016)	0

There was one value exceeding the 50g/m³ limit recorded for the current year. The median value for the current reporting period was same than the previous period.

1.6.2 Pond Discharge Total Suspended Solids



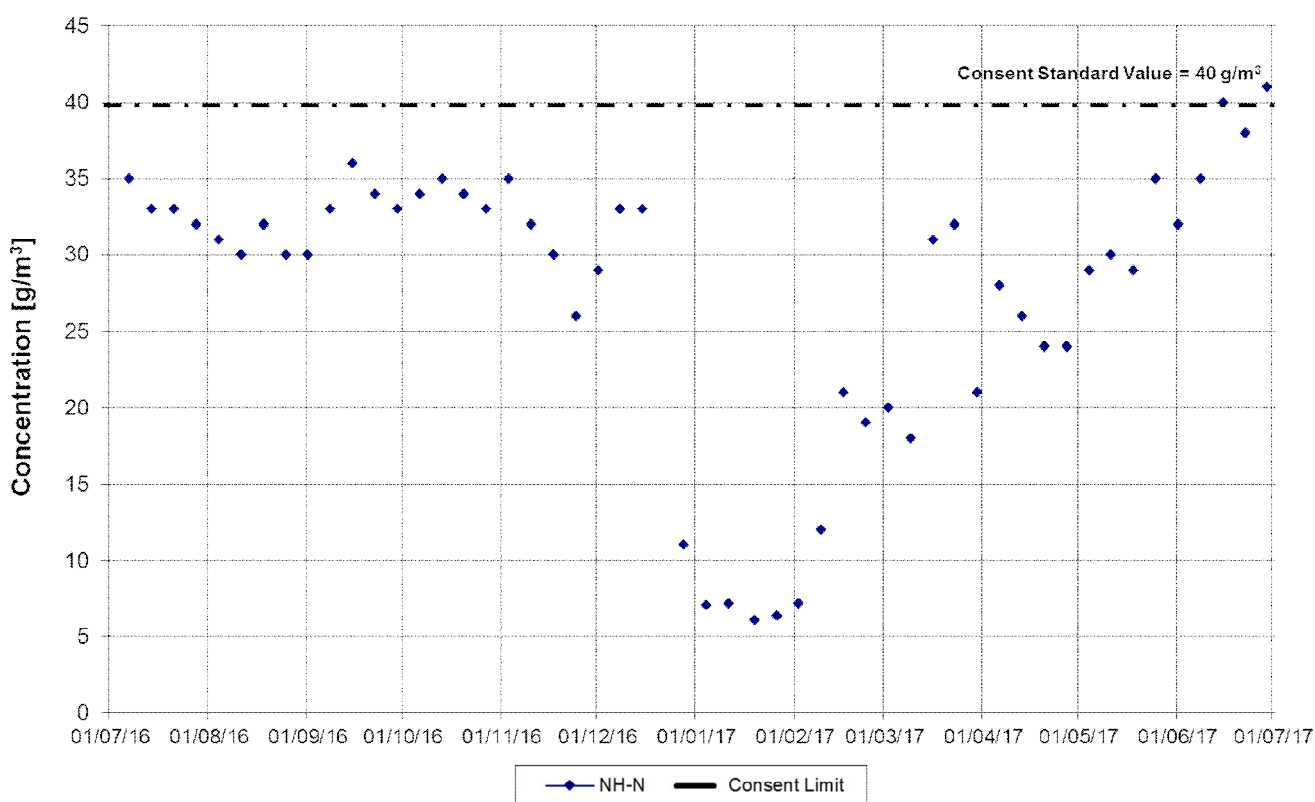
1.7 Ammonia Nitrogen Compliance

Table 1.7.1 Pond Discharge Ammoniacal Nitrogen

Median Value [g/m ³] Current Monitoring Period (July 2016 - June 2017)	31	Number of Exceedances Current Monitoring Period (July 2016 - June 2017)	1
Median Value [g/m ³] Previous Monitoring Period (July 2015 - June 2016)	26	Number of Exceedances Previous Monitoring Period (July 2015 - June 2016)	0

There was one value exceeding 40g/m³ recorded for current year. The median value for the current period was higher than the previous reporting period.

1.7.1 Pond Discharge Ammoniacal Nitrogen



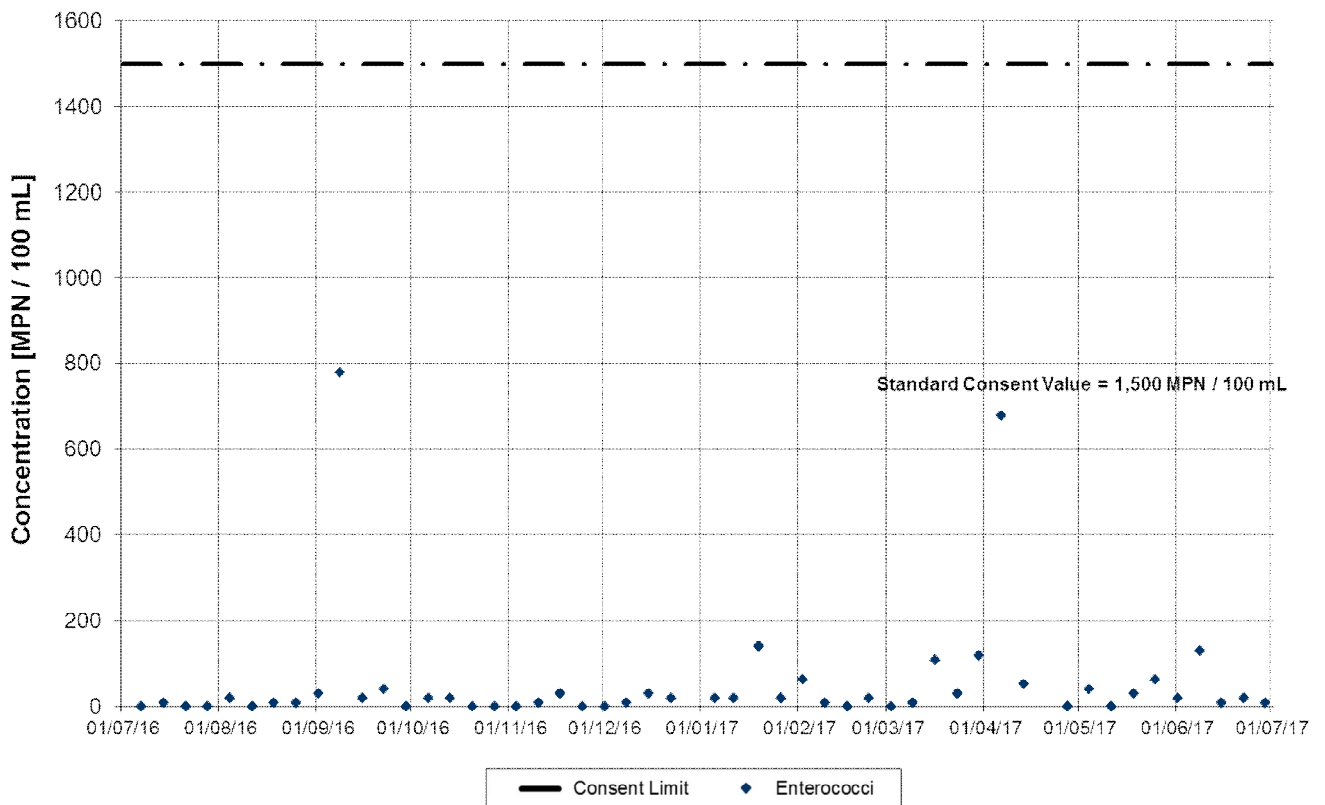
1.8 Enterococci Monitoring

Table 1.8.1 Pond Discharge Enterococci

Median Value [MPN/100ml] Current Monitoring Period (July 2016 - June 2017)	20	Number of Exceedances Current Monitoring Period (July 2016 - June 2017)	0
Median Value [MPN/100ml] Previous Monitoring Period (July 2015 - June 2016)	41	Number of Exceedances Previous Monitoring Period (July 2015 - June 2016)	1

There was no exceedance of the consented value in the current year. The median value was lower than the previous period.

1.8.1 Pond Discharge Enterococci



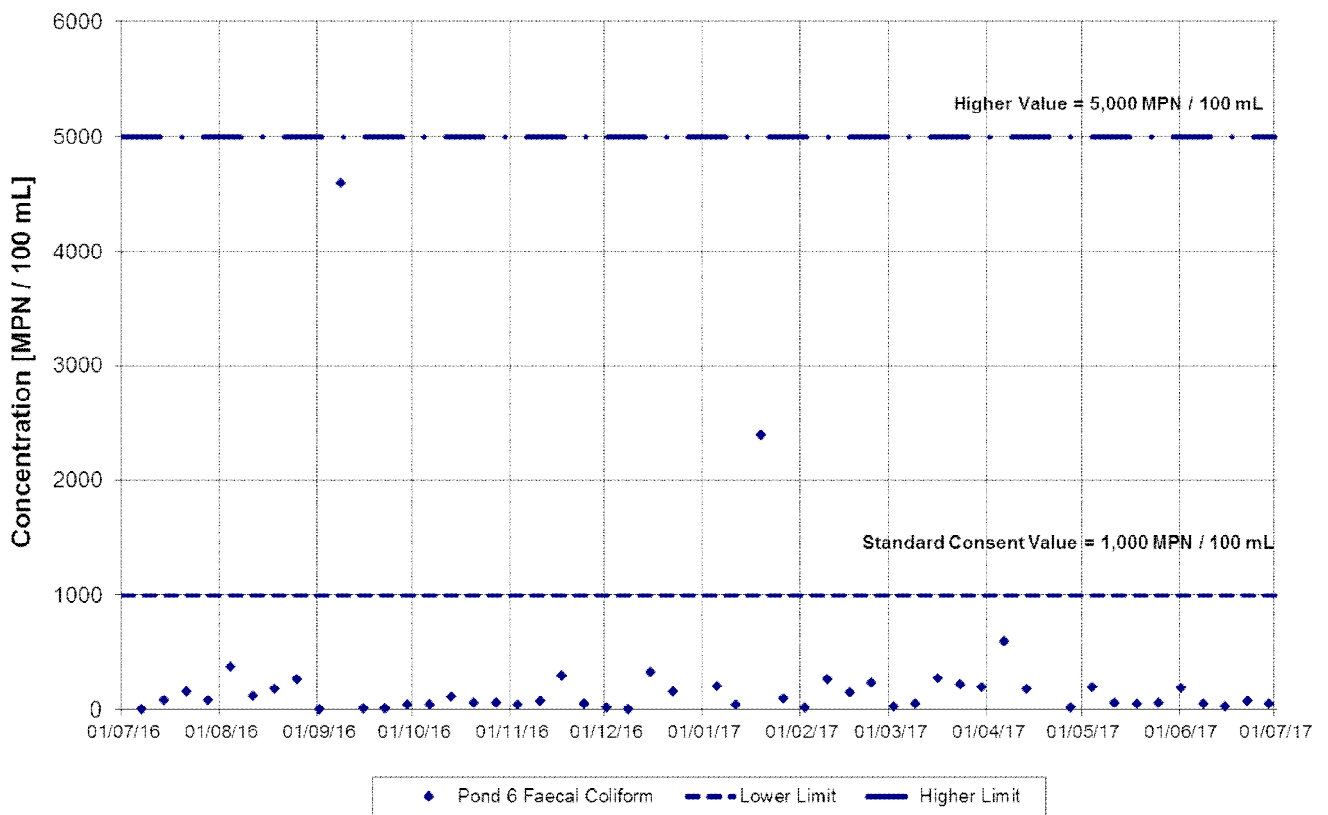
1.9 Faecal Coliform Compliance

Table 1.9.1 Pond Discharge Faecal Coliforms

Median Value [MPN/100ml] Current Monitoring Period (July 2016 - June 2017)	80	Number of Exceedances of Lower Limit Current Monitoring Period (July 2016 - June 2017)	2
Median Value [MPN/100ml] Previous Monitoring Period (July 2015 - June 2016)	60	Number of Exceedances of Lower Limit Previous Monitoring Period (July 2015 - June 2016)	3

There were two sample results above the standard consent limit. The median for this year is higher than the previous period.

1.9.1 Pond Discharge Faecal Coliforms



1.10 Other Pathogenic, and Other Contaminants

Condition 13e

Giardia cysts, cryptosporidium, salmonella, enterovirus, adenovirus and campylobacter levels have been measured and reported in April 2017.

Condition 13f

Heavy metals (copper, chromium, nickel, zinc, cadmium, lead, arsenic, and mercury) were measured and reported July 2016 and January 2017.

Condition 13g

Organochlorine pesticides, organophosphate pesticides, PCBs, and polycyclic aromatic hydrocarbons were last analysed in September 2016 and reported in the November 2016 quarterly report.

2 Receiving Environment Monitoring in Pegasus Bay

2.1 Water Quality Resource Consent Conditions

Table 2.1.1 Receiving Environment Water Quality Consent Compliance July 2016 – June 2017

Consent Condition	Parameter	Compliance Condition	Compliance				
			Jul - Oct 16	Nov –Jan 17	Feb – Apr 17	May - Jun 17	Overall
18	Faecal Coliforms	Sampled and Analysed	J	J	J	J	J
	Enterococci	Sampled and Analysed	J	J	J	J	J
22a ¹	Temperature	Two yearly	n/a	n/a	J	n/a	J
	DO	Two yearly	n/a	n/a	J	n/a	J
	Salinity	Two yearly	n/a	n/a	J	n/a	J
	Total Suspended Solids	Two yearly	n/a	n/a	J	n/a	J
	Nitrogen Oxides	Two yearly	n/a	n/a	J	n/a	J
	Ammoniacal Nitrogen	Two yearly	n/a	n/a	J	n/a	J
	Dissolved Reactive Phosphorus	Two yearly	n/a	n/a	J	n/a	J
	Chlorophyll-a	Two yearly	n/a	n/a	J	n/a	J
	Trace Metals (arsenic, cadmium, copper, chromium, lead, nickel and zinc)	Two yearly	n/a	n/a	J	n/a	J
	Faecal Coliforms	Two yearly	n/a	n/a	J	n/a	J
	Enterococci	Two yearly	n/a	n/a	J	n/a	J
	Phytoplankton Species	Two yearly	n/a	n/a	J	n/a	J

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

¹ Sampling is scheduled for 2019.

2.2 Comments on Compliance

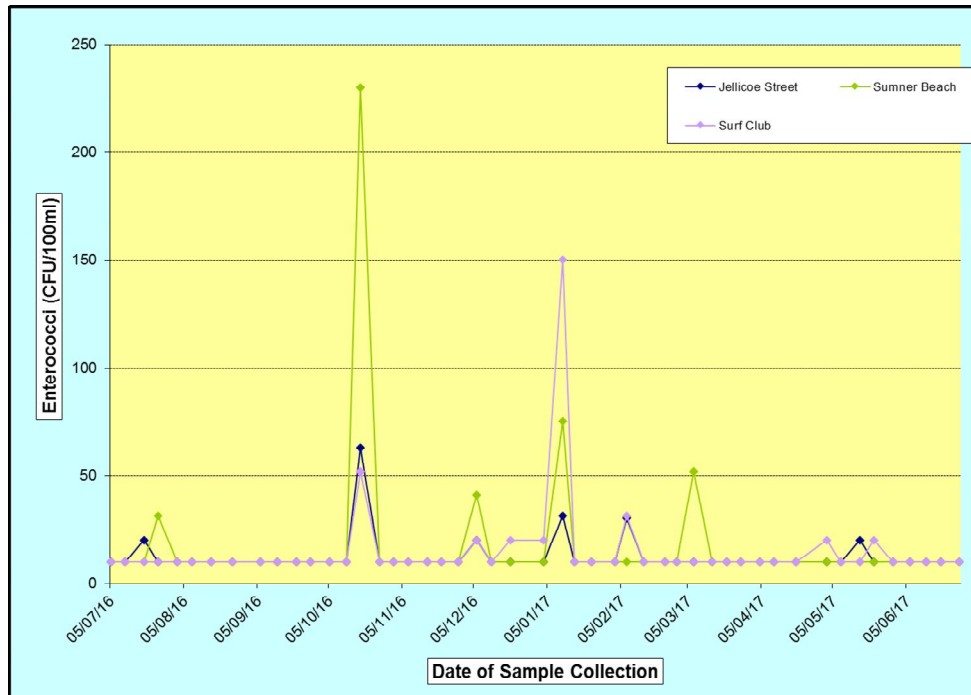
Most results for the Pegasus Bay area were within consent for 2016-17. One 6 occasions follow-up sampling was required, these generally 24hr delayed sample, except for October which required 48hrs.

Testing for condition 22a was done February 2017 and reported to ECan.

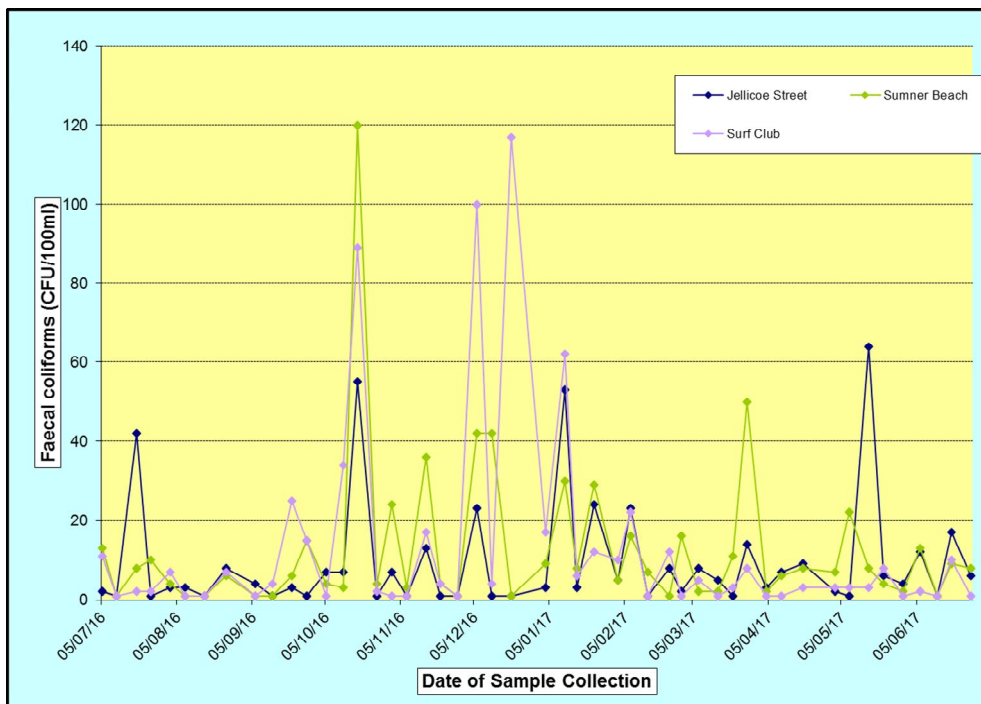
2.3 Beach Water Quality Analysis Results

Samples for condition 18 were taken at weekly intervals from the prescribed onshore locations. The results are presented in Figures 2.3.1 and 2.3.2. Retest results are contained in the appendices.

2.3.1 Enterococci Levels at beaches adjacent to the Outfall



2.3.2 Faecal Coliform Levels at beaches adjacent to the Outfall



2.4 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 2.4.1. The results are attached to the quarterly reports covering the same period.

Table 2.4.1 Receiving Environment Monitoring Consent Compliance Jul 2016 - Jun 2017

Consent Condition	Parameter	Frequency	Compliance Condition	Compliance				
				Jul - Oct 15	Nov –Jan 16	Feb – Apr 16	May - Jun 16	Overall
23	Marine Sediments	5-yearly	Delayed to 2018	n/a	n/a	n/a	n/a	K
25	Benthic Invertebrates	5-yearly	Delayed to 2018	n/a	n/a	n/a	n/a	K
26	Epibenthic Fauna	5-yearly	Delayed to 2018	n/a	n/a	n/a	n/a	K
27	Shellfish/Tuatua	Quarterly	Sampled and Analysed	J	J	J	J	J
29	Complaints	As required	Recorded and Reported	J	J	J	J	J
31	Report	Annually	Report and information lodged with ECan	J	n/a	n/a	n/a	J
32	Report	Quarterly	Report and information lodged with ECan	J	J	J	J	J
34	Management Plan	4 Years post commissioning	Report and information lodged with ECan – done March 2012 - 12/140121	n/a	n/a	n/a	n/a	n/a
36	Community Liaison Group	Annually	Recorded and Reported	n/a	J	n/a	n/a	n/a

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

2.5 Comments on Other Receiving Environment

Conditions 23 - 26

Sediment, benthic and epibenthic testing was due in February/March 2017. Unfortunately weather conditions prevented the consultant undertaking this work and it is now scheduled for February/March 2018.

Condition 27

Shellfish were sampled and analysed.

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 ECan.

Condition 36

The community liaison meeting was held 7/12/16 at CWTP (2 attendees).