



# Governors Bay Wastewater Treatment Plant Annual Monitoring Report 07/2014 – 06/2015

Prepared by: City Care Ltd  
Tim Ure

On behalf of

Christchurch City Council, City Water & Waste Unit

25/08/2015

**Resource Consent Number:** CRC101760  
**File Number:** CO6C/03694  
**Client Name:** Christchurch City Council  
**To:** Discharge contaminants into water  
**Consent Location:** Governors Bay Wastewater Treatment Plant, GOVERNORS BAY  
**Status:** Active

07/08/2012 Consent Commenced  
 07/08/2017 Lapse Date  
 03/09/2012 Given Effect to Date  
 31/12/2018 Expiry Date

**Subject to the Following Conditions:**

<b>1</b>	The discharge shall be only treated sewage from the Governors Bay Wastewater Treatment Plant, located at Lot 1 DP 55349, Jetty Road, Governors Bay. The Governors Bay Wastewater Treatment Plant shall only service municipal waste from the settlement of Governors Bay.
	<b>Compliance</b>
<b>2</b>	<ul style="list-style-type: none"> <li>a. Treated sewage effluent shall only be discharged to Lyttelton Harbour/Whakaraupo via an existing ocean outfall located at or about map reference NZMS 260 M36:838-315.</li> <li>b. The discharge at this location shall cease on 31 December 2018.</li> </ul>
	<b>Compliance</b>
<b>3</b>	The volume of effluent discharged shall not exceed 600 cubic metres per day at a maximum rate of 21 litres per second.
	<b>Non-compliance; the instantaneous flow rate limit was exceeded 34 times – 1x Sep 2014, 1x Nov 2014, 2x Dec 2014, 13x Jan 2015, 4x Mar 2015, 6x April 2015, 7x May 2015.</b>
<b>4</b>	The consent holder shall measure inflows from the Governors Bay Wastewater Treatment Plant, on a continuous basis, to a degree of accuracy of plus or minus ten percent, and shall maintain a record of total daily inflows. This record shall be made available to the Canterbury Regional Council on request.
	<b>Compliance</b>
<b>5</b>	The median concentration of the five-day biological oxygen demand in the effluent discharged shall not exceed 30 grams per cubic metre from the date of commencement of this consent.
	<b>Compliance</b>
<b>6</b>	The median concentration of the suspended solids in the effluent discharged shall not exceed 30 grams per cubic metre from the date of commencement of this consent.
	<b>Compliance</b>
<b>7</b>	<ul style="list-style-type: none"> <li>a. The median concentration of faecal coliforms shall not exceed 700 colony forming units (CFU) per 100 millilitres of effluent.</li> <li>b. The median concentration of enterococci shall not exceed 1,750 MPN per 100 millilitres of effluent.</li> </ul>
	<b>Compliance</b>
<b>8</b>	<p>For the purposes of determining whether the consent holder is complying with Conditions (5), (6) and (7):</p> <ul style="list-style-type: none"> <li>a. The effluent shall be sampled at any point after treatment and prior to discharge, and analysed for the concentration of the five-day biological oxygen demand, suspended solids, faecal coliforms and enterococci.</li> <li>b. The effluent shall be sampled at the following frequency:             <ul style="list-style-type: none"> <li>i. at least monthly samples shall be taken from 1 March to 30 November; and</li> <li>ii. at least weekly samples, on separate days selected at random, shall be taken during December, January and February.</li> </ul> </li> <li>c. For the purposes of Conditions (5), (6) and (7), whenever a new sample result is available for each determinand, it shall be grouped with the previous four results obtained under Conditions (8)(a) and (b) or Condition (9), and the median result recorded.</li> <li>d. The time of day samples are taken shall be recorded.</li> </ul>
	<b>Compliance</b>
<b>9</b>	If any sample measured has a faecal coliform count greater than 700 faecal coliforms per 100 millilitres of effluent or an enterococci count of more than 1,750 MPN per 100 millilitres of effluent, the consent holder shall take a further sample of treated effluent within two days of obtaining that result and shall test for faecal coliform and enterococci concentrations.
	<b>Compliance</b>

10	<ul style="list-style-type: none"> <li>a. If the median concentration of faecal coliforms or enterococci, as calculated in accordance with Condition 8(c), exceeds 700 faecal coliforms per 100 millilitres or 1,750 enterococci per 100 millilitres of effluent, the consent holder shall within five working days of the exceedance, write to the Canterbury Regional Council prepare a report outlining the measures the consent holder proposes to undertake to address the concentration exceedances, and the timeframe within which this will occur.</li> <li>b. The consent holder shall display the report required by condition 10(a) to the Canterbury Regional Council and display the report required by condition 10(a) on the consent holder's website. This report shall be uploaded within five working days of the exceedance occurring.</li> <li>c. The Consent Holder shall notify the Canterbury Regional Council and the parties set out in condition 21(b) within five working days of the exceedance described in condition 10(a).</li> </ul>
	<b>Compliance</b>
11	<p>Prior to discharge, the effluent shall be sampled and analysed not less than once per month for the following:</p> <ul style="list-style-type: none"> <li>a. Dissolved reactive phosphorus (grams per cubic metre);</li> <li>b. Ammoniacal nitrogen (grams per cubic metre);</li> <li>c. Total oxidized nitrogen (grams per cubic metre); and</li> <li>d. Total nitrogen (grams per cubic metre).</li> </ul>
	<b>Compliance</b>
12	<p>Prior to discharge, the effluent shall be sampled at least annually during January and analysed for the following:</p> <ul style="list-style-type: none"> <li>a. Arsenic (milligrams per cubic metre);</li> <li>b. Cadmium (milligrams per cubic metre);</li> <li>c. Chromium (milligrams per cubic metre);</li> <li>d. Copper (milligrams per cubic metre);</li> <li>e. Lead (milligrams per cubic metre);</li> <li>f. Nickel (milligrams per cubic metre); and</li> <li>g. Zinc (milligrams per cubic metre)</li> </ul>
	<b>Compliance</b>
13	<p>The sampling and analysis required by condition 15 shall continue for a further 12 months from the date of cessation of discharge.</p>
	<b>CCC to follow up</b>
14	<ul style="list-style-type: none"> <li>a. The water of the receiving environment shall be sampled in January, February, March, May, June, September, November and December, at each of the following locations: <ul style="list-style-type: none"> <li>i. 50 metres due north of the outfall;</li> <li>ii. 50 metres due south of the outfall;</li> <li>iii. 50 metres due east of the outfall;</li> <li>iv. 50 metres due west of the outfall; and</li> <li>v. Surface water quality monitoring site SQ35187 (which is located at or about NZMS 260: M36:8636-3190, east of Quail Island/Otamahua).</li> </ul> </li> <li>b. Each sample shall be analysed for the concentration of faecal coliforms, enterococci, total suspended solids, ammoniacal nitrogen, total oxidized nitrogen, total nitrogen, chlorophyll-a and dissolved reactive phosphorus.</li> <li>c. The time the samples are taken shall be recorded.</li> <li>d. Samples shall be taken at approximately 0.5 metres below the surface of the water.</li> <li>e. Samples shall not be taken on consecutive days.</li> <li>f. Samples shall be taken within one hour of low water.</li> </ul>
	<b>Compliance</b>
15	<ul style="list-style-type: none"> <li>a. The water of the receiving environment shall be sampled from the shore, once per month at Rapaki at or about NZMS 260:M36:845-332.</li> <li>b. Each sample shall be analysed for the concentration of faecal coliforms and shall also be analysed to determine the source(s) of the faecal contamination, where faecal coliform, levels exceed 260 faecal coliforms/100mL.</li> <li>c. The time the sample is taken shall be recorded.</li> <li>d. Each sample shall be taken at approximately 0.5 metres below the surface of the water.</li> <li>e. Each sample shall not be taken on consecutive days.</li> <li>f. Each sample shall be taken between three to five hours after the time of high tide.</li> </ul>
	<b>Compliance</b>
16	<p>If any of the samples collected from around the mixing zone in accordance with Condition (14) contain concentrations of total nitrogen greater than 1.0mgN/l or ammoniacal nitrogen greater than 0.91 mgN/l, the consent holder shall undertake an investigation of the operation of the Wastewater Treatment Plant and shall re-sample the discharge for ammoniacal nitrogen, total oxidized nitrogen, total nitrogen and dissolved reactive phosphorus, within 48 hours of receiving the results of the initial survey. The consent holder shall report the findings of the investigation to Canterbury Regional Council and the parties set out in condition 21(b) within one week of receipt of the results of the re-sample.</p>
	<b>Compliance</b>
17	<p>The monitoring required under Condition (14) shall be undertaken on the same day as the monitoring required under Condition (8). In the event that the monitoring required under Conditions (14) and (8) cannot be undertaken on the</p>

	same days, the reason shall be recorded and submitted to the Canterbury Regional Council and the parties set out in condition 21(b) with the results required to be submitted in accordance with Condition (19).
	<b>Compliance</b>
<b>18</b>	The laboratory carrying out the analyses for the purposes of Conditions (5), (6), (7), (9), (11), (12), (14) and (15) of this consent shall be accredited for the analyses to ISO Guide 25, either by International Accreditation New Zealand (IANZ), or by an organisation with a mutual agreement with IANZ.
	<b>Compliance</b>
<b>19</b>	The consent holder shall submit to the Canterbury Regional Council and the parties set out in condition 21(b): <ul style="list-style-type: none"> <li>a. The results of any monitoring required each month under the conditions of this consent, by the 10th working day of the following month.</li> <li>b. The results of any sampling undertaken under Condition (9) that have a faecal coliform count greater than 700 faecal coliforms per 100 millilitres of effluent, or an enterococci count greater than 1,750 enterococci MPN per 100 millilitres of effluent, within three working days of receipt of any results.</li> <li>c. The interpretation of the sampling undertaken under condition (1) against the recreational Shellfish Gathering Guideline in the Microbiological Water quality Guidelines for Marine and Freshwater Recreation Areas (ministry for the Environment, 2003) shall be published monthly on the consent holder's website.</li> </ul>
	<b>Compliance</b>
<b>20</b>	The consent holder shall submit to the Canterbury Regional Council and parties set out in condition 21(b) within three months of the commencement of this consent, a Management Plan. This shall include: <ul style="list-style-type: none"> <li>a. An Operation and Maintenance Manual, which contains the key operation and maintenance tasks of the operator, normal operations, emergency operations and safety precautions. The emergency operations and safety precautions shall set out: <ul style="list-style-type: none"> <li>i. The contingency measures to be taken at the pumping stations in the Governors Bay Wastewater Treatment Plant catchment and at the Treatment Plant in order to avoid the release of effluent to the environment during periods of any mechanical or electrical failure or power cut; and</li> <li>ii. The measures to be taken at the pumping stations in the Governors Bay catchment and at the Treatment Plant in the event of an emergency discharge or overflow.</li> </ul> </li> <li>b. The Management Practices to ensure compliance with conditions of the resource consent.</li> <li>c. The Maintenance Contractor's monitoring programme and reporting provisions, including a specific requirement that monitoring is undertaken in accordance with Conditions (8), (9), (10), (11), (12), (13), (14), (15) and (16) of this consent.</li> </ul>
	<b>Compliance; Management Plan submitted on 05/11/2012</b>
<b>21</b>	<ul style="list-style-type: none"> <li>a. The consent holder shall submit a report to the Canterbury Regional Council, attention: RMA Compliance and Enforcement Manager, by 31 August of each year summarising the monitoring data collected and providing an interpretation of the results of monitoring. This report shall include an interpretation of the sampling undertaken under condition (15) against the Recreational Shellfish Gathering Guideline in the Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas (Ministry for the Environment, 2003).</li> <li>b. The consent holder shall supply a copy of the report referred to in condition 21(a) to all of the following organizations/groups/people: <ul style="list-style-type: none"> <li>a. Governors Bay Community Association;</li> <li>b. Cass Bay Residents Association;</li> <li>c. Church Bay Neighborhood Association</li> <li>d. Governors Bay Community Association Incorporated;</li> <li>e. Lyttelton Harbour/Whakaraupo Issues Group;</li> <li>f. Paula Smith C/o 1 Purau Avenue, RD 2, Governors Bay;</li> <li>g. Te Hapu o Ngati Wheke (Rapaki) Runanga;</li> <li>h. Te Runanga o Koukourarata;</li> <li>i. Te Runanga o Ngati Tahu.</li> </ul> </li> <li>a. The consent holder shall display all effluent and receiving environment monitoring data collected on the consent holder's website. This data shall be updated on a monthly basis.</li> </ul>
	<b>Compliance via this report; CCC to distribute</b>
<b>22</b>	<ul style="list-style-type: none"> <li>a. The consent holder shall prepare an implementation plan within 60 working days of the commencement of this resource consent.</li> <li>b. The implementation plan must describe the steps to be undertaken to ensure that by 31 December 2018 sewage is no longer discharged from Governors Bay outfall into Lyttelton Harbour/Whakaraupo, including: <ul style="list-style-type: none"> <li>a. No later than 30 June 2015 all preliminary design details have been completed;</li> <li>b. No later than 30 September 2015, all necessary resource consents have been applied for;</li> <li>c. No later than 31 March 2017 detailed design work completed;</li> <li>d. No later than 31 July 2017 the contract to construct the works is let;</li> <li>e. No later than 31 December 2018 all works have been commissioned.</li> </ul> </li> <li>a. The consent holder shall provide an annual report to the Canterbury Regional Council in July of each year, outlining progress on the Implementation Plan for the removal of the sewage discharge from Lyttelton Harbour/Whakaraupo. A copy of this annual report will also be forwarded to all organizations/groups represented on the Lyttelton Harbour/Whakaraupo Wastewater Working Party and also all parties listed in condition 21(b).</li> <li>b. The consent holder shall hold a public meeting once a year to discuss the monitoring data collected in the previous year and also to provide an update on progress relating to the cessation of the discharge at map reference NZMS 260 M36:838-815 on 31 December 2018, and the removal of the sewage discharge from</li> </ul>

	Lyttleton Harbour/Whakaraupo. c. The consent holder shall continue to sample the receiving environment as specified in condition (15) for the 12 months following the cessation of the discharge at map reference NZMS 260 M36:838-815.
	<b>CCC to follow up</b>
<b>23</b>	The Canterbury Regional Council may, once per year, on any of the last five working days of June or November each year, serve notice of its intention to review the conditions of this consent for the purposes of: <ul style="list-style-type: none"> <li>a. Dealing with any adverse effects which may arise from the exercise of this consent and which it is appropriate to deal with later; or</li> <li>b. Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; or</li> <li>c. Complying with the requirements of a relevant rule in an operative regional plan; or Amending the frequency of monitoring and the parameters monitored; or</li> <li>d. Amending the frequency of monitoring and the parameters monitored.</li> </ul>
	<b>ECAN to request</b>

### **Treatment Plant Effluent Monitoring**

Daily flows for the Governors Bay Wastewater Treatment Plant (WWTP) were under the 600 m<sup>3</sup>/d limit with the maximum flow through the plant being 435m<sup>3</sup>/day

The plant operated with full compliance for effluent water quality relating to BOD<sub>5</sub>, TSS, faecal coliforms (FC), and Enterococci (ENT) (Table 2.1). Maximum medians for organic loading parameters were 4.8 mg/L for BOD<sub>5</sub> and 18 mg/L for TSS compared to 30-mg/L limits. Results for human health-related parameters were excellent with maximum medians of 10 CFU/100 mL for FC and 30 MPN/100 mL for ENT compared to 700 CFU/100 mL and 1,750 MPN/100 mL consented.

### **Receiving Environment Monitoring**

The receiving environment was monitored around the outfall and at one control site (Rapaki) (Attachment 2.1). Human health related parameters of FC and ENT were usually at or below the respective detection limits although up to 57 CFU/100 mL was measured for FC. Trigger levels of 1 mg/L for TN and 0.91 mg/L for NH<sub>3</sub> were not exceeded at any of the sites with maximum values of 0.48 mg/L TN at 50 m due north of the outfall and 0.080 mg/L NH<sub>3</sub> at 50 m due east of the outfall. Monitoring results did not appear to be significantly different between the outfall sites and the control site.

The receiving environment was also sampled at Rapaki for comparison to the Recreational Shellfish Gathering Guidelines (Attachment 2.2). Accordingly, the median during the monitoring period was 4 CFU/100 mL which is less than the recommended maximum median of 14 CFU/100 mL. Moreover, no samples exceeded the trigger limit of 43 CFU/100 mL (compared to the recommended maximum of 10% of samples in excess).

**Table 1. Summary of Exceedances and Non-Compliances from July 2014 - June 2015.**

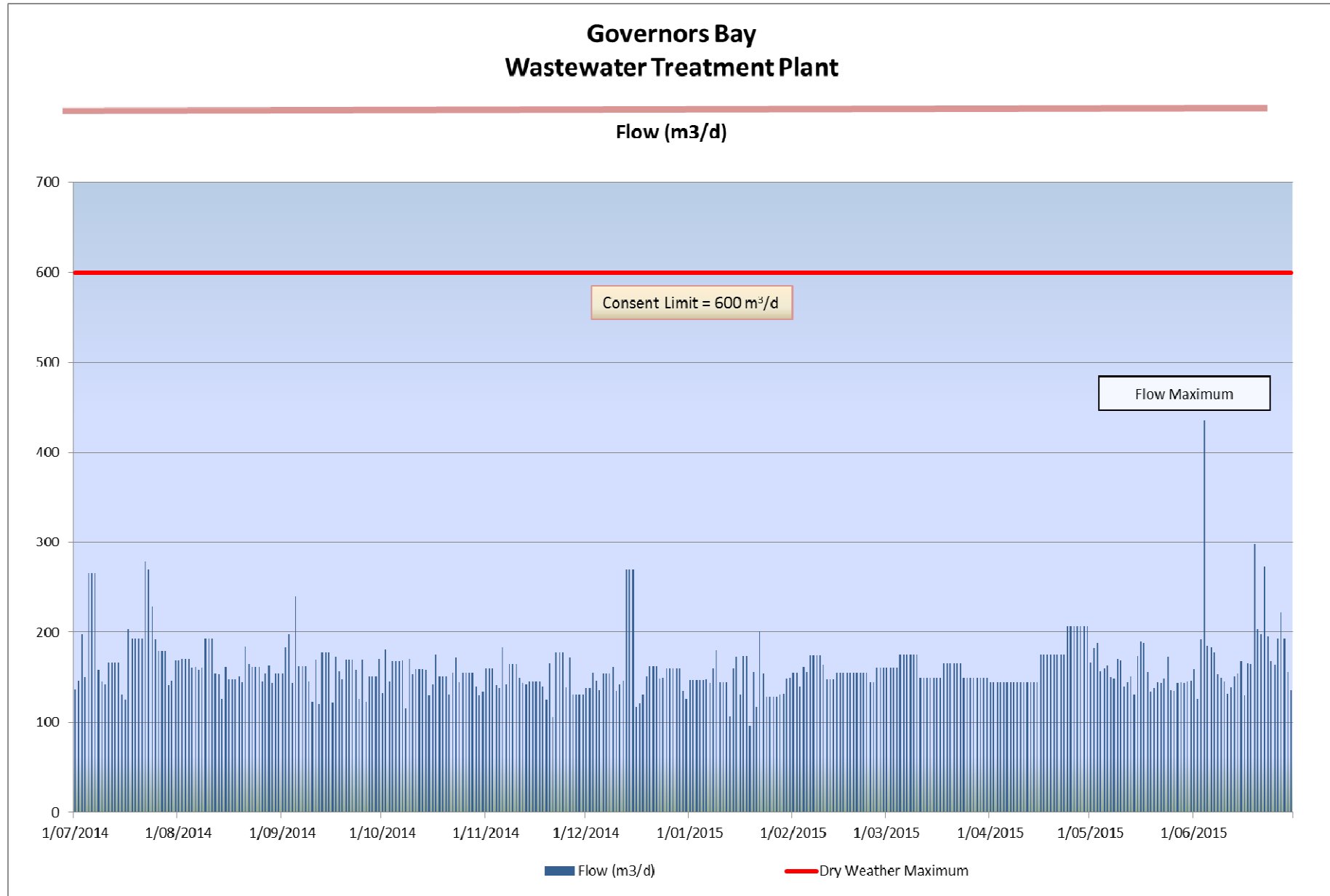
<b>Parameter</b>	<b>Exceedances of Trigger Value</b>
Flow <600 m <sup>3</sup> /d	0
Flow <21 L/s	0
BOD <sub>5</sub> median <30 mg/L	0
TSS median <30 mg/L	0
FC <700 CFU/100 mL	0
ENT <1,750 MPN/100 mL	0
TN <1 mg/L	0
NH <sub>3</sub> <0.91 mg/L	0

## Attachment 1.1: Flows, Governors Bay, Data

Plant:	Governors Bay Wastewater Treatment, Banks Peninsula						
Asset Owner:	Christchurch City Council						
Laboratory	Christchurch City Council Laboratory, City Water & Waste Unit						
<b>Max:</b>	<b>600</b>	<b>m<sup>3</sup>/d</b>	<b>Dry weather</b>				
Date	Flow [m <sup>3</sup> /d]	Date	Flow [m <sup>3</sup> /d]	Date	Flow [m <sup>3</sup> /d]	Date	Flow [m <sup>3</sup> /d]
1/07/2014	137	1/10/2014	133	1/01/2015	147	1/04/2015	145
2/07/2014	147	2/10/2014	181	2/01/2015	147	2/04/2015	145
3/07/2014	198	3/10/2014	146	3/01/2015	147	3/04/2015	145
4/07/2014	151	4/10/2014	168	4/01/2015	147	4/04/2015	145
5/07/2014	266	5/10/2014	168	5/01/2015	147	5/04/2015	145
6/07/2014	266	6/10/2014	168	6/01/2015	148	6/04/2015	145
7/07/2014	266	7/10/2014	169	7/01/2015	143	7/04/2015	145
8/07/2014	158	8/10/2014	116	8/01/2015	160	8/04/2015	145
9/07/2014	146	9/10/2014	171	9/01/2015	180	9/04/2015	145
10/07/2014	142	10/10/2014	153	10/01/2015	145	10/04/2015	145
11/07/2014	167	11/10/2014	159	11/01/2015	145	11/04/2015	145
12/07/2014	167	12/10/2014	159	12/01/2015	145	12/04/2015	145
13/07/2014	167	13/10/2014	159	13/01/2015	107	13/04/2015	145
14/07/2014	167	14/10/2014	158	14/01/2015	160	14/04/2015	145
15/07/2014	131	15/10/2014	130	15/01/2015	173	15/04/2015	145
16/07/2014	126	16/10/2014	142	16/01/2015	131	16/04/2015	176
17/07/2014	204	17/10/2014	176	17/01/2015	174	17/04/2015	176
18/07/2014	193	18/10/2014	152	18/01/2015	174	18/04/2015	176
19/07/2014	193	19/10/2014	152	19/01/2015	96	19/04/2015	176
20/07/2014	193	20/10/2014	152	20/01/2015	156	20/04/2015	176
21/07/2014	193	21/10/2014	131	21/01/2015	117	21/04/2015	176
22/07/2014	279	22/10/2014	155	22/01/2015	201	22/04/2015	176
23/07/2014	270	23/10/2014	172	23/01/2015	154	23/04/2015	176
24/07/2014	229	24/10/2014	145	24/01/2015	128	24/04/2015	207
25/07/2014	192	25/10/2014	155	25/01/2015	128	25/04/2015	207
26/07/2014	179	26/10/2014	155	26/01/2015	128	26/04/2015	207
27/07/2014	179	27/10/2014	155	27/01/2015	128	27/04/2015	207
28/07/2014	179	28/10/2014	155	28/01/2015	131	28/04/2015	207
29/07/2014	141	29/10/2014	140	29/01/2015	132	29/04/2015	207
30/07/2014	147	30/10/2014	130	30/01/2015	149	30/04/2015	207
31/07/2014	169	31/10/2014	134	31/01/2015	150	1/05/2015	167
1/08/2014	169	1/11/2014	160	1/02/2015	155	2/05/2015	182
2/08/2014	171	2/11/2014	160	2/02/2015	155	3/05/2015	188
3/08/2014	171	3/11/2014	160	3/02/2015	140	4/05/2015	157
4/08/2014	171	4/11/2014	141	4/02/2015	162	5/05/2015	160
5/08/2014	161	5/11/2014	138	5/02/2015	156	6/05/2015	163
6/08/2014	162	6/11/2014	183	6/02/2015	175	7/05/2015	151
7/08/2014	158	7/11/2014	142	7/02/2015	175	8/05/2015	149
8/08/2014	161	8/11/2014	165	8/02/2015	175	9/05/2015	171
9/08/2014	193	9/11/2014	165	9/02/2015	175	10/05/2015	169
10/08/2014	193	10/11/2014	165	10/02/2015	164	11/05/2015	140
11/08/2014	193	11/11/2014	150	11/02/2015	149	12/05/2015	144
12/08/2014	154	12/11/2014	143	12/02/2015	149	13/05/2015	152
13/08/2014	153	13/11/2014	142	13/02/2015	149	14/05/2015	131
14/08/2014	127	14/11/2014	146	14/02/2015	155	15/05/2015	174
15/08/2014	162	15/11/2014	146	15/02/2015	155	16/05/2015	190
16/08/2014	148	16/11/2014	146	16/02/2015	155	17/05/2015	188
17/08/2014	148	17/11/2014	146	17/02/2015	155	18/05/2015	156

18/08/2014	148	18/11/2014	140	18/02/2015	155	19/05/2015	134
19/08/2014	152	19/11/2014	126	19/02/2015	155	20/05/2015	138
20/08/2014	145	20/11/2014	166	20/02/2015	155	21/05/2015	145
21/08/2014	185	21/11/2014	106	21/02/2015	155	22/05/2015	143
22/08/2014	165	22/11/2014	177	22/02/2015	155	23/05/2015	149
23/08/2014	161	23/11/2014	177	23/02/2015	155	24/05/2015	173
24/08/2014	161	24/11/2014	177	24/02/2015	145	25/05/2015	136
25/08/2014	161	25/11/2014	139	25/02/2015	145	26/05/2015	135
26/08/2014	146	26/11/2014	172	26/02/2015	161	27/05/2015	143
27/08/2014	154	27/11/2014	131	27/02/2015	161	28/05/2015	145
28/08/2014	163	28/11/2014	131	28/02/2015	161	29/05/2015	143
29/08/2014	143	29/11/2014	131	1/03/2015	161	30/05/2015	146
30/08/2014	154	30/11/2014	131	2/03/2015	161	31/05/2015	147
31/08/2014	154	1/12/2014	138	3/03/2015	161	1/06/2015	159
1/09/2014	154	2/12/2014	138	4/03/2015	161	2/06/2015	127
2/09/2014	184	3/12/2014	155	5/03/2015	176	3/06/2015	192
3/09/2014	198	4/12/2014	147	6/03/2015	176	4/06/2015	435
4/09/2014	143	5/12/2014	136	7/03/2015	176	5/06/2015	186
5/09/2014	240	6/12/2014	154	8/03/2015	176	6/06/2015	184
6/09/2014	162	7/12/2014	154	9/03/2015	176	7/06/2015	177
7/09/2014	162	8/12/2014	154	10/03/2015	176	8/06/2015	153
8/09/2014	162	9/12/2014	162	11/03/2015	150	9/06/2015	150
9/09/2014	146	10/12/2014	135	12/03/2015	150	10/06/2015	146
10/09/2014	123	11/12/2014	142	13/03/2015	150	11/06/2015	132
11/09/2014	170	12/12/2014	147	14/03/2015	150	12/06/2015	139
12/09/2014	120	13/12/2014	271	15/03/2015	150	13/06/2015	152
13/09/2014	177	14/12/2014	271	16/03/2015	150	14/06/2015	154
14/09/2014	177	15/12/2014	271	17/03/2015	150	15/06/2015	168
15/09/2014	177	16/12/2014	117	18/03/2015	166	16/06/2015	130
16/09/2014	122	17/12/2014	121	19/03/2015	166	17/06/2015	166
17/09/2014	173	18/12/2014	131	20/03/2015	166	18/06/2015	165
18/09/2014	157	19/12/2014	152	21/03/2015	166	19/06/2015	298
19/09/2014	148	20/12/2014	162	22/03/2015	166	20/06/2015	204
20/09/2014	170	21/12/2014	162	23/03/2015	166	21/06/2015	198
21/09/2014	170	22/12/2014	162	24/03/2015	150	22/06/2015	273
22/09/2014	170	23/12/2014	149	25/03/2015	150	23/06/2015	196
23/09/2014	158	24/12/2014	150	26/03/2015	150	24/06/2015	168
24/09/2014	127	25/12/2014	160	27/03/2015	150	25/06/2015	164
25/09/2014	170	26/12/2014	160	28/03/2015	150	26/06/2015	193
26/09/2014	123	27/12/2014	160	29/03/2015	150	27/06/2015	222
27/09/2014	151	28/12/2014	160	30/03/2015	150	28/06/2015	193
28/09/2014	151	29/12/2014	160	31/03/2015	150	29/06/2015	156
29/09/2014	151	30/12/2014	135			30/06/2015	136
30/09/2014	171	31/12/2014	127				

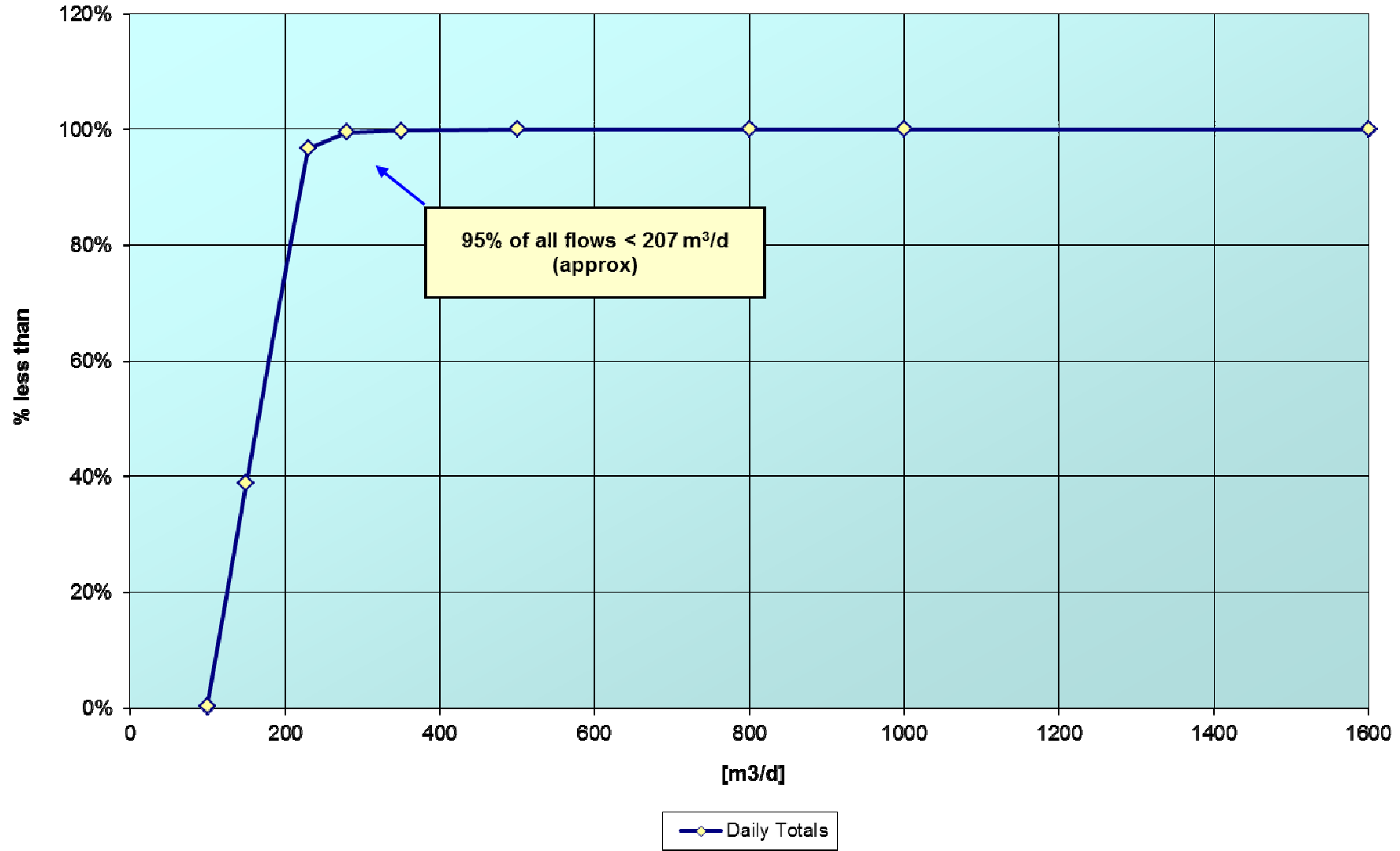
**Attachment 1.2: Flows, Governors Bay, Chart**





Attachment 1.3: Flows, Governors Bay, '% less than'

Governors Bay WWTP flows < x m<sup>3</sup>/d



## Attachment 2.1: Lab Data, Governors Bay Wastewater Treatment Plant

Plant:		Governors Bay Wastewater Treatment, Banks Peninsula											
Asset Owner:		Christchurch City Council											
Laboratory		Christchurch City Council Laboratory, City Water & Waste Unit											
Date	5-Sample Median												
	BOD <sub>5</sub>	DRP	TSS	TN	NH <sub>4</sub> -N	NOx	FC	ENT	N <sub>org</sub>	BOD <sub>5</sub>	TSS	FC	ENT
	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	CFU/100ml	M PN/100ml	[mg/l]	[mg/l]	[mg/l]	CFU/100ml	M PN/100ml
16/07/2014	9.1	3.9	32	19.7	18	18	10	52	1.3	4.7	18.0	10.0	5
20/08/2014	7.4	3.7	13	22.3	19	20	20	20	2.4	4.8	18.0	7.5	10
10/09/2014	3.7	4.4	17	17.2	15	15	2	10	1.7	4.7	18.0	10.0	10
15/10/2014	4	5.2	11	21.0	19	19	10	10	1.6	4.7	17.0	10.0	10
19/11/2014	3.9	4.4	12	16.1	13	13	10	10	2.8	4.0	13.0	10.0	10
03/12/2014	2.4		6.5				180	110		3.9	12.0	10.0	10
09/12/2014	4.1	3.6	10	17.6	16	16	10	30	1.2	3.9	11.0	10.0	10
19/12/2014	4.2		9				10	380		4.0	10.0	10.0	30
23/12/2014	1.1		8				10e	30		3.9	9.0	10.0	30
30/12/2014	1.9		8				10	10		2.4	8.0	10.0	30
07/01/2015	1.8	3.2	3	2.6	0.92	0.95	10	10	1.7	1.9	8.0	10.0	30
13/01/2015	1		8				10	100		1.8	8.0	10.0	30
21/01/2015	3.7		11				10	10		1.8	8.0	10.0	10
28/01/2015	2.6		4				10	10		1.9	8.0	10.0	10
03/02/2015	5.5		5				20	10		2.6	5.0	10.0	10
10/02/2015	1	1.0	4	1.2	0.12	0.13	10	10	1.1	2.6	5.0	10.0	10
19/02/2015	3.2		3				10	10		3.2	4.0	10.0	10
25/02/2015	4.7		3				10	10		3.2	4.0	10.0	10
11/03/2015	5.1	3.5	3	4.1	0.97	0.98	20	10	3.1	4.7	3.0	10.0	10
16/04/2015	1.1	0.16	3	8.9	9.1	9.1	10	10	1	3.2	3.0	10.0	10
07/05/2015	2.8	3.6	4	10.6	8.5	8.6	20e	10	2.0	3.2	3.0	10.0	10
11/06/2015	1	2.9	4	20.1	17	17	10	20	3.1	2.8	3.0	10.0	10
								Limit		30	30	700	1750
								Exceedances		0	0	0	0
										4.8	18.0	10.0	30.0
	As	Cd	Cr	Cu	Pb	Ni	Zn						
	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]						
13/01/2015	<0.0015	<0.00020	<0.0010	<0.0020	0.0020	<0.0025	0.035						

## Attachment 2.2: Lab Data, Receiving Environment, Rapaki

Rapaki					
Date	FC	Rain	Rain Prev.	High Tide	Low Tide
	cfu/100mL	Y/N	Y/N	hh:mm	hh:mm
16/07/2014	10e	Yes	No	7:22	
27/08/2014	<1	No	No	5:32	
16/09/2014	<10	No	No	10:20	
28/10/2014	5	No	No	8:32	
25/11/2014	5	Yes	Yes	7:19	
10/12/2014	43	Yes	Yes	8:10	
21/01/2015	10e	No	No	5:38	
13/02/2015	5	No	No	12:18	
10/03/2015	<1	No	No	8:40	
15/04/2015	6	Yes	Yes	13:06	
13/05/2015	<1	No	No	11:55	
12/06/2015	2	No	No	0:00	
Median	5 CFU/100mL				
>43 CFU/100 mL	0 Count				

**Attachment 2.3: Lab Data, Receiving Environment**

	OF 50m due North	OF - 50m due East	OF - 50m due South	OF - 50m due West	Quail Control	OF 50m due North	OF - 50m due East	OF - 50m due South	OF - 50m due West	Quail Control	OF 50m due North	OF - 50m due East	OF - 50m due South	OF - 50m due West	Quail Control	OF 50m due North	OF - 50m due East	OF - 50m due South	OF - 50m due West	Quail Control
	TN	TN	TN	TN	TN	NH3	NH3	NH3	NH3	NH3	NOX	NOX	NOX	NOX	NOX	DRP	DRP	DRP	DRP	DRP
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
10/09/2014	0.16	0.15	0.15	0.15	0.15	0.01	0.04	0.09	0.11	0.06	0.01	0.01	0.01	0.01	0.01	0.00	0.003	0.0032	0.0032	0.003
19/11/2014	0.42	0.5	0.48	0.21	0.24	0.005	0.01	0.007	0.005	0.005	0.05	0.081	0.099	0.01	0.01	0.038	0.043	0.055	0.013	0.011
9/12/2014	0.23	0.23	0.22	0.22	0.2	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.0078	0.099	0.011	0.011	0.0076
7/01/2015	0.26	0.3	0.28	0.27	0.26	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.017	0.014	0.013	0.013	0.0097
11/02/2015	0.26	0.3	0.16	0.17	0.16	0.01	0.0065	0.007	0.008	0.018	0.01	0.01	0.01	0.01	0.01	0.014	0.014	0.015	0.013	0.011
11/03/2015	0.2	0.16	0.13	0.18	0.11	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.012	0.012	0.012	0.012	0.013
7/05/2015	0.14	0.14	0.14	0.13	0.15	0.01	0.006	0.008	0.005	0.005	0.023	0.029	0.02	0.023	0.023	0.014	0.017	0.011	0.014	0.015
16/06/2015	0.18	0.2	0.17	0.16	0.17	0.005	0.005	0.005	0.005	0.005	0.061	0.056	0.054	0.055	0.055	0.03	0.028	0.028	0.027	0.025
average	0.231	0.248	0.216	0.186	0.180	0.007	0.009	0.016	0.019	0.013	0.023	0.027	0.028	0.018	0.018	0.017	0.029	0.019	0.013	0.012
maximum	0.42	0.50	0.48	0.27	0.26	0.01	0.04	0.09	0.11	0.06	0.06	0.08	0.10	0.06	0.06	0.04	0.10	0.05	0.03	0.02

	OF 50m due North	OF - 50m due East	OF - 50m due South	OF - 50m due West	Quail Control	OF 50m due North	OF - 50m due East	OF - 50m due South	OF - 50m due West	Quail Control	OF 50m due North	OF - 50m due East	OF - 50m due South	OF - 50m due West	Quail Control	OF 50m due North	OF - 50m due East	OF - 50m due South	OF - 50m due West	Quail Control
	TSS	TSS	TSS	TSS	TSS	Chla	Chla	Chla	Chla	Chla	ENT	ENT	ENT	ENT	ENT	FC	FC	FC	FC	FC
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100	MPN/100	MPN/100	MPN/100	MPN/100	CFU/100	CFU/100m	CFU/100	CFU/100	CFU/100
10/09/2014	31	26	37	77	42	2	2	1.4	1.3	1.5	10	10	10	10	10	2	2	1	1	1
19/11/2014	56	61	96	78	43	3.4	3.3	3.3	2.5	3.3	10	10	10	10	10	18	23	18	11	1
9/12/2014	49	59	64	61	32	0.17	0.18	0.6	0.29	0.42	10	10	10	10	10	2	2	2	2	5
7/01/2015	99	75	35	90	84	3.6	3.5	3.4	3.8	2.7	10	10	10	10	10	1	1	1	1	1
11/02/2015	100	100	95	130	54	4.1	4.2	4	4.6	4.8	10	10	10	10	20	1	1	1	1	10
11/03/2015	16	17	16	24	17	3	2.6	2.7	3.9	4.5	10	10	10	10	10	1	1	1	1	1
7/05/2015	34	42	36	43	48	3.6	2.8	4	6	5.9	10	10	10	10	10	2	1	1	1	1
16/06/2015	82	100	71	64	33	2.5	0.8	0.8	1.3	0.7	10	10	10	10	10	3	1	1	1	1
average	58.375	60.000	56.250	70.875	44.125	2.796	2.423	2.525	2.961	2.978	10.000	10.000	10.000	10.000	11.250	3.750	4.000	3.250	2.375	2.625
maximum	100.00	100.00	96.00	130.00	84.00	4.10	4.20	4.00	6.00	5.90	10.00	10.00	10.00	10.00	20.00	18.00	23.00	18.00	11.00	10.00