



# Governors Bay Wastewater Treatment Plant Annual Monitoring Report 07/2013 – 06/2014

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On behalf of

Christchurch City Council, City Water & Waste Unit

29 August 2013

**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; total exceeded 3 times up to 890 m<sup>3</sup>/d (Attachment 1.1) due to extreme rain events. The instantaneous flow rate limit was exceeded eight times – 2x(27/10/13) 3x(8/2 and 12/2) 1x(20/4) 1x(2/5) 1x(5/6)</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>
<b>10</b>	<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>
<b>11</b>	<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>
<b>12</b>	<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>
<b>13</b>	<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>
<b>14</b>	<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>
<b>15</b>	<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>
<b>16</b>	<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	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 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>	
18	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>	
19	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>	
20	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>	
21	<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>	
22	<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</li> </ul>

- 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 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.

**CCC to follow up**

- 23** 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:
- Dealing with any adverse effects which may arise from the exercise of this consent and which it is appropriate to deal with later; or
  - Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; or
  - Complying with the requirements of a relevant rule in an operative regional plan; or Amending the frequency of monitoring and the parameters monitored; or
  - Amending the frequency of monitoring and the parameters monitored.

**ECAN to request**

**Treatment Plant Effluent Monitoring**

Daily flows for the Governors Bay Wastewater Treatment Plant (WWTP) were generally under the 600 m<sup>3</sup>/d limit with 95% of all flows <280 m<sup>3</sup>/d (Attachment 1.3). However, due to heavy rain in March, April and May of 2014, the consented limit was exceeded three times up to 890 m<sup>3</sup>/d (Table 2).

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 5.2 mg/L for BOD<sub>5</sub> (5.7 in 12/13) and 22 mg/L for TSS (17 in 12/13) compared to 30-mg/L limits. Results for human health-related parameters were excellent with maximum medians of 20 CFU/100 mL for FC (30 in 12/13) and 10 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 0.50 mg/L TN at 50 m due east of the outfall and 0.066 mg/L NH<sub>3</sub> at 50 m due north 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 3 CFU/100 mL (2.5 in 12/13) 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 2013-June 2014.**

Parameter	Exceedances of Trigger Value
Flow <600 m <sup>3</sup> /d	3
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

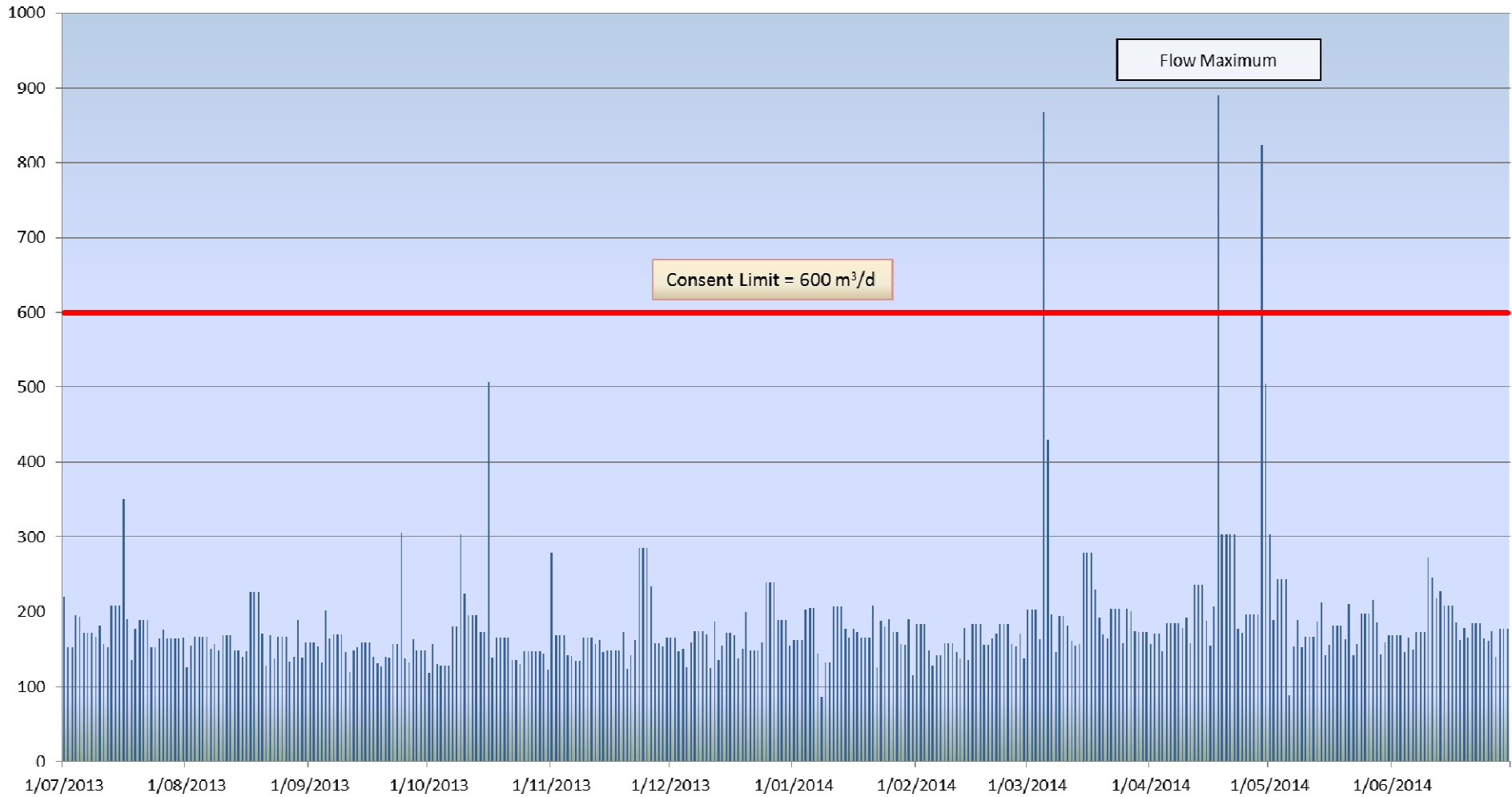
Plant:	Governors Bay Wastewater Treatment, Banks Peninsula						
Asset Owner:	Christchurch City Council						
Laboratory	Christchurch City Council Laboratory, City Water & Waste Unit						
<b>Max:</b>	<b>600</b>	<b>m<sup>3</sup>/d</b>	<b>Dry weather</b>				
Date	Flow [m <sup>3</sup> /d]	Date	Flow [m <sup>3</sup> /d]	Date	Flow [m <sup>3</sup> /d]	Date	Flow [m <sup>3</sup> /d]
1/07/2013	220	1/10/2013	118	1/01/2014	163	1/04/2014	157
2/07/2013	153	2/10/2013	157	2/01/2014	163	2/04/2014	170
3/07/2013	153	3/10/2013	130	3/01/2014	163	3/04/2014	170
4/07/2013	195	4/10/2013	129	4/01/2014	204	4/04/2014	147
5/07/2013	193	5/10/2013	129	5/01/2014	206	5/04/2014	185
6/07/2013	172	6/10/2013	129	6/01/2014	206	6/04/2014	185
7/07/2013	172	7/10/2013	182	7/01/2014	144	7/04/2014	185
8/07/2013	172	8/10/2013	182	8/01/2014	86	8/04/2014	185
9/07/2013	167	9/10/2013	303	9/01/2014	133	9/04/2014	179
10/07/2013	182	10/10/2013	224	10/01/2014	133	10/04/2014	192
11/07/2013	158	11/10/2013	195	11/01/2014	207	11/04/2014	159
12/07/2013	153	12/10/2013	195	12/01/2014	207	12/04/2014	237
13/07/2013	208	13/10/2013	195	13/01/2014	207	13/04/2014	237
14/07/2013	208	14/10/2013	173	14/01/2014	178	14/04/2014	237
15/07/2013	208	15/10/2013	173	15/01/2014	166	15/04/2014	188
16/07/2013	351	16/10/2013	507	16/01/2014	178	16/04/2014	155
17/07/2013	191	17/10/2013	138	17/01/2014	173	17/04/2014	207
18/07/2013	136	18/10/2013	166	18/01/2014	165	18/04/2014	890
19/07/2013	178	19/10/2013	165.8	19/01/2014	165	19/04/2014	304
20/07/2013	190	20/10/2013	166	20/01/2014	165	20/04/2014	304
21/07/2013	190	21/10/2013	166	21/01/2014	208	21/04/2014	304
22/07/2013	190	22/10/2013	137	22/01/2014	127	22/04/2014	304
23/07/2013	153	23/10/2013	137	23/01/2014	188	23/04/2014	177
24/07/2013	153	24/10/2013	130	24/01/2014	181	24/04/2014	172
25/07/2013	164	25/10/2013	147	25/01/2014	191	25/04/2014	197
26/07/2013	176	26/10/2013	147	26/01/2014	173	26/04/2014	197
27/07/2013	164	27/10/2013	147	27/01/2014	173	27/04/2014	197
28/07/2013	164	28/10/2013	147	28/01/2014	158	28/04/2014	197
29/07/2013	164	29/10/2013	147	29/01/2014	156	29/04/2014	823
30/07/2013	164	30/10/2013	144	30/01/2014	191	30/04/2014	505
31/07/2013	166	31/10/2013	123	31/01/2014	115	1/05/2014	304
1/08/2013	127	1/11/2013	279	1/02/2014	184	2/05/2014	189
2/08/2013	155	2/11/2013	168	2/02/2014	184	3/05/2014	244
3/08/2013	167	3/11/2013	168	3/02/2014	184	4/05/2014	244
4/08/2013	167	4/11/2013	168	4/02/2014	148	5/05/2014	244
5/08/2013	167	5/11/2013	142	5/02/2014	129	6/05/2014	89
6/08/2013	167	6/11/2013	141	6/02/2014	142	7/05/2014	154
7/08/2013	151	7/11/2013	135	7/02/2014	142	8/05/2014	189
8/08/2013	157	8/11/2013	135	8/02/2014	158	9/05/2014	153
9/08/2013	148	9/11/2013	166	9/02/2014	158	10/05/2014	167
10/08/2013	168	10/11/2013	166	10/02/2014	158	11/05/2014	167
11/08/2013	168	11/11/2013	166	11/02/2014	145	12/05/2014	167
12/08/2013	168	12/11/2013	157	12/02/2014	137	13/05/2014	187
13/08/2013	149	13/11/2013	162	13/02/2014	179	14/05/2014	213
14/08/2013	149	14/11/2013	146	14/02/2014	136	15/05/2014	142
15/08/2013	140	15/11/2013	149	15/02/2014	183	16/05/2014	156
16/08/2013	147	16/11/2013	149	16/02/2014	183	17/05/2014	182

17/08/2013	227	17/11/2013	149	17/02/2014	183	18/05/2014	182
18/08/2013	227	18/11/2013	149	18/02/2014	156	19/05/2014	182
19/08/2013	227	19/11/2013	173	19/02/2014	156	20/05/2014	163
20/08/2013	170	20/11/2013	124	20/02/2014	164	21/05/2014	211
21/08/2013	129	21/11/2013	142	21/02/2014	171	22/05/2014	142
22/08/2013	168	22/11/2013	162	22/02/2014	184	23/05/2014	157
23/08/2013	137	23/11/2013	286	23/02/2014	184	24/05/2014	198
24/08/2013	166	24/11/2013	286	24/02/2014	184	25/05/2014	198
25/08/2013	166	25/11/2013	286	25/02/2014	157	26/05/2014	198
26/08/2013	166	26/11/2013	234	26/02/2014	154	27/05/2014	216
27/08/2013	134	27/11/2013	159	27/02/2014	170	28/05/2014	186
28/08/2013	140	28/11/2013	159	28/02/2014	137	29/05/2014	143
29/08/2013	190	29/11/2013	154	1/03/2014	204	30/05/2014	160
30/08/2013	139	30/11/2013	166	2/03/2014	204	31/05/2014	168
31/08/2013	159	1/12/2013	166	3/03/2014	204	1/06/2014	168
1/09/2013	159	2/12/2013	166	4/03/2014	163	2/06/2014	168
2/09/2013	159	3/12/2013	147	5/03/2014	867	3/06/2014	168
3/09/2013	154	4/12/2013	152	6/03/2014	430	4/06/2014	146
4/09/2013	132	5/12/2013	127	7/03/2014	197	5/06/2014	166
5/09/2013	202	6/12/2013	160	8/03/2014	146	6/06/2014	150
6/09/2013	165	7/12/2013	174	9/03/2014	194	7/06/2014	173
7/09/2013	170	8/12/2013	174	10/03/2014	194	8/06/2014	173
8/09/2013	170	9/12/2013	174	11/03/2014	182	9/06/2014	173
9/09/2013	170	10/12/2013	169	12/03/2014	161	10/06/2014	272
10/09/2013	145	11/12/2013	126	13/03/2014	155	11/06/2014	245
11/09/2013	120	12/12/2013	187	14/03/2014	157	12/06/2014	218
12/09/2013	149	13/12/2013	136	15/03/2014	280	13/06/2014	229
13/09/2013	153	14/12/2013	155	16/03/2014	280	14/06/2014	208
14/09/2013	160	15/12/2013	172	17/03/2014	280	15/06/2014	208
15/09/2013	160	16/12/2013	172	18/03/2014	230	16/06/2014	208
16/09/2013	160	17/12/2013	168	19/03/2014	192	17/06/2014	186
17/09/2013	140	18/12/2013	137	20/03/2014	169	18/06/2014	162
18/09/2013	131	19/12/2013	151	21/03/2014	164	19/06/2014	179
19/09/2013	128	20/12/2013	199	22/03/2014	205	20/06/2014	166
20/09/2013	140	21/12/2013	148	23/03/2014	205	21/06/2014	185
21/09/2013	138	22/12/2013	148	24/03/2014	205	22/06/2014	185
22/09/2013	158	23/12/2013	148	25/03/2014	159	23/06/2014	185
23/09/2013	158	24/12/2013	160	26/03/2014	205	24/06/2014	165
24/09/2013	307	25/12/2013	239	27/03/2014	201	25/06/2014	161
25/09/2013	137	26/12/2013	239	28/03/2014	175	26/06/2014	174
26/09/2013	133	27/12/2013	239	29/03/2014	173	27/06/2014	140
27/09/2013	163	28/12/2013	189	30/03/2014	173	28/06/2014	177
28/09/2013	148	29/12/2013	189	31/03/2014	173	29/06/2014	177
29/09/2013	148	30/12/2013	189			30/06/2014	177
30/09/2013	148	31/12/2013	155				

Attachment 1.2: Flows, Governors Bay, Chart

### Governors Bay Wastewater Treatment Plant

Flow (m<sup>3</sup>/d)



Consent Limit = 600 m<sup>3</sup>/d

Flow Maximum

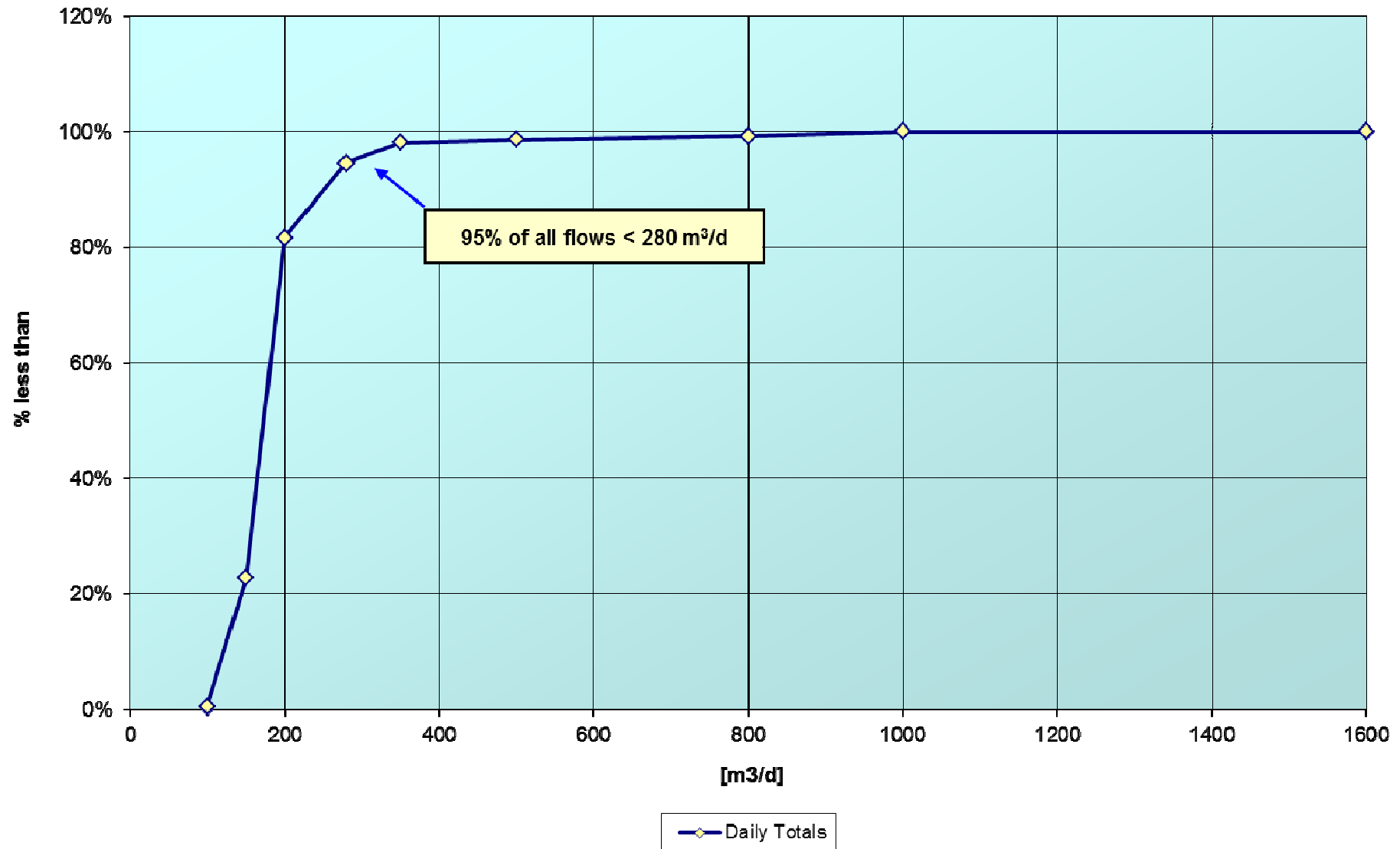
Flow (m<sup>3</sup>/d)

Dry Weather Maximum



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													
											5-Sample Median			
Date	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	MPN/100ml	[mg/l]	[mg/l]	[mg/l]	CFU/100ml	MPN/100ml	
24/07/2013	2.5	2.9	9	17.8	0.1	16.0	10	5	1.7	2.5	9.0	10.0	5	
21/08/2013	5.1	3.6	17	20.1	2.4	17.0	5	10	-2.4	2.5	9.0	10.0	5	
19/09/2013	8.9	4.6	82	29.2	0.94	25.0	30	5	-0.9	2.8	16.0	20.0	5	
16/10/2013	6.9	4.5	27	22.8	0.1	20.0	5	30	-0.1	5.1	17.0	10.0	10	
20/11/2013	5	3.9	22	14.5	0.7	14.0	5	5	-0.2	5.1	22.0	5.0	5	
3/12/2013	3.4		8				5	5	0.0	5.1	22.0	5.0	5	
12/12/2013	5.2	4.7	15	20.4	0.6	20.0	5	5	-0.1	5.2	22.0	5.0	5	
18/12/2013	6.9		34				5	5	0.0	5.2	22.0	5.0	5	
24/12/2013	3.4		7				5	5	0.0	5.0	15.0	5.0	5	
3/01/2014	5.1		15				40	10	0.0	5.1	15.0	5.0	5	
7/01/2014	3.3	3.3	20	11.5	0.2	9.6	5	5	1.7	5.1	15.0	5.0	5	
16/01/2014	2.6		8				2	5	0.0	3.4	15.0	5.0	5	
23/01/2014	3.6		8				5	5	0.0	3.4	8.0	5.0	5	
28/01/2014	1.2		13				5	5	0.0	3.3	13.0	5.0	5	
5/02/2014	5		23				5	5	0.0	3.3	13.0	5.0	5	
11/02/2014	3.6	4.0	14	17.5	1.0	16.0	5	5	0.9	3.6	13.0	5.0	5	
20/02/2014	5.7		21				5	10	0.0	3.6	14.0	5.0	5	
26/02/2014	4.2		16				10	5	0.0	4.2	16.0	5.0	5	
19/03/2014	4.3	3.6	6	16.7	0.5	14.0	10	5	1.9	4.3	16.0	5.0	5	
16/04/2014	4.8	3.0	17	19.6	0.2	18.0	5	5	1.4	4.3	16.0	5.0	5	
14/05/2014	4.5	2.3	27	10	0.6	7.7	10	10	1.7	4.5	17.0	10.0	5	
17/06/2014	4.7	3.1	18	18.1	0.1	17.0	5	5	1.0	4.5	17.0	10.0	5	
									Limit	30	30	700	1750	
									Exceedances	0	0	0	0	
	As	Cd	Cr	Cu	Pb	Ni	Zn							
	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]							
3/01/2013	0.0008	0.0001	0.0005	0.0025	0.0008	0.0013	0.0310							
16/01/2014	0.0008	0.0001	0.0029	0.0073	0.0087	0.0013	0.2900							

Removed < for calculations and halved the value.

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

Rapaki					
Date	FC cfu/100mL	Rain Y/N	Rain Prev. Y/N	High Tide hh:mm	Low Tide hh:mm
24/07/2013	2	No	No	5:08	
26/08/2013	0.5	No	No	8:25	
4/09/2013	1	No	Yes	9:33	
7/10/2013	22	No	No	6:30	
25/11/2013	14	Yes	No	10:08	
9/12/2013	5	No	Yes	10:38	
16/01/2014	4	No	No	5:36	
25/02/2014	3	No	Yes	12:37	
16/04/2014	5	No	Yes	4:56	
22/05/2014	3	No	No	10:51	
23/06/2014	0.5	No	No	13:24	
Median	3 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	mg/L
0.08	0.74	0.067	0.07	0.044	0.014	0.026	0.012	0.005	0.005	0.005	0.067	0.015	0.005	0.011	0.013	0.025	0.017	0.013	0.011	
0.15	0.17	0.096	0.15	0.095	0.0025	0.0025	0.0025	0.01	0.012	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.006	0.006	
0.035	0.044	0.11	0.045	0.017	0.0025	0.0063	0.0073	0.003	0.0025	0.033	0.036	0.100	0.044	0.016	0.014	0.012	0.033	0.014	0.009	
0.09	0.063	0.092	0.079	0.059	0.052	0.063	0.057	0.077	0.038	0.005	0.005	0.005	0.005	0.005	0.027	0.028	0.026	0.028	0.023	
0.17	0.15	0.16	0.13	0.13	0.0025	0.0025	0.0025	0.009	0.0025	0.039	0.005	0.028	0.005	0.005	0.027	0.016	0.023	0.017	0.014	
0.15	0.21	0.23	0.19	0.15	0.032	0.034	0.035	0.035	0.034	0.022	0.062	0.086	0.023	0.017	0.019	0.026	0.031	0.020	0.016	
0.26	0.27	0.25	0.26	0.24	0.005	0.0071	0.005	0.005	0.005	0.098	0.099	0.096	0.098	0.084	0.040	0.014	0.014	0.014	0.012	
0.09	0.079	0.14	0.091	0.091	0.0025	0.007	0.005	0.0025	0.0025	0.017	0.018	0.016	0.027	0.019	0.010	0.010	0.010	0.015	0.010	
0.13	0.22	0.14	0.13	0.10	0.014	0.019	0.016	0.018	0.013	0.028	0.037	0.044	0.027	0.020	0.019	0.017	0.020	0.016	0.013	
0.34	0.74	0.31	0.26	0.21	0.052	0.063	0.057	0.077	0.038	0.098	0.099	0.100	0.098	0.084	0.040	0.028	0.033	0.028	0.023	

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/100	CFU/100	CFU/100	CFU/100
56	51	59	51	32	1.0	0.7	0.7	0.7	1.1	5	5	5	5	5	4	1	2	1	1
17	18	17	21	17	2.8	3.0	2.4	2.5	2.3	10	10	10	5	2100	5	5	5	5	440
57	44	40	42	20	1.5	1.4	1.2	1.4	2.0	5	5	5	5	5	13	2	9	0.5	5
110	97	88	85	37	3.2	3.6	3.1	3.4	2.5	5	5	5	5	5	1	2	1	1	3
18	21	22	16	14	1.8	1.9	1.9	1.9	2.1	10	5	10	5	5	3	5	5	5	1
17	21	21	17	16	2.2	2.5	2.7	2.2	2.2	5	5	5	5	5	1	1	2	0.5	0.5
11	18	24	24	11	1.3	1.2	1.2	1.3	No result	5	10	5	5	5	4	1	1	2	1
45	62	36	49	32	4.3	4.7	7.6	5.9	11.0	5	10	5	20	5	5	5	10	5	5
41	42	38	38	22	2.3	2.4	2.6	2.4	3.3	11	5	10	5	5	5	3	4	3	57
110	97	88	85	37	4.3	4.7	7.6	5.9	11.0	41	5	31	5	5	13	5	10	5	440

Removed < for calculations and halved the value.