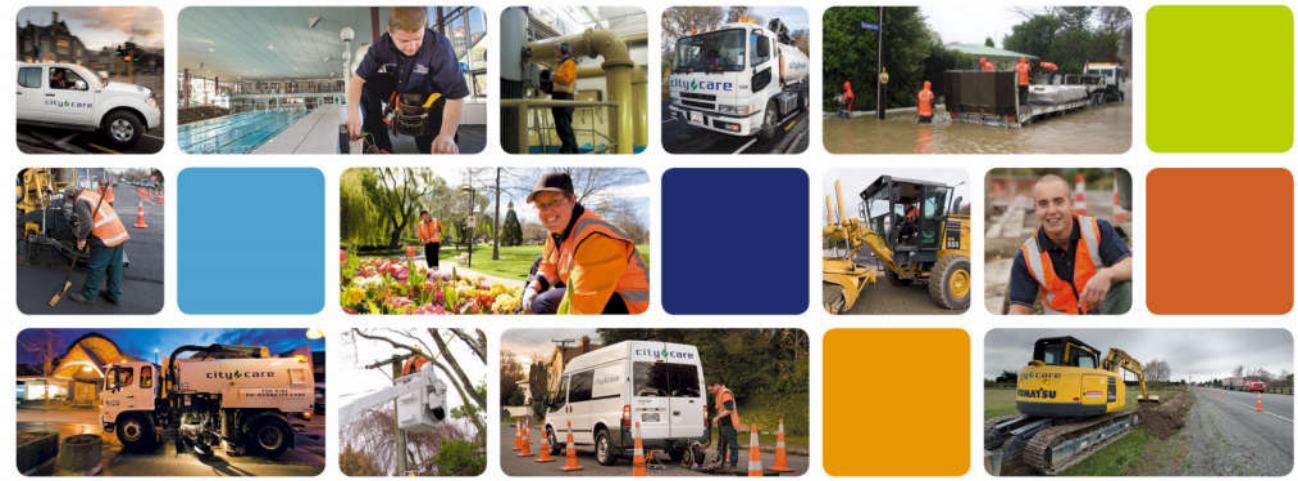


Governors Bay
Wastewater Treatment Plant
Annual Monitoring Report
July 2015 – June 2016

Prepared by: City Care Ltd
Kris Kaser

On behalf of

Christchurch City Council, City Water & Waste Unit

24 Aug 2016

Christchurch City Council

city care

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:

1	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.
	Compliance
2	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. b. The discharge at this location shall cease on 31 December 2018.
	Compliance
3	The volume of effluent discharged shall not exceed 600 cubic metres per day at a maximum rate of 21 litres per second.
	Non-compliance; the instantaneous flow rate limit was exceeded 9 times – 3x Sep 2015 (21.6l/s)**, 2x Nov 2015** (21.3l/s), **3x Jan 2016** (21.1l/s)**, 1 x Feb 2016** (21.3l/s) – Maximum Daily volume was 358 m^3
4	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.
	Compliance
5	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.
	Compliance
6	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.
	Non-Compliance: was exceeded on two occasions – refer attachment 2.1
7	a. The median concentration of faecal coliforms shall not exceed 700 colony forming units (CFU) per 100 millilitres of effluent. b. The median concentration of enterococci shall not exceed 1,750 MPN per 100 millilitres of effluent.
	Compliance
8	For the purposes of determining whether the consent holder is complying with Conditions (5), (6) and (7): 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. b. The effluent shall be sampled at the following frequency: i. at least monthly samples shall be taken from 1 March to 30 November; and ii. at least weekly samples, on separate days selected at random, shall be taken during December, January and February. 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. d. The time of day samples are taken shall be recorded.
	Compliance
9	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.
	Compliance

10	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 exceedence, write to the Canterbury Regional Council prepare a report outlining the measures the consent holder proposes to undertake to address the concentration exceedences, and the timeframe within which this will occur. 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. 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).
	Compliance
11	Prior to discharge, the effluent shall be sampled and analysed not less than once per month for the following: a. Dissolved reactive phosphorus (grams per cubic metre); b. Ammoniacal nitrogen (grams per cubic metre); c. Total oxidized nitrogen (grams per cubic metre); and d. Total nitrogen (grams per cubic metre).
	Compliance
12	Prior to discharge, the effluent shall be sampled at least annually during January and analysed for the following: a. Arsenic (milligrams per cubic metre); b. Cadmium (milligrams per cubic metre); c. Chromium (milligrams per cubic metre); d. Copper (milligrams per cubic metre); e. Lead (milligrams per cubic metre); f. Nickel (milligrams per cubic metre); and g. Zinc (milligrams per cubic metre)
	Compliance
13	The sampling and analysis required by condition 15 shall continue for a further 12 months from the date of cessation of discharge.
	CCC to follow up
14	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: i. 50 metres due north of the outfall; ii. 50 metres sue south of the outfall; iii. 50 metres due east of the outfall; iv. 50 metres due west of the outfall; and v. Surface water quality monitoring site SQ35187 (which is located at or about NZMS 260: M36:8636-3190, east of Quail Island/Otamahua). 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. c. The time the samples are taken shall be recorded. d. Samples shall be taken at approximately 0.5 metres below the surface of the water. e. Samples shall not be taken on consecutive days. f. Samples shall be taken within one hour of low water.
	Compliance
15	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. b. Each sample shall be analysed for the concentration of faecal coliforms and shall also be analyses to determine the source(s) of the faecal contamination, whare faecal coliform, levels exceed 260 faecal coliforms/100mL. c. The time the sample is taken shall be recorded. d. Each sample shall be taken at approximately 0.5 metres below the surface of the water. e. Each sample shall not be taken on consecutive days. f. Each sample shall be taken between three to five hours after the time of high tide.
	Compliance
16	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.
	Compliance
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).
	Compliance
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.
	Compliance
19	The consent holder shall submit to the Canterbury Regional Council and the parties set out in condition 21(b): a. The results of any monitoring required each month under the conditions of this consent, by the 10th working day of the following month. b. The results of any sampling undertaken under Condition (9) that have a faecal coliform count greater that 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. 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.
	Compliance
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: 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: 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 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. b. The Management Practices to ensure compliance with conditions of the resource consent. 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.
	Compliance; Management Plan submitted on 05/11/2012
21	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). 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: a. Governors Bay Community Association; b. Cass Bay Residents Association; c. Church Bay Neighborhood Association d. Governors Bay Community Association Incorporated; e. Lyttleton Harbour/Whakaraupo Issues Group; f. Paula Smith C/o 1 Purau Avenue, RD 2, Governors Bay; g. Te Hapu o Ngati Wheke (Rapaki) Runanga; h. Te Runanga o Koukourarata; i. Te Runanga o Ngati Tahu. 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.
	Compliance via this report; CCC to distribute
22	a. The consent holder shall prepare an implementation plan within 60 working days of the commencement of this resource consent. 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: a. No later than 30 June 2015 all preliminary design details have been completed; b. No later than 30 September 2015, all necessary resource consents have been applied for; c. No later than 31 March 2017 detailed design work completed; d. No later than 31 July 2017 the contract to construct the works is let; e. No later than 31 December 2018 all works have been commissioned. 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 Lyttleton Harbour/Whakaraupo Wastewater Working Party and also all parties listed in condition 21(b). 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

	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: 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 b. Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; or 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 d. 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 under the 600 m^3/d limit with the maximum flow through the plant being 358m^3/day.

Peak instantaneous flowrates exceeded 21l/s on 9 occasions with the largest being 21.6 l/s – it should be noted that the flow meter is on the incoming flow and the buffering/dampening effect of the plant treatment tanks would bring the discharge flows to within the consented allowable 21 l/s.

The plant operated with full compliance for effluent water quality relating to BOD_5, faecal coliforms (FC), and Enterococci (ENT), however exceeded TSS limits (30 mg/l) on 2 occasions (January 84.0 mg/l) (Table 2.1). Maximum medians for organic loading parameters were 15 mg/L for BOD_5 compared to 30-mg/L limits and 84 mg/l for TSS. Results for human health-related parameters with maximum medians of 180 CFU/100 mL (700 CFU/100ml consent) for FC and 160 MPN/100 mL (1,750 MPN/100 mL consented) for ENT.

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 22 CFU/100 mL was measured for FC. Trigger levels of 1 mg/L for TN and 0.91 mg/L for NH3 were not exceeded at any of the sites with maximum values of 0.32 mg/L TN at 50 m due north of the outfall (10 May16) and 0.011 mg/L NH3 at 50 m due West 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 1 CFU/100 mL which is less than the recommended maximum median of 14 CFU/100 mL. The highest reading for FC cfu/100ml was 22 cfu/100ml (10 May16).

Table 1. Summary of Exceedances and Non-Compliances from July 2015 - June 2016.

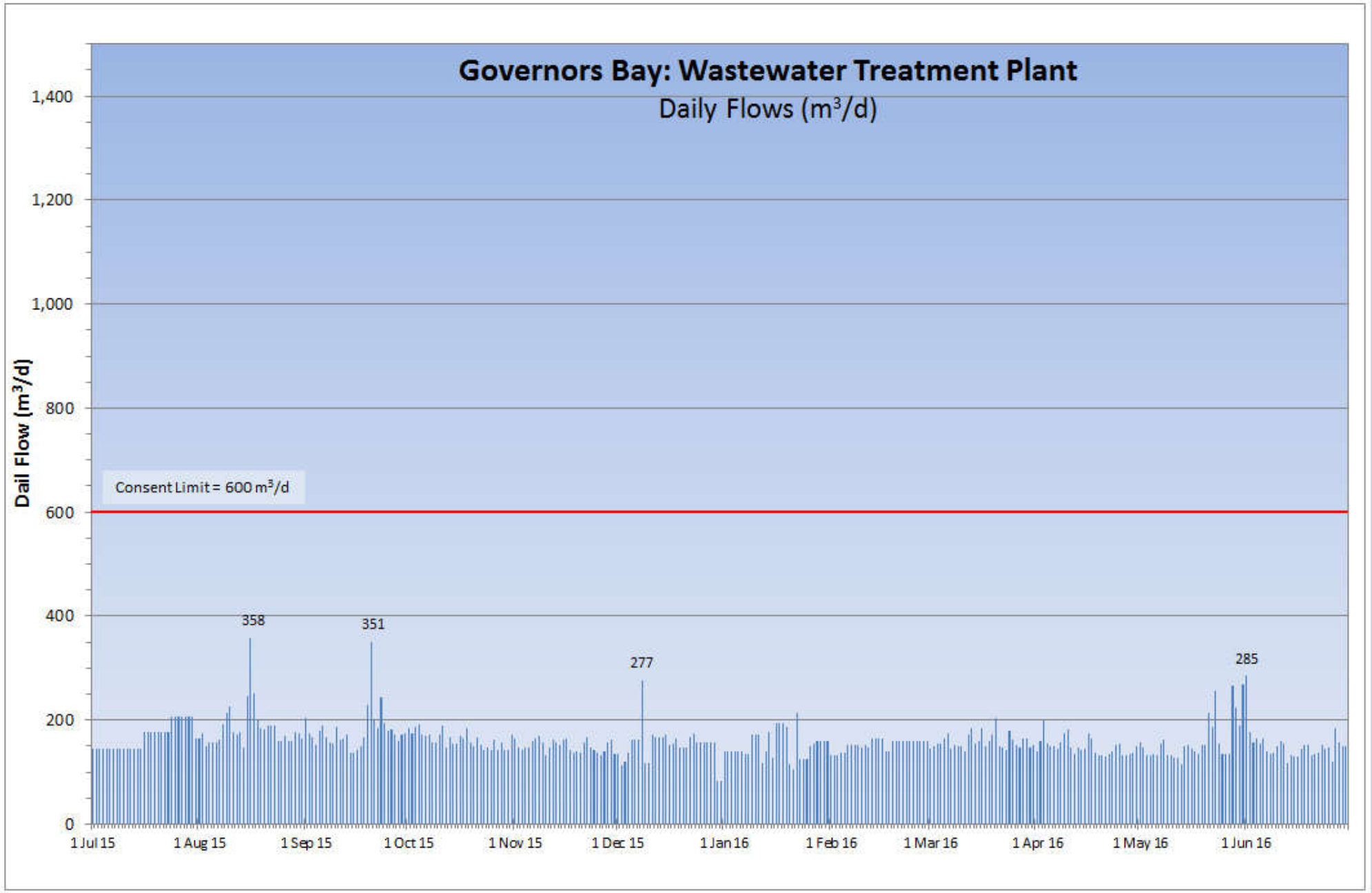
Parameter	Exceedances of Trigger Value
Flow >600 m^3/d	0
Flow >21 L/s	**9**
BOD_5 median >30 mg/L	0
TSS median >30 mg/L	**2**
FC >700 CFU/100 mL	0
ENT >1,750 MPN/100 mL	0
Receiving TN >1 mg/L	0
Receiving NH3 >0.91 mg/L	0

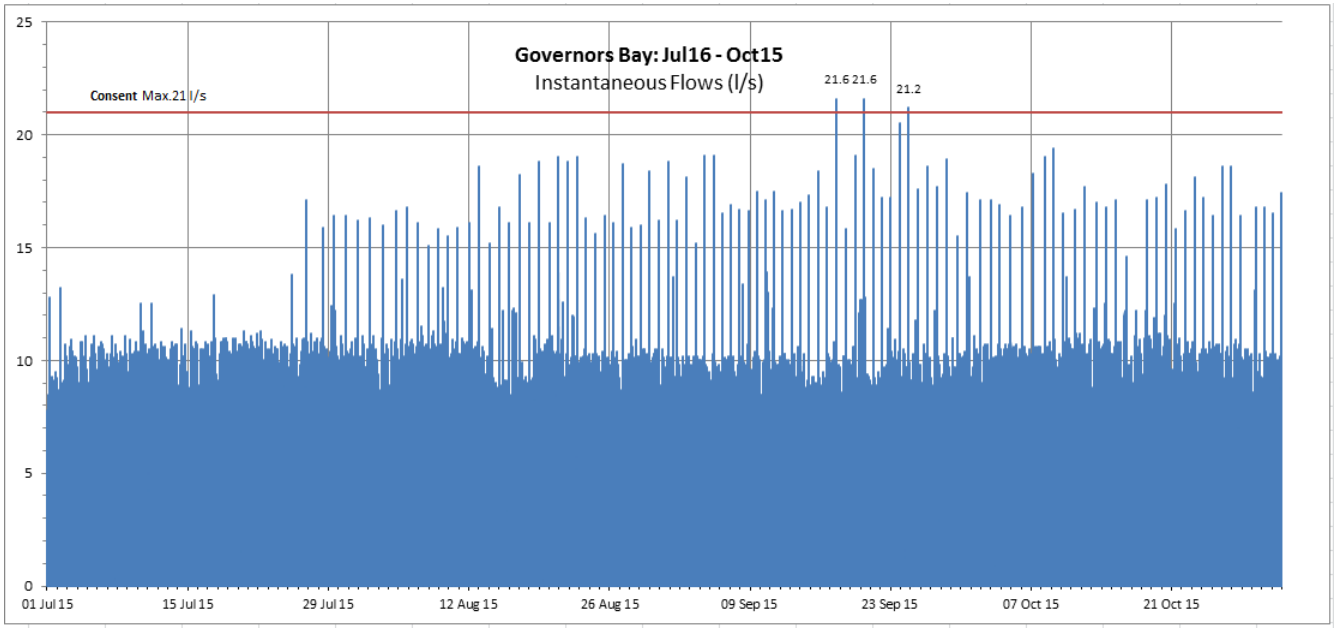
Attachment 1.1: Flows, Governors Bay, Data

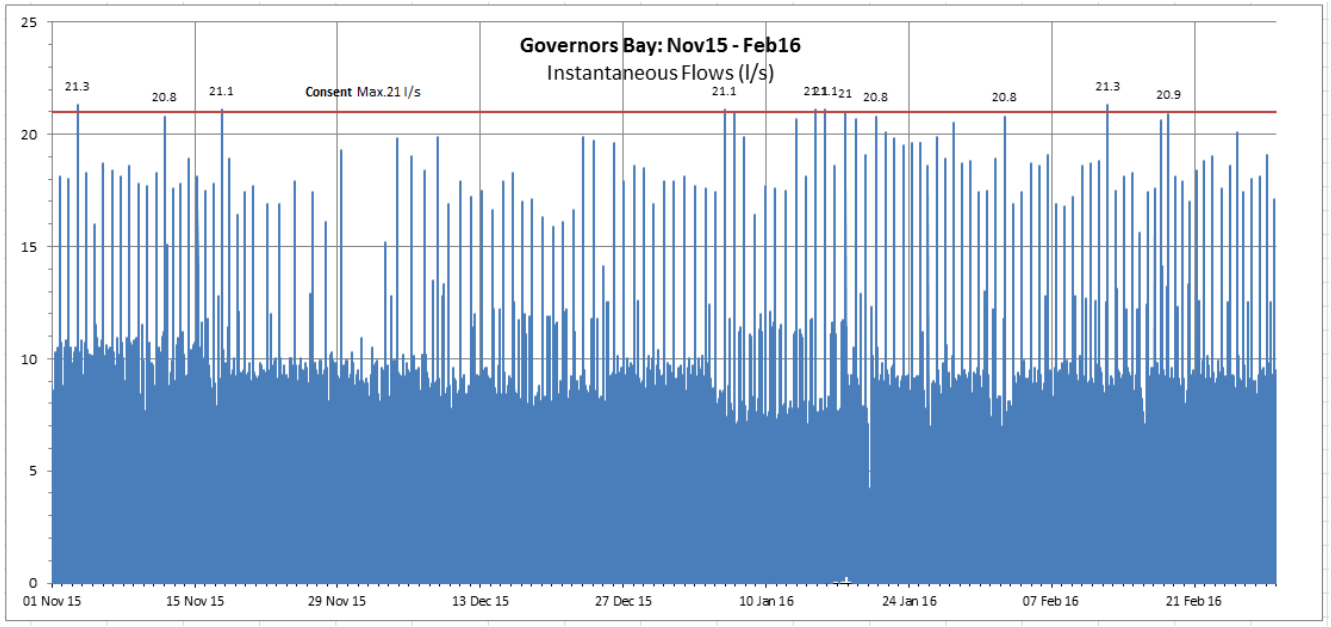
Plant :	Governors Bay Wastewater Treatment, Banks Peninsula:						
Asset owner:	Christchurch City Council						
Date	Flow (m^3/d)	Date	Flow (m^3/d)	Date	Flow (m^3/d)	Date	Flow (m^3/d)
1 Jul 15	145	1 Oct 15	185	1 Jan 16	139	1 Apr 16	139
2 Jul 15	145	2 Oct 15	175	2 Jan 16	139	2 Apr 16	160
3 Jul 15	145	3 Oct 15	186	3 Jan 16	139	3 Apr 16	200
4 Jul 15	145	4 Oct 15	191	4 Jan 16	139	4 Apr 16	155
5 Jul 15	145	5 Oct 15	171	5 Jan 16	139	5 Apr 16	149
6 Jul 15	145	6 Oct 15	169	6 Jan 16	139	6 Apr 16	149
7 Jul 15	145	7 Oct 15	172	7 Jan 16	134	7 Apr 16	144
8 Jul 15	145	8 Oct 15	158	8 Jan 16	134	8 Apr 16	158
9 Jul 15	145	9 Oct 15	156	9 Jan 16	172	9 Apr 16	174
10 Jul 15	145	10 Oct 15	172	10 Jan 16	172	10 Apr 16	181
11 Jul 15	145	11 Oct 15	188	11 Jan 16	172	11 Apr 16	148
12 Jul 15	145	12 Oct 15	148	12 Jan 16	117	12 Apr 16	134
13 Jul 15	145	13 Oct 15	167	13 Jan 16	139	13 Apr 16	146
14 Jul 15	145	14 Oct 15	155	14 Jan 16	176	14 Apr 16	143
15 Jul 15	145	15 Oct 15	155	15 Jan 16	128	15 Apr 16	145
16 Jul 15	176	16 Oct 15	169	16 Jan 16	195	16 Apr 16	175
17 Jul 15	176	17 Oct 15	164	17 Jan 16	195	17 Apr 16	164
18 Jul 15	176	18 Oct 15	185	18 Jan 16	195	18 Apr 16	137
19 Jul 15	176	19 Oct 15	158	19 Jan 16	186	19 Apr 16	132
20 Jul 15	176	20 Oct 15	149	20 Jan 16	116	20 Apr 16	132
21 Jul 15	176	21 Oct 15	166	21 Jan 16	104	21 Apr 16	129
22 Jul 15	176	22 Oct 15	152	22 Jan 16	214	22 Apr 16	134
23 Jul 15	176	23 Oct 15	142	23 Jan 16	126	23 Apr 16	139
24 Jul 15	207	24 Oct 15	147	24 Jan 16	126	24 Apr 16	153
25 Jul 15	207	25 Oct 15	142	25 Jan 16	126	25 Apr 16	155
26 Jul 15	207	26 Oct 15	163	26 Jan 16	150	26 Apr 16	132
27 Jul 15	207	27 Oct 15	141	27 Jan 16	154	27 Apr 16	131
28 Jul 15	207	28 Oct 15	156	28 Jan 16	160	28 Apr 16	135
29 Jul 15	207	29 Oct 15	143	29 Jan 16	160	29 Apr 16	136
30 Jul 15	207	30 Oct 15	143	30 Jan 16	160	30 Apr 16	149
31 Jul 15	165	31 Oct 15	172	31 Jan 16	160	1 May 16	157
1 Aug 15	165	1 Nov 15	165	1 Feb 16	133	2 May 16	147
2 Aug 15	174	2 Nov 15	148	2 Feb 16	133	3 May 16	133
3 Aug 15	149	3 Nov 15	141	3 Feb 16	133	4 May 16	133
4 Aug 15	157	4 Nov 15	148	4 Feb 16	137	5 May 16	134
5 Aug 15	158	5 Nov 15	146	5 Feb 16	137	6 May 16	133
6 Aug 15	156	6 Nov 15	160	6 Feb 16	153	7 May 16	154
7 Aug 15	161	7 Nov 15	164	7 Feb 16	153	8 May 16	161
8 Aug 15	191	8 Nov 15	169	8 Feb 16	153	9 May 16	131
9 Aug 15	214	9 Nov 15	156	9 Feb 16	153	10 May 16	131
10 Aug 15	226	10 Nov 15	133	10 Feb 16	147	11 May 16	127
11 Aug 15	177	11 Nov 15	147	11 Feb 16	151	12 May 16	128
12 Aug 15	171	12 Nov 15	161	12 Feb 16	146	13 May 16	114
13 Aug 15	177	13 Nov 15	158	13 Feb 16	165	14 May 16	150
14 Aug 15	147	14 Nov 15	152	14 Feb 16	165	15 May 16	152
15 Aug 15	247	15 Nov 15	162	15 Feb 16	165	16 May 16	145
16 Aug 15	358	16 Nov 15	165	16 Feb 16	165	17 May 16	140
17 Aug 15	252	17 Nov 15	143	17 Feb 16	140	18 May 16	135
18 Aug 15	202	18 Nov 15	137	18 Feb 16	140	19 May 16	151
19 Aug 15	185	19 Nov 15	140	19 Feb 16	160	20 May 16	152

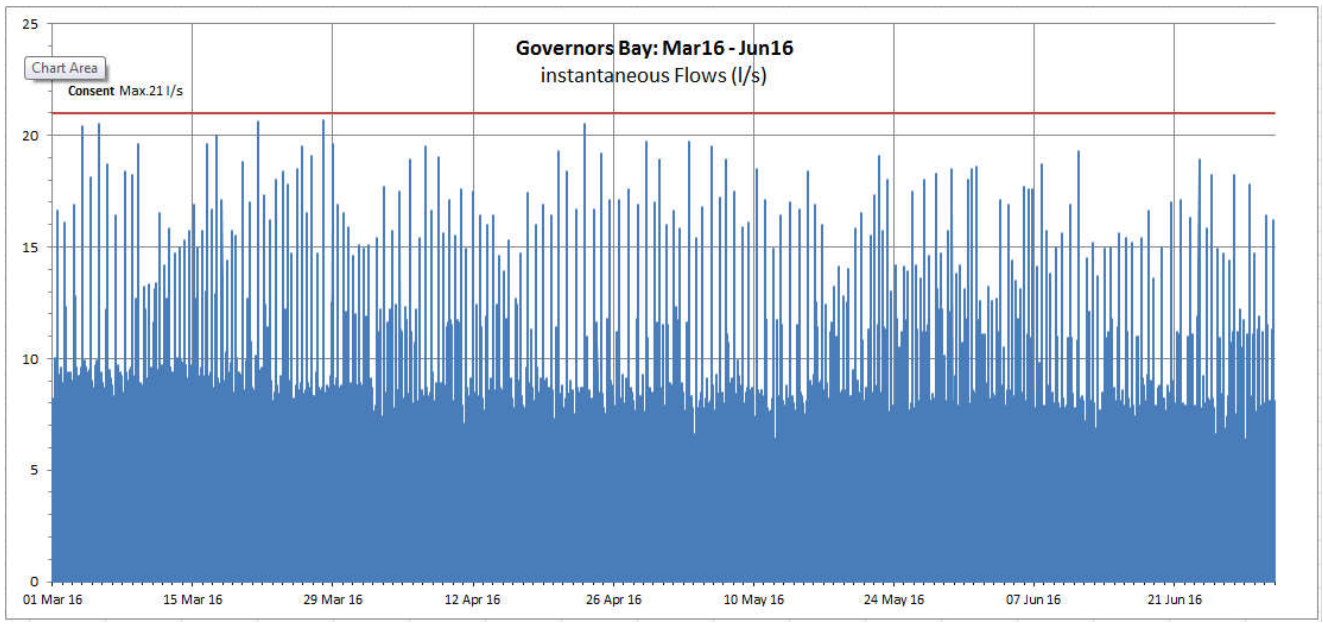
Date	Flow (m3/d)	Date	Flow (m3/d)	Date	Flow (m3/d)	Date	Flow (m3/d)
21 Aug 15	189	21 Nov 15	158	21 Feb 16	160	22 May 16	187
22 Aug 15	188	22 Nov 15	167	22 Feb 16	160	23 May 16	257
23 Aug 15	189	23 Nov 15	148	23 Feb 16	160	24 May 16	155
24 Aug 15	160	24 Nov 15	143	24 Feb 16	160	25 May 16	134
25 Aug 15	160	25 Nov 15	138	25 Feb 16	160	26 May 16	135
26 Aug 15	169	26 Nov 15	132	26 Feb 16	160	27 May 16	134
27 Aug 15	160	27 Nov 15	140	27 Feb 16	160	28 May 16	267
28 Aug 15	159	28 Nov 15	157	28 Feb 16	160	29 May 16	225
29 Aug 15	178	29 Nov 15	161	29 Feb 16	160	30 May 16	188
30 Aug 15	175	30 Nov 15	135	1 Mar 16	145	31 May 16	268
31 Aug 15	165	1 Dec 15	135	2 Mar 16	150	1 Jun 16	285
1 Sep 15	203	2 Dec 15	113	3 Mar 16	155	2 Jun 16	177
2 Sep 15	174	3 Dec 15	120	4 Mar 16	154	3 Jun 16	157
3 Sep 15	167	4 Dec 15	137	5 Mar 16	165	4 Jun 16	164
4 Sep 15	153	5 Dec 15	162	6 Mar 16	174	5 Jun 16	154
5 Sep 15	180	6 Dec 15	162	7 Mar 16	145	6 Jun 16	164
6 Sep 15	188	7 Dec 15	162	8 Mar 16	152	7 Jun 16	139
7 Sep 15	166	8 Dec 15	277	9 Mar 16	149	8 Jun 16	134
8 Sep 15	157	9 Dec 15	117	10 Mar 16	149	9 Jun 16	138
9 Sep 15	155	10 Dec 15	117	11 Mar 16	139	10 Jun 16	149
10 Sep 15	187	11 Dec 15	173	12 Mar 16	171	11 Jun 16	159
11 Sep 15	162	12 Dec 15	167	13 Mar 16	184	12 Jun 16	154
12 Sep 15	165	13 Dec 15	167	14 Mar 16	154	13 Jun 16	118
13 Sep 15	173	14 Dec 15	167	15 Mar 16	160	14 Jun 16	133
14 Sep 15	138	15 Dec 15	172	16 Mar 16	184	15 Jun 16	130
15 Sep 15	136	16 Dec 15	151	17 Mar 16	150	16 Jun 16	130
16 Sep 15	141	17 Dec 15	155	18 Mar 16	160	17 Jun 16	144
17 Sep 15	149	18 Dec 15	165	19 Mar 16	172	18 Jun 16	153
18 Sep 15	166	19 Dec 15	146	20 Mar 16	203	19 Jun 16	152
19 Sep 15	230	20 Dec 15	146	21 Mar 16	150	20 Jun 16	131
20 Sep 15	351	21 Dec 15	146	22 Mar 16	148	21 Jun 16	134
21 Sep 15	201	22 Dec 15	166	23 Mar 16	143	22 Jun 16	136
22 Sep 15	183	23 Dec 15	175	24 Mar 16	180	23 Jun 16	153
23 Sep 15	243	24 Dec 15	158	25 Mar 16	162	24 Jun 16	144
24 Sep 15	193	25 Dec 15	158	26 Mar 16	151	25 Jun 16	146
25 Sep 15	179	26 Dec 15	158	27 Mar 16	147	26 Jun 16	119
26 Sep 15	181	27 Dec 15	158	28 Mar 16	164	27 Jun 16	184
27 Sep 15	172	28 Dec 15	158	29 Mar 16	164	28 Jun 16	156
28 Sep 15	159	29 Dec 15	158	30 Mar 16	148	29 Jun 16	150
29 Sep 15	173	30 Dec 15	84	31 Mar 16	153	30 Jun 16	149
30 Sep 15	174	31 Dec 15	84				

Attachment 1.2: Flows, Governors Bay, Chart

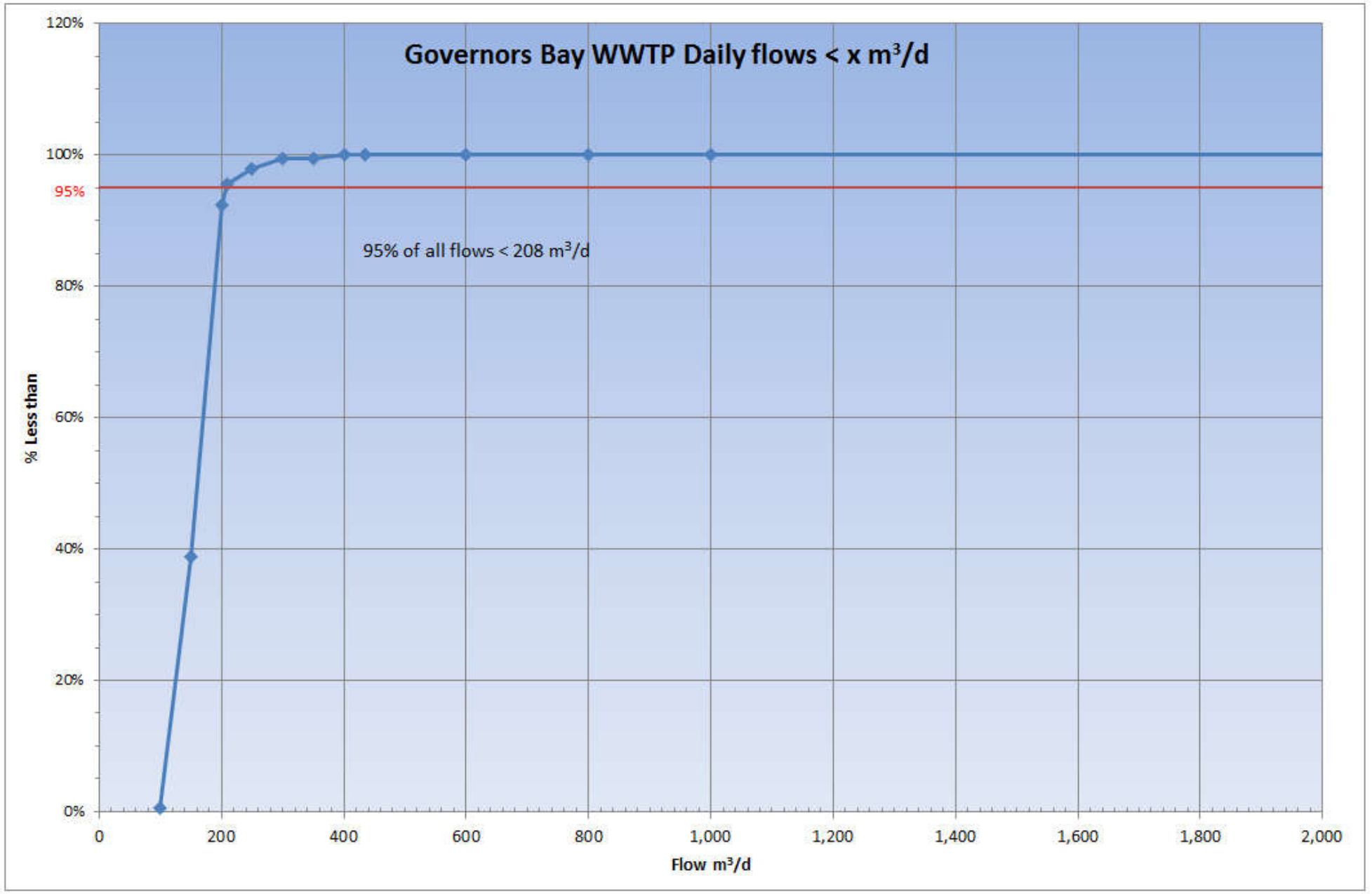



Governors Bay: Jul16 - Oct15
Instantaneous Flows (l/s)
Consent Max.21 l/s
21.6 21.6
21.2
25
20
15
10
5
0
01 Jul 15
15 Jul 15
29 Jul 15
12 Aug 15
26 Aug 15
09 Sep 15
23 Sep 15
07 Oct 15
21 Oct 15


Governors Bay: Nov15 - Feb16
Instantaneous Flows (l/s)
21.3
20.8
21.1
Consent Max.21 l/s
21.1
20.8
20.8
21.3
20.9
25
20
15
10
5
0
01 Nov 15
15 Nov 15
29 Nov 15
13 Dec 15
27 Dec 15
10 Jan 16
24 Jan 16
07 Feb 16
21 Feb 16


Governors Bay: Mar16 - Jun16
instantaneous Flows (l/s)
Chart Area
Consent Max.21 l/s
25
20
15
10
5
0
01 Mar 16
15 Mar 16
29 Mar 16
12 Apr 16
26 Apr 16
10 May 16
24 May 16
07 Jun 16
21 Jun 16

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



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	BOD_5	DRP	TSS	TN	NH_4-N	NOx	FC	ENT	N_{org}	5-Sample Median BOD_5	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
21 Oct 15	9.8	5.4	48	28.9	1.6	24	2200	400	4.7	2.2	12.0	180.0	160
18 Nov 15	3.8	4.60	15	28.3	0.95	26	10	10	1.9	3.8	15.0	180.0	160
1 Dec 15	3.3		23				20	30		3.8	23.0	100.0	30
8 Dec 15	10.0	4.80	25	17	7.30	7.2	10	10	10	7.0	23.0	20.0	30
15 Dec 15	3.9		23				20	10		3.9	23.0	20.0	10
23 Dec 15	3.2		14				60	52		3.8	23.0	20.0	10
30 Dec 15	19.0		120				80	30		3.9	23.0	20.0	30
5 Jan 16	480.0	1.60	720	6.1	0.42	2.7	6000	24000	58	10.0	25.0	60.0	30
12 Jan 16	8.0		25				270	98		8.0	25.0	80.0	52
20 Jan 16	15.0		84				70	20		15.0	84.0	80.0	52
27 Jan 16	4.2		15				10	10		15.0	84.0	80.0	30
3 Feb 16	4.6		14				10	10		8.0	25.0	70.0	20
10 Feb 16	5.1	2.40	18	15	1.40	12	10	10	2.3	5.1	18.0	10.0	10
17 Feb 16	4.2		16				80	20		4.6	16.0	10.0	10
24 Feb 16	5.0		23				1200	10		4.6	16.0	10.0	10
15 Mar 16	8.9	3.60	42	23	0.71	19	60	10	3.7	5.0	18.0	60.0	10
22 Apr 16	4.9	3.50	28	9.5	0.56	0.95	10	10	2.6	5.0	23.0	60.0	10
10 May 16	7.4	3.10	29	22	0.48	20	140	31	1.6	5.0	28.0	80.0	10
21 Jun 16	11.0	0.42	28	17	0.60	16	520	160	1	7.4	28.0	140.0	10
								Limit		30	30	700	1750
								Exceedances		0	2	0	0
								MAX		15.0	84.0	180.0	160.0

	As	Cd	Cr	Cu	Pb	Ni	Zn
	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]
13 Jan 15	<0.0015	<0.00020	<0.0010	<0.0020	0.0020	<0.0025	0.035
12 Jan 16	<0.0015	<0.00020	<0.0010	<0.0020	<0.0015	<0.0025	0.0031

Attachment 2.2: Lab Data, Receiving Environment, Rapaki

Rapaki

Date	FC cfu/100mL	Rain Y/N	Rain Prev. Y/N	High Tide hh:mm
20 Jul 15	1	No	No	07:32
31 Aug 15	1	yes	yes	05:04
22 Sep 15	2	No	yes	10:55
15 Oct 15	1	No	No	07:00
18 Nov 15	1	No	No	10:15
1 Dec 15	8	No	No	03:46
6 Jan 16	1	No	No	02:20
10 Feb 16	11	No	No	06:32
15 Mar 16	1	No	No	10:52
22 Apr 16	1	No	No	04:19
10 May 16	22	yes	No	10:15
21 Jun 16	10	No	No	04:53
Median	1	CFU/100mL		
>43 CFU/100 mL	0	Count		

Attachment 2.3: Lab Data, Receiving Environment

Consent CRC101760

Date	OF - 50m due				Quail Control	OF - 50m due				Quail Control	OF - 50m due				Quail Control	OF - 50m due				Quail Control
	North	East	South	West		North	East	South	West		North	East	South	West		North	East	South	West	
	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 Sep 2015	0.01	0.10	0.069	0.084	0.12	0.005	0.005	0.005	0.005	0.005	0.016	0.014	0.013	0.02	0.013	0.015	0.015	0.014	0.016	0.011
6 Nov 2015	0.15	0.16	0.15	0.15	0.17	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.01	0.011	0.0083	0.0097	0.0088
8 Dec 2015	0.06	0.017	0.094	0.23	0.11	0.005	0.005	0.01	0.011	0.005	0.01	0.01	0.01	0.19	0.01	0.013	0.013	0.19	0.06	0.013
12 Jan 2016	0.16	0.12	0.18	0.17	0.2	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.02	0.019	0.021	0.021	0.017
11 Feb 2016	0.16	0.16	0.15	0.17	0.14	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.022	0.022	0.027	0.02	0.02
17 Mar 2016	0.18	0.18	0.16	0.2	0.18	0.007	0.006	0.005	0.006	0.005	0.01	0.01	0.01	0.01	0.01	0.027	0.024	0.02	0.024	0.023
10 May 2016	0.32	0.31	0.27	0.31	0.26	0.01	0.01	0.01	0.01	0.01	0.017	0.01	0.01	0.01	0.01	0.022	0.018	0.017	0.019	0.015
17 Jun 2016	0.17	0.23	0.17	0.29	0.17	0.005	0.005	0.005	0.005	0.006	0.062	0.01	0.059	0.18	0.072	0.021	0.021	0.02	0.023	0.023
average	0.151	0.160	0.155	0.201	0.169	0.006	0.006	0.006	0.007	0.006	0.018	0.011	0.017	0.055	0.018	0.019	0.018	0.040	0.024	0.016
maximum	0.320	0.310	0.270	0.310	0.260	0.010	0.010	0.010	0.011	0.010	0.062	0.014	0.059	0.190	0.072	0.027	0.024	0.190	0.060	0.023

Date	OF - 50m due				Quail Control	OF - 50m due				Quail Control	OF - 50m due				Quail Control	OF - 50m due				Quail Control
	North	East	South	West		North	East	South	West		North	East	South	West		North	East	South	West	
	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/100m	MPN/100m	MPN/100m	MPN/100m	MPN/100m	MPN/100m	MPN/100m	MPN/100m	MPN/100m	MPN/100m
10 Sep 2015	34	28	24	34	25	1.5	1.4	1.5	1.7	3.0	10	10	10	10	10	1	2	1	1	1
6 Nov 2015	59	47	85	54	27	2.2	2.06	2.1	1.96	2.37	10	10	10	10	10	2	3	2	2	1
8 Dec 2015	72	94	13	17	95	0.61	0.83	0.66	0.69	1.06	10	10	10	10	10	1	1	1	7	1
12 Jan 2016	27	15	14	15	62	0.7	0.92	1	1	2.2	10	30	10	10	10	5	21	4	2	1
11 Feb 2016	42	60	43	43	24	4.4	4.3	3.7	3.4	3.2	10	10	10	10	10	1	1	1	1	1
17 Mar 2016	16	16	20	16	13	3.1	2	3.6	2.9	4.9	10	10	10	10	10	3	1	1	1	1
10 May 2016	26	21	20	32	19	3.8	3.2	2.8	3.2	2.6	10	20	10	10	10	2	1	1	1	1
17 Jun 2016	results missed by CCC Lab					1.9	1.6	1.8	2.2	2.6	10	10	10	10	10	4	8	1	1	1
average	39.43	40.14	31.29	30.14	37.86	2.28	2.04	2.15	2.13	2.74	10.00	13.75	10.00	10.00	10.00	2.38	4.75	1.50	2.00	1.00
maximum	72.00	94.00	85.00	54.00	95.00	4.40	4.30	3.70	3.40	4.90	10.00	30.00	10.00	10.00	10.00	5.00	21.00	4.00	7.00	1.00