



Governors Bay Wastewater Treatment Plant Annual Monitoring Report July 2017 – June 2018

Prepared by: Citycare Water
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On behalf of

Christchurch City Council, City Water & Waste Unit

30 Aug 2018

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	<ul style="list-style-type: none"> 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 4 times – Maximum Daily volume was 832 m ³ On 22 July 2017
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.
	Compliance: – refer attachment 2.1
7	<ul style="list-style-type: none"> 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	<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"> 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: <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 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	<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"> 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	<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"> 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	<p>The sampling and analysis required by condition 15 shall continue for a further 12 months from the date of cessation of discharge.</p>
	CCC to follow up
14	<ul style="list-style-type: none"> 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"> i. 50 metres due north of the outfall; ii. 50 metres due 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	<ul style="list-style-type: none"> 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 analysed to determine the source(s) of the faecal contamination, where 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	<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>
	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	<p>The consent holder shall submit to the Canterbury Regional Council and the parties set out in condition 21(b):</p> <ol style="list-style-type: none"> 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 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. 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	<p>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:</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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; Updated Management Plan submitted on 28 June 2018	
21	<ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> a. Governors Bay Community Association; b. Cass Bay Residents Association; c. Church Bay Neighborhood Association d. Governors Bay Community Association Incorporated; e. Lyttelton 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	<ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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 Lyttelton 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:
- 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 under the 600 m³/d limit with one exception, the maximum flow through the plant being 832m³/day (22 July 2017).

Peak instantaneous flowrates exceeded 21l/s on 4 occasions with the largest being 21.4 l/s (11Dec17) – 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 BOD₅, faecal coliforms (FC), Enterococci (ENT), and TSS limits (30 mg/l). Maximum medians for organic loading parameters were 8.5 mg/L for BOD₅ compared to 30-mg/L limits and 23 mg/l for TSS. Results for human health-related parameters with maximum medians of 110 CFU/100 mL (700 CFU/100ml consent) for FC and 63 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 averaging 15.9 cfu/100 @ 50m due east (maximum shingle sample was 110cfu/100 @ 20sept17 – 50m east) and ENT of 10 cfu/100ml. 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 0.24 mg/L TN at 50 m due West of the outfall (10 Jan18) and 0.039 mg/L NH₃ at 50 m due North of the outfall (20 Sept 17). 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 6 CFU/100 mL which is less than the recommended maximum of 14 CFU/100 mL. The highest readings for FC cfu/100ml were 110 cfu/100ml (10 Jan18) & 299 cfu/100ml (13Mar18).

Table 1. Summary of Exceedances and Non-Compliances from July 2017 - June 2018.

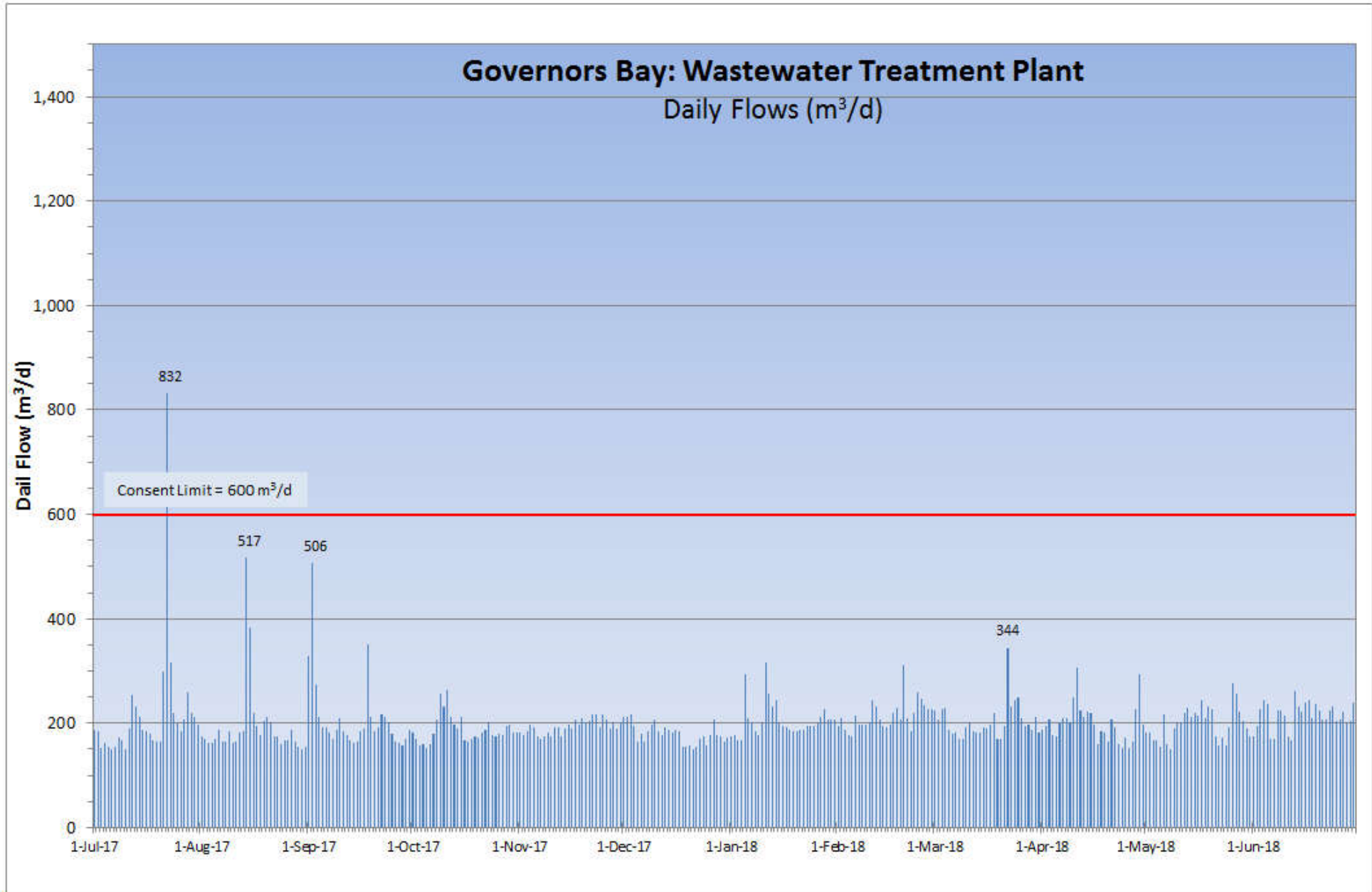
Parameter	Exceedances of Trigger Value
Flow >600 m ³ /d	1
Flow >21 L/s	4
BOD ₅ median >30 mg/L	0
TSS median >30 mg/L	0
FC >700 CFU/100 mL	0
ENT >1,750 MPN/100 mL	0
Receiving TN >1 mg/L	0
Receiving NH ₃ >0.91 mg/L	0

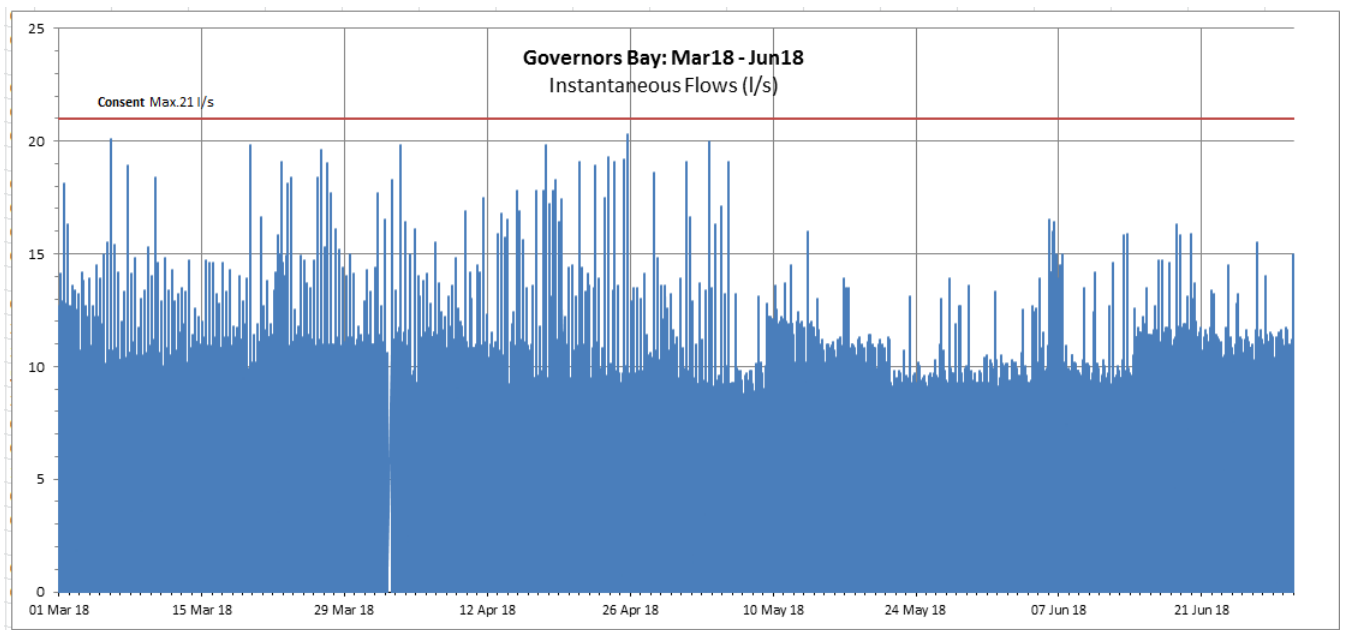
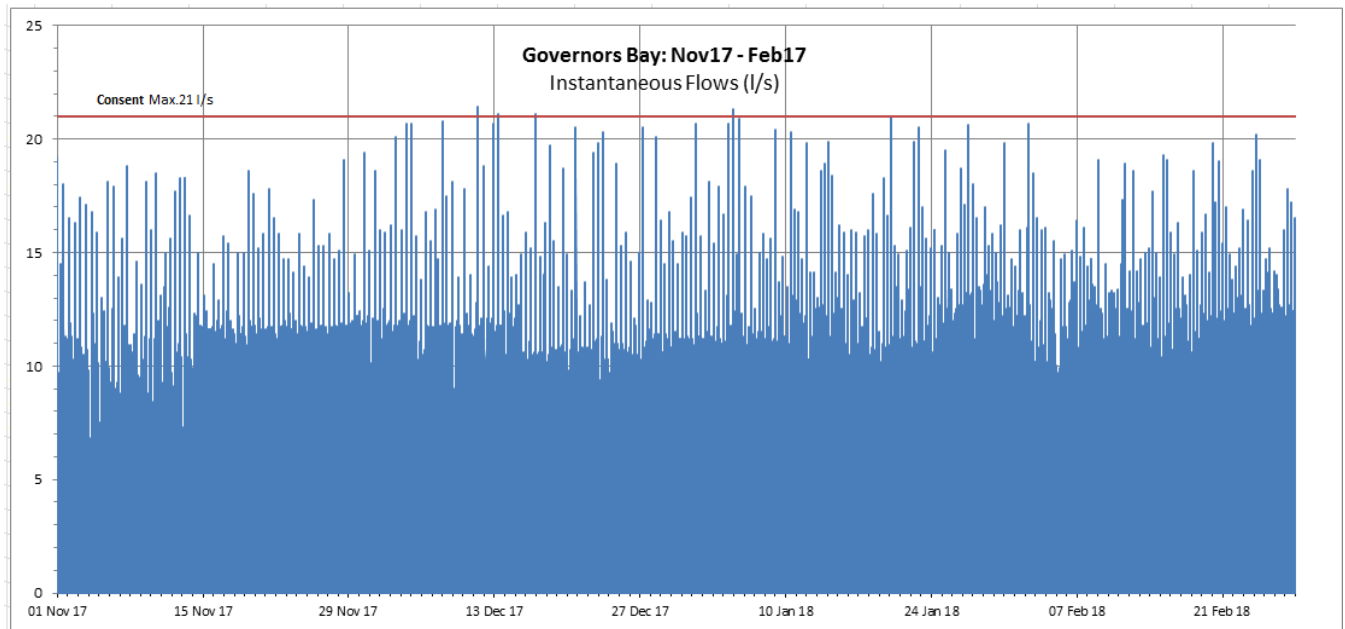
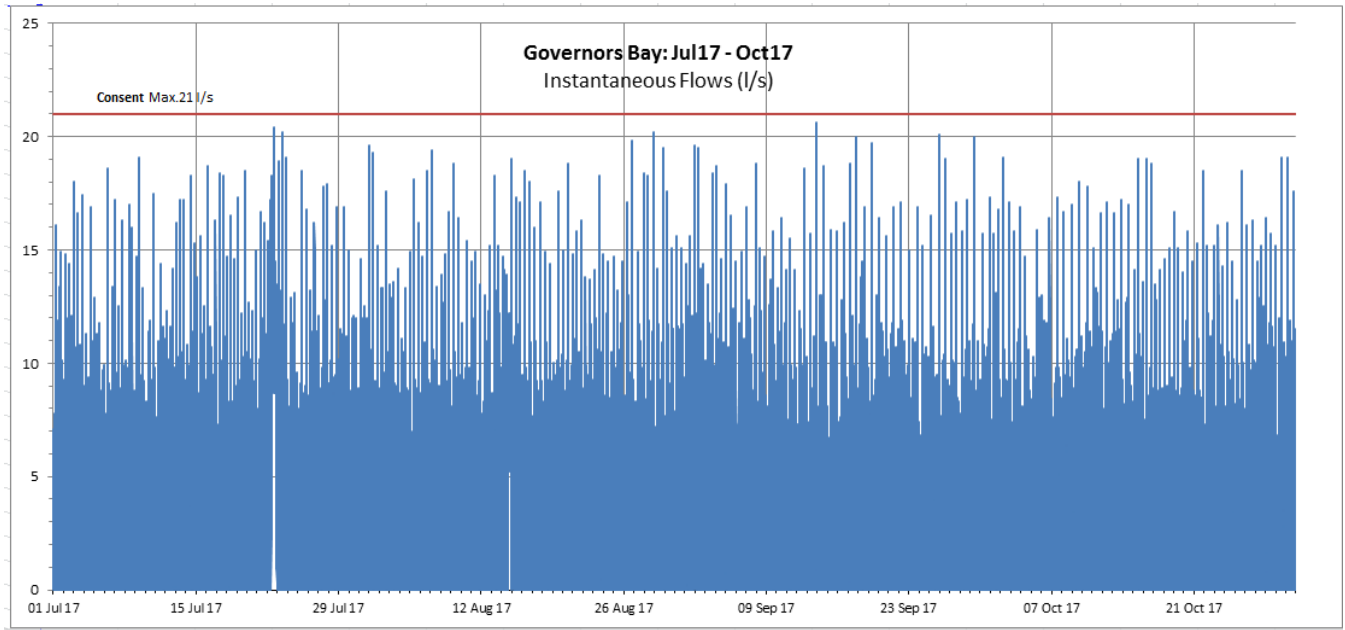
Attachment 1.1: Flows, Governors Bay, Data

Plant :		Governors Bay Wastewater Treatment, Banks Peninsula: Daily Flows for July 2017 - June 2018					
Asset owner:		Christchurch City Council					
Date	Flow (m3/d)	Date	Flow (m3/d)	Date	Flow (m3/d)	Date	Flow (m3/d)
1-Jul-17	186	1-Oct-17	182	1-Jan-18	176	1-Apr-18	187
2-Jul-17	184	2-Oct-17	170	2-Jan-18	177	2-Apr-18	194
3-Jul-17	153	3-Oct-17	158	3-Jan-18	168	3-Apr-18	208
4-Jul-17	162	4-Oct-17	159	4-Jan-18	168	4-Apr-18	177
5-Jul-17	154	5-Oct-17	153	5-Jan-18	293	5-Apr-18	174
6-Jul-17	149	6-Oct-17	160	6-Jan-18	209	6-Apr-18	199
7-Jul-17	155	7-Oct-17	179	7-Jan-18	203	7-Apr-18	209
8-Jul-17	173	8-Oct-17	206	8-Jan-18	184	8-Apr-18	209
9-Jul-17	168	9-Oct-17	256	9-Jan-18	177	9-Apr-18	201
10-Jul-17	150	10-Oct-17	232	10-Jan-18	203	10-Apr-18	250
11-Jul-17	189	11-Oct-17	264	11-Jan-18	315	11-Apr-18	306
12-Jul-17	253	12-Oct-17	211	12-Jan-18	256	12-Apr-18	224
13-Jul-17	232	13-Oct-17	198	13-Jan-18	231	13-Apr-18	213
14-Jul-17	213	14-Oct-17	189	14-Jan-18	243	14-Apr-18	222
15-Jul-17	188	15-Oct-17	212	15-Jan-18	201	15-Apr-18	220
16-Jul-17	185	16-Oct-17	168	16-Jan-18	195	16-Apr-18	198
17-Jul-17	179	17-Oct-17	166	17-Jan-18	191	17-Apr-18	160
18-Jul-17	168	18-Oct-17	170	18-Jan-18	188	18-Apr-18	184
19-Jul-17	164	19-Oct-17	174	19-Jan-18	185	19-Apr-18	182
20-Jul-17	166	20-Oct-17	172	20-Jan-18	185	20-Apr-18	165
21-Jul-17	300	21-Oct-17	182	21-Jan-18	188	21-Apr-18	208
22-Jul-17	832	22-Oct-17	187	22-Jan-18	187	22-Apr-18	193
23-Jul-17	317	23-Oct-17	203	23-Jan-18	194	23-Apr-18	159
24-Jul-17	219	24-Oct-17	178	24-Jan-18	195	24-Apr-18	152
25-Jul-17	199	25-Oct-17	174	25-Jan-18	195	25-Apr-18	172
26-Jul-17	185	26-Oct-17	179	26-Jan-18	200	26-Apr-18	152
27-Jul-17	206	27-Oct-17	178	27-Jan-18	212	27-Apr-18	164
28-Jul-17	259	28-Oct-17	195	28-Jan-18	227	28-Apr-18	228
29-Jul-17	219	29-Oct-17	196	29-Jan-18	207	29-Apr-18	295
30-Jul-17	211	30-Oct-17	182	30-Jan-18	206	30-Apr-18	198
31-Jul-17	196	31-Oct-17	181	31-Jan-18	207	1-May-18	183
1-Aug-17	175	1-Nov-17	181	1-Feb-18	194	2-May-18	181
2-Aug-17	169	2-Nov-17	178	2-Feb-18	210	3-May-18	168
3-Aug-17	162	3-Nov-17	184	3-Feb-18	187	4-May-18	168
4-Aug-17	163	4-Nov-17	198	4-Feb-18	178	5-May-18	156
5-Aug-17	171	5-Nov-17	192	5-Feb-18	174	6-May-18	217
6-Aug-17	188	6-Nov-17	174	6-Feb-18	215	7-May-18	159
7-Aug-17	164	7-Nov-17	169	7-Feb-18	198	8-May-18	149
8-Aug-17	164	8-Nov-17	175	8-Feb-18	198	9-May-18	189
9-Aug-17	185	9-Nov-17	181	9-Feb-18	196	10-May-18	201
10-Aug-17	163	10-Nov-17	175	10-Feb-18	201	11-May-18	203
11-Aug-17	165	11-Nov-17	192	11-Feb-18	243	12-May-18	219
12-Aug-17	182	12-Nov-17	193	12-Feb-18	232	13-May-18	229
13-Aug-17	185	13-Nov-17	175	13-Feb-18	208	14-May-18	213
14-Aug-17	517	14-Nov-17	189	14-Feb-18	194	15-May-18	219
15-Aug-17	382	15-Nov-17	197	15-Feb-18	191	16-May-18	214
16-Aug-17	220	16-Nov-17	190	16-Feb-18	197	17-May-18	243
17-Aug-17	195	17-Nov-17	208	17-Feb-18	219	18-May-18	210
18-Aug-17	177	18-Nov-17	196	18-Feb-18	229	19-May-18	233
19-Aug-17	204	19-Nov-17	210	19-Feb-18	206	20-May-18	227

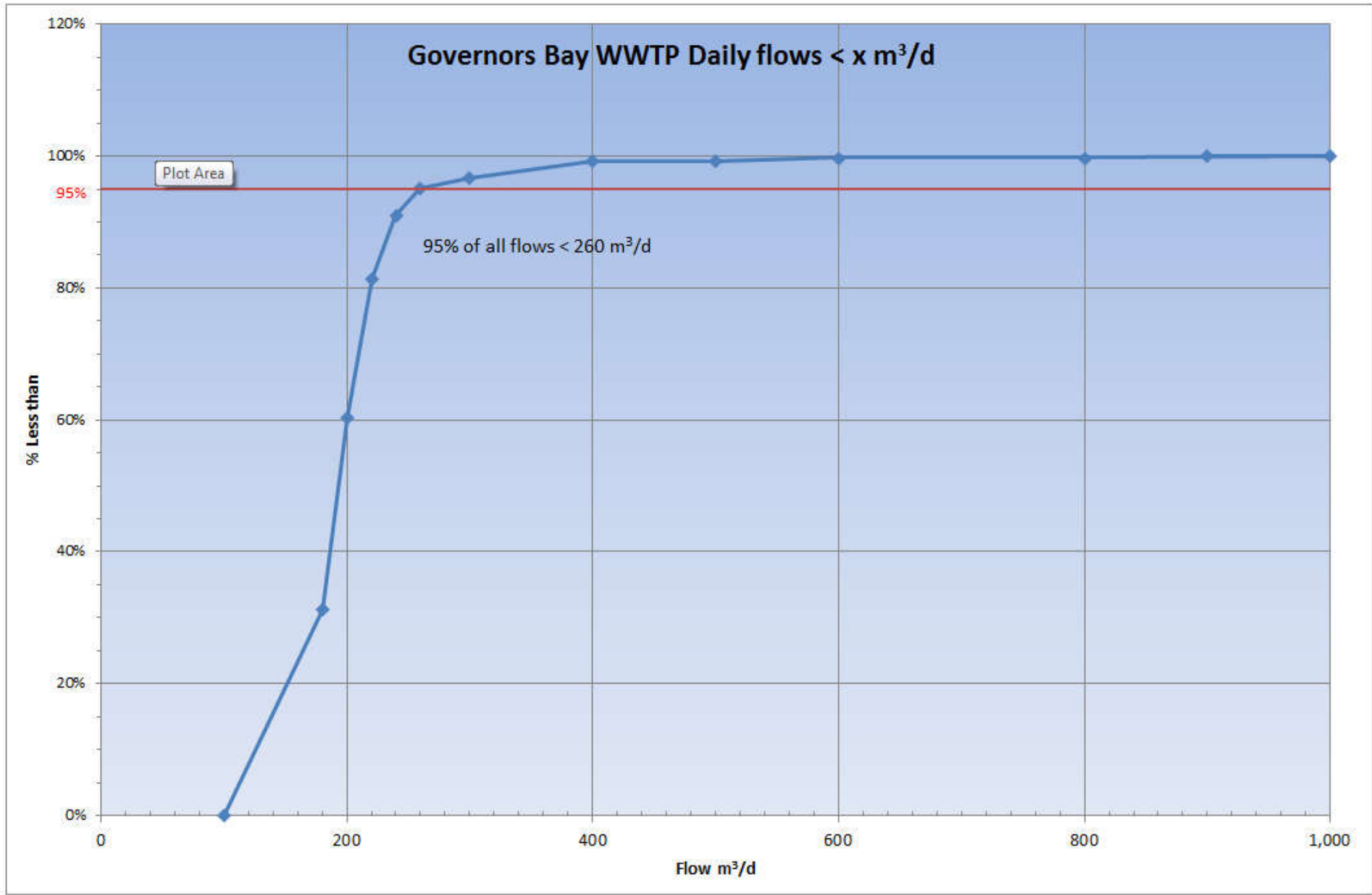
Date	Flow (m3/d)	Date	Flow (m3/d)	Date	Flow (m3/d)	Date	Flow (m3/d)
20-Aug-17	213	20-Nov-17	202	20-Feb-18	312	21-May-18	175
21-Aug-17	201	21-Nov-17	205	21-Feb-18	209	22-May-18	158
22-Aug-17	175	22-Nov-17	218	22-Feb-18	184	23-May-18	173
23-Aug-17	174	23-Nov-17	217	23-Feb-18	219	24-May-18	158
24-Aug-17	160	24-Nov-17	193	24-Feb-18	258	25-May-18	192
25-Aug-17	167	25-Nov-17	216	25-Feb-18	246	26-May-18	277
26-Aug-17	167	26-Nov-17	208	26-Feb-18	234	27-May-18	256
27-Aug-17	187	27-Nov-17	189	27-Feb-18	226	28-May-18	223
28-Aug-17	166	28-Nov-17	202	28-Feb-18	226	29-May-18	205
29-Aug-17	154	29-Nov-17	189	1-Mar-18	225	30-May-18	190
30-Aug-17	151	30-Nov-17	201	2-Mar-18	206	31-May-18	176
31-Aug-17	156	1-Dec-17	211	3-Mar-18	227	1-Jun-18	174
1-Sep-17	329	2-Dec-17	211	4-Mar-18	230	2-Jun-18	195
2-Sep-17	506	3-Dec-17	216	5-Mar-18	187	3-Jun-18	227
3-Sep-17	274	4-Dec-17	195	6-Mar-18	179	4-Jun-18	244
4-Sep-17	212	5-Dec-17	166	7-Mar-18	183	5-Jun-18	237
5-Sep-17	193	6-Dec-17	179	8-Mar-18	169	6-Jun-18	171
6-Sep-17	192	7-Dec-17	165	9-Mar-18	171	7-Jun-18	171
7-Sep-17	183	8-Dec-17	185	10-Mar-18	192	8-Jun-18	224
8-Sep-17	171	9-Dec-17	198	11-Mar-18	201	9-Jun-18	224
9-Sep-17	186	10-Dec-17	207	12-Mar-18	185	10-Jun-18	214
10-Sep-17	210	11-Dec-17	184	13-Mar-18	183	11-Jun-18	176
11-Sep-17	185	12-Dec-17	177	14-Mar-18	183	12-Jun-18	167
12-Sep-17	177	13-Dec-17	191	15-Mar-18	191	13-Jun-18	262
13-Sep-17	168	14-Dec-17	187	16-Mar-18	190	14-Jun-18	233
14-Sep-17	162	15-Dec-17	182	17-Mar-18	198	15-Jun-18	221
15-Sep-17	166	16-Dec-17	187	18-Mar-18	219	16-Jun-18	239
16-Sep-17	184	17-Dec-17	184	19-Mar-18	169	17-Jun-18	243
17-Sep-17	190	18-Dec-17	154	20-Mar-18	170	18-Jun-18	210
18-Sep-17	350	19-Dec-17	154	21-Mar-18	195	19-Jun-18	237
19-Sep-17	212	20-Dec-17	157	22-Mar-18	344	20-Jun-18	224
20-Sep-17	185	21-Dec-17	150	23-Mar-18	231	21-Jun-18	208
21-Sep-17	192	22-Dec-17	155	24-Mar-18	245	22-Jun-18	208
22-Sep-17	218	23-Dec-17	171	25-Mar-18	248	23-Jun-18	224
23-Sep-17	211	24-Dec-17	174	26-Mar-18	210	24-Jun-18	231
24-Sep-17	203	25-Dec-17	157	27-Mar-18	195	25-Jun-18	205
25-Sep-17	180	26-Dec-17	178	28-Mar-18	198	26-Jun-18	208
26-Sep-17	164	27-Dec-17	207	29-Mar-18	187	27-Jun-18	223
27-Sep-17	162	28-Dec-17	178	30-Mar-18	211	28-Jun-18	199
28-Sep-17	157	29-Dec-17	176	31-Mar-18	182	29-Jun-18	205
29-Sep-17	170	30-Dec-17	165			30-Jun-18	239
30-Sep-17	187	31-Dec-17	173				

Attachment 1.2: Flows, Governors Bay, Chart





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			
	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	CFU/100ml	MPN/100ml	[mg/l]	BOD ₅	TSS	FC	ENT
										[mg/l]	[mg/l]	CFU/100ml	MPN/100ml
20-Jul-17	8.5	2.50	25	17	0.088	13	30	63	3.7	8.5	20.0	30.0	63
9-Aug-17	5.8	4.20	21	15	2.0	12	20	41	2.8	8.5	21.0	30.0	63
20-Sep-17	4.5	2.80	15	12	0.10	10	40	10	2.1	8.5	21.0	40.0	63
25-Oct-17	2.9	3.50	15	19	0.16	16	180	10	2.5	5.8	21.0	40.0	41
14-Nov-17	2.6	4.10	24	23.5	1.2	21	10	10	2.4	4.5	21.0	30.0	10
6-Dec-17	3.8		23				140	10		3.8	21.0	40.0	10
13-Dec-17	2.6	4.60	14	17.4	0.57	15	40	10	2.4	2.9	15.0	40.0	10
20-Dec-17	2.4		14				10	10		2.6	15.0	40.0	10
27-Dec-17	10.0		33				10	20		2.6	23.0	10.0	10
3-Jan-18	8.1		56				400	360		3.8	23.0	40.0	10
10-Jan-18	4.1	3.80	20	9.4	0.71	7.1	1100	100	2.3	4.1	20.0	40.0	20
17-Jan-18	1.0	3.80	12	8.1	0.20	6.6	20	10	1.5	4.1	20.0	20.0	20
24-Jan-18	1.7		7				10	10		4.1	20.0	20.0	20
31-Jan-18	1.4		7				10	10		1.7	12.0	20.0	10
7-Feb-18	2.1		10				10	10		1.7	10.0	10.0	10
14-Feb-18	3.4	4.10	13	13.6	0.27	11	110	63	2.1	1.7	10.0	10.0	10
21-Feb-18	2.6		19				2700	460		2.1	10.0	10.0	10
28-Feb-18	2.1		13				10	10		2.1	13.0	10.0	10
13-Mar-18	3.9	5.90	15	33.0	1.5	29	20	10	3.6	2.6	13.0	20.0	10
17-Apr-18	3.5	6.50	6	22.3	0.67	20	270	10	2.0	3.4	13.0	110.0	10
15-May-18	2.3	3.90	10	16.5	0.50	14	50	10	2.4	2.6	13.0	50.0	10
19-Jun-18	4.8	2.80	21	19.1	0.01	17	10	10	2.0	3.5	13.0	20.0	10
									Limit =	30	30	700	1750
									Exceedances =	0	0	0	0
									MAX =	8.5	23.0	110.0	63.0
	As	Cd	Cr	Cu	Pb	Ni	Zn						
	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]						
12-Jan-16	<0.0015	<0.00020	<0.0010	<0.0020	<0.0015	<0.0025	0.0031						
18-Jan-17	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.051						
17-Jan-18	<0.0010	<0.0010	<0.0010	0.0054	<0.0010	<0.0010	0.055						

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-17	31	no	no	7:02
9-Aug-17	16	NA	NA	5:25
20-Sep-17	15	no	yes	10:18
25-Oct-17	5	no	no	9:07
14-Nov-17	6	no	no	2:00
13-Dec-17	2	no	yes	2:00
10-Jan-18	110	yes	yes	12:00
14-Feb-18	1	yes	no	16:45
13-Mar-18	299	no	no	14:43
17-Apr-18	1	no	not given	17:36
15-May-18	2	not given	not given	14:18
19-Jun-18	6	not given	not given	15:00
Median	6 CFU/100mL			
>43 CFU/100 mL	2 Count			

Attachment 2.3: Lab Data, Receiving Environment

Governors Bay Consent CRC101760	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		
Date	TN mg/L	TN mg/L	TN mg/L	TN mg/L	TN mg/L	NH3 mg/L	NH3 mg/L	NH3 mg/L	NH3 mg/L	NH3 mg/L	NOX mg/L	NOX mg/L	NOX mg/L	NOX mg/L	NOX mg/L	DRP mg/L	DRP mg/L	DRP mg/L	DRP mg/L	DRP mg/L	
			not to exceed 1.0				not to exceed 0.91														
20-Sep-17	0.24	0.28	0.26	0.24	0.23	0.039	0.029	0.027	0.025	0.41	0.043	0.041	0.037	0.035	0.05	0.015	0.013	0.012	0.012	0.013	
14-Nov-17	0.083	0.13	0.086	0.093	0.084	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.12	0.026	0.015	0.016	0.017	0.038	0.04	
13-Dec-17	0.24	0.23	0.23	0.22	0.25	0.005	0.006	0.005	0.005	0.007	0.01	0.01	0.01	0.01	0.01	0.018	0.018	0.019	0.019	0.018	
10-Jan-18	0.27	0.28	0.3	0.35	0.23	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.013	0.01	0.019	0.018	0.019	0.02	0.019	
14-Feb-18	0.22	0.26	0.19	0.21	0.16	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.012	0.012	0.011	0.014	0.012	
13-Mar-18	0.23	0.22	0.14	0.24	0.18	0.007	0.005	0.005	0.005	0.005	0.057	0.01	0.012	0.081	0.01	0.023	0.012	0.013	0.027	0.014	
15-May-18	0.2	0.17	0.24	0.24	0.24	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.017	0.016	0.016	0.018	0.015	
19-Jun-18	0.34	0.31	0.31	0.33	0.38	0.034	0.034	0.037	0.035	0.036	0.12	0.12	0.12	0.12	0.12	0.024	0.024	0.024	0.025	0.024	
average	0.228	0.235	0.220	0.240	0.219	0.013	0.012	0.012	0.011	0.060	0.021	0.014	0.014	0.040	0.018	0.018	0.016	0.016	0.022	0.019	
maximum	0.340	0.310	0.310	0.350	0.380	0.039	0.034	0.037	0.035	0.410	0.057	0.041	0.037	0.120	0.050	0.024	0.024	0.024	0.038	0.040	

Governors Bay Consent CRC101760	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	
Date	TSS mg/L	TSS mg/L	TSS mg/L	TSS mg/L	TSS mg/L	Chla mg/L	Chla mg/L	Chla mg/L	Chla mg/L	Chla mg/L	ENT MPN/100ml	ENT MPN/100ml	ENT MPN/100ml	ENT MPN/100ml	ENT MPN/100ml	FC MPN/100ml	FC MPN/100ml	FC MPN/100ml	FC MPN/100ml	FC MPN/100ml
20-Sep-17	47	74	58	50	62	4.30	4.90	5.00	4.30	5.60	10.0	10.0	10.0	10.0	20.0	84.0	110.0	69.0	48.0	68.0
14-Nov-17	31	33	41	31	32	1.70	1.40	1.90	1.50	2.10	10.0	10.0	10.0	10.0	30.0	3.0	1.0	10.0	2.0	32.0
13-Dec-17	26	32	22	27	21	3.50	3.70	3.60	3.90	3.40	10.0	10.0	10.0	10.0	10.0	1.0	2.0	1.0	2.0	4.0
10-Jan-18	64	61	71	64	52	7.30	6.10	6.00	6.40	7.40	10.0	10.0	10.0	10.0	10.0	9.0	1.0	4.0	2.0	1.0
14-Feb-18	24	21	23	22	24	6.70	7.20	6.70	7.40	6.60	10.0	10.0	10.0	10.0	10.0	1.0	3.0	1.0	1.0	1.0
13-Mar-18	16	18	17	18	16	0.22	0.21	0.25	0.22	0.31	10.0	10.0	10.0	10.0	10.0	1.0	3.0	1.0	2.0	1.0
15-May-18	31	31	37	29	28	4.70	4.30	4.60	4.30	6.00	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0	1.0
19-Jun-18	42	47	56	38	42	1.80	2.00	1.90	1.60	2.60	10.0	10.0	10.0	10.0	10.0	3.0	6.0	6.0	5.0	1.0
average	35.13	39.63	40.63	34.88	34.63	3.778	3.726	3.744	3.703	4.251	10.0	10.0	10.0	10.0	13.8	12.9	15.9	11.6	7.9	13.6
maximum	64	74	71	64	62	7.300	7.200	6.700	7.400	7.400	10.0	10.0	10.0	10.0	30.0	84.0	110.0	69.0	48.0	68.0