



Diamond Harbour Wastewater Treatment Plant Annual Monitoring Report July 2016 – June 2017

Prepared by: Citycare Water
Kris Kaser

On behalf of

Christchurch City Council, City Water & Waste Unit

29 August 2017



Resource Consent Number: CRC101835
File Number: CO6C/14460
Client Name: Christchurch City Council
To: Discharge Contaminants Into Water.
Consent Location: Pauahinekotou Head, LYTTELTON HARBOUR
Status: Active

07/08/2012 Consent Commenced
 07/08/2017 Lapse Date
 03/09/2012 Given Effect to Date
 31/12/2021 Expiry Date

Subject to the Following Conditions:

1	The discharge shall be only treated sewage from the Diamond Harbour Wastewater Treatment Plant, located at the based of Pauahinekotou Head, Diamond Harbour.
	Compliance
2	a. Treated sewage effluent shall only be discharged to Lyttelton Harbour/Whakaraupo via an existing outfall approximately 60 metres seaward from Pauahinekotou Head, at or about map reference NZMS 260 M36: 8729-3141. b. The discharge at this location shall cease on 31 December 2021.
	Compliance
3	The volume of effluent discharged shall not exceed 2500 cubic metres per day at a maximum rate of 34 litres per second.
	Unable to confirm compliance; the instantaneous inflow flowrate exceeded the consented limit of 34l/s 1,332 times during the twelve month period, primarily due to 3 major events (27Aug16) and 6 April through 15 April17. The peak flows through the treatment plant will be buffered through the large treatment tanks in the treatment plant prior to UV disinfection and discharge into the harbour. At present there is no flow meter on the discharge pipework. The maximum discharge of 2500 m³ per day was not exceeded Max Flow was recorded on 6 April 2017 (Attachment 1.1).
4	The consent holder shall measure flows from the Diamond Harbour Sewage 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 flows. 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
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.
	Complies
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 or more that 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.
	Unable to confirm Compliance
10	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 ten working days of the exceedence, write to the Canterbury Regional Council outlining the measures the consent holder proposes to undertake to address the concentration exceedences, and the timeframe within which this will occur.
	Compliance; no exceedances occurred for either parameter
11	Prior to discharge, the effluent shall be sampled and analysed not less than once per month for the following: <ul style="list-style-type: none"> a. Dissolved reactive phosphorous (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: <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	<ul style="list-style-type: none"> a. The water of the receiving environment shall be sampled in January, 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). vi. surface water quality monitoring site at Church Bay, which is located at or about NZMS 260 M36:872-305. b. Each sample shall be analysed for the concentration of faecal coliforms, enterococci, total suspended solids, chlorophyll-a, ammoniacal nitrogen, total oxidized nitrogen total nitrogen and dissolved reactive phosphorus. The time the samples are taken shall be recorded. c. Samples shall be taken at approximately 0.5 metres below the surface of the water. d. Samples shall not be taken on consecutive days. e. Samples shall be taken within one hour of low water.
	Compliance
14	If any of the samples collected from around the mixing zone in accordance with Condition (13) contain concentrations of total nitrogen greater than 1.0 mgN/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 within one week of receipt of the results of the re-sample.
	Compliance
15	The monitoring required under Condition (13) shall be undertaken on the same day as the monitoring required under Condition (8). In the event that the monitoring required under Conditions (13) and (8) cannot be undertaken on the same days, the reason shall be recorded and submitted to the Canterbury Regional Council.
	Compliance
16	The sediment survey as carried out by Golders Associates (Report Number: 0978205527 – January 2010) for the application shall be repeated in 2015 in the month of November. The samples shall be analysed for total organic carbon, copper, lead and zinc and shall be collected from the following locations: <ul style="list-style-type: none"> a. At distances 25 metres perpendicular to the outfall; and b. At 50 metres and 150 metres along a transect in the same trajectory as the outfall pipe. These locations are illustrated on Plan CRC101835A which forms part of this consent.
	CCC to follow up
17	The laboratory carrying out the analyses for the purposes of Conditions (5), (6), (7), (9), (11), (12) and (13) 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

18	The consent holder shall submit to the Canterbury Regional Council: <ul 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.
Compliance	
19	The consent holder shall submit to the Canterbury Regional Council within three months of the commencement of this consent, a Management Plan. This shall include: <ul 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: <ul style="list-style-type: none"> i. The contingency measures to be taken at the pumping stations in the Diamond Harbour 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 Diamond Harbour 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	
20	<ul style="list-style-type: none"> a. The consent holder shall submit a report to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, and upload the report on the consent holder's website by 31 August of each year summarizing the monitoring data collected and providing an interpretation of the results of the monitoring. b. The consent holder shall supply a copy of the report referred to in condition 20(a) to all the following organisations/groups/people: <ul style="list-style-type: none"> a. Cass Bay Residents Association b. Church Bay Neighborhood Association c. Diamond Harbour Community Association Incorporated d. Paula Smith C/o 1 Purau Avenue, RD 2, Diamond Harbour e. Te Hapu o Ngati Wheke (Rapaki) Runanga f. Te Runanga o Koukourarata g. Te Runanga o Ngai Tahu h. Governors Bay Community Association. c. 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	
21	<ul style="list-style-type: none"> a. Within 60 days of the commencement date of this resource consent, the consent holder shall prepare an implementation plan which includes, but is not limited to the following matters: <ul 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 30 June 2017 detailed design work completed; d. No later than 31 December 2021 all works have been commissioned, and after a period of testing the treatment plant is decommissioned. b. The consent holder shall provide an annual report to the Canterbury Regional Council in July 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 organisations/groups represented on the Lyttelton Harbour/Whakaraupo Wastewater Working Party and also all parties listed in condition 20(b). c. 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 Lyttelton Harbour/Whakaraupo.
CCC to follow up	
22	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"> 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 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 d. Amending the frequency of monitoring and the parameters monitored.
ECAN to request	
23	The consent holder shall surrender resource consent CRC031546 within 60 working days of the commencement of this consent.
Compliance	

Treatment Plant Effluent Monitoring

Daily flows for the Diamond Harbour Wastewater Treatment Plant (WwTP) were generally well under the 2,500 m³/d limit with 95% of all flows <400 m³/d (Attachment 1.3). Highest flows recorded were 2,394 m³/d on 6 April 17 with the next highest of 1,598 m³/d on 14 April 2017 and 1,319 m³/d on 27 August 2016, within the consented limit (N.B. flows are measured on the inlet).

The instantaneous inflow rate was greater than 34 l/s 1332 times. The majority of the exceedances were during the two large rainfall events in Aug 16 & April 2017. Other smaller rain events were usually short-lived and uncharacteristic of the normal flow regime. This is a marked increase than was recorded the previous year of 319 occasions and many exceedances will be attributable to the SCADA logging rate – ie 6 April 17 in a one hour period the flow exceeded 34l/s on 61 occasions (would be only 6 if logged at 10 min. interval). The discharge rate would be buffered and therefore the inflow rate is a conservative guide only of the discharge rate.

The plant operated with full compliance for effluent water quality relating to BOD₅, TSS, faecal coliforms (FC), and Enterococci (ENT) (Table 1). Maximum medians of 3.1 mg/L BOD₅ were below the 30-mg/L limits, TSS max of 20 mg/l compared to allowable 30 mg/l and FC of 10 CFU/100 mL and ENT of 10 MPN/100 mL were excellent 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 two control sites (Quail Island and Church Bay) (Attachment 2.2). Human health related parameters of FC and ENT were usually well below the respective detection limits. 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 0.280mg/L TN at 50 m due North of the outfall and 0.032 mg/L NH₃ at 50m due West of Outfall. Monitoring results did not appear to be significantly different between the outfall sites and the control sites.

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

Parameter	Exceedances of Trigger Value
Flow >2,500 m ³ /d	0
Discharge Flowrate >34 L/s	Unable to confirm compliance
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

Table 2. Incoming instantaneous flowrates from July 2016-June 2017.

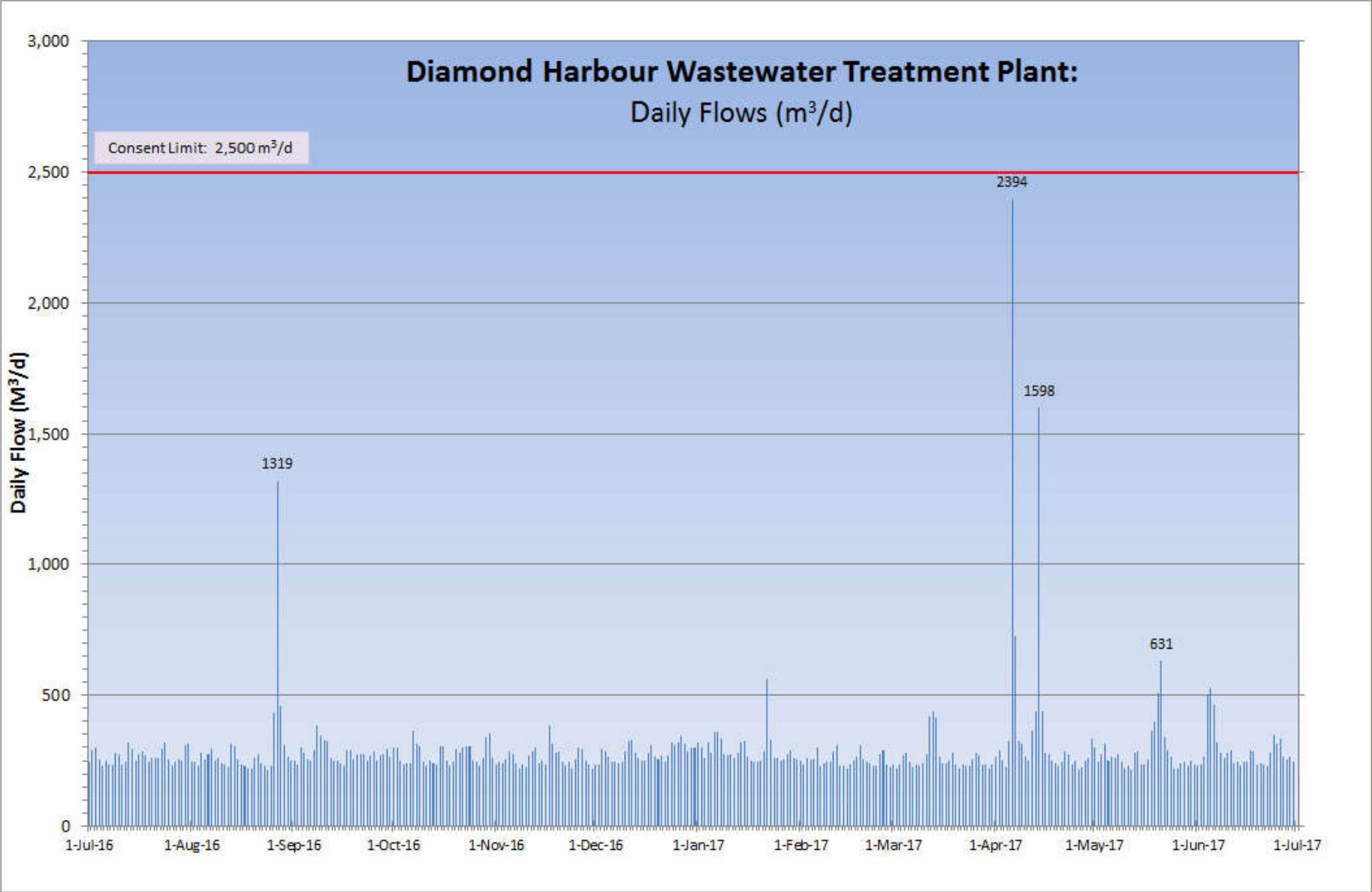
Month	Values > 34 L/s [#]
Jul-16	16
Aug-16	240
Sep-16	0
Oct-16	9
Nov-16	7
Dec-16	3
Jan-17	3
Feb-17	0
Mar-17	1
Apr-17	1035
May-17	12
Jun-17	6
Total	1332

Attachment 1.1: Flows, Diamond Harbour, Data

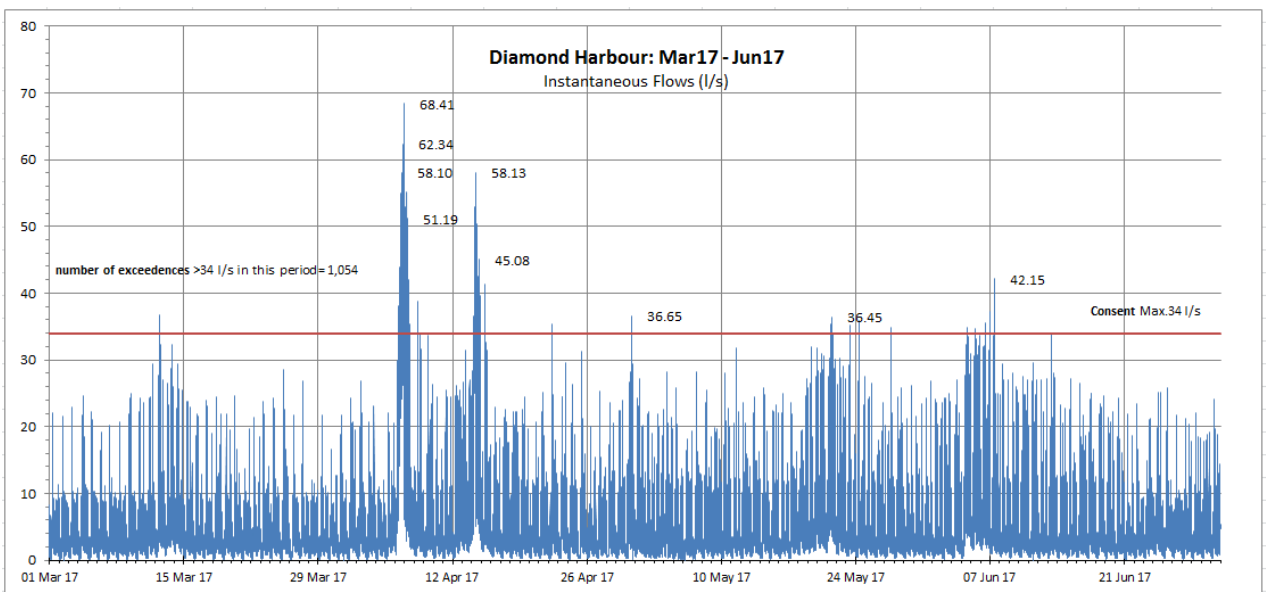
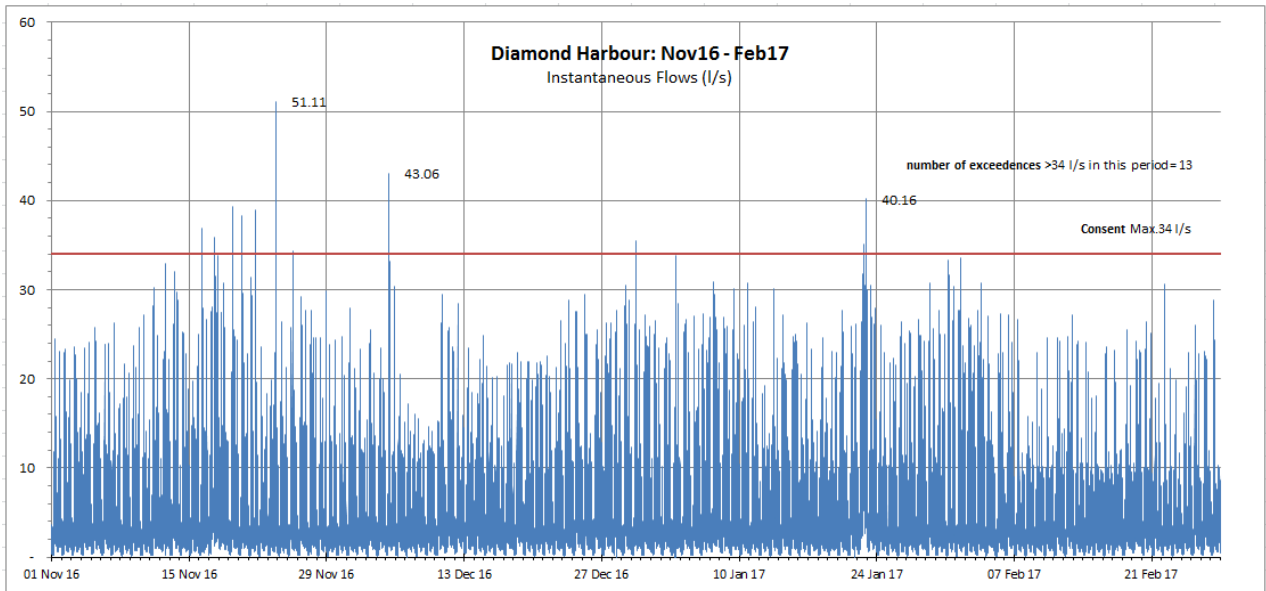
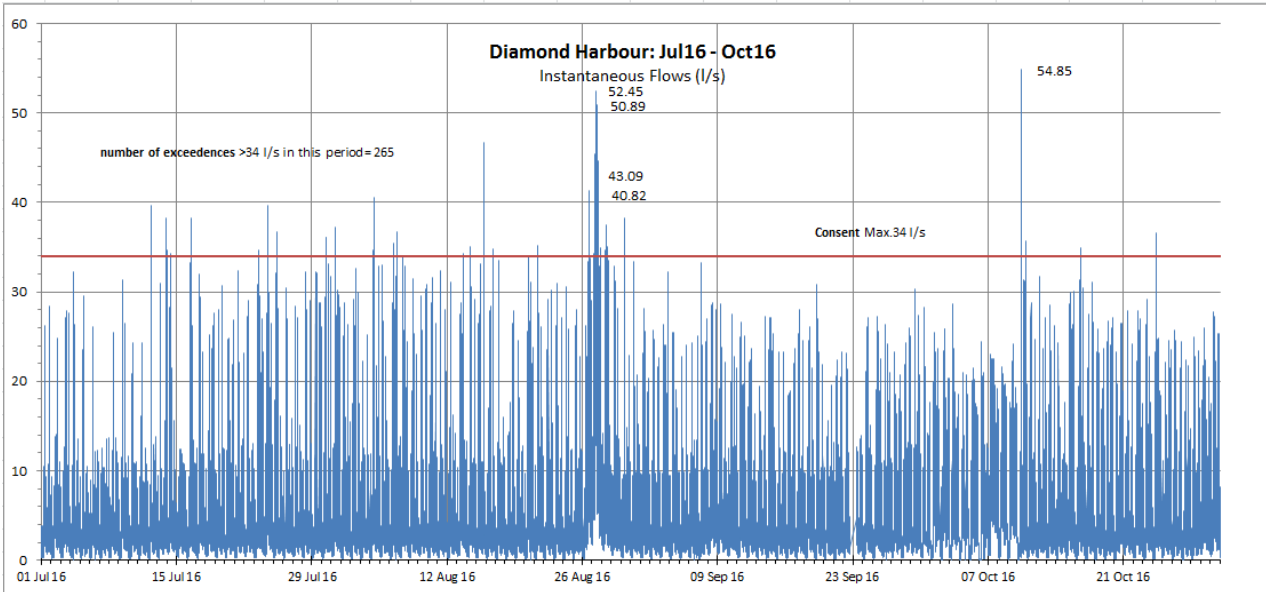
Plant :		Diamond Harbour Wastewater Treatment, Banks Peninsula: Daily Flows					
Date	Flow (m ³ /d)	Date	Flow (m ³ /d)	Date	Flow (m ³ /d)	Date	Flow (m ³ /d)
1-Jul-16	245	1-Oct-16	301	1-Jan-17	318	1-Apr-17	267
2-Jul-16	289	2-Oct-16	301	2-Jan-17	298	2-Apr-17	289
3-Jul-16	300	3-Oct-16	249	3-Jan-17	262	3-Apr-17	249
4-Jul-16	253	4-Oct-16	234	4-Jan-17	321	4-Apr-17	225
5-Jul-16	232	5-Oct-16	241	5-Jan-17	280	5-Apr-17	324
6-Jul-16	252	6-Oct-16	239	6-Jan-17	360	6-Apr-17	2,394
7-Jul-16	236	7-Oct-16	364	7-Jan-17	359	7-Apr-17	725
8-Jul-16	237	8-Oct-16	317	8-Jan-17	334	8-Apr-17	325
9-Jul-16	280	9-Oct-16	304	9-Jan-17	275	9-Apr-17	315
10-Jul-16	274	10-Oct-16	243	10-Jan-17	271	10-Apr-17	264
11-Jul-16	237	11-Oct-16	231	11-Jan-17	275	11-Apr-17	252
12-Jul-16	246	12-Oct-16	250	12-Jan-17	262	12-Apr-17	364
13-Jul-16	318	13-Oct-16	239	13-Jan-17	280	13-Apr-17	437
14-Jul-16	294	14-Oct-16	233	14-Jan-17	322	14-Apr-17	1,598
15-Jul-16	249	15-Oct-16	307	15-Jan-17	326	15-Apr-17	438
16-Jul-16	276	16-Oct-16	303	16-Jan-17	265	16-Apr-17	280
17-Jul-16	286	17-Oct-16	252	17-Jan-17	248	17-Apr-17	276
18-Jul-16	270	18-Oct-16	231	18-Jan-17	243	18-Apr-17	250
19-Jul-16	246	19-Oct-16	246	19-Jan-17	247	19-Apr-17	239
20-Jul-16	262	20-Oct-16	294	20-Jan-17	251	20-Apr-17	232
21-Jul-16	259	21-Oct-16	279	21-Jan-17	285	21-Apr-17	247
22-Jul-16	261	22-Oct-16	299	22-Jan-17	561	22-Apr-17	285
23-Jul-16	297	23-Oct-16	306	23-Jan-17	329	23-Apr-17	273
24-Jul-16	322	24-Oct-16	305	24-Jan-17	261	24-Apr-17	233
25-Jul-16	256	25-Oct-16	251	25-Jan-17	259	25-Apr-17	251
26-Jul-16	232	26-Oct-16	244	26-Jan-17	252	26-Apr-17	217
27-Jul-16	244	27-Oct-16	228	27-Jan-17	255	27-Apr-17	227
28-Jul-16	255	28-Oct-16	258	28-Jan-17	275	28-Apr-17	248
29-Jul-16	249	29-Oct-16	340	29-Jan-17	291	29-Apr-17	262
30-Jul-16	312	30-Oct-16	354	30-Jan-17	262	30-Apr-17	337
31-Jul-16	313	31-Oct-16	258	31-Jan-17	257	1-May-17	298
1-Aug-16	245	1-Nov-16	237	1-Feb-17	249	2-May-17	244
2-Aug-16	244	2-Nov-16	244	2-Feb-17	234	3-May-17	273
3-Aug-16	228	3-Nov-16	242	3-Feb-17	261	4-May-17	317
4-Aug-16	279	4-Nov-16	253	4-Feb-17	254	5-May-17	249
5-Aug-16	253	5-Nov-16	285	5-Feb-17	254	6-May-17	263
6-Aug-16	276	6-Nov-16	276	6-Feb-17	300	7-May-17	262
7-Aug-16	297	7-Nov-16	239	7-Feb-17	230	8-May-17	275
8-Aug-16	251	8-Nov-16	223	8-Feb-17	242	9-May-17	247
9-Aug-16	262	9-Nov-16	233	9-Feb-17	243	10-May-17	221
10-Aug-16	240	10-Nov-16	225	10-Feb-17	244	11-May-17	229
11-Aug-16	233	11-Nov-16	272	11-Feb-17	287	12-May-17	216
12-Aug-16	227	12-Nov-16	284	12-Feb-17	309	13-May-17	279
13-Aug-16	317	13-Nov-16	301	13-Feb-17	229	14-May-17	283
14-Aug-16	306	14-Nov-16	239	14-Feb-17	230	15-May-17	234
15-Aug-16	255	15-Nov-16	248	15-Feb-17	220	16-May-17	234
16-Aug-16	237	16-Nov-16	234	16-Feb-17	233	17-May-17	257
17-Aug-16	231	17-Nov-16	383	17-Feb-17	248	18-May-17	362
18-Aug-16	222	18-Nov-16	317	18-Feb-17	263	19-May-17	399
19-Aug-16	221	19-Nov-16	282	19-Feb-17	308	20-May-17	509

Date	Flow (m ³ /d)	Date	Flow (m ³ /d)	Date	Flow (m ³ /d)	Date	Flow (m ³ /d)
20-Aug-16	259	20-Nov-16	286	20-Feb-17	256	21-May-17	631
21-Aug-16	273	21-Nov-16	246	21-Feb-17	246	22-May-17	340
22-Aug-16	239	22-Nov-16	232	22-Feb-17	242	23-May-17	289
23-Aug-16	232	23-Nov-16	243	23-Feb-17	230	24-May-17	265
24-Aug-16	218	24-Nov-16	221	24-Feb-17	231	25-May-17	219
25-Aug-16	232	25-Nov-16	255	25-Feb-17	273	26-May-17	221
26-Aug-16	434	26-Nov-16	302	26-Feb-17	289	27-May-17	239
27-Aug-16	1319	27-Nov-16	297	27-Feb-17	235	28-May-17	243
28-Aug-16	459	28-Nov-16	249	28-Feb-17	226	29-May-17	228
29-Aug-16	309	29-Nov-16	236	1-Mar-17	235	30-May-17	252
30-Aug-16	265	30-Nov-16	221	2-Mar-17	219	31-May-17	237
31-Aug-16	250	1-Dec-16	235	3-Mar-17	234	1-Jun-17	231
1-Sep-16	252	2-Dec-16	234	4-Mar-17	270	2-Jun-17	236
2-Sep-16	237	3-Dec-16	293	5-Mar-17	278	3-Jun-17	267
3-Sep-16	302	4-Dec-16	284	6-Mar-17	245	4-Jun-17	503
4-Sep-16	280	5-Dec-16	264	7-Mar-17	224	5-Jun-17	526
5-Sep-16	254	6-Dec-16	245	8-Mar-17	236	6-Jun-17	466
6-Sep-16	248	7-Dec-16	247	9-Mar-17	228	7-Jun-17	321
7-Sep-16	289	8-Dec-16	240	10-Mar-17	238	8-Jun-17	278
8-Sep-16	382	9-Dec-16	247	11-Mar-17	276	9-Jun-17	260
9-Sep-16	346	10-Dec-16	286	12-Mar-17	418	10-Jun-17	279
10-Sep-16	329	11-Dec-16	327	13-Mar-17	439	11-Jun-17	289
11-Sep-16	324	12-Dec-16	331	14-Mar-17	412	12-Jun-17	242
12-Sep-16	262	13-Dec-16	279	15-Mar-17	263	13-Jun-17	247
13-Sep-16	249	14-Dec-16	258	16-Mar-17	242	14-Jun-17	230
14-Sep-16	252	15-Dec-16	251	17-Mar-17	242	15-Jun-17	243
15-Sep-16	240	16-Dec-16	248	18-Mar-17	249	16-Jun-17	245
16-Sep-16	229	17-Dec-16	280	19-Mar-17	279	17-Jun-17	289
17-Sep-16	289	18-Dec-16	312	20-Mar-17	235	18-Jun-17	285
18-Sep-16	288	19-Dec-16	266	21-Mar-17	222	19-Jun-17	236
19-Sep-16	253	20-Dec-16	254	22-Mar-17	237	20-Jun-17	239
20-Sep-16	276	21-Dec-16	269	23-Mar-17	230	21-Jun-17	233
21-Sep-16	276	22-Dec-16	246	24-Mar-17	229	22-Jun-17	229
22-Sep-16	276	23-Dec-16	271	25-Mar-17	254	23-Jun-17	281
23-Sep-16	250	24-Dec-16	320	26-Mar-17	278	24-Jun-17	351
24-Sep-16	272	25-Dec-16	309	27-Mar-17	272	25-Jun-17	314
25-Sep-16	286	26-Dec-16	321	28-Mar-17	237	26-Jun-17	335
26-Sep-16	252	27-Dec-16	344	29-Mar-17	236	27-Jun-17	265
27-Sep-16	268	28-Dec-16	314	30-Mar-17	223	28-Jun-17	253
28-Sep-16	277	29-Dec-16	285	31-Mar-17	235	29-Jun-17	264
29-Sep-16	293	30-Dec-16	300			30-Jun-17	243
30-Sep-16	267	31-Dec-16	300				

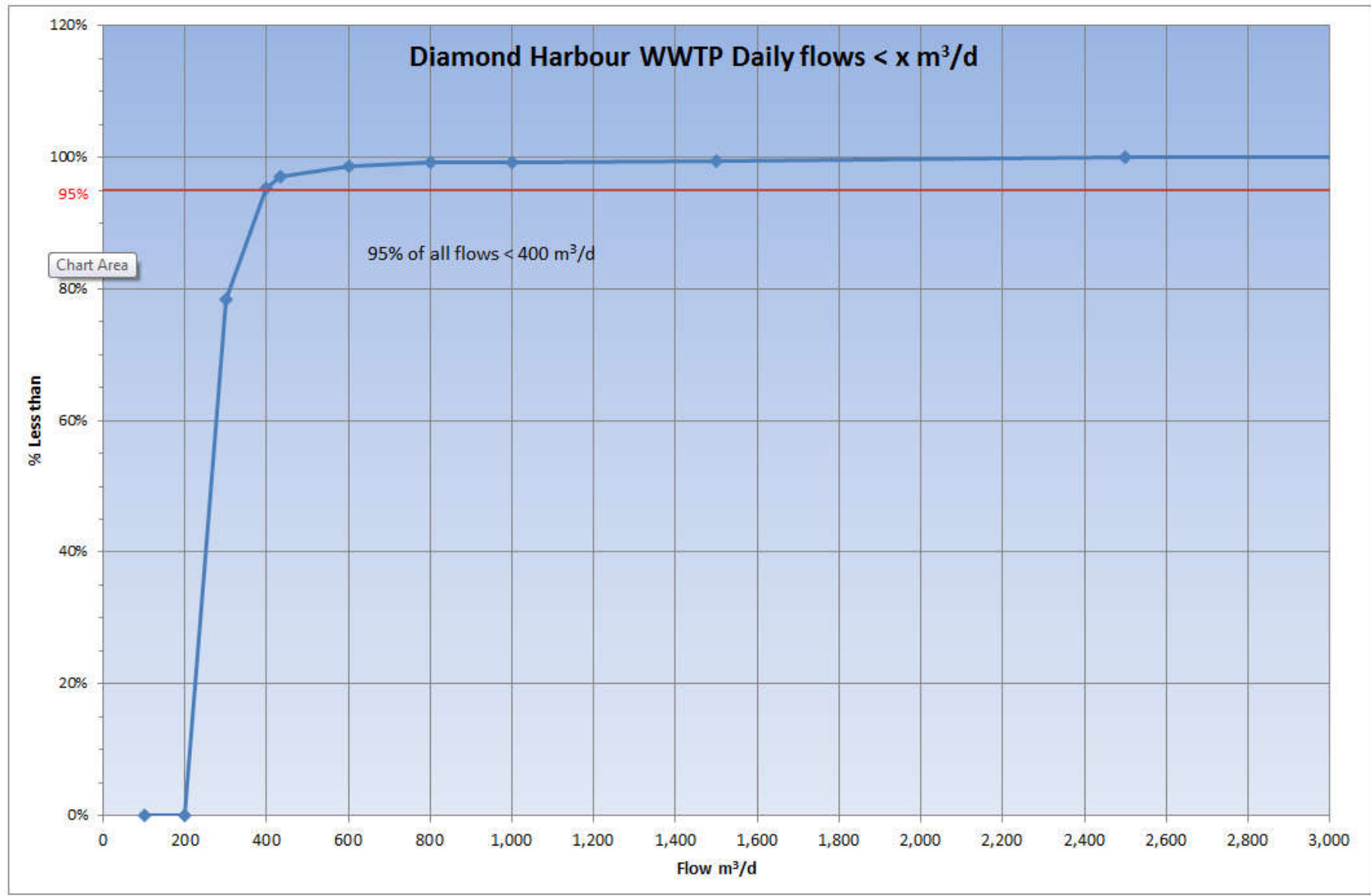
Attachment 1.2: Flows, Diamond Harbour, Chart



Attachment 1.3: Intantaneous Flows, Diamond Harbour



Attachment 1.3: Flows, Diamond Harbour, '% less than'



Attachment 2.1: Lab Data, Diamond Harbour Wastewater Treatment Plant

Plant:		Diamond Harbour Wastewater Treatment, Banks Peninsula											
Asset Owner:		Christchurch City Council											
Laboratory		Christchurch City Council Laboratory, City Water & Waste Unit											
									5-Sample Median				
Date	BOD ₅	DRP	TSS	TN	NH ₄ -N	NO _x	FC	ENT	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]	CFU/100ml	MPN/100ml	
20-Jul-16	5.8	0.9	20	4.9	1.2	0.74	10	10	2.8	20.0	10.0	10	
18-Aug-16	2.8	1.1	5	3.3	0.4	1.3	10	10	2.8	20.0	10.0	10	
26-Sep-16	5.7	1.5	17	4	1.5	0.33	10	10	2.8	17.0	10.0	10	
20-Oct-16	2.2	0.3	7	3.8	0.005	2.2	10	10	2.8	17.0	10.0	10	
9-Nov-16	2.9	3.4	11	6	3.2	0.98	10	10	2.9	11.0	10.0	10	
7-Dec-16	2.3		8				10	10	2.8	8.0	10.0	10	
13-Dec-16	1.4	0.94	17	3.5	0.6	2.9	10	10	2.3	11.0	10.0	10	
21-Dec-16	2.1		8				10	10	2.2	8.0	10.0	10	
28-Dec-16	3.1		11				10	10	2.3	11.0	10.0	10	
4-Jan-17	2.2		14				20	10	2.2	11.0	10.0	10	
11-Jan-17	3.2	2.3	3	7.8	0.6	6.4	10	10	2.2	11.0	10.0	10	
18-Jan-17	1.3		9				20	10	2.2	9.0	10.0	10	
25-Jan-17	4.4		17				10	10	3.1	11.0	10.0	10	
1-Feb-17	2.5		8				10	10	2.5	9.0	10.0	10	
8-Feb-17	1.8	3.3	4	9.1	0.7	7.5	10	10	2.5	8.0	10.0	10	
15-Feb-17	2.5		8				10	10	2.5	8.0	10.0	10	
22-Feb-17	1.6		8				100	10	2.5	8.0	10.0	10	
28-Feb-17	5.2	3.4	14	6	0.4	4.8	10	10	2.5	8.0	10.0	10	
26-Apr-17	2.4	1.3	5	11	0.005	9.7	10	10	2.4	8.0	10.0	10	
19-May-17	5.3	0.032	16	8.6	0.005	7.8	100	63	2.5	8.0	10.0	10	
12-Jun-17	3.1	0.055	7	8.5	1.3	6.8	10	10	3.1	8.0	10.0	10	
									Limit	30	30	700	1750
									Exceedances	0	0	0	0
									Max	3.1	20.0	10.0	10.0
	As	Cd	Cr	Cu	Pb	Ni	Zn						
	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]						
12 Jan 2016	<0.0015	<0.00020	<0.0010	0.0039	<0.0015	<0.0025	0.025						
18 Jan 2017	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.020						

Attachment 2.2: Lab Data, Receiving Environment

*See Governors Bay for Quail Control data.																								
Consent CRC101835																								
Date	OF - 50m due					Church Bay	OF - 50m due					Church Bay	OF - 50m due					Church Bay	OF - 50m due					Church Bay
	East	North	South	West	TN	East	North	South	West	NH3	East	North	South	West	NOX	East	North	South	West	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				
14-Sep-16	0.17	0.25	0.27	0.25	0.2	0.005	0.005	0.005	0.01	0.009	0.01	0.01	0.01	0.01	0.01	0.0067	0.0069	0.0097	0.009	0.0092				
9-Nov-16	0.15	0.12	0.12	0.12	0.12	0.005	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.005	0.004	0.004	0.004	0.01				
13-Dec-16	0.16	0.28	0.15	0.15	0.17	0.021	0.013	0.018	0.032	0.028	0.01	0.01	0.01	0.01	0.01	0.007	0.006	0.005	0.006	0.007				
11-Jan-17	0.22	0.2	0.18	0.16	0.19	0.009	0.005	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.01	0.01	0.008	0.008	0.009	0.009				
8-Feb-17	0.15	0.18	0.16	0.16	0.16	0.014	0.016	0.017	0.018	0.014	0.01	0.01	0.01	0.01	0.01	0.016	0.015	0.015	0.016	0.018				
1-Mar-17	0.14	0.15	0.18	0.21	0.16	0.006	0.005	0.006	0.012	0.008	0.01	0.01	0.024	0.032	0.01	0.012	0.011	0.022	0.027	0.012				
19-May-17	0.14	0.14	0.14	0.13	0.14	0.007	0.012	0.011	0.011	0.013	0.018	0.023	0.02	0.018	0.016	0.015	0.016	0.013	0.016	0.015				
20-Jun-17	0.18	0.17	0.17	0.16	0.15	0.01	0.011	0.012	0.005	0.012	0.022	0.023	0.022	0.024	0.018	0.015	0.015	0.015	0.015	0.014				
average	0.164	0.186	0.171	0.168	0.161	0.010	0.009	0.010	0.012	0.012	0.013	0.013	0.015	0.016	0.012	0.011	0.010	0.011	0.013	0.012				
maximum	0.220	0.280	0.270	0.250	0.200	0.021	0.016	0.018	0.032	0.028	0.022	0.023	0.024	0.032	0.018	0.016	0.016	0.022	0.027	0.018				
Date	OF - 50m due					Church Bay	OF - 50m due					Church Bay	OF - 50m due					Church Bay	OF - 50m due					Church Bay
	East	North	South	West	TSS	East	North	South	West	Chla	East	North	South	West	ENT	East	North	South	West	FC				
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100mL	MPN/100mL	MPN/100mL	MPN/100mL	MPN/100mL	CFU/100mL	CFU/100mL	CFU/100mL	CFU/100mL	CFU/100mL				
14-Sep-16	12	12	12	13	15	6.5	5.6	5.1	4.8	5.4	10	10	10	10	10	1.0	1.0	1.0	1.0	10.0				
9-Nov-16	13	13	14	10	13	1	1	1	1	1	10	10	10	10	20	1.0	1.0	1.0	1.0	1.0				
13-Dec-16	21	26	26	22	58	1	1	1	1	1	10	10	10	10	10	1.0	3.0	1.0	1.0	2.0				
11-Jan-17	27	20	17	40	27	4.1	4.3	4.5	4.3	4.1	10	10	10	10	10	1.0	1.0	1.0	1.0	1.0				
8-Feb-17	15	19	14	15	63	3.6	3.8	3.7	3.4	4.7	10	10	10	10	10	1.0	1.0	1.0	1.0	2.0				
1-Mar-17	12	13	13	17	19	2	2.2	2.1	2.2	2.3	10	10	10	10	10	1.0	1.0	1.0	2.0	1.0				
19-May-17	14	15	19	22	17	1.3	2	1.8	1.5	1.3	10	10	10	10	10	2.0	4.0	2.0	3.0	2.0				
20-Jun-17	10	10	12	9	13	3	2.6	3.4	2.5	1.7	10	10	10	10	10	1.0	1.0	1.0	1.0	2.0				
average	15.500	16.000	15.875	18.500	28.125	2.813	2.813	2.825	2.588	2.688	10.00	10.00	10.00	10.00	11.25	1.125	1.625	1.125	1.375	2.625				
maximum	27	26	26	40	63	6.5	5.6	5.1	4.8	5.4	10	10	10	10	20	2	4	2	3	10				
* TN should not be > 1																								
* NH3 should not be > 0.91																								