



Wainui

Wastewater Treatment Plant

Annual Monitoring Report

07/2011 – 06/2012

Prepared by: City Care Ltd
Julia Valigore

On behalf of

Christchurch City Council, City Water & Waste Unit

4 October 2012



Resource Consent Number: CRC093701

File Number: CO6C/10288

Client Name: Christchurch City Council, Water and Waste Unit

To: Discharge wastewater from wastewater treatment plant at or about map reference N36:0333-1011.

Consent Location: Green Road, WAINUI

Status: Current

28/09/2011 Consent Commenced

28/03/2013 Lapse Date if not Given Effect To

28/03/2013 Consent Expires

1	The discharge shall be only treated sewage effluent from up to 51 lots of the three-stage residential subdivision shown on attached Plan CRC093701A.
	Compliance
2	Prior to discharge, the domestic sewage effluent shall be treated in the Wainui Subdivision Sewage Treatment Plant as shown on attached Plan CRC093701B and Plan CRC093701C, and located on Lot 17 DP69197, as shown on Plan CRC093701A.
	Compliance
3	The discharge into Akaroa Harbour shall occur at or about map reference NZTM2000 BY25:9332-4851 (NZMS 260 N36:0333-1011) via the existing outfall pipe.
	Compliance
4	The total volume of treated sewage effluent discharged into Akaroa Harbour shall not exceed 30 cubic metres per day averaged over any seven-day consecutive period.
	Compliance (Attachment 1)
5	The consent holder shall measure the treated sewage effluent outflows from the Wainui Subdivision Sewage Treatment Plant on a continuous basis using a flow meter with an accuracy of at least 10% and shall maintain a record of total daily outflows (cubic metres per day). The consent holder shall submit the results of the outflow measurements to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by the 10th working day of the following month.
	Compliance
6	(a) A single grab sample of treated sewage effluent prior to discharge via the ocean outfall shall be collected by a suitably qualified and experienced person, in accordance with AS/NZS 5667.1:1998 (Water quality - Sampling - Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples) and analysed, using the most scientifically recognised and current method by a laboratory that is certified for that method, by a nationally recognised accreditation authority such as International Accreditation New Zealand, for the variables and at the corresponding frequencies set out in the following Sampling Schedule: At least once every two months, on separate days selected at random, from 1 March to 30 November; and at least fortnightly samples, on separate days selected at random, during December, January and February (i) Five-Day Biochemical Oxygen Demand, (BOD5) - reported as grams per cubic metre (ii) Total Suspended solids - reported as grams per cubic metre (iii) Faecal Coliforms - reported as number per 100 millilitres. (b) The time of the day and date that the sample is collected shall be recorded.
	Compliance (Attachment 2)
7	The median value of any consecutive three samples taken in accordance with Condition (6) and/or Condition (8) shall not exceed the following standards for each of the named contaminants: Contaminant Unit Standard BOD5 grams per cubic metre 30 Total Suspended Solids grams per cubic metre 30 Faecal Coliforms colony forming units (CFU) per 100 millilitres 1000
	Partial compliance (Attachment 2)
8	If any single sample measured has a faecal coliform value greater than 1,000 faecal coliforms per 100 millilitres of effluent, the consent holder shall: (a) Take a further sample of treated effluent within two days of obtaining that result and shall test for faecal coliform concentration in accordance with the requirements specified in Condition (6). (b) If the median value of three consecutive samples including the further sample taken in accordance with Condition (8)(a), has a faecal coliform count greater than 1,000 faecal coliforms per 100 millilitres of effluent, the consent holder shall within three working days of receipt of the sampling result obtained in accordance with Condition (8)(a), inform the Canterbury

	Regional Council, Attention: RMA Compliance and Enforcement Manager, stating the reason(s) for the exceedence and what has/is been done to reduce faecal coliform concentrations.
	Compliance, all FEC results <1,000 cfu/100 mL
9	The consent holder shall submit to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, the results of any monitoring required each month under Conditions (6), (7) and (8) of this consent, by the 10th working day of the following month.
	Compliance
10	The consent holder shall submit a report to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, in October of each year summarising the monitoring data collected and providing an interpretation of the results of monitoring, for the year period ending 30th June of the same year.
	Compliance
11	The diffuser section of the outfall pipe shall be positioned and maintained at all times at not less than the 10 metres bathymetric contour line.
	Compliance
12	The consent holder shall inspect the outfall pipeline and anchor structures at 12 monthly intervals and shall provide a certificate, signed by a person who is a Chartered Professional Engineer or by a person who has demonstrated that they have the appropriate level of expertise, to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of completion of the inspection, confirming the structural integrity of the outfall pipeline, anchor structures and diffuser are maintained.
	Compliance (Attachment 3)
13	The consent holder shall submit a Management Plan, to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within one month of the commencement of this consent. The Management Plan shall include: (a) An Operations and Maintenance Manual, which contains the key operation and maintenance tasks of the operator, normal operations, emergency operations and safety precautions. (b) The Management Practices to ensure compliance with all conditions of this consent. (c) The monitoring programme and reporting provisions, including a specific requirement that monitoring is undertaken in accordance with conditions (4) to (12) (inclusive) of this consent.
	Compliance
14	The Canterbury Regional Council may, once per year, on any of the last five working days of August or February, 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 (d) Amending the frequency of monitoring and the variables monitored, and the reporting required.
	ECAN to request
15	This consent shall expire 18 months after its commencement.
	CCC to arrange new consent

Treatment Plant Effluent Monitoring

Daily flows from the Wainui Wastewater Treatment Plant (WWTP) into Akaroa Harbour were less than 11 m³/d for 95% of flows (Attachment 1). The consented 7-day average flow of 30 m³/d was never exceeded (21 m³/d maximum 7-day average).

Plant performance relating to organic parameters like BOD₅ and TSS was generally good except as noted below:

- Elevated TSS of 71 mg/L on 28/12/2012 was caused by the pump tripping out on 26/12/2012 resulting in overflow onto the spare filter bed (which probably pushed old biomass through the system).
- Elevated TSS of 250 mg/L and BOD of 110 mg/L on 11/01/2012 were caused by UV lamp breakage prior to sampling. Solids including glass and any accumulated debris from the sleeve were suspended. Although the system was flushed, some of the solids still remained in the treated water.
- The cause of slightly elevated TSS of 39 mg/L on 08/02/2012 is unknown.

These events caused the 3-sample TSS median to be exceeded on three occasions (Attachment 2) resulting in partial compliance for Condition 7. This issue was discussed informally with ECAN in a meeting on 13/03/2012. Otherwise, the WWTP has coped with the stricter BOD and TSS limits of 30 mg/L for the current consent compared to 50 mg/L for the previous consent.

The UV system was operated very reliably except for the lamp damage issue noted above which was immediately replaced. Faecal coliforms (FEC), which had been exceeded historically (2009-2010) due to UV system problems, have not been an issue since the UV system was fully dismantled, cleaned, and rebuilt in January 2011. Ongoing maintenance ensured that the UV system worked correctly and that any problems were identified quickly. The maximum 3-sample FEC median was 73 cfu/100 mL, which is well below the limit of 1,000 cfu/100 mL.

Table 1. Summary of Exceedances from July 2011-June 2012.

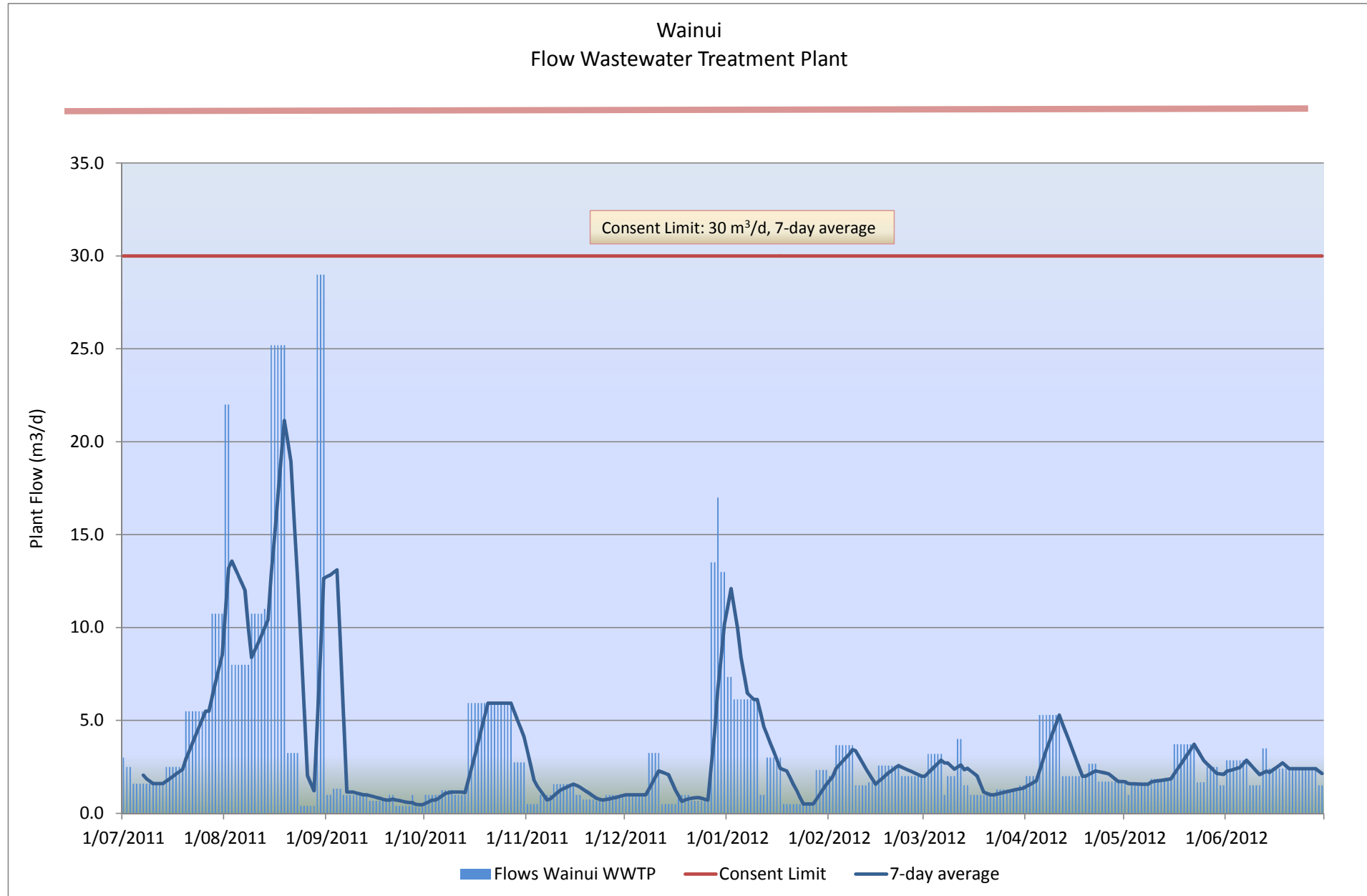
Parameter	Single Samples Exceeding Median Limit	Median Limit Exceedances	Condition Non-Compliances
Flow	0	0	0
BOD ₅	1	0	1
TSS	3	3	
FEC	0	0	
Total	4	3	1

Attachment 1.1: Flows, Wainui, Data

Plant:		Wainui Wastewater Treatment, Banks Peninsula					
Asset Owner:		Christchurch City Council					
Laboratory		Christchurch City Council Laboratory, City Water & Waste Unit					
Consent Limit		30 m ³ /d					
Date	Flow [m ³ /d]	Date	Flow [m ³ /d]	Date	Flow [m ³ /d]	Date	Flow [m ³ /d]
1/07/2011	3.0	1/10/2011	1.0	1/01/2012	7.3	1/04/2012	2.0
2/07/2011	2.5	2/10/2011	1.0	2/01/2012	7.3	2/04/2012	2.0
3/07/2011	2.5	3/10/2011	1.0	3/01/2012	6.1	3/04/2012	2.0
4/07/2011	1.6	4/10/2011	1.0	4/01/2012	6.1	4/04/2012	2.0
5/07/2011	1.6	5/10/2011	1.0	5/01/2012	6.1	5/04/2012	5.3
6/07/2011	1.6	6/10/2011	1.3	6/01/2012	6.1	6/04/2012	5.3
7/07/2011	1.6	7/10/2011	1.3	7/01/2012	6.1	7/04/2012	5.3
8/07/2011	1.6	8/10/2011	1.3	8/01/2012	6.1	8/04/2012	5.3
9/07/2011	1.6	9/10/2011	1.3	9/01/2012	6.1	9/04/2012	5.3
10/07/2011	1.6	10/10/2011	1.0	10/01/2012	6.1	10/04/2012	5.3
11/07/2011	1.6	11/10/2011	1.0	11/01/2012	1.0	11/04/2012	5.3
12/07/2011	1.6	12/10/2011	1.0	12/01/2012	1.0	12/04/2012	2.0
13/07/2011	1.6	13/10/2011	1.0	13/01/2012	3.0	13/04/2012	2.0
14/07/2011	2.5	14/10/2011	5.9	14/01/2012	3.0	14/04/2012	2.0
15/07/2011	2.5	15/10/2011	5.9	15/01/2012	3.0	15/04/2012	2.0
16/07/2011	2.5	16/10/2011	5.9	16/01/2012	3.0	16/04/2012	2.0
17/07/2011	2.5	17/10/2011	5.9	17/01/2012	3.0	17/04/2012	2.0
18/07/2011	2.5	18/10/2011	5.9	18/01/2012	0.5	18/04/2012	2.0
19/07/2011	2.5	19/10/2011	5.9	19/01/2012	0.5	19/04/2012	2.0
20/07/2011	5.5	20/10/2011	5.9	20/01/2012	0.5	20/04/2012	2.7
21/07/2011	5.5	21/10/2011	5.9	21/01/2012	0.5	21/04/2012	2.7
22/07/2011	5.5	22/10/2011	5.9	22/01/2012	0.5	22/04/2012	2.7
23/07/2011	5.5	23/10/2011	5.9	23/01/2012	0.5	23/04/2012	1.7
24/07/2011	5.5	24/10/2011	5.9	24/01/2012	0.5	24/04/2012	1.7
25/07/2011	5.5	25/10/2011	5.9	25/01/2012	0.5	25/04/2012	1.7
26/07/2011	5.5	26/10/2011	5.9	26/01/2012	0.5	26/04/2012	1.7
27/07/2011	5.5	27/10/2011	5.9	27/01/2012	0.5	27/04/2012	1.7
28/07/2011	10.8	28/10/2011	2.8	28/01/2012	2.3	28/04/2012	1.7
29/07/2011	10.8	29/10/2011	2.8	29/01/2012	2.3	29/04/2012	1.7
30/07/2011	10.8	30/10/2011	2.8	30/01/2012	2.3	30/04/2012	1.7
31/07/2011	10.8	31/10/2011	2.8	31/01/2012	2.3	1/05/2012	1.7
1/08/2011	22.0	1/11/2011	0.5	1/02/2012	2.0	2/05/2012	1.0
2/08/2011	22.0	2/11/2011	0.5	2/02/2012	2.0	3/05/2012	1.7
3/08/2011	8.0	3/11/2011	0.5	3/02/2012	3.7	4/05/2012	1.7
4/08/2011	8.0	4/11/2011	0.5	4/02/2012	3.7	5/05/2012	1.7
5/08/2011	8.0	5/11/2011	1.0	5/02/2012	3.7	6/05/2012	1.7
6/08/2011	8.0	6/11/2011	1.0	6/02/2012	3.7	7/05/2012	1.7
7/08/2011	8.0	7/11/2011	1.0	7/02/2012	3.7	8/05/2012	1.7
8/08/2011	8.0	8/11/2011	1.0	8/02/2012	3.7	9/05/2012	1.9
9/08/2011	10.8	9/11/2011	1.6	9/02/2012	1.5	10/05/2012	1.9
10/08/2011	10.8	10/11/2011	1.6	10/02/2012	1.5	11/05/2012	1.9
11/08/2011	10.8	11/11/2011	1.6	11/02/2012	1.5	12/05/2012	1.9
12/08/2011	10.8	12/11/2011	1.6	12/02/2012	1.5	13/05/2012	1.9
13/08/2011	11.0	13/11/2011	1.6	13/02/2012	1.7	14/05/2012	1.9
14/08/2011	11.0	14/11/2011	1.6	14/02/2012	1.7	15/05/2012	1.9
15/08/2011	25.2	15/11/2011	1.6	15/02/2012	1.7	16/05/2012	3.7
16/08/2011	25.2	16/11/2011	1.0	16/02/2012	2.6	17/05/2012	3.7
17/08/2011	25.2	17/11/2011	1.0	17/02/2012	2.6	18/05/2012	3.7
18/08/2011	25.2	18/11/2011	0.8	18/02/2012	2.6	19/05/2012	3.7

19/08/2011	25.2	19/11/2011	0.8	19/02/2012	2.6	20/05/2012	3.7
20/08/2011	3.3	20/11/2011	0.8	20/02/2012	2.6	21/05/2012	3.7
21/08/2011	3.3	21/11/2011	0.8	21/02/2012	2.6	22/05/2012	3.7
22/08/2011	3.3	22/11/2011	0.7	22/02/2012	2.6	23/05/2012	1.7
23/08/2011	3.3	23/11/2011	0.7	23/02/2012	2.0	24/05/2012	1.7
24/08/2011	0.4	24/11/2011	0.7	24/02/2012	2.0	25/05/2012	1.7
25/08/2011	0.4	25/11/2011	1.0	25/02/2012	2.0	26/05/2012	2.5
26/08/2011	0.4	26/11/2011	1.0	26/02/2012	2.0	27/05/2012	2.5
27/08/2011	0.4	27/11/2011	1.0	27/02/2012	2.0	28/05/2012	2.5
28/08/2011	0.4	28/11/2011	1.0	28/02/2012	2.0	29/05/2012	2.5
29/08/2011	29.0	29/11/2011	1.0	29/02/2012	2.0	30/05/2012	1.5
30/08/2011	29.0	30/11/2011	1.0	1/03/2012	2.0	31/05/2012	1.5
31/08/2011	29.0	1/12/2011	1.0	2/03/2012	3.2	1/06/2012	2.9
1/09/2011	1.0	2/12/2011	1.0	3/03/2012	3.2	2/06/2012	2.9
2/09/2011	1.0	3/12/2011	1.0	4/03/2012	3.2	3/06/2012	2.9
3/09/2011	1.3	4/12/2011	1.0	5/03/2012	3.2	4/06/2012	2.9
4/09/2011	1.3	5/12/2011	1.0	6/03/2012	3.2	5/06/2012	2.9
5/09/2011	1.3	6/12/2011	1.0	7/03/2012	1.0	6/06/2012	2.9
6/09/2011	1.0	7/12/2011	1.0	8/03/2012	2.0	7/06/2012	2.9
7/09/2011	1.0	8/12/2011	3.3	9/03/2012	2.0	8/06/2012	1.5
8/09/2011	1.0	9/12/2011	3.3	10/03/2012	2.0	9/06/2012	1.5
9/09/2011	1.0	10/12/2011	3.3	11/03/2012	4.0	10/06/2012	1.5
10/09/2011	1.0	11/12/2011	3.3	12/03/2012	4.0	11/06/2012	1.5
11/09/2011	1.0	12/12/2011	0.5	13/03/2012	1.5	12/06/2012	3.5
12/09/2011	1.0	13/12/2011	0.5	14/03/2012	1.5	13/06/2012	3.5
13/09/2011	1.0	14/12/2011	0.5	15/03/2012	1.0	14/06/2012	2.4
14/09/2011	0.7	15/12/2011	0.5	16/03/2012	1.0	15/06/2012	2.4
15/09/2011	0.7	16/12/2011	0.5	17/03/2012	1.0	16/06/2012	2.4
16/09/2011	0.7	17/12/2011	1.0	18/03/2012	1.0	17/06/2012	2.4
17/09/2011	0.7	18/12/2011	1.0	19/03/2012	1.0	18/06/2012	2.4
18/09/2011	0.7	19/12/2011	1.0	20/03/2012	1.0	19/06/2012	2.4
19/09/2011	0.7	20/12/2011	1.0	21/03/2012	1.0	20/06/2012	2.4
20/09/2011	1.0	21/12/2011	0.7	22/03/2012	1.0	21/06/2012	2.4
21/09/2011	1.0	22/12/2011	0.7	23/03/2012	1.3	22/06/2012	2.4
22/09/2011	0.4	23/12/2011	0.7	24/03/2012	1.3	23/06/2012	2.4
23/09/2011	0.4	24/12/2011	0.7	25/03/2012	1.3	24/06/2012	2.4
24/09/2011	0.4	25/12/2011	0.7	26/03/2012	1.3	25/06/2012	2.4
25/09/2011	0.4	26/12/2011	0.7	27/03/2012	1.3	26/06/2012	2.4
26/09/2011	0.4	27/12/2011	13.5	28/03/2012	1.3	27/06/2012	2.4
27/09/2011	1.0	28/12/2011	13.5	29/03/2012	1.3	28/06/2012	2.4
28/09/2011	0.3	29/12/2011	17.0	30/03/2012	1.5	29/06/2012	1.5
29/09/2011	0.3	30/12/2011	13.0	31/03/2012	1.5	30/06/2012	1.5
30/09/2011	0.3	31/12/2011	13.0				

Attachment 1.2: Flows, Wainui, Chart



Attachment 2: Lab Data, Wainui

Date	Lab analysis			3-Sample Median		
	BOD5 [mg/l]	TSS [mg/l]	FEC [cfu/100 ml]	BOD5 [mg/l]	TSS [mg/l]	FEC [CFU/100 ml]
4/07/2011	5.3	1.5	5.0	-	-	-
5/09/2011	6.0	9.0	5.0	-	-	-
2/11/2011	1.5	8.0	20	5.3	8.0	5
1/12/2011	1.5	1.5	18	1.5	8.0	18
14/12/2011	1.5	2.5	9	1.5	2.5	18
28/12/2011	13	71	38	1.5	2.5	18
11/01/2012	110	250	140	13.0	71.0	38
25/01/2012	4.2	23	73	13.0	71.0	73
8/02/2012	3.0	39	64	4.2	39.0	73
22/02/2012	1.5	10.0	9	3.0	23.0	64
1/03/2012	1.5	8.0	4.5	1.5	10.0	9
2/05/2012	1.5	3.0	5.0	1.5	8.0	5
	Compliance Criteria :			30.0	30.0	1,000
Removed '<' for calculations and halved the value.						

Attachment 3: Maintenance Report Outfall



Maintenance Management Services Ltd
Trading as MMS Ltd
Workshop: 183 Dyers Rd, Bromley, Christchurch
Admin: 6 Harbour View Tce, Cass Bay, Lyttelton 8082
P: 3287718 F: 3287401 M: 0274 332284
E: mmsltd@xtra.co.nz

DIVING INSPECTION REPORT

CUSTOMER: **ORDER NUMBER: 647925**

Attn Julia Valigore
Treatment Manager
City Care Ltd
P.O. Box 7669

Christchurch

INSPECTION DATE: 20 January 2012

JOB: Marine outfall inspections for Wainui.

Terms of reference

We were requested to carry out an inspection dive of the above listed marine outfalls and provide a written report on the condition of each one with the following information: Location, Description, General Condition, Maintenance Performed, Items requiring Attention: Urgent, Non Urgent.

Location:	Wainui
Description:	Approximately 1Km long twin 50mm PVC pipes running along seabed with small concrete anchor blocks. 50% of the pipeline is buried up to 300mm and the rest is on or above the seabed. Diffuser consists of four hockey stick shaped steel pipes rising perpendicular approximately 1.5M out of a concrete base.
General Condition:	NO CHANGE. Good. There is no evidence of any pipe fracture or discontinuity.
Maintenance Performed:	Removed approximately 11m of mussels from chain & fitted anode.
Requiring Attention:	

If there are any queries regarding this report please contact me.

Regards,

Brent McKay
Manager



Wainui

Wastewater Treatment Plant

Annual Monitoring Report

06/2013 – 05/2014

Prepared by: City Care Ltd
Julia Valigore

On behalf of

Christchurch City Council, City Water & Waste Unit

3 July 2014

Resource Consent Number: CRC091580

File Number: CO6C/28303

Client Name: Christchurch City Council, Water and Waste Unit

To: Discharge treated domestic wastewater onto land from the Wainui Wastewater Treatment Plant

Consent Location: Road Reserve, WAINUI

Status: Current

21/09/2011 Consent Commenced

02/05/2013 Given Effect To

21/09/2021 Lapse Date

21/09/2046 Consent Expires

1	The discharge shall be only treated domestic wastewater from Wainui.
	Compliance
2	Wastewater shall be discharged only onto land within the irrigation areas marked as IA1, IA2, IA3 and IA4, within Pt Lot DP 7501 as shown on the attached Plan CRC091580, centred on map reference NZMS 260 N36:0184-1125.
	Compliance; only IA2 (10,000 m³) utilised during reporting period
3	The volume of wastewater discharged shall not exceed 125 cubic metres per day as an annual average. The volume of wastewater discharged shall not exceed 214 cubic metres per day as a weekly average. The volume of wastewater discharged shall not exceed 250 cubic metres per day at any time.
	Compliance; maximum flow was 26.4 m³/d
4	The consent holder shall measure and record the daily discharge flow from the wastewater treatment system to the irrigation areas in cubic metres using a flow meter that shall record flows to an accuracy of plus or minus 10 percent.
	Compliance
5	Prior to discharge, the wastewater shall be treated via the following treatment system: a. Screening of inflow; and then b. Biological secondary treatment; and then c. Disinfection by ultra violet light or another method that provides an equivalent level of treatment.
	Compliance
6	Prior to commissioning the wastewater treatment plant, the consent holder shall submit to Environment Canterbury, Attention: RMA Compliance and Enforcement Manager, details of the inlet screening system, the biological treatment method, the disinfection method, and the location of sampling points.
	Compliance
7	After exiting the wastewater treatment system, the wastewater shall be discharged via a land application system as follows: a. The land application system shall comprise drip irrigation tubing. The length of tubing installed shall be sufficient to ensure compliance with the hydraulic application rates specified in Condition 8. b. Lines of drip irrigation tubing shall be spaced at intervals not more than one metre apart. c. The drippers on the drip irrigation tubing shall be spaced at intervals not more than one metre apart. d. The wastewater shall be evenly dosed in fixed quantities over the land application system. e. The drip irrigation tubing shall be located on the ground surface or buried up to 150 millimetres below the ground surface.
	Compliance as per design
8	The wastewater shall be discharged at an annual average hydraulic application rate not exceeding 3.3 millimetres per day. The maximum weekly average hydraulic application rate shall be 7.2 millimetres per day. The maximum daily hydraulic application rate shall be 12 millimetres per day.
	Compliance; maximum application rate was 2.6 mm/d
9	a. The land treatment areas shall be vegetated with trees and/or native vegetation. b. At least 75 percent of the area receiving wastewater shall be vegetated with trees and or native vegetation that are at least five years old or otherwise sufficient to avoid erosion and wastewater runoff.

	c. All trees shall be maintained in a healthy state until they reach an age where harvesting is appropriate.
	Compliance
10	The wastewater shall not be discharged onto land closer than 20 metres from any surface water body, including ephemeral waterways, and shall not be discharged onto land closer than 10 metres from the irrigation area property boundary.
	Compliance as per design
11	Wastewater shall be sampled in accordance with standard AS/NZS 5667.1.1998 after treatment and prior to discharge onto land at least once every month. The sampling frequency may be reduced to at least once every three months provided: <ul style="list-style-type: none"> a. At least ten years have elapsed since commissioning of the wastewater treatment system; and b. None of the contaminant triggers values specified in condition (14) have been exceeded during the previous ten years.
	Compliance
12	Samples of treated wastewater taken in compliance with condition (11) shall be analysed for the following contaminants: <ul style="list-style-type: none"> a. total suspended solids b. five day biochemical oxygen demand c. total nitrogen d. faecal coliforms.
	Compliance (Attachment 2)
13	Detailed records shall be kept of the specific irrigation areas used for wastewater irrigation.
	Compliance; only IA2 (10,000 m²) utilised during reporting period as per design
14	The median concentration of contaminants shall be compared to the following trigger values: <ul style="list-style-type: none"> a. total suspended solids 20 grams per cubic metre b. faecal coliforms 10,000 colony forming units/100 millilitres. For the purposes of this condition, the median shall be calculated from the results of any five consecutive treated wastewater samples analysed.
	Compliance (Attachment 2)
15	The consent holder shall notify the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within 20 working days of the identification of any exceedence of any trigger value specified in Condition (14). The notification shall detail what measures the consent holder has implemented or will implement to mitigate any adverse environmental effects and to prevent a reoccurrence of a trigger value exceedence. Such measures may include: <ul style="list-style-type: none"> a. Additional sampling and analysis of the treated wastewater. b. Investigation of whether the exceedence has adversely affected soil quality or water quality in waterways adjacent to the irrigation areas. c. Further treatment of the wastewater discharge. <ul style="list-style-type: none"> i. The consent holder shall use their best endeavours to ensure that the trigger values specified in Condition (14) are not exceeded.
	Compliance; ECAN notified of TSS median exceedences and action
16	The discharge shall not result in any wastewater flowing off the irrigation areas IA1, IA2, IA3 and IA4 shown on Plan CRC091580.
	Compliance as per design (eg irrigation inhibited based on rainfall)
17	Wastewater shall not be discharged onto land with an average slope greater than 20 degrees.
	Compliance as per design
18	All samples required to be taken under this consent shall be: <ul style="list-style-type: none"> a. Taken by a suitably qualified person. b. Stored and transferred in accordance with AS/NZS 5667.1:1998 (Water quality - Sampling - Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples), and details of all that methodology shall be maintained and made available on request by the Canterbury Regional Council. c. Analysed using generally accepted methods and analysed by a laboratory that is accredited for each method of analysis by International Accreditation New Zealand or an equivalent accreditation body.
	Compliance
19	The discharge onto land shall not exceed a rate of 200 kilograms of nitrogen per hectare per year.
	Compliance; TN load estimated at 43.5 kg/ha
20	Fencing shall be established and maintained around the wastewater treatment system and irrigation areas to prevent livestock access and to deter public entry.
	Compliance

21	The consent holder shall erect warning notices at the entrance gates to the wastewater treatment plant and irrigation areas. The notices shall be readable at a distance of five metres and shall state "Treated wastewater is irrigated onto land in this area. Public access is prohibited. For contact details, phone Christchurch City Council on 03-941-8999".
	Compliance
22	The wastewater treatment and land application systems shall be operated by trained and competent staff.
	Compliance
23	<p>a. Within one month of commissioning of the wastewater treatment and land irrigation systems, a Wastewater Management Plan that includes the detailed inspection, maintenance and contingency programmes to be undertaken to ensure compliance with conditions of this consent including conditions (3), (7d), (8), (9), (14), (16) and (19), shall be prepared and provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager.</p> <p>b. The consent holder may, at any time, submit to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, an amended Wastewater Management Plan provided it is for the purpose of avoiding or mitigating an adverse environmental effect, or maintaining or improving the overall effectiveness of the original Wastewater Management Plan.</p> <p>c. This consent shall be exercised in accordance with the current version of the Wastewater Management Plan.</p>
	Compliance per Wainui Wastewater Scheme Management Plan (Spiire 2013)
24	The consent holder shall keep written records of all inspections, maintenance and upgrades of the wastewater treatment and land application systems. For upgrades and non-routine maintenance the records shall include the reason for the work, a description of the work, the expected outcome of the work and the date the work was completed. The consent holder shall forward a copy of the records to the Canterbury Regional Council upon request.
	Compliance (Attachment 3)
25	<p>An annual report on the performance of the wastewater treatment and land application systems shall be submitted to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August each year. The report shall include as a minimum:</p> <ol style="list-style-type: none"> Daily discharge flow records. Wastewater sampling results. Median and 90 percentile wastewater quality concentrations. Records of the irrigation areas used. Daily wastewater application rates. Estimated annual areal nitrogen load applied to each of the irrigation areas. This shall be estimated using flow records and sample results. Summary details of inspections, maintenance and upgrades of the wastewater treatment and land application systems since the previous annual report.
	Compliance via this report; CCC to distribute
26	<p>The Canterbury Regional Council may, on any of the last five working days of May or November each year, serve notice of its intention to review the conditions of this consent for the purposes of:</p> <ol style="list-style-type: none"> dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; or requiring the consent holder to conduct monitoring instead of, or in addition to, that required by the consent.
	ECAN to request
27	The lapsing date for the purposes of section 125 of the Resource Management Act shall be 10 years after the date of resource consent commencement.
	Compliance
28	This consent shall expire 35 years after the date of resource consent commencement.
	Compliance

Monitoring Summary

This annual report covers the period from June 1, 2013 through May 31, 2014 based on the conditions of CRC091580.

Irrigation Field Flow Monitoring

Flows to the Wainui Wastewater Treatment Plant (WWTP) Irrigation Field were less than 12 m³/d for 95% of flows (Attachment 1). The maximum daily flow was 26.4 m³/d, which was well below the consented 250, 214, and 125 m³/d limits for daily, weekly average, and annual average periods. Based on the 10,000 m² irrigation area for IA2, the maximum application rate was 2.6 mm/d. Thus, the flows were also compliant with the corresponding rates of 12, 7.2, and 3.3 mm/d based on daily, weekly average, and annual average periods, respectively.

Plant performance relating to BOD₅, TSS, TN, and faecal coliforms (FEC) was generally good. However, there were three elevated samples for TSS resulting in three median trigger level exceedances. These elevated levels were attributed to poor design of the sump in the treatment building. Basically, the sump is located at ground level, so contaminants from the surface (e.g., sediment, pebbles, etc) can be swept/washed into it. To resolve the issue, sediment was removed from the bottom of the sump in December 2013 and a container was installed in the sump in February 2014 that could more easily be taken out as required for periodic sediment removal.

The annual TN load was calculated as 43.5 kg TN/ha based on the annual average of TN (25.4 mg/L), the total annual flow (1,710 m³), and the irrigation area available (IA2 = 10,000 m²). This nutrient load was well below the annual maximum of 200 kg TN/ha.

Table 1. Summary of Exceedances from June 2013-May 2014.

Parameter	Single Samples Above Limit	Trigger Limit Exceedances	Condition Non-Compliances
Flow	0	0	0
Application Rate	0	0	0
BOD ₅	0	0	0
TSS	3	3	0
FEC	0	0	
Annual TN Load	0	0	0
Total	3	0	0

WWTP and Irrigation Field O&M

No non-routine maintenance was conducted during this reporting period. Routine O&M tasks are summarised in Attachment 3. These rounds include equipment checks and O&M on a regular basis to ensure that the WWTP and irrigation field are operating as designed and any problems are identified quickly.

Attachment 1.1: Irrigation Field Flows, Wainui, Data

Plant:	Wainui WWTP Irrigation Field, Banks Peninsula
Asset Owner:	Christchurch City Council
Laboratory:	Christchurch City Council Laboratory, City Water & Waste Unit

**Consent limits - 125m³/d annual average; 214m³/d weekly average; 250m³/d daily
 Consent limits - 3.3mm/d annual average; 7.2mm³/d weekly average; 12mm/d daily**

Date	Flow [m ³ /d]	Rate (mm/d)	Date	Flow [m ³ /d]	Rate (mm/d)	Date	Flow [m ³ /d]	Rate (mm/d)	Date	Flow [m ³ /d]	Rate (mm/d)
01/06/13	3.0	0.3	01/09/13	2.6	0.3	01/12/13	2.7	0.3	01/03/14	0.7	0.1
02/06/13	3.0	0.3	02/09/13	2.6	0.3	02/12/13	2.7	0.3	02/03/14	0.7	0.1
03/06/13	3.0	0.3	03/09/13	2.6	0.3	03/12/13	2.2	0.2	03/03/14	12.0	1.2
04/06/13	3.0	0.3	04/09/13	6.7	0.7	04/12/13	2.2	0.2	04/03/14	6.3	0.6
05/06/13	3.0	0.3	05/09/13	6.7	0.7	05/12/13	2.2	0.2	05/03/14	6.3	0.6
06/06/13	3.0	0.3	06/09/13	2.7	0.3	06/12/13	2.7	0.3	06/03/14	6.3	0.6
07/06/13	3.1	0.3	07/09/13	2.7	0.3	07/12/13	2.7	0.3	07/03/14	4.0	0.4
08/06/13	3.1	0.3	08/09/13	2.7	0.3	08/12/13	2.7	0.3	08/03/14	4.0	0.4
09/06/13	3.1	0.3	09/09/13	2.7	0.3	09/12/13	2.7	0.3	09/03/14	4.0	0.4
10/06/13	3.1	0.3	10/09/13	2.7	0.3	10/12/13	2.7	0.3	10/03/14	4.0	0.4
11/06/13	3.1	0.3	11/09/13	2.7	0.3	11/12/13	2.2	0.2	11/03/14	4.0	0.4
12/06/13	3.1	0.3	12/09/13	2.7	0.3	12/12/13	2.2	0.2	12/03/14	8.3	0.8
13/06/13	3.0	0.3	13/09/13	2.7	0.3	13/12/13	2.2	0.2	13/03/14	0.8	0.1
14/06/13	3.0	0.3	14/09/13	2.7	0.3	14/12/13	3.3	0.3	14/03/14	5.5	0.6
15/06/13	3.0	0.3	15/09/13	2.7	0.3	15/12/13	3.3	0.3	15/03/14	5.5	0.6
16/06/13	3.0	0.3	16/09/13	1.7	0.2	16/12/13	3.3	0.3	16/03/14	5.5	0.6
17/06/13	3.0	0.3	17/09/13	1.7	0.2	17/12/13	3.3	0.3	17/03/14	5.5	0.6
18/06/13	3.0	0.3	18/09/13	1.7	0.2	18/12/13	3.3	0.3	18/03/14	5.5	0.6
19/06/13	3.0	0.3	19/09/13	1.7	0.2	19/12/13	3.2	0.3	19/03/14	5.5	0.6
20/06/13	3.0	0.3	20/09/13	0.3	0.0	20/12/13	3.2	0.3	20/03/14	5.5	0.6
21/06/13	3.0	0.3	21/09/13	4.4	0.4	21/12/13	1.6	0.2	21/03/14	3.7	0.4
22/06/13	3.0	0.3	22/09/13	4.4	0.4	22/12/13	1.6	0.2	22/03/14	3.7	0.4
23/06/13	3.0	0.3	23/09/13	4.4	0.4	23/12/13	1.6	0.2	23/03/14	3.7	0.4
24/06/13	3.0	0.3	24/09/13	1.7	0.2	24/12/13	1.6	0.2	24/03/14	3.7	0.4
25/06/13	3.0	0.3	25/09/13	1.7	0.2	25/12/13	1.1	0.1	25/03/14	3.7	0.4
26/06/13	3.0	0.3	26/09/13	1.7	0.2	26/12/13	1.1	0.1	26/03/14	3.7	0.4
27/06/13	3.0	0.3	27/09/13	1.7	0.2	27/12/13	11.7	1.2	27/03/14	4.6	0.5
28/06/13	3.0	0.3	28/09/13	4.4	0.4	28/12/13	11.7	1.2	28/03/14	4.6	0.5
29/06/13	3.0	0.3	29/09/13	4.4	0.4	29/12/13	11.7	1.2	29/03/14	4.6	0.5
30/06/13	3.0	0.3	30/09/13	4.4	0.4	30/12/13	11.7	1.2	30/03/14	4.6	0.5
01/07/13	11.5	1.1	01/10/13	0.0	0.0	31/12/13	11.7	1.2	31/03/14	4.6	0.5
02/07/13	11.5	1.1	02/10/13	5.1	0.5	01/01/14	15.3	1.5	01/04/14	3.3	0.3
03/07/13	11.5	1.1	03/10/13	5.1	0.5	02/01/14	15.3	1.5	02/04/14	3.3	0.3
04/07/13	3.4	0.3	04/10/13	5.1	0.5	03/01/14	15.3	1.5	03/04/14	2.3	0.2
05/07/13	3.4	0.3	05/10/13	5.1	0.5	04/01/14	9.8	1.0	04/04/14	2.3	0.2
06/07/13	0.6	0.1	06/10/13	4.5	0.5	05/01/14	9.8	1.0	05/04/14	2.3	0.2
07/07/13	0.6	0.1	07/10/13	4.5	0.5	06/01/14	9.8	1.0	06/04/14	3.3	0.3
08/07/13	0.6	0.1	08/10/13	4.5	0.5	07/01/14	5.2	0.5	07/04/14	3.3	0.3
09/07/13	0.6	0.1	09/10/13	5.4	0.5	08/01/14	5.2	0.5	08/04/14	3.4	0.3
10/07/13	0.6	0.1	10/10/13	5.4	0.5	09/01/14	5.2	0.5	09/04/14	3.4	0.3
11/07/13	0.6	0.1	11/10/13	5.4	0.5	10/01/14	5.2	0.5	10/04/14	3.4	0.3
12/07/13	8.8	0.9	12/10/13	5.4	0.5	11/01/14	5.2	0.5	11/04/14	3.4	0.3
13/07/13	8.8	0.9	13/10/13	5.4	0.5	12/01/14	6.4	0.6	12/04/14	10.0	1.0
14/07/13	8.8	0.9	14/10/13	4.0	0.4	13/01/14	6.4	0.6	13/04/14	10.0	1.0
15/07/13	8.8	0.9	15/10/13	4.0	0.4	14/01/14	4.9	0.5	14/04/14	6.7	0.7
16/07/13	8.8	0.9	16/10/13	4.0	0.4	15/01/14	4.9	0.5	15/04/14	6.7	0.7
17/07/13	8.8	0.9	17/10/13	4.0	0.4	16/01/14	4.9	0.5	16/04/14	12.4	1.2
18/07/13	8.8	0.9	18/10/13	4.0	0.4	17/01/14	4.9	0.5	17/04/14	12.4	1.2
19/07/13	5.4	0.5	19/10/13	8.5	0.8	18/01/14	4.9	0.5	18/04/14	12.4	1.2
20/07/13	5.4	0.5	20/10/13	8.5	0.8	19/01/14	4.9	0.5	19/04/14	26.4	2.6
21/07/13	5.4	0.5	21/10/13	5.6	0.6	20/01/14	4.9	0.5	20/04/14	26.4	2.6
22/07/13	5.4	0.5	22/10/13	5.6	0.6	21/01/14	4.9	0.5	21/04/14	26.4	2.6
23/07/13	5.4	0.5	23/10/13	5.6	0.6	22/01/14	3.2	0.3	22/04/14	26.4	2.6
24/07/13	5.4	0.5	24/10/13	3.4	0.3	23/01/14	3.2	0.3	23/04/14	6.7	0.7
25/07/13	5.4	0.5	25/10/13	3.4	0.3	24/01/14	3.3	0.3	24/04/14	6.7	0.7
26/07/13	5.4	0.5	26/10/13	6.3	0.6	25/01/14	3.3	0.3	25/04/14	6.7	0.7

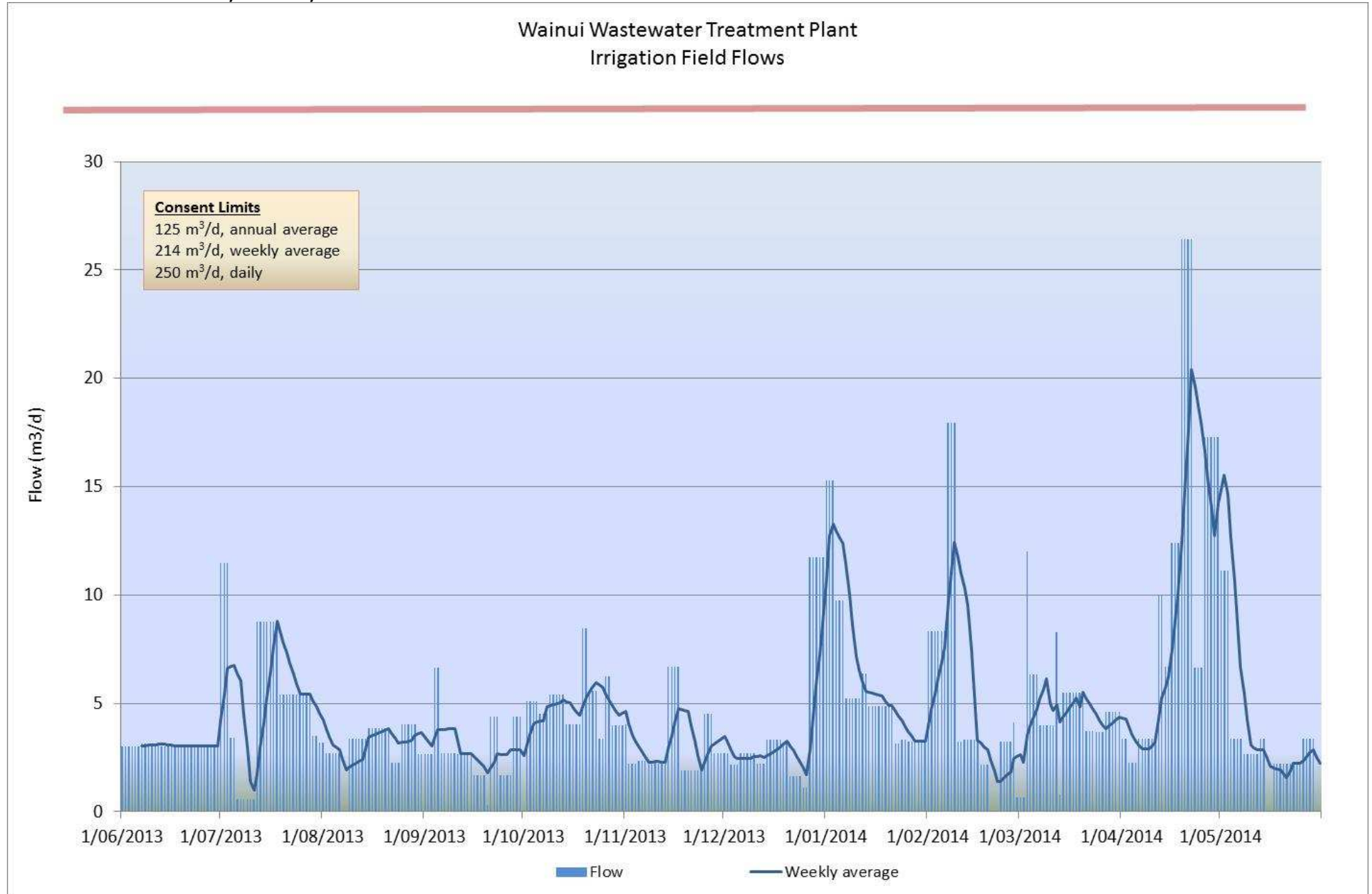
Date	Flow [m ³ /d]	Rate (mm/d)	Date	Flow [m ³ /d]	Rate (mm/d)	Date	Flow [m ³ /d]	Rate (mm/d)	Date	Flow [m ³ /d]	Rate (mm/d)
27/07/13	5.4	0.5	27/10/13	6.3	0.6	26/01/14	3.3	0.3	26/04/14	17.3	1.7
28/07/13	5.4	0.5	28/10/13	4.0	0.4	27/01/14	3.3	0.3	27/04/14	17.3	1.7
29/07/13	3.5	0.4	29/10/13	4.0	0.4	28/01/14	3.3	0.3	28/04/14	17.3	1.7
30/07/13	3.5	0.4	30/10/13	4.0	0.4	29/01/14	3.3	0.3	29/04/14	17.3	1.7
31/07/13	3.2	0.3	31/10/13	4.0	0.4	30/01/14	3.3	0.3	30/04/14	17.3	1.7
01/08/13	3.2	0.3	01/11/13	4.0	0.4	31/01/14	3.3	0.3	01/05/14	11.1	1.1
02/08/13	2.7	0.3	02/11/13	2.2	0.2	01/02/14	8.3	0.8	02/05/14	11.1	1.1
03/08/13	2.7	0.3	03/11/13	2.2	0.2	02/02/14	8.3	0.8	03/05/14	11.1	1.1
04/08/13	2.7	0.3	04/11/13	2.2	0.2	03/02/14	8.3	0.8	04/05/14	3.4	0.3
05/08/13	2.7	0.3	05/11/13	2.4	0.2	04/02/14	8.3	0.8	05/05/14	3.4	0.3
06/08/13	2.7	0.3	06/11/13	2.4	0.2	05/02/14	8.3	0.8	06/05/14	3.4	0.3
07/08/13	0.0	0.0	07/11/13	2.4	0.2	06/02/14	8.3	0.8	07/05/14	3.4	0.3
08/08/13	0.0	0.0	08/11/13	2.3	0.2	07/02/14	17.9	1.8	08/05/14	2.7	0.3
09/08/13	3.4	0.3	09/11/13	2.3	0.2	08/02/14	17.9	1.8	09/05/14	2.7	0.3
10/08/13	3.4	0.3	10/11/13	2.3	0.2	09/02/14	17.9	1.8	10/05/14	2.7	0.3
11/08/13	3.4	0.3	11/11/13	2.2	0.2	10/02/14	3.3	0.3	11/05/14	2.7	0.3
12/08/13	3.4	0.3	12/11/13	2.2	0.2	11/02/14	3.3	0.3	12/05/14	2.7	0.3
13/08/13	3.4	0.3	13/11/13	2.2	0.2	12/02/14	3.3	0.3	13/05/14	3.4	0.3
14/08/13	3.4	0.3	14/11/13	6.7	0.7	13/02/14	3.3	0.3	14/05/14	3.4	0.3
15/08/13	3.8	0.4	15/11/13	6.7	0.7	14/02/14	3.3	0.3	15/05/14	0.0	0.0
16/08/13	3.8	0.4	16/11/13	6.7	0.7	15/02/14	3.3	0.3	16/05/14	0.0	0.0
17/08/13	3.8	0.4	17/11/13	6.7	0.7	16/02/14	3.3	0.3	17/05/14	2.2	0.2
18/08/13	3.8	0.4	18/11/13	1.9	0.2	17/02/14	2.2	0.2	18/05/14	2.2	0.2
19/08/13	3.8	0.4	19/11/13	1.9	0.2	18/02/14	2.2	0.2	19/05/14	2.2	0.2
20/08/13	3.8	0.4	20/11/13	1.9	0.2	19/02/14	2.2	0.2	20/05/14	2.2	0.2
21/08/13	3.8	0.4	21/11/13	1.9	0.2	20/02/14	0.0	0.0	21/05/14	2.2	0.2
22/08/13	2.3	0.2	22/11/13	1.9	0.2	21/02/14	0.0	0.0	22/05/14	2.2	0.2
23/08/13	2.3	0.2	23/11/13	1.9	0.2	22/02/14	0.0	0.0	23/05/14	2.2	0.2
24/08/13	2.3	0.2	24/11/13	1.9	0.2	23/02/14	3.3	0.3	24/05/14	2.2	0.2
25/08/13	4.0	0.4	25/11/13	4.5	0.5	24/02/14	3.3	0.3	25/05/14	2.2	0.2
26/08/13	4.0	0.4	26/11/13	4.5	0.5	25/02/14	3.3	0.3	26/05/14	3.3	0.3
27/08/13	4.0	0.4	27/11/13	4.5	0.5	26/02/14	3.3	0.3	27/05/14	3.3	0.3
28/08/13	4.0	0.4	28/11/13	2.7	0.3	27/02/14	4.1	0.4	28/05/14	3.4	0.3
29/08/13	4.0	0.4	29/11/13	2.7	0.3	28/02/14	0.7	0.1	29/05/14	3.4	0.3
30/08/13	2.6	0.3	30/11/13	2.7	0.3			0.0	30/05/14	0.0	0.0
31/08/13	2.6	0.3						0.0	31/05/14	0.0	0.0

Flow meter issues during upgrade; flow estimated.

Summary Statistics

Daily maximum	26.4 m3/d
	2.6 mm/d
Maximum weekly average	13.3 m3d
	1.3 mm/d
Annual average	4.7 m3/d
	0.5 mm/d

Attachment 1.2: Flows, Wainui, Chart



Attachment 2: Lab Data and Calculations, Wainui

Date	Lab analysis				5-Sample Median	
	BOD5 [mg/l]	TSS [mg/l]	FEC [cfu/100ml]	TN [mg/l]	TSS [mg/l]	FEC [cfu/100ml]
4/06/2013	2.3	1.5	5.0	28.0		
3/07/2013	1.5	10.0	5.0	19.0		
7/08/2013	1.5	1.5	5.0	47.0		
4/09/2013	3.1	50.0	5.0	12.0		
1/10/2013	1.5	53.0	5.0	14.0	10.0	5.0
5/11/2013	2.1	21.0	0.5	16.0	21.0	5.0
5/12/2013	2.1	1.5	5.0	60.0	21.0	5.0
16/01/2014	2.0	18.0	5.0	42.2	21.0	5.0
13/02/2014	2.6	6.0	10.0	3.5	18.0	5.0
20/02/2014		1.5			6.0	
19/03/2014	1.0	1.5	5.0	30.0	1.5	5.0
16/04/2014	1.5	5.0	5.0	27.0	5.0	5.0
7/05/2014	2.6	5.0	10.0	6.6	5.0	5.0
Median:	2.1	5.0	5.0	23.0		
90th Percentile:	2.6	44.2	9.5	46.5		
Average:	2.0	13.5	5.5	25.4		
Maximum/Limit:	3.1	53.0	10.0	60.0	20	10,000
Exceedances:					3.0	0.0

Removed '<' for calculations and halved the value.

Total flow (m3)	1710					
Maximum daily flow (m3)	26.4					
Annual average TN (mg/L)	25.4					
Estimated TN load (kg/ha/yr)	43.5					

Attachment 3: O&M Rounds, Wainui

Frequency	Seaview WWTP		Warnerville Irrigation Field	
	Task Description	Comments	Task Description	Comments
Every Visit	<ul style="list-style-type: none"> Check line flow and pressure readings. 	Flow meter 205.0 PL002 FT01 readings should range 1.1L/s to 2.2L/s. Pressure transducer 205.0 PL002 PT01 high pressure should not be >900kPa. Pressure switch 205.3PL001PS01 low pressure should not be < -40kPa.	<ul style="list-style-type: none"> Check line flow and pressure readings. Check tank level is sufficient for full submergence of pumps 305.0.OP001 & 305.0.OP003. 	Pressure transmitters 315.1 PL001 PT01 & 315.2 PL001 PT01 should range 400kPa to 900 kPa Normal range of 305.0.OT001LT01 is 1.675m to 3.8m (measured from tank bottom)
Every Week	<ul style="list-style-type: none"> Visually check for leaks. Check pumps 205.1 & 205.2 OP001 for excessive heat, noise, vibration, and correct operation. Check current drawn. Level control operation is OK. Check for fat build-up in septic tanks Check hatches and doors for odour and condition Monitor motor running currents 	Sound should be < 85dB at 1 m from the pump. Temperature should be < 50°C. By SCADA/VSD	<ul style="list-style-type: none"> Check current drawn. Monitor motor running currents 	Rated current is 13A By SCADA/VSD
Every 6 Months	<ul style="list-style-type: none"> Check level switch 010.1 TT001 LS01 and level transducer 0101.1 TT001 LT01 operation Check flow meter 205.0 PL002 FT01 calibration & accuracy Check pressure transducer 205.0 PL002 PT01 calibration & accuracy Operate/grease all valves and check for gland leakage. Check pump mechanical seals, and replace if necessary. Check shaft or shaft sleeve for scouring. Check alignment for pumps and motors. Check holding down bolt for tightness. Check coupling for wear. 	If suspected issue only If suspected issue only Visual check	<ul style="list-style-type: none"> Operate all valves and check for gland leakage. Check flow meters calibration & accuracy 315.1 PL001 FT01 & 315.2 PL001 FT01 Check pressure transmitters calibration & accuracy 315.1 PL001 PT01 & 315.2 PL001 PT01 <p><u>Irrigation System:</u></p> <ul style="list-style-type: none"> Check main to submain connection Check flush points at each zone Visual check for leaks at top chamber Check even drip distribution Check sub main pins are secure Check air valve works Check indexing valve works to each of the 3 zones Remove and clean twin disk filter Open all flush valves at the end of the drip lines (along fence line) and run for 5 min before closing or once lines are sufficiently flushed. Check pressures at the top and bottom of each zone when zone is operating Open and flush submains at bottom of each zone. Ensure holding downpipes for pumps 305.0.OP001 & 305.0.OP003 are secure. 	If suspected issue only If suspected issue only Flush tubes using plastic valve Run pump and check valve Visual monitoring required On discharge line to irrigation field (may require confined space entry permit) Check with pressure instrument Normal operating ranges is 141.5 to 222kPa Black polyethylene pipe
Every 12 Months	<ul style="list-style-type: none"> Check rotating elements for wear. Check mountings are secure. Check operation of controls and test critical alarms. Coordinate RPZ certification 	2 RPZ (1 potable supply and 1 process supply); Martin Fry	<ul style="list-style-type: none"> Check operation of electronic controls and test critical alarms. Check mechanical pump seals Test insulation on motors Coordinate RPZ certification 	1 RPZ; Martin Fry
Every 5 Years	<ul style="list-style-type: none"> Replace motor bearings and check general condition of motor. 	As required if noisy		



Wainui

Wastewater Treatment Plant

Annual Monitoring Report

06/2014 – 05/2015

Prepared by: City Care Ltd
Hugh Blake-Manson

On behalf of

Christchurch City Council, City Water & Waste Unit

25 August 2015

Resource Consent Number: CRC091580

File Number: CO6C/28303

Client Name: Christchurch City Council, Water and Waste Unit

To: Discharge treated domestic wastewater onto land from the Wainui Wastewater Treatment Plant

Consent Location: Road Reserve, WAINUI

Status: Current

21/09/2011 Consent Commenced

02/05/2013 Given Effect To

21/09/2021 Lapse Date

21/09/2046 Consent Expires

1	The discharge shall be only treated domestic wastewater from Wainui.
	Compliance
2	Wastewater shall be discharged only onto land within the irrigation areas marked as IA1, IA2, IA3 and IA4, within Pt Lot DP 7501 as shown on the attached Plan CRC091580, centred on map reference NZMS 260 N36:0184-1125.
	Compliance; only IA2 (10,000 m³) utilised during reporting period
3	The volume of wastewater discharged shall not exceed 125 cubic metres per day as an annual average. The volume of wastewater discharged shall not exceed 214 cubic metres per day as a weekly average. The volume of wastewater discharged shall not exceed 250 cubic metres per day at any time.
	Compliance; maximum flow was 24.4 m³/d as measured at the treatment plant
4	The consent holder shall measure and record the daily discharge flow from the wastewater treatment system to the irrigation areas in cubic metres using a flow meter that shall record flows to an accuracy of plus or minus 10 percent.
	Compliance
5	Prior to discharge, the wastewater shall be treated via the following treatment system: a. Screening of inflow; and then b. Biological secondary treatment; and then c. Disinfection by ultra violet light or another method that provides an equivalent level of treatment.
	Compliance
6	Prior to commissioning the wastewater treatment plant, the consent holder shall submit to Environment Canterbury, Attention: RMA Compliance and Enforcement Manager, details of the inlet screening system, the biological treatment method, the disinfection method, and the location of sampling points.
	Compliance
7	After exiting the wastewater treatment system, the wastewater shall be discharged via a land application system as follows: a. The land application system shall comprise drip irrigation tubing. The length of tubing installed shall be sufficient to ensure compliance with the hydraulic application rates specified in Condition 8. b. Lines of drip irrigation tubing shall be spaced at intervals not more than one metre apart. c. The drippers on the drip irrigation tubing shall be spaced at intervals not more than one metre apart. d. The wastewater shall be evenly dosed in fixed quantities over the land application system. e. The drip irrigation tubing shall be located on the ground surface or buried up to 150 millimetres below the ground surface.
	Compliance as per design
8	The wastewater shall be discharged at an annual average hydraulic application rate not exceeding 3.3 millimetres per day. The maximum weekly average hydraulic application rate shall be 7.2 millimetres per day. The maximum daily hydraulic application rate shall be 12 millimetres per day.
	Compliance; Annual Average hydraulic rate 0.35 mm/d, maximum daily application rate 1.9 mm/d
9	a. The land treatment areas shall be vegetated with trees and/or native vegetation. b. At least 75 percent of the area receiving wastewater shall be vegetated with trees and or native vegetation that are at least five years old or otherwise sufficient to avoid erosion and wastewater runoff.

	c. All trees shall be maintained in a healthy state until they reach an age where harvesting is appropriate.
	Compliance
10	The wastewater shall not be discharged onto land closer than 20 metres from any surface water body, including ephemeral waterways, and shall not be discharged onto land closer than 10 metres from the irrigation area property boundary.
	Compliance as per design
11	Wastewater shall be sampled in accordance with standard AS/NZS 5667.1.1998 after treatment and prior to discharge onto land at least once every month. The sampling frequency may be reduced to at least once every three months provided: <ul style="list-style-type: none"> a. At least ten years have elapsed since commissioning of the wastewater treatment system; and b. None of the contaminant triggers values specified in condition (14) have been exceeded during the previous ten years.
	Compliance
12	Samples of treated wastewater taken in compliance with condition (11) shall be analysed for the following contaminants: <ul style="list-style-type: none"> a. total suspended solids b. five day biochemical oxygen demand c. total nitrogen d. faecal coliforms.
	Compliance (Attachment 2)
13	Detailed records shall be kept of the specific irrigation areas used for wastewater irrigation.
	Compliance; only IA2 (10,000 m²) utilised during reporting period as per design
14	The median concentration of contaminants shall be compared to the following trigger values: <ul style="list-style-type: none"> a. total suspended solids 20 grams per cubic metre b. faecal coliforms 10,000 colony forming units/100 millilitres. For the purposes of this condition, the median shall be calculated from the results of any five consecutive treated wastewater samples analysed.
	Compliance (Attachment 2)
15	The consent holder shall notify the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, within 20 working days of the identification of any exceedence of any trigger value specified in Condition (14). The notification shall detail what measures the consent holder has implemented or will implement to mitigate any adverse environmental effects and to prevent a reoccurrence of a trigger value exceedence. Such measures may include: <ul style="list-style-type: none"> a. Additional sampling and analysis of the treated wastewater. b. Investigation of whether the exceedence has adversely affected soil quality or water quality in waterways adjacent to the irrigation areas. c. Further treatment of the wastewater discharge. <ul style="list-style-type: none"> i. The consent holder shall use their best endeavours to ensure that the trigger values specified in Condition (14) are not exceeded.
	Compliance; ECAN notified of TSS median exceedances and action
16	The discharge shall not result in any wastewater flowing off the irrigation areas IA1, IA2, IA3 and IA4 shown on Plan CRC091580.
	Compliance as per design (eg irrigation inhibited based on rainfall)
17	Wastewater shall not be discharged onto land with an average slope greater than 20 degrees.
	Compliance as per design
18	All samples required to be taken under this consent shall be: <ul style="list-style-type: none"> a. Taken by a suitably qualified person. b. Stored and transferred in accordance with AS/NZS 5667.1:1998 (Water quality - Sampling - Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples), and details of all that methodology shall be maintained and made available on request by the Canterbury Regional Council. c. Analysed using generally accepted methods and analysed by a laboratory that is accredited for each method of analysis by International Accreditation New Zealand or an equivalent accreditation body.
	Compliance
19	The discharge onto land shall not exceed a rate of 200 kilograms of nitrogen per hectare per year.
	Compliance; TN load estimated at 43.5 kg/ha
20	Fencing shall be established and maintained around the wastewater treatment system and irrigation areas to prevent livestock access and to deter public entry.
	Compliance

21	The consent holder shall erect warning notices at the entrance gates to the wastewater treatment plant and irrigation areas. The notices shall be readable at a distance of five metres and shall state "Treated wastewater is irrigated onto land in this area. Public access is prohibited. For contact details, phone Christchurch City Council on 03-941-8999".
	Compliance
22	The wastewater treatment and land application systems shall be operated by trained and competent staff.
	Compliance
23	<p>a. Within one month of commissioning of the wastewater treatment and land irrigation systems, a Wastewater Management Plan that includes the detailed inspection, maintenance and contingency programmes to be undertaken to ensure compliance with conditions of this consent including conditions (3), (7d), (8), (9), (14), (16) and (19), shall be prepared and provided to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager.</p> <p>b. The consent holder may, at any time, submit to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, an amended Wastewater Management Plan provided it is for the purpose of avoiding or mitigating an adverse environmental effect, or maintaining or improving the overall effectiveness of the original Wastewater Management Plan.</p> <p>c. This consent shall be exercised in accordance with the current version of the Wastewater Management Plan.</p>
	Compliance per Wainui Wastewater Scheme Management Plan (Spire 2013)
24	The consent holder shall keep written records of all inspections, maintenance and upgrades of the wastewater treatment and land application systems. For upgrades and non-routine maintenance the records shall include the reason for the work, a description of the work, the expected outcome of the work and the date the work was completed. The consent holder shall forward a copy of the records to the Canterbury Regional Council upon request.
	Compliance (Attachment 3)
25	<p>An annual report on the performance of the wastewater treatment and land application systems shall be submitted to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, by 30 August each year. The report shall include as a minimum:</p> <ol style="list-style-type: none"> Daily discharge flow records. Wastewater sampling results. Median and 90 percentile wastewater quality concentrations. Records of the irrigation areas used. Daily wastewater application rates. Estimated annual areal nitrogen load applied to each of the irrigation areas. This shall be estimated using flow records and sample results. Summary details of inspections, maintenance and upgrades of the wastewater treatment and land application systems since the previous annual report.
	Compliance via this report; CCC to distribute
26	<p>The Canterbury Regional Council may, on any of the last five working days of May or November each year, serve notice of its intention to review the conditions of this consent for the purposes of:</p> <ol style="list-style-type: none"> dealing with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; or requiring the consent holder to conduct monitoring instead of, or in addition to, that required by the consent.
	ECAN to request
27	The lapsing date for the purposes of section 125 of the Resource Management Act shall be 10 years after the date of resource consent commencement.
	Compliance
28	This consent shall expire 35 years after the date of resource consent commencement.
	Compliance

Monitoring Summary

This annual report covers the period from June 1, 2014 through May 31, 2015 based on the conditions of CRC091580.

Irrigation Field Flow Monitoring

Flows to the Wainui Wastewater Treatment Plant (WWTP) Irrigation Field were less than 9.4 m³/d for 95% of flows (Attachment 1). The maximum daily flow was 24.4 m³/d, which was well below the consented 250, 214, and 125 m³/d limits for daily, weekly average, and annual average periods. Based on the 10,000 m² irrigation area for IA2, the maximum application rate was 1.9 mm/d. Thus, the flows were also compliant with the corresponding rates of 12, 7.2, and 3.3 mm/d based on daily, weekly average, and annual average periods, respectively.

Plant performance relating to BOD₅, TSS, TN was generally good. However, there were six elevated samples for faecal coliforms. These elevated levels were attributed to poor UV lamp operation, though no consent transgression resulted. The UV lamp operation was fixed with resulting improved FEC reduction.

The annual TN load was calculated as 43.9 kg TN/ha based on the annual average of TN (34.8 mg/L), the total annual flow (1,262 m³), and the irrigation area available (IA2 = 10,000 m²). This nutrient load was well below the annual maximum of 200 kg TN/ha.

Table 1. Summary of Exceedances from June 2014-May 2015.

Parameter	Single Samples Above Limit	Trigger Limit Exceedances	Condition Non-Compliances
Flow	0	0	0
Application Rate	0	0	0
BOD ₅	0	0	0
TSS	0	0	0
FEC	0	0	0
Annual TN Load	0	0	0
Total	0	0	0

WWTP and Irrigation Field O&M

No non-routine maintenance was conducted during this reporting period. Routine O&M tasks are summarised in Attachment 3. These rounds include equipment checks and O&M on a regular basis to ensure that the WWTP and irrigation field are operating as designed and any problems are identified quickly.

Attachment 1.1: Irrigation Field Flows, Wainui, Data

Plant:	Wainui WWTP Irrigation Field, Banks Peninsula
Asset Owner:	Christchurch City Council
Laboratory:	Christchurch City Council Laboratory, City Water & Waste Unit

Consent limits - 125m³/d annual average; 214m³/d weekly average; 250m³/d daily
Consent limits - 3.3mm/d annual average; 7.2mm³/d weekly average; 12mm/d daily

Date	Flow [m ³ /d]	Rate (mm/d)	Date	Flow [m ³ /d]	Rate (mm/d)	Date	Flow [m ³ /d]	Rate (mm/d)	Date	Flow [m ³ /d]	Rate (mm/d)
01/06/14	6.8	0.7	01/09/14	3.1	0.3	01/12/14	2.4	0.2	01/03/15	2.7	0.3
02/06/14	6.8	0.7	02/09/14	3.1	0.3	02/12/14	2.4	0.2	02/03/15	2.7	0.3
03/06/14	3.3	0.3	03/09/14	3.1	0.3	03/12/14	2.4	0.2	03/03/15	1.8	0.2
04/06/14	3.3	0.3	04/09/14	3.1	0.3	04/12/14	2.4	0.2	04/03/15	1.8	0.2
05/06/14	0.0	0.0	05/09/14	3.1	0.3	05/12/14	2.4	0.2	05/03/15	1.8	0.2
06/06/14	0.0	0.0	06/09/14	3.1	0.3	06/12/14	2.4	0.2	06/03/15	1.8	0.2
07/06/14	2.2	0.2	07/09/14	3.1	0.3	07/12/14	2.4	0.2	07/03/15	1.8	0.2
08/06/14	2.2	0.2	08/09/14	3.1	0.3	08/12/14	2.4	0.2	08/03/15	1.8	0.2
09/06/14	2.2	0.2	09/09/14	1.9	0.2	09/12/14	2.0	0.2	09/03/15	1.8	0.2
10/06/14	1.6	0.2	10/09/14	1.9	0.2	10/12/14	2.0	0.2	10/03/15	1.8	0.2
11/06/14	1.6	0.2	11/09/14	1.9	0.2	11/12/14	2.0	0.2	11/03/15	1.8	0.2
12/06/14	1.6	0.2	12/09/14	1.9	0.2	12/12/14	2.0	0.2	12/03/15	1.8	0.2
13/06/14	1.6	0.2	13/09/14	1.9	0.2	13/12/14	2.0	0.2	13/03/15	1.8	0.2
14/06/14	1.0	0.1	14/09/14	1.9	0.2	14/12/14	2.0	0.2	14/03/15	3.1	0.3
15/06/14	1.0	0.1	15/09/14	1.9	0.2	15/12/14	2.0	0.2	15/03/15	3.1	0.3
16/06/14	1.0	0.1	16/09/14	1.9	0.2	16/12/14	2.0	0.2	16/03/15	1.7	0.2
17/06/14	1.0	0.1	17/09/14	1.9	0.2	17/12/14	2.0	0.2	17/03/15	1.7	0.2
18/06/14	1.0	0.1	18/09/14	1.9	0.2	18/12/14	2.0	0.2	18/03/15	1.7	0.2
19/06/14	1.0	0.1	19/09/14	1.9	0.2	19/12/14	2.0	0.2	19/03/15	1.7	0.2
20/06/14	1.0	0.1	20/09/14	1.9	0.2	20/12/14	2.0	0.2	20/03/15	1.6	0.2
21/06/14	2.2	0.2	21/09/14	1.9	0.2	21/12/14	4.0	0.4	21/03/15	1.6	0.2
22/06/14	2.2	0.2	22/09/14	1.9	0.2	22/12/14	4.0	0.4	22/03/15	1.6	0.2
23/06/14	2.2	0.2	23/09/14	2.5	0.2	23/12/14	4.0	0.4	23/03/15	1.6	0.2
24/06/14	1.7	0.2	24/09/14	2.5	0.2	24/12/14	4.0	0.4	24/03/15	1.6	0.2
25/06/14	1.7	0.2	25/09/14	2.5	0.2	25/12/14	4.0	0.4	25/03/15	1.6	0.2
26/06/14	1.7	0.2	26/09/14	2.5	0.2	26/12/14	11.4	1.1	26/03/15	1.6	0.2
27/06/14	1.7	0.2	27/09/14	2.5	0.2	27/12/14	11.4	1.1	27/03/15	1.6	0.2
28/06/14	0.0	0.0	28/09/14	2.5	0.2	28/12/14	11.4	1.1	28/03/15	1.6	0.2
29/06/14	0.0	0.0	29/09/14	2.5	0.2	29/12/14	11.4	1.1	29/03/15	1.6	0.2
30/06/14	0.0	0.0	30/09/14	2.5	0.2	30/12/14	14.8	1.5	30/03/15	1.6	0.2
01/07/14	3.3	0.3	01/10/14	4.0	0.4	31/12/14	14.8	1.5	31/03/15	1.6	0.2
02/07/14	3.3	0.3	02/10/14	4.0	0.4	01/01/15	14.8	1.5	01/04/15	6.5	0.7
03/07/14	3.3	0.3	03/10/14	4.0	0.4	02/01/15	14.8	1.5	02/04/15	6.5	0.7
04/07/14	3.3	0.3	04/10/14	4.0	0.4	03/01/15	6.6	0.7	03/04/15	6.5	0.7
05/07/14	2.2	0.2	05/10/14	4.0	0.4	04/01/15	6.6	0.7	04/04/15	6.5	0.7
06/07/14	2.2	0.2	06/10/14	4.0	0.4	05/01/15	6.6	0.7	05/04/15	6.5	0.7
07/07/14	2.2	0.2	07/10/14	4.0	0.4	06/01/15	6.6	0.7	06/04/15	6.5	0.7
08/07/14	3.4	0.3	08/10/14	4.0	0.4	07/01/15	6.6	0.7	07/04/15	3.2	0.3
09/07/14	3.4	0.3	09/10/14	4.0	0.4	08/01/15	6.6	0.7	08/04/15	3.2	0.3
10/07/14	4.0	0.4	10/10/14	4.0	0.4	09/01/15	6.6	0.7	09/04/15	3.2	0.3
11/07/14	4.0	0.4	11/10/14	0.3	0.0	10/01/15	6.6	0.7	10/04/15	3.2	0.3
12/07/14	4.0	0.4	12/10/14	0.3	0.0	11/01/15	6.6	0.7	11/04/15	3.2	0.3
13/07/14	4.0	0.4	13/10/14	0.3	0.0	12/01/15	6.6	0.7	12/04/15	3.2	0.3
14/07/14	4.0	0.4	14/10/14	6.0	0.6	13/01/15	6.6	0.7	13/04/15	6.5	0.7
15/07/14	6.6	0.7	15/10/14	1.0	0.1	14/01/15	4.4	0.4	14/04/15	6.5	0.7
16/07/14	6.6	0.7	16/10/14	1.0	0.1	15/01/15	4.4	0.4	15/04/15	3.2	0.3
17/07/14	2.4	0.2	17/10/14	1.0	0.1	16/01/15	4.4	0.4	16/04/15	3.2	0.3

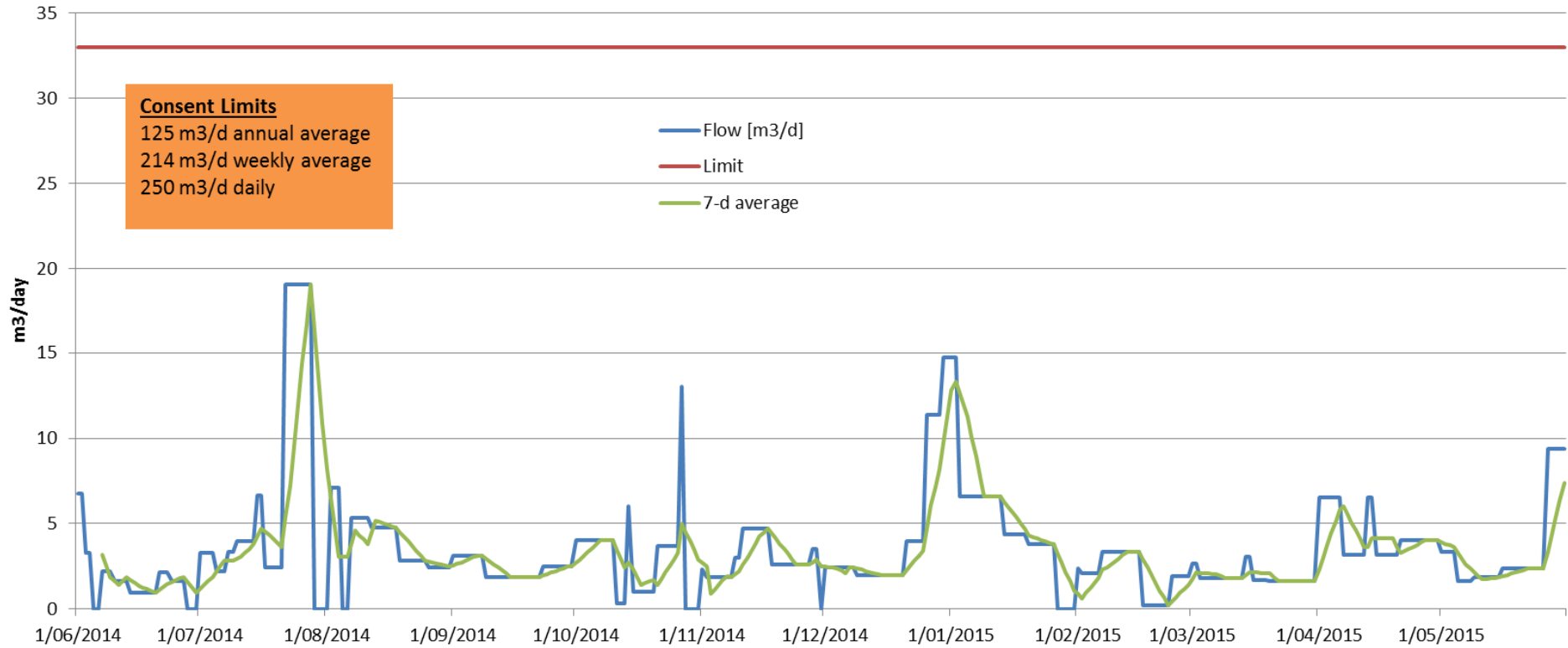
18/07/14	2.4	0.2	18/10/14	1.0	0.1	17/01/15	4.4	0.4	17/04/15	3.2	0.3
19/07/14	2.4	0.2	19/10/14	1.0	0.1	18/01/15	4.4	0.4	18/04/15	3.2	0.3
20/07/14	2.4	0.2	20/10/14	1.0	0.1	19/01/15	4.4	0.4	19/04/15	3.2	0.3
21/07/14	2.4	0.2	21/10/14	3.7	0.4	20/01/15	3.8	0.4	20/04/15	3.2	0.3
22/07/14	19.0	1.9	22/10/14	3.7	0.4	21/01/15	3.8	0.4	21/04/15	4.0	0.4
23/07/14	19.0	1.9	23/10/14	3.7	0.4	22/01/15	3.8	0.4	22/04/15	4.0	0.4
24/07/14	19.0	1.9	24/10/14	3.7	0.4	23/01/15	3.8	0.4	23/04/15	4.0	0.4
25/07/14	19.0	1.9	25/10/14	3.7	0.4	24/01/15	3.8	0.4	24/04/15	4.0	0.4
26/07/14	19.0	1.9	26/10/14	3.7	0.4	25/01/15	3.8	0.4	25/04/15	4.0	0.4
27/07/14	19.0	1.9	27/10/14	13.0	1.3	26/01/15	3.8	0.4	26/04/15	4.0	0.4
28/07/14	19.0	1.9	28/10/14	0.0	0.0	27/01/15	0.0	0.0	27/04/15	4.0	0.4
29/07/14	0.0	0.0	29/10/14	0.0	0.0	28/01/15	0.0	0.0	28/04/15	4.0	0.4
30/07/14	0.0	0.0	30/10/14	0.0	0.0	29/01/15	0.0	0.0	29/04/15	4.0	0.4
31/07/14	0.0	0.0	31/10/14	0.0	0.0	30/01/15	0.0	0.0	30/04/15	4.0	0.4
01/08/14	0.0	0.0	01/11/14	2.3	0.2	31/01/15	0.0	0.0	01/05/15	3.3	0.3
02/08/14	7.1	0.7	02/11/14	1.9	0.2	01/02/15	2.4	0.2	02/05/15	3.3	0.3
03/08/14	7.1	0.7	03/11/14	1.9	0.2	02/02/15	2.1	0.2	03/05/15	3.3	0.3
04/08/14	7.1	0.7	04/11/14	1.9	0.2	03/02/15	2.1	0.2	04/05/15	3.3	0.3
05/08/14	0.0	0.0	05/11/14	1.9	0.2	04/02/15	2.1	0.2	05/05/15	1.6	0.2
06/08/14	0.0	0.0	06/11/14	1.9	0.2	05/02/15	2.1	0.2	06/05/15	1.6	0.2
07/08/14	5.3	0.5	07/11/14	1.9	0.2	06/02/15	2.1	0.2	07/05/15	1.6	0.2
08/08/14	5.3	0.5	08/11/14	1.9	0.2	07/02/15	3.3	0.3	08/05/15	1.6	0.2
09/08/14	5.3	0.5	09/11/14	3.0	0.3	08/02/15	3.3	0.3	09/05/15	1.8	0.2
10/08/14	5.3	0.5	10/11/14	3.0	0.3	09/02/15	3.3	0.3	10/05/15	1.8	0.2
11/08/14	5.3	0.5	11/11/14	4.7	0.5	10/02/15	3.3	0.3	11/05/15	1.8	0.2
12/08/14	4.8	0.5	12/11/14	4.7	0.5	11/02/15	3.3	0.3	12/05/15	1.8	0.2
13/08/14	4.8	0.5	13/11/14	4.7	0.5	12/02/15	3.3	0.3	13/05/15	1.8	0.2
14/08/14	4.8	0.5	14/11/14	4.7	0.5	13/02/15	3.3	0.3	14/05/15	1.8	0.2
15/08/14	4.8	0.5	15/11/14	4.7	0.5	14/02/15	3.3	0.3	15/05/15	1.8	0.2
16/08/14	4.8	0.5	16/11/14	4.7	0.5	15/02/15	3.3	0.3	16/05/15	2.4	0.2
17/08/14	4.8	0.5	17/11/14	4.7	0.5	16/02/15	3.3	0.3	17/05/15	2.4	0.2
18/08/14	4.8	0.5	18/11/14	2.6	0.3	17/02/15	0.2	0.0	18/05/15	2.4	0.2
19/08/14	2.8	0.3	19/11/14	2.6	0.3	18/02/15	0.2	0.0	19/05/15	2.4	0.2
20/08/14	2.8	0.3	20/11/14	2.6	0.3	19/02/15	0.2	0.0	20/05/15	2.4	0.2
21/08/14	2.8	0.3	21/11/14	2.6	0.3	20/02/15	0.2	0.0	21/05/15	2.4	0.2
22/08/14	2.8	0.3	22/11/14	2.6	0.3	21/02/15	0.2	0.0	22/05/15	2.4	0.2
23/08/14	2.8	0.3	23/11/14	2.6	0.3	22/02/15	0.2	0.0	23/05/15	2.4	0.2
24/08/14	2.8	0.3	24/11/14	2.6	0.3	23/02/15	0.2	0.0	24/05/15	2.4	0.2
25/08/14	2.8	0.3	25/11/14	2.6	0.3	24/02/15	1.9	0.2	25/05/15	2.4	0.2
26/08/14	2.4	0.2	26/11/14	2.6	0.3	25/02/15	1.9	0.2	26/05/15	2.4	0.2
27/08/14	2.4	0.2	27/11/14	2.6	0.3	26/02/15	1.9	0.2	27/05/15	9.4	0.9
28/08/14	2.4	0.2	28/11/14	3.5	0.4	27/02/15	1.9	0.2	28/05/15	9.4	0.9
29/08/14	2.4	0.2	29/11/14	3.5	0.4	28/02/15	1.9	0.2	29/05/15	9.4	0.9
30/08/14	2.4	0.2	30/11/14	0.0	0.0				30/05/15	9.4	0.9
31/08/14	2.4	0.2							31/05/15	9.4	0.9

Summary Statistics

Daily maximum	19.0	m3/d
	1.9	mm/d
Maximum weekly average	19.0	m3d
	1.9	mm/d
Annual average	3.5	m3/d
	0.35	mm/d

Attachment 1.2: Flows, Wainui, Chart

Wainui Wastewater Treatment Plant Irrigation Field Flows



Attachment 2: Lab Data and Calculations, Wainui

Plant:	Wainui WWTP Irrigation Field, Banks Peninsula
Asset Owner:	Christchurch City Council
Laboratory:	Christchurch City Council Laboratory, City Water & Waste Unit

Date	Lab analysis				5-Sample Median	
	BOD5 [mg/l]	TSS [mg/l]	FEC [cfu/100ml]	TN [mg/l]	TSS [mg/l]	FEC [cfu/100ml]
2/07/2014	2.2	4.0	5.0	11.0		
5/08/2014	1.0	3.0	5.0	21.0		
2/09/2014	3.0	3.0	5.0	29.0		
1/10/2014	1.5	3.0	120.0	56.4		
10/11/2014	1.0	3.0	90.0	1.0	3.0	5.0
2/12/2014	1.4	10.0	220.0	38.0	3.0	90.0
13/01/2015	2.6	15.0	8,400.0	19.1	3.0	120.0
10/02/2015	1.0	21.0	210.0	20.0	10.0	210.0
3/03/2015	1.0	3.0	40.0	72.9	10.0	210.0
1/04/2015	2.2	12.0	5.0	51.6	12.0	210.0
7/05/2015	1.2	3.0	5.0	63.0	12.0	40.0

Median:	1.4	3.0	40.0	29.0		
90th Percentile:	2.6	15.0	220.0	63.0		
Average:	1.6	7.3	827.7	34.8		
Maximum/Limit:	3.0	21.0	8,400.0	72.9	20	10,000
Exceedances:					0.0	6.0

Removed '<' for calculations and halved the value.

Total flow (m3)	1262
Maximum daily flow (m3)	19.0
Annual average TN (mg/L)	34.8
Estimated TN load (kg/ha/yr)	43.9

Attachment 3: O&M Rounds, Wainui

Frequency	Seaview WWTP		Warnerville Irrigation Field	
	Task Description	Comments	Task Description	Comments
Every Visit	<ul style="list-style-type: none"> Check line flow and pressure readings. 	Flow meter 205.0 PL002 FT01 readings should range 1.1L/s to 2.2L/s. Pressure transducer 205.0 PL002 PT01 high pressure should not be >900kPa. Pressure switch 205.3PL001PS01 low pressure should not be < -40kPa.	<ul style="list-style-type: none"> Check line flow and pressure readings. Check tank level is sufficient for full submergence of pumps 305.0.OP001 & 305.0.OP003. 	Pressure transmitters 315.1 PL001 PT01 & 315.2 PL001 PT01 should range 400kPa to 900 kPa Normal range of 305.0.OT001LT01 is 1.675m to 3.8m (measured from tank bottom)
Every Week	<ul style="list-style-type: none"> Visually check for leaks. Check pumps 205.1 & 205.2 OP001 for excessive heat, noise, vibration, and correct operation. Check current drawn. Level control operation is OK. Check for fat build-up in septic tanks Check hatches and doors for odour and condition Monitor motor running currents 	Sound should be < 85dB at 1 m from the pump. Temperature should be < 50°C. By SCADA/VSD	<ul style="list-style-type: none"> Check current drawn. Monitor motor running currents 	Rated current is 13A By SCADA/VSD
Every 6 Months	<ul style="list-style-type: none"> Check level switch 010.1 TT001 LS01 and level transducer 0101.1 TT001 LT01 operation Check flow meter 205.0 PL002 FT01 calibration & accuracy Check pressure transducer 205.0 PL002 PT01 calibration & accuracy Operate/grease all valves and check for gland leakage. Check pump mechanical seals, and replace if necessary. Check shaft or shaft sleeve for scouring. Check alignment for pumps and motors. Check holding down bolt for tightness. Check coupling for wear. 	If suspected issue only If suspected issue only Visual check	<ul style="list-style-type: none"> Operate all valves and check for gland leakage. Check flow meters calibration & accuracy 315.1 PL001 FT01 & 315.2 PL001 FT01 Check pressure transmitters calibration & accuracy 315.1 PL001 PT01 & 315.2 PL001 PT01 <p><u>Irrigation System:</u></p> <ul style="list-style-type: none"> Check main to submain connection Check flush points at each zone Visual check for leaks at top chamber Check even drip distribution Check sub main pins are secure Check air valve works Check indexing valve works to each of the 3 zones Remove and clean twin disk filter Open all flush valves at the end of the drip lines (along fence line) and run for 5 min before closing or once lines are sufficiently flushed. Check pressures at the top and bottom of each zone when zone is operating Open and flush submains at bottom of each zone. Ensure holding downpipes for pumps 305.0.OP001 & 305.0.OP003 are secure. 	If suspected issue only If suspected issue only Flush tubes using plastic valve Run pump and check valve Visual monitoring required On discharge line to irrigation field (may require confined space entry permit) Check with pressure instrument Normal operating ranges is 141.5 to 222kPa Black polyethylene pipe
Every 12 Months	<ul style="list-style-type: none"> Check rotating elements for wear. Check mountings are secure. Check operation of controls and test critical alarms. Coordinate RPZ certification 	2 RPZ (1 potable supply and 1 process supply); Martin Fry	<ul style="list-style-type: none"> Check operation of electronic controls and test critical alarms. Check mechanical pump seals Test insulation on motors Coordinate RPZ certification 	1 RPZ; Martin Fry
Every 5 Years	<ul style="list-style-type: none"> Replace motor bearings and check general condition of motor. 	As required if noisy		