



**Resource Consent Number:** CRC071865.1

**File Number:** CO6C/01282

**Client Name:** Christchurch City Council (City Solutions)

**To:** To discharge contaminants into the Coastal Waters.

**Consent Location:** Red House Bay, Beach Road, AKAROA HARBOUR

**State:** Current

**Events:**

17/08/2010 Change in Conditions takes effect

1/07/2013 Consent Expires

1/07/2013 Lapse Date if not Given Effect To

<b>1</b>	The discharge shall be only treated wastewater from the Akaroa Wastewater Treatment Plant, located at Redhouse Bay, Akaroa Harbour.
	<b>Compliance</b>
<b>2</b>	Treated wastewater from the Akaroa Wastewater Treatment Plant shall be discharged into Akaroa Harbour via an existing 100 meter long submerged outfall at map reference NZMS 260 N37:05561-09862, as shown in Appendix A which forms part of this consent.
	<b>Compliance</b>
<b>3</b>	Warning notices, which can be read from a distance of five metres, shall be erected and maintained at the following locations: On the shoreline 400 metres either side of the point on the shoreline nearest the outfall, and Beside Beach Road adjacent to the rocks that lead out to Green Point. The warning notices shall advise the public of the existence of a wastewater outfall and the dangers of swimming in the area or eating shellfish collected in that location.
	<b>Compliance</b>
<b>4</b>	The volume of wastewater exiting the Akaroa Wastewater Treatment Plant shall be continuously recorded using a flow meter. The readings from the flow meter shall be recorded in litres per second and shall be used to calculate the daily volume of wastewater entering the treatment plant, and these daily volumes shall be recorded. The daily volumes recorded shall be used to determine compliance with condition (5).
	<b>Compliance (Attachment 1)</b>
<b>5</b>	The volume of treated wastewater discharged shall not exceed 750 cubic metres per day, except during rainfall events of a total of 50 millimetres or more over 3 consecutive days, when the volume of treated wastewater discharged may exceed 750 cubic metres per day but not 3,000 cubic metres per day. Note: For the purposes of this condition, the rainfall shall be that measured at the weather station operated by NIWA on Rue Lavaud, Akaroa (Agent number = 4951).
	<b>Compliance (Attachments 1 and 2); dry weather maximum of 750 m<sup>3</sup>/d was exceeded on 20/10/2011 due to an extreme rain event of 116 mm over 19-20/10/2011. Station 4951 has stopped operation so data from 36593 was used instead.</b>
<b>6</b>	Treated wastewater shall be sampled after treatment and prior to discharge into Akaroa Harbour via the outfall. The samples shall be collected at the frequencies specified and analysed for the contaminants listed in Table 1: Table 1: Treated wastewater quality monitoring – contaminants and sampling frequency Weekly (Dec, Jan, Feb) Monthly Monthly (between 1 Mar and 30 Nov) Annually (Jan) faecal coliforms dissolved reactive phosphorus (DRP) Faecal coliforms lead enterococci ammonia enterococci copper total suspended solids (TSS) total nitrogen (TN) TSS chromium total five day biochemical oxygen demand (BOD5) oxides of nitrogen (NOx) BOD5 cadmium total phosphorus (TP) zinc temperature
	<b>Compliance (Attachment 3)</b>
<b>7</b>	The median concentration of faecal coliforms in the treated wastewater shall not exceed 1,000 per 100 millilitres
	<b>Compliance (Attachment 3)</b>
<b>8</b>	The consent holder shall use the best practicable option to ensure the median concentration of BOD5 and TSS does not exceed 30 grams per cubic metre
	<b>Compliance (Attachment 3)</b>
<b>9</b>	For the purposes of conditions (7) and (8) the median shall be calculated from the results of any five consecutive treated wastewater samples analysed
	<b>Compliance (Attachment 3)</b>
<b>10</b>	The receiving water shall be sampled and analysed for faecal coliforms and enterococci at the following locations, as shown on plan CRC071865A: Adjacent to the two rocky outcrops either side of the Treatment Plant at or about map references NZMS260:N36:0573-1022 and NZMS260:N37:0554-0979; At the shoreline nearest the outfall; 400 metres

	along the shoreline in a southerly direction from site (b); and 400 metres along the shoreline in a northerly direction from site (b).
	<b>Compliance (Attachment 3)</b>
11	Receiving water sampling and analysis for faecal coliforms and enterococci shall be occur at least weekly during December, January and February each year and at least monthly for faecal coliforms between 1 March and 30 November. Receiving water sampling shall occur within six hours of treated wastewater sampling.
	<b>Compliance (Attachment 3)</b>
12	In the event that the analysis of receiving water samples collected under condition (11) from outside the 250 metre radius mixing zone indicates: A concentration of faecal coliforms that exceeds a median of 14 per 100 millilitres and/or That the concentration of the faecal coliforms in more that ten percent of samples exceeds 43 per 100 millilitres; The consent holder shall notify the Canterbury regional council, Attention: RMA Compliance and Enforcement manager. The results of all samples collected in December and the following January and February of each year shall be used to determine whether the values specified in this condition have been exceeded for each site.
	<b>Compliance (Attachment 3); ECAN was notified of 3 instances exceeding these limits in report dated 29 March 2012</b>
13	The notification required by condition (12) shall be provided within one month of detecting the exceedance, and shall identify whether the exceedance resulted from wastewater discharge and, if so, shall detail what measures the consent holder has implemented or will implement to mitigate any adverse environmental effects as a result of the exceedance and to prevent a reoccurrence. Such measures may include: Additional sampling and analysis; and Investigation of whether the exceedance was related to high concentrations in the treated wastewater.
	<b>Compliance (report dated 29 March 2012 addressed these requirements)</b>
14	The receiving water shall be sampled and analysed for temperature, TN, NO <sub>x</sub> , TP, DRP and ammonia at the following locations, as shown on plan CRC071865.1A attached to this consent as Appendix B: 250 metres due north of the outfall; 250 metres due west of the outfall; and 250 metres due south of the outfall.
	<b>Compliance (Attachment 3)</b>
15	Receiving water sampling and analysis for temperature, TN, NO <sub>x</sub> , TP, DRP and ammonia shall occur at least once during the first week of February, May, August and November. Receiving water sampling shall occur within six hours of treated wastewater sampling.
	<b>Compliance (Attachment 3)</b>
16	The consent holder shall use the best practicable option to ensure the median concentration of TN, NO <sub>x</sub> , TP, DRP and ammonia in the receiving water do not exceed the following concentrations: TN that exceeds a median of 0.21 mg/L; NO <sub>x</sub> that exceeds a median of 0.023 mg/L TP that exceeds a median of 0.039 mg/L; DRP that exceeds a median of 0.017 mg/L; and Ammonia that exceeds a median of 0.910 mg/L The consent holder shall notify the Canterbury Regional Council, Attention: RMA Compliance and Enforcements Manager. For the purposes this condition, the median shall be calculated for each site from the results of any four consecutive samples.
	<b>Partial compliance (Attachment 3)</b>
17	The notification required by condition (16) shall be provided within one month of detecting the exceedance, and shall identify whether the exceedance resulted from the wastewater discharge and, if so, shall detail what measures the consent holder has implemented or will implement to mitigate any adverse environmental effects as a result of the exceedance and to prevent a reoccurrence. Such measures may include: Additional sampling and analysis; and Investigation of whether the exceedance was related to high concentrations in the treated wastewater.
	<b>See comments below</b>
18	The time and date that the sample is collected shall be recorded for all samples collected under this consent. The laboratory carrying out the analyses of all samples collected under this consent shall be accredited for the analyses to ISO guide 25, either by International Accreditation New Zealand (IANZ), or by an organisation with a mutual agreement with IANZ.
	<b>Compliance; details of all sample methods and dates/times provided to ECAN monthly; non-accredited TN results for receiving environment samples accepted by ECAN (according to 09/07/2012 email) while CCC lab pursues validation.</b>
19	The consent holder shall submit to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, any sampling results required by this consent during each month by the 15th working day of the following month.
	<b>Compliance</b>
20	The consent holder shall submit to the Canterbury Regional Council, Attention: RMA Compliance and Enforcement Manager, an annual report by 31 July each year which includes, but is not limited to, the following: Results of the monitoring undertaken in the previous year from 1 July to 30 June; An analysis of monitoring results with limits and trigger values specified in the conditions of this consent; An analysis of receiving water monitoring results with treated wastewater monitoring results; Measures taken to remedy any exceedances of limits or trigger values; Comparison of monitoring results with historical data; An interpretation of the results in relation to the effects of the discharge on the

	environment; and Details of all upgrades to the treatment plant or that may affect the quality or volume of treated wastewater discharged.
	<b>Compliance via this report</b>
<b>21</b>	Copies of all monitoring results and reports relating to the discharge from the wastewater treatment plant shall be made available to the community via the Akaroa Service Centre and the Christchurch City Council website.
	<b>CCC to follow up</b>
<b>22</b>	The consent holder shall submit to the Canterbury Regional Council, within six months of the grant of this consent, a management plan that details the measures that will be taken to ensure compliance with the trigger values specified in this consent relating to treated wastewater and receiving environment quality and shall include contingency measures in response to mechanical or electrical failures.
	<b>Compliance</b>
<b>23</b>	The consent shall be exercise in accordance with the management plan.
	<b>Compliance</b>
<b>24</b>	The consent holder shall use its best endeavours to establish and maintain a Community Working Party (CWP), and provide reasonable organisational and administrative support for such a group for the duration of the consent. The CWP shall be established within 6 months of the granting of this consent and the first meeting shall set up the framework and aims for the group and their responsibilities. In establishing the group, the consent holder shall invite a representative of each of the following organisations to be members of the CWP and to meet at least once per year: Friends of Banks Peninsula; Department of Conservation; Environment Canterbury; Onuku Runanga; Wairewa Runanga; Taiapure Management Group; Akaroa Promotions; Akaroa Harbour marine Protection Society; and Any other interested person or interest group. The consent holder shall liaise with the CWP with the aim of facilitating the following outcomes: The consent holder has access to community opinions, observations, and activities that may be affected by the exercise of this consent; and Communication and liaison between the consent holder and local community is maintained.
	<b>CCC to follow up</b>
<b>25</b>	The consent holder shall undertake a programme of works associated with the investigation and selection of a long-term method of treatment and disposal of wastewater from the Akaroa Wastewater Treatment Plant. This programme shall be undertaken in general accordance with the schedule attached as Appendix C which forms part of this consent. The consent holder shall submit to the Canterbury Regional Council and the CWP: a report on the list of options for wastewater treatment and disposal, no later than 31 July 2009; and a report of the preferred option for wastewater treatment and disposal, no later than 31 July 2011. A progress report shall be submitted to the Canterbury Regional Council and to the CWP, six months prior to the dates set out in (b) above, to show that progress is being made to meet these timeframes.
	<b>CCC to follow up</b>
<b>26</b>	The Canterbury Regional Council may, on any of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of: 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; and Requiring the consent holder to conduct monitoring instead of, or in addition to, that required by the consent.
	<b>ECAN to request</b>

### **Treatment Plant Effluent Monitoring**

Daily flows into the Akaroa Wastewater Treatment Plant (WWTP) were very well under control with 95% of them <390 m<sup>3</sup>/d (Attachment 1), which is well below the dry weather maximum of 750 m<sup>3</sup>/d.

The plant demonstrated excellent performance over the past year with no exceedances above the median limits for the effluent quality (Table 1). Individual samples collected for BOD<sub>5</sub>, TSS, and FEC analysis were only elevated above the respective trigger values on one occasion (Attachment 3.1). These elevated concentrations all occurred on separate days during the summer and were not prolonged, so the medians remained compliant.

No upgrades to the plant occurred during the reporting period, but CCC can provide more information on its plans to design and install a new plant.

### **Receiving Environment Monitoring**

Results for the receiving environment have historically shown big discrepancies and uncertainty in the data. To combat this, Dr. Bolton Ritchie recommended switching from TN to Chlorophyll *a* to monitor algae growth, but this issue was left unconsidered by CCC. Progress has been made,

however, with regards to data quality over the past year. CCC lab is in the process of acquiring IANZ accreditation for TN analysis with an appropriate detection limit, which produces more meaningful data.

Some transgressions were experienced for human-health related parameters (Attachment 3.2). Assuming interpretation of Condition 12 is based on summer samples separated for each site, this meant that the median limit was exceeded at three locations (Table 1). 23% of samples collected at 400m Shoreline North and Shoreline nearest Outfall (3 events each) and 15% of samples (2 events) collected at North Rocky Outcrop were >43 CFU/100mL. All location medians were <14 CFU/100mL.

Nutrient data gathered from the receiving environment was non-compliant at all locations for TN and NOx as well as TP at 250m due North of outfall (Attachment 3.3). However, since the plant effluent was compliant for these parameters, these values do not appear related to treatment process. Regardless, the really positive fact is that the water quality of the harbour has improved compared to 2010/2011 based on all medians except for NOx.

Exceedances and transgressions relating to the receiving environment should not be linked to the WWTP discharge as previously discussed in Akaroa WWTP's 1) annual monitoring report for 2010-2011 and 2) summer sampling results for receiving water faecal coliforms dated 29 March 2012. A direct causative relationship cannot be determined due to the impact from other sources (e.g., runoff, tourist ships, etc.).

As this consent expires next year, special attention should be given to better defining and clarifying the conditions in order to reduce uncertainty with interpretation and ensure reporting compliance.

**Table 1. Summary of Monitoring Non-Compliances from July 2011-June 2012.**

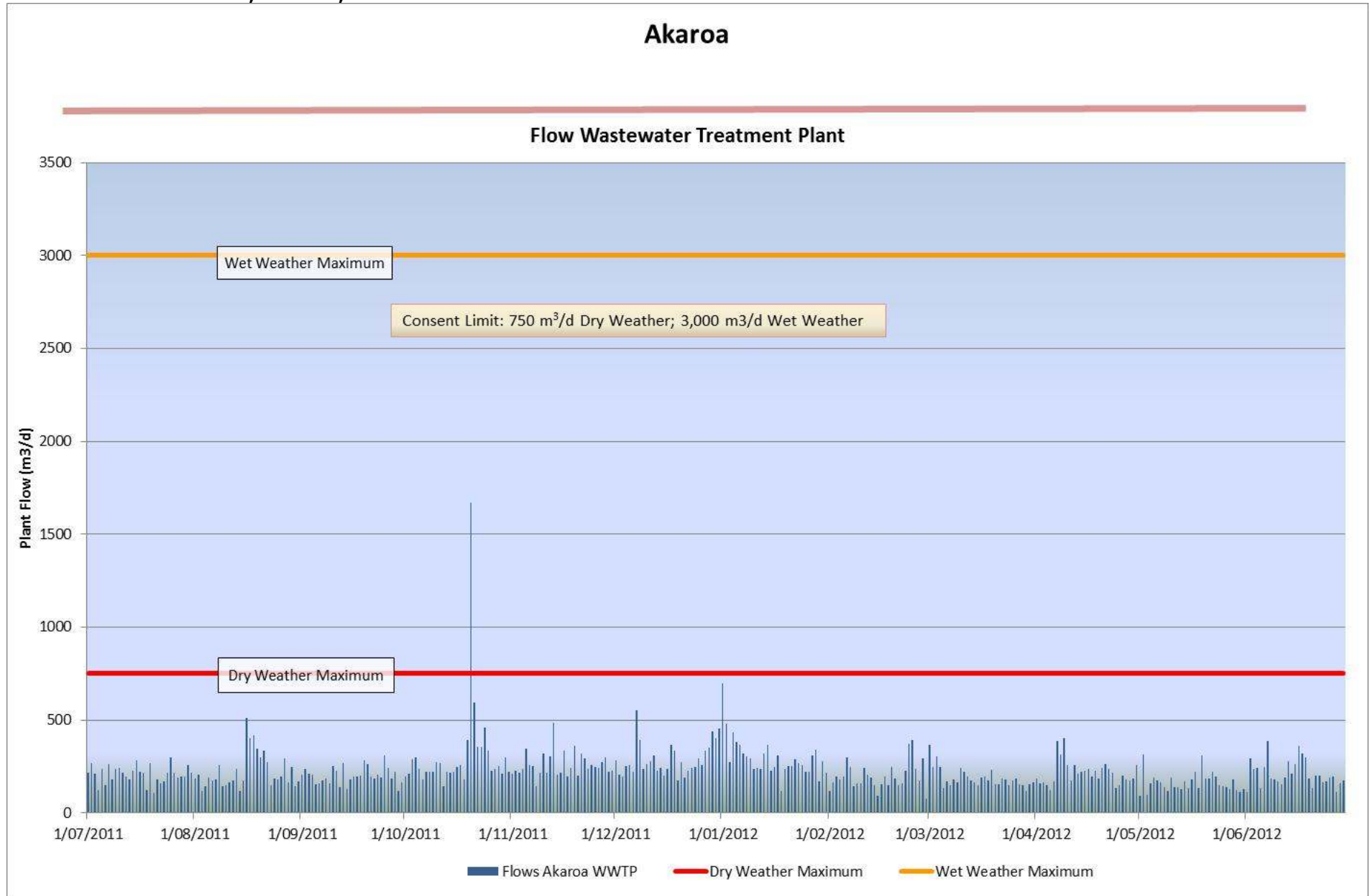
<b>Treatment Plant Effluent</b>			
<b>Parameter</b>	<b>Single Samples Exceeding Limit</b>	<b>Median Limit Exceedances</b>	<b>Condition Non-Compliances</b>
BOD5	1	0	0
TSS	1	0	0
FEC	1	0	0
<b>Receiving Environment</b>			
<b>Parameter</b>	<b>Single Samples Exceeding Limit</b>	<b>Median Limit/% Exceedances</b>	<b>Condition Non-Compliances</b>
FEC median < 14	23	0	0
<10% FEC > 43	10	3	0
TN	7	3	1
NNN	9	3	
TP	6	1	
DRP	0	0	
Ammonia	0	0	

## Attachment 1.1: Flows, Akaroa, Data

Plant:		Akaroa Wastewater Treatment, Banks Peninsula						
Asset Owner:		Christchurch City Council						
Laboratory		Christchurch City Council Laboratory, City Water & Waste Unit						
Max:		750	m <sup>3</sup> /d	Dry weather	Max:	3000	m <sup>3</sup> /d	Wet weather
Date	Flow [m <sup>3</sup> /d]	Date	Flow [m <sup>3</sup> /d]	Date	Flow [m <sup>3</sup> /d]	Date	Flow [m <sup>3</sup> /d]	
1/07/2011	216	1/10/2011	196	1/01/2012	696	1/04/2012	184	
2/07/2011	268	2/10/2011	209	2/01/2012	479	2/04/2012	158	
3/07/2011	209	3/10/2011	291	3/01/2012	271	3/04/2012	165	
4/07/2011	124	4/10/2011	298	4/01/2012	433	4/04/2012	150	
5/07/2011	237	5/10/2011	236	5/01/2012	382	5/04/2012	125	
6/07/2011	148	6/10/2011	178	6/01/2012	365	6/04/2012	168	
7/07/2011	263	7/10/2011	224	7/01/2012	320	7/04/2012	389	
8/07/2011	182	8/10/2011	224	8/01/2012	307	8/04/2012	315	
9/07/2011	236	9/10/2011	224	9/01/2012	294	9/04/2012	402	
10/07/2011	242	10/10/2011	271	10/01/2012	235	10/04/2012	260	
11/07/2011	215	11/10/2011	270	11/01/2012	244	11/04/2012	176	
12/07/2011	196	12/10/2011	144	12/01/2012	237	12/04/2012	258	
13/07/2011	183	13/10/2011	224	13/01/2012	322	13/04/2012	212	
14/07/2011	227	14/10/2011	219	14/01/2012	367	14/04/2012	221	
15/07/2011	286	15/10/2011	220	15/01/2012	225	15/04/2012	228	
16/07/2011	220	16/10/2011	248	16/01/2012	250	16/04/2012	235	
17/07/2011	217	17/10/2011	256	17/01/2012	310	17/04/2012	196	
18/07/2011	124	18/10/2011	183	18/01/2012	116	18/04/2012	225	
19/07/2011	267	19/10/2011	394	19/01/2012	238	19/04/2012	185	
20/07/2011	110	20/10/2011	1671	20/01/2012	253	20/04/2012	242	
21/07/2011	179	21/10/2011	595	21/01/2012	253	21/04/2012	263	
22/07/2011	162	22/10/2011	354	22/01/2012	291	22/04/2012	238	
23/07/2011	168	23/10/2011	357	23/01/2012	267	23/04/2012	217	
24/07/2011	219	24/10/2011	462	24/01/2012	258	24/04/2012	133	
25/07/2011	298	25/10/2011	336	25/01/2012	220	25/04/2012	148	
26/07/2011	216	26/10/2011	227	26/01/2012	224	26/04/2012	201	
27/07/2011	189	27/10/2011	238	27/01/2012	309	27/04/2012	179	
28/07/2011	197	28/10/2011	252	28/01/2012	340	28/04/2012	177	
29/07/2011	196	29/10/2011	214	29/01/2012	169	29/04/2012	188	
30/07/2011	260	30/10/2011	299	30/01/2012	279	30/04/2012	258	
31/07/2011	216	31/10/2011	223	31/01/2012	217	1/05/2012	91	
1/08/2011	184	1/11/2011	213	1/02/2012	120	2/05/2012	317	
2/08/2011	207	2/11/2011	226	2/02/2012	167	3/05/2012	99	
3/08/2011	120	3/11/2011	215	3/02/2012	198	4/05/2012	160	
4/08/2011	146	4/11/2011	238	4/02/2012	179	5/05/2012	193	
5/08/2011	193	5/11/2011	345	5/02/2012	197	6/05/2012	177	
6/08/2011	176	6/11/2011	259	6/02/2012	299	7/05/2012	163	
7/08/2011	180	7/11/2011	253	7/02/2012	249	8/05/2012	137	
8/08/2011	257	8/11/2011	144	8/02/2012	145	9/05/2012	120	
9/08/2011	146	9/11/2011	217	9/02/2012	160	10/05/2012	191	
10/08/2011	147	10/11/2011	319	10/02/2012	162	11/05/2012	139	
11/08/2011	167	11/11/2011	219	11/02/2012	244	12/05/2012	139	
12/08/2011	175	12/11/2011	304	12/02/2012	205	13/05/2012	130	
13/08/2011	236	13/11/2011	485	13/02/2012	191	14/05/2012	172	
14/08/2011	121	14/11/2011	204	14/02/2012	149	15/05/2012	134	
15/08/2011	176	15/11/2011	216	15/02/2012	92	16/05/2012	183	
16/08/2011	513	16/11/2011	337	16/02/2012	157	17/05/2012	220	

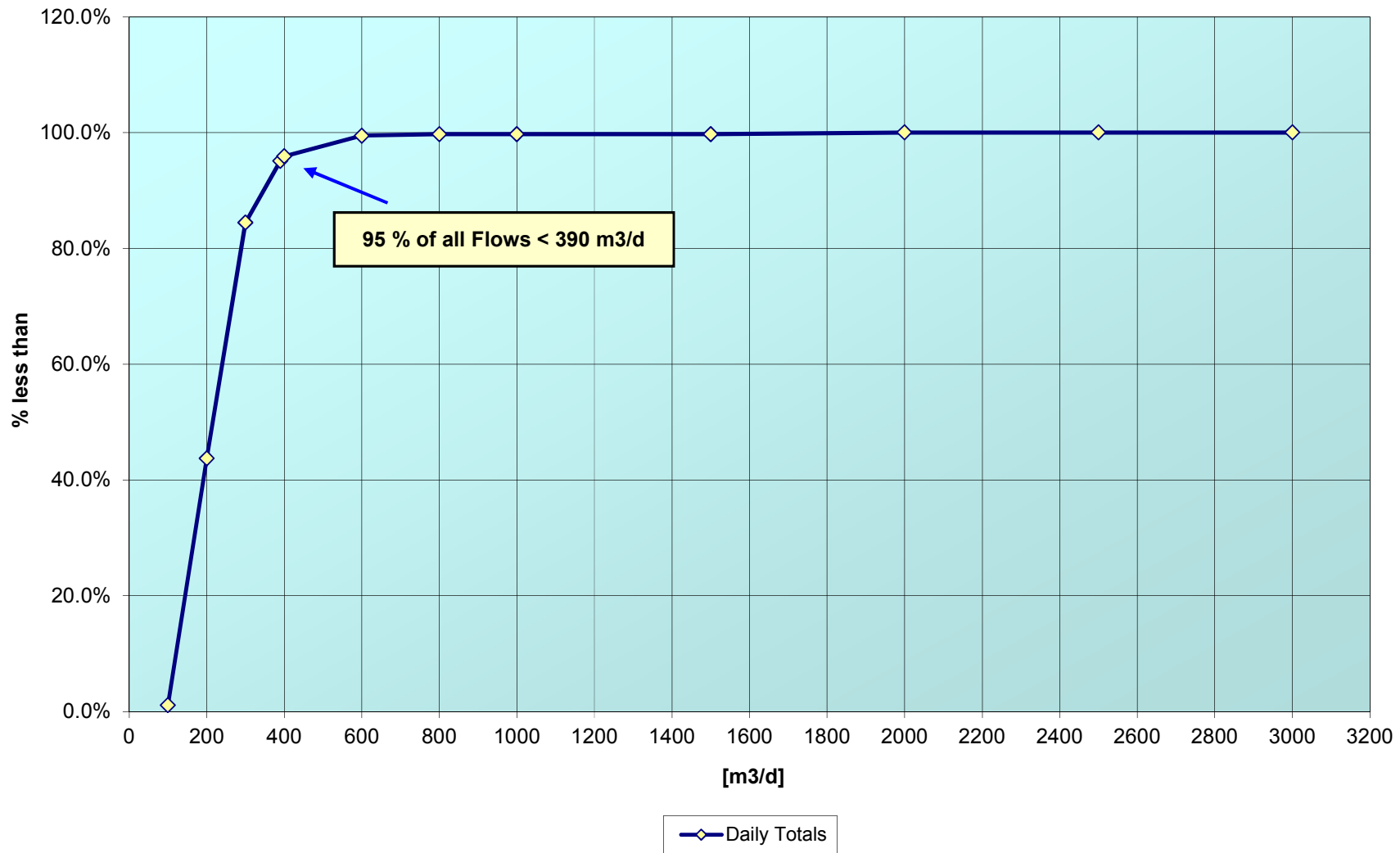
17/08/2011	405	17/11/2011	197	17/02/2012	197	18/05/2012	135
18/08/2011	419	18/11/2011	240	18/02/2012	151	19/05/2012	312
19/08/2011	347	19/11/2011	361	19/02/2012	248	20/05/2012	184
20/08/2011	302	20/11/2011	202	20/02/2012	185	21/05/2012	184
21/08/2011	336	21/11/2011	319	21/02/2012	148	22/05/2012	223
22/08/2011	271	22/11/2011	294	22/02/2012	162	23/05/2012	194
23/08/2011	148	23/11/2011	238	23/02/2012	225	24/05/2012	148
24/08/2011	187	24/11/2011	258	24/02/2012	371	25/05/2012	142
25/08/2011	183	25/11/2011	246	25/02/2012	391	26/05/2012	139
26/08/2011	195	26/11/2011	241	26/02/2012	236	27/05/2012	131
27/08/2011	295	27/11/2011	276	27/02/2012	176	28/05/2012	181
28/08/2011	167	28/11/2011	301	28/02/2012	295	29/05/2012	122
29/08/2011	247	29/11/2011	223	29/02/2012	75	30/05/2012	112
30/08/2011	144	30/11/2011	225	1/03/2012	369	31/05/2012	128
31/08/2011	170	1/12/2011	285	2/03/2012	250	1/06/2012	113
1/09/2011	207	2/12/2011	207	3/03/2012	303	2/06/2012	295
2/09/2011	235	3/12/2011	195	4/03/2012	250	3/06/2012	239
3/09/2011	210	4/12/2011	252	5/03/2012	133	4/06/2012	242
4/09/2011	206	5/12/2011	257	6/03/2012	170	5/06/2012	133
5/09/2011	155	6/12/2011	220	7/03/2012	149	6/06/2012	247
6/09/2011	158	7/12/2011	555	8/03/2012	181	7/06/2012	385
7/09/2011	177	8/12/2011	390	9/03/2012	167	8/06/2012	185
8/09/2011	186	9/12/2011	236	10/03/2012	241	9/06/2012	180
9/09/2011	161	10/12/2011	262	11/03/2012	221	10/06/2012	171
10/09/2011	251	11/12/2011	277	12/03/2012	197	11/06/2012	153
11/09/2011	225	12/12/2011	308	13/03/2012	173	12/06/2012	190
12/09/2011	140	13/12/2011	228	14/03/2012	164	13/06/2012	281
13/09/2011	270	14/12/2011	244	15/03/2012	149	14/06/2012	210
14/09/2011	128	15/12/2011	203	16/03/2012	191	15/06/2012	263
15/09/2011	178	16/12/2011	236	17/03/2012	196	16/06/2012	362
16/09/2011	196	17/12/2011	369	18/03/2012	177	17/06/2012	318
17/09/2011	195	18/12/2011	335	19/03/2012	232	18/06/2012	300
18/09/2011	201	19/12/2011	176	20/03/2012	154	19/06/2012	186
19/09/2011	283	20/12/2011	273	21/03/2012	154	20/06/2012	132
20/09/2011	265	21/12/2011	190	22/03/2012	188	21/06/2012	201
21/09/2011	198	22/12/2011	228	23/03/2012	178	22/06/2012	201
22/09/2011	188	23/12/2011	242	24/03/2012	151	23/06/2012	166
23/09/2011	208	24/12/2011	248	25/03/2012	174	24/06/2012	170
24/09/2011	190	25/12/2011	295	26/03/2012	184	25/06/2012	189
25/09/2011	310	26/12/2011	259	27/03/2012	154	26/06/2012	196
26/09/2011	245	27/12/2011	337	28/03/2012	150	27/06/2012	113
27/09/2011	188	28/12/2011	353	29/03/2012	120	28/06/2012	159
28/09/2011	222	29/12/2011	440	30/03/2012	153	29/06/2012	176
29/09/2011	118	30/12/2011	402	31/03/2012	164	30/06/2012	183
30/09/2011	163	31/12/2011	455				

## Attachment 1.2: Flows, Akaroa, Chart





**Attachment 1.3: Flows, Akaroa, '% less than'**



**Attachment 1.4: Instantaneous Flows, Akaroa, Excel File (emailed)**

## Attachment 2.1: Rainfall data, Akaroa

Station information:							
Name	Agent Number	Network	Latitude	Longitude	Height (m)	Posn_Prec	Observing Authority
Akaroa Ev	36593	H32895	-43.81	172.966	45	G	Niwa
Onawe Du	4928	H32791	-43.76	172.925	46	G	N/A
Akaroa,Ru	4951	H32893	-43.8	172.97	4	H	N/A no longer monitored
Note: Position precision types are: "W" = based on whole minutes, "T" = estimated to tenth minute, G = derived from gridref, "E" = error cases derived from gridref, H = based on GPS readings (NZGD49), "D" = by definition i.e. grid points.							
Rain: Daily							
Station	Date(NZST)	Amount(mm)	SofG	Deficit(mm)	Runoff(mm)	Period(Hrs)	Freq
36593	20111001:0800	0	-	24	0	24	D
4928	20111001:0800	0	-	26	0	24	D
36593	20111002:0800	0	-	26.6	0	24	D
4928	20111002:0800	0	-	28.6	0	24	D
36593	20111003:0800	0.6	-	28.7	0	24	D
4928	20111003:0800	1.2	-	30.1	0	24	D
36593	20111004:0800	17.4	-	14	0	24	D
4928	20111004:0800	19.1	-	13.7	0	24	D
36593	20111005:0800	5.2	-	11.4	0	24	D
4928	20111005:0800	2.7	-	13.6	0	24	D
36593	20111006:0800	0	-	14.1	0	24	D
4928	20111006:0800	0.1	-	16.2	0	24	D
36593	20111007:0800	0	-	16.8	0	24	D
4928	20111007:0800	0	-	18.9	0	24	D
36593	20111008:0800	4.6	-	14.8	0	24	D
4928	20111008:0800	3.9	-	17.6	0	24	D
36593	20111009:0800	2	-	15.5	0	24	D
4928	20111009:0800	2.3	-	18	0	24	D
36593	20111010:0800	0	-	18.2	0	24	D
4928	20111010:0800	0	-	20.7	0	24	D
36593	20111011:0800	8.2	-	12.6	0	24	D
4928	20111011:0800	4.4	-	18.9	0	24	D
36593	20111012:0800	0	-	15.3	0	24	D
4928	20111012:0800	0	-	21.6	0	24	D
36593	20111013:0800	0	-	18	0	24	D
4928	20111013:0800	0	-	24.3	0	24	D
36593	20111014:0800	0	-	20.6	0	24	D
4928	20111014:0800	0	-	26.9	0	24	D
36593	20111015:0800	0	-	23.3	0	24	D
4928	20111015:0800	0.2	-	29.4	0	24	D
36593	20111016:0800	0.4	-	25.5	0	24	D
4928	20111016:0800	0.8	-	31.2	0	24	D
36593	20111017:0800	0	-	28.2	0	24	D
4928	20111017:0800	0	-	33.9	0	24	D
36593	20111018:0800	0	-	30.9	0	24	D
4928	20111018:0800	0.2	-	36.4	0	24	D
36593	20111019:0800	63	-	0	29.5	24	D
4928	20111019:0800	33.2	-	5.8	0	24	D
36593	20111020:0800	53.4	-	0	50.7	24	D
4928	20111020:0800	63.4	-	0	54.9	24	D
36593	20111021:0800	1.4	-	1.3	0	24	D
4928	20111021:0800	1	-	1.7	0	24	D
36593	20111022:0800	2.6	-	1.3	0	24	D
4928	20111022:0800	5.6	-	0	1.3	24	D
36593	20111023:0800	0	-	4	0	24	D
4928	20111023:0800	0	-	2.7	0	24	D
36593	20111024:0800	0	-	6.7	0	24	D
4928	20111024:0800	0	-	5.3	0	24	D

## Attachment 2.2: Closing of Rainfall Station 4951, Akaroa

Station Details for Agent: 4951

[http://cliflo.niwa.co.nz/pls/niwp/wstn\\_sta\\_details?cAgent=4951](http://cliflo.niwa.co.nz/pls/niwp/wstn_sta_details?cAgent=4951)

### Station Details for Agent: 4951

[Check Data Availability](#) | [Sensor and Site History](#)

Parameter	Indicator
Agent Number	4951
Network Number	H32893
Name	Akaroa, Rue Lavaud
Lat (dec deg, S of equator is neg)	-43.80418
Longitude (dec deg, E of Greenwich is pos e.g. NZ)	172.96997
Position Precision	H
Note: Position precision types are: "W" = based on whole minutes, "T" = estimated to tenth minute, "G" = derived from gridref, "E" = error cases derived from gridref, "H" = based on GPS readings (NZGD40), "D" = by definition i.e. grid points.	
Height above MSL in metres	4m
Grid Reference (NZ Metric Map Series)	N36076117
Start Date	30-Nov-1977
End Date	01-Jan-2008
Closed Indicator (Closed = 1)	1
Sty Station Type	1: Climat (Standard)
Synoptic Number (World Met. Organisation Number)	-
WRA No	328903
Observing Authority	N/A

#### Current Indicators

Note: the following indicators show the current status for open stations. Closed stations may show no recorded parameters.

Parameter	Indicator	Parameter	Indicator
Rain	X	Evaporation	-
Surface Wind Dir	-	Surface Wind Speed	-
Max Gust Dir	-	Max Gust Speed	-
Solar Radiation	-	Sunshine Hours	-
10cm Earth Temp	-	20cm Earth Temp	-
30cm Earth Temp	-	100cm Earth Temp	-
Dry Bulb Temp	X	Wet Bulb Temp	X
Grass Min Temp	X	Weather Phenomenon	-
Max Temp	X	Min Temp	X
Visibility	-	Cloud Amount	-
MSL Pressure	-		
Wind Run	-		
Time Offset (from UTC)	12	day_daylight_area	02

[Sensor and Site History](#) | [Check Data Availability](#)  
[Find stations USING datatypes](#) | [Find stations IGNORING datatypes](#)  
[Database Query Form](#) | [Cliflo Home](#)

**Attachment 3.1: Lab Data, Akaroa Wastewater Treatment Plant (Conditions 6-9)**

	Date	Flow	BOD <sub>5</sub>	NH <sub>4</sub> -N	TKN	N <sub>org</sub>	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NNN	N <sub>tot</sub>	DRP	P <sub>tot</sub>	TSS	Temp	FEC	Ent	Median					
																	BOD <sub>5</sub>	TSS	FEC			
		[m <sup>3</sup> /d]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[deg C]	CFU/100ml	MPN/100ml	[mg/l]	[mg/l]	CFU/100ml			
Jul-11	4/07/2011	124	12.0	6.6	7.4	0.8	0.4	17.5	17.9	25.3	4.5	4.5	13.0	10.1	110	5	5.8	5.0	9.0			
Aug-11	3/08/2011	120	6.9	1.5	2.4	0.9	0.4	13.5	13.9	16.3	3.1	3.5	9.0	9.2	5	5	5.8	6.0	9.0			
Sep-11	5/09/2011	155	12.0	2.2	3.8	1.6	0.4	19.0	19.0	23.2	4.5	5.1	11.0	11.5	5	5	6.9	9.0	9.0			
Oct-11	4/10/2011	298	13.0	5.1	6.8	1.7	1.1	14.0	15.0	21.9	4.1	4.6	16.0	13.6	9	5	12.0	11.0	9.0			
Nov-11	2/11/2011	226	9.3	13.0	15.0	2.0	0.9	7.9	8.7	23.8	4.9	5.5	11.0	16.6	10	5	12.0	11.0	9.0			
Dec-11	1/12/2011	285	8.8	12.0	14.0	2.0	1.1	15.0	16.0	30.1	5.3	6.1	14.0	17.3	120	75	9.3	11.0	9.0			
	7/12/2011												14.0	17.5	170	85		14.0	10.0			
	14/12/2011												5.0	19.0	18	<10		14.0	18.0			
	19/12/2011												<5	17.0	130	10		12.5	120.0			
	28/12/2011												17.0	20.9	21,000	4100		14.0	130.0			
Jan-12	4/01/2012	433	>21	28.0	36.0	8.0	3.1	3.0	6.1	42.1	7.5	7.8	19.0	20.2	760	310	10.7	15.5	170.0			
	11/01/2012												17.0	22.0	150	41		17.0	150.0			
	18/01/2012												100.0	20.7	810	150		18.0	760.0			
	25/01/2012												17.0	19.5	55	31		17.0	760.0			
Feb-12	1/02/2012	120	16.0	19.0	21.0	2.0	1.2	16.0	17.0	38.2	8.1	8.1	15.0	19.0	9	10	11.2	17.0	150.0			
	8/02/2012												18.0	19.9	91	10		17.0	91.0			
	15/02/2012												10.0	19.5	<9	<10		17.0	73.0			
	22/02/2012												15.0	16.4	240	10		15.0	73.0			
Mar-12	1/03/2012	369	8.0	11.0	11.0	0.0	1.2	18.0	19.0	30.2	6.8	7.4	23.0	18.5	4.5	300	9.1	15.0	50.0			
Apr-12	2/04/2012	158	3.5	7.8	8.4	0.6	1.4	21.0	19.0	28.8	8.8	9.5	6.0	17.0	18	5	8.4	15.0	54.5			
May-12	2/05/2012	317	2.9	2.6	2.7	0.1	0.5	24.0	25.0	27.2	6.2	6.9	6.0	13.1	5	5	5.8	10.0	11.5			
Jun-12	7/06/2012	385	7.7	4.1	4.0	0.0	0.4	15.0	15.0	19.4	3.2	3.4	8.0	10.5	20	5	7.7	8.0	18.0			
																	5-sample median limit			30	30	1000
		As	Cd	Cr	Cu	Pb	Ni	Zn														
		[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]														
Jan-12	4/01/2012	3.7	<0.2	<1	30.0	<1.5	2.7	64.0														
Red text - rerun value from 05/03/2012.						Removed < for calculations and halved the value.																

**Attachment 3.2: Lab Data, Receiving Environment (Condition 12)**

	400m Shoreline North	400m Shoreline South	North Rocky Outcrop	Shoreline nearest OF	South Rocky Outcrop	400m Shoreline North	400m Shoreline South	North Rocky Outcrop	Shoreline nearest OF	South Rocky Outcrop
	Entero	Entero	Entero	Entero	Entero	FEC	FEC	FEC	FEC	FEC
	MPN/100ml	MPN/100ml	MPN/100ml	MPN/100ml	MPN/100ml	CFU/100ml	CFU/100ml	CFU/100ml	CFU/100ml	CFU/100ml
4/07/2011	5	5	5	10	10	5	5	5	10	60
3/08/2011	5	5	5	5	5	1	1	1	1	2
5/09/2011	5	5	5	5	5	2	2	2	2	2
4/10/2011	52	5	5	5	5	45	4.5	4.5	4.5	4.5
2/11/2011	20	5	5	5	5	5	5	20	5	40
1/12/2011	5	5	5	10	5	1	42	1	1	1
7/12/2011	20	10	20	41	20	42	24	24	27	24
14/12/2011	10	5	10	5	10	130	64	64	100	91
19/12/2011	5	5	5	5	5	13	5	1	1	1
28/12/2011	10	5	5	5	5	5	2	1	1	2
4/01/2012	5	5	5	5	10	4	2	4	6	1
11/01/2012	120	31	20	160	20	740	42	44	340	9
18/01/2012	10	5	5	5	5	1	2	2	1	1
25/01/2012	5	41	5	5	5	6	1	5	1	1
1/02/2012	5	5	5	10	5	1	1	1	2	1
8/02/2012	5	20	5	5	10	110	29	15	20	6
15/02/2012	5	10	5	5	5	1	9	5	4	13
22/02/2012	5	5	10	5	5	25	24	13	68	16
1/03/2012	150	130	120	50	170	150	120	180	110	170
2/04/2012	5	5	5	5	5	11	15	33	15	1
2/05/2012	5	10	5	5	5	1	1	4	1	1
7/06/2012	5	10	20	5	10	10	8	10	8	10
Removed < for calculations and halved the value.										
median of summer samples										
						6	9	5	4	2
# summer samples > 14										
						5	6	4	5	3
# summer samples > 43										
						3	1	2	3	1
% summer samples > 43										
						23.1%	7.7%	15.4%	23.1%	7.7%

**Attachment 3.3: Lab Data, Receiving Environment (Conditions 14-16)**

	250 metres due north						250 metres due west						250 metres due south						
	Temp	TN	NOx	TP	DRP	NH	Temp	TN	NOx	TP	DRP	NH	Temp	TN	NOx	TP	DRP	NH	
	°C	mg/L	mg/L	mg/L	mg/L	mg/L	°C	mg/L	mg/L	mg/L	mg/L	mg/L	°C	mg/L	mg/L	mg/L	mg/L	mg/L	
<b>TRIGGER</b>		0.210	0.023	0.039	0.017	0.910		0.210	0.023	0.039	0.017	0.910		0.210	0.023	0.039	0.017	0.910	
2/08/2010	11.0	1.600	0.020	0.030	0.017	0.030	11.0	1.100	0.040	0.030	0.010	0.030	11.0	2.200	0.040	0.030	0.012	0.030	
4/11/2010	13.4	0.400	0.390	0.085	0.048	0.030	13.4	0.400	0.420	0.081	0.014	0.140	13.4	0.400	0.370	0.096	0.036	0.130	
31/01/2011	15.3	4.600	0.070	0.320	0.020	0.050	15.3	0.800	0.040	0.120	0.020	0.050	15.3	1.500	0.030	0.270	0.024	0.050	
6/05/2011	12.9	1.000	0.060	0.014	0.014	0.021	12.9	1.000	0.050	0.017	0.012	0.015	12.9	1.000	0.030	0.014	0.014	0.022	
3/08/2011	6.5	1.100	0.100	0.500	0.009	0.005	6.5	1.100	0.070	0.500	0.009	0.200	6.5	1.100	0.080	0.500	0.016	0.037	
2/11/2011	13.9	0.400	0.002	0.057	0.002	0.005	13.9	0.800	0.002	0.046	0.002	0.005	13.9	0.600	0.002	0.040	0.009	0.005	
1/02/2012	16.0	0.100	0.130	0.005	0.003	0.014	16.0	0.100	0.142	0.015	0.002	0.013	16.0	0.100	0.132	0.005	0.002	0.018	
2/05/2012	11.4	0.120	0.089	0.028	0.014	0.055	11.4	0.100	0.060	0.027	0.011	0.060	11.4	0.230	0.070	0.026	0.012	0.060	
2010/2011 4-Sample Median		1.300	0.065	0.058	0.019	0.030		0.900	0.045	0.056	0.013	0.040		1.250	0.035	0.063	0.019	0.040	
2011/2012 4-Sample Median		0.260	0.095	0.043	0.006	0.010		0.450	0.065	0.037	0.005	0.037		0.415	0.075	0.033	0.011	0.028	
		<b>Over trigger levels</b>																	
		Green values - IANZ accreditation pending for lab on this analysis.																	
		Removed < for calculations and halved the value.																	