

# **119642 Ngaruawahia Wastewater Sewage Treatment Discharge 1 July 2011 – 30 June 2012**

**This consent authorises the Consent Holder to:** discharge up to 11,200 cubic metres per day of treated domestic wastewater from a wastewater treatment system into the Waikato River, in the vicinity of the Waikato River and Old Taupiri Road, Ngaruawahia, at or about map reference S14:002-935

	Conditions	Comply Yes/No	Comments
1	<p>The wastewater treatment and disposal system shall be designed, operated and maintained in general accordance with:</p> <ul style="list-style-type: none"> <li>i) The application for this resource consent;</li> <li>ii) The document titled “Waikato District Council Ngaruawahia and Huntly Wastewater Resource Consents Project, Resource Consents Application: Assessment of Effects on the Environment” dated March 2009 and recorded on Waikato Regional Council’s document system numbered 1458402; and</li> <li>iii) The document titled “Waikato District Council Ngaruawahia and Huntly Wastewater Resource Consents Project, Resource Consents Application: Response to RMA Section 92(1) Requests for Further Information” dated August 2009 and recorded on Waikato Regional Council’s document system numbered 1531323;</li> </ul> <p>subject to the conditions below which shall prevail should any inconsistency occur between the conditions and the above documents.</p>	Yes	<p>The Ngaruawahia treatment plant has been generally operated in accordance with the conditions of Consent 119642.</p> <p>Deviations from Consent conditions are recorded below and summarised in the attached covering letter.</p>
2	<p>The consent holder shall pay to the Waikato Regional Council any administrative charge fixed in accordance with section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulations made under section 360 of the Resource Management Act.</p>	Yes	<p>Administrative charges have been paid.</p>
3	<p>Notwithstanding the stated limits in conditions of this consent, the consent holder shall make all reasonable and practical efforts to ensure that the final wastewater quality is maximised within the capabilities of the treatment system at all times.</p>	Yes	<p>The treatment plant is managed and operated by appropriately trained and experienced engineers and operators.</p>

	Conditions	Comply Yes/No	Comments
4	The maximum volume of treated wastewater discharged shall not exceed 11,200 cubic metres per day.	Yes	<ul style="list-style-type: none"> <li>Maximum recorded daily out flow was 3750 m<sup>3</sup> on 25th December 2012.</li> <li>The average daily out flow was 1660 m<sup>3</sup>/day.</li> <li>More detailed data is included in the attached spreadsheet.</li> </ul>
5	<p>The consent holder shall ensure that prior to 1 December 2012, the quality of the discharge immediately prior to entering the rock-lined channel (or downstream of the gravel bed filter prior to decommissioning) shall comply with the following limits:</p> <ul style="list-style-type: none"> <li>i) The pH of the discharge shall not be less than 6 or greater than 9 pH units;</li> <li>ii) The median five day carbonaceous biochemical oxygen demand concentration shall not exceed 30 grams per cubic metre and the 90<sup>th</sup> percentile shall not exceed 90 grams per cubic metre;</li> <li>iii) The median suspended solids concentration shall not exceed 60 grams per cubic metre and the 90<sup>th</sup> percentile shall not exceed 120 grams per cubic metre;</li> <li>iv) The median ammoniacal-nitrogen concentration shall not exceed 18 grams per cubic metre and the 90<sup>th</sup> percentile shall not exceed 30 grams per cubic metre;</li> <li>v) The median total nitrogen concentration shall not exceed 30 grams per cubic metre;</li> <li>vi) The median total phosphorus concentration shall not exceed 8 grams per cubic metre;</li> <li>vii) The median <i>Escherichia coli</i> (<i>E.coli</i>) concentration shall not exceed 3,500 MPN per 100 millilitres.</li> </ul> <p>For the purposes of this condition, to determine compliance with the median limits no more than six samples in any 12 consecutive monthly samples over the period 1 July to 30 June each year shall exceed the specified limit. To determine compliance with the 90<sup>th</sup> percentile limits, no more than one sample in any ten consecutive monthly sampling events shall exceed the specified limit.</p>	<p>Yes</p> <p>No</p> <p>Yes</p> <p>No</p> <p>No</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<ul style="list-style-type: none"> <li>i) Minimum 6.38 Maximum 9.81</li> <li>ii) The median cBOD<sub>5</sub> was 33.5g/m<sup>3</sup> The 90<sup>th</sup> percentile was 45.4/m<sup>3</sup></li> <li>iii) The median SS was 90g/m<sup>3</sup> The 90<sup>th</sup> percentile was 203.6g/m<sup>3</sup></li> <li>iv) The median NH<sub>4</sub> was 0.235 g/m<sup>3</sup> The 90<sup>th</sup> percentile was 1.2g/m<sup>3</sup></li> <li>v) The median TN was 12.0 g/m<sup>3</sup></li> <li>vi) The median TP was 3.55 g/m<sup>3</sup></li> <li>vii) The median <i>E.coli</i> was 14000cfu/100ml</li> </ul>

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<p>6 The consent holder shall ensure that, no later than 1 December 2012, the quality of the discharge immediately prior to entering the rock-lined channel shall comply with the following limits:</p> <p>i) The pH of the discharge shall not be less than 6 or greater than 9 pH units;</p> <p>ii) The median five day carbonaceous biochemical oxygen demand concentration shall not exceed 30 grams per cubic metre and the 90<sup>th</sup> percentile shall not exceed 60 grams per cubic metre;</p> <p>iii) The median suspended solids concentration shall not exceed 30 grams per cubic metre and the 90<sup>th</sup> percentile shall not exceed 60 grams per cubic metre;</p> <p>iv) The median ammoniacal-nitrogen concentration shall not exceed 10 grams per cubic metre and the 90<sup>th</sup> percentile shall not exceed 20 grams per cubic metre;</p> <p>v) The median total nitrogen (TN) concentration shall not exceed 25 grams per cubic metre;</p> <p>vi) The median summer (December to May inclusive) total nitrogen (TN<sub>summer</sub>) concentration shall not exceed 20 grams per cubic metre;</p> <p>vii) The median summer (December to May inclusive) total nitrogen load (TN<sub>load</sub>) for Ngaruawahia Wastewater Treatment Plant and Huntly Wastewater Treatment Plant combined shall not exceed 57 kilograms per day;</p> <p>viii) The median total phosphorus (TP) concentration shall not exceed 8 grams per cubic metre;</p> <p>ix) The median summer (December to May inclusive) total phosphorus (TP<sub>summer</sub>) concentration shall not exceed 8 grams per cubic metre;</p> <p>x) The median summer (December to May inclusive) total phosphorus load (TP<sub>load</sub>) for Ngaruawahia Wastewater Treatment Plant and Huntly Wastewater Treatment Plant combined shall not exceed 17.3 kilograms per day;</p> <p>xi) The median <i>Escherichia coli</i> (<i>E.coli</i>) concentration shall not exceed 126 cfu per 100 millilitres.</p> <p>For the purposes of this condition, to determine compliance with the median limits (excluding <i>E.coli</i>) no more than six samples in any 12 consecutive monthly samples over the period 1 July to 30 June each year shall exceed the specified limit. To determine compliance with the summer median limits, no more than 3 of the 6 monthly samples in any given summer (December to May) shall exceed the specified limit. To determine compliance with the median <i>E.coli</i> limit, no more than 26 samples in any 52 consecutive weekly samples shall exceed the specified limit. To determine compliance with the 90<sup>th</sup> percentile limits, no more than one sample in any ten consecutive monthly sampling events shall exceed the specified limit.</p> <p>Note: The discharge of treated wastewater to the Waikato River from the Huntly Wastewater Treatment Plant is authorised by consent 119647.</p>	N/A	<p><b>Note: Condition 6 refers to the monitoring period after 1 December 2012.</b></p> <p>However, to provide a clear understanding of the current performance, the information is provided below.</p> <table><tr><th>Criteria</th><th>Consent</th><th>2011-12</th></tr><tr><td><b>pH</b></td><td>&gt;6.0 - &lt;9.0</td><td>Minimum 6.78 Maximum 9.81</td></tr><tr><td><b>Median cBOD<sub>5</sub></b></td><td>&lt;30g/m<sub>3</sub></td><td>33.5g/m<sub>3</sub></td></tr><tr><td><b>90<sup>th</sup> %ile cBOD<sub>5</sub></b></td><td>&lt;60g/m<sub>3</sub></td><td>45.4g/m<sub>3</sub></td></tr><tr><td><b>Median SS</b></td><td>&lt;30 g/m<sub>3</sub></td><td>90g/m<sub>3</sub></td></tr><tr><td><b>90<sup>th</sup> %ile SS</b></td><td>&lt;60 g/m<sub>3</sub></td><td>203.6g/m<sub>3</sub></td></tr><tr><td><b>Median Ammoniacal nitrogen</b></td><td>&lt;10 g/m<sub>3</sub></td><td>0..235g/m<sub>3</sub></td></tr><tr><td><b>90<sup>th</sup> %ile Ammoniacal nitrogen</b></td><td>&lt;20g/m<sub>3</sub></td><td>1.2g/m<sub>3</sub></td></tr><tr><td><b>Median total nitrogen</b></td><td>&lt;25g/m<sub>3</sub></td><td>12.0g/m<sub>3</sub></td></tr><tr><td><b>Median TN (summer)</b></td><td>&lt;20g/m<sub>3</sub></td><td>18.55g/m<sub>3</sub></td></tr><tr><td><b>Median TN (summer load)</b></td><td>&lt;57kg/day</td><td>28kg/day</td></tr><tr><td><b>Median total phosphorus</b></td><td>&lt;8g/m<sub>3</sub></td><td>3.55g/m<sub>3</sub></td></tr><tr><td><b>Median TP (summer)</b></td><td>&lt;8g/m<sub>3</sub></td><td>3.85g/m<sub>3</sub></td></tr><tr><td><b>Median TP (summer load)</b></td><td>&lt;17.3kg/day</td><td>15kg/day</td></tr><tr><td><b>Median E.coli</b></td><td>&lt;126cfu/100ml</td><td>&lt;14,000cfu/100ml</td></tr></table>	Criteria	Consent	2011-12	<b>pH</b>	>6.0 - <9.0	Minimum 6.78 Maximum 9.81	<b>Median cBOD<sub>5</sub></b>	<30g/m <sub>3</sub>	33.5g/m <sub>3</sub>	<b>90<sup>th</sup> %ile cBOD<sub>5</sub></b>	<60g/m <sub>3</sub>	45.4g/m <sub>3</sub>	<b>Median SS</b>	<30 g/m <sub>3</sub>	90g/m <sub>3</sub>	<b>90<sup>th</sup> %ile SS</b>	<60 g/m <sub>3</sub>	203.6g/m <sub>3</sub>	<b>Median Ammoniacal nitrogen</b>	<10 g/m <sub>3</sub>	0..235g/m <sub>3</sub>	<b>90<sup>th</sup> %ile Ammoniacal nitrogen</b>	<20g/m <sub>3</sub>	1.2g/m <sub>3</sub>	<b>Median total nitrogen</b>	<25g/m <sub>3</sub>	12.0g/m <sub>3</sub>	<b>Median TN (summer)</b>	<20g/m <sub>3</sub>	18.55g/m <sub>3</sub>	<b>Median TN (summer load)</b>	<57kg/day	28kg/day	<b>Median total phosphorus</b>	<8g/m <sub>3</sub>	3.55g/m <sub>3</sub>	<b>Median TP (summer)</b>	<8g/m <sub>3</sub>	3.85g/m <sub>3</sub>	<b>Median TP (summer load)</b>	<17.3kg/day	15kg/day	<b>Median E.coli</b>	<126cfu/100ml	<14,000cfu/100ml
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	Conditions	Comply Yes/No	Comments
7	Decommissioning of the wetland and gravel filter and construction of the rock-lined channel shall be completed <del>within 12 months of commencement of this resource consent</del> <b>by 23 April 2013.</b>	Not due	This work will be carried out during a significant upgrade to be completed during the 2012-13 financial year.
8	The consent holder shall decommission the wetland and gravel filter, and construct the rock-lined channel in such a manner so as to minimise sediment losses. To this end the works shall be undertaken in such a manner so that they are consistent with the Waikato Regional Council document titled "Erosion and Sediment Control – Guidelines for Soil Disturbing Activities" (Technical Report No.2009/02, dated January 2009).	N/A	Works will be carried out according to the Guidelines.
9	At least one month prior to decommissioning the wetland and gravel filter, the consent holder shall provide a Management Plan to the Waikato Regional Council which details as a minimum how the decommissioning works and construction of the rock-lined channel will be undertaken, the design plan for the rock-lined channel, and how compliance will be achieved with condition 8.  Note: The Waikato Regional Council reserves the right to make comment on the Management Plan submitted and any subsequent changes to the Management Plan.	N/A	The Management Plan will be provided prior to the commencement of works.
10	Should the measured median concentration or 90 <sup>th</sup> percentile concentration for either five day carbonaceous biochemical oxygen demand, suspended solids, or ammoniacal-nitrogen exceed 90% of the consented limits, as specified in condition 6 of this consent, for 2 of 3 consecutive years then a "trigger" level will be met. The consent holder shall design, build and commission the appropriate upgrade to the treatment process within two years after the "trigger" level is reached. The upgrade undertaken shall be designed to reduce the median or 90 <sup>th</sup> percentile concentration, as applicable, for the parameter for which the trigger was reached to less than 80% of the consented limit for that parameter.	Partial	<p>cBOD5 (90% of consented median = 27g/m<sup>3</sup>)</p> <p>09-10 The median was 13.0g/m<sup>3</sup></p> <p>10-11 The median was 13.0/m<sup>3</sup></p> <p>11-12 The median was 33.5g/m<sup>3</sup></p> <p>(90% of consented 90<sup>th</sup> %ile = 54g/m<sup>3</sup>)</p> <p>09-10 The 90<sup>th</sup> percentile was 20.8g/m<sup>3</sup></p> <p>10-11 The 90<sup>th</sup> percentile was 18.8/m<sup>3</sup></p> <p>11-12 The 90<sup>th</sup> percentile was 45.4g/m<sup>3</sup></p> <p>SS (90% of consented median = 27g/m<sup>3</sup>)</p> <p>09-10 The median was 29.0g/m<sup>3</sup></p> <p>10-11 The median was 33.0/m<sup>3</sup></p>

	Conditions	Comply Yes/No	Comments
			<p>11-12 The median was 90.0g/m<sup>3</sup></p> <p>(90% of consented 90<sup>th</sup> %ile = 90g/m<sup>3</sup>)</p> <p>09-10 The 90<sup>th</sup> percentile was 46.0g/m<sup>3</sup></p> <p>10-11 The 90<sup>th</sup> percentile was 48.2/m<sup>3</sup></p> <p>11-12 The 90<sup>th</sup> percentile was 203.6g/m<sup>3</sup></p> <p>NH<sub>3</sub> (90% of consented median = 19g/m<sup>3</sup>)</p> <p>09-10 The median was 5.4g/m<sup>3</sup></p> <p>10-11 The median was 8.0/m<sup>3</sup></p> <p>11-12 The median was 0.234g/m<sup>3</sup></p> <p>(90% of consented 90<sup>th</sup> %ile = 18g/m<sup>3</sup>)</p> <p>09-10 The 90<sup>th</sup> percentile was 18.0g/m<sup>3</sup></p> <p>10-11 The 90<sup>th</sup> percentile was 12.0g /m<sup>3</sup></p> <p>11-12 The 90<sup>th</sup> percentile was 1.2g/m<sup>3</sup></p>
11	Should the measured median concentration for total nitrogen (TN), total phosphorus (TP) or <i>E.coli</i> exceed 90% of the consented limits, as specified in condition 6 of this consent, for 2 of 3 consecutive years then a “trigger” level will be met. The consent holder shall design, build and commission the appropriate upgrade to the treatment process within two years after the “trigger” level is reached. The upgrade undertaken shall be designed to reduce the median concentration for the parameter for which the trigger was reached to less than 80% of the consented limit for that parameter.	Yes	<p>TN (90% of consented median = 36g/m<sup>3</sup>)</p> <p>09-10 The median was 12.18g/m<sup>3</sup></p> <p>10-11 The median was 13.82/m<sup>3</sup></p> <p>11-12 The median was 23.01/m<sup>3</sup></p> <p>TP (90% of consented median = 7.2g/m<sup>3</sup>)</p> <p>09-10 The 90<sup>th</sup> median was 5.5g/m<sup>3</sup></p> <p>10-11 The 90<sup>th</sup> median was 4.75/m<sup>3</sup></p> <p>11-12 The 90<sup>th</sup> median was 5.94g/m<sup>3</sup></p> <p>The trigger level for both parameters has not been exceeded</p>

	Conditions	Comply Yes/No	Comments
12	Should the measured median summer (December to May inclusive) mass load for either total nitrogen (TN <sub>load</sub> ) or total phosphorus (TP <sub>load</sub> ) for Huntly and Ngaruawahia combined exceed 90% of the consented limit, as specified in condition 6 of this consent, on 2 of 3 consecutive summer periods then a "trigger" level will be met. The consent holder shall design, build and commission the appropriate upgrade to the treatment process within two years after the "trigger" level is reached. The upgrade undertaken shall be designed to reduce the combined summer mass load of the nutrient for which the trigger was reached to less than 80% of the consented limit for that parameter.	Partial	<p>TN<sub>(load)</sub> (90% of consented median = 51.3kg/day)</p> <p>09-10 The median was 29.2 kg/day</p> <p>10-11 The median was 48.0 kg/day</p> <p>11-12 The median was 49.0 kg/day</p> <p>TP<sub>(load)</sub> (90% of consented median = 15.6kg/day)</p> <p>09-10 The median was 19.9 kg/day</p> <p>10-11 The median was 21.3 kg/day</p> <p>11-12 The median was 15.0 kg/day</p> <p>Upgrade works are described in the Summary Report.</p>
13	Unless otherwise agreed with the Waikato Regional Council in writing, the consent holder shall ensure that the treatment system is upgraded in accordance with the application documentation to the satisfaction of Waikato Regional Council.	N/A	Waikato Regional Council will be kept fully informed as upgrade works proceed.
14	The consent holder shall continuously monitor the flow rate of wastewater entering and leaving the treatment plant and shall record the total daily influent and discharge volumes.	Yes	Influent and effluent flows are recorded via telemetry and the data is contained in the attached spreadsheet, (Appendix I).
15	The consent holder shall continuously monitor and record rainfall at the site on a daily basis.	No	An electronic rain gauge connected to the Council SCADA system will be installed in the 2012-13 financial year.
16	<p>The consent holder shall, prior to January each year, calculate the ratio of daily Peak Wet Weather Flow (PWWF) to Average Dry Weather Flow (ADWF). Where the ratio of PWWF to ADWF exceeds 4.5, the consent holder shall prepare an Infiltration Management Plan and provide this to Waikato Regional Council for review prior to implementation.</p> <p>For the purposes of this condition, calculation of ADWF will be taken as the median daily wastewater flow measured at the inlet to the oxidation pond during the month of March for the preceding year.</p>	Yes	<p>ADWF = 1396m<sup>3</sup>/day</p> <p>PWWF = 4621m<sup>3</sup>/day</p> <p>Ratio = 3.3</p>

	Conditions	Comply Yes/No	Comments
17	The consent holder shall define a sampling location or locations and the sampling method or methods to be used for monitoring the parameters in conditions 5 and 6. The location(s) and method(s) used for the sampling shall be to the satisfaction of Waikato Regional Council.	Yes	Details of the sample points are attached as Appendix 2.
18	The consent holder shall take grab samples of the treated wastewater on a monthly basis, from the sampling location specified in condition 17 of this consent, for the purpose of determining compliance with conditions 5 and 6. <i>E.coli</i> grab samples shall be taken on a weekly basis.	Yes	Samples are taken in accordance with Condition 18. Results of all are included in the attached spreadsheet (Appendix 1).
19	All wastewater quality analyses shall be undertaken by an IANZ accredited or equivalent laboratory. All methods used shall be appropriate for the wastewater analyses undertaken.	Yes	Analysis is carried out by Hills Laboratories who are IANZ accredited for the appropriate tests.  Test methods used are attached as Appendix 3

	Conditions	Comply Yes/No	Comments
20	<p>The consent holder shall prepare an Operations and Management Plan. This Plan shall be prepared by a suitably qualified and experienced person and shall detail how the treatment system is to be operated and maintained to ensure compliance with the conditions of this consent and consent 119643, 119644 and 119645. As a minimum the Plan shall include the following matters:</p> <ul style="list-style-type: none"> <li>i) A description of the wastewater treatment plant including as-built plans for the wastewater treatment facilities;</li> <li>ii) A description of the sequence, timing and methods of construction of upgrades to the treatment plant;</li> <li>iii) A description and schedule of the routine inspection, monitoring and maintenance procedures to be undertaken to ensure effective plant operation;</li> <li>iv) A schedule of monitoring to be carried out to ensure effective plant operation and compliance with consent conditions;</li> <li>v) A sampling location plan;</li> <li>vi) A schedule of the treatment plant critical aspects and the detailed response and contingency plans to address anticipated variations from normal plant operation;</li> <li>vii) Procedures for recording routine maintenance and all repairs that are undertaken;</li> <li>viii) Chain of command, responsibility and notification protocols;</li> <li>ix) The current infiltration management plan;</li> <li>x) The operation of the de-sludging pond;</li> <li>xi) Procedures for improving and/or reviewing the plant management plan.</li> </ul> <p>This Plan shall be lodged with Waikato Regional Council within six months of commencement of this consent, and shall be reviewed and updated annually and as required as a result of any changes in plant operation or management. An electronic copy of the management plan shall be provided to Waikato Regional Council within 10 working days of a request to do so.</p> <p>Note: The Waikato Regional Council reserves the right to make comment on the Operations and Management Plan submitted and any subsequent changes to the Plan.</p>	Yes	The Operations and Management Plan was forwarded to Waikato Regional Council on 17 August 2012.



	Conditions	Comply Yes/No	Comments
21	The treatment system and discharge to the Waikato River shall be operated, maintained and managed by appropriately experienced personnel in accordance with the Operations and Management Plan pursuant to condition 20 of this consent.	Yes	The Operations and Maintenance Plan (Section 4) refers to the management structure. Experience in wastewater operations of key personnel includes: Lou Larson – Water and Wastewater Manager (18 yrs) Peter Saward – Treatment Plants Engineer (24yrs) Craig Peebles – Treatment Plants Supervisor (18yrs) Parvati Patel – Planning Engineer (10yrs) Chris Harris – Operator (2yrs) Nigel O'Connor – Operator (8yrs) Johannes Mostert – Operator (4yrs) Caleb Powell – Cadet Operator (3yrs)
22	The consent holder shall ensure contractors are made aware of the conditions of this resource consent and ensure compliance with those conditions.	Yes	All contractors employed at the treatment site are inducted in both health and safety procedures and relevant conditions of this consent.
23	<p>In conjunction with consent 119643, the consent holder shall maintain and keep a Complaints Register for all complaints made about the treatment and discharge operations received by the consent holder. The Register shall record:</p> <ul style="list-style-type: none"> <li>i) The date, time and duration of the event/incident that has resulted in the complaint;</li> <li>ii) The location of the complainant when the event/incident was detected;</li> <li>iii) The possible cause of the incident;</li> <li>iv) The weather conditions and wind direction at the site when the incident allegedly occurred, if significant to the complaint;</li> <li>v) Any corrective action undertaken by the consent holder in response to the complaint.</li> </ul> <p>The Register shall be made available to the Waikato Regional Council at all reasonable times. Complaints which may indicate non-compliance with the conditions of this</p>	Yes	<p>Council's CRM database records all complaints from the public.</p> <p>There were no complaints from the public during the consent year regarding the Huntly WWTP.</p>

	Conditions	Comply Yes/No	Comments
	resource consent shall be forwarded to the Waikato Regional Council within 5 working days of the complaint being received.		
24	The consent holder shall place and maintain a sign in the vicinity of the discharge to the Waikato River, in such a way that it is conspicuous to river users, advertising of the presence of the wastewater discharge and warning against the use of the location for swimming.	Yes	A sign is located in the vicinity of the discharge that alerts and warns people of the presence of the wastewater discharge.
25	The consent holder shall maintain landscape and screen planting as detailed in the report titled "Waikato District Council Ngaruawahia Waste Water Treatment Visual Analysis", dated March 1998, and recorded on Waikato Regional Council's document system numbered 67984.	Yes	Landscaping and screen planting was carried out at the site in accordance with the specified plan. Screen plantings are well established. Additional maintenance planting has been carried out since that time.
26	<p>The consent holder shall be responsible for any erosion that occurs as a result of the exercise of this consent and for any erosion works that become necessary to preserve the integrity and stability of the banks of the Waikato River.</p> <p>Note: A separate resource consent may be required as a result of the need to undertake erosion control works. Any such consent shall be obtained by the consent holder at their sole expense prior to any works being undertaken.</p>	Yes	There are no current issues regarding erosion at the Huntly discharge site.
27	The discharge to the Waikato River shall be via a multi-port diffuser located on the bed of the Waikato River.	Yes	The discharge is via a multi port diffuser installed in the Waikato river bed.
28	Ports 2, 4, 6 and 8 of the diffuser, as numbered from the true right bank of the Waikato River, shall remain closed unless specifically permitted in writing by the Waikato Regional Council.	Yes	Ports 2, 4, 6 & 8 are blocked off.

	Conditions	Comply Yes/No	Comments
29	The consent holder shall maintain the outfall diffuser in an operational state such that the discharge from ports 1, 3, 5, 7 and 9 is uniform along the operational length of the diffuser and providing effective dispersion of the wastewater in the river flow.	Yes	The discharge is uniform across all ports.
30	The consent holder shall undertake a survey of the diffuser at six monthly intervals to demonstrate compliance with conditions 28 and 29 of this consent. The frequency of the surveys may be reduced to no less than every two years following written request to and approval from the Waikato Regional Council. The results of each survey and any recommendation as to the frequency of future surveys shall be provided to the Waikato Regional Council within 30 days of the survey.	Yes	The most recent inspection report is attached as Appendix 4.
31	The consent holder shall forward the results of the monitoring undertaken pursuant to conditions 14, 15 and 18 to the Waikato Regional Council, via electronic means, within one month of receipt of the results by the consent holder.	Partial	Previously this information has been provided three monthly. From July 2012 the reports will be provided monthly.
32	<p>The consent holder shall provide to the Waikato Regional Council, Waikato-Tainui Te Kahanganui Incorporated (Claims and Environmental Unit), and Hopuhopu Manawhenua Roopu a written report by 30 September each year addressing the following:</p> <ul style="list-style-type: none"> <li>i) A summary of the monitoring results required by conditions of this resource consent for the year ending 30 June;</li> <li>ii) Critically analyse the monitoring data collected and comment on any emerging trends;</li> <li>iii) Comment on compliance with the conditions of this resource consent;</li> <li>iv) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this resource consent and a description of and a summary of the efficacy of any remedial works undertaken;</li> <li>v) Comment on infiltration rates and any remedial works planned and the efficacy of these works in subsequent reports;</li> </ul>	Yes	<ul style="list-style-type: none"> <li>i) The monitoring results are included in the attached spreadsheet, Appendix 1).  Trend graphs of the monitoring results for the reporting year and the previous four years are included in the attached spreadsheet, ('Trends' page). Analysis and comments are included in the covering letter.</li> <li>ii) Comments on compliance are included in the attached Summary Report.</li> <li>iii) See ii) above.</li> <li>iv) See ii) above.</li> </ul>

	Conditions	Comply Yes/No	Comments
	<p>vi) Any other issue considered relevant to the consent holder.</p> <p>A quarterly report shall be prepared and distributed at the end of March, June and December of each year. These progress reports shall address the monitoring results for the preceding 12 months, including the rolling 12 month median value. The reports shall be distributed to Waikato Regional Council, Waikato-Tainui Te Kauhanganui Incorporated (Claims and Environmental Unit), and Hopuhopu Manawhenua Roopu.</p>		<p>v) See ii) above. vi) See ii) above.</p> <p>Quarterly reports are forwarded to the relevant parties.</p>
33	<p>The consent holder shall notify the Waikato Regional Council within 24 hours (where practicable) of the consent holder becoming aware of the limits specified in conditions 4, 5 and 6 of this resource consent being exceeded, or any accidental discharge, plant breakdown or other circumstance which is likely to result in the limits of this consent being exceeded. The consent holder shall, within 10 working days of the incident occurring, provide a written report to the Waikato Regional Council, identifying the breach, possible causes and steps to ensure future compliance.</p>	Partial	<p>There have been no breaches of Condition 4.</p> <p>Median CBOD5 was exceeded by 12% Median Suspended Solids was exceeded by 50% 90<sup>th</sup> %ile Suspended solids was exceeded by 86%</p> <p>Condition 6 refers to monitoring after 1 December 2012. These parameters relate to median levels and 90<sup>th</sup> percentiles which are calculated at the end of the monitoring year.</p> <p>The results of the routine monitoring will, in future, be reported monthly as per Condition 31.</p> <p>There were no accidental discharges, plant breakdowns or other events that resulted in the limits of this consent being exceeded.</p>

	Conditions	Comply Yes/No	Comments
34	<p>The consent holder shall as soon as reasonably practicable, notify the Waikato District Council (Community Assets – Operations Unit), Watercare Services Limited, and the Waikato Regional Council of an event that may in itself, or as a consequence of an event, have a significant adverse effect on the quality of the water within the Waikato River at the abstraction points of the Hopuhopu, Huntly, Te Kauwhata and Tuakau (Auckland) Water Supplies.</p> <p>The consent holder shall record the reasons why the situation occurred, the actions taken by the consent holder and an assessment of what measures can be adopted in the future to minimise such occurrences and upon written request from the Waikato Regional Council provide a report to the Waikato Regional Council and the Medical Officer of Health addressing this matter.</p>	Yes	There were no instances of events that had a significant adverse effect on the water quality of the Waikato River.
35	<p>The consent holder shall, by 30 September 2015 and every five years thereafter, submit to the Waikato Regional Council a Wastewater Treatment Review Report, the scope of which shall include:</p> <ul style="list-style-type: none"> <li>i) An analysis of the performance of the treatment system with respect to the initial plant design;</li> <li>ii) Identification of any deficiencies in the plant design or operation and the measures that are or have been undertaken to address these deficiencies and the anticipated (or actual) improvement in treated wastewater quality;</li> <li>iii) Timetable for the treatment plant capital upgrade to cater for actual population growth;</li> <li>iv) A review of the trend in the combined contribution made by the Ngaruawahia and Huntly wastewater treatment plant discharges to the total nitrogen and total phosphorus load in the Waikato River at Mercer Bridge since commencement of this consent.</li> </ul>	Yes	Condition 35 refers to a report due by 30 Sept 2015.

	Conditions	Comply Yes/No	Comments
36	<p>The consent holder shall retain suitably qualified persons to review the findings outlined in Appendix 5 "Alternatives Study" of the AEE, recorded on Waikato Regional Council's document system numbered 1458402, at intervals as below. The investigations shall include the feasibility, technology and economics of alternative collection, treatment and disposal systems for wastewater including land-based disposal options. The reviews shall be carried out in consultation with Waikato-Tainui Te Kauhanganui Incorporated (Claims and Environmental unit) and Hopuhopu Manawhenua Roopu and the findings of the reviews shall be adopted by Waikato District Council for the proposed upgrade of the treatment system.</p> <p>The first review shall focus on alternative treatment options for removal of algae from the effluent after the pond systems and UV disinfection prior to the proposed rock-lined channel. The review shall include (but not be limited to) consideration of sand filter, Bio-Filtro and an algae treatment system that has been identified by Hopuhopu Manawhenua Roopu. This review shall be completed and reported to the Waikato Regional Council, Waikato-Tainui Te Kauhanganui Incorporated (Claims and Environmental unit) and the Hopuhopu Manawhenua Roopu not later than 30 September 2011.</p> <p>The second review shall consider all aspects that are covered in Appendix 5 of the AEE and shall include (but not be limited to) consideration of Bio-Filtro and an algae treatment system that has been identified by Hopuhopu Manawhenua Roopu. The review shall be completed and reported to Waikato Regional Council, Waikato-Tainui Te Kauhanganui Incorporated (Claims and Environmental unit) and the Hopuhopu Manawhenua Roopu not later than 31 March 2016.</p> <p>The third review shall cover the same matters and options as the second review and shall be completed and reported to Waikato Regional Council, Waikato-Tainui Te Kauhanganui Incorporated (Claims and Environmental unit) and the Hopuhopu Manawhenua Roopu not later than 31 March 2022.</p> <p>Note: Commissioning of any treatment upgrade is subject to condition 13.</p>	Yes	<p>The first review was submitted prior to September 2011.</p> <p>The second review is due before 31 March 2016.</p> <p>The third review is due before 31 March 2022.</p>

	Conditions	Comply Yes/No	Comments
37	<p>The Waikato Regional Council may, in the six month period following 30 September 2015 and every five years thereafter, serve notice on the consent holder under section 128 of the Resource Management Act 1991, of its intention to review the conditions of this resource consent for the following purposes:</p> <ul style="list-style-type: none"> <li>i) To review the effectiveness of the conditions of this resource consent in avoiding or mitigating any adverse effects on the environment from the exercise of this resource consent and if necessary to avoid, remedy or mitigate such effects by way of further or amended conditions; or</li> <li>ii) To review the adequacy of and the necessity for monitoring undertaken by the consent holder and specifically to review the frequency of record keeping and the method of record collection for the purposes of determining the most appropriate method and frequency; or</li> <li>iii) If necessary and appropriate, to require the holder of this resource consent to adopt the best practicable option to remove or reduce adverse effects on the surrounding environment; or</li> <li>iv) To review the conditions of this resource consent to ensure the exercise of this resource consent is not inconsistent with the Vision and Strategy of the Waikato-Tainui Raupatu Claims Waikato River Settlement Act 2010 (Schedule 2 – Vision and strategy for Waikato River) and if necessary to address any such inconsistencies by way of further or amended conditions.</li> </ul> <p>Note: Costs associated with any review of the conditions of this resource consent will be recovered from the consent holder in accordance with the provisions of section 36 of the Resource Management Act 1991.</p>	Yes	Condition 37 refers to reviews that may be carried out after 30 September 2015.



## APPENDIX 2 – Final Effluent Sample Site





### **APPENDIX 3 – Test Methods used by Hill Laboratories**

Total Kjeldahl Digestion Sulphuric acid digestion with copper sulphate catalyst.

Total Phosphorus Digestion Acid persulphate digestion.

Total Suspended Solids Filtration using Whatman 934 AH, Advantec GC-50 or 2-3 equivalent filters (nominal pore size 1.2 - 1.5µm), gravimetric determination. APHA 2540 D 21st ed. 2005.

Total Nitrogen Calculation: TKN + Nitrate-N + Nitrite-N. 0.05 g/m<sup>3</sup>.

Total Ammoniacal-N Filtered sample. Phenol/hypochlorite colorimetry. Discrete Analyser. (NH<sub>4</sub>-N = NH<sub>4</sub><sup>+</sup>-N + NH<sub>3</sub>-N). APHA 4500-NH<sub>3</sub> F (modified from manual analysis) 21st ed. 2005.

Nitrite-N Automated Azo dye colorimetry, Flow injection analyser. APHA 4500-NO<sub>3</sub>- I (Modified) 21st ed. 2005.

Nitrate-N Calculation: (Nitrate-N + Nitrite-N) - NO<sub>2</sub>N.

Nitrate-N + Nitrite-N Total oxidised nitrogen. Automated cadmium reduction, flow injection analyser. APHA 4500-NO<sub>3</sub>- I (Modified) 21st ed. 2005.

Total Kjeldahl Nitrogen (TKN) Total Kjeldahl digestion, phenol/hypochlorite colorimetry. Discrete Analyser. APHA 4500-Norg C. (modified) 4500 NH<sub>3</sub> F (modified) 21st ed. 2005.

Total Phosphorus Total phosphorus digestion, ascorbic acid colorimetry. Discrete Analyser. APHA 4500-P E (modified from manual analysis) 21st ed. 2005.

Carbonaceous Biochemical Oxygen Demand (cBOD<sub>5</sub>). Incubation 5 days, DO meter, nitrification inhibitor added, dilutions, seeded. APHA 5210 B 21st ed. 2005.

# **DIVER SERVICES LIMITED**

## **INSPECTION REPORT DOCUMENT**

**INSPECTION REPORT**

**FOR**

**WAIKATO DISTRICT COUNCIL**

# **NGARUAWAHIA OUTFALL**

**DSL Ref.# 2697**



Die test of outfall following repairs

## **DIVERS VISUAL REPORT**

**DIVER SERVICES LIMITED**

**WAIKATO DISTRICT COUNCIL**

### **NGARUAWAHIA WASTEWATER TREATMENT PLANT**

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#### **1.0 INTRODUCTION:**

Diver Services Limited was contracted by the Waikato District Council to provide diving services at the Ngaruawahia Waste Water Treatment Outfall on the 29th December 2011.

## 2.0 SCOPE OF WORKS:

The scope of works comprised an inspection of the outfall and diffusers in the Waikato River and the removal of any debris from around the diffusers.

## 3.0 METHODOLOGY:

The visual inspection was carried out in accordance with Diver Services General Visual Inspection Procedure and Diver Services Close Visual Inspection Procedure. Photographs were taken using a 5Megapixel Sony Digital camera, the photos are computer enhanced for picture clarity but no alterations have been made.

## 4.0 RESULTS OF INSPECTION:

Three diving personnel were mobilised to the site where the inspection commenced at 1200hrs. All debris found was removed by hand as the inspection progressed.

The divers located the outfall easily as its location is well known.

The diffuser is constructed from HDPE with Galvanized mild steel flanges and end plate.

There is 76 meters of 400mm OD pipeline with a 12 meter X 400mm OD diffuser section attached by a flange. There are 5 X 80mm ID diffusers and four blanked 200mm diffuser flanges spaced evenly along the diffuser starting and finishing 1.2M in from each end of the diffuser pipe. All diffuser backing flanges and bolts are now 316 stainless Steel.

Weights: There are 2 weight blocks on each section of the pipeline and 3 blocks on the diffuser section.

The Outfall pipe is buried out to approx 30M to where the divers located the outfall and from there to the end of the diffuser section the top of the 400mm OD pipe is level with the river bed.

The diffusers are in two parts with a 200mm stub welded to the diffuser pipe, this is flanged to five pieces of 80mm diffusers curved to 90 degree angle that points downstream.

There are four blanked diffuser stubs spaced between the active diffusers.

The number 2 and 3 diffusers were blocked with straw and small sticks which had come from the treatment plant; this was cleared by the divers.

The scour hole at the end of the diffuser has filled in half way up the pipe.

The diffusers have been fitted with eel stop diffuser sleeves designed by Diver Services Ltd, these are working well and there was not blockages caused by eels. The sleeves also appear to assist with preventing backfilling of river sediment and with the diffusion as they waiver in the river flow. They were intake with no sign of wear or damage after 12 month in service.

The outfall is in good condition and operating correctly.

## 5.0 River Data:

Location = 37°38'25.92"S 175°09'05.03"E

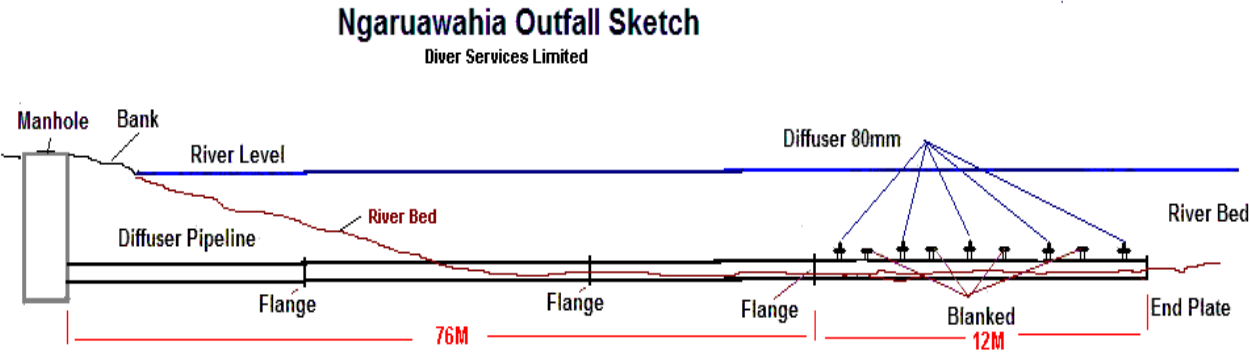
River Clarity = Poor. Approx 1M

Minimum Allowable Flow = 186 Cusec's

6.0 Recommendations:

This Diffuser System is working well with good flows.  
We would recommend a 6 monthly inspection to check the bottom profile and to ensure that the diffuser ports are not blocked.

7.0 Outfall Sketches



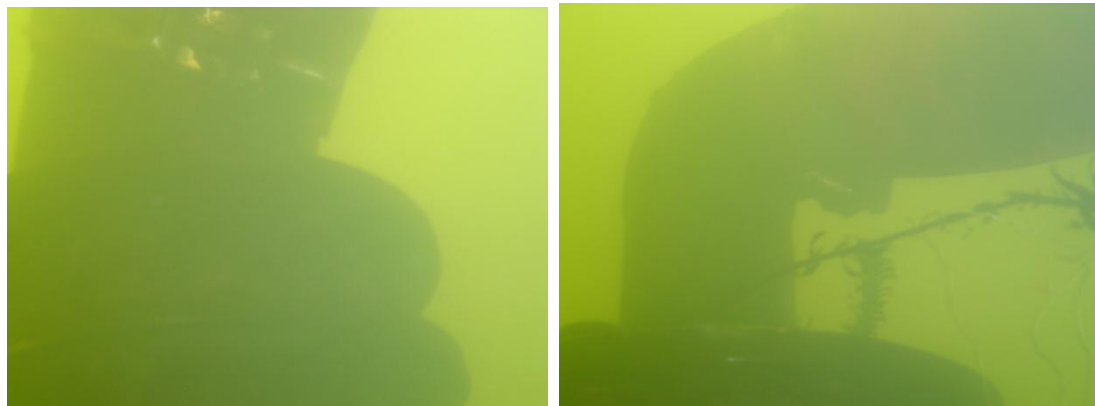
8.0 Outfall Checks

24.08.09 NGARUAWAHIA OUTFALL									
Diffusers	1	2	3	4	5	6	7	8	9
Diffuser Type	80mm	Blank	80mm	Blank	80mm	Blank	80mm	Blank	80mm
Flow	Strong	0	Strong	0	Strong	0	Strong	0	Strong
Diff. Height	400mm	N/A	400mm	N/A	400mm	N/A	400mm	N/A	400mm

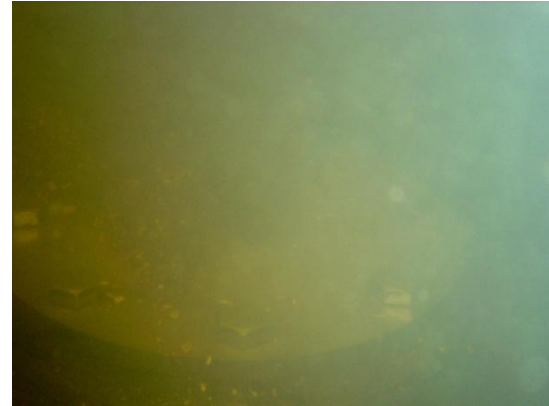
**9.0 Photos of Interest**  
**The following**  
**previous inspection as the river clarity did not allow for photos to be taken on this occasion.**

**photos are from a**

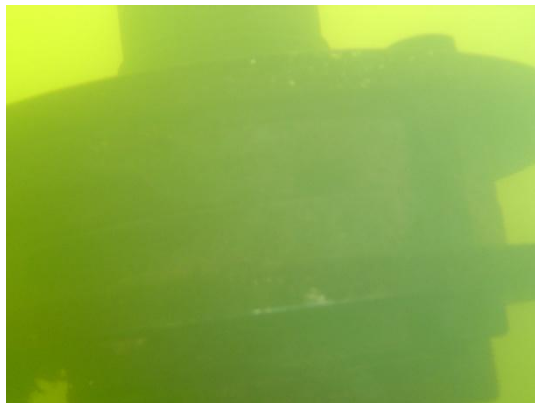
The Photos below has been digitally altered to counteract poor underwater visibility and are not indicative of the water clarity or visibility.



Diffuser Flanges



Diffusers Discharging



Diffuser pipe end Plate

**Report Ends**