105551 Matangi Wastewater Discharge to Ground 1 July 2011 – 30 June 2012

This consent authorises the Consent Holder: To discharge up to 52 cubic metres per day of treated sewage effluent from Matangi township, into the ground in the vicinity of Tauwhare Rd – Matangi. NZMS 260 S14:210-751

	Conditions	Comply Yes/No	Comments
1	The volume of effluent discharged from the wastewater treatment and disposal system shall not exceed 52 cubic metres per day.	Yes	Maximum discharge for the period 1 July 2011 – 30 June 2012 was 48.6m³/day Daily flows are calculated from manual readings of the totaliser during regular site visits. As this is not calculated daily it does not accurately report the daily peaks. The median averaged daily out flow was 20.7 cubic metres per day over the total reporting period.
2	The consent holder shall retain appropriately experienced personnel to operate the treatment and disposal system	Yes	The treatment plant is managed and operated by appropriately trained and experienced engineers and operators. 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)

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<tr><td>3</td><td>The wastewater treatment plant and disposal system shall be operated and maintained in a manner that is consistent with the document titled “Matangi Township, Wastewater treatment System – Management Manual (revised July 2008)”</td><td>Yes</td><td>Innoflow Technologies supplied an operation manual for the 1999 upgrade. Reflection Treatment Systems provided an amended manual for the 2008 upgrade.

A Sodium Carbonate dosing system was installed in late May 2010 and is working well at increasing the pH to a neutral range. The average pH is being maintained at 7.01 pH.

A recycle from the treated disposal line to the raw inlet has been very beneficial in providing improved denitrification.

<table><tr><td></td><td>NH4-N</td><td>TKN</td><td>NO3-N</td></tr><tr><td>2010-11</td><td>0.77</td><td>3.52</td><td>27.2</td></tr><tr><td>2011-12</td><td>0.55</td><td>1.1</td><td>23.2</td></tr></table></td></tr>
<tr><td>4</td><td>The wastewater treatment tanks shall be desludged as necessary and in particular following receipt of notice in writing from the Waikato Regional Council to do so. The sludge waste shall be disposed of in an approved wastewater sludge disposal area.</td><td>Yes</td><td>Treatment tanks were regularly inspected but not desludged during this reporting period.</td></tr>
<tr><td>5</td><td>There shall be no overland flow of effluent from any part of the wastewater treatment or effluent disposal system.</td><td>No</td><td>The 33x25m dripper irrigation field has problems with minor surface ponding in some areas. An additional drain was installed to capture this and this was successful so that no off site flow occurs. Some ponding has persisted especially during periods when the water table is high
The existing disposal area remains problematic as it appears hard pan beneath the field reduces effectiveness.
The disposal field is to be extended during the 2012-13 financial year on adjacent land acquired by council.</td></tr>
<tr><td>6</td><td>The consent holder shall continue to:

a) determine the quality, quantity and variability of the treated wastewater prior to discharge, and
b) determine the effects of the discharge on groundwater. To this end the consent holder shall undertake the following sampling to the satisfaction of Waikato Regional Council:

(i) At an appropriate point immediately prior to discharge into</td><td>Yes</td><td>Data Supplied. See attached data tables.

Treated wastewater quality has continued to improve modestly over the previous years.</td></tr>
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the ground, to determine the total-nitrogen, nitrate-nitrogen, ammoniacal-nitrogen, dissolved reactive phosphorus, five-day biochemical oxygen demand (BOD5) concentrations and faecal coliform bacteria numbers at three monthly intervals (i.e. four times) throughout the year (see note 1).

(ii) From at least two groundwater monitoring bores to determine total-nitrogen, nitrate-nitrogen, ammoniacal-nitrogen, dissolved reactive phosphorus, five-day biochemical oxygen demand (BOD5) concentrations and faecal coliform bacteria numbers at three monthly intervals (i.e. four times) throughout the year (see note 1)

		2008-09	2009-10	2010-11	2011-12
Treated Effluent		Median	Median	Median	Median
TN	g/m^3	35.9	29.5	39	32.8
Total NH_4- N	g/m^3	1.7	2.6	0.4	0.6
DRP	g/m^3	7.7	5.4	7.3	7.4
cBOD5	g/m^3	2.8	2.5	2.3	1.8
FC	MPN/100mL	4700	5600	11000	3800

Nutrient analysis of monitoring bore samples is tabulated below. A comparison of the current period nutrient results with the results from the previous 3 years shows little influence upon ground water quality at Bore 3.

		2008-09	**2009-10**	**2010-11**	**2011-12**
Bore 1 - paddock	***Median***	***Median***	***Median***	***Median***	***Median***
Total NH_4-N	g/m^3	0.014	0.026	0.04	0.02
NO_3-N	g/m^3	16	31	20.15	12.2
TN	g/m^3	17.34	32	21.33	12.21
DRP	g/m^3	0.02	0.014	0.02	0.02

		2008-09	**2009-10**	**2010-11**	**2011-12**
Bore 2 – between gates	***Median***	***Median***	***Median***	***Median***	***Median***
Total NH_4-N	g/m^3	0.225	0.8	0.036	0.01
NO3-N	g/m^3	20	37	17.7	26
TN	g/m^3	21.96	36.6	18.1	26
DRP	g/m^3	2.85	3	3.65	4.8

		2008-09	2009-10	2010-11	2011-12
Bore 3 – by railway	***Median***	***Median***	***Median***	***Median***	***Median***
Total NH_4-N	g/m^3	0.01	0.01	0.01	0.01
NO3-N	g/m^3	4.9	5.8	3.3	2.1
TN	g/m^3	5.59	6.3	3.44	2.6
DRP	g/m^3	0.02	0.027	0.03	0.03

1. Bore in paddock

2. Bore between gates

3. Bore by railway

7	The consent holder shall retain an appropriately experienced person to compile an annual monitoring report that shall include the following: (i) Analyses of all samples that have been taken at three monthly intervals throughout the year. (ii) Sample analyses, which shall be provided to the Waikato Regional Council in an agreed data form. (iii) The total mass of nitrogen, stated as kilograms per hectare per year that has been discharged into ground during the year. (iv) The total volume of wastewater discharged per week. The report shall be provided to the satisfaction of the Waikato Regional Council within two months of the fourth quarterly sample being taken.	Yes	Sampling frequency was continued beyond that required, so that a clear picture of performance subsequent to the sand filter renovation and new disposal field could be evaluated. The median discharge rate for total nitrogen was 0.7 kg/day for the reporting period. The 2010-11 median discharge rate for total nitrogen was 1.4 kg/day. The median application rate for total nitrogen was 6.4 kg/ha/day for the reporting period. This gives an estimated total nitrogen application rate of 2336 kg/ha/yr, down from 4854 kg/ha/yr for 2010-11 and 5128 kg/ha/yr for 2009-10.

			<table><tr><th></th><th></th><th>2008-09</th><th>2009-10</th><th>2010-11</th><th>2011-12</th></tr><tr><td>Annual TN discharged</td><td>kg/yr</td><td>465</td><td>537</td><td>511</td><td>219</td></tr></table> NB: The discharge area used has two disposal areas: The original 16m x 16m disposal bed underneath the recirculating sand filter, and a dripper irrigation bed 24m x 33m. Approximately 0.105 Ha total. The total volume of flow was recorded during routine service visits and the flow for the period totalised and then the daily flows averaged. Data attached.
8	The Waikato Regional Council may review the conditions of this consent, every five years from the date of commencement this consent, for any of the purposes specified in s128 of the Resource Management Act, and specifically to: (i) Address any adverse effects on the environment which may arise from the exercise of this consent and which it is appropriate to deal with at a later stage, (ii) Require the consent holder to adopt the best practical option to remove or reduce any adverse effect on the environment, (iv) Take into account any changes to Waikato Regional Council Policy or Plans. **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.	Yes	No notice of intention to review the consent has been received from the Waikato Regional Council
9	The consent holder shall pay 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 1991.	Yes	Fees have been paid