


105551 Matangi Wastewater Discharge to Ground 1 July 2010 – 30 June 2011

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. | No | <p>Maximum discharge flows were exceeded in July through to December 2010 but they were good in 2011.</p> <p>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 flow meters are mechanical and periodically subject to organic build up and wear. They have not been calibrated. New meters were fitted in April 2011 but not powered until 7 July 2011 due to delays caused by construction of a new on-site building and electrical telemetry upgrades.</p> <p>The Median averaged daily out flow was 45.7 cubic metres per day over the total reporting period. The Median for the previous period was 43.1 cubic metres per day.</p> <p>Maximum average recorded daily flow total was 129 for the period 15-23 September 2010.</p> <p>The 90th Percentile average daily flow exceeded the limit was 111.4 m³/day. This was an increase on the previous period 2009/10 year when the 90th Percentile average daily flow was 58.7 m³/day.</p> <p>The averaged daily flow was 55.9 cubic metres per day over the reporting period. For the 2009/10 year the Mean of the averaged daily flow was 48 cubic metres per day.</p> <p>The in flows reduced when all the drains in the Matangi industrial estate were cleaned out, however, from flow recordings we expected a larger reduction in in flows. More work may be required, probably in the residential site.</p> |

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|---|--|-----|---|
| 2 | The consent holder shall retain appropriately experienced personnel to operate the treatment and disposal system | Yes | <p>The treatment plant is managed and operated by an appropriately trained and experienced engineers and operators.</p>  |
| 3 | 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)” | Yes | <p>Innoflow Technologies supplied an operation manual for the 1999 upgrade. Reflection Treatment Systems provided an amended manual for the 2008 upgrade.</p> <p>A trial Sodium Carbonate dosing system was installed in late May 2010 and is showing promise at increasing the pH to a neutral range. The aim is 7.00 pH.</p> <p>A recycle from the treated disposal line to the raw inlet was installed to see if any denitrification benefit could be gained. It is not clear yet if any benefit will be achieved. This is still in place.</p> |
| 4 | The wastewater treatment tanks shall be de-sludged 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. | Yes | Treatment tanks were not desludged during this reporting period. |
| 5 | There shall be no overland flow of effluent from any part of the wastewater treatment or effluent disposal system. | No | <p>Minor Non-Compliance</p> <p>The recently installed disposal field consisting of a 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 the high flow</p> |

period June to Dec 2010. The problem has reduced since Jan 2011.

The existing disposal area remains problematic as it appears hard pan beneath the field reduces effectiveness. The disposal field was to be extended in the summer of 2009/2010 however that project has been deferred. Due to the problems with apparent increased flow and discharge flow meters blocking periodically the project has been rescoped to install new magnetic flowmeter flow monitoring so that a clearer picture can be gained.



Problems with the disposal field and steps taken to mitigate were reported regularly to Environment Waikato.

6 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 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

Yes

Data Supplied. See attached data tables.

Treated wastewater quality has significantly improved over the previous period. Increased Nitrate and TKN levels indicate good nitrification of the ammonia due to improved treatment performance. Total Nitrogen has decreased in the treated effluent.

| | | 2008-09 | 2009-10 | 2010-11 |
|-------------------------|-----------|---------------|---------------|---------------|
| Treated Effluent | | Median | Median | Median |
| TN | g/cum | 35.9 | 29.5 | 39 |
| TKN | g/cum | 2.80 | 2.40 | 1.6 |
| Total Ammoniacal N | g/cum | 1.70 | 2.60 | 0.4 |
| DRP | g/cum | 7.70 | 5.40 | 7.3 |
| cBOD ₅ | g/cum | 2.80 | 2.50 | 2.3 |
| FC | MPN/100mL | 4700 | 5600 | 11000 |

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)

Nitrate levels in groundwater sample bores 1 & 2 (which are directly beside the disposal beds) have increased as overall treatment conversion rates of ammonia have improved. A comparison of the current period nutrient results with the results from 2007-08 shows little influence upon ground water quality at Bore 3.

| | | 2008-09 | 2009-10 | 2010-11 |
|-------------------------|-------|---------------|---------------|---------------|
| | | <i>Median</i> | <i>Median</i> | <i>Median</i> |
| Bore 1 - paddock | | | | |
| Total Ammoniacal N | g/cum | 0.014 | 0.026 | 0.04 |
| TKN | g/cum | 1.300 | 0.97 | 1.08 |
| NO3-N | g/cum | 16.00 | 31 | 20.15 |
| TN | g/cum | 17.34 | 32 | 21.33 |
| DRP | g/cum | 0.02 | 0.014 | 0.02 |
| TP | g/cum | 1.60 | 2 | 2.10 |

| | | 2008-09 | 2009-10 | 2010-11 |
|-------------------------------|-------|---------------|---------------|---------------|
| | | <i>Median</i> | <i>Median</i> | <i>Median</i> |
| Bore 2 – between gates | | | | |
| Total Ammoniacal N | g/cum | 0.225 | 0.8 | 0.036 |
| TKN | g/cum | 1.065 | 1.11 | 0.57 |
| NO3-N | g/cum | 20.00 | 37.00 | 17.7 |
| TN | g/cum | 21.96 | 36.6 | 18.1 |
| DRP | g/cum | 2.85 | 3.0 | 3.65 |
| TP | g/cum | 3.45 | 2.5 | 4.4 |

| | | 2008-09 | 2009-10 | 2010-11 |
|----------------------------|-------|---------------|---------------|---------------|
| | | <i>Median</i> | <i>Median</i> | <i>Median</i> |
| Bore 3 – by railway | | | | |
| Total Ammoniacal N | g/cum | 0.010 | 0.010 | 0.01 |
| TKN | g/cum | 0.375 | 0.5 | 0.1 |
| NO3-N | g/cum | 4.90 | 5.8 | 3.3 |
| TN | g/cum | 5.59 | 6.3 | 3.44 |
| DRP | g/cum | 0.02 | 0.027 | 0.03 |
| TP | g/cum | 0.39 | 0.2 | 0.03 |



1. Bore in paddock



2. Bore between gates



3. Bore by railway

| 7 | <p>The consent holder shall retain an appropriately experienced person to compile an annual monitoring report that shall include the following:</p> <ul style="list-style-type: none"> (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. <p>The report shall be provided to the satisfaction of the Waikato Regional Council within two months of the fourth quarterly sample being taken.</p> | Yes | <p>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.</p> <p>The Median discharge rate for Total Nitrogen was 1.4 kg/day for the reporting period. The 2009-10 Median discharge rate for Total Nitrogen was 1.47 kg/day.</p> <p>The Median application rate for Total Nitrogen was 13.3 kg/ha day for the reporting period. This gives an estimated Total Nitrogen application rate of 4854 kg/ha yr for 2010-11 down from 5128 kg/Ha yr for 2009-10.</p> <p>Total Nitrogen discharged annually</p> <table border="1" data-bbox="1238 592 2166 671"> <thead> <tr> <th></th> <th></th> <th>2008-09</th> <th>2009-10</th> <th>2010-11</th> </tr> </thead> <tbody> <tr> <td>Median</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>TN</td> <td>kg/yr</td> <td>465</td> <td>537</td> <td>511</td> </tr> </tbody> </table> <p>NB: The discharge area used has two disposal areas: The original 16m x 16m disposal bed underneath the recirculating sand filter, the recent dripper irrigation bed 24m x 33m, approximately 0.105 Ha total.</p> <p>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.</p> | | | 2008-09 | 2009-10 | 2010-11 | Median | | | | | TN | kg/yr | 465 | 537 | 511 |
|--------|---|---------|--|---------|--|---------|---------|---------|--------|--|--|--|--|----|-------|-----|-----|-----|
| | | 2008-09 | 2009-10 | 2010-11 | | | | | | | | | | | | | | |
| Median | | | | | | | | | | | | | | | | | | |
| TN | kg/yr | 465 | 537 | 511 | | | | | | | | | | | | | | |
| 8 | <p>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:</p> <ul style="list-style-type: none"> (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. | Yes | | | | | | | | | | | | | | | | |

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|---|---|-----|--|
| | <p>Note:</p> <p>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> | | |
| 9 | <p>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.</p> | Yes | |