Consent Name	Matangi Wastewater Treatment System
Consent No.	105551
Year	1 July 2013 – 30 June 2014
Date	30 September 2014

MATANGI WASTEWATER TREATMENT SYSTEM
ANNUAL REPORT 2013 - 2014
RC 105551

The Waikato District Council (WDC) holds the above resource consent associated with the treatment and discharge of wastewater from the Matangi wastewater treatment plant (WWTP) to land. The consent has an expiry date of 30 September 2021.

The conditions issued by Waikato Regional Council include the following:

119642	To discharge up to 52m³ per day of treated wastewater from the plant, subject to a number of conditions.

The consented discharge volume limit was met due to a drier than normal 2013 winter along with an extension of the disposal field. The Matangi WWTP continues to perform very well with regard to cBOD5, TSS and ammonia removal.

The plant does not have a dedicated disinfection process, therefore the 2013/14 median faecal coliform count of 3850 MPN/100mL, in the discharge to the sub-surface disposal field, could be considered low.

The sampling bores only detect low E.coli concentrations therefore the ground appears to be providing disinfection treatment.

The treatment plant is not designed for nitrogen or phosphorus removal. Therefore the amount of nitrogen and phosphorus discharging to the ground is similar to the amount entering the treatment plant.

Elevated nitrogen concentrations are therefore observed in the bore samples. Elevated phosphorus concentrations are not observed in the bore samples because the phosphorus is probably bound to the soil.

OPERATIONAL COMMENTS

Staff Maintenance Visits: An operations staff member visits the site at least twice a week.

Mark Curtis
TREATMENT & OPERATIONS TEAM LEADER

Martin Mould
WATERS MANAGER

DATA SUMMARY July 2013 - June 2014 RC 105551 - Matangi WWTP

Annual Out Flow Summary	52m3
Average Daily OutFlow	25
Max Daily OutFlow	45
Annual OutflowTotal	8525

Annual Nutrient Loads (0.108ha Disposal Area)		2011-12	2012-13	2013-14
Average TN discharged per day	kg/day	0.70	1.4	0.97
Average TN application rate	kg/ha/day	6.4	13.2	8.6
Average DRP discharged per day	kg/day	0.2	0.3	0.2
Average DRP application rate	kg/ha/day	1.5	2.7	0.7

Monthly Discharge to Land		Median	90 Percentile	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14
pH Between 6 & 9		6.7	7.1	6.75	7.29	6.60	7.0	6.6	6.6	7.1	6.7	6.7	6.8	6.6	6.4
Suspended Solids	g/m3	3.0	6.7	6.8	6.2	26.1	5.3	4.0	3.0	5.0	3.0	3.0	3.0	3.0	5.0
cBOD5	g/m3	2.0	8.29	8.4	8.6	6.2	7.3	2.0	4.2	2.0	2.0	2.0	2.0	2.0	2
Ammoniacal-N	g/m3	0.8	19.5	19.8	32.8	1.76	16.90	0.1	4.2	0.1	0.2	0.5	0.1	0.9	0.68
Nitrate	g/m3	41.3	52	3.03	0.049	25.7	0.008	36.0	25.2	51.2	52.0	46.5	49.0	54.0	52
TN	g/m3	41.4	52.6	22.83	32.85	27.46	16.91	35.8	29.4	51.3	52.2	47.0	49.1	54.9	52.68
DRP	g/m3	7.6	9.2	3.7	5.2	4.8	4.6	5.4	7.1	8.4	9.0	9.2	9.6	8.9	8.0
Faecal coliforms	MPN/100m	3850.0	28700.0	100000	26000	4100	29000	6200	7400	69	190	1000	1400	1400	3600

Groundwater Test - Bore 1		Median	90 Percentile	Jul-13	Oct-13	Jan-14	Apr-14
pH Between 6 & 9		6.2	6.3	6.14	6.3	6.14	6.18
Suspended Solids	g/m3	1210.0	2852	1340	1080	30.3	3500
cBOD5	g/m3	2.0	2.7	2	2	2	3
Ammoniacal-N	g/m3	0.5	0.7854	0.66	0.0653	0.434	0.84
Nitrate	g/m3	23.9	37.95	42.00	28.5	19.3	10.5
TN	g/m3	24.1	38.42959	42.66	28.56	19.75	11.34
DRP	g/m3	0.0	0.0	0.0161	0.019	0.0238	0.026
Faecal coliforms	MPN/100m	10.0	213.0	300	10	1	10

Groundwater Test - Bore 2		Median	90 Percentile	Jul-13	Oct-13	Jan-14	Apr-14
pH Between 6 & 9		6.3	6.4	6.14	6.37	6.48	6.24
Suspended Solids	g/m3	3.2	4.11	3.2	3.1	4.5	3
cBOD5	g/m3	2.0	2	2	2	2	2
Ammoniacal-N	g/m3	0.0	0.01	0.01	0.01	0.01	0.01
Nitrate	g/m3	30.6	46.2	48	19.1	8.5	42
TN	g/m3	30.6	46.207	48.010	19.11	8.51	42
DRP	g/m3	1.4	1.7	1.66	1.23	1.66	1.09
Faecal coliforms	MPN/100m	1.0	1.0	1	1	1	1

Groundwater Test - Bore 3		Median	90 Percentile	Jul-13	Oct-13	Jan-14	Apr-14
pH Between 6 & 9		6.3	7.1	6.12	6.37	7.37	6.3
Suspended Solids	g/m3	3.0	25.33	3	3	34.9	3
cBOD5	g/m3	2.0	2	2	2	2	2
Ammoniacal-N	g/m3	0.0	0.01	0.01	0.01	0.01	0.01
Nitrate	g/m3	4.0	4.725	2.36	3.86	4.95	4.2
TN	g/m3	4.0	4.732	2.370	3.87	4.96	4.2
DRP	g/m3	0.0	0.0	0.0276	0.0311	0.0191	0.03
Faecal coliforms	MPN/100m	1.0	1.0	1	1	1	1

Date	Outflow Meter Reading	Flow for period (m3)	Period (days)	Daily OutFlow (m3)
4/07/2013	16282	173	7	24.7
10/07/2013	16440	158	6	26.3
26/07/2013	16869	429	16	26.8
13/08/2013	17377	508	18	28.2
5/09/2013	17884	507	23	22.0
11/09/2013	18007	123	6	20.5
24/09/2013	18365	358	13	27.5
3/10/2013	18638	273	9	30.3
8/10/2013	18805	167	5	33.4
16/10/2013	19085	280	8	35.0
1/11/2013	19521	436	16	27.3
7/11/2013	19649	128	6	21.3
13/11/2013	19800	151	6	25.2
19/11/2013	19949	149	6	24.8
2/12/2013	20322	373	13	28.7
10/12/2013	20570	248	8	31.0
24/12/2013	20968	398	14	28.4
21/01/2014	21519	551	28	19.7
28/01/2014	21674	155	7	22.1
3/02/2014	21821	147	6	24.5
10/03/2014	22584	763	35	21.8
21/03/2014	22829	245	11	22.3
10/04/2014	23136	307	20	15.4
16/04/2014	23393	257	6	42.8
8/05/2014	23839	446	22	20.3
14/05/2014	23966	127	6	21.2
20/05/2014	24086	120	6	20.0
30/05/2014	24282	196	10	19.6
4/06/2014	24379	97	5	19.4
10/06/2014	24495	116	6	19.3
17/06/2014	24658	163	7	23.3
24/06/2014	24807	149	7	21.3
Total Flow		8525		
Average Flow				24.9
Max Flow				42.8

EVENT SUMMARY	**JULY 2013 - JUNE2014**
Jan 2014	A recirculation tank float failure led to a discharge to the gravel bed. The float was repaired. An electrical and monitoring upgrade is still in progress to improve monitoring and compliance.
COMPLAINTS SUMMARY	**JULY 2013 - JUNE2014**
	Nil complaints during the 2013/14 period

CONSENT SUMMARY July 2013 - June 2014 RC 105551 – Matangi WWTP

The Matangi Wastewater Treatment Plant has generally operated in compliance with the conditions of Resource Consent 105551. Important matters to note and non-compliances are detailed below against the corresponding summary of the condition.

A summary of results are included in the spreadsheet above and a summary of key matters are included in the cover letter.

<table>
<tr><th colspan="2">Conditions Comments</th></tr>
<tr><td>1</td><td>The volume of effluent discharged from the wastewater treatment and disposal system shall not exceed 52 cubic metres per day.

• Maximum daily discharge for the period was 42.8m³ in April 2014.
• Work on the telemetry system was completed in March which enabled manual extraction of accurate daily records from SCADA.</td></tr>
<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)".

• Reflection Treatment Systems provided an amended manual for the 2008 upgrade.
• A recycle from the treated disposal line to the raw inlet showed some benefits in the first few years. However recently the nitrate concentration has been increasing. The return line has been blocking up with sludge and regular maintenance will be scheduled for the future

<table>
<tr><th></th><th>NH4-N</th><th>TN</th><th>NO3-N</th></tr>
<tr><td>2009-10</td><td>2.6</td><td>29.5</td><td>27.0</td></tr>
<tr><td>2010-11</td><td>0.77</td><td>39.0</td><td>36.0</td></tr>
<tr><td>2011-12</td><td>0.40</td><td>39.0</td><td>32.0</td></tr>
<tr><td>2012-13</td><td>0.7</td><td>32.4</td><td>32.0</td></tr>
<tr><td>2013-14</td><td>0.80</td><td>41.4</td><td>41.3</td></tr>
</table>
</td></tr>
<tr><td>4</td><td>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.

• Treatment tanks were regularly inspected but did not require de-sludging 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.

• Some ponding was identified during the year and repairs to the system were carried out.
• A drier than normal 2013 winter along with an extension of the disposal field resulted in decreased pressure on the receiving environment.</td></tr>
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6	*The consent holder shall continue to determine the quality, quantity and variability of the treated wastewater prior to discharge, and determine the effects of the discharge on groundwater.* • Please see the attached summary spreadsheet. • A comparison of the current period nutrient results with the results from the previous 5 years shows little influence upon ground water quality at Bore 3. 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 provided to Waikato Regional Council within two months of the fourth quarterly sample being taken.* • This report is submitted in compliance with this condition. • NB: The discharge area has three disposal areas: The original 16m x 16m disposal bed underneath the recirculating sand filter, a dripper irrigation bed 24m x 33m and the new dripper irrigation bed 40m x 40m. Approximately 0.27 Ha total. • An additional 0.16ha of soakage has been installed which has provided significant improvement to the TN and DRP loading.