

Appendix 1: Suggested consent conditions dated 8 April 2015

Schedule 1 – General Conditions for WAR120258 [31707, 32044, 32045, 33045]

1. The activity authorised by this Wastewater Discharge Permit shall be undertaken in general accordance with the application (including the Description and Assessment of Effects) lodged with the Wellington Regional Council on 7 April 2014 and further information received on:

- *2 June 2014; and*
- *An email dated 19 March 2015.*

Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the resource consent, the conditions apply.

Note: Any change from the location, design concepts and parameters, implementation and/or operation may require a new resource consent or a change of consent conditions pursuant to Section 127 of the Resource Management Act 1991.

2. The consent holder shall engage in writing with the Manager Environmental Regulation, Wellington Regional Council, if any contingency works or variation from the present consent is required prior to undertaking any such activity. This is to ascertain whether the contingency work is within the scope of this consent, or whether a variation to the consent or additional resource consent will be required.

Upgrade Staging

3. The treatment system shall be upgraded in stages in accordance with the following table:

Stage Name	Stage Description	Stage to commence no later than:
Stage 1A	Plant Optimisation and minor capital works	Commencement of this consent
Stage 1B	Discharge of treated effluent to “MWWTP Adjacent” block during low-flow conditions	1 November 2017
Stage 2A	Discharge of treated effluent to Pain Farm (Stage 2A) <u>without</u> deferred storage	December 31, 2030
Stage 2B	Discharge of treated effluent to Pain Farm (Stage 2B) <u>with</u> deferred storage	December 31, 2035

Table 1: Land Management Stage Commissioning Programme

Management and Operations Plans

4. The consent holder shall prepare the Management and Operations Plans listed in Table 2 (below). The Plans shall give effect to requirements in Schedule 1, 2, 3, and 4 (attached) and may be prepared as separate plans.
5. The Plans in Table 2 (below), including any amendments, shall be approved by the Manager, Environmental Regulation, Wellington Regional Council. The consents shall thereafter be exercised in conformance with the endorsed Plans.

6. All Management Plans listed in Table 2 (below) are to be prepared by a suitably qualified and experienced person with expertise in the matters that the individual Management Plan is to address.

Management Plan	Due (time from commencement of consent)
MWWTP Operations and Maintenance Manual	6 Months
Tangata Whenua Values Monitoring Plan	12 Months
Inflow and Infiltration Reduction Management Plan	12 Months
Effluent Discharge Management Plan	12 Months
Land Discharge Management Plan	27 Months
Odour Management Plan	6 Months
Environmental Monitoring Plan	12 Months

Table 2: Management Plans

7. The content of the management plans shall be agreed with the Manager prior to being drafted and all management plans shall be reviewed and where necessary updated either:
- annually within one month of the anniversary of the commencement date of this of consent or
 - Within three months of implementing a new stage as defined in Table 1, Condition 3; or
 - Where environmental monitoring supports a change. Any change shall be subject to the written approval of the Manager, Environmental Regulation, Wellington Regional Council

Monitoring and Recording

8. The consent holder shall monitor and record wastewater flow and quality according to the frequency, and constituents specified in Schedule 6: Table 1, at
- the locations specified in Schedule 6: Table 2 and Figure 1 (until such time as the Environmental Monitoring Plan is endorsed pursuant to Schedule 1: Condition 5); and
 - the monitoring locations specified in the Environmental Monitoring Plan (following its endorsement pursuant to Schedule 1: Condition 5).

Advice Note: The intent of this condition is to confirm that the monitoring frequencies, constituents and locations will be those contained within Schedule 6 of this consent until such time as the Environmental Monitoring Plan is prepared and approved by the Manager. Following approval of the Environmental Monitoring Plan, all environmental monitoring would then be undertaken in accordance with the approved Environmental Monitoring Plan.

9. To enable the sampling of the treated wastewater, easy and safe access, to a sampling port(s) shall be provided and maintained as close as is practicable to those sampling locations specified in Schedule 1: Condition 8.
10. The consent holder shall keep inspection records and operational logs which record regular inspections, identify changes in the operating procedures and record unusual events that occur at the plant. Copies of these records shall be supplied to the Manager, Environmental Regulation, Wellington Regional Council as required by Schedule 1: Condition 15, or within 20 working days of a written request by the Manager Environmental Regulation, Wellington Regional Council.

11. In respect of monitoring required by these consents, the following shall apply:
 - a) all monitoring techniques employed in respect of the conditions of this consent shall be carried out by suitably experienced and qualified persons;
 - b) all analytical testing undertaken in connection with these consents shall be performed by a laboratory that is IANZ accredited for the analytical tests;
 - c) all soil and water sample analyses shall be undertaken in accordance with the methods detailed in the "Standard Methods For The Examination Of Water And Waste Water, 2012" 22nd edition by A.P.H.A. and A.W.W.A. and W.E.F., or any other method approved in written advance by the Manager, Environmental Regulation, Wellington Regional Council; and
 - d) All macroinvertebrate sampling shall be undertaken as per Condition 13 Schedule 2.
12. Where an approved management plan or manual (including any review in accordance with Schedule 1:Condition 7) contains a monitoring, measurement, or recording methodology which differs from those specific methodologies contained within any condition of these resource consents, the management plan or manual methodology shall prevail.

Note: The intent of this condition is to ensure that appropriate industry methodologies can be applied over the term of consent without the need for an unnecessary variation to conditions (subject to the endorsement of the Manager).

Wastewater Volume Measurement

13. The consent holder shall fit measuring equipment to monitor the wastewater flows at the following points and within the timeframes specified.
 - a) Inlet structure: before within **one month** of commencement of this consent
 - b) Discharge outflow: within **one month** of commencement of this consent
 - c) Land treatment volume: **prior** to any discharge of treated effluent to land (for Stage 1B and Stage 2A and 2B respectively)

Measuring equipment shall be maintained to manufacturer's specifications for the duration of these consents.

14. Within one month of the commencement of this consent, the consent holder shall install a datalogger and flow measuring device at the discharge point to the Ruamahanga River that is compatible with the Welling Regional Council's Water Data Management System.
 - a) The datalogger shall record the instantaneous treated wastewater discharge at a minimum of 15 minute intervals. The data shall be provided automatically on a daily basis in a format compatible with the Water Use Data Management System and;
 - b) The datalogger unit and flow measuring device shall be installed and maintained by a suitably qualified person in accordance with manufacturer's specifications and industry best practice guidelines, and to the satisfaction of the Manger, Environmental Regulation, wellington Regional Council.
15. Where the measuring equipment measures flow in a pipe, measurement error is to be no more than +/- 5%, and where installed at a weir or open channel, measurement error is to be no more than +/- 10% as an average across the flow range. The measuring equipment must:
 - a) be able to measure cumulative discharge;
 - b) be able to measure instantaneous flow rate;
 - c) be installed in accordance with the manufacturer's specifications; and

- d) be calibrated annually.
16. The consent holder shall verify the accuracy of the measuring device/system required under condition(s) 14 and 15 by 30 June 2016 and a minimum of every five years thereafter, and as directed by the Manager, Environmental Regulation, Wellington Regional Council for the duration of this consent to determine if the actual volume of discharge is within +/- 5%.

Any verification of the measuring device/system under this condition must be performed by a suitably qualified person, and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

Within **one month** of any verification being undertaken on the measuring device/system, the consent holder shall submit to the Manager, Environmental Regulation, Wellington Regional Council, a copy of the verification certificate/and or evidence documenting the calibration as completed by the person who undertook the verification.

Inflow and Infiltration

17. The consent holder shall minimise the volume of wastewater entering the WWTP by preventing, as far as is practicable, storm water inflow and infiltration into the wastewater reticulation network and treatment system. This shall include the prevention of stormwater run-off from the land surrounding the treatment ponds.

Reporting

18. The consent holder shall provide a Quarterly Data and Exception Report for each three-month period ending 31 March, 30 June, 30 September and 31 December to the Manager, Environmental Regulation, Wellington Regional Council, within 30 working days of the end of each three month period. The quarterly report shall be provided in hard copy and electronic format. The quarterly report shall include, but not be limited to, the following:
- a) The results of all monitoring undertaken in accordance with the conditions of this consent, with all monitoring data provided in a suitable electronic format;
 - b) A brief commentary on any exceptions identified from the data and reasons for difficulties in achieving compliance with the conditions of this consent; and
 - c) Subject to Schedule 1: Condition 26 a schedule summarising any complaints received during the quarter.

Where agreed in writing with the Manager, up to two quarterly reports may be combined into a single report for any such specified reporting period(s).

Advice Note: The Quarterly Data and Exception Report required under this condition on 30 September of any year may be incorporated into the Annual Report, but where it is shall be clearly identified for compliance monitoring purposes.

19. The consent holder shall provide to the Manager an Annual Report by 30 September each year, summarising compliance with the conditions of these consents for the previous compliance year (1 July to 30 June inclusive). The Annual Report shall be provided in hard copy and electronic format. This report shall include as a minimum:
- a) a summary of all monitoring undertaken in accordance with the conditions of this consent, including analysis of the information in terms of compliance and adverse effects carried out by a suitably qualified person;

- b) a discussion on any trends or changes in environmental effects evident from the monitoring data, both within the annual period and compared to previous years;
- c) any reasons for non-compliance or difficulties in achieving compliance with the conditions of this consent;
- d) any measures that have been undertaken, or are proposed to be undertaken in the upcoming 12 months, to improve the environmental performance of the wastewater treatment and disposal system;
- f) any recommendations on alterations/additions to the monitoring programmes and/or any changes to any of the Management Plans following any review in accordance with Schedule 1: Condition 7;
- g) a schedule of any complaints recorded during the year and any follow up actions undertaken; and
- i) any other issues considered important by the consent holder.

A copy of the Annual Report should be made available to the Community Liaison Group, Kahungunu ki Wairarapa and Rangitane o Wairarapa within 10 working days of submission to the Greater Wellington Regional Council.

Communications and Liaison

- 20. Within three months of the commencement of this consent, the consent holder shall establish a Community Liaison Group (CLG) in order to report to community members on the performance of the MWWTP, the long term strategy for wastewater treatment and discharge, progress with initiatives to reduce flow and load of contaminants to the MWWTP, improvements to MWWTP performance, and reductions to the volume and load of contaminants discharged to the Ruamahanga River. The consent holder shall invite Wellington Regional Council and all submitters to the application to attend the CLG meetings. The CLG shall be invited to meet at intervals as decided upon by the members of the CLG, but at least once per year, and records of the meetings shall be forwarded to the Manager Environmental Regulation, Wellington Regional Council, within two weeks of each meeting.
- 21. Within one month of commencement of this consent a WWTP liaison person shall be appointed by the consent holder to be the main and readily accessible point of contact. The consent holder shall take appropriate steps to seek to advise all stakeholders and interested persons of the stakeholder liaison person's name and contact details. If the liaison person will not be available for any reason, an alternative person shall be nominated by the consent holder and changes notified accordingly to those stakeholders/interested persons.

Resource Consent Compliance System

- 22. Within two months of commencement of this consent, the consent holder shall develop and implement a robust resource consent compliance management system, including the identification of the person responsible for monitoring compliance. The consent holder shall provide a written summary (including templates and examples as relevant) of the compliance system to the Manager, Environmental Regulation, Wellington Regional Council, by the end of the two month period. A copy of the summary shall also be provided to the members of the CLG, Kahungunu ki Wairarapa and Rangitane o Wairarapa.

Signage

- 23. For the duration of these consents, the consent holder shall:

- a) maintain signage on the true left and true right stream banks in the immediate vicinity of the treated wastewater outfall which shall at all times:
 - provide clear identification of the location and nature of the discharge; and
 - state the width and downstream distance of the mixing zone authorised by this consent; and
 - provide a 24-hour contact phone number; and
 - be visible to the public visiting the area and legible from a distance of 20 metres without unnecessarily detracting from the visual amenity of the area.
 - b) maintain appropriate signage on the boundaries of the site which shall be legible to a person during daylight hours, warning that partially treated wastewater is discharged to land and may be present at the site.
24. The consent holder shall consult with Regional Public Health and provide a copy of their written approval regarding the wording of the signs prior to submitting them for approval to Wellington Regional Council. Written confirmation of the signage placement accompanied by photographs of the signage shall also be provided to the Manager, Environmental Regulation, Wellington Regional Council within one month of the commencement of this consent.

Access

25. The access gate to the site shall remain locked at all times that operational staff of the consent holder (which shall include authorised contractors) are not present on site, to prevent unauthorised access.
26. Stock access to the WWTP oxidation ponds and discharge channel shall be restricted, except that grazing of the pond embankment by stock shall be permitted under the management of the consent holder. All fences or other barriers shall be maintained by the consent holder to a suitable stock proof standard at all times.

On-site meeting with WWTP Operations Contractor

27. The consent holder shall arrange and conduct a consent information meeting within two months of the date of commencement of this consent. The purpose of the meeting shall be to confirm the conditions of the consents and the responsibilities of the contractor. The consent holder shall invite, with a minimum of 10 working days notice, the Wellington Regional Council and a representative from each key contractor operating the activity.

Complaints Register

28. The consent holder shall keep a record of any complaints that are received with respect to the operation of the WWTP and associated irrigation. The record shall contain the following details:
- a) name and address of the complainant;
 - b) identification of the nature of the complaint;
 - c) date and time of the complaint and of the alleged event;
 - d) weather conditions at the time of the complaint; and
 - e) any measures taken to address the cause of the complaint.
29. The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council of all complaints relating to the exercise of these consents, within 24 hours of being

received by the consent holder, or the next working day. A schedule of all complaints shall be provided with the quarterly report.

System Failure

30. The system shall be maintained in an efficient operating condition at all times. In the event of any treatment failure that is likely to result in deterioration in the quality of the discharge which would affect the receiving environment, and potentially be in breach of any condition of this consent, the consent holder shall:
- a) Take immediate steps to remedy and mitigate any adverse effects on the environment caused by the failure;
 - b) Notify the Manager, Environmental Regulation, Wellington Regional Council within 24 hours after the malfunction has been detected, detailing the manner and cause of that malfunction and the steps taken to mitigate its effects and to prevent recurrence. Notification can be sent to the Wellington Regional Council at notifications@gw.govt.nz. Please include the consent reference and the name and phone number of a contact person;
 - c) The consent holder shall forward an incident report to the Manager, Environmental Regulation, Wellington Regional Council, within seven (7) working days of the incident occurring, unless otherwise agreed with the Manager, Environmental Regulation, Wellington Regional Council. The report shall describe the manner and cause of the incident, measures taken to mitigate/control the incident (and/or illegal discharge), and measures to prevent recurrence; and
 - d) Notify Wairarapa District Health Board as soon as practicable after the malfunction has been detected.

***Advice note:** Compliance with this condition does not preclude Wellington Regional Council undertaking follow up enforcement investigations and actions against the consent holder.*

31. Notification in accordance with Schedule 1: Condition 29(d) shall include but not be limited to:
- The nature of the discharge,
 - Location of the discharge,
 - Start date and estimated time of the discharges,
 - End date and estimated time of the discharge (if known at the time of notification),
 - Estimated duration of the discharge (hours),
 - Maximum flow (litres/second) or estimate thereof,
 - Mean flow (litres/second) or estimate thereof,
 - Estimated volume (m³),
 - Cause of overflow/discharge,
 - Action taken (including signs, notification of interested parties, clean-up of stream etc.), and
 - The contact details of the person reporting the notification.

Review of Conditions

32. Wellington Regional Council may review any or all of the conditions of this consent by giving notice of its intention to do so pursuant to Section 128 of the Resource Management Act 1991, at any time within three months of the annual anniversary of the date of commencement of this consent for any of the following purposes:

- to deal with 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;
- to review the adequacy of any monitoring requirement(s) so as to incorporate into the consent any modification to any plan(s) or monitoring requirement(s) which may become necessary to deal with any adverse effects on the environment arising from the exercise of this consent;
- to alter the monitoring requirement(s) in light of the results obtained from any previous monitoring;
- to require remediation measures to be undertaken if adverse effects from the activity are greater than anticipated in the application.
- to incorporate Cultural Health Monitoring requirements.
- to enable consistency with relevant regional plans and NES requirements.

Resource Management Charges

33. A resource management charge, set in accordance with section 36(2) of the Resource Management Act 1991 shall be paid to Wellington Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of the resource consents and for the carrying out of its functions under section 35 (duty to gather information, monitor and keep records) of the Act.

Schedule 2: WAR120258 [31707] - Discharge Permit to water: Discharge permit to discharge treated wastewater to the Ruamahanga River

Discharge Rate, Parameters and Regime

1. Subject to the additional restrictions during each Stage imposed by Schedule 2: Condition 2, this permit authorises the discharge of treated wastewater at:
 - a) An annual average daily flow of 650m³/day; and
 - b) A maximum daily rate of 4,300m³/day.
2. In addition to the maximum rates specified in Schedule 2: Condition 1, discharges to the Ruamahanga River shall be operated under the following conditions:

- a) Discharge regime prior to the commissioning of Stage 1B land treatment
Until the commencement of the Stage 1 Land Treatment, treated wastewater shall be discharged to the River via the existing discharge channel at a rate not exceeding the maximum rates provided for in Schedule 2; Condition 1.
- b) Stage 1B and 2A Discharge to Ruamahanga River
Following confirmation of commencement of Stage 1B Land Treatment in accordance with Schedule 2: Condition 6, discharges into the Ruamahanga River shall not exceed the following:

Flow in the Ruamahanga at Waihenga Bridge (L/s)	Max. Wastewater discharge (m ³ /day)	Max. Wastewater discharge rate (L/s)
Below 24,930 (< HMF)	Nil	Nil
24,930 to 49,860 (< median)	1350	11
49,860 to 99,720 (< 2 x median)	2700	21
99,720 to 149,580 (< FRE3)	3000	35
Above 149,580 (> FRE3)	4300	50

The discharge shall be managed in a way that is consistent with achieving the percentages outlined in the Assessment of Environmental Effects, 7 April 2014 (refer Tables 2 and 3). On an annual basis, the consent holder shall provide a report to Wellington Regional Council, assessing the discharge against the table above, identifying any exceedances that have occurred, and identifying if/as required any improvements or changes to the discharge regime .

- c) Stage 2B Discharge to Ruamahanga River
Following confirmation of commencement of Stage 2B Land Treatment in accordance with Schedule 2: Condition 6, there shall be no discharge of treated effluent to Ruamahanga River when the flow in the Ruamahanga River at Waihenga Bridge is less than three times the median flow (149,580 L/s).

Advice Note: Contingency measures to manage pond storage volumes shall be included in the Effluent Discharge Management Plan to minimise, as far as practicable, any discharge to the Ruamahanga River during Stage 2B (i.e. land treatment shall be the priority where practicable and the effects are less on the environment to discharge to land than directly to the river).

3. Any treated wastewater discharged to the Ruamahanga River shall meet the following standards:

- a) The concentration of BOD₅ shall not exceed 35g/m³ in more than 8 out of any 12 consecutive monthly test results;
- b) The concentration of TSS shall not exceed 55g/m³ in more than 8 out of any 12 consecutive monthly test results;
- c) The concentration of Total Ammonia-nitrogen (NH₄-N) shall not exceed 20g/m³ in more than 8 out of any 12 consecutive monthly test results; and
- d) The concentration of TN shall not exceed 29mg/l in more than 8 out of any 12 consecutive monthly test results.
- e) The concentration of DRP shall not exceed 5g/m³ in more than 8 out of any 12 consecutive monthly test results.

Advice Note: Compliance will be demonstrated based on the monthly samples as set out in Schedule 6: Table 1.

- 4. The following UV treatment standards shall apply:
 - a) For discharges up to 2,800m³/day no more than 5 of 10 consecutive E.coli values shall exceed 100 cfu per 100 millilitres, and no more than 2 out of 10 consecutive values shall exceed 1,400 per 100 millilitres; or
 - b) For discharges over 2,800m³/day, UV treatment shall be applied to a minimum of 2,800m³/day and the remaining flow may have no UV treatment.
- 5. All discharges to the Ruamahanga River shall be made via the existing surface discharge channel at the location identified in Schedule 6: Figure 1.

Advice Note: Instantaneous flows in the Ruamahanga River at the Waihenga Bridge site are measured by Wellington Regional Council and are available on the website at the following link <http://graphs.gw.govt.nz/ruamahanga-river-at-waihenga-bridge/>

Confirmation of Land Treatment

- 6. The consent holder shall confirm in writing to the Manager, Environmental Regulation, Wellington Regional Council the commencement date of any land treatment in Stages 1B, 2A and 2B. This confirmation shall be provided no less than 20 working days prior to any irrigation on the respective land treatment site.
- 7. A copy of the confirmation required by Schedule 2; Condition 6 shall also be provided to the members of the Community Liaison Group, Kahungunu ki Wairarapa and Rangitane o Wairarapa, no more than five working days after the Manager, Environmental Regulation, Wellington Regional Council, has been advised.

Stage 1B mixing zone investigation

- 8. Within **three months** of commencement of Stage 1B, the consent holder shall develop a Monitoring Protocol to characterise mixing of the discharge with river water and river health in a distance of 500m downstream of the discharge in a range of river and wastewater flow conditions relevant to Stage (1B). As a minimum, the survey shall be carried out in both winter and summer conditions, and include sampling during maximum wastewater discharge flows proposed for Stage 1B at no less than three river flows, including at river flow at or close to half median flows on at least one sampling occasion and include monitoring of periphyton growth, macroinvertebrate communities, Ammoniacal-N, DO, DRP, and BOD. Periphyton and macroinvertebrate communities shall follow the protocols and methodologies set in

Schedule 2: conditions 12 and 13 of this consent. The Monitoring Protocol shall be developed in consultation with a water quality expert appointed by the Manager, Environmental Regulation, Wellington Regional Council, and approved by the Manager, Environmental Regulation, Wellington Regional Council, prior to the monitoring taking place.

9. Within **15 months** of commencement of Stage 1B of this consent, a Near Zone River Health Report shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council which outlines the investigation, analyses, and findings of the River Health Survey required by Schedule 2: Condition 8. The Report shall include confirmation of the suitability of the reasonable mixing zone.

Environmental monitoring

Water Quality Sampling

10. Subject to Schedule 1: Condition 8, the consent holder shall collect representative grab samples from the Ruamahanga River according to the frequency, constituents and locations detailed in Schedule 6: Table 1, Table 2 and Figure 1.

Macroinvertebrate Sampling

11. The consent holder shall have an appropriately qualified and experienced ecologist undertake macroinvertebrate sampling annually in the period between January 1 and March 31 at surface water locations identified in Schedule 6: Table 2 and Figure 2, each year until the second anniversary of the commencement of Stage 2B.

***Advice Note:** The timing of the invertebrate sampling is intended to reflect in-stream conditions under the discharge to water regime and under the discharge to land regime. In addition, for certainty, sampling locations are subject to change under Schedule 1: Condition 8.*

12. The sampling and assessment required under Schedule 2: Condition 11 shall be undertaken following a period of at least three weeks without a significant flood event (defined as an instantaneous river flow exceeding three times the estimated median flow in Ruamahanga River at Waihenga and during a period of low flow).
13. The macroinvertebrate sampling shall follow Protocols C3 (Hard-bottomed quantitative), P3 (full count with subsampling option) and QC3 (Quality control for full count with subsampling option) from the Ministry for the Environment's "protocols for sampling macroinvertebrates in wadeable streams" (Stark et al. 2001). This shall involve:
 - a) collection of five replicate 0.1m² Surber samples at random within a 20m section of riffle habitat at each sampling site;
 - b) full count of the macroinvertebrate taxa within each replicate sample to the taxonomic resolution level specified for use of the Macroinvertebrate Community Index (MCI); and
 - c) enumeration of the results as taxa richness, MCI, QMCI, %EPT taxa and %EPT individuals.

Periphyton and Algae Assessment

14. The consent holder shall have an appropriately qualified and experienced freshwater ecologist undertake an assessment of the percentage cover, biomass and community composition of

periphyton, filamentous algae and cyanobacterial mats in run habitat, as close as possible to the sites defined in Schedule 6: Table 2 and Figure 2. The periphyton assessment shall be every year to coincide with macroinvertebrate monitoring and reporting (refer Schedule 2: Condition 11).

The periphyton and algal assessment is to include:

- a) a visual assessment of the percentage cover of both filamentous algae and algal mats (to the nearest 5%) at five points across each of four transects encompassing run habitat and extending across the width of the river at each sampling site. Reported estimates shall include:
 - (i) Percentage cover of visible stream bed by bacterial and/or fungal growths (sewage fungus) visible to the naked eye;
 - (ii) Percentage cover of visible stream bed by filamentous algae more than 2cm long;
 - (iii) Percentage cover of visible stream bed by diatoms or cyanobacteria mats more than 0.3cm thick;
 - (iv) Percentage cover of visible stream bed by diatoms less than 0.3cm thick; and
 - (v) Percentage cover of visible stream bed that is clean.
 - b) collection of a composite periphyton sample across each sampling site using method QM-1a from the Stream Periphyton Monitoring Manual (Biggs and Kilroy 2000) at the same established monitoring sites and transects as defined in Condition 10 above (a composite of scrapings from eight rocks, two from each transect), using method QM-1b from the Stream Periphyton Monitoring Manual (Biggs and Kilroy 2000). The composite sample shall be analysed for ash free dry weight and chlorophyll *a*.
15. The consent holder shall have an appropriately qualified and experienced freshwater ecologist undertake an assessment of the percentage cover of deposited sediment in run habitat, as close as possible to the sites identified in Schedule 6: Table 2 and Figure 1. The deposited sediment assessment shall be undertaken twice per year, including once annually to coincide with macroinvertebrate monitoring required by Schedule 2: Condition 11.

Receiving water standards

16. From the date of commencement of this consent, the consent holder shall ensure that the discharge does not cause or breach any one or more of the following in the Ruamahanga River at the distances downstream of the outfall set out in Table 3:
- a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or
 - b) bacterial and / or fungal slime growths visible to the naked eye as plumose growths or mats; or
 - c) the receiving water to become unsuitable for consumption by farm animals; or
 - d) a reduction in horizontal visibility exceeding 30%; or
 - e) the DO concentration to fall below 80% saturation; or
 - f) a reduction in QMCI of greater than 20%; or
 - g) the concentration of total ammoniacal nitrogen to exceed 0.400 mg/m³;
 - h) the chlorophyll *a* concentration (mg/m²) to exceed 120 mg/m²;
 - i) the maximum cover of visible streambed of periphyton as filamentous algae more than 2cm long to exceed 30%; or
 - j) the maximum cover of visible streambed of periphyton as mat algae more than 0.3cm thick to exceed 60%.

Clause		Distance from outfall at which the limit applies			
		Stage 1A	Stage 1B	Stage 2A	Stage 2B
a) to e)	conspicuous oil or grease films, scums or foams, or floatable or suspended materials; bacterial and / or fungal slime growths the receiving water to become unsuitable for consumption by farm animals horizontal visibility reduction Dissolved oxygen	250m	250m	250m	250m
f)	QMCI	500m	250m	250m	250m
g)	Ammoniacal-N	250m	250m	250m	250m
h), i) and J)	Chlorophyll a, periphyton cover	500m	500m	250m	250m

Table 3: distance from the outfall at which the limit applies.

17. If the consent holder is unable to comply with Condition 16 d) e) or g) above, the consent holder shall use a Wilcoxon Signed Rank test to determine if there are any statistically significant increases or decreases. If it is determined that there are significant differences in accordance with the Wilcoxon Signed Rank occurring ($p = 0.05$ or lower), the permit holder shall undertake an investigation into the effects of the discharge from the Martinborough WWTP compared with upstream contamination. The findings shall be reported in the annual report required by Condition 19 (Schedule 1).

***Advice Note:** To perform the statistical test, analysis needs to be against a minimum of ten upstream and downstream paired results from the monthly sampling.*

Reporting

18. The findings and results of investigations undertaken in accordance with Schedule 2: Conditions 10, 11, 14 and 15 shall be incorporated and submitted in annual reports, as required by Schedule 1: Condition 19. The reports must note any differences encountered with reference to the applicable discharge regime and assess compliance against the discharge quality standards listed in Schedule 2: Condition 3 and the water quality standards listed in Schedule 2, Condition 16.

Schedule 3: WAR120258 [32045] – Discharge permit to air – discharge permit to discharge odours from the oxidation ponds and odours and other contaminants from irrigation of treated effluent to land

Odour Management

1. There shall be no discharges of odour to air that are noxious, dangerous, offensive or objectionable resulting from the operation of the MWWTP, at or beyond the boundary of the WWTP site as designated (Ds065) in the Wairarapa Combined District Plan.
2. There shall be no discharges of odour to air that are noxious, dangerous, offensive or objectionable resulting from the irrigation of effluent from either the Stage 1B (MWWTP) or Stage 2A and 2B (Pain Farm) Land Treatment sites, at or beyond the boundary of the respective irrigation area site boundaries.
3. There shall be no spray drift that is noxious, dangerous, offensive or objectionable resulting from the irrigation of effluent from either the Stage 1B (MWWTP) or Stage 2A and 2B (Pain Farm) Land Treatment sites, at or beyond the boundary of the respective irrigation area site boundaries.
4. All irrigation of treated effluent under Schedule 4 shall be managed in general accordance with the relevant parts of the Effluent Discharge Management Plan (Schedule 1: Condition 4) relating to the land treatment discharge.
5. The management of odour from the scheme shall be in general accordance with the Odour Management Plan (Schedule 1: Condition 4).

Schedule 4: WAR120258 [32044] – Discharge permit to land – discharge permit to discharge treated wastewater to land via an irrigation system

Discharge Rate and Quality

1. The discharge of treated wastewater to land shall not exceed the following rates:
 - a) Stage 1B Land Treatment: MWWTP 795 m³/day
 - b) Stage 2A and 2B Land Treatment: Pain Farm 4300 m³/day
2. The effluent hydraulic loading rate shall not exceed the following:
 - a) 35mm depth per week, and no more than 15mm in any 24 hour period during Stage 1B; and
 - b) 21mm depth per week, and no more than 9mm in any 24 hour period during Stage 2A or 2B and only when there is a corresponding soil moisture deficit.
3. Any treated wastewater discharged shall meet the following standards:
 - a) The concentration of BOD₅ shall not exceed 60g/m³ in 9 out of any 12 consecutive monthly test results;
 - b) The concentration of TSS shall not exceed 90g/m³ in 9 out of any 12 consecutive monthly test results;
 - c) The nitrogen loading rate shall not exceed a maximum of 300kg/ha/yr from any source and is to be determined from the average of 12 consecutive monthly test results and the average monthly flow collected in accordance with the Environmental Monitoring Plan and any applied rates of other sources (Schedule 1: Condition 4).
4. The detailed design of the land treatment irrigation proposed for Stage 1B shall be included in the Effluent Discharge Management Plan and Land Discharge Management Plan (Schedule 1: Condition 4).
5. Detailed design for Stage 2A and 2B Irrigation shall be included with a revision to the Effluent Discharge Management Plan and the Land Discharge Management Plan in accordance with Schedule 1: Condition 4.
6. The design of the land treatment irrigation schemes for Stage 1B, 2A and 2B shall be undertaken to, where practicable, give effect to the following:
 - a) Discharge of treated wastewater to the irrigation area shall:
 - (i) be evenly distributed to the entire area being utilised for irrigation;
 - (ii) not cause runoff or surface ponding; and
 - (iii) not lead to the development of anaerobic soil conditions.
 - b) Avoid the discharge of wastewater to land within 125m of the property boundary, except that wastewater may be discharged to land within 25m from the property boundary where:
 - (i) median E.coli. concentrations are less than 100cfu/100ml; and
 - (ii) irrigation is at low pressure (less than 1.4 bar); and,
 - (iii) the irrigation boom does not exceed 1.52m from ground level and does not incorporate an “end gun”;
 - (iv) wind speed does not exceed 12m/s (or 4m/s sustained for a period of 15 minutes or more) in a direction toward an existing dwelling (at the time of commencement of this consent) on an adjoining site within 300m of the irrigation area.

7. The discharge of treated wastewater to the irrigation area shall be in general accordance with the Effluent Discharge Management Plan (Schedule 1: Condition 4).

Monitoring

8. The consent holder shall continuously measure and maintain daily records of wastewater flows entering the treatment plant and the volume of the treated wastewater discharged to the land application area, to record the quantity of material being received and applied.
9. The consent holder shall record the location and volume applied to various irrigation areas within the land application system.
10. The consent holder shall record crop and pasture management practices across the site including:
 - a) Cultivation date;
 - b) Sowing date;
 - c) Fertiliser applications;
 - d) Harvesting; and
 - e) Any other management practices
11. The consent holder shall carry out groundwater sampling according to the constituents and frequency specified in the Environmental Monitoring Plan; and samples shall be taken in accordance with the most recent version of Wellington Regional Council's groundwater sampling protocol.
12. During Stage 1B, 2A and 2B, the consent holder shall undertake soil monitoring in accordance with the Environmental Monitoring Plan during the period of September and October every second year to assess soil health and performance of the land treatment scheme.

Reporting

13. The findings and results of investigations in Schedule 4: Conditions 11 and 12 shall be incorporated and submitted in the Annual Report (Schedule 1: Condition 19). The reports must note any differences encountered with reference to the applicable discharge regime and provide reasons where appropriate as to why irrigation has not been maximised.

Schedule 5: WAR120258 [33045] – Discharge permit to land – discharge permit to discharge treated wastewater to land via seepage from MWWTP oxidation ponds and the discharge channel

Discharge Rate

1. The rate of discharge to land (and subsequently groundwater) from the base and sides of the oxidation and maturation ponds and base and sides of the discharge channel via seepage is for 24 hours per day, 7 days per week, 52 weeks per year.

Monitoring

2. The consent holder shall:
 - a) carry out groundwater sampling according to the constituents and frequency in Schedule 6: Table 1, and at locations identified in Schedule 6: Table 2 and Figure 1; and
 - b) samples shall be taken in accordance with the most recent version of Wellington Regional Council's groundwater sampling protocol.

Reporting

3. The results of monitoring undertaken in accordance with Schedule 5: Condition 2 shall be incorporated and submitted in the Annual Report, as required by Schedule 1: Condition 15.

Schedule 6 - Monitoring Summary

Table 1: Sampling Parameters, Frequency and Location

Location	Inlet	Outlet	Land discharge area	Ruamahanga River	Groundwater sampling (pond seepage)	Groundwater sampling (land application area)
Constituent	Post inlet screening	Post UV		At locations in Table 2 and Figure 1	At locations in Table 2 and Figure 1	At locations in Table 2 and Figure 1
Flow	Every 15 minutes	Every 15 minutes	Daily		Water level below top of casing 6 monthly during summer and winter	Water level below top of casing 6 monthly during land application in summer and during winter rest period
Inspection	Daily	Daily	Daily		6 Monthly	Before and after land application season
Pond level		Daily				
Soil moisture and Rainfall			Daily			
UV Dosage			Daily			
Biological Oxygen Demand BOD	TBC	Monthly		Monthly	Annually	
Suspended Solids SS	TBC	Monthly		Monthly		
<i>E. coli</i>		Monthly		Monthly	Annually	Before and after land application season
Faecal Coliforms		Monthly		Monthly	Annually	
Ammoniacal Nitrogen NH3-N	TBC	Monthly		Monthly	Annually	
Nitrate Nitrogen NO3-N	TBC	Monthly		Monthly	Annually	Before and after land application season
Total Phosphorus TP	TBC	Monthly		Monthly	Annually	Before and after land application season

Total Nitrogen TN	TBC	Monthly		Monthly	Annually	Before and after land application season
Dissolved Reactive Phosphorus DRP	TBC	Monthly		Monthly	Annually	Before and after land application season
Particulate Organic Matter POM		Monthly		Monthly	Annually	
pH	TBC	Monthly		Monthly	Annually	
Conductivity	TBC	Monthly		Monthly	Annually	
Temperature	TBC	Monthly		Monthly	Annually	
Clarity (black disc)		Monthly		Monthly		
Dissolved Oxygen DO	TBC	Monthly		Monthly	Annually	

***Note:** Schedule 1 : Condition 12 applies to Schedule 6: Table 1 to the extent that where an approved management plan or manual (including any review in accordance with Schedule 1:Condition 7) contains a parameter, frequency, or detection limit which differs from those specific methodologies contained within this table, the management plan or manual methodology shall prevail. This is to ensure that current appropriate industry methodologies can be applied without the need for an unnecessary variation to conditions (subject to the endorsement of the Manager).*

Table 2: Monitoring Sites

APPROXIMATE SAMPLING SITE LOCATION	NZTM N	NZTM E
A. Wastewater Sampling Site		
Discharge to Ruamahanga River	1804567	5434977
UV Treatment Plant	1804562	5434931
Martinborough Receiving Water (Ruamahanga River)		
Upstream of discharge	1804399	5435667
50m downstream	1804399	5435103
250m downstream	1804267	5435237
500m downstream	1804038	5435261
B. Groundwater Sampling Sites		
<i>[To be confirmed in the Environmental Monitoring Plan]</i>		

***Note:** Schedule 1: Condition 12 applies to Schedule 6: Table 2 to the extent that where an approved management plan or manual (including any review in accordance with Schedule 1: Condition 7) contains a monitoring location which differs from those specific methodologies contained within this table, the management plan or manual methodology shall prevail. This is to ensure that current appropriate industry methodologies can be applied without the need for an unnecessary variation to conditions (subject to the endorsement of the Manager).*

Figure 1: Indicative monitoring site locations (NB Inlet monitoring location to be confirmed upon installation of equipment during Stage 1A)

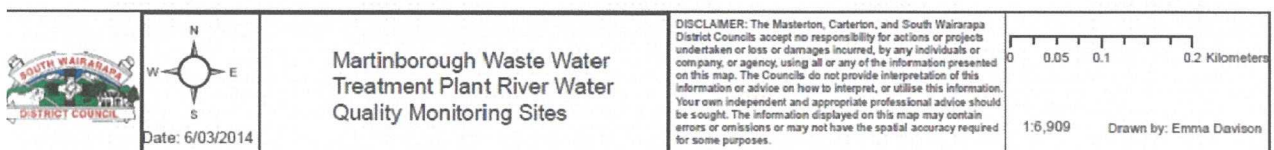
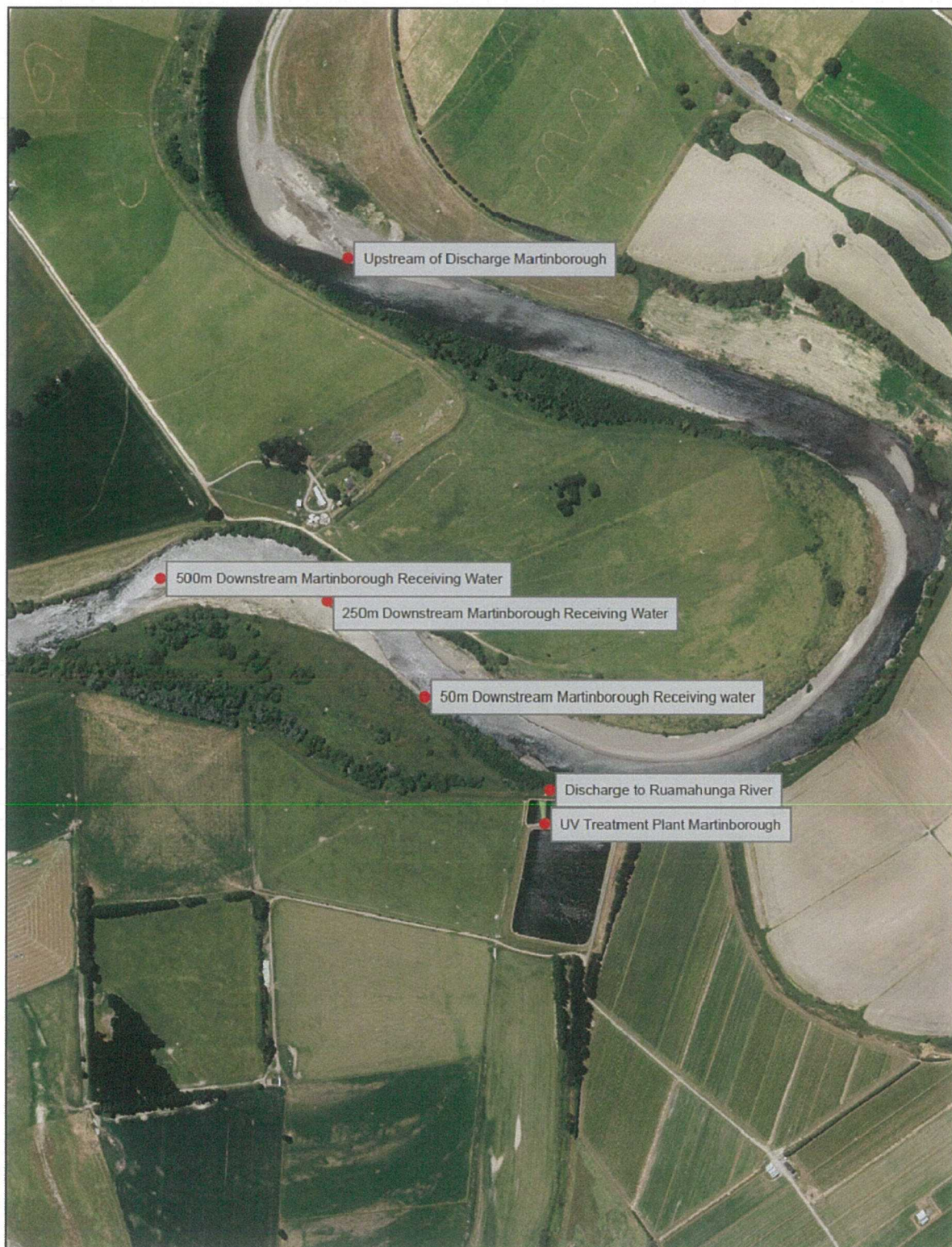
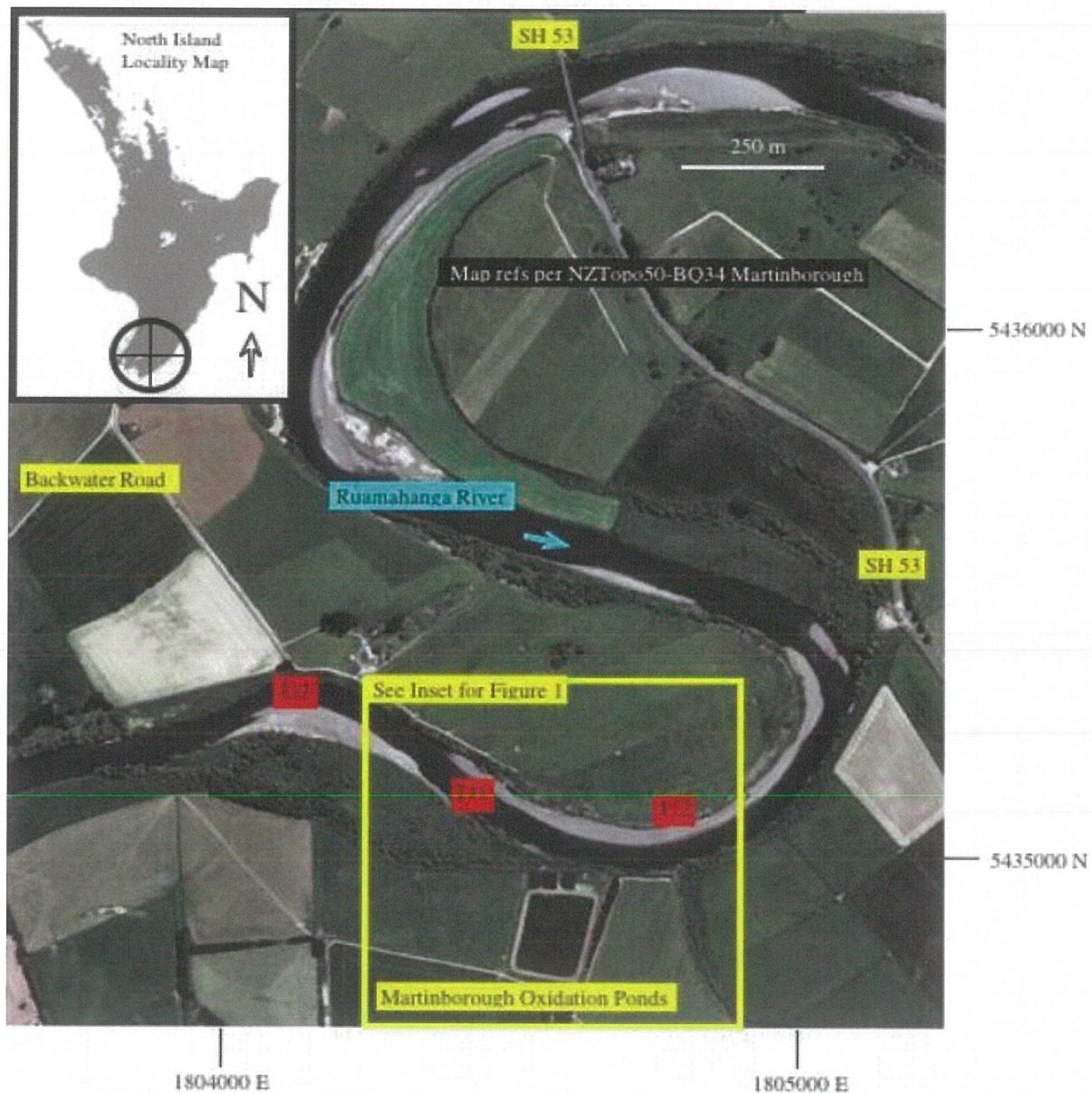


Figure 2: Indicative macroinvertebrate monitoring site locations

Figure 1: Locality Map for Sampling Sites Upstream (U2) and Downstream (D1 and D2) of the Discharge of Treated Wastewater from the Martinborough Oxidation Pond to the Ruamahanga River.



Appendix 2: Compliance Reports

File No: WAR970079 [30753, 20870]
29 October 2014

South Wairarapa District Council
P.O. Box 6
Martinborough 5714

For: Bill Sloan

Dear Bill

Compliance monitoring report for WAR970079 [30753, 20870]

Consent holder:	South Wairarapa District Council
Description:	The discharge of contaminants to water and air associated with the operation of the Martinborough wastewater treatment plant.
Location:	Martinborough Oxidation Pond, Weld Street, Martinborough
Consent type:	Discharge Permit

Please find your compliance assessment for Annual Reporting (1 July 2013 to 30 June 2014) below.

A detailed assessment of all conditions can be found in the table below.

Annual compliance rating

WAR970079 [30753] has a rating of **environmental non-compliance** for 2013/2014.

You have received this rating because conditions 1, 2, 4, 7, 15 and 20 were not complied with. A detailed assessment on each condition can be found in the table attached. Compliance ratings are explained overleaf.

WAR970079 [20870] has a rating of **technical non-compliance** for 2013/2014.

You have received this rating because condition 2 was not complied with. A detailed assessment on each condition can be found in the table attached. Compliance ratings are explained overleaf.

Action required by consent holder

On this occasion we have decided not to take any further enforcement action because we believe that you are aware of the issues raised and are attempting to address and remedy the non-compliances and in this regard are in the process of preparing, for formal submission, your replacement consent application. However, we may not be so lenient should you be responsible for any further breaches of the Resource Management Act 1991 (RMA). Accordingly, you should take all necessary steps to ensure you comply with your obligations under the RMA, including all conditions of your current consent.

Consent supervision and monitoring charge and next compliance assessment

You will receive an annual consent supervision and monitoring charge on a quarterly basis. Components of this charge are explained at the end of this letter.

Your consents will continue be inspected and assessed regularly throughout the year.

If you have any questions about the monitoring of your consent or your compliance assessment please contact Nicola Arnesen on 06 826 1604.

Yours sincerely

Nicola Arnesen

Senior Resource Advisor, Environmental Regulation

GWRC compliance rating system

Grade	Rating	Explanation and examples	Likely action required of consent holder
A	Full compliance	<ul style="list-style-type: none"> All administrative conditions assessed are met (eg, supplying information and/or records) All effects based and best practice conditions assessed are met (eg, complying with any maximum limits) 	<ul style="list-style-type: none"> None – 100% compliance with all consent conditions assessed
B	Technical non-compliance	<ul style="list-style-type: none"> Failure to supply information and/or keep adequate records Failure to adequately notify GWRC of works Minor works outside scope of consent issued but within scope of environmental effects considered when consent processed 	<ul style="list-style-type: none"> Action by the consent holder within specified timeframe
C	Environmental non-compliance	<ul style="list-style-type: none"> Breach of effects based or best practice consent condition with minor actual or potential environmental effects Breach of effects based or best practice consent condition with more than minor actual or potential environmental effects that can be fixed immediately Works outside scope of consent issued where environmental effects not considered 	<ul style="list-style-type: none"> Requires immediate action and possible ongoing action by the consent holder Non-routine additional follow up inspection and/or audit by Environmental Regulation staff
D	Significant non-compliance	<ul style="list-style-type: none"> Persistent Grade C breach of same condition and failure to respond to requests for compliance Significant breach of effects based or best practice conditions that causes environmental effects (eg, unauthorised discharge from site to water, significant disturbance to sensitive receiving environment or site on a scale not envisaged by consent, significant breach of water quality/quantity limit) Significant works outside scope of consent issued that causes environmental effects 	<ul style="list-style-type: none"> Requires immediate action and possible ongoing action by the consent holder Non-routine additional follow up inspection and/or audit by Environmental Regulation staff

Notes

- The actions and examples are a guide for compliance assessment. Depending on the consideration of any mitigating or aggravating factors, a more stringent or less stringent grading may be applied.
- If your consent falls within Grade B, C, or D, additional non-standard compliance charges apply which are based on actual and reasonable time spent by GWRC staff.
- Please be aware that GWRC has a responsibility to enforce the Resource Management Act 1991. Failure to comply with the Act can result in an infringement notice with a maximum fee of \$1,000 or prosecution with a maximum fine of \$600,000 for a company or \$300,000 or two years imprisonment for an individual. Accordingly, all necessary steps must be taken to ensure you comply with your obligations under the Act.

Consent supervision and monitoring charges

Each consent receives either an annual or one-off consent monitoring charge from GWRC.

This charge is made up of three parts:

- A *customer service charge* that covers the administrative cost of your consent(s);
- A *compliance monitoring charge* that covers all actual and reasonable time associated with assessing compliance with your consent(s) including the time spent visiting and assessing your site, information and reports you submit, file notes, travel time and reporting to you on compliance with your consent(s); and
- A *State of the Environment (SoE) charge* that covers a proportion of the cost of GWRC monitoring the environment that relates to your activity.

For further information on consent monitoring charges, please see our *Resource Management Charging Policy*.

Compliance monitoring - Assessment of conditions

Martinborough WWTP – Annual Report 1 July 2013 – 30 June 2014

WAR970079 [30753] (Discharge to water)

WAR970079 [20870] (Discharge to Air)

The discharge of contaminants to water and air associated with the operation of the Martinborough wastewater treatment plant,

This assessment is based on the evaluation of GWRC and Aquanet Consulting from onsite observations and the data presented in SWDC's Annual Report for the Martinborough WWTP (1 July 2013 to 30 June 2014) dated August 2014 and its associated appendices.

1. WAR970079 [30753] (Discharge to Water)

Condition		Condition met?			Comments
		Yes √	No x	NA	
1	General Conditions The location, design, upgrading and operation of the works shall be in accordance with the resource consent application WAR970079 (2624) and its associated plans and documents lodged with the Wellington Regional Council on 26 September 2001, and additional information lodged on 15 February 2002 and at the reconvened hearing on 31 May 2002, and AR970079 [30753] lodged on 12 November 2010, unless otherwise specified by a consent condition.		x		SWDC's Annual Compliance report notes that not all proposed upgrades from original applications were completed. Environmental Non-compliance
2	The loading of the oxidation pond shall not exceed 100kg BOD/ha/day.		x		SWDC is unable to confirm compliance with this condition. However they are proposing to install a new influent flow meter to allow further monitoring to ensure future compliance. Technical Non-compliance
3	The Consent Holder shall use its best endeavours to ensure that no high strength industrial waste is discharged to the sewerage system unless it has been pre-treated to a quality similar to that of domestic wastewater and the waste shall not cause any deterioration of the discharge quality from the oxidation pond.				SWDC's Annual Compliance report states that " <i>all discharges to the sewerage system are subject to the provisions of the Masterton District Council and South Wairarapa District Council Consolidated Bylaw 2012: Part 12 – Trade waste, adopted by SWDC on July 31, 2013.system</i> ".

					Full Compliance
4	The oxidation pond is to be maintained in an aerobic state at all times.	√			<p>SWDC note that aerators are installed in the ponds and DO is regularly monitored. They consider the ponds to be anaerobic if DO drops below 2 g/m³.</p> <p>DO levels shown for the reporting period are all above 2 g/m³, with the exceptions of 3 sampling occasions (Technical non-compliance on these occasions).</p> <p><i>DO range for Pond 1: 1.02 - 20.0 g/m³; DO range for Pond 2: 0.99 - 13.38 g/m³.</i></p> <p>SWDC note that City Care Ltd will, in future, note further details in relation to any low DO readings measured.</p> <p>Technically Non-Complying</p>
5	The Consent Holder shall ensure that the level of sludge in the oxidation pond does not exceed one third of the operational volume. Any sludge removed must be disposed of at an approved and consented facility.	√			<p>No surveying of sludge levels has been undertaken during this reporting period.</p> <p>SWDC note that Opus undertook a Sludge Survey in 2013 which showed sludge levels to be below one third of the operational volume. They do not believe this has changed.</p> <p>Further sludge surveys are proposed but no definitive times for this to occur are given. GWRC would like SWDC to indicate when the next survey is likely to occur.</p> <p>Full Compliance</p>
6	The Consent Holder shall ensure that there is no deterioration of the quality of the discharge as compared with the average quality of the effluent for the period 1 January 1999 to 30 December 2001, as described in the Assessment of Environmental Effects report.			N/A	<p>The compliance report notes that effluent quality has improved since the 1999-2001 period due to the installation of 2 rock groynes, a baffled outlet, 4 maturation cells in series and a UV disinfection.</p>
7	The quality of the existing discharge from the pond into the Ruamahanga River shall comply with the tabulated quality parameters. (** Refer Table below)		×		<p>Effluent discharge has exceeded condition standards as follows:</p> <ul style="list-style-type: none"> • E.coli on 5 occasions (16/07/13, 08/10/13, 16/12/13, 22/01/14 and 14/04/14);

	<p>Works to upgrade the treatment plant to comply with the above standards including the installation of an ultraviolet treatment plant shall be completed by 1 December 2011.</p> <p><i>Note 1: Summer is defined as November to April inclusive. Winter is defined as May to October inclusive.</i></p>			<ul style="list-style-type: none"> • Total Nitrogen geomeans exceeded the standard on every sampling occasion except one, but met the standard for all 90th percentiles; • Ammonia-N geomeans exceeded the standard on all summer sampling occasions but met the standard for all winter sampling occasions and for all 90th percentiles (summer and winter). <p>All other parameters were fully compliant with Condition 7 standards (both geomeans and 90th percentiles).</p> <p>The 2014 compliance report provides an assessment of the likely causes and environmental effects (here public health risk to recreational water users) of the E.coli exceedances. This is useful.</p> <p>However, no assessment of the potential/actual effects of the exceedances of the TN or ammonia standards is provided. Given that ammonia is directly toxic to aquatic life, an assessment of the potential effects associated with the exceedances would be useful.</p> <p>Environmental Non-Compliance</p>
8a	<p>The consent holder will undertake the following in consultation with the Manager, Environmental Regulation, Wellington Regional Council and key stakeholders :</p> <p>By 1 December 2011 - Notify the Manager, Environmental Regulation, GWRC that the work to install the Ultraviolet Treatment Plant has been completed. Circulate the Baker & Associates assessment of Pain Farm to the Manager, Environmental Regulation, GWRC and key stakeholders; and a meeting with these parties to discuss outcomes of the Baker & Associates assessment and what progress and timetable is scheduled for development of Pain Farm for discharge to land (if that option is selected by the consent holder as a viable option).</p>		N/A	<p>Note: The 2014 compliance report indicates that the amended Replacement Consent application proposes land treatment to Pain Farm as part of the Stage 2 upgrade works.</p> <p>Not assessed in this reporting period</p>
8b	By 10 January 2012 - Submission of a draft			

	<p>Assessment of Environmental Effects (AEE) to the Manager, Environmental Regulation, GWRC and key stakeholders. The draft AEE shall cover all aspects identified in 5.4.2 of the Regional Freshwater Plan, and shall specifically include the following matters raised at the meetings on 23 February 2011 and 26 August 2011:</p> <ul style="list-style-type: none"> • A cultural values assessment, • Detailed assessment of the Pain Farm discharge to land site (if that option is selected as the preferred discharge site), • Preliminary assessment of a range of alternative discharge to land options in terms of their feasibility and costs, • Assessment of a range of options to upgrade the wastewater treatment plant in order to reduce the existing water quality standards (particularly BOD, SS, and ammonia) in terms of their feasibility and costs, • Analysis of receiving water quality and biological monitoring in the Ruamahanga River and the associated effects of the discharge to the river. <p><i>Note: The above specific matters are not an exhaustive list of requirements to lodge an application and Assessment of Environmental Effects under section 88 of the Resource Management Act 1991. Additional water quality and biological monitoring of the receiving environment may be required to ensure an appropriate level of analysis is provided.</i></p>			N/A	Not assessed in this reporting period
8c	By 28 February 2012 - A meeting with relevant representatives from the GWRC and key stakeholders to discuss the commitments and proposals put forward in the application draft Assessment of Environmental Effects.			N/A	Not assessed in this reporting period
8d	By 10 April 2012 - Submission of a full and complete application and Assessment of Environmental Effects to the Wellington Regional Council.			N/A	Not assessed in this reporting period
9	Any residuals from any chemical treatment (for example aluminium residuals from the coagulation proposed for phosphate removal) shall not result in a discharge that exceeds appropriate guideline levels in the receiving waters.	√			<p>SWDC state that no chemical treatments have been carried out except for lab scale trials.</p> <p>Full Compliance</p>
10	Transfer of Permit				

	The permit holder's interest in this consent may not be transferred to any owner or occupier of the site unless that owner or occupier has assumed the South Wairarapa District Council's responsibilities for the treatment and disposal of sewage.			N/A	
11	<p>Mitigation Steps</p> <p>In the event of any failure of the Martinborough oxidation pond facility that would result in any deterioration in the quality of effluent discharging to the Ruamahanga River and be in breach of any condition of this permit, the permit holder shall:</p> <ul style="list-style-type: none"> • Take immediate steps to remedy and mitigate any adverse effects on the environment caused by any releases of such effluent. Such steps shall be to the satisfaction of the Manager, Planning and Resources, GWRC; and • Immediately notify the Medical Officer of Health (C/- The Health Protection Officer, Choice Health) in accordance with the Public Health Service's Response Manual for Sewage Discharges; and • Notify the Manager, Planning and Resources, GWRC within 24 hours after the malfunction of the oxidation pond facility has been detected; and • If required by the Manager, Planning and Resources, GWRC, provide within 24 hours after notification a written report to the Manager detailing the manner and cause of that malfunction and the nature of the released effluent, and the steps taken (and being taken, if appropriate) to remedy and control that release and to prevent further such releases of untreated or partially treated effluent. 				Full Compliance
12	A management plan shall be submitted within six months of the commencement of this consent detailing how the sewage treatment and disposal system will be operated to ensure compliance with the consent conditions. The management plan is to be to the satisfaction of the Manager, Planning and Resources, GWRC.			N/A	Not assessed in this reporting period
13	<p>Risk Communication Strategy</p> <p>By 31 July 2002, in association with the Greytown sewage consent, the Consent Holder</p>			N/A	

	shall develop a risk communication strategy to notify potentially affected people of the existence and potential health effects of the discharge. The strategy shall involve the identification of key community groups (eg, recreational groups using the Ruamahanga River for water related activities) and the provision of risk information to those groups on a regular basis. The risk communication strategy will be developed in consultation with the public health service, Rangitane o Wairarapa and Ngati Kahungunu and shall be to the satisfaction of the Manager, Planning and Resources, GWRC, and shall be adhered to by the consent holder.				Not assessed in this reporting period
14	<p>The permit holder shall place and maintain appropriate signs advising of the presence of treated wastewater from the Martinborough oxidation ponds. The signs shall be placed on the true left bank of the Ruamahanga River at or about the sewage outfall.</p> <p>The siting, wording and format of the signs shall be to the satisfaction of the Manager, Planning and Resources, GWRC. The sign shall be placed by 31 July 2002.</p>	√			<p>Photos provided (Appendix 3)</p> <p>Full Compliance</p>
15	<p>Minimising Adverse Effects</p> <p>The discharge shall not cause any of the following effects in the Ruamahanga river after reasonable mixing:</p> <ul style="list-style-type: none"> • the production of any conspicuous oil or grease films, scums or foams or floatable or suspended material; • any conspicuous change in the colour or visual clarity; • the rendering of freshwater unsuitable for consumption by farm animals; • any significant adverse effects on aquatic life; • a change of more than 3°C in the natural temperature of the water <p>"Reasonable mixing" will be determined by the consent holder and agreed upon by the Manager, Planning and Resources, Wellington Regional Council, and will be defined by distance downstream of the outfall.</p>				<p>The 2014 compliance report refers to investigations carried out during the 2013-2014 summer, concluding that the discharge appears to be having localised significant effect on periphyton growth and cover and pollution sensitive macroinvertebrates. Upgrades to the treatment system including full land disposal are proposed as part of the new consent application package as a means of improving water quality.</p> <p>Environmental Non-compliance</p>
16	<p>Review of conditions</p> <p>The Wellington Regional Council may review any</p>			N/A	

	<p>or all conditions of this permit by giving notice of its intention to do so pursuant to Section 128 of the Resource Management Act 1991, at any time within three months of 30 June for each for the term of this consent for either of the following purposes:</p> <ul style="list-style-type: none"> a) to deal with any adverse effects on the environment which may arise from the exercise of this permit and which it is appropriate to deal with at a later stage; b) to review the adequacy of the monitoring requirements so as to incorporate into the permit any modification to monitoring which may be necessary to deal with any adverse effects on the environment arising from the exercise of this permit; c) reduce the monitoring requirements when the effects of the sewage discharge are adequately established. 				
17	The Wellington Regional Council shall be entitled to recover from the consent holder the costs of the conduct of any review, calculated in accordance with and limited to Councils scale of charge in force and applicable at that time pursuant to Section 36 of the Resource Management Act 1991.			N/A	
18	The permit holder may apply, in accordance with Section 127 of the Resource Management Act 1991, for a change or cancellation of any condition of the discharge permit (except the term of the permit) at any time during the term of this permit.			N/A	
19	<p>Charges</p> <p>A resource management charge, set in accordance with Section 36(2) of the Resource Management Act 1991 shall be paid to the Wellington Regional Council for the carrying out of its functions in relation to the administration, monitoring, and supervision of resource consents and for the carrying out of its functions under Section 35 (duty to gather information, monitor, and keep records) of the Act.</p>			N/A	
20	<p>Monitoring</p> <p>The consent holder shall, in consultation with the GWRC, submit a monitoring programme for the</p>		x		This was not completed however SWDC have submitted a draft

	sewage treatment, discharge and receiving water. The monitoring programme is to be confirmed to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council and implemented within two months of the commencement of this consent.				Environmental Monitoring plan as part of their Replacement Consent application.
					Technical Non-compliance
21	<p>Consent term</p> <p>The consent term shall be for a ten year period from the date of commencement of the consent.</p> <p>Notes</p> <p>14. The allowance referred to in Condition 8 is required due to normal performance variables in the proposed treatment technologies. Additionally, occasional higher levels may occur in the unlikely event of a significant plant breakdown or other such events beyond the reasonable control of the Consent Holder. It is anticipated that any such events should be infrequent and for short duration.</p> <p>2. The nominal technologies to be applied to achieve the upgrading of the discharge are pond partitioning and rock groynes for Stage 1, and sand filters with pre-filtration coagulation and post filtration UV irradiation for Stage 2⁵.</p> <p>⁴ Removed as no longer applied to Condition 8 which was varied under Section 127 of the Act.</p> <p>⁵ References to Stages 1 and 2 were removed from Condition 7 which was varied under Section 127 of the Act.</p>			N/A	

** Condition 7: Tabulated Quality parameters

Parameter	E.coli cfu/100 ml	BOD g/m3		SS mg/l		Oil & Grease		Total N mg/l		Ammonia N mg/l		Total P mg/l		pH	
Standard	Absolute Standard	Geomean	90 th percentile	Geomean	90 th percentile	Geomean	90 th percentile	Geomean	90 th percentile	Geomean	90 th percentile	Geomean	90 th percentile	Geomean	90 th percentile
Pre UV treatment system (up to 1 Dec 2011)	10000*	60	90	100	170	10	15	25	37.5	6.5 summer 24 winter	25 summer 36 winter	10	15	6.5 - 8.5	9
Post UV treatment system (from 1 Dec 2011)	200	60	90	100	170	10	15	25	37.5	6.5 summer 24 winter	25 summer 36 winter	10	15	6.5 - 8.5	9

* Please note this figure is now based on an absolute standard as opposed to a rolling geomean.

2. WAR970079 [20870] (Discharge to Air)

Condition		Condition met?			Comments
		Yes √	No x	NA	
1	General Conditions There shall be no discharges to air resulting from the exercise of this consent that are noxious, dangerous, offensive or objectionable at or beyond the legal boundary of the property from which the permit holder operates. Such discharges include, but are not limited to odour, gases, vapours and aerosols.	√			SWDC's Annual Compliance report notes that there have been no issues with odour or complaints received during this reporting period. Full Compliance
2	The Consent Holder shall maintain a record of any complaints that are received in relation to the exercise of this consent. The record shall contain at least the following, where practical: a) Name and address of complainant. b) Identification of the nature of the complaint. c) Date and time of the complaint and of the alleged event. d) Weather and pond conditions at the time of the complaint. The Consent Holder shall notify the Manager, Planning and Resources, Wellington Regional Council, of any complaints relating to the exercise of this permit, within twenty-four hours of being received by the permit holder or the next working day.		x		SWDC's Annual Compliance report notes that while a complaints register is kept, it does not provide the level of detail as required by Condition 2 a)-d). No copy of the Complaints register is provided, however SWDC note that no complaints have been received during this reporting period. Technical non-compliance
3	At all times the sewage in the pond is to contain enough dissolved oxygen to prevent the generation of malodours.	√			SWDC note that aerators are installed in the ponds and DO is regularly monitored. They consider the ponds to be anaerobic if DO drops below 2 g/m ³ . DO levels shown for the reporting period are all above 2 g/m ³ , with the exceptions of 3 sampling occasions. <i>DO range for Pond 1: 1.02 - 20.0 g/m³; DO range for Pond 2: 0.99 - 13.38 g/m³.</i> SWDC note that City Care Ltd will, in future, note further details in relation to any low DO readings measured. Full Compliance
4	The Consent Holder shall formally notify in writing the owners of Palliser Estate vineyard of	√			SWDC have stated that Palliser Estate has been notified and that a vegetative

	the potential health risk of aerosols being discharged from the pond. That notification should include reference to the desirability of maintaining a vegetative screen established along the property boundary.				screen is maintained on the boundary.
5	Transfer of Permit The Consent Holder's interest in this consent may not be transferred to any owner or occupier of the site unless that owner or occupier has assumed the South Wairarapa District Council's responsibilities for the treatment and disposal of sewage.			N/A	
6	Review of Conditions The Wellington Regional Council may review any or all conditions of this permit by giving notice of its intention to do so in accordance with Section 128 of the Resource Management Act 1991 at any time within three months of 30 June for each year for the term of this consent for either of the following purposes: <ul style="list-style-type: none"> a) to deal with any adverse effects on the receiving environment which may arise from the exercise of this permit and which it is appropriate to deal with at a later stage; b) to review the adequacy of the monitoring requirements so as to incorporate into this permit any modifications to the monitoring that may be necessary to deal with the adverse effects on the environment arising from the exercise of this consent. 			N/A	
7	The Wellington Regional Council shall be entitled to recover from the consent holder the costs of the conduct of any review, calculated in accordance with and limited to that Council's scale of charge in force and applicable at that time pursuant to Section 36 of the Resource Management Act 1991.			N/A	
8	The permit holder may apply, in accordance with Section 127 of the Resource Management Act 1991, for a change or cancellation of any condition of the discharge permit (except the term of the permit) at any time during the term of this permit.			N/A	
9	Charges				

	A resource management charge, set in accordance with Section 36(2) of the Resource Management Act 1991 shall be paid to the Regional Council for the carrying out of its functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under Section 35 (duty to gather information, monitor and keep records) of the Act.			N/A	
10	Consent Term The consent term shall be for a twenty year period from the date of commencement of the consent.			N/A	



File No: WAR970079
11 October 2013

South Wairarapa District Council
PO Box 6
Martinborough 5741

For: Jean-Paul Irwin

Dear Jean-Paul

Compliance monitoring report 2012/2013 for WAR970079 [30753, 20870]

Consent holder:	<i>South Wairarapa District Council</i>
Description:	<i>Discharge treated sewage to Ruamahanga River and discharge associated contaminants to air</i>
Location:	<i>Martinborough Wastewater Treatment Plant, Weld Street, Martinborough</i>
Consent type:	<i>Discharge to water and air</i>

I inspected your site and audited your reports for 2012/2013 compliance season. Your compliance assessment for 2012/2013 is below.

A detailed assessment of all conditions is attached.

Annual compliance rating

WAR970079 [30753] has a rating of **significant non-compliance** for 2012/2013.

WAR970079 [20870] has a rating of **full compliance** for 2012/2013.

You have received this rating because conditions 1, 2, 7 & 15 were not complied with. Compliance ratings are explained overleaf.

The Annual Report was sent through to our Environmental Science Department for comment and these have been inserted below:

Effluent quality

As stated in the annual report several variables are not meeting their compliance standards. I did note that the E. coli graph presented in the appendix is showing the 2011/12 year (not 2012/13) and either way it does not appear to match the raw data included in the appendix (ie, the graph doesn't match the raw data for the 2011/12 or 2012/13 year) so I'm not sure what data has been used to assess the compliance with the E. coli threshold and whether the explanatory text in the annual report is referring to the correct or incorrect data (ie, is the graph or the data right?)

Receiving water quality

The annual report provides some information from the “2012–2013 Summer Low-flow Assessment of Ecological Effects” report. It sounds like there would be significant value in GWRC seeing this report, has a copy of this been provided?

Of note, from the brief info provided states that there is an increase in periphyton along the true left bank for at least a couple of hundred metres below the discharge and that the discharge stays along true left bank in a concentrated plume for at least several hundred metres. And as stated in the annual report (or the excerpt from the low flow assessment report), the current water quality monitoring is therefore likely to be under estimating the worst of the water quality effects (I assume because the water quality monitoring is undertaken out in the middle of the river and has been missing the plume).

Overall

I think this annual report could be significantly improved by some simple tables that summarise the effluent and receiving water quality data. It is not particularly helpful to just provide the data in excel spreadsheet with some graphs (also in the excel spreadsheet).

Action required by consent holder

On this occasion we have decided not to take any further enforcement action because we believe that you are aware of the issues raised and are attempting to address and remedy the non-compliances and in this regard are in the process of preparing, for formal submission, your replacement consent application. However, we may not be so lenient should you be responsible for any further breaches of the Resource Management Act 1991 (RMA). Accordingly, you should take all necessary steps to ensure you comply with your obligations under the RMA, including all conditions of your current consent.

Consent supervision and monitoring charge and next compliance assessment

You will receive an annual consent supervision and monitoring charge on a quarterly basis. Components of this charge are explained at the end of this letter.

Your consents will continue be inspected and assessed regularly throughout the year.

If you have any questions about the monitoring of your consent or your compliance assessment please contact Aimee Charmley on 06 8261556.

Yours sincerely

Aimee Charmley
Senior Resource Advisor, Environmental Regulation

Greater Wellington compliance rating system

Grade	Rating	Explanation and examples	Likely action required of consent holder
A	Full compliance	<ul style="list-style-type: none"> All administrative conditions assessed are met (eg supplying information and/or records) All effects based and best practice conditions assessed are met (eg complying with any maximum limits) 	<ul style="list-style-type: none"> None – 100% compliance with all consent conditions assessed
B	Technical non-compliance	<ul style="list-style-type: none"> Failure to supply information and/or keep adequate records Failure to adequately notify GW of works Minor works outside scope of consent issued but within scope of environmental effects considered when consent processed 	<ul style="list-style-type: none"> Action by the consent holder within specified timeframe
C	Environmental non-compliance	<ul style="list-style-type: none"> Breach of effects based or best practice consent condition with minor actual or potential environmental effects Breach of effects based or best practice consent condition with more than minor actual or potential environmental effects that can be fixed immediately Works outside scope of consent issued where environmental effects not considered 	<ul style="list-style-type: none"> Requires immediate action and possible ongoing action by the consent holder Non-routine additional follow up inspection and/or audit by Environmental Regulation staff
D	Significant non-compliance	<ul style="list-style-type: none"> Persistent Grade C breach of same condition and failure to respond to requests for compliance Significant breach of effects based or best practice conditions that causes environmental effects (eg unauthorised discharge from site to water, significant disturbance to sensitive receiving environment or site on a scale not envisaged by consent, significant breach of water quality/quantity limit) Significant works outside scope of consent issued that causes environmental effects 	<ul style="list-style-type: none"> Requires immediate action and possible ongoing action by the consent holder Non-routine additional follow up inspection and/or audit by Environmental Regulation staff

Notes

- The actions and examples are a guide for compliance assessment. Depending on the consideration of any mitigating or aggravating factors, a more stringent or less stringent grading may be applied.
- If your consent falls within Grade B, C, or D, additional non-standard compliance charges apply which are based on actual and reasonable time spent by Greater Wellington staff.
- Please be aware that Greater Wellington has a responsibility to enforce the Resource Management Act 1991. Failure to comply with the Act can result in an infringement notice with a maximum fee of \$1,000 or prosecution with a maximum fine of \$600,000 for a company or \$300,000 or two years imprisonment for an individual. Accordingly, all necessary steps must be taken to ensure you comply with your obligations under the Act.

Consent supervision and monitoring charges

Each consent receives either an annual or one-off consent supervision and monitoring charge from Greater Wellington.

This charge is made up of three parts:

- A *customer service charge* that covers the administrative cost of your consent(s);
- A *compliance monitoring charge* that covers all actual and reasonable time associated with assessing compliance with your consent(s) including the time spent visiting and assessing your site, information and reports you submit, file notes, travel time and reporting to you on compliance with your consent(s); and
- A *State of the Environment (SoE) charge*. This is only applied in cases where Greater Wellington monitors resource use in your area to ensure the sustainable management of that resource.

For further information on compliance charging, please see the Greater Wellington *Resource Management Charging Policy (2011)*.

Compliance monitoring report 2012/2013 – assessment of conditions

WAR970079 [30753] – Discharge to water

Condition		Condition met?			Comments
		Yes ✓	No ✗	NA	
1	The location, design, upgrading and operation of the works shall be in accordance with the resource consent application WAR970079 [2624] and its associated plans and documents lodged with the Wellington Regional Council on 26 September 2001, additional information lodged on 15 February 2002, the reconvened hearing on 31 May 2002 and variation of consent application WAR970079 [30753] lodged on 12 November 2010, unless otherwise specified by a consent condition.		✗		Environmental non-compliance
2	The loading of the oxidation pond shall not exceed 100kg BOD/ha/day.		✗		Technical Non-Compliance You have not demonstrated compliance with this condition.
3	The Consent Holder shall use its best endeavours to ensure that no high strength industrial waste is discharged to the sewerage system unless it has been pre-treated to a quality similar to that of domestic wastewater and the waste shall not cause any deterioration of the discharge quality from the oxidation pond.	✓			Full compliance
4	The oxidation pond is to be maintained in an aerobic state at all times.	✓			Full compliance
5	The Consent Holder shall ensure that the level of sludge in the oxidation pond does not exceed one third of the operational volume. Any sludge removed must be disposed of at an approved and consented facility.	✓			Full compliance
6	The Consent Holder shall ensure that there is no deterioration of the quality of the discharge as compared with the average quality of the effluent for the period 1 January 1999 to 30 December 2001, as described in the Assessment of Environmental Effects report.	✓			Full compliance
7	<p>The quality of the existing discharge from the pond into the Ruamahanga River shall comply with the tabulated quality parameters.</p> <p>Works to upgrade the treatment plant to comply with the above standards including the installation of an ultraviolet treatment plant shall be completed by 1 December 2011.</p> <p>Note 1: Summer is defined as November to April inclusive. Winter is defined as May to October inclusive.</p> <p>* Please note this figure is now based on an absolute standard as opposed to a rolling geomean.</p>		✗		<p>Environmental non-compliance</p> <p>Total nitrogen, ammonia and <i>E.coli</i> have been non-compliant.</p>

8 ² a	<p>The consent holder will undertake the following in consultation with the Manager, Environmental Regulation, Wellington Regional Council and key stakeholders :</p> <p>By 1 December 2011 - Notify the Manager, Environmental Regulation, Wellington Regional Council that the work to install the Ultraviolet Treatment Plant has been completed. Circulate the Baker & Associates assessment of Pain Farm to the Manager, Environmental Regulation, Wellington Regional Council and key stakeholders; and a meeting with these parties to discuss outcomes of the Baker & Associates assessment and what progress and timetable is scheduled for development of Pain Farm for discharge to land (if that option is selected by the consent holder as a viable option)</p>			NA	Not applicable for this compliance year
8 ² b	<p>By 10 January 2012 - Submission of a draft Assessment of Environmental Effects (AEE) to the Manager, Environmental Regulation, Wellington Regional Council and key stakeholders. The draft AEE shall cover all aspects identified in 5.4.2 of the Regional Freshwater Plan, and shall specifically include the following matters raised at the meetings on 23 February 2011 and 26 August 2011:</p> <ul style="list-style-type: none"> • A cultural values assessment, • Detailed assessment of the Pain Farm discharge to land site (if that option is selected as the preferred discharge site), • Preliminary assessment of a range of alternative discharge to land options in terms of their feasibility and costs, • Assessment of a range of options to upgrade the wastewater treatment plant in order to reduce the existing water quality standards (particularly BOD, SS, and ammonia) in terms of their feasibility and costs, • Analysis of receiving water quality and biological monitoring in the Ruamahanga River and the associated effects of the discharge to the river. <p>Note: The above specific matters are not an exhaustive list of requirements to lodge an application and Assessment of Environmental Effects under section 88 of the Resource Management Act 1991. Additional water quality and biological monitoring of the receiving environment may be required to ensure an appropriate level of analysis is provided.</p>			NA	Not applicable for this compliance year
8 ² c	By 28 February 2012 - A meeting with relevant representatives from the Wellington Regional Council and key stakeholders to discuss the commitments and proposals put forward in the application draft Assessment of Environmental Effects.			NA	Not applicable for this compliance year
8 ² d	By 10 April 2012 - Submission of a full and complete application and Assessment of Environmental Effects to the Wellington Regional Council.			NA	Not applicable for this compliance year
9	Any residuals from any chemical treatment (for example aluminium residuals from the coagulation proposed for phosphate removal) shall not result in a	✓			Full compliance

	discharge that exceeds appropriate guideline levels in the receiving waters.				
10	The permit holder's interest in this consent may not be transferred to any owner or occupier of the site unless that owner or occupier has assumed the South Wairarapa District Council's responsibilities for the treatment and disposal of sewage.	✓			Full compliance
11	<p>In the event of any failure of the Martinborough oxidation pond facility that would result in any deterioration in the quality of effluent discharging to the Ruamahanga River and be in breach of any condition of this permit, the permit holder shall:</p> <ul style="list-style-type: none"> • Take immediate steps to remedy and mitigate any adverse effects on the environment caused by any releases of such effluent. Such steps shall be to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council; and • Immediately notify the Medical Officer of Health (C/- The Health Protection Officer, Choice Health) in accordance with the Public Health Service's Response Manual for Sewage Discharges; and • Notify the Manager, Planning and Resources, Wellington Regional Council within 24 hours after the malfunction of the oxidation pond facility has been detected; and • If required by the Manager, Planning and Resources, Wellington Regional Council, provide within 24 hours after notification a written report to the Manager detailing the manner and cause of that malfunction and the nature of the released effluent, and the steps taken (and being taken, if appropriate) to remedy and control that release and to prevent further such releases of untreated or partially treated effluent. 		✓		Full compliance – incidents have been reported in the correct manner as per consent requirements
12	A management plan shall be submitted within six months of the commencement of this consent detailing how the sewage treatment and disposal system will be operated to ensure compliance with the consent conditions. The management plan is to be to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council			NA	
13	By 31 July 2002, in association with the Greytown sewage consent, the Consent Holder shall develop a risk communication strategy to notify potentially affected people of the existence and potential health effects of the discharge. The strategy shall involve the identification of key community groups (eg, recreational groups using the Ruamahanga River for water related activities) and the provision of risk information to those groups on a regular basis. The risk communication strategy will be developed in consultation with the public health service, Rangitane o Wairarapa and Ngati Kahungunu and shall be to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council, and shall be adhered to			NA	

	by the consent holder.				
14	<p>The permit holder shall place and maintain appropriate signs advising of the presence of treated wastewater from the Martinborough oxidation ponds. The signs shall be placed on the true left bank of the Ruamahanga River at or about the sewage outfall.</p> <p>The siting, wording and format of the signs shall be to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council. The sign shall be placed by 31 July 2002.</p>	✓			Full compliance
15	<p>The discharge shall not cause any of the following effects in the Ruamahanga river after reasonable mixing:</p> <ul style="list-style-type: none"> • the production of any conspicuous oil or grease films, scums or foams or floatable or suspended material; • any conspicuous change in the colour or visual clarity; • the rendering of freshwater unsuitable for consumption by farm animals; • any significant adverse effects on aquatic life; • a change of more than 3oCelcius in the natural temperature of the water. <p>"Reasonable mixing" will be determined by the consent holder and agreed upon by the Manager, Planning and Resources, Wellington Regional Council, and will be defined by distance downstream of the outfall.</p>		✗		Significant Non-Compliance
16	Review of conditions			NA	
17	Cost recovery for review			NA	
18	Change of conditions			NA	
19	Charges			NA	
20	The consent holder shall, in consultation with the Wellington Regional Council, submit a monitoring programme for the sewage treatment, discharge and receiving water. The monitoring programme is to be confirmed to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council and implemented within two months of the commencement of this consent.				
21	Consent term			NA	

Compliance monitoring report 2011/2012 – assessment of conditions

WAR970079 [20870] – Discharge to air

Condition		Condition met?			Comments
		Yes ✓	No ✗	NA	
1	There shall be no discharges to air resulting from the exercise of this consent that are noxious,dangerous, offensive or objectionable at or beyond the legal boundary of the property from which the permit holder operates. Such discharges include, but are not limited to odour, gases, vapours and aerosols.	✓			Full compliance
2	Complaints record	✓			Full compliance
3	At all times the sewage in the pond is to contain enough dissolved oxygen to prevent the generation of malodours.	✓			Full compliance
4	The Consent Holder shall formally notify in writing the owners of Palliser Estate vineyard of the potential health risk of aerosols being discharged from the pond. That notification should include reference to the desirability of maintaining a vegetative screen established along the property boundary.	✓			Full compliance
5	Transfer of permit			NA	
6	Review of consent			NA	
7	Cost recovery			NA	
8	Change of conditions			NA	



File No: WAR970079
29/08/2012

South Wairarapa District Council
PO Box 6
Martinborough 5741

For: Bill Sloane

Dear Bill

Compliance monitoring report 2011/2012 for WAR970079 [2624, 20870]

Consent holder:	South Wairarapa District Council
Description:	Discharge treated sewage to Ruamahanga River and discharge associated contaminants to air
Location:	Martinborough Wastewater Treatment Plant, Weld Street, Martinborough
Consent type:	Discharge to water and air

I inspected your site on 10 May 2012 and audited your reports through July and August 2012. Your compliance assessment for 2011/2012 is below.

A detailed assessment of all conditions is attached.

Annual compliance rating

WAR970079 [2624] has a rating of **significant non-compliance** for 2011/2012.

WAR970079 [20870] has a rating of **full compliance** for 2011/2012.

You have received this rating because conditions 1, 5 – 9, 11 & 15 were not complied with. Compliance ratings are explained overleaf.

Action required by consent holder

On this occasion we have decided not to take any further enforcement action because we believe that you are aware of the issues raised and are attempting to address and remedy the non-compliances and in this regard are in the process of preparing, for formal submission, your replacement consent application. However, we may not be so lenient should you be responsible for any further breaches of the Resource Management Act 1991 (RMA). Accordingly, you should take all necessary steps to ensure you comply with your obligations under the RMA, including all conditions of your current consent.

Dosing of the ponds

It should be noted that the response provided by NZET with regards to dosing the ponds with Ecogreen bioaugmentation tablets was deemed inadequate by our Environmental Monitoring and Investigations Team. I also note that you have discontinued dosing the ponds since July and I would suggest that you do not incorporate this aspect into your new application unless you provide additional information as outlined below.

This report was referred to our Environmental Monitoring and Investigations Scientist, Dr Claire Conwall. Dr Conwall concluded that she was not satisfied with the report that was provided stating that, '.....I am also cautious of the general tone of the report in that it does not appear to supply any information regarding the environmental reliability/safety of any claims that are not supplied by the manufacturer. Also there is no information on the website about the actual product ingredients (i.e. such as an MSDS) and no references in the report as to where any of the information is sourced from (specific to the product, not general research papers that are referred to on p2).' She concludes that, 'On the basis of the limited report and the generic content of it I am hesitant to rely on this as an accurate representation of the product, and I would suggest that SWDC need to supply more information regarding this product (e.g. MSDS / independent information not from the manufacturers website).'

Consent supervision and monitoring charge and next compliance assessment

You will receive an annual consent supervision and monitoring charge on a quarterly basis. Components of this charge are explained at the end of this letter.

Your consents will continue be inspected and assessed regularly throughout the year.

As your consent has a rating of **significant non-compliance [2624]**, Greater Wellington officers have spent more time assessing compliance than originally estimated. An invoice will be sent shortly for this extra time, including time spent on additional inspections, assessments, reporting and all travel time.

If you have any questions about the monitoring of your consent or your compliance assessment please contact Aimee Bishop on 06 8261556.

Yours sincerely

Aimee Bishop

Resource Advisor, Environmental Regulation

Greater Wellington compliance rating system

Grade	Rating	Explanation and examples	Likely action required of consent holder
A	Full compliance	<ul style="list-style-type: none"> All administrative conditions assessed are met (e.g. supplying information and/or records) All effects based and best practice conditions assessed are met (e.g. complying with any maximum limits) 	<ul style="list-style-type: none"> None – 100% compliance with all consent conditions assessed
B	Technical non-compliance	<ul style="list-style-type: none"> Failure to supply information and/or keep adequate records Failure to adequately notify GW of works Minor works outside scope of consent issued but within scope of environmental effects considered when consent processed 	<ul style="list-style-type: none"> Action by the consent holder within specified timeframe
C	Environmental non-compliance	<ul style="list-style-type: none"> Breach of effects based or best practice consent condition with minor actual or potential environmental effects Breach of effects based or best practice consent condition with more than minor actual or potential environmental effects that can be fixed immediately Works outside scope of consent issued where environmental effects not considered 	<ul style="list-style-type: none"> Requires immediate action and possible ongoing action by the consent holder Non-routine additional follow up inspection and/or audit by Environmental Regulation staff
D	Significant non-compliance	<ul style="list-style-type: none"> Persistent Grade C breach of same condition and failure to respond to requests for compliance Significant breach of effects based or best practice conditions that causes environmental effects (e.g. unauthorised discharge from site to water, significant disturbance to sensitive receiving environment or site on a scale not envisaged by consent, significant breach of water quality/quantity limit) Significant works outside scope of consent issued that causes environmental effects 	<ul style="list-style-type: none"> Requires immediate action and possible ongoing action by the consent holder Non-routine additional follow up inspection and/or audit by Environmental Regulation staff

Notes

- The actions and examples are a guide for compliance assessment. Depending on the consideration of any mitigating or aggravating factors, a more stringent or less stringent grading may be applied.
- If your consent falls within Grade B, C, or D, additional non-standard compliance charges apply which are based on actual and reasonable time spent by Greater Wellington staff.
- Please be aware that Greater Wellington has a responsibility to enforce the Resource Management Act 1991. Failure to comply with the Act can result in an infringement notice with a maximum fee of \$1,000 or prosecution with a maximum fine of \$600,000 for a company or \$300,000 or two years imprisonment for an individual. Accordingly, all necessary steps must be taken to ensure you comply with your obligations under the Act.

Consent supervision and monitoring charges

Each consent receives either an annual or one-off consent supervision and monitoring charge from Greater Wellington.

This charge is made up of three parts:

- A *customer service charge* that covers the administrative cost of your consent(s);
- A *compliance monitoring charge* that covers all actual and reasonable time associated with assessing compliance with your consent(s) including the time spent visiting and assessing your site, information and reports you submit, file notes, travel time and reporting to you on compliance with your consent(s); and
- A *State of the Environment (SoE) charge*. This is only applied in cases where Greater Wellington monitors resource use in your area to ensure the sustainable management of that resource.

For further information on compliance charging, please see the *Greater Wellington Resource Management Charging Policy (2011)*.

Compliance monitoring report 2011/2012 – assessment of conditions

WAR970079 [2624] – Discharge to water

Condition		Condition met?			Comments
		Yes✓	No ✗	NA	
1	The location, design, upgrading and operation of the works shall be in accordance with the resource consent application WAR970079 [2624] and its associated plans and documents lodged with the Wellington Regional Council on 26 September 2001, additional information lodged on 15 February 2002, the reconvened hearing on 31 May 2002 and variation of consent application WAR970079 [30753] lodged on 12 November 2010, unless otherwise specified by a consent condition.		✗		Significant Non-Compliance The second stage of upgrades were not undertaken
2	The loading of the oxidation pond shall not exceed 100kg BOD/ha/day.	✓			Full compliance
3	The Consent Holder shall use its best endeavours to ensure that no high strength industrial waste is discharged to the sewerage system unless it has been pre-treated to a quality similar to that of domestic wastewater and the waste shall not cause any deterioration of the discharge quality from the oxidation pond.	✓			Full compliance
4	The oxidation pond is to be maintained in an aerobic state at all times.	✓			Full compliance
5	The Consent Holder shall ensure that the level of sludge in the oxidation pond does not exceed one third of the operational volume. Any sludge removed must be disposed of at an approved and consented facility.		✗		Environmental non compliance
6	The Consent Holder shall ensure that there is no deterioration of the quality of the discharge as compared with the average quality of the effluent for the period 1 January 1999 to 30 December 2001, as described in the Assessment of Environmental Effects report.		✗		Significant non compliance
7	<p>The quality of the existing discharge from the pond into the Ruamahanga River shall comply with the tabulated quality parameters.</p> <p>Works to upgrade the treatment plant to comply with the above standards including the installation of an ultraviolet treatment plant shall be completed by 1 December 2011.</p> <p>Note 1: Summer is defined as November to April inclusive. Winter is defined as May to October inclusive.</p> <p>* Please note this figure is now based on an absolute standard as opposed to a rolling geomean.</p>		✗		Pre 28 October 2011 - Significant non compliance (subsequently a Section 127 variation was processed and granted).

7	<p>The quality of the existing discharge from the pond into the Ruamahanga River shall comply with the tabulated quality parameters.</p> <p>Works to upgrade the treatment plant to comply with the above standards including the installation of an ultraviolet treatment plant shall be completed by 1 December 2011.</p> <p>Note 1: Summer is defined as November to April inclusive. Winter is defined as May to October inclusive.</p> <p>* Please note this figure is now based on an absolute standard as opposed to a rolling geomean.</p>			<p><u>Post 28 October 2011</u> – Environmental non-compliance</p> <p>Total nitrogen, ammonia and <i>E.coli</i> have been non-compliant.</p>
8 ² a	<p>The consent holder will undertake the following in consultation with the Manager, Environmental Regulation, Wellington Regional Council and key stakeholders :</p> <p>By 1 December 2011 - Notify the Manager, Environmental Regulation, Wellington Regional Council that the work to install the Ultraviolet Treatment Plant has been completed. Circulate the Baker & Associates assessment of Pain Farm to the Manager, Environmental Regulation, Wellington Regional Council and key stakeholders; and a meeting with these parties to discuss outcomes of the Baker & Associates assessment and what progress and timetable is scheduled for development of Pain Farm for discharge to land (if that option is selected by the consent holder as a viable option)</p>	×		Technical non-compliance
8 ² b	<p>By 10 January 2012 - Submission of a draft Assessment of Environmental Effects (AEE) to the Manager, Environmental Regulation, Wellington Regional Council and key stakeholders. The draft AEE shall cover all aspects identified in 5.4.2 of the Regional Freshwater Plan, and shall specifically include the following matters raised at the meetings on 23 February 2011 and 26 August 2011:</p> <ul style="list-style-type: none"> • A cultural values assessment, • Detailed assessment of the Pain Farm discharge to land site (if that option is selected as the preferred discharge site), • Preliminary assessment of a range of alternative discharge to land options in terms of their feasibility and costs, • Assessment of a range of options to upgrade the wastewater treatment plant in order to reduce the existing water quality standards (particularly BOD, SS, and ammonia) in terms of their feasibility and costs, • Analysis of receiving water quality and biological monitoring in the Ruamahanga River and the associated effects of the discharge to the river. <p>Note: The above specific matters are not an exhaustive list of requirements to lodge an application and Assessment of Environmental Effects under section 88 of the Resource Management Act 1991. Additional water quality and biological monitoring of</p>	×		Technical non-compliance

	the receiving environment may be required to ensure an appropriate level of analysis is provided.				
8 ² c	By 28 February 2012 - A meeting with relevant representatives from the Wellington Regional Council and key stakeholders to discuss the commitments and proposals put forward in the application draft Assessment of Environmental Effects.		×		Technical non-compliance
8 ² d	By 10 April 2012 - Submission of a full and complete application and Assessment of Environmental Effects to the Wellington Regional Council.		×		Technical non-compliance
9	Any residuals from any chemical treatment (for example aluminium residuals from the coagulation proposed for phosphate removal) shall not result in a discharge that exceeds appropriate guideline levels in the receiving waters.			NA	There is concern regarding the dosing of the ponds with ecogreen bioaugmentation tablets. The response prepared by Stu Clarke has been reviewed by our EMI team and it has been deemed inadequate.
10	The permit holder's interest in this consent may not be transferred to any owner or occupier of the site unless that owner or occupier has assumed the South Wairarapa District Council's responsibilities for the treatment and disposal of sewage.			NA	
11	<p>In the event of any failure of the Martinborough oxidation pond facility that would result in any deterioration in the quality of effluent discharging to the Ruamahanga River and be in breach of any condition of this permit, the permit holder shall:</p> <ul style="list-style-type: none"> • Take immediate steps to remedy and mitigate any adverse effects on the environment caused by any releases of such effluent. Such steps shall be to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council; and • Immediately notify the Medical Officer of Health (C/- The Health Protection Officer, Choice Health) in accordance with the Public Health Service's Response Manual for Sewage Discharges; and • Notify the Manager, Planning and Resources, Wellington Regional Council within 24 hours after the malfunction of the oxidation pond facility has been detected; and • If required by the Manager, Planning and Resources, Wellington Regional Council, provide within 24 hours after notification a written report to the Manager detailing the manner and cause of that malfunction and the nature of the released effluent, and the steps taken (and being taken, if appropriate) to remedy and control that release and to prevent further such releases of untreated or partially treated effluent. 		×		Technical Non-Compliance
12	A management plan shall be submitted within six months of the commencement of this consent detailing how the sewage treatment and disposal system will be operated to ensure compliance with the consent conditions. The management plan is to be to the satisfaction of the Manager, Planning and Resources,			NA	

	Wellington Regional Council				
13	By 31 July 2002, in association with the Greytown sewage consent, the Consent Holder shall develop a risk communication strategy to notify potentially affected people of the existence and potential health effects of the discharge. The strategy shall involve the identification of key community groups (eg, recreational groups using the Ruamahanga River for water related activities) and the provision of risk information to those groups on a regular basis. The risk communication strategy will be developed in consultation with the public health service, Rangitane o Wairarapa and Ngati Kahungunu and shall be to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council, and shall be adhered to by the consent holder.			NA	
14	<p>The permit holder shall place and maintain appropriate signs advising of the presence of treated wastewater from the Martinborough oxidation ponds. The signs shall be placed on the true left bank of the Ruamahanga River at or about the sewage outfall.</p> <p>The siting, wording and format of the signs shall be to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council. The sign shall be placed by 31 July 2002.</p>	✓			Full compliance
15	<p>The discharge shall not cause any of the following effects in the Ruamahanga river after reasonable mixing:</p> <ul style="list-style-type: none"> • the production of any conspicuous oil or grease films, scums or foams or floatable or suspended material; • any conspicuous change in the colour or visual clarity; • the rendering of freshwater unsuitable for consumption by farm animals; • any significant adverse effects on aquatic life; • a change of more than 3oCelsius in the natural temperature of the water. <p>"Reasonable mixing" will be determined by the consent holder and agreed upon by the Manager, Planning and Resources, Wellington Regional Council, and will be defined by distance downstream of the outfall.</p>		×		Significant Non-Compliance
16	Review of conditions			NA	
17	Cost recovery for review			NA	
18	Change of conditions			NA	
19	Charges			NA	
20	The consent holder shall, in consultation with the Wellington Regional Council, submit a monitoring programme for the sewage treatment, discharge and receiving water. The monitoring programme is to be confirmed to the satisfaction of the Manager, Planning and Resources, Wellington Regional Council and implemented within two months of the commencement of this consent.				

21	Consent term			NA	
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Compliance monitoring report 2011/2012 – assessment of conditions

WAR970079 [20870] – Discharge to air

Condition		Condition met?			Comments
		Yes ✓	No ✗	NA	
1	There shall be no discharges to air resulting from the exercise of this consent that are noxious,dangerous, offensive or objectionable at or beyond the legal boundary of the property from which the permit holder operates. Such discharges include, but are not limited to odour, gases, vapours and aerosols.	✓			Full compliance
2	Complaints record	✓			Full compliance
3	At all times the sewage in the pond is to contain enough dissolved oxygen to prevent the generation of malodours.	✓			Full compliance
4	The Consent Holder shall formally notify in writing the owners of Palliser Estate vineyard of the potential health risk of aerosols being discharged from the pond. That notification should include reference to the desirability of maintaining a vegetative screen established along the property boundary.	✓			Full compliance
5	Transfer of permit			NA	
6	Review of consent			NA	
7	Cost recovery			NA	
8	Change of conditions			NA	

Appendix 3: Diagram of Stages from the AEE

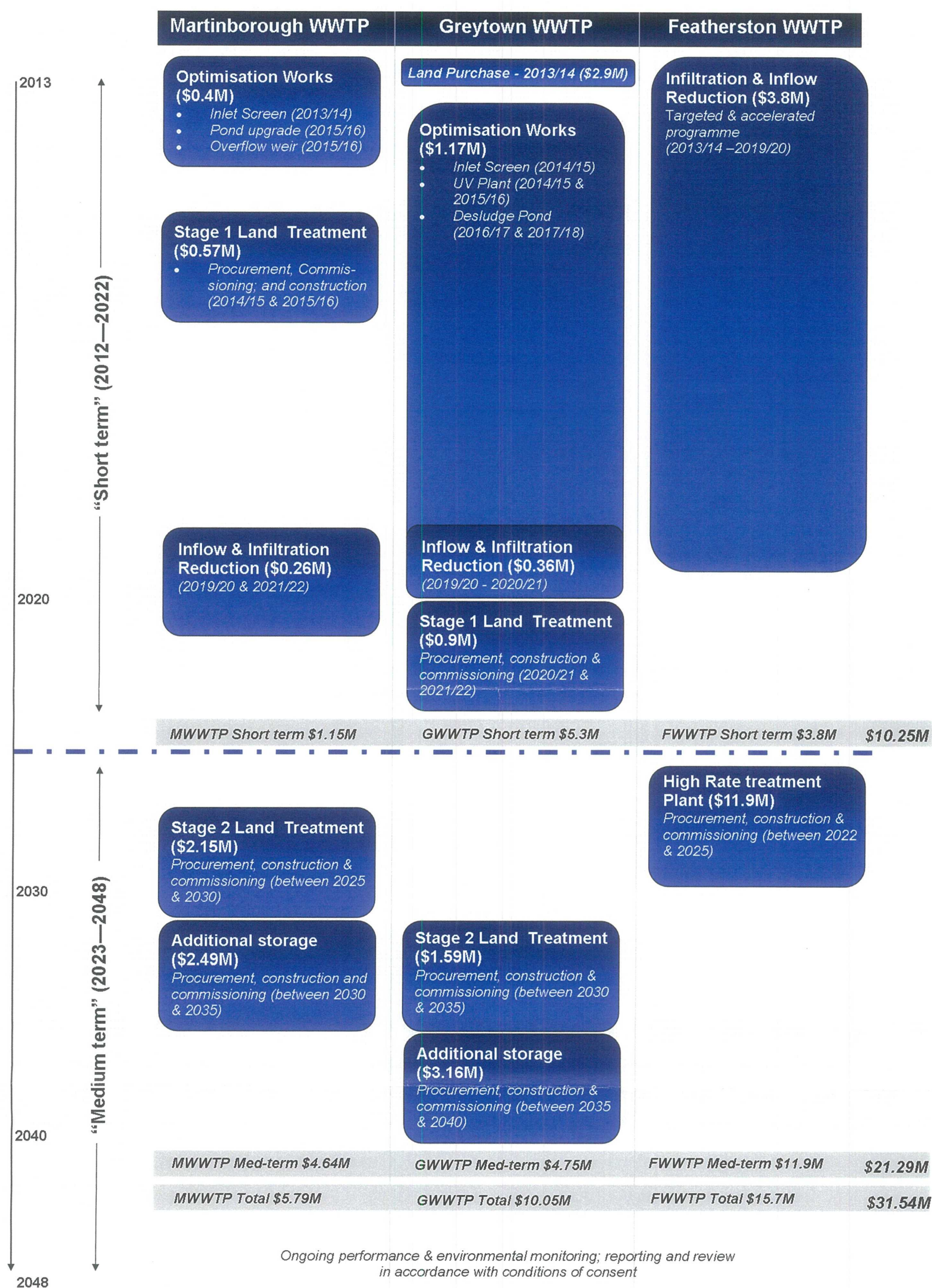


Figure 1 – SWDC WWTP Upgrade Capital Programme

Appendix 4: Public Notice from the notification of the application



greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Notification of application for a resource consent: WAR120258 under section 95(A) of the Resource Management Act 1991

Greater Wellington Regional Council has received an application for a resource consent from:

Applicant: South Wairarapa District Council
Location: Martinborough Wastewater Treatment Plant, Dublin Street, Martinborough
Map Reference: NZTM: 1804586.5434856
Proposal: To discharge contaminants to land, air and water associated with the proposed long term upgrade and operation of the Martinborough Wastewater Treatment Plant.
Consent applied for: [31707] Discharge permit – to discharge contaminants from treated effluent into the Ruamahanga River through the whole term of the consent
[32044] Discharge permit – to discharge treated effluent to land adjacent to the plant (Stage 1B) and the Pain Farm (Lake Ferry Road)(Stage 2A and 2B)
[32045] Discharge permit –to discharge contaminants to air (odour from the ponds and treatment process, and effluent associated with land application)
[33045] Discharge permit – to discharge contaminants to land and water via seepage from the ponds and channel
The consents are sought for a term of 35 years.

To make a submission

Any person may make a submission on this application. The submission must be dated, signed by you and include the following information:

1. Your name, postal address, telephone number, email address and facsimile number (if applicable).
2. Details of the application in respect of which you are making the submission, including location.
3. Whether you support, oppose or are neutral to the application.
4. Your submission, with reasons.
5. The decision you wish Greater Wellington Regional Council to make.
6. Whether you wish to be heard in support of your submission.

Submission forms are available from the Greater Wellington Regional Council office at 34 Chapel Street, Masterton, and our website at <http://www.gw.govt.nz/assets/Resource-Consents/Submission-form.pdf>

Closing date for submissions

You are required to forward your submission to the Manager, Environmental Regulation, Greater Wellington Regional Council, PO Box 41, Masterton 5840, in time to be received no later than **4.30pm on Wednesday 6 August 2014**.

The application and all supporting information can be viewed at the following places during normal working hours:

- **Greater Wellington Regional Council (Masterton Office)**, 34 Chapel Street, Masterton
- **Martinborough Library**, Jellicoe Street, Martinborough
- **Greater Wellington Regional Council's website:** www.gw.govt.nz

The officer in charge of processing this application is Nicola Arnesen, Environmental Regulation, Greater Wellington Regional Council, Masterton.

Your submission may also become publicly available if a request for it is made under the Local Government Official Information and Meetings Act 1987. Greater Wellington Regional Council is legally required to provide a copy of your submission to the applicant.

Note: You must serve a copy of your submission on the applicant as soon as reasonably practicable.

Address for Service: South Wairarapa District Council, C/- Kerry Geange, Geange Consulting, PO Box 213, Carterton 5743

Appendix 5: Summary of Submissions

WAR120258 Martinborough Wastewater Treatment Plant – summary of submissions

Submitter number	Name	Support/ Neutral/ Oppose	Hearing	Summary of submission
1	Alan Styles	Support	No	<ul style="list-style-type: none"> No comments made
2	Mahaki Trustees Ltd and Hikunui Trustees Ltd	Oppose	Yes	<ul style="list-style-type: none"> Improvement of the water quality in the Ruamahanga should be a priority SWDC need to change to a land irrigation system now Concern over number of water courses which drain from Pain Farm to Mahaki Farm Concern with impact on the runoff and groundwater as a consequence of any irrigation
3	Regional Public Health	Neutral	Yes	<ul style="list-style-type: none"> Supports SWDC policy to progressively reduce discharges to water; recognises poor recreational water quality is one key environmental factors contributing to poor human health; Cultural health effects Supports concept of Integrated Catchment Management, Martinborough WWTP integral to wider catchment and discharge significant point source discharge; Supports proposed conditions for warning signage Does not oppose proposed timeframe however health risk associated with discharge should be reduced as soon as practicable and timeframes seen as a maximum Satisfied that set back distance from boundary is appropriate and likely to ensure aerosol do not cross boundaries to adjoining properties Recommends that consent conditions for discharge to land under stage 2A reflect that technologies and treated wastewater demand may alter over the ensuing 16 years Recommends provision for formal structured process to track and monitor progress toward implementation of staged upgrades
4	Kahungunu Ki Wairarapa	Neutral	Yes	<ul style="list-style-type: none"> [31707] The less than minor effects of discharge could change over consent term of 35 years [32044] supportive of discharging treated effluent to land have preference for other conditions and discharges [32045] as part of a preference for spray irrigation KKW understands the risk of discharging contaminants to air [33045] would like assurances that measures have been taken to minimise the effects

WAR120258 Martinborough Wastewater Treatment Plant – summary of submissions

Submitter number	Name	Support/ Neutral/ Oppose	Hearing	Summary of submission
				<p>of this permit, monitoring will be undertaken to understand effects, reporting can evaluate any breaches and remediation</p> <ul style="list-style-type: none"> • Seek a shorter term of 20 years
5	Bernard Hudepohl	Oppose	Yes	<ul style="list-style-type: none"> • strong objections to discharge permits • do not portray a very clean green attitude • will have a long and drastic effect to my properties value therefore discriminating [severely] against us
6	Beverley Clark	Oppose	Yes	<ul style="list-style-type: none"> • Oppose continued use of waterways as an effluent pond • Pain Estate is a valuable town asset, not suitable for human wastewater management • In-ground dripper system preferred over above-ground • look at supplying horticultural groups with treated wastewater as an alternative
7	Wairarapa Water Users Society	Oppose	Yes	<ul style="list-style-type: none"> • support Whaitua as part of process of review of Regional Plan • believes there must be equity in application of rules and regulations between rural and urban community • does not support 35 year term • rural water users have a shorter term for their consents to allow for new rules after the plan becomes effective
8	Sustainable Wairarapa Inc	Oppose	Yes	<ul style="list-style-type: none"> • all applicants to be treated with equity • the Ruamahanga Whaitua will set limits and will be applicable to these resource consents • Management plans should be considered by the hearing committee • question how a proposal can be developed if flows are unknown • the standards could fail for three months of the summer when the river is at low flows and this is unacceptable • Conditions at the 'near zone' not known now so how can conditions be developed
9	Neville Fisher	Oppose	Yes	<ul style="list-style-type: none"> • Oppose lifting average daily discharge rate, effectively increases potential river loading when all efforts should be to reduce

WAR120258 Martinborough Wastewater Treatment Plant – summary of submissions

Submitter number	Name	Support/ Neutral/ Oppose	Hearing	Summary of submission
				<ul style="list-style-type: none"> lifting maximum daily discharge rate to allow increased discharge at higher river flows little to no improvement to final receiving environment of Lake Onoke and Wairarapa oppose consent period of 35 years consent periods to be aligned with each stage of development and on a tighter time frame
10	Federated Farmers Of New Zealand	Conditional	Yes	<ul style="list-style-type: none"> Acknowledge application forms part of SWDC long term district wide integrated asset management strategy appreciate concern for affordability and support intent to implement longer term programme of staged upgrades appreciate concern for certainty and 35 year term support short-term focus on achieving significant reduction Ruamahanga Whaitua is tasked with developing objectives and limits for the catchment, this application be considered in context of those catchment-specific objectives and limits Ruamahanga catchment community will be best served with integrated catchment objectives and integrated catchment solutions support continued operation of Martinborough WWTP under expired consent conditions Recommend this consent application be deferred pending development of Ruamahanga Whaitua Plan Change
11	Wellington Fish & Game Council	Oppose	Yes	<ul style="list-style-type: none"> Ruamahanga River principal trout fishery in Wairarapa listed in GWRC Regional Freshwater Plan as regionally important amenity and recreation values, and as a waterbody with water quality identified as needing enhancement suffers from degraded water quality caused by point source discharges, allocated abstraction and extremely low flows during summer with the exception of E.Coli current proposal fails to improve quality of discharged wastewater and fails to meet treated sewage discharge quality standard imposed by

WAR120258 Martinborough Wastewater Treatment Plant – summary of submissions

Submitter number	Name	Support/ Neutral/ Oppose	Hearing	Summary of submission
				<p>the current consent</p> <ul style="list-style-type: none"> • application inconsistent with purpose and principals RMA
12	South Wairarapa Biodiversity Group	Neutral	Yes	<ul style="list-style-type: none"> • Lake Onoke is highly vulnerable to activities that occur further up the catchment, the lake is a sink for contaminants discharged upstream and continues to be heavily impacted by human activities • receiving environment influenced by cumulative contribution of nutrients including MWWTP • support proposal to reduce discharge • support progressive removal of direct discharge to the river • should not be able to increase contaminant loading and maximum loads to be defined in conditions • should have conditions for compliance and monitoring • Management Plans are missing a statement to meet conditions • the AEE does not provide comprehensive analysis of cumulative effects of the proposed discharge on Lake Onoke, this assessment is necessary before determining the application; • given the Regional Plan review and Ruamahanga Whaitua process it is premature to lock in contaminant discharges for 35 years • a compulsory review of conditions at 10 and 20 years or a term of 15 years to enable contaminant load conditions to be adjusted
13	Martinborough Business Association	Neutral	Yes	<ul style="list-style-type: none"> • appeal of Martinborough and Wairarapa is ability to enjoy the environment • best interests that community waste is managed so that it doesn't affect actual or perceived quality • access to and use of Ruamahanga River is important, main access is Waihenga Bridge which is already subject to contact recreation health warnings, MWWTP will contribute same effect down the river • the wine sector has been making significant effort to improve environmental performance

WAR120258 Martinborough Wastewater Treatment Plant – summary of submissions

Submitter number	Name	Support/ Neutral/ Oppose	Hearing	Summary of submission
				<ul style="list-style-type: none"> request conditions that are prescriptive, clear and enforceable support consent conditions requiring all monitoring results to be posted on website
14	Colin and Nalini Baruch	Oppose	No	<ul style="list-style-type: none"> opposed because downwind of proposed discharge area; recent truck wash and irrigation based at Martinborough Transport already shown that the level of odour is high enough to be offensive do not have access to town water supplies, concerned that higher levels of effluent combined with current farm effluent and new truck wash will put aquifer and water supply at risk from contamination, rendering water supply unusable business relies on water from aquifer in preparation of food products, contaminated water places business at risk any closure due to odour drift, water contamination or related issues will have significant negative impact on business surprised that SWDC would consider developing the effluent disposal so close to growing residential developments there is other farmland around Martinborough further from residential properties which has seen less residential development of the years
15	Patrick Desbonnets	Oppose	No	<ul style="list-style-type: none"> the smell from land application would be intolerable considering that the main wind is a north-wester
16	Dawn Proctor	Oppose	No	<ul style="list-style-type: none"> object to the discharge of treated effluent real potential for objectionable odour and the prevailing wind being north west real potential for river and stream pollution

Appendix 6: Relevant Statutory Criteria

The Resource Management Act 1991

Part II

5. Purpose

- (1) The purpose of this Act is to promote the sustainable management of natural and physical resources.
- (2) In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while—
 - (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
 - (b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
 - (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

6. Matters of national importance

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

- (a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:
- (b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:
- (c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:
- (d) The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:
- (e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.
- [(f) The protection of historic heritage from inappropriate subdivision, use, and development.]
- [(g) The protection of recognised customary activities.]

7. Other matters

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—

- (a) Kaitiakitanga:
- [(aa) The ethic of stewardship:]
- (b) The efficient use and development of natural and physical resources:
 - [(ba) The efficiency of the end use of energy:]
- (c) The maintenance and enhancement of amenity values:
- (d) Intrinsic values of ecosystems:
- (e) Repealed.
- (f) Maintenance and enhancement of the quality of the environment:
- (g) Any finite characteristics of natural and physical resources:
- (h) The protection of the habitat of trout and salmon:
- [(i) The effects of climate change:]
- [(j) The benefits to be derived from the use and development of renewable energy.]

8. Treaty of Waitangi

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

104. Consideration of applications

- (1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to—
 - (a) any actual and potential effects on the environment of allowing the activity; and
 - (b) any relevant provisions of—
 - (i) a national policy statement:
 - (ii) a New Zealand coastal policy statement:
 - (iii) a regional policy statement or proposed regional policy statement:
 - (iv) a plan or proposed plan; and

- (c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.
- (2) When forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect.
- [[(2A) When considering an application affected by section 124, the consent authority must have regard to the value of the investment of the existing consent holder.]]
- (3) A consent authority must not—
 - (a) have regard to trade competition when considering an application:
 - (b) when considering an application, have regard to any effect on a person who has given written approval to the application:
 - [[(c) grant a resource consent contrary to—
 - (i) section 107 or section 107A or section 217:
 - (ii) an Order in Council in force under section 152:
 - (iii) any regulations:
 - (iv) a Gazette notice referred to in section 26(1), (2), and (5) of the Foreshore and Seabed Act 2004:]]
 - (d) grant a resource consent if the application should have been publicly notified and was not.
- (4) Subsection (3)(b) does not apply if a person has given written approval in accordance with that paragraph but, before the date of the hearing (if a hearing is held) or otherwise before the determination of the application, that person gives notice in writing to the consent authority that the approval is withdrawn.
- (5) A consent authority may grant a resource consent on the basis that the activity is a controlled activity, a restricted discretionary activity, a discretionary activity, or a non-complying activity, regardless of what type of activity the application was expressed to be for.]

104B. Determination of applications for discretionary or non-complying activities

After considering an application for a resource consent for a discretionary activity or non-complying activity, a consent authority -

- (a) may grant or refuse the application; and
- (b) if it grants the application, may impose conditions under section 108.

105. Matters relevant to certain applications

- (1) If an application is for a discharge permit or coastal permit to do something that would contravene section 15 or section 15B, the consent authority must, in addition to the matters in section 104(1), have regard to—
 - (a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
 - (b) the applicant's reasons for the proposed choice; and
 - (c) any possible alternative methods of discharge, including discharge into any other receiving environment.
- (2) If an application is for a resource consent for a reclamation, the consent authority must, in addition to the matters in section 104(1), consider whether an esplanade reserve or esplanade strip is appropriate and, if so, impose a condition under section 108(2)(g) on the resource consent.]

107. Restriction on grant of certain discharge permits

- (1) Except as provided in subsection (2), a consent authority shall not grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15A allowing –
 - (a) the discharge of any contaminant or water into water; or
 - (b) a discharge of a contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water; ...if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:
 - (c) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:
 - (d) any conspicuous change in the colour or visual clarity:
 - (e) any emission of objectionable odour:
 - (f) the rendering of fresh water unsuitable for consumption by farm animals:
 - (g) any significant adverse effects on aquatic life.
- (2) A consent authority may grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15A that may allow any of the effects described in subsection (1) if it is satisfied—
 - (a) that exceptional circumstances justify the granting of the permit; or
 - (b) that the discharge is of a temporary nature; or

- (c) that the discharge is associated with necessary maintenance work—
and that it is consistent with the purpose of this Act to do so.

108. Conditions of resource consents

- [(1) Except as expressly provided in this section and subject to any regulations, a resource consent may be granted on any condition that the consent authority considers appropriate, including any condition of a kind referred to in subsection (2).]
- [(2) A resource consent may include any one or more of the following conditions:
- (a) Subject to subsection (10), a condition requiring that a financial contribution be made:
 - [[(b) a condition requiring provision of a bond (and describing the terms of that bond) in accordance with section 108A:]]
 - (c) A condition requiring that services or works, including (but without limitation) the protection, planting, or replanting of any tree or other vegetation or the protection, restoration, or enhancement of any natural or physical resource, be provided:
 - (d) In respect of any resource consent (other than a subdivision consent), a condition requiring that a covenant be entered into, in favour of the consent authority, in respect of the performance of any condition of the resource consent (being a condition which relates to the use of land to which the consent relates):
 - (e) Subject to subsection (8), in respect of a discharge permit or a coastal permit to do something that would otherwise contravene section 15 (relating to the discharge of contaminants) or section 15B, a condition requiring the holder to adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment of the discharge and other discharges (if any) made by the person from the same site or source:
 - (f) In respect of a subdivision consent, any condition described in section 220 (notwithstanding any limitation on the imposition of conditions provided for by [[section 77B(2)(c) or (3)(c)]]):
 - (g) In respect of any resource consent for reclamation granted by the relevant consent authority, a condition requiring an esplanade reserve or esplanade strip of any specified width to be set aside or created under Part 10:
 - (h) In respect of any coastal permit to occupy any part of the coastal marine area (relating to land of the Crown in the coastal marine area or land in the coastal marine area vested in the regional council), a condition—
 - (i) Detailing the extent of the exclusion of other persons:

(ii) Specifying any coastal occupation charge.]

- [(3) A consent authority may include as a condition of a resource consent a requirement that the holder of a resource consent supply to the consent authority information relating to the exercise of the resource consent.]
- [(4) Without limiting subsection (3), a condition made under that subsection may require the holder of the resource consent to do one or more of the following:
- (a) To make and record measurements:
 - (b) To take and supply samples:
 - (c) To carry out analyses, surveys, investigations, inspections, or other specified tests:
 - (d) To carry out measurements, samples, analyses, surveys, investigations, inspections, or other specified tests in a specified manner:
 - (e) To provide information to the consent authority at a specified time or times:
 - (f) To provide information to the consent authority in a specified manner:
 - (g) To comply with the condition at the holder of the resource consent's expense.]
- [(5) Any conditions of a kind referred to in subsection (3) that were made before the commencement of this subsection, and any action taken or decision made as a result of such a condition, are hereby declared to be, and to have always been, as valid as they would have been if subsections (3) and (4) had been included in this Act when the conditions were made, or the action was taken, or the decision was made.]
- (6) Repealed.
- (7) Any condition under subsection [(2)(d)] may, among other things, provide that the covenant may be varied or cancelled or renewed at any time by agreement between the consent holder and the consent authority.
- (8) Before deciding to grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 (relating to the discharge of contaminants) [or 15B] subject to a condition described in subsection [(2)(e)], the consent authority shall be satisfied that, in the particular circumstances and having regard to—
- (a) The nature of the discharge and the receiving environment; and
 - (b) Other alternatives, including any condition requiring the observance of minimum standards of quality of the receiving environment—the inclusion of that condition is the most efficient and effective means of preventing or minimising any actual or likely adverse effect on the environment.
- [(9) In this section, financial contribution means a contribution of—

- (a) Money; or
- (b) Land, including an esplanade reserve or esplanade strip (other than in relation to a subdivision consent), but excluding Maori land within the meaning of the Maori Land Act 1993 unless that Act provides otherwise; or
- (c) A combination of money and land.]

[(10) A consent authority must not include a condition in a resource consent requiring a financial contribution unless—

- (a) The condition is imposed in accordance with the purposes specified in the plan [[or proposed plan]] (including the purpose of ensuring positive effects on the environment to offset any adverse effect); and
- (b) The level of contribution is determined in the manner described in the plan [[or proposed plan]].]

Appendix 7: Relevant sections of Planning Documents

National Policy Statement for Freshwater Management 2014

Objective A1

To safeguard:

- a) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and
- b) the health of people and communities, at least as affected by secondary contact with fresh water;

in sustainably managing the use and development of land, and of discharges of contaminants.

Objective A2

The overall quality of fresh water within a region is maintained or improved while:

- a) protecting the significant values of outstanding freshwater bodies;
- b) protecting the significant values of wetlands; and
- c) improving the quality of fresh water in water bodies that have been degraded by human activities to the point of being over-allocated.

C. Integrated management

Objective C1

To improve integrated management of fresh water and the use and development of land in whole catchments, including the interactions between fresh water, land, associated ecosystems and the coastal environment.

Policy C1

By every regional council managing fresh water and land use and development in catchments in an integrated and sustainable way, so as to avoid, remedy or mitigate adverse effects, including cumulative effects.

D. Tāngata whenua roles and interests

Objective D1

To provide for the involvement of iwi and hapū, and to ensure that tāngata whenua values and interests are identified and reflected in the management of fresh water including associated ecosystems, and decision-making regarding freshwater planning, including on how all other objectives of this national policy statement are given effect to.

Policy D1

Local authorities shall take reasonable steps to:

- a) involve iwi and hapū in the management of fresh water and freshwater ecosystems in the region;
- b) work with iwi and hapū to identify tāngata whenua values and interests in fresh water and freshwater ecosystems in the region; and

- c) reflect tāngata whenua values and interests in the management of, and decision-making regarding, fresh water and freshwater ecosystems in the region.

Regional Policy Statement

Policy 16: Promoting discharges to land – regional plans

Regional plans shall include policies, rules and/or methods that promote:

- (a) discharges of human and/or animal waste to land rather than water, particularly discharges of sewage, while maintaining groundwater quality and soil health; and
- (b) the use of collective sewage treatment systems that discharge to land where it is likely that individual treatment systems will not maintain groundwater quality and soil health.

Policy 39: Recognising the benefits from renewable energy and regionally significant infrastructure – consideration

When considering an application for a resource consent, notice of requirement or a change, variation or review of a district or regional plan, particular regard shall be given to:

- (a) the social, economic, cultural and environmental benefits of energy generated from renewable energy resources and/or regionally significant infrastructure; and
- (b) protecting regionally significant infrastructure from incompatible subdivision, use and development occurring under, over, or adjacent to the infrastructure; and
- (c) the need for renewable electricity generation facilities to locate where the renewable energy resources exist; and
- (d) significant wind and marine renewable energy resources within the region.

Policy 40: Maintaining and enhancing aquatic ecosystem health in water bodies – consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a regional or district plan, particular regard shall be given to:

- (a) requiring that water quality, flows and water levels and aquatic habitats of surface water bodies are managed for the purpose of safeguarding aquatic ecosystem health;
- (b) requiring, as a minimum, water quality in the coastal marine area to be managed for the purpose of maintaining or enhancing aquatic ecosystem health; and
- (c) managing water bodies and the water quality of coastal water for other purposes identified in regional plans.

Policy 43: Protecting aquatic ecological function of water bodies – consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district or regional plan, particular regard shall be given to:

- (a) maintaining or enhancing the functioning of ecosystems in the water body;
- (b) maintaining or enhancing the ecological functions of riparian margins;
- (c) minimising the effect of the proposal on groundwater recharge areas that are connected to surface water bodies;
- (d) maintaining or enhancing the amenity and recreational values of rivers and lakes, including those with significant values listed in Table 15 of Appendix 1;
- (e) protecting the significant indigenous ecosystems and habitats with significant indigenous biodiversity values of rivers and lakes, including those listed in Table 16 of Appendix 1;
- (f) maintaining natural flow regimes required to support aquatic ecosystem health;
- (g) maintaining fish passage;

- (h) protecting and reinstating riparian habitat, in particular riparian habitat that is important for fish spawning;
- (i) discouraging stock access to rivers, lakes and wetlands; and
- (j) discouraging the removal or destruction of indigenous wetland plants in wetlands.

Regional Freshwater Plan

4.1 Objectives

The relationship of tangata whenua with fresh water

- 4.1.1 The relationship of tangata whenua and their culture and traditions with fresh water, and with ancestral sites, waahi tapu and other taonga within the beds of rivers and lakes, is recognised and provided for.
- 4.1.2 The mauri of water bodies and river and lake beds is protected.
- 4.1.3 The principles of the Treaty of Waitangi are taken into account in the management of the Region's water bodies and river and lake beds.

Natural values

- 4.1.5 The life-supporting capacity of water and aquatic ecosystems is safeguarded from the adverse effects of any subdivision, use and development.

4.2 Policies

The relationship of tangata whenua with freshwater

- 4.2.4 To avoid, remedy, or mitigate the adverse effects of the use and development of water bodies and river and lake beds on the habitats of species traditionally harvested by the tangata whenua.
- 4.2.5 To have regard to the values and customary knowledge of the tangata whenua, where these have been identified by the tangata whenua, when assessing resource consent applications for the use and development of water bodies and river and lake beds.

5.2 Policies

Receiving Water Quality

- 5.2.4 To manage water quality for contact recreation purposes in those water bodies identified in Appendix 5 (subject to Policy 5.2.10), excluding Lake Waitawa (managed according to Policy 5.2.6) and Lake Wairarapa (managed according to Policies 5.2.2 and 5.2.6)
- 5.2.8 To have regard to the relevant guidelines in Appendix 8 when deciding whether a discharge is able to satisfy Policies 5.2.1 to 5.2.7 (above) when considering applications for resource consents (subject to Policy 5.2.10).
- 5.2.9 To manage the quality of the fresh water of the rivers, or parts of rivers, identified in Appendix 7 so that water quality is enhanced to satisfy the purposes identified in the Appendix (subject to Policy 5.2.10).

5.2.10 To allow the discharge of contaminants to fresh water which do not satisfy Policies 5.2.1 to 5.2. 9, whichever is (are) relevant, only where:

- (1) the discharge is of a temporary nature; or
- (2) the discharge is associated with necessary maintenance works; or
- (3) exceptional circumstances justifying the granting of a permit; or
- (4) the discharge:
 - was present at the time the Plan was notified; and
 - is not likely to cause a decrease in the existing quality of water at that site and the person responsible for the discharge has defined a programme of work for upgrading the discharge within a specified timeframe; or
- (5) that in any event, it is consistent with the purpose of the Act to allow the discharge.

[5.2.10A 1. When considering any application for a discharge the consent authority must have regard to the following matters:

- a) the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water and
- b) the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.

2. When considering any application for a discharge the consent authority must have regard to the following matters:

- a) the extent to which the discharge would avoid contamination that will have an adverse effect on the health of people and communities as affected by their secondary contact with fresh water; and
- b) the extent to which it is feasible and dependable that any more than minor adverse effect on the health of people and communities as affected by their secondary contact with fresh water resulting from the discharge would be avoided.

3. This policy applies to the following discharges (including a diffuse discharge by any person or animal):

- a) a new discharge or
 - b) a change or increase in any discharge – of any contaminant into fresh water, or onto or into land in circumstances that may result
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- in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.

4. Paragraph 1 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011.

5. Paragraph 2 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2014 takes effect]

Mixing Zones

- 5.2.11 To ensure that any zones allowed on a discharge permit for reasonable mixing of contaminants or water with the receiving water are determined by having regard to:
- the purpose for which the receiving water is being managed, and any effects of the discharge on that management purpose; and
 - any tangata whenua values that may be affected; and
 - the volume of water or concentration of contaminants being discharged, and the area of receiving water that could potentially be affected; and
 - the physical, hydraulic and hydrological characteristics of the receiving water.
- 5.2.13 To encourage users to discharge to land as an alternative to surface water where:
- the provisions of the Regional Plan for Discharges to Land are satisfied; and
 - discharging to land has less adverse environmental effects than discharging to water; and
 - there are no significant cultural, environmental, technical, or financial constraints associated with discharging to land

Regional Discharges to Land Plan

Liquid contaminants

- 4.1.4 There is a significant reduction in contamination of surface water, groundwater and coastal water from discharges of human effluent to land.
- 4.1.5 The adverse environmental effects of discharges of liquid contaminants from point sources into or onto land are avoided, remedied or mitigated.

Discharges of human effluent

- 4.2.12 To give particular consideration to any relevant iwi management plans or statements of tangata whenua views when considering applications for the discharge of human effluent (treated or untreated) to land.
- 4.2.13 To give particular regard to the following matters when assessing applications for permits to discharge contaminants to land from reticulated sewerage systems:
- (1) the nature of the contaminants entering the sewerage system and being discharged from the system;
 - (2) whether trade wastes are present in the system, and any actions required to:
 - (a) monitor the trade wastes entering the system; and
 - (b) minimise the adverse effects of trade wastes on the treatment of the effluent;
 - (3) the extent to which stormwater is able to enter the system, and any actions required to avoid, remedy or mitigate the effects of system overload by stormwater;
 - (4) the management of the system, and any actions required to avoid, remedy or mitigate the effects of any accidental discharges from the system;

- (5) the location of the discharge site and the hydrogeological conditions at and around the site;
- (6) the extent to which the effluent is treated prior to the discharge entering any water, and any actual or potential effects of the discharge on surface water, coastal water, and groundwater (particularly in the vulnerable areas identified in Map 1);
- (7) the effects of any odour or contaminant discharged into air;
- (8) any actual or potential effect of the discharge on human health or amenity, and on the health and functioning of plants, animals or ecosystems;
- (9) any other uses or values of the discharge site and surrounding area, including any values placed on the site by tangata whenua; and
- (10) the Public Health Guidelines for the Safe Use of Sewage Effluent and Sewage Sludge on Land,²⁷ or alternative researched and documented benchmarks for assessment.

4.2.14 To require discharges to land from reticulated sewerage systems to be managed in accordance with a site-specific discharge management plan.

[4.2.24A 1. When considering any application for a discharge the consent authority must have regard to the following matters:

- a) the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with freshwater and
- b) the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.

2. When considering any application for a discharge the consent authority must have regard to the following matters:

- a) the extent to which the discharge would avoid contamination that will have an adverse effect on the health of people and communities as affected by their secondary contact with freshwater; and
- b) the extent to which it is feasible and dependable that any more than minor adverse effect on the health of people and communities as affected by their secondary contact with freshwater resulting from the discharge would be avoided.

3. This policy applies to the following discharges (including a diffuse discharge by any person or animal):

- a) a new discharge or
- b) a change or increase in any discharge – of any contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.

4. Paragraph 1 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011.

5. Paragraph 2 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2014 takes effect]

Regional Air Quality Management Plan

4.1 Objectives

- 4.1.2 Discharges to air in the Region are managed in a way, or at a rate which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while ensuring that adverse effects, including any adverse effects on:
- local ambient air quality;
 - human health;
 - amenity values;
 - resources or values of significance to tangata whenua;
 - the quality of ecosystems, water, and soil; and
 - the global atmosphere;
- are avoided, remedied or mitigated.

4.2 Policies

General ambient air quality management

- 4.2.6 To ensure that any measures adopted to avoid, remedy or mitigate the effects of discharges of contaminants to air, take account of the sensitivity of alternative receiving environments (e.g., water or soil).
- 4.2.10 To adopt the following approach when placing conditions on air discharge permits:
- (1) to set emission limits on a discharge, where appropriate, in order to minimise its effects on ambient air quality and the surrounding environment;
 - (2) to require, where appropriate, that the best practicable option (BPO) be adopted to prevent or minimise the adverse effects arising from discharges;
 - (3) to minimise the emission of any of the hazardous air contaminants identified in Appendix 1;
 - (4) to require, where appropriate, an operations manual and contingency plans relating to discharges;
 - (5) to require, where relevant, adherence to particular guidelines or codes of practice; and
 - (6) to require appropriate effects-based monitoring, where appropriate, which may consider a wider range of air contaminants and their effects than those listed in Appendix 2.
- 4.2.14 To avoid, remedy or mitigate any adverse effects, (including on human health or amenity values) which arise as a result of the frequency, intensity, duration, offensiveness, time and location of the discharge to air of odorous contaminants.

Appendix 8: Report for GWRC prepared by Dr Olivier Ausseil

IN THE MATTER of the Resource
Management Act 1991 (the Act)

AND

IN THE MATTER IN THE MATTER of
application for Resource Consent by South
Wairarapa District Council for discharge of
treated wastewater from the
Martinborough Wastewater Treatment
Plant to the Ruamahanga River.

REPORT OF OLIVIER AUSSEIL

CONSULTING WATER QUALITY SCIENTIST

1. INTRODUCTION

Qualifications and experience

- 1.1 My name is Olivier Michel Nicolas Ausseil.
- 1.2 I am a Principal Scientist – Water Quality at Aquanet Consulting Ltd.
- 1.3 I hold a PhD of Environmental Biosciences, Chemistry and Health from the University of Provence, France. I also hold a Master of Science Degree of Agronomical Engineering from the National Higher Agronomical School of Montpellier, France, and a DEA (equivalent Masters Degree) in Freshwater Environmental Sciences from the University of Montpellier II, France.
- 1.4 I have over 13 years experience in New Zealand as a scientist working in local government and as a private consultant working for regional councils and local authorities, central government and government agencies, and the private sector. Prior to that, I worked as a Research Engineer between 1998 and 2001 for the French Atomic Energy Commissariat during my PhD studies.
- 1.5 Prior to forming Aquanet Consulting Ltd, I was employed by the Regional Planning Group of Horizons Regional Council ("Horizons") from July 2002 to June 2007, where I held the positions of Project Scientist, Environmental Scientist- Water Quality, and Senior Scientist - Water Quality.

- 1.6** My responsibilities at Horizons included leading the water quality and aquatic biodiversity monitoring and research programme and providing technical support to policy development. I was the primary author of three technical reports underpinning the river values framework and water quality standards in the notified version of the Proposed One Plan for the Region.
- 1.7** Since July 2007, I have been Principal Scientist at Aquanet Consulting Limited. In this position, I have been engaged by 17 different regional, district or city councils, the Ministry for the Environment, the Department of Conservation, Fish and Game New Zealand, and a number of private companies to provide a variety of technical and scientific services in relation to water quality and aquatic ecology.
- 1.8** I am a certified Commissioner under the Ministry for the Environment "Making good decisions" programme. I was a Hearing Commissioner appointed by Horizons to hear New Zealand Defence Force's consent applications to discharge treated wastewater from the Waiouru wastewater treatment plant to the Waitangi Stream, in June 2011 and February 2012.
- 1.9** I have worked as a technical advisor on behalf of the consenting authority, the applicant and/or submitters on well over 120 resource consent applications, compliance assessments and/or prosecution cases for a wide range of activities. In July 2010, I ran a training workshop for Horizons staff on the technical assessment of resource consent applications for discharges to water.
- 1.10** My work routinely involves providing assessment of effects on water quality and/or aquatic ecology, recommending or assessing compliance with, resource consent conditions, and designing or implementing water quality/aquatic ecology monitoring programmes. I have designed and implemented a large number of monitoring programmes both at the scale of a specific activity and at a wider catchment or regional scale. As part of my previous role at Horizons Regional Council I redesigned the state of the environment water quality monitoring programme. I also undertook a detailed review of Environment Southland's water quality monitoring programme in 2010 and of Environment Bay of Plenty's in 2012.
- 1.11** I have authored or co-authored a number of catchment- or region-wide water quality reports focussing largely on in-stream nutrient concentrations, in-stream nutrient loads and catchment nutrient yields, and their effects on periphyton growth for Greater Wellington Regional Council (whole region, including the Ruamahanga catchment), Hawke's Bay Regional Council, and for Environment Canterbury.

- 1.12** I have authored or co-authored a number of reports making recommendations for water quality limits for regional plan change processes, for Horizons Regional Council, Hawke's Bay Regional Council and Greater Wellington Regional Council.
- 1.13** With regards to municipal wastewater treatment plants I have worked as a technical advisor on behalf of consenting authorities, applicants and submitters on over 35 resource consent applications for discharges of treated domestic wastewater to land and/or water, from both medium-sized towns and small communities. I recently prepared technical reports assessing the effects on water quality and aquatic ecology of proposed discharges from:
- (a) Shannon WWTP (on behalf of Horowhenua District Council),
 - (b) Feilding WWTP (on behalf of Manawatu District Council),
 - (c) Bulls WWTP (on behalf of Rangitikei District Council)
 - (d) Pahiatua (on behalf of Tararua District Council).
- 1.14** I am currently preparing similar assessments for the following WWTPs:
- (a) Woodville and Eketahuna on behalf of Tararua District Council,
 - (b) Levin on behalf of Horowhenua District Council
 - (c) Otane on behalf of Central Hawke's Bay District Council.
 - (d) National Park, Ohakune and Raetihi, on behalf of Ruapehu District Council.
- 1.15** I am also the water quality expert retained by Hawke's Bay Regional Council for the Waipawa and Waipukurau WWTPs consent review process.
- 1.16** In the Wairarapa region, I was involved in the council-level hearing and Environment Court appeals for the Masterton and the Carterton WWTPs, and, in addition to the Martinborough WWTP, I am also the water quality expert retained by GWRC for the Featherston and Greytown WWTPs consent applications.
- 1.17** A number of the above cases included dual land/water discharge systems not dissimilar to the discharge regime proposed by SWDC for stages 1B, 2A and 2B. I recently developed and applied a proprietary computer model to provide detailed assessment of the effects of proposed dual land/water discharge regimes on water quality.

- 1.18 I am the facilitator of the Palmerston North Wastewater Monitoring Group, a stakeholder group for the Palmerston North City Council's wastewater treatment plant, established as a requirement of resource consent conditions.
- 1.19 I am a member of the New Zealand Freshwater Sciences Society.
- 1.20 I confirm that I have read the 'Code of Conduct for expert witnesses' contained in the Environment Court Practice Note 2011. My evidence has been prepared in compliance with that Code. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

2. Background

- 2.1 My involvement started in 2012, and I have been involved in the Martinborough WWTP re-consenting process on behalf of GWRC since early 2012. During this time, I undertook reviews of successive versions of the consent application and supporting technical reports. Along the process I have also had detailed technical discussions with the different water quality and land experts involved on behalf of SWDC. In particular I reviewed, and provided comments on, several successive versions of the report prepared by EAM (Appendix 9 of the Application), and I also discussed with Mr Forbes the design of the low flow study he undertook (reported in Appendix 11 of the Application).
- 2.2 The application by SWDC is for a term of 35 years, and includes four successive stages, each involving different regimes of discharge to land and/or to water. My understanding of these stages as applied for is summarised below:

Stage	Timing			Discharge regime		Description
	Start	End	Duration	To water	To land	
1A	Grant of consent	1 Nov. 2017	<18 months	100% Continuous discharge as per current regime	0%	Plant Optimisation and minor capital works
1B	1 Nov. 2017	31 Dec. 2030	c. 13 years	76% No discharge under half median flow	24%	Discharge of treated effluent to "MWWTP Adjacent" block during low-flow conditions
2A	31 Dec. 2030	31 Dec. 2035	c. 5 years	42% No discharge under half median flow	58%	Discharge of treated effluent to Pain Farm (Stage 2A) <u>without</u> deferred storage
2B	31 Dec. 2035	Consent expiry	c. 15 years	c. 0% No discharge below FRE3 Discharge above FRE3 only when storage is full	c. 100%	Discharge of treated effluent to Pain Farm (Stage 2B) <u>with</u> deferred storage

2.3 The direct receiving environment for the proposed discharge to water component of the different stages is the Ruamahanga River. Figure 1 in the AEE (Part 1) shows the location of the discharge point. I am familiar with the site and the discharge location, having visited the MWWTP in June 2012. I am also generally familiar with the Ruamahanga River and its water quality /ecology, having been involved in the Masterton WWTP resource consent process, and having written several region-wide water quality technical report for GWRC, which contain specific sections on the Ruamahanga River catchment.

2.4 The Ruamahanga River flows into Lake Onoke, and ultimately into the Pacific Ocean at Palliser Bay. These constitute the secondary, albeit distant, receiving environments for the MWWTP discharge to water.

2.5 A Zone of Reasonable Mixing (ZRM) is not specifically identified in the existing resource consent, or in the set of proposed consent conditions (Part One C of the Application). I comment further on these aspects in Section 5 of this evidence.

3. Scope of this evidence

3.1 The scope of this evidence is to provide a technical review of the resource consent application (including various technical reports provided as part of the application), in relation to potential and actual effects on water quality and aquatic ecology. In particular:

- (a) Assess the effects of the current discharge regime on water quality and aquatic ecology of the receiving surface water environment, the Ruamahanga River;
- (b) Comment on mixing characteristics and aspects relative to the Zone of Reasonable Mixing (ZRM);
- (c) Assess the potential and likely actual effects of the future discharge regimes at various stages of the proposal;
- (d) The assessment above includes in each case an assessment against provisions of:
 - i. S107(1)(a) to (g) of the Resource management Act (1991);
 - ii. The RPS and Regional Plan provisions relative to water quality, including in particular an assessment of effects on the receiving environment's recreational and ecological values;
- (e) Comments on the proposed resource consent conditions.

3.2 In preparing this evidence, I have reviewed the following documents and reports:

- (a) "Martinborough Wastewater Treatment Plant. Proposed operation, upgrade and maintenance. Application for resource consents, activity description and assessment of Environmental Effects" prepared by Geange consulting, and dated 7 April 2014;
- (b) The water quality and ecological assessment report prepared by EAM (Appendix 9 of the application);
- (c) A low flow assessment of ecological effects report prepared by Forbes Ecology in July 2013 (Appendix 11 of the Application);
- (d) A further information letter from Forbes Ecology, dated 20 November 2012 (also provided as part of Appendix 11 of the Application);
- (e) Mass balance calculations provided by AWT and Forbes Ecology (Appendix 12 of the Application);
- (f) The annual instream biological survey reports prepared by Brian T. Coffey and Associates Limited, for 2006 to 2014.

4. Receiving environments

- 4.1** As indicated above, the direct receiving environment for the discharge to water components of the different proposed stages is the Ruamahanga River.
- 4.2** The Ruamahanga River is identified in Appendix 5 of the Regional Freshwater Plan as a water body with regionally significant Amenity and Recreational Values, in which water quality is to be managed for contact recreation purposes. It is also my understanding that Policy 5.2.6 sets that all surface water bodies in the region are to be managed for aquatic ecosystem purposes. The Ruamahanga River is not identified in Appendix 4 as a water body with important trout habitat, although Appendix 5 cites angling "as" one of the recreational values associated with the mid and lower Ruamahanga River. A full description of the regional planning framework is provided in Ms Arnesen's report.
- 4.3** In 2012, I wrote a technical report on behalf of GWRC, on the nutrient status of streams and rivers throughout the Wellington Region, based on the council's State of the Environment monitoring data¹. This report includes a section specifically on the Ruamahanga River. Key conclusions of this report include:

¹ Ausseil O. (2012) Nutrient Status of rivers and streams in the Wellington Region. An analysis of State of the Environment monitoring data. June 2011. *Report prepared for Greater Wellington Regional Council by Aquanet Consulting Ltd.*

- (a) Nutrient concentrations in the Ruamahanga River increase rapidly from very low concentrations at the McLays Site² (0.003 mg/L DRP and 0.030 mg/L DIN) to concentrations just below the ANZECC Guidelines for lowland rivers at the Te Ore Ore Site (0.008 mg/L DRP and 0.410 mg/L SIN). SIN concentrations remain essentially stable in the remainder of the Ruamahanga River down to the Pukio site. DRP concentrations increase significantly between Te Ore Ore and the Gladstone site (to 0.025 mg/L), presumably at least partly as a result of the inputs from the Masterton WWTP, before decreasing again at the Pukio site (0.017 mg/L at that site)³.
- (b) Nutrient concentration ratios are indicative of co-limited conditions at McLays, then shift to strongly P-limited at Te Ore Ore, At Gladstone, inputs of phosphorus remove the P limitation existing at Te Ore Ore, and it is doubtful whether nutrients exert any significant limitation to periphyton growth at that site. Pukio displays a pattern of P limited conditions (at higher river flows) shifting to co-limited and then N-limited conditions as river flow reduce.
- (c) The periphyton biomass guideline for the protection of Aesthetics/Recreation values and trout habitat and angling values⁴ never being exceeded at any of the Ruamahanga River State of the Environment monitoring sites during the 2004-2009 monitoring period. A moderate or possible issue associated with periphyton cover was identified at the Ruamahanga at Pukio site, due to infrequent exceedance of the filamentous algae cover guideline for Aesthetics/recreation⁵.
- (d) The Ruamahanga River itself appears to be reasonably robust to the effects of nutrient enrichment, i.e. only very moderate periphyton issues were identified at the most downstream site in spite of quite elevated dissolved nutrient concentrations, particularly at Te Ore Ore. The high frequency of freshes that regularly “reset” periphyton biomass to low levels is probably the key factor limiting periphyton growth in this river.

4.4 The EAM report (Appendix 9 to the Application) makes use of the nutrient concentration thresholds I recommended in my 2012 report to calculate what assimilative capacity may be available in the river. These calculations are in section 4.3.3/table13 of the main AEE

² The Ruamahanga at McLays site is located at the Forest Park boundary and is reflective of natural or near-natural conditions. Moving downstream, monitoring sites are found in the following order: Te Ore Ore, Gladstone and Pukio. The Pukio site is located c. 8-10 km downstream of the MWWTP discharge.

³ Note that this describes the historical situation based on 2004 to 2009 data. I have not re-analysed data since the implementation of the Masterton WWTP upgrades.

⁴ A periphyton biomass of 120 mg chlorophyll a/m², from the New Zealand Periphyton Guidelines (Biggs, 2000).

⁵ An algal cover by long (>2cm) filamentous algae of 30% of the visible stream bed.

document part 2 of the Application). These calculations are of course predicated on the instream threshold numbers used, i.e. whether there is assimilative capacity available in the river or not largely depends on the in-stream threshold/limits assumed in the exercise. It is important to note that:

- (a) While my report was being finalised, the form of GWRC's regional plan process changed from a 'traditional' single stage plan process to a two-stage 'collaborative' process. It is my understanding that the two-stage process will involve firstly a regional plan which will include river and stream objectives appropriate at a regional scale and secondly collaborative development of catchment or 'whaitua' based river and stream objectives and resource use limits. This means that some of the in-stream 'limits' identified in my technical reports may be used to inform the first stage, i.e. the definition of regional scale river and stream objectives, while some may be considered during the collaborative 'whaitua' second stage.
- (b) It is my understanding that these processes are ongoing, and therefore that the in-stream nutrient thresholds identified in my technical report do not, at this stage have any status from a regional planning perspective. The assimilative capacity analysis presented in the EAM report and the AEE should therefore be taken within this context.

4.5 It is my understanding that monitoring data indicates that Lake Onoke generally presents low water clarity and high nutrient levels, and occasional algal blooms (as described in Ms Arnesen's report). Lake Onoke is in my view too distant from the MWWTP discharge, and there are too many other sources of nutrients entering the lake, to be able to reliably comment on any direct effects of the MWWTP discharge on Lake Onoke. However, the loads of nutrients entering the Lake from the Ruamahanga River and other tributaries (and therefore the contribution from the MWWTP to these loads) is of ecological relevance to Lake Onoke.

5. Mixing, and Zone of Reasonable Mixing

Mixing and dilution

5.1 An assessment of the degree and extent of mixing of the discharge with waters of the Ruamahanga River was undertaken by Mr Adam Forbes of Forbes Ecology (2013), using electrical conductivity and concentrations of dissolved reactive phosphorus (DRP) as tracers. The methodology used is in my view adequate and the survey provides a useful snapshot of mixing characteristics under low river flow conditions.

- 5.2** I note however, that the use of a dye (such as fluoresceine or rhodamine) would have assisted in providing immediate cues as to the location and spread of the discharge plume (as opposed to an *a posteriori* analysis using laboratory results). This note is particularly relevant in relation to the conclusion reached by Mr Forbes that the water quality sampling undertaken during that survey might have missed the discharge plume and thus may underestimate concentrations of wastewater-borne contaminants in the Ruamahanga River. The use of a dye could have assisted in determining an adequate low flow sampling location.
- 5.3** Mr Forbes makes the suggestion that data collected to date may have been collected outside the more concentrated part of the plume, and therefore may underestimate the concentrations of treated wastewater contaminants within the Ruamahanga River. This is noted and should be considered when determining the exact location of any future monitoring sites.
- 5.4** The key conclusion reached by Forbes is that the discharge results in a concentrated, relatively poorly mixed plume area which extended < 4m laterally across the river from the true left bank. The plume appeared to extend to, and possibly beyond 370m downstream of the discharge. Periphyton growth provided indications that some of the discharge, albeit in a very diluted form, is likely to reach the entire width of the river by 90-130m downstream of the discharge.
- 5.5** The Forbes study was undertaken under very low flow conditions, which I expect represent a worst-case scenario in terms of discharge mixing and resulting contaminant concentrations and biological effects. I have no information on the extent and degree of the discharge under higher flow conditions. I would however expect that dilution and mixing of the discharge improve as flow in the river increases. This qualitative conclusion is relevant to the assessment of effects for Stages 1B and 2A, during which discharges below half median flow (i.e. excluding discharges at low river flows) will not occur.
- 5.6** I have reviewed the 8 in-stream biological surveys undertaken by Brian T. Coffey and Associates Limited during the 2006-2014 period. The conclusions of these reports remain very consistent during the monitoring period, and indicate that of the three monitoring sites located downstream of the discharge, the first one (D1), located 200m downstream of the discharge point is considered by the author to be "within the mixing zone" and that the other two monitoring sites, located 500m and 1,000 m downstream are considered by the author to be "downstream of the mixing zone".

Zone of Reasonable mixing

5.7 I note that condition 15 of the current resource consent (WAR970079 [30753]) sets receiving water quality standards to be met after reasonable mixing and that

““Reasonable mixing” will be determined by the consent holder and agreed upon by the Manager, Planning and Resources, Wellington Regional Council, and will be defined by distance downstream of the outfall”.

I have asked both Ms Arnesen and Mr Geange, and they informed me that there does not seem to be any record of this aspect (relative to the setting of the ZRM) being resolved.

5.8 The Application itself does not identify a ZRM for the different stages of the discharge, although it proposes two conditions relative to a near-zone river health study to be undertaken within 3 months of granting the consent and the production of a report including confirmation of the suitable ZRM (conditions 8 and 9, Schedule 2).

5.9 As indicated later in this evidence, whether the existing discharge (and therefore proposed stage 1A discharge) meets various requirements, including those of S107(1)(g) depends to a large extent on where this assessment is undertaken, i.e. whether the different monitoring points are considered within or beyond the ZRM.

5.10 I have read Freshwater Plan Policy 5.2.11 relative to ZRM. It lists the following matters that must be given regard to:

- (a) the purpose for which the receiving water is being managed, and any
- (b) effects of the discharge on that management purpose; and
- (c) any tangata whenua values that may be affected; and
- (d) the volume of water or concentration of contaminants being discharged, and the area of receiving water that could potentially be affected; and
- (e) the physical, hydraulic and hydrological characteristics of the receiving water.

An explanation follows Policy 5.2.11:

*“**Explanation.** Both s107 and the Third Schedule of the Act direct that the effects of discharges are to be considered after reasonable mixing of the contaminants with the receiving water. The size of the zone allowed for reasonable mixing depends on the effects that non-compliance within the zone will have on the management of the receiving water as directed by Policies 5.2.1 to 5.2.6 of the Plan and by s 107 of the Act. For example, the size of a zone allowed for reasonable mixing of ammonia may depend on whether the zone causes a block to fish passage (because of its toxicity and potential for significant adverse effects on aquatic life). The size of the zone allowed*

for reasonable mixing of nutrients may depend on whether algal growths will attach to stones on the bed downstream of the discharge (undesirable biological growths are not allowed in waters managed for contact recreation, fish spawning, water supply, or aquatic ecosystems)."

5.11 It is beyond the scope of my evidence to determine or recommend the extent of a ZRM, as planning, and possibly legal considerations apply to the exercise. However, a number of technical aspects are relevant, and these are listed below to assist decision making:

- (a) In my experience, the zone of reasonable mixing is often determined as a fixed distance (e.g. 200m), a distance calculated based on the width of the river (e.g. 5 to 7 times the river width) or the distance at which the discharge reaches the full width of the river⁶;
- (b) The width of the wetted channel at the point of discharge is 50-70m (as assessed from aerial photographs); 5-7 times the river width would represent approximately 250 to 490m;
- (c) Forbes (2013) concluded that periphyton growth indicated that some of the discharge, albeit in a very diluted form, is likely to reach the entire width of the river by 90-130m downstream of the discharge. However, it is my understanding that the majority of the effluent appears to persist in a more concentrated plume along the True Left (TL) bank of the river at least 370m downstream of the outfall (under low flows conditions);
- (d) The extent of the zone of reasonable mixing may also be determined as the zone within which the discharge frustrates one or several of the management purposes the receiving water body is managed for. My assessment concludes that significant adverse effects on aquatic life currently occur at 200m, but not at 500m. The zone within which significant adverse effects occur is likely to extend longitudinally to some, unknown, distance between 200m and 500m downstream of the discharge point. The lateral extent of that zone is not known exactly, although work undertaken by Mr Forbes and Mr Coffey indicates that it extends only a short

⁶ For example, the Hawke's Bay Regional Plan Footnote 17 reads:

For the purposes of this Regional Plan, "reasonable mixing in surface water" of contaminants in surface water will generally be considered to have occurred as follows:

a) In relation to flowing surface water bodies, at whichever of the following is the least:

(i) a distance 200 metres downstream of the point of discharge

(ii) a distance equal to seven times the bed width of the surface water body, but which shall be not less than 50 metres, or

(iii) the distance downstream at which mixing of contaminants has occurred across the full width of the surface water body, but which shall not be less than 50 metres.

b) In relation to lakes, at a distance 15 metres from the point of discharge.

Alternatively, for activities that are subject to resource consents, "reasonable mixing" may be determined on a case by case basis through the resource consent process.

distance (c. 4m) from the TL bank until at least 370m from the discharge point. This situation is likely to remain for the duration of proposed stage 1A.

- (e) Under the current situation, a condition of no significant adverse effects on aquatic life at 200m would unavoidably place the discharge in a non-compliance situation, and this for the duration of Stage 1A. By contrast, a similar condition applying at 500m would not.
- (f) It is, in my opinion, unlikely that the ammonia component of the discharge would constitute a barrier to fish migration. Although often mentioned, such as for example in the explanation of Policy 5.2.11 (refer to paragraph 5.10 above), the role of ammonia in creating a barrier (or a "block") to fish migration remains largely unproven, as native fish species do not seem to consistently avoid ammonia⁷. This also suggests that active avoidance behaviours of fish should not be relied upon to reduce the potentially toxic effects of transiently elevated concentrations of ammonia close to wastewater discharges⁸.
- (g) Other water quality determinants, such as water clarity, change in water clarity and *E. coli* appear to currently meet the requirements of S107(1) and do not, in my opinion frustrate the management objectives set out in the Regional Freshwater Plan at a distance of 250m downstream of the discharge.
- (h) With regards to future stages, the mixing characteristics of the MWWTP discharge with river water at higher river flows (i.e. above half median flow) are unknown, apart from the qualitative conclusion I draw in paragraph 5.5. With regards to effects on water quality and aquatic life, my conclusion is that the scale and spatial extent of effects will reduce compared with their current level once Stage 1B is implemented, followed by further reductions as stages 2A and 2B are in turn implemented. The spatial extent of any "zone of non-compliance" as regards significant effects on aquatic life will similarly reduce over time. I have a high degree of confidence that there will be no significant adverse effects on aquatic life at 200m downstream of the discharge once Stage 2B is implemented (i.e. that the "Zone of non compliance" will be reduced to 200m or less), and it appears likely that it will also be the case during stage 2A. There is however a higher level of uncertainty on whether it is also going to be the case during stage 1B, and in my opinion, monitoring is warranted to address that uncertainty.

⁷Richardson, J., E. K. Williams and C. W. Hickey (2001). "Avoidance behaviour of freshwater fish and shrimp exposed to ammonia and low dissolved oxygen separately and in combination." *New Zealand Journal of Marine and Freshwater Research* 35: 625-633

⁸ Uytendaal, A and Ausseil O. Tukituki catchment. Recommended water quality limits and targets for the Tukituki Plan Change 6. February 2013. ISSN Print 1179 8513. ISSN On Line 2230 4894. EMT 13/04. HBRC plan No 4463

6. Current discharge (and stage 1A)

- 6.1** My understanding is that Stage 1A upgrades are primarily maintenance and treatment process upgrades that will only have a relatively minor effect on the quality and quantity of the discharge to the Ruamahanga River. I therefore expect the effects on water quality and aquatic ecology during Stage 1A to be essentially the same as they are currently. The following section examines the effects of the current discharge, primarily based on existing monitoring data. The conclusions I draw in relation to the current discharge are therefore equally applicable to Stage 1A.

Assessment against provisions of S107(1) currently and during Stage 1A

- 6.2** This section examines the compliance of the discharge with S107(1) standards, specifically clauses 107(1) (c), (d), (f) and (g). Clause 107(1)(e) is not covered in this report as it relates to odour, which is not a water quality issue.
- 6.3** In his response dated 20 November 2012, Mr Forbes provided an assessment of the effects of the discharge against S107 (1) provisions. I have reviewed his assessment as well as the underlying information and data, and generally concur with his conclusions, as follows.
- 6.4** S107(1)(c) (the production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials). Mr Forbes notes that no analysis was provided. Similarly, I am not aware of any formal records of the presence/ absence of S107(1)(c) narrative standards downstream of the MWWTP discharge, in spite of this standard being included in condition 15 of the current consent. Based on my experience of other WWTPs, it seems very unlikely that the MWWTP discharge would result in a breach of S107(1)(c). However, should a similar condition be imposed on any future consent, then I recommend that a record of the presence/absence of conspicuous oil or grease films, etc. be made during sampling. This would be a very simple matter to address, such as adding a “tick box” on the field sampling sheets to ensure the formal recording of a simple visual observation.
- 6.5** S107(1)(d) (conspicuous change in water clarity). Water visual clarity is routinely measured in rivers as the horizontal sighting range of a black disc (black disc method). I am not aware of any black disc measurements undertaken as part of the monthly water quality monitoring undertaken by SWDC as part of the consent compliance monitoring. The Forbes Ecology 2013 study found that the discharge had no detrimental effect on visual water clarity (as measured by black disc sighting range measurement). The monitoring undertaken by Forbes covered five summer months, and included extreme

low flows in the river, i.e. close to worst-case situation with regard to potential effects on water clarity.

- 6.6** S107(1)(d) (conspicuous change in colour). The Forbes study concluded that there were no measurable effects on water turbidity or suspended solid concentrations. This finding is confirmed by my examination of water quality data provided by SWDC for the period July 2010 to December 2013, which shows no significant changes between upstream and any of the downstream sites for turbidity or total suspended solids. Typically, effects on colour from oxidation pond discharges are associated with suspended algae or bacteria material. This means that any effects on water colour from oxidation pond discharges is generally associated with changes in suspended solid concentrations and visual water clarity. In fact, apart from quite specific circumstances, significant adverse effects on visual clarity are expected to occur before significant adverse effects on water colour or light penetration occur⁹. On this basis, although colour has not been specifically monitored, I am satisfied that the discharge does not currently cause any significant changes in water colour after reasonable mixing.
- 6.7** 107(1)(f) (the rendering of fresh water unsuitable for consumption by farm animals). A number of water quality determinands are relevant to the suitability of water for farm animal consumption, including microbiological water quality, toxicants such as metals etc. The AEE indicates that the treated wastewater is UV-treated prior to its discharge to the Ruamahanga River. Mr Forbes 20 November 2012 letter indicates that the *E. coli* levels in the Ruamahanga River around the MWWTP were (with one exception) below the MfE 'Alert/Amber' range, and that analysis of upstream/downstream data did not reveal any significant differences between upstream and downstream of the discharge. Other determinands, such as heavy metals have not been monitored in the discharge, but based on my experience of similar domestic wastewater plant discharge, I do not expect heavy metals to be present in the discharge at levels at which they may cause a significant environmental concern. On that basis, I am satisfied that the discharge is likely to meet 107(1)(f) requirements, within the limits of available data; for the parameters monitored.
- 6.8** S107(g) (significant adverse effects on aquatic life). I have reviewed the ecological surveys undertaken annually by Brian T. Coffey and Associates Limited between 2006 and 2012 upstream and at three distances (200m, 500m and 1000m) downstream of the discharge point. Results indicate that the discharge causes a significant adverse effect on most indices of macroinvertebrate community at the 200m downstream site, compared

⁹ MfE (1994). Water Quality Guidelines No2: Guidelines for the Management of Water Colour and Clarity, Published by the Ministry for the Environment, Wellington, New Zealand

with upstream, with a return to close to upstream conditions at the 500m and 1000m downstream sites. This conclusion is consistent with Mr Forbes's assessment (20 November response). I note that the Coffey reports clearly indicate that the first downstream site (D1, 200m) is considered to be within the mixing zone by the author, with the 500m and 100m sites considered to be the actual downstream sites.

- 6.9** No information was provided in the application on which to base a robust assessment of direct effects on fish, although I note that the Forbes Ecology report (2013) mentions the presence of a fish kill (p33 of that report). The report indicates that investigations on DO levels took place and were going to be reported separately, although I have not seen that information.
- 6.10** Ammonia can be toxic to aquatic life in sufficiently high concentrations. The toxicity of ammonia in freshwater depends on water pH and temperature. The higher the pH and temperature, the more toxic the ammonia. The graph presented on page 85 of the AEE shows that total ammonia-N concentrations measured downstream of the discharge were always below the ANZECC guidelines trigger values for 95% protection species. In my opinion the 95th protection species (the "default" protection species in the ANZECC Guidelines) is appropriate for this reach of the Ruamahanga River, with higher protection levels generally reserved for pristine/high conservation value waterways and lower protection levels assigned to modified/degraded waterways. On the basis of the available data, I am satisfied that the risk of toxic effects to aquatic life from the ammonia content of the discharge is low. I note however the comments in the Forbes (2013) report that sampling to date may have missed the most concentrated plume and thus underestimated downstream concentrations.
- 6.11** To my knowledge, only day-time 'Spot' measurements of Dissolved Oxygen (DO) DO are available. These do not seem to indicate any significant differences between upstream and the monitoring point located 250m downstream. However, minimum DO levels generally occur during late night-early morning, which means that the available data do not allow a robust assessment against any DO minima, such as for example, the 80% saturation minimum defined in the Regional Freshwater Plan Appendix 8 for waters managed for aquatic ecosystem or fishery purpose. In his 20 November 2012 response, Mr Forbes indicates that is unlikely that the discharge will have anything but negligible effects with regards to % DO saturation levels in the Ruamahanga River. I would note that any effects on DO from the MWWTP discharge would be associated with the degradation of deposited or suspended organic matter from the discharge and/or the respiration from the periphyton biomass, and therefore I would expect that any effects on

DO concentration or saturation would be limited to the area where these effects occur, i.e. a will become no more than minor at 500m.

Effects on nutrients and periphyton growth

- 6.12** Periphyton is the green or brown slime or filaments coating stones, wood, or any other stable surfaces in streams and rivers. It is formed of assemblages of algae, cyanobacteria, bacteria and fungi. Algae, which form part of the periphyton assemblages, are the main primary producers in most stony-bottomed streams, and, as such, are a normal and essential part of the ecosystem. However, in certain situations periphyton can proliferate and have detrimental effects on a number of values associated with streams and rivers. A number of factors control and affect the growth of periphyton. These include the hydrological regime (in particular the frequency of freshes or floods), water temperature, sunlight and, of particular relevance to this report, available nutrients.
- 6.13** Of these controlling factors, the MWWTP discharge only influences the concentrations of available nutrients in the river, whilst river flow, water temperature and sunlight/shading appear similar upstream and downstream of the discharge- and thus any effects of the discharge on periphyton growth will be as a result of nutrient inputs. The effects of nutrient inputs from the MWWTP may be expressed as increased periphyton growth in the river, but also potentially as a cumulative contributor to planktonic algae blooms in Lake Onoke.
- 6.14** Periphyton growth in the Ruamahanga River in the vicinity of the MWWTP discharge as reported in the Coffey reports appears to follow a similar pattern to macroinvertebrate communities during the 2006-2014 period, with localised significant changes in periphyton cover (generally increases in filamentous algae and/or cyanobacteria cover) at the 200m site and a return to close to upstream conditions at the 500m and the 1,000m downstream sites. The monitoring and reporting methodology (by abundance class) used in the Coffey reports unfortunately does not allow a direct comparison with national periphyton cover guidelines (expressed as % cover by long filamentous and/or thick mat forming algae).
- 6.15** The low flow study carried out by Mr Forbes (2013) showed:
- (a) An increase in periphyton cover and a decrease in “clean” substrate at 50-150 m downstream of the discharge, with some return towards upstream conditions at 250m downstream;

- (b) The national guidelines for periphyton cover¹⁰ were met at all sites on all 5 monitoring occasions in spite of the above mentioned increase (apart from April 2013, when the upstream and 50 m downstream sites exceeded the guideline for coarse long filamentous algae). In other words, an increase occurred but not to a point where it breached guideline levels for the protection of Aesthetics/recreation or trout habitat or angling values.
- (c) Periphyton biomass showed a somewhat similar pattern, with a significant increase in periphyton biomass (as measured by the aeral density of the green pigment Chlorophyll *a* in mg/m²) at sites 50m and 150m downstream of the discharge point (refer to page 22 of the Forbes Ecology report). The average biomass measured at the 50 and 150 m downstream site exceeded the national guideline for the protection of Aesthetics/recreation or trout habitat or angling values (120 mg/m²). Unfortunately, chlorophyll *a* was not measured further downstream, thus, whether a measure of recovery occurred at the 250 m site cannot be confirmed (although it appears likely given the periphyton cover patterns).

6.16 If this increase in chlorophyll *a* was indeed fully associated with periphyton growth, then I would consider this to be at the same time statistically significant and ecologically meaningful. Generally, benthic Chlorophyll *a* is used as a measure of periphyton biomass. However, in this situation, I note that significant deposition of fine organic material, likely originating from the discharge was noted in the reach 50-90m downstream of the discharge. It is likely that the fine sediment in question is particulate organic matter from the oxidation ponds, which is generally mostly composed of algae, cyanobacteria and bacteria cells. It is possible that the chlorophyll *a* contained the deposited algae and cyanobacteria material might have contributed to the high benthic chlorophyll *a* measurements downstream of the discharge. Regardless of the exact cause, in my opinion, it is likely that the increase in periphyton growth and the deposition of fine organic matter on the river bed would have contributed to the significant decreases in macroinvertebrate community health observed at 200 m downstream of the discharge.

¹⁰ 30% cover by long (>2cm) filamentous algae or 60% cover by thick (0.3cm) diatom or cyanobacteria mats for the protection of Aesthetics/recreation and trout habitat and angling values, from the New Zealand Periphyton Guidelines (Biggs, 2000).

Effects on recreational values

- 6.17** The recreational values of the river, including contact recreation, angling, canoeing/kayaking (as identified in the Regional Freshwater Plan, Appendix 5) and aesthetic values may be compromised by point source discharges via their effects on:
- (a) Microbiological water quality/ health risk to recreational users of the water; and/or
 - (b) Visual clarity and/or colour (including for aesthetic reasons, but also for trout feeding and angling);
 - (c) Deposited sediments, as excessive deposited sediment can affect visual aspects/aesthetics values, but also the habitat of fish species gathered recreationally (e.g. trout, eels);
 - (d) Biological/periphyton growths, as excessive periphyton growth can affect aesthetic/amenity values, but also angling;
 - (e) Species gathered recreationally (e.g. trout, eels), either directly by, e.g. toxic effects, or indirectly by effects on their food source (macroinvertebrates).
- 6.18** As indicated above, the discharge does not appear to result in more than minor effects on microbiological water quality, or on water clarity.
- 6.19** Forbes (2013) records the presence of significant deposition of fine sediment 50-90 m downstream of the discharge, with a return to upstream conditions by 150-190m downstream of the discharge. Any effects on recreational values associated with deposited sediment therefore appear to be limited to a reach of c. 100m downstream of the discharge and confined to along the true left bank of the river. The Forbes study included extreme low flows in the Ruamahanga River, thus providing a useful indication of a worst-case situation.
- 6.20** Effects on periphyton and macroinvertebrate communities appear to be spatially limited to a reach of river of more than 200m but less than 500m, confined along the true left bank.
- (a) Any effects on aesthetic/amenity and trout angling values are therefore limited to the same spatial extent;
 - (b) Effects on macroinvertebrate communities may affect the quality or quantity of the macroinvertebrates available as a food source for recreational fish species within that zone. However, given the small size of the area within which effects on periphyton and macroinvertebrate communities occur, any flow-on effects on the local populations of recreational fish species is unlikely to be more than minor.

- 6.21** As indicated in paragraph 6.10, I am satisfied that am satisfied that the risk of toxic effects to aquatic life from the ammonia content of the discharge is low.

Lake Onoke

- 6.22** Lake Onoke: Estimates produced by EAM (Appendix 9 of the Application, also reproduced in Table 4 of the AEE) indicate that the MWWTP contributes 2.13 tonnes of DIN (1.29 T/yr for DRP) per year to the Ruamahanga River. This compares with an estimated annual load in the Ruamahanga at Pukio 1,229 T/yr (48.7 T/yr for DRP). Based on these numbers, the discharge contributes c. 0.2% of the DIN load and c. 2.6% of the DRP load measured at Pukio.

Conclusions 107(1) effects

- 6.23** In conclusion, based on available information, my view is that the discharge:
- (a) Meets the requirements of S107(1)(c), (d), (e), and (f) at both 250m and 500m downstream of the discharge point;
 - (b) Does not meet the requirements of S107(1)(g) in a section of river extending from the discharge point to at least 200m downstream of the discharge. The section of river where significant adverse effects are caused by the discharge appears to be confined to an area located along the river's true left bank.
 - (c) The requirements of S107(1)(g) are met at 500m downstream of the discharge point. The exact point at which the effects reduce from significant (at 200m) to not significant (at 500m) is unknown.

Conclusions Regional Freshwater Plan

- 6.24** It is my understanding that the Regional freshwater Plan sets that the Ruamahanga River near the MWWTP discharge is to be managed for Aquatic Ecosystems and Contact Recreation management purposes. Based on available information, my view is that the discharge:
- (a) Does not frustrate or compromise in any more than minor way these management purposes at 500m downstream of the discharge point (and further downstream);
 - (b) Is likely to frustrate some aspects of the Aquatic Ecosystems and Contact Recreation management purposes, but only within a zone extending from the discharge point to some distance between 200m and 500m longitudinally, and a short distance c. 4-10m from the true left bank laterally.

7. Stage 1B

7.1 The discharge regime proposed under Stage 1B is summarised in p24-25 of the AEE. Table 3 of the AEE provides a summary of the proportion of effluent predicted to be discharged to land vs. to the river in each month. My understanding is that key design criteria and predicted outcomes relevant to my assessment are:

- (a) No direct discharges to the river are proposed when the river flow is below half median flow (estimated at 24.93 m³/s at the Ruamahanga at Waihenga Bridge flow monitoring site);
- (b) On any day when effluent is discharged to the river, the rate of discharge is calculated so as to not cause a more than 0.002 mg/L DRP concentration increase in the river after full mixing;
- (c) On average, 24% of the annual effluent volume will be discharged to land (and 76% to the River);
- (d) The predicted proportion of effluent discharged to land vs. the river varies considerably depending on the month: c. 20% of the effluent will be discharged to water in January, and c. 40-57% in November, December, February and March. More than 85% of the effluent is proposed to be discharged to the River during the other months (i.e. May to November).

7.2 The AEE provides graphs of the predicted effects of the discharge on in-river concentrations by month (e.g. Figure 19 for DRP). Although no information was provided relative to the assumption, data or methodology used to produce these outputs, these graphs provide a useful means to assess the degree of reduction in the effects of the discharge predicted to result from the implementation of the successive stages of the proposal.

7.3 Less treated effluent will be discharged to the Ruamahanga River during stage 1B than currently, and there will be no discharge to the river at times when the discharge is at most risk of causing effects on water quality, i.e. periods of low river flows. Qualitatively, it is therefore logical to expect that the effects of the discharge on water quality and aquatic ecology will be less than what they currently are.

Effects on water clarity, microbiological water quality, Do, pH, temp.

7.4 Given the conclusions I have drawn in relation to the current discharge, any effects of the discharge on water clarity, microbiological water quality (*E. coli*), water pH and temperature will be no more than minor.

Effects on nutrients and periphyton growth

- 7.5** As indicated earlier, some effects on periphyton growth have been observed under the current discharge regime at the point 200m downstream of the discharge point, with a return to conditions comparable to upstream at the 500m downstream monitoring site.
- 7.6** Periphyton growth is primarily controlled by river flow, water temperature, sunlight and available nutrients (mostly DIN and DRP). Of these controlling factors, the discharge only influences the concentrations of available nutrients, and river flow, water temperature and sunlight/shading appear similar upstream and downstream of the discharge- and thus any effects of the discharge on periphyton growth will be as a result of nutrient inputs.
- 7.7** Based on my modelling of other dual discharge systems developed along similar concepts, I expect that the relative reduction in the effects of the discharge on the in-river concentrations of various contaminants (e.g. ammonia, DRP, DIN, TSS) to be significantly greater than the proportion of effluent removed from the river (24%). This is due to the preferential removal of the discharge from the river during times of low river flow (i.e. when available dilution is smallest) and maintenance of the discharge during high river flows (i.e. when available dilution is greatest). For example:
- (a) For the Feilding WWTP, approximately 20% of the discharge overall were modelled to be taken out of the river, resulting in (at similar effluent quality) in a 40-60% reduction in the effects of the discharge on in-river nutrient concentrations¹¹;
 - (b) For the Shannon WWTP, approximately 80% of the effluent were modelled to be taken out of the river, resulting in (at similar effluent quality) in a c. 95% reduction in the effects of the discharge on in-river nutrient concentration¹².
- 7.8** Figure 19, 20 and 21 of the AEE indicate that the proposed discharge regime will result in significant reductions in the effects of the discharge on in-river DRP and Total nitrogen (TN¹³) concentrations during the months of November through to March. Typically, these months are also the driest and warmest months of the year, when river flows tend to be

¹¹ Ausseil O. (2014). Feilding WWTP discharge to the Oroua River - Water quality modelling and assessment of effects of the proposed future discharge regime. March 2014. Report prepared for Manawatu District Council by Aquanet Consulting Ltd.

¹² Shannon WWTP discharge to the Manawatu River - Water quality modelling and assessment of effects of the proposed future discharge regime. 31 October 2013. Report prepared for Manawatu District Council by Aquanet Consulting Ltd

¹³ Noting that not all of total nitrogen present in the water column is directly available to plants. It is generally considered that the Dissolved Inorganic Nitrogen (DIN, being the sum of nitrate-, nitrite and total ammonia-nitrogen) fraction is the most directly available to plants. Estimates of TN concentration increases therefore provide an environmentally conservative estimate of the amount of nitrogen directly available to plants (i.e. the DIN fraction)

more stable, i.e. the months during which the physical conditions are more favourable for periphyton growth, i.e. when the risk of excessive periphyton growth is the greatest.

7.9 As visually estimated from figures 19 and 21, the concentrations increases (assumed to be monthly average concentration increases after full mixing) caused by the discharge in the Ruamahanga River during stage 1B are predicted to be:

- (a) c. 0.0002 to 0.0003 mg/L (0.2 to 0.3 ppb) for DRP and c.0.001 to 0.0015 mg/L (1 to 1.5 ppb) for TN during the November to March period; and
- (b) c. 0.0005 (5 ppb) for DRP and c. 0.002 to 0.004 mg/l (2 to 4 ppb) for TN during the April to October period.
- (c) These correspond to significant reductions compared to the predicted current effects, with the greater reductions to be predicted during the summer months (when discharge to land is more readily available). This is consistent with the results of modelling I undertook of similar proposed discharge regimes, as set out in paragraph 7.7.

7.10 The predicted nutrient concentration increases are small compared with concentrations likely to cause a strong stimulation of algal growth, and are unlikely to be detectable against background (i.e. upstream) concentrations using standard laboratory analyses. In my opinion, the effects of the discharge on nutrient concentrations and periphyton growth after full mixing will not be detectable, and can be considered negligible. This conclusion is applicable to the monitoring point 500m downstream of the discharge point, i.e. after reasonable mixing has occurred.

7.11 Within the mixing zone, I expect that the current, moderate, effects the discharge on periphyton growth measured within 200 to 250 m of the discharge point will be considerably reduced. Given this and the findings of the Forbes study, I am of the opinion that the risk of the discharge causing nuisance periphyton growth during stage 1B at 200m or 250m will be relatively low, although it cannot be excluded. If excessive growths do occur, these will likely be infrequent.

Effects of the discharge to land on water quality

7.12 It is my understanding that there may be some uncertainty as regard the amount of nutrients 'lost' from the land discharge area and ultimately finding its way back into the Ruamahanga River. I will not comment on these aspects as these are outside my area of expertise. I will however comment on the potential effects on water quality and river ecology. In my opinion, given the assessment of current effects I have undertaken above,

the uncertainties associated with the amount of nutrient finding its way back to the river from the land discharge area do not necessarily translate into meaningful uncertainty as regards potential effects on water quality/river ecology, and a simple qualitative assessment is in my view sufficient, as set out below:

- (a) The effects of nutrients contained in the current discharge on periphyton growth and macroinvertebrate communities do not appear to be more than minor after full or near-full mixing, i.e. at 500m;
- (b) Any nutrient lost from the land discharge area to groundwater is likely to undergo some dilution in groundwater and ultimately enter the river in a diluted form over a significant length of River (i.e. several hundred meters), ensuring gradual mixing with the River water, and thus avoiding any localised effects caused by the poorly mixed effluent plume, as currently observed 200m downstream of the discharge point;
- (c) The above conclusion is applicable even if all the nutrients contained in the treated effluent do reach the River (as is the case in the current, 100% discharge to water), as it is based on current measured effects after near-full mixing. In practice, I understand that some of the nitrogen and phosphorus from the discharge will be retained within the soil profile and plant matter, which will in fact reduce the risk of excessive periphyton growth compared to the current situation.

Effects on macroinvertebrate communities

- 7.13** As explained above, the current discharge results in significant, albeit localised, adverse effects on macroinvertebrate communities. Two key mechanisms are likely to be contributing to these effects (1) the deposition of organic matter on the bottom of the river and (2) the flow on-effects on macroinvertebrate communities arising from increased growth of periphyton downstream of the discharge. Toxic effects associated with Ammonical nitrogen may also play a role in the observed effects on macroinvertebrate communities, although this is likely to be minor in my opinion, given the characteristics of the discharge and mixing and existing water quality data.
- 7.14** Removal of the discharge at flows below half median flow will significantly limit the risk of organic particulate matter settling on the bottom on the river. I thus expect the effects on sedimentation described in p18 of the Forbes report and commented on in paragraph 6.19 above to be significantly reduced.

- 7.15 Similarly, I expect that the risk of the discharge stimulating periphyton growth to levels at which it will impact on macroinvertebrate communities to be significantly reduced compared to the current situation.
- 7.16 The discharge regime proposed under stage 1B will, in my opinion, significantly reduce the impacts of both key mechanisms by which the discharge may affect macroinvertebrate communities, and in turn, reduce the risk of significant adverse effects on macroinvertebrate communities in the reach 200-500m downstream of the discharge. This is, in my opinion, primarily due to the removal of the discharge from the river during the times when both effect mechanisms (deposition and periphyton growth) are most likely to occur. It is however difficult to say whether some localised significant adverse effects will still occur within some distance downstream of the discharge, for example at the 200m downstream site, and what their severity and spatial scale will be, apart from saying that it is likely to be significantly reduced compared to currently.
- 7.17 Effects on recreational values in the river are expected to be similar to those described in paragraphs 6.17 to 6.21, except that they will be reduced in severity and spatially limited to a smaller zone than currently.
- 7.18 Cumulative effects on nutrient loads entering Lake Onoke will be reduced, compared to currently. The AEE indicates that 24% of the effluent on average will be removed from the River. Based on the AEE estimates (refer to paragraph 6.22), the contribution of the MWWTP to the nutrient loads measured at Pukio will be reduced to 2% of the DRP load and 0.13% of the DIN load.

Conclusions – Stage 1B

- 7.19 In conclusion, stage 1B discharge:
- (a) will not result in any more than minor effects on any of the water quality or ecological parameters considered in my review after full or near-full mixing (i.e. at 500m downstream of the discharge point);
 - (b) Will not result in any more than minor effect on pH, temperature, BOD, *E. coli* or toxicity associated with ammoniacal nitrogen at and downstream of a point located 250 m downstream of the discharge point;
 - (c) There remains some uncertainty with regards to of the effects on macroinvertebrate community and periphyton growth at the point 200m downstream of the discharge and within the reach extending from 200m to 500m downstream of the discharge, although I fully expect that both the degree/severity and the spatial extent of these

effects will be considerably reduced compared to the current/Stage 1A situation. Some monitoring may be advisable once Stage 1B is implemented to address this uncertainty.

8. Stage 2A

8.1 The AEE indicates that 58% of the current discharge overall will be removed from the River and that no discharge to the river will occur at flows below half median flow. Table 3 of the AEE also indicates that:

- (a) no discharges to the River are expected at flows below 3* median flow in January, February, March, October and November,
- (b) No, or very occasional (1% in April), discharges to the river are expected below median flow in April, May, September and December, with only very occasional discharges between median and three times median in April, September and December;
- (c) Only very occasional discharges are expected at flows below median flow in April, July and August.

8.2 As explained in paragraph 7.7, I expect that the relative reduction in the effects of the discharge on the in-river concentrations of various contaminants (e.g. ammonia, DRP, DIN, TSS) to be significantly greater than 58%. This is based on my modelling of other dual discharge systems developed along similar concepts.

8.3 Qualitatively, the removal or near-removal of the discharge from the river at all flows below three times median flows in the period September to April means that the risk of effects from the discharge during these months will be very low. At flows above three times median, periphyton growth is expected to be limited, if not removed, by river flow, and any localised deposition of organic matter from the discharges is also very unlikely. September to April includes the January to March period during which river flows are typically more settled, and the risk of periphyton growth reaching excessive levels greatest.

8.4 The exact mixing characteristics of the discharge with river water are unknown at flows at which the river discharge is proposed. However, I expect that any effluent plume forming along the true left bank will only be temporary due to the stop-and-go nature of the discharge, and confined to winter months. On that basis I expect that any effects currently occurring within the mixing zone will be greatly reduced, and it seems unlikely

that any significant adverse effects on macroinvertebrates and/or periphyton will remain at a distance of 200 to 250m downstream of the discharge.

Lake Onoke

- 8.5 Cumulative effects on nutrient loads entering Lake Onoke will be reduced, compared to Stages 1A and 1B. The AEE indicates that 58% of the effluent on average will be removed from the River. Based on the AEE estimates (refer to paragraph 6.22), the contribution of the MWWTP to the nutrient loads measured at Pukio will be reduced to 1.1% of the DRP load and 0.07% of the DIN load.

Waterbodies within Pain Farm

- 8.6 Figure 13 of the AEE shows surface watercourses present within the Pain Farm property, including one permanent stream running along the northern boundary of the site and two ephemeral streams in the south-western corner of the property. The AEE states that *"all streams within Pain Farm are currently accessible by stock, have limited shading and shallow water depth. The waterways are not considered to be sensitive water ways. Due to the ephemeral nature of the waterways running across the site they are considered to have a low habitat value"*. I note that this last statement is directly at odds with Figure 13 presented on the same page, showing a permanent stream. The statement that ephemeral streams have low habitat value is also ecologically not correct.
- 8.7 Overall I do not believe that the information provided in the AEE allows a robust assessment or understanding of the current and potential habitat values (or other values) of these streams. I have not visited the Pain Farm site, and thus cannot comment further on these aspects.
- 8.8 With regards to potential effects on these streams, p93 and 94 of the AEE provide qualitative assessment on the effects of the land discharge on water quality, which seem equally applicable to the Ruamahanga River and the streams within Pain farm. I agree with the statement that eliminating stock access to these streams will result in an improvement, and would add that this is primarily applicable to the habitat quality and some aspects of water quality (e.g. by eliminating direct input of faecal matter from stock into these streams), but not necessarily to inputs of dissolved contaminants such as nitrate-nitrogen.
- 8.9 I note that there seems to be a degree of uncertainty about the amount of nutrients (in particular nitrogen) entering these streams from the land irrigation area. I do not have sufficient information relative to the current state and characteristics (current water quality, fish species, etc.) of these streams to assess whether this may or may not result

in adverse effects within these streams, for example in relation to periphyton growth and/or ammonia or nitrate toxicity.

- 8.10** Overall, I do not feel I have sufficient information to provide a robust review of the nature or values of the streams within Pain Farm, or of the potential or likely effects of the proposed activities. I note however, that this information may be able to be collected, and an assessment undertaken, in the future. I understand that a number of detailed investigations are required for the development of Stage 2, and recommend that some assessment of the values of, and potential effects on, surface streams within Pain farms be included in these investigations.

Conclusions Stage 2A

- 8.11** By comparison with the conclusions I draw for Stages 1A and 1B, I draw the following conclusions as regard the stage 2A discharge:

- (a) It will not result in any more than minor effects on any of the water quality or ecological parameters at 500m downstream of the discharge point (and further downstream);
- (b) It will not result in any more than minor effect on pH, temperature, BOD, *E. coli* or toxicity associated with ammoniacal nitrogen at and downstream of a point located 250 m downstream of the discharge point;
- (c) It is unlikely to result in more than minor effects on macroinvertebrate communities and periphyton growth at the point 200 to 250m downstream of the discharge (and further downstream to 500m);
- (d) I cannot comment on the potential effects of the discharge to land on waterbodies within Pain Farm, due to a lack of information, and suggest an assessment be conducted as part of the Stage 2A investigations.

9. Stage 2B

- 9.1** Based on information provided in the AEE, Stage 2B will result in no direct discharges to the River at flows below 3* median flow, and only exceptionally at flows greater than 3* median flows. As explained above, I expect that, at flows above three times median, periphyton growth will be strongly limited, if not removed, by river flow, and any localised deposition of organic matter from the discharges is also very unlikely. On that basis any significant adverse effects on macroinvertebrate communities is highly unlikely, even in relative close proximity to the discharge point.

- 9.2** All other potential effects on water quality, ecology or recreational river values are likely to be no more than minor.
- 9.3** In-river monitoring when the discharge is operating (i.e. during high river flows) is likely to be unsafe, and unlikely to detect any significant changes after reasonable mixing. For these reasons I do not recommend any direct in-river monitoring during Stage 2B.
- 9.4** The near-complete removal of the discharge from the Ruamahanga River also means that any cumulative effects on nutrient loads entering Lake Onoke will be near-eliminated.

10. Consent conditions

- 10.1** I have reviewed the set of consent conditions included in Part 1 of the Application, and make the following comments:
- 10.2** I note that the conditions do not set any receiving water standards or targets during any of the proposed stages. Whilst this may be appropriate for Stage 2B when discharges to the river will be all but eliminated, it is, in my experience, highly unusual for stages involving a significant discharge to water component (stages 1A to 2A). I recommend that, at minima, the following receiving water standards/targets be included:
- (a) S 107(1) standards, or numerical translation thereof (for example a no more than 30% change in water clarity is often adopted as a numerical translation of S107(1)(d)); and
 - (b) Water quality guidelines contained in Appendix 8 of the Regional Freshwater Plan for waters managed for Aquatic Ecosystems and Contact Recreation purposes, or numerical translation thereof.
- 10.3** The distance from the discharge point at which the above standards/targets have to be met will depend on the ZRM ultimately adopted by the Hearing Panel for each water quality determinand and for the different Stages. The Application itself does not identify a ZRM for the different Stages, although it proposes two conditions relative to a near-zone river health study to be undertaken within 3 months of granting the consent (conditions 8 and 9, Schedule 2). I do not see any great value in the study as proposed in these conditions, as (1) Stage 1A is only proposed for a relatively short period of time and (2) the consent holder would have limited ability to do anything about the effects identified in the study until Stage 1B is implemented. However, I am of the opinion that a study aiming at understanding the severity and the spatial extent of any effects on periphyton growth and macroinvertebrate communities during Stage 1B would be very

useful in addressing the uncertainties identified in paragraph 7.19. Conditions 8 and 9 could, in my view, be usefully amended to reflect this aim.

- 10.4** I note that the consent conditions controlling the discharge to water regime (conditions 1 and 2, Schedule 2) do not seem to be any different for Stages 1B and 2A. This is surprising, given that the proposed discharge regimes as described in the AEE, are very different from one another. This is best illustrated by comparing Table 2 and Table 3 of the AEE, showing large differences in the expected proportion of discharge to water in different months (e.g. over 99% discharge to land in October to February during Stage 2A, vs. 'only' 13% to 79% during Stage 1B). It may be useful to amend the consent conditions to recognise the differences between Stages 1B and 2A, although this may be best addressed by way of discharge management plans.
- 10.5** Proposed condition 3, Schedule 2, sets effluent quality standards for the discharge to water. I note that Condition 3 as proposed sets limits applying to 9 out of 12 samples, which presumably corresponds to an expected 90th percentile concentrations. I am unsure of the source of these numbers, and this may be able to be clarified by the Applicant. The issue I raise is that the numbers in Condition 3 are different from (and generally higher than) those used in parts of the assessment of effects, including Mr Forbes's 20 November 2012 response (Appendix 11 of the Application) and the mass balance calculations presented in Appendix 12 of the Application. It seems that these calculations may have used the median effluent concentration. If that was the case, then it may be advisable to set effluent quality conditions that also reflect the effluent quality used in the assessment.
- 10.6** Lastly, I note that Condition 4, Schedule 2 sets effluent standard for discharges of up to 2,800 m³/day. Any discharge over and above 2,800 m³/day is not proposed to be UV treated. I note that condition 2b) allows the discharge of up to 3,000 m³/day at flows below three times median flows. Recreational use of the river is less likely at times of high river flows, and a number of regional plans set microbiological water quality limits or targets for contact recreation management purposes at river flows up to 3* median flow¹⁴ (or a similar high flow statistic). On this basis it would be more consistent with the "Contact Recreation" management purpose set in the Regional Freshwater Plan for the Ruamahanga River if all of the effluent discharged at river flows below 3* median flows was UV treated prior to its discharge. This could be achieved by requiring that up to 3,000 m³/day be UV treated in Condition 4 (assuming that the UV plant has that capacity, which

¹⁴ E.g. Horizons One Plan, Hawke's Bay Tukituki Plan Change 6

may be an incorrect assumption), or that the daily discharge volume to the river be limited to 2,800 m³/day at flows below 3* median in condition 2b.

- 10.7 I have provided Ms Arnesen with a number of comments and suggestions in relation to resource consent conditions, but note that I have not directly discussed these with SWDC's experts, or with experts acting on behalf on any other party. I expect that such discussions would assist in further refining the wording of consent conditions.

Prepared by Dr O. Ausseil,
31 March 2015.

A handwritten signature in black ink, appearing to read 'Ausseil', with a long horizontal stroke extending to the right.

Appendix 9: Report for GWRC prepared by Rob Docherty



26 November 2014

Nicola Arnesen
Greater Wellington Regional Council
PO Box 41
MASTERTON 5840

Dear Nicola

MARTINBOROUGH WASTEWATER TREATMENT PLANT CONSENT APPLICATION – TECHNICAL REVIEW OF AEE DOCUMENT, AND FURTHER INFORMATION RECEIVED FROM APPLICANT

This letter report outlines the work undertaken by Pattle Delamore Partners Ltd (PDP) in evaluating the consent application for the above project, provides PDP's final review of clarifications provided by the applicant to the original application, discusses some outstanding technical issues and presents some proposed consent conditions for incorporation into the proposed discharge consent.

This letter has been written to summarise PDP's findings and to assist GWRC to prepare the officer's report for the above project, but is not intended to be tabled at the Consent Hearing.

1.0 Background

Greater Wellington Regional Council (GWRC) engaged PDP in April 2014 to undertake a desktop technical review of a Consent Application document dated 10 March 2014 relating to the above project. The Scope of the PDP review was to focus on the land disposal elements of the application and:

- (i) Undertake a technical review of the AEE document for the proposed Wastewater Treatment Plant (WWTP) and land disposal system to determine whether there are any technical issues of concern which could lead to the system not performing as expected and provide a summary report of any concerns,
- (ii) Work with GWRC and the applicant to review any additional information which is supplied to address any issues raised by PDP.

The Consent Application document was titled "Martinborough Waste Water Treatment Plant, Proposed Operation, Upgrade and Maintenance to 2047 - Application for Resource Consents, Activity Description and AEE". This document (referred to throughout this letter report as the AEE) was produced by Geange Consulting (together with specialist input from subconsultants including Lowe Environmental Impact (LEI)) on behalf of the South Wairarapa District Council. A final version of the AEE dated 7 April 2014 was received by PDP on 8 April.

Further to PDP's review of this final version of the AEE, a letter report from PDP to Nicola Arnesen dated 30 April 2014 was prepared which requested further information from the applicant to clarify some of the issues PDP identified in the AEE. This letter (referred to as PDP Letter 1 and included in Appendix A) was forwarded to Geange and LEI.

A further letter (attached in Appendix B and referred to as PDP Letter 2) was sent to Nicola on 12 May specifically outlining further information required from the applicant and this was forwarded to Geange and LEI by GWRC as a Section 92 request.

After discussion with LEI, a letter from LEI entitled 'MWWTP – Response to GWRC Request for Further Information' dated 2 June 2014 was received by PDP. Upon review by PDP an email response was sent to Nicola on 25 June stating that; *"The Section 92 response from LEI dated 2 June answers some of the questions, but PDP still has some concerns about the level of detail provided to support the consent application. These concerns can be addressed by taking a conservative approach to analysing the effects and by specifying certain conditions in the consent. Alternatively, the applicant can undertake further work to address and alleviate these concerns. There is currently sufficient information in the AEE and supporting LEI letter dated 2 June to enable the application to be assessed."*

Subsequent to the above statement, and upon further review of the AEE and LEI letter by PDP in November, it has become clear that some of the technical information in the LEI letter is inconsistent with that in the AEE. Further discussion on these inconsistencies was held between PDP and LEI (Katie Beecroft) on 14 November 2014 via telephone, clarifying several of these issues. LEI confirmed they would investigate and provide further information, including a replacement version of Table 4 in the AEE which is now obsolete. This clarification and re issue of Table 4 was received on 19 November 2014.

PDP notes that there are minor errors remaining in Table 4. For stage 2A, the total volume to river is 20,000 m³ higher than the total of the inputs at different flow rates.

At this stage (24 November 2014) little further detail has been provided by LEI on the volume of storage required. The issue of storage volume is discussed further in Section 4.3 below.

2.0 Staging Outlined in the AEE

The staging proposed by the applicant for upgrading the waste water treatment plant (WWTP) is discussed in the AEE and defines the "strategic implementation" as being separated into two stages primarily on the basis of SWDC funding the works;

Stage 1 – comprises 1A and 1B and is short term until 30 June 2022. It includes some minor upgrades to the WWTP (1A) and a land treatment stage (1B) which will irrigate onto 5.3 ha of net irrigation area beside the existing WWTP onto land referred to as the "Adjacent Block". Although the end date for irrigation at the adjacent block has not been explicitly identified, it is assumed to be at the beginning of Stage 2A.

Stage 2 – comprises Stage 2A and 2B and is medium term from 1 July 2022 to 30 June 2048. It includes construction of a pump station and pipelines to transfer effluent from the WWTP to a new storage pond and to a new irrigation facility at Pain Farm. The new storage pond (stated in the AEE to have a volume of about 37,400 m³) will be constructed as Stage 2B.

This letter report discusses the issues raised by PDP in terms of Stage 1 and Stage 2.

3.0 Stage 1

3.1 Groundwater Mounding

In Letter 1&2 PDP identified some concerns regarding groundwater mounding at the land irrigation site for stage 1. Mounding is when the watertable beneath the irrigation area rises in response to the increased drainage from irrigation. As the irrigation rate at this site is relatively high, it is expected that majority of this irrigated effluent will infiltrate into the groundwater. Little information was given in the AEE regarding these expected infiltration rates, and the rate at which the groundwater would leave the site via throughflow into the river, reducing any potential

groundwater mound. PDP was concerned that irrigation could artificially raise the water level within the aquifer, which may cause problems along the river bank with groundwater breakouts and bank instability. In the response to PDP's concerns, LEI modelled groundwater mounding beneath the irrigation area to be 0.00044 m (0.44 mm). PDP attempted to recreate this model, but insufficient information was provided on the parameters used in the original model, in particular the amount of deep drainage occurring below the plant root zone. It was therefore not possible for PDP to replicate this model and confirm the accuracy of this figure. A more generic model generated by PDP using the information provided by LEI was able to estimate the groundwater mound to be approximately 0.1 m above the background ground water level. Despite the discrepancy between these two estimates (0.44 mm and 100 mm), the size of this groundwater mound is very small compared to normal seasonal fluctuations (approximately 2 m) and is considered not large enough to cause problems with breakouts or river bank instability, thus groundwater mounding during Stage 1 is not considered a concern.

3.2 Nitrate

Included in Letter 1&2 was a request for more detail regarding the influence of nitrate on the River from the land irrigation during Stage 1, particularly during the Mean Annual Low Flow (MALF). The high irrigation rate will cause irrigated effluent to bypass the plant root zone without complete nitrate removal, with the remaining nitrate being then carried into the groundwater. Due to the high ground permeability and irrigation rate, this nitrate rich groundwater will quickly enter the river. The request made by PDP was for more detailed information regarding how much nitrate will reach the river, and what effect this will have on the river ecosystem. The response from LEI indicated that they had generated an estimate of how large the nitrate input to the river would be, and due to the small magnitude of this nitrate input it was assumed that the effects on the river ecology would be negligible. This LEI response also included correction of an error made estimating the N loading for Stage 1 on Table 4 in the AEE.

Whilst the contribution of Stage 1 land irrigation to the Nitrate (N) load in the river during MALF is small compared to the ANZECC limit for toxicity (0.023 mg/l compared with 0.7 mg/l), high background nitrate loads in this river at MALF are caused by the accumulation of many small inputs along the length of the river, increasing the amount of N to toxic levels. This level of nitrate loading is similar to the current permitted land use (dairy). The low concentration in this outflow, the conservative nature of this estimate, and the assumed temporary nature of this irrigation indicates that the specified N input is acceptable. However, due to the ambiguity of the discharged N load, it is recommended that a condition be added requiring preparation of a monitoring plan to ensure that N loads from groundwater discharges caused by land irrigation do not exceed this concentration (or exceed ANZECC limits) during MALF conditions.

4.0 Stage 2

4.1 Management Strategy

The AEE application did not include any details on the management plans. Information on these plans was requested by PDP, in particular the timing of irrigation events, and how responsibility for specific decisions regarding the daily operation of the scheme will be managed and delegated. Information was also requested regarding the timing of irrigation events, and required specifications of the equipment used to measure the parameters required for the decision making process. Information was provided by LEI regarding the timing of irrigation events specified in the model, and an overview of what the management plans will include. As specific details of the management strategy have not been included, an approved management plan has been added to the consent conditions.

4.2 Winter Irrigation

Concerns were raised by PDP regarding winter irrigation during Stage 2. The section 92 request included a request by PDP for further information in regard to the two potential issues; Groundwater Mounding, and Nitrate loading.

4.2.1 Groundwater Mounding

A hard pan layer is present beneath a majority of the irrigated area, identified in the test pits. The depth of this layer was indicated to be approximately 400-600 mm in the AEE. This layer represents a zone of low permeability, which has the potential to restrict downward water flow. High infiltration rates during winter can cause a build-up of water on top of this layer, which can lead to the groundwater level coming in close proximity to the surface. Mottling and leaching of the soil above this layer indicates that background water levels are commonly within 200 mm of the surface during winter. No measurements of the normal background water levels have been made at this site. The deficit irrigation model is designed to minimise the amount of additional groundwater escaping from the irrigated area, but the scheme will cause saturation of the soil zone prior to rainfall events, potentially reducing the amount of rainfall which can be absorbed by the soil zone, increasing the input to groundwater. As such, the scheme will increase the groundwater level by an unknown amount. As the current groundwater fluctuations at this site are not known, there is potential for natural background fluctuations plus the irrigated effluent to cause groundwater levels to rise close to the surface, and there is no mechanism to prevent irrigation occurring when this is the case. PDP has assumed a standard value of 200 mm for the soil depth used in the deficit model, but this is not specified. It is only when the groundwater is above the base of the soil zone (200 mm) that it will increase soil moisture and restrict irrigation.

Consequences of groundwater being in such close proximity to the surface include:

- ✧ The potential for groundwater and/or effluent to reach the surface. This is both a soil quality and health issue. Groundwater close to the surface can flood crops, and destroy the mechanical strength of the soil, causing boggy and flooded areas.
- ✧ The potential for a reduced capacity within the soil zone to accept irrigated water due to increased soil moisture from rising groundwater levels above 200 mm. This would reduce the operating capacity of the irrigation scheme, potentially overloading storages.

Further knowledge and/or monitoring is required to ensure that either of these outcomes will not occur. Two approaches to accomplish this are outlined below:

4.2.2 Monitoring

Without knowledge of the background groundwater fluctuations, it is unknown how close the groundwater is to the surface naturally. One of the simplest ways to alleviate risk associated with these groundwater fluctuations is to gather information on background groundwater levels. The most effective way to determine the background groundwater level is by installing piezometers measuring the groundwater level above and below the hard pan layer. Data taken weekly over a period of months or longer will identify the magnitude of natural groundwater fluctuations in this area. The deficit irrigation model can be used to predict the increase in the water level caused by irrigation, which can then be added to the measured fluctuations and enable the final water level to be predicted. Preferably this monitoring will be undertaken at least two years prior to the initiation of irrigation on this site. Once irrigation has begun, weekly measurements (monthly during summer) of groundwater levels above the pan layer will enable the enforcement of a limit restricting irrigation when groundwater is within close proximity to the surface. This will prevent any problems with groundwater mounding.

4.2.3 Deep Ripping and Monitoring

Increasing the permeability of the pan layer will prevent groundwater mounding above it. This may be able to be accomplished by a process of deep ripping at the site, which will enable water to pass through the pan layer, preventing build-up of groundwater near the surface. This solution would still require monitoring of water levels at the site to determine the extent of groundwater mounding below the pan layer, and to ensure the effectiveness of deep

ripping at reducing groundwater mounding above the hard pan layer. This monitoring would require less monitoring sites and a lower frequency than the monitoring mentioned in section 4.2.1.1.

4.2.4 Nitrate Loading

The concerns initially raised by PDP involved the potential for winter irrigation to add more nitrate to the soil than is taken up by the crop. This is due mainly to the low nitrogen uptake of the crop during the winter, and the potential for the winter irrigation N load to exceed this uptake. PDP requested a monthly nitrate budget for plant uptake, to show that this would not be exceeded. The additional information provided by LEI in the response to this request included a nitrate budget showing that there is a possibility that the amount of nitrate entering the soil zone may be larger than that absorbed by the crop. In May 2012, the modelled irrigation passes were 7. This equates to 16.8kg of N/ha/month. The plant uptake is 0.5 kg of N/ha/day, or 15.5 kg of N/ha/month. This effectively means that, in this situation, for the entire month of May the soil would be over saturated with N, and any infiltrating rainfall would cause this N to migrate into the groundwater. This release of N into the groundwater can be controlled by preventing irrigation in the post-harvest/winter time period. After the beginning of September the N demand of the crop is high enough to completely remove the N from the irrigated water without releasing any into the groundwater.

4.3 Storage Volume

In Letter 1 PDP asked for further information regarding the determination of the required storage volume for the scheme. In response LEI provided information including an output from the moisture deficit/storage model. It is clear from the AEE and communications with LEI that several versions of the soil moisture model have been run. The various versions suggest that a much higher storage volume than that suggested in Table 4 (of about 37,400 m³) will be required for this project. These versions of the storage model have been dismissed by LEI (email LEI/PDP of 19 Nov 2014) as using older data sets with lower resolution, and not taking into account the complexities of the system. However, from PDP's perspective, the final storage volume proposed for each Stage of the WWTP upgrade remains unclear.

A summary of the disagreement within the AEE documentation regarding the volume of storage required during the final Stage (2b) is as follows:

- ✧ It is stated in the AEE that 37,400 m³ of storage is required. Part 2 of the AEE (pg 29, section 3.2.2) states that 'approximately 37,400 m³ of additional storage' will be required for Stage 2B for full irrigation to land.
- ✧ This is then reiterated in Table 4 (pg 30 of the AEE) that 'additional storage' of 37,400 m³ for stage 2B will be constructed. This is relative to a net irrigation area of 53ha.
- ✧ In Appendix 2 (AWT 2013 page 10) it is noted that a minimum of 63,000 m³ of storage is needed if both Pain farm and the Adjacent Block are used for complete irrigation to land (net irrigation area of 58.3ha). This would mean that by reducing the irrigation area to only Pain farm, the required volume should be increased. If a straight pro-rata basis is used then this volume would probably increase to around 70,000 m³.
- ✧ The LEI response letter of 2/6/2014 (fig 3) indicates that total pond storage of 98,000 m³ is required to prevent discharge to the river based on the 5 years of record. This letter also refers to Appendix 2 (which specifies a minimum 63,000 m³ for a larger irrigation area) for confirmation of the required storage specified in the AEE (37,400 m³).

The proposed storage volume of 37,400 m³ stated in the AEE appears to be the less than the maximum required storage in every year. To date, PDP has not been provided with substantiation of the volume specified in the AEE (37,400 m³), nor sufficient information to substantiate it in a replicate model. It is PDP's understanding from the AEE that the storage volume would reflect the 90th percentile of winter requirements. This would mean that one in every five years discharge into the river would occur during the winter. A storage volume equalling the 90th percentile of winter waste storage requirements is probably acceptable, but there is a lack of information regarding the actual

volume required. PDP considers this to be a potential issue and as such we are taking a conservative approach at this stage. Accordingly, it is considered that at storage volume of at least 98,000 m³ should be provided, subject to further verification modelling by the applicant.

5.0 Proposed conditions

PDP has prepared some DRAFT consent conditions relating to the effluent discharge to land which are designed to address the issues described above. These conditions need further input by GWRC staff to ensure they are consistent with GWRC's objectives.

5.1 Draft Consent Conditions

Draft consent conditions to address PDP's concerns are listed below.

It remains unclear from the AEE if the cessation of irrigation at the Adjacent Block will occur at the beginning of Stage 2 (item 2.0 above). Conditions 1) and 2) below will ensure that if continued irrigation at the Adjacent Block is intended (in parallel with irrigation on the Pain farm), an assessment of, and a Plan monitoring the effects on the river of the continued irrigation is undertaken.

- 1) *All irrigation at the Adjacent Block must cease prior to the commencement of Stage 2A irrigation at Pain farm. If irrigation is to continue at Adjacent Block in parallel with Irrigation at Pain Farm, then a variation to this consent must be submitted demonstrating to the satisfaction of GWRC that continued irrigation at the Adjacent Block will minimise the total nitrogen mass load and nitrogen species concentrations entering the river by the operation of a deficit regime.*
- 2) *Irrigation at the Adjacent Block will not extend beyond 2030 without a variation to this consent.*

In response to the ambiguous predictions of the additional total nitrogen and nitrate loads caused by Stage 1 irrigation (item 3.2 above), PDP proposes Condition 3) below to ensure the nitrogen species input to the river is within the range predicted in the AEE.

- 3) *The consent holder shall develop a River Monitoring Plan to the satisfaction of GWRC, which will require approval prior to the commencement of Stage 1 irrigation. The Monitoring Plan shall include the following:*
 - I. *Monitoring of water quality both upstream and downstream of the mixing zone where groundwater from the Adjacent Block discharges, as agreed upon with the GWRC, at least three times per year during MALF conditions.*
 - II. *The Monitoring Plan shall be reviewed by the GWRC yearly during Stage 1A, after the first year of operation of Stage 1B, and every five years thereafter.*
 - III. *The maximum increase in Total N concentration of the river water in between the upstream and downstream monitoring points shall not exceed 0.05mg/l. The average increase in Total N for the same river reach shall not exceed 0.023 mg/L.*

No management Plans were included in the application documentation (item 4.1 above), it is proposed that consent Conditions 4) and 5) below are included to ensure that these plans are available and approved by the GWRC prior to the onset of irrigation.

- 4) *Prior to the beginning of each stage of operation (1A, 1B, 2A and 2B), the consent holder shall prepare and submit a Monitoring and Contingency Plan, for the approval of the GWRC demonstrating the following:*
 - I. *The additions to the Monitoring for that specific stage of operation.*
 - II. *The parameters and frequency of groundwater and river monitoring.*
 - III. *The trigger levels for each monitoring point and action to be taken if these are breached.*

- 5) *Prior to the beginning of each stage of operation (1A, 1B, 2A and 2B), the consent holder shall prepare and submit an Irrigation Management Plan, for the approval of the GWRC demonstrating the following:*
- I. The timing of irrigation events and how they will be performed. Including the irrigation programme, how the site is divided up into separate areas, and when each will be irrigated throughout the year.*
 - II. How the limiting parameters for irrigation will be measured (e.g. soil moisture, groundwater level, rainfall predictions, antecedent rainfall, and any other relevant parameters).*
 - III. How the limiting parameters for irrigation will be used to calculate on a daily basis how much to irrigate. Details of who will undertake this calculation and make the decision.*
 - IV. Details relating to the daily decision making process around operation of the Dual Discharge scheme of whether to irrigate, store or discharge to the river, and how the decision will be made and who is responsible for making it.*

Due to the presence of the hard pan layer at Pain Farm restricting vertical movement of groundwater (item 4.2.1 above), Condition 6) below is proposed to ensure that this is correctly monitored, and that there is no possibility of the effects of groundwater levels being too close to the surface.

- 6) *The consent holder shall demonstrate to the satisfaction of GWRC prior to the commencement of Stage 2 irrigation that the irrigation will not bring groundwater levels closer than 500 mm to the ground surface. This report shall also demonstrate that the viability of the scheme to operate during stage 2B, whilst only discharging to the river in one out of five years. This shall be presented in a technical report including the following work:*
- I. The construction of a sufficient number of piezometers, in locations approved by GWRC prior to irrigation infrastructure construction, to determine the background groundwater levels and fluctuations both above and below the hard pan layer by taking monthly measurements from at least 2 winter groundwater peaks.*
 - II. At least 2 years of monthly data demonstrating background groundwater fluctuations.*
 - III. If the site has been deep ripped, and the increased permeability of the hard pan layer demonstrated, the above requirements will only be for at least 1 year of data monitoring the deeper groundwater level, provided this takes into account at least 2 winter groundwater peaks.*
 - IV. An approved ongoing monitoring plan to continually measure groundwater levels and prevent irrigation when groundwater levels are within 500 mm of the surface.*

Due to the low amount of nitrogen consumed by the crop during the winter months (item 4.2.2 above), and the large amount of rainfall at the time, Condition 7) below is proposed to limit this potential source of groundwater contamination.

- 7) *Irrigation shall not be permitted to occur between the time of harvest, or the end of April (whichever occurs first), and the beginning of September.*

As PDP was unable to confirm the accuracy of the deficit model used to generate the predictions of storage volume (item 4.3 above), and other evidence provided demonstrates larger expected storage volume requirements, PDP recommends a conservative approach, using the larger of the predicted waste water volumes, unless lower requirements can be shown to the satisfaction of the GWRC. If a large storage volume (e.g. 98,000 m³ or similar) is required then the cost of providing such a large volume should be considered by the applicant as it may affect the financial viability of the scheme. Therefore, to prevent the large storage required from being a 'fatal 'flaw', it is necessary for the applicant to demonstrate the validity of the scheme prior to the beginning of Stage 1. Proposed Condition 8) below refers:

- 8) *The consent holder shall demonstrate the feasibility of the scheme with regard to storage size prior to the beginning of Stage 1, and then review the required amount of storage prior to the beginning of Stage 2 with more accurate data obtained during Stage 1 monitoring.*

- I. *The consent holder shall, prior to the beginning of Stage 1 demonstrate that the storage volume to be constructed is of a sufficient size to store the winter wastewater production in 4 out of 5 years, including at the reduced irrigation rate caused by Condition 7 above.*
- II. *Prior to the onset of Stage 2 construction, a review of this storage volume will be conducted, which will include a new iteration of the deficit irrigation model including the larger data set collected during Stage 1A and 1B. If this condition is not met, the required storage volume for this project will be 98,000 m³.*

5.2 Other Consent Conditions

In addition to the above conditions, for land disposal consents we consider it strongly advisable to include some conditions around ongoing and regular review of the scheme and its performance. GWRC may already have some proposed conditions in the consent around this, however, as yet we have not seen these conditions and so have included Condition 9) and Condition 10) below for your consideration. The purpose of these conditions is to have an independent person who has experience with land disposal schemes regularly review the overall operation and performance, check the monitoring data to note any trends which may be occurring and recommend any improvements, which, if left unattended could end up causing an adverse effect on the environment.

9. *Within 12 months of the date of commencement of this consent, and prior to any discharge commencing, the consent holder shall have an approved engineer/ practitioner experienced in design and operation of land disposal schemes prepare an operations and management plan for the land disposal System and submit it to the GWRC (Manager Compliance) for certification.*

The plan shall include as a minimum:

- i. *A brief description of the treatment and land application system, including a site map indicating the location of all waste streams entering the treatment system and the application area, treatment device(s), and monitoring sites;*
- ii. *Operational management of the land application system;*
- iii. *On-site responsibilities, including operation and maintenance of the transfer pipeline to the site;*
- iv. *How the system will be operated and maintained to meet the requirements of the conditions of this consent;*
- v. *A plan identifying the location and size of each of the irrigation blocks, and details of how each of these blocks will be managed;*
- vi. *The control and regulation of irrigation application, including application depths, return periods and soil moisture monitoring;*
- vii. *The proposed harvesting regime, including recording of nitrogen removal and compliance with consent conditions;*
- viii. *A plan identifying all of the watercourses (permanent and ephemeral), wetlands and groundwater seepage areas within the treatment site which shall be based on a winter survey;*
- ix. *Management of the storage ponds, including full details of the modelling work that has been undertaken to arrive at the storage volume to store the winter wastewater production in 4 out of 5 years (as per Condition 8);*
- x. *Key operational matters, including daily, weekly and monthly maintenance checks;*
- xi. *Monitoring procedures covering all aspects of this permit to demonstrate compliance with the conditions;*
- xii. *A risk assessment plan and contingency plans in the event of system malfunctions or breakdowns;*
- xiii. *Details of the procedures for ensuring that the system is sampled sufficiently to ensure compliance with the conditions of consent;*
- xiv. *Details of how changes in wastewater composition are to be managed;*
- xv. *Details of procedure for receiving and dealing with any complaints; and*

The consent holder shall undertake all operations in accordance with the certified plan. This operations and management plan shall be reviewed within 6 months of the discharge commencing, and annually thereafter. The plan should also be

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reviewed within 3 months of any changes to the wastewater treatment system taking place. Any amendments of the plan shall be forwarded to, and subject to certification by, the GWRC.

10. Before 1 September of each year that the discharge occurs, the consent holder shall have an approved independent engineer/ practitioner experienced in design and operation of land disposal schemes review the performance of the scheme and provide a report to the GWRC covering the 12 month period ending 30 July. As a minimum this report shall include the items listed below and a comparison with previous years:

- I. a summary of all monitoring undertaken as required by this consent, and any additional monitoring undertaken by the consent holder to better characterise the effects of the discharge on the groundwater and River;
- II. a critical analysis of the monitoring information in terms of compliance and adverse environmental effect, including a review and commentary on the 'trends' that the monitoring data is showing in terms of concentration of contaminants in the groundwater and River;
- III. an assessment of the wastewater flow data and the potential need for additional storage pond volume and/or additional irrigation area in the next 24 month period. If additional storage volume and/or irrigation area is required, details of the proposed action by the consent holder to increase the capacity of the system including a timetable over which the work will be undertaken is required;
- IV. comment on any non-compliances and operational problems, and any actions undertaken to address these;
- V. identification and comment on any trends in data collected, both within the annual period and compared to previous years;
- VI. a summary of hydraulic loading and nitrogen application rates for the irrigated portion of the site, and records of the cut and carry operation so that a nitrogen balance in terms of kilograms nitrogen per hectare per annum can be determined ;
- VII. a waste profile analysis which assesses the source of wastewater entering the system and identifies any potential increases in risk particularly relating to increases in flow and load as a result of this;
- VIII. details of any works undertaken or proposed to improve the performance of the treatment system, and the timeframe for completion of any proposed works;
- IX. recommendations regarding alterations or additions to the monitoring programme;
- X. the tabulated results of the laboratory analytical monitoring; and
- XI. any other issues considered important by the consent holder.

In summary, we hope this report is to your satisfaction and we look forward to discussing it further with you. Please feel free to contact either Dean or Rob if you have any questions.

Yours faithfully

PATTLE DELAMORE PARTNERS LIMITED



Prepared by Dean Bradley



Reviewed by R A Docherty

