

Draft index to monitoring

<b>Condition</b>	<b>Timing</b>	<b>Type</b>	<b>Monitoring</b>	
1	Construction of outfall until commissioning complete	Water supply	Provision of temporary water supply	
2	From commencement	Discharge regime	Makoura Stream and Ruamahanga River	
3	From when a discharge to land commences	Discharge regime	Ruamahanga River and land	
4	From commencement	Wastewater quantity monitoring	Inflows to pond Quantity discharged to land and river	
5	REMOVED			
6	Commissioning of outfall	Quality monitoring	Verification of mixing	
7	Commissioning of outfall	Mixing zone effects		
8, 10	Duration of consent	Sampling protocols		
11, 12, 13, 14	From commencement until direct discharge to Makoura Stream ceases	Wastewater quantity monitoring		
15	From commencement of discharge to Ruamahanga or land	Makoura Stream flows	Gauging flows	
16		Effluent standards	Effluent	
17		Effluent parameters		
19		nutrient and algal in river	DRP, periphyton, algae	
20		Nov-April when no direct discharge to river monitoring	Water quality	
21, 22		River water quality monitoring	Water quality	
23, 24		River biological survey	Periphyton, macroinvertebrates	
25		Once discharge to land commences	Makoura Stream monitoring	Water quality
26 - 48			Land application requirements	various

**MASTERTON WASTEWATER TREATMENT PLANT UPGRADE**

**REGIONAL COUNCIL CONSENT CONDITIONS WITH APPLICANT'S CHANGES AND COMMENTS**

**SCHEDULE 1: GENERAL CONDITIONS**

Condition	Comment
<p><b>Works to be in accordance with Applications and plans</b></p> <p>1. The location, design, implementation and operation of the activity shall be in general accordance with the <b>consent application and associated plans</b> lodged with the Wellington Regional Council on 15 August 2008 and the plans and proposals provided at the hearing.</p>	<p>The condition should be referenced to <b>particular plans</b> rather than to an AEE which was not intended to be specification of design or operational requirements.</p>
<p>2. In the event of any inconsistencies between the application and later information provided by the applicant, the most recent information applies. In the event of any inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.</p>	
<p><b>Progress Reports</b></p> <p>3. The permit holder shall provide to the Manager Environmental Regulation, Wellington Regional Council, an annual report detailing progress of the upgrade. The first report shall be due six months after the commencement of these permits with subsequent reports provided at twelve monthly intervals until such time that all construction works are complete and commissioned. The report shall as a minimum include:</p> <p>(a) a time line for the upgrade works and comment on any changes to the timeline;                  (b) a list of works undertaken in the previous twelve months; and                  (c) a list and time line of proposed works for the forthcoming twelve months.</p>	<p>Annual report would suffice and match the proposed summer construction seasons.</p> <p><b>NB inconsistent use of "permit holder" and "consent holder" throughout document.</b></p>
<p><b>Inflow and Infiltration</b></p> <p><b>MDC wording</b></p> <p>4. The permit holder shall continue to work to reduce the influence of groundwater inflows and stormwater infiltration on wastewater flows entering the treatment plant. This shall include preparation and implementation of a 10-year Inflows and Infiltration Reduction Plan within six</p>	<p>The applicant submits that there is no need for this condition at all however it is acceptable in the form proposed by MDC. There is no evidence that continued reasonable reductions in I/I will cause any further reduction in adverse effects from the discharges which are being</p>

<p>months of the granting of these consents.</p> <p><b>GW wording</b>  The permit holder shall undertake all reasonable steps to reduce the influence of groundwater inflows and stormwater infiltration on wastewater flows entering the treatment plant. This shall include preparation and implementation of a 10-year Inflows and Infiltration Reduction Plan within six months of the granting of these consents.</p>	<p>applied for. In particular, such reductions will not address the concerns of Maori. The applications do not relate to I/I, leakage or overflows. The Council is committed to addressing I/I but it is not directly relevant to this hearing. The reference to "all reasonable steps" is unclear and unenforceable.</p>
<p><b>Management Plans</b></p> <p>5. Where a management plan is required to be submitted it:</p> <ul style="list-style-type: none"> <li>(a) shall be forwarded to the Manager Environmental Regulation, Wellington Regional Council;</li> <li>(b) address the matters set out in the respective management plan;</li> <li>(c) comply with the conditions of all relevant consents; and</li> <li>(d) be to the satisfaction on Wellington Regional Council.</li> </ul> <p><b>Advice note:</b> The term "to the satisfaction of the Wellington Regional Council" means that the management plan shall be confirmed in writing by the Wellington Regional Council as containing all the requirements as specified in the conditions.</p>	<p>The certification should be limited to ensuring that the plans contain what the conditions require them to contain. The deleted words are meaningless unless referenced back to detail specified in plans.</p>
<p><b>Operations and Management Plan</b></p> <p>6. No later than six months from commencement of the consent, the permit holder shall prepare and forward, an Operations and Management Manual which sets out the measures to be utilised to provide for the effective and efficient operation of the wastewater treatment and irrigation system. The system shall be managed and operated in accordance with this manual, which shall be updated within six months of the commissioning of the upgraded wastewater treatment system and at other times as appropriate. The manual shall include as a minimum:</p> <ul style="list-style-type: none"> <li>(a) a brief description of the treatment and discharge system, including a site map indicating the locations of all wastestreams entering the treatment system, treatment device(s), point of discharge, and monitoring sites;</li> <li>(b) operational management of the irrigation system;</li> <li>(c) on-site responsibilities, including operation and maintenance of the transfer pipeline to the site;</li> <li>(d) how the system will be operated and maintained to meet the requirements of the</li> </ul>	<p>GW comment  Need O&amp;M Plan from start but will need updating as various stages of the upgrade are commissioned. MDC agrees.</p>



The protocol shall include

- Measures to minimise the occurrence and/or duration of winter (May to October) discharges at flows below 12.3 m<sup>3</sup>/s.
- Measures to so far as is practicable, maintain the minimum effluent to river water ratio above 40:1 during winter (May to October) when flows are below 12.3 m<sup>3</sup>/s .
- Measures to so far as is practicable maintain the minimum effluent to river water ratio above 50:1 when flows are between 12.3 m<sup>3</sup>/s and 15 m<sup>3</sup>/s and above 40:1 when flows are between 15 m<sup>3</sup>/s and 20 m<sup>3</sup>/s
- Measures to maintain the minimum effluent to river water ratio above 30:1 at all times
- Measures to so far as is practicable minimise the occurrence, and/or duration of discharges of effluent to the river during the river flow recession period following river freshes during November to April inclusive.(as flows recede from 20 m<sup>3</sup>/s).
- Measures to control the discharges to the fresh events exceeding about 6 hours duration (based on the Mt Bruce flow recorder early warning)

**Alternative wording proposed by GW**

Within X months of the commencement of these permits, the permit holder shall prepare and forward, a management plan specific to the discharges of treated wastewater to the Ruamahanga River during the term of consent. The discharges shall be operated in accordance with this plan which shall, as a minimum, include (so far as is practicable within the constraints of the proposed storage, required pond residence times and available land treatment):

- Measures to minimise the occurrence, duration and/or rate of winter (May to October) discharges at flows below median river flow;
- Measures to maintain the minimum effluent to river water ratio above 40:1 at all times; and
- Measures to cease discharging effluent to the river during the river flow recession period following river freshes during November to April inclusive (a "fresh" being defined as a river

minor adverse effects. Accordingly, it is not appropriate for these objectives to become a standard.

A 40:1 discharge ratio at all times would require additional storage and/or provision for discharge outside of the proposed flow envelope and has not been justified by any expert evidence.

It is impractical to always cease discharging during the recession of a fresh. Nor is there any evidence that this is necessary to avoid remedy or mitigate any effects.

Note that the officers have not had an opportunity to review the MDC wording prior to this draft being prepared.

<p>flow above 12.3 m3/s).</p>	
<p><b>Complaints</b></p> <p>7. The permit holder shall keep a record of any complaints that are received. The record shall contain the following details, where practicable:</p> <ul style="list-style-type: none"> <li>(a) name and address of the complainant;</li> <li>(b) identification of the nature of the complaint;</li> <li>(c) date and time of the complaint and of the alleged event;</li> <li>(d) weather conditions at the time of the complaint; and</li> <li>(e) any measures taken to address the cause of the complaint</li> </ul> <p>The permit holder shall notify the Manager, Environmental Regulation, 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.</p> <p>The permit holder shall forward to the Manager, Environmental Regulation, Wellington Regional Council a copy of any complaints recorded in the annual report required by condition 8 of these General Conditions.</p>	
<p><b>Reporting</b></p> <p>8 The permit holder shall provide a report to the Manager Environmental Regulation, Wellington Regional Council, in electronic and written format by no later than the last day of each calendar month incorporating the results of all monitoring undertaken in accordance with conditions [insert condition numbers once finalised - surface water] and conditions [insert condition numbers once finalised - soils/groundwater] of these permits for the preceding calendar month. The monthly report shall include (i) copies of the laboratory analytical results, (ii) reasons for any non-compliance and subsequent actions undertaken to remedy the non-compliance.</p>	<p>GW comment: item (i) transferred from Condition 9(i) so that lab results are supplied on a monthly basis.</p>
<p>9. The permit holder shall provide to the Manager Environmental Regulation, Wellington Regional Council, an annual monitoring report by 31 August each year summarising compliance with the conditions of these permits. This report shall include as a minimum:</p> <ul style="list-style-type: none"> <li>(a) a summary of all monitoring undertaken in accordance with the conditions of this permit and a critical analysis of the information in terms of compliance and adverse</li> </ul>	<p>Dates to coincide with MDC financial year and also to cover full summer season when most irrigation and pasture harvesting will occur.</p>

<p>environmental effects; and</p> <ul style="list-style-type: none"> <li>(b) a discussion of any trends or changes in environmental effects evident from the monitoring data, both within the annual period and compared to previous years; and</li> <li>(c) a summary of nitrogen application rates for any irrigated portion of the site, in terms of kilograms nitrogen per hectare per annum, and crop yields removed from the farm, in kg N/ha/yr on a per paddock basis; and</li> <li>(d) detailed comment on any groundwater inflow and stormwater infiltration reduction measures implemented in the preceding 12 months, including their effectiveness and planned measures for the coming 12 months; and</li> <li>(e) comment on compliance with the conditions of this permit; and</li> <li>(f) any reasons for non-compliance or difficulties in achieving compliance with the conditions of this permit; and</li> <li>(g) 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 discharge system; and</li> <li>(h) any recommendations on alterations/additions to the monitoring programmes; and</li> <li>(i) the tabulated results of the laboratory analytical monitoring; and</li> <li>(j) any other issues considered important by the permit holder.</li> </ul> <p>The annual monitoring report is to cover the preceding 12 month period from 1 July to 30 June inclusive.</p>	<p>Provide tabulated results only – not all the copies</p> <p>GW comment: okay but needs to be provided under Condition 8.</p>
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<p><b>Warning signage</b></p> <p>10. For the duration of these permits, the permit holder shall:</p> <p>(a) maintain appropriate signage on the true right river bank in the immediate vicinity of the wastewater outfall to the satisfaction of the Manager Environmental Regulation, Wellington Regional Council. The signage shall:</p> <ul style="list-style-type: none"> <li>• provide clear identification of the location and nature of the discharge; and</li> <li>• provide a 24-hour contact phone number; and</li> <li>• be visible to the public visiting the area and legible from a distance of 10 metres without unnecessarily detracting from the visual amenity of the area.</li> </ul> <p>(b) maintain appropriate signage on the boundaries of the site which shall be legible to a person during daylight hours, warning that treated wastewater is discharged to land and may be present at the site.</p> <p>Written confirmation of the signage placement accompanied by photographs of the signage shall be provided to the Manager Environmental Regulation, Wellington Regional Council within three months of the commencement of this permit and again within three months after installation of the diffuser outfall.</p> <p>Note: The permit holder shall consult with Wairarapa Public Health regarding the wording of the signs prior to submitting them for approval to Wellington Regional Council. If monitoring over five years demonstrates that the risk to public health is negligible, the wording of the signage and need for signage can be reviewed in consultation with Wellington Regional Council and Wairarapa Public Health.</p>	<p>Evidence is that signage is not necessary and that at times of higher flow, the river is unsuitable for swimming because of upstream pollution and at times of below median flow in summer there is no discharge. Nevertheless, the Council does not oppose a sign at Wardells bridge provided that it does not suggest that the discharge is causing a health risk.</p> <p>Signage is more appropriate at the Cliffs than at Wardells bridge. The signage should reflect the overall state of the river rather than focussing on the wastewater discharge. Following discussions with Dr Palmer, MDC is proposing the development of a risk communication strategy. This is outlined in Mr Harding's evidence.</p> <p>If there is a protocol, then it should be directed at all swimming locations and should warn the public that at times above average flow in summer and at average flows in winter it is unwise to swim in the river and that swimming should be avoided for 24 hours after above average flows because of contamination from rural and urban run off and treated waste water discharge.</p> <p>True left bank is private property near outfall. The sign need not refer to the mixing zone, that is irrelevant in terms of warning, it relates to compliance with conditions.</p>
<p><b>Breakdown/emergency notification</b></p> <p><b>GW wording</b></p>	<p>GW note: submitters (adjacent landowners) asked to be notified if this happened.</p>

<p>The consent holder shall provide a 24 hour contact number to the Manager Environmental Regulation, Wellington Regional Council, in case emergency contact is required.</p> <p>11. The permit holder shall notify the Manager Environmental Regulation, Wellington Regional Council as soon as practicable and, as a minimum requirement, within 48 hours of any accidental discharge, plant breakdown or other contingency which is likely to result in an exceedance of the limits of these permits.</p>	
<p><b>GW wording</b></p> <p><b>Community Liaison Group</b></p> <p>The permit holder shall use its best endeavours to establish and maintain a Community Liaison Group (CLG), and provide reasonable organisational and administrative support for such group for the duration of these permits.</p> <p>In establishing the CLG the permit holder shall invite a representative of each of the following to be members of the CLG and to meet at least once per year:</p> <ul style="list-style-type: none"> <li>- Wairarapa Public Health</li> <li>- Wellington Fish and Game</li> <li>- Department of Conservation</li> <li>- Sustainable Wairarapa</li> <li>- Rangitaane O Wairarapa</li> <li>- Kahungunui Ki Wairarapa</li> <li>- Landowners adjacent to land owned by Masterton District Council for the wastewater treatment plant</li> <li>- Such other person or persons as shall be considered by the permit holder in conjunction with Wellington Regional Council to represent any group or groups with a significant interest in or involvement with the Ruamahanga River</li> </ul> <p>The permit holder shall liaise with the CLG and ensure as a minimum that:</p> <ol style="list-style-type: none"> <li>(i) the permit holder has access to community opinions, observations and activities that may be affected by the exercise of these permits</li> <li>(ii) members are provided with the opportunity to inspect the permit holder's operations on such occasions as shall be reasonable agreed with the permit holder</li> <li>(iii) Communication and liaison between permit holder and the local community is maintained</li> <li>(iv) Copies of all monitoring, reports and documentation relating to this discharge are</li> </ol>	<p>MDC is of the view that such a group will serve little purpose. Its preference would be that efforts were invested in a working group focussed on improving water quality within the catchment rather than focussing on a discharge which will have been significantly reduced and which will have minimal adverse effects. The Council has its own processes in place to consult regarding possible further land treatment options and the views of tangata whenua.</p> <p>Mr ten Hove will outline a possible alternative condition in his evidence.</p>

available to members

### **Cultural Health Monitoring and Reporting**

The permit holder shall engage a co-ordinator to establish and oversee a programme of cultural health index monitoring and reporting with the objective to build and enable a relationship with tangata whenua.

The monitoring and reporting shall, as a minimum provide for:

- baseline monitoring of Makoura Stream within the first 12 months of commencement of the permit and then every five years for the term of the permit
- monitoring of the Ruamahanga River on at least three occasions during the period of the permit.

### **opposed**

The applicant does not agree that it should be responsible for cultural health monitoring. It will be monitoring the water quality and ecological health of both immediate receiving environments. If there is a need for cultural health monitoring then it should be focussed on the whole catchment and all sources of contamination, it should also consider the health impacts of rates increases to implement any proposals. HIA and cultural health index monitoring are (if anything) a responsibility of the Regional Council and Public Health. There is no compelling evidence that it is likely that the discharge will have any impact on cultural health. It is accepted that the discharge will have an effect on the relationship of Maori to the Ruamahanga river. That is not however a matter which can be assessed by way of the suggested study.

The applicant does wish to participate in a whole of catchment working party which would amongst other matters consider the relationship of Maori to the river.

<p><b>Review &amp; Charges</b></p> <p><b>MDC wording</b></p> <p>12. Wellington Regional Council may review any or all conditions of these permits 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 31 August for each year for the term of these permits, for any of the following reasons:</p> <ul style="list-style-type: none"> <li>(a) to review the adequacy of, and if necessary amend the monitoring requirements outlined in this permit;</li> <li>(b) to avoid, remedy or mitigate any adverse effect on the environment arising from the discharge.</li> </ul> <p>The review of conditions shall allow for the deletion or amendment of conditions of this permit; and the addition of such new conditions as are shown to be necessary to avoid, remedy or mitigate any significant adverse effects on the environment.</p> <p><b>GW wording</b></p> <p>Wellington Regional Council may review any or all conditions of these permits 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 31 August for each year for the term of these permits, for any of the following reasons:</p> <ul style="list-style-type: none"> <li>(a) to review the adequacy of, and if necessary amend the monitoring requirements outlined in this permit;</li> <li>(b) if one or more receiving environment standards are exceeded for: (i) percentage cover of filamentous algae on the river bed (ii) percentage cover of algal mats as specified in Condition 19 and (iii) the groundwater limits in Condition 40.</li> <li>(c) to address any adverse effects on the environment arising from the exercise of this permit; or</li> <li>(d) to avoid, remedy or mitigate any significant adverse effect on the environment arising from the discharge.</li> </ul> <p>The review of conditions shall allow for the deletion or amendment of conditions of this permit; and the addition of such new conditions as are shown to be necessary to avoid, remedy or mitigate any significant adverse effects on the environment.</p>	<p>GW (b) is opposed. If standards are exceeded then GW may review on the basis of adverse effects. MDC proposed to delete the word significant. The review may be triggered by any adverse effects but should only result in amended conditions if that is necessary to address significant adverse effects. GW (b) confuses the role of a review clause and consent compliance.</p> <p>GW (c) and (d) overlap and are inconsistent.</p> <p>If instream standards are set, then non compliance should only result in a potential review if that results in adverse effects.</p> <p>(b) already covers that situation. Other non compliance can be addressed by way of abatement notice, infringement notices, or as a last resort prosecution.</p> <p>GW comment: 31 August aligns with annual monitoring reporting.</p> <p>(b) Original wording inserted but reworded to be more specific:</p>
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<p>13. 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.</p>	<p>Unnecessary but unobjectionable</p>
<p>14. 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 execution of its functions under Section 35 (duty to gather information, monitor and keep records) of the Act.</p>	<p>Unnecessary but unobjectionable</p>

**SCHEDULE 2: SPECIFIC RESOURCE CONSENT CONDITIONS**

**WAR 090066 (27160) - Discharge permit to discharge treated wastewater (effluent) to the Ruamahanga River and Makoura Stream.**

**WAR 090066 (27161) - Discharge permit to discharge stormwater runoff from the wastewater irrigation land to the Ruamahanga River and Makoura Stream.**

**WAR 090066 (27162) - Discharge permit to discharge treated wastewater (effluent) to land via an irrigation system.**

**WAR 090066 (27163) - Discharge permit to discharge partially treated wastewater (effluent) to land and groundwater through the base of the existing oxidation ponds and new oxidation ponds.**

These permits shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

Condition	Comment
<p><b>Construction of new outfall to Ruamahanga River</b></p> <p><b>GW wording</b></p> <p>1. The permit holder shall provide a temporary water supply to the property of R. &amp; M. Ternent from when the outfall is commissioned until the full land irrigation system has been commissioned.</p> <p><b>MDC additional wording</b></p> <p>The permit holder shall provide additional storage capacity for the Ternent river intake supply from when the river outfall is commissioned, to enable sufficient water to be taken from the river during periods of no discharge.</p>	<p>GW comment Should the outfall be moved within 12 months and until the full land irrigation system is commissioned a temporary water supply would be required.</p> <p>MDC does not agree that the outfall should be moved before the second stage of land treatment is completed.</p> <p>On average during summer the discharge does not occur for 66% of the time and this will be more than sufficient for the Ternents to be able to take water into storage when the discharge is not occurring. This condition will ensure that the tanks can be filled at times of no discharge during the summer. It is not clear what the Ternents requirements are</p>

	<p>during winter.</p> <p>MDC does not accept that the Ternents have any riparian rights to water.</p> <p>MDC Comment A geological investigation of the area in 2006 has identified problems with alternatives supplies such as relocation of the intake or installation of a bore. Additional storage was the recommended as the best option.</p>
<p><b>DISCHARGE REGIME</b></p> <p><b>Discharge regime prior to commissioning of the full land irrigation system</b></p> <p>2. Discharge to Makoura Stream and Ruamahanga River prior to commissioning of any land irrigation:</p> <p>(a) The discharge of treated wastewater to Makoura Stream shall cease no later than 12 months from the commencement of this permit.</p> <p>(b) The discharge shall not exceed 700 L/s</p> <p>(c) The average dry weather discharge volume shall not exceed 15,750 m<sup>3</sup>/d (average dry weather flow is defined as the wastewater flow taken after three consecutive days without rainfall)</p> <p>(d) The consent holder shall ensure that flow measuring devices capable of continuously measuring flows of magnitudes up to and beyond the peak flow rate are maintained to ensure that measurement error is no more than ± 10%.</p> <p><b>From the commencement of these permits until the full land irrigation area is operational, treated wastewater shall only be discharged to the Ruamahanga River:</b> <b>MDC propose</b> <b>When the new ponds, river diffuser and first stage irrigation area are operational, treated wastewater shall</b></p>	<p>Condition has been reworded and restructured to clarify there are three stages to the upgrade:</p> <p>(i) current situation to Makoura Stream</p> <p>(ii) discharge to the Ruamahanga River after diffuser commissioning and initial land disposal</p> <p>(iii) full proposal</p> <p>Delete reference to Ruamahanga River in first line of 2.MDC opposes having the discharge removed from Makoura Stream within 12 months of commencement.</p> <p>The 15,750 m<sup>3</sup>/d value is the average raw wastewater inflow volume and cannot be linked to the discharge rate because of storage in the ponds . No purpose is served by the volumetric limit</p>

<p><b>be discharged to the Ruamahanga River only:</b></p> <ul style="list-style-type: none"> <li>(e) when the mean hourly river flow at Wardell's Bridge gauge station is greater than 6.15 m<sup>3</sup>/s(half median) for whole year when a <b>dilution of 40 times</b> can be achieved; and</li> <li>(f) when the instantaneous flow in the river at Wardell's Bridge gauge station is <b>at least 40 times</b> the instantaneous discharge rate; and</li> <li>(g) up to a maximum instantaneous discharge rate of 1200 L/s</li> </ul> <p><b>MDC proposes 30 times</b></p>	<p>and should be deleted unless "discharge" is replaced by "inflow"..</p> <p>GW comment The dilution depends on information presented by MDC in their reply. <b>MDC does not agree that a 40:1 dilution ratio is appropriate or necessary as a standard. However see the discharge protocol condition.</b></p> <p><b>If this requirement was imposed then provision would need to be made for significant additional storage or for discharges outside of the currently proposed flow triggers.</b></p>
<p><b>Discharge regime after all commissioning is complete</b></p> <p><b>MDC wording</b></p> <p>3. From 5 years after commencement of this permit onwards, treated wastewater shall only be discharged to the Ruamahanga River:</p> <ul style="list-style-type: none"> <li>(a) during 1 November to 30 April inclusive, when the mean hourly river flow at Wardell's Bridge gauge station is greater than 12.3 m<sup>3</sup>/s and less than 300 m<sup>3</sup>/s; or</li> <li>(b) during 1 May to 31 October inclusive, when the mean hourly river flow at Wardell's Bridge gauge station is greater than 6.15 m<sup>3</sup>/s and less than 300 m<sup>3</sup>/s; and</li> <li>(c) when the instantaneous flow in the river at Wardell's Bridge gauge station is at least 30 times the instantaneous discharge rate; and</li> <li>(d) up to a maximum instantaneous discharge rate of 1200 L/s.</li> </ul> <p><b>GW wording</b></p> <ul style="list-style-type: none"> <li>(a) during 1 November to 30 April inclusive, when the mean hourly river flow at Wardell's Bridge gauge</li> </ul>	<p>The scheme is not viable with a maximum discharge rate of 700L/S and the proposed restriction is not necessary in order to achieve a sustainable outcome.</p> <p>GW comment The dilution depends on information presented by MDC in their reply.</p> <p><b>MDC is agreeable to a 40:1 dilution ratio in winter at flows between 6.15 and 12.3 but needs to retain the ability to discharge up to 30:1 at flows above median. This is better addressed by way of the</b></p>

<p>station is greater than 12.3 m<sup>3</sup>/s and less than 300 m<sup>3</sup>/s and the instantaneous flow in the river at Wardell's Bridge gauge station is at least 30 times the instantaneous discharge rate; or</p> <p>(b) during 1 May to 31 October inclusive, when the mean hourly river flow at Wardell's Bridge gauge station is greater than 6.15 m<sup>3</sup>/s and less than 300 m<sup>3</sup>/s and the instantaneous flow in the river at Wardell's Bridge gauge station is at least 40 times the instantaneous discharge rate; and</p> <p>(c) up to a maximum instantaneous discharge rate of 1200 L/s.</p>	<p>discharge protocol rather than a standard and hence the MDC wording is preferred. If the wording were to be changed to a standard then there would need to be provision for breaches of the condition and the trigger flow requirement.</p>
<p><b>WASTEWATER QUANTITY MONITORING</b></p> <p><b>Wastewater quantity monitoring (after all commissioning is complete)</b></p> <p>4. The permit 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 Ruamahanga River and land irrigation system to the satisfaction of the Manager Environmental Regulation, Wellington Regional Council. The flow measuring devices shall be capable of continuously measuring wastewater flows of magnitudes up to and beyond the peak instantaneous flow rate, and shall be maintained to ensure that measurement error is no more than ± 5</p>	<p>There will be no treated wastewater discharged to Makoura Stream. Stormwater runoff from pasture will be discharged to Makoura Stream in high rainfall events. Difficult to measure accurately. Event duration could be recorded.</p> <p>GW comment: applies only to the Ruamahanga River given the restructuring of Condition 2. MDC agrees</p>
<p><b>WASTEWATER QUALITY MONITORING</b></p> <p><b>Section 107 standards</b></p> <p>5. The wastewater discharge to the Makoura Stream shall not give rise to any of the following effects in the receiving waters outside of a mixing zone extending downstream of the point of discharge to Wardell's Bridge:</p> <p>(a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or</p> <p>(b) any conspicuous change in the colour or visual clarity; or</p> <p>(c) any emission of objectionable odour; or</p> <p>(d) any significant adverse effects on aquatic life; or</p> <p>(e) any heterotrophic or nuisance periphyton growths.</p>	<p>This condition is in the current consent and is unnecessary but unobjectionable.</p> <p>GW comment: condition not needed if Condition 2(a) is adopted ie. discharge to stream ceases after 12 months.</p>

<p>6.</p> <p><b>Verification of mixing</b></p> <p><b>MDC wording</b></p> <p>Within six months of commissioning the Ruamahanga River outfall, the permit holder shall conduct in-situ investigations upstream of the discharge and at 300m and 800m downstream of the end of the outfall, to confirm the extent of mixing and dilution at median flow.</p> <p>A report documenting the methods and results of the assessment, including any assumptions made, shall be forwarded in writing to the Manager Environmental Regulation, Wellington Regional Council no later than three months after the assessment has been completed.</p> <p><b>GW wording</b></p> <p>Within six months of commissioning the Ruamahanga River outfall, the permit holder shall conduct in-situ investigations <b>to verify that:</b></p> <p><b>(i) reasonable mixing (70% mixed) is achieved 300m downstream of the outfall; and</b></p> <p><b>(ii) full mixing (100% mixed) is achieved 800m downstream of the outfall</b></p> <p>The methodology to be used shall be agreed with Wellington Regional Council prior to the work being undertaken. A report documenting the methods and results of the assessment, including any assumptions made, shall be forwarded in writing to the Manager Environmental Regulation, Wellington Regional Council no later than three months after the assessment has been completed.</p>	<p>The AEE predicts 70% mixing at 300m. It is not appropriate or necessary to express that as a compliance limit. If for example monitoring establishes that dilution is only 60% it does not follow that this will cause any adverse effects.</p> <p>The adequacy of mixing can be checked by way of monitoring at Wardells Bridge. The applicant has no objection to carrying out a one off verification of the adequacy of mixing. This would require monitoring various parameters at 300m downstream and a point upstream of the discharge. There is no need for that to be a compliance requirement.</p> <p>GW comment: would support verification of the mixing as it would confirm the predictions that 300m is suitable</p> <p>MDC says focus on mixing zone rather than effects is misguided.</p>
<p><b>MDC wording</b></p> <p>7. The wastewater discharge to the Ruamahanga River shall not cause any of the following effects in the</p>	<p>It is less confusing to just state the compliance point. It should be 300m. (the AEE describes reasonable mixing as being at between 300- 500 m and proposes 400 m as the point of</p>

<p>receiving waters outside of a mixing zone extending 300m downstream of the point of the downstream end of the diffuser discharge.</p> <ul style="list-style-type: none"> <li>(a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or</li> <li>(b) any conspicuous change in the colour of the river; or</li> <li>(c) a reduction in horizontal visibility greater than 33% (black disc measurement) compared with upstream of the discharge; or</li> <li>(d) any emission of objectionable odour; or</li> <li>(e) the rendering of fresh water unsuitable for consumption by farm animals; or</li> <li>(f) any significant adverse effects on aquatic life.</li> </ul> <p>Note: when assessing compliance, upstream sampling results will be taken into account</p> <p><b>GW wording</b></p> <p>The permit holder shall maintain the wastewater discharge and the outfall diffuser to ensure that the discharge is reasonably (70%) mixed 300 m downstream of the outfall and fully (100%) mixed 800 m downstream of the outfall.</p> <p>The wastewater discharge to the Ruamahanga River shall not cause any of the following effects in the receiving waters outside of a mixing zone extending 300m downstream of the point of the downstream end of the diffuser discharge:</p> <ul style="list-style-type: none"> <li>(a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or</li> </ul>	<p>RMZ, but 300m was used for the purpose of assessing effects.)</p> <p>The applicant's position is that this condition is unnecessary. Nevertheless, the condition is unobjectionable. The use of the term "cause" is intended to convey the fact that the condition would only be breached if it was established that the effect in question would not have occurred but for the discharge MfE guideline is 33%</p> <p>(g) – numerical standards are not proposed for in river monitoring.</p> <p>(h) is addressed by condition 19</p> <p>MDC opposes highlighted wording as being unnecessary and achieving no environmental purpose. It is not effects based and confuses the purpose of a reasonable mixing zone. What is important is that the zone of allowable non compliance is clearly specified.</p> <p>Upstream sampling results will be relevant for all parameters.</p>
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<p>(b) any conspicuous change in the colour of the river; or  (c) a reduction in horizontal visibility (defined as the horizontal sight range of a 200m diameter black disc) greater than 30% (black disc measurement) compared with upstream of the discharge; or  (d) any emission of objectionable odour; or  (e) the rendering of fresh water unsuitable for consumption by farm animals; or  (f) any significant adverse effects on aquatic life; or  (g) <b>the ammoniacal nitrogen concentration to exceed 0.8 g/m<sup>3</sup></b>; or  (h) any heterotrophic or nuisance periphyton growths (more than 2 cm long)</p> <p>Note: when assessing compliance <b>with (h) upstream sampling results will be taken into account.</b></p>	<p><b>GW comment:</b>  (g) there is no risk of upstream ammoniacal nitrogen levels causing non-compliance with this limit if the minimum dilution ratio is maintained and expected mixing achieved.</p> <p><b>MDC responds that there is a risk of an upstream discharge causing a breach. This standard is not in the WRFPP or in section 107 of the Act. The limit must still be shown to be necessary (and has not been) If it is imposed it would require monitoring at 300 m which is unnecessary. This parameter can be monitored at Wardells bridge.</b></p>
<p><b>Sampling and analysis</b></p> <p>8.. All sampling techniques employed in respect of the conditions of this permit shall be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.</p>	
<p>9. <del>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, 2005" 21st 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.</del></p>	<p>GW comment: condition not needed as doubles up with Condition 8</p>
<p><b>MDC wording</b></p> <p>10. Unless specifically approved otherwise in writing by the Manager Environmental Regulation, Wellington Regional Council, all analytical testing (with the exception of E coli carried out by Wairarapa Laboratory Services) undertaken in connection with this consent shall be performed by a laboratory that is IANZ accredited for the analytical tests.</p> <p><b>GW wording</b></p>	<p><b>MDC prefers E. coli to be analysed locally by Wairarapa Laboratory Services, as is the current practice agreed with GWRC, which avoids same day courier charges.</b></p>

Unless specifically approved otherwise in writing by the Manager Environmental Regulation, Wellington Regional Council, all analytical testing undertaken in connection with this consent shall be performed by a laboratory that is IANZ accredited for the analytical tests.

GW comment: laboratory needs to be accredited and results made available electronically and WLS presently cannot meet the requirements.

**Discharge requirements until all commissioning is complete**

**GW wording**

**Wastewater monitoring programme and standards for effluent discharged to Makoura Stream and the Ruamahanga River until full commissioning of land irrigation system**

11. The permit holder shall monitor the final discharge from the oxidation ponds according to the following frequency, constituents and detection limits:

Constituent	Monitoring Frequency	Detection Limit
Flow (influent and effluent)	Continuously	10%
pH	Weekly	0.1 pH
Temperature	Weekly	0.1 °C
<b>Colour and Clarity:</b>		
Total suspended Solids	Monthly	0.1 g/m <sup>3</sup>
Total Solids	Monthly	0.1 g/m <sup>3</sup>
Colour	Weekly	
Foam and Scum	Weekly	
<b>Oxygen Demand:</b>		
Dissolved Oxygen	Weekly	0.2 g/m <sup>3</sup>
BOD <sub>5</sub>	Monthly	1 g/m <sup>3</sup>
<b>Nutrients:</b>		
Total Nitrogen	Monthly	0.1 g/m <sup>3</sup>
Nitrite-N	Monthly	0.1 g/m <sup>3</sup>
Nitrate-N	Monthly	0.1 g/m <sup>3</sup>
Total Kjeldahl Nitrogen	Monthly	0.1 g/m <sup>3</sup>
Ammonia-N	Monthly	0.1 g/m <sup>3</sup>

GW comment: needs to cover from commencement of consent to when there is a discharge year round at half median flow

MDC comment: would be simpler to link the wastewater quality monitoring to existing ponds or new ponds. This would avoid the complications of timing of changing from Makoura to Ruamahanga, as commented on in Condition2.

E. Coli can be changed to monthly year round. MDC: monitoring frequency is agreed.

GW : E Coli Detection should be 1.

MDC: E coli detection limit of 1 not practical for wastewater, but 1 is ok for groundwater

Dissolved reactive phosphorus	Monthly	0.1 g/m <sup>3</sup>	
Total phosphorus	Monthly	0.1 g/m <sup>3</sup>	
<b>Metals &amp; Metalloids:</b>			
Cd, Cu, Ni, Pb, Zn, Hg, As, Ag, Cr	Annually	0.001 g/m <sup>3</sup>	
Alkalinity & hardness	Annually	0.1 g/m <sup>3</sup>	
<b>Organics:</b>			
Total Petroleum hydrocarbons (TPH), Semi Volatile Organic Compounds (SVOC), Volatile Organic Compounds (VOC)	Annually	0.001 g/m <sup>3</sup>	
<b>Pathogens &amp; Indicators:</b>			
<i>E. coli</i>	Monthly	10 cfu/100mL	

Compliance with these discharge standards shall be determined through monitoring undertaken in accordance with condition 12.

12. The discharge shall comply with the standards specified below. The standards in the table are a rolling geometric mean and shall be calculated based on the last 12 consecutive sample results from monitoring undertaken in accordance with condition 11.

Parameter	Unit	Standard
<i>E. coli</i>	cfu/100 ml	1200
BOD <sub>5</sub>	g/m <sup>3</sup>	32
Suspended Solids	g/m <sup>3</sup>	42
Total Nitrogen	g/m <sup>3</sup>	13
Ammonia-N	g/m <sup>3</sup>	2.0 (summer) 7.0 (winter)
Total Phosphorus	g/m <sup>3</sup>	3.3

*Note: 'Summer' is defined as the period 1 November to 30 April inclusive  
'Winter' is defined as the period 1 May to 31 October inclusive*

**GW wording**

13. The permit holder shall monitor receiving water quality at the frequencies and detection levels specified below:

Same as existing interim consent so OK

Constituent	Unit	Detection Limit	Frequency
<b>Field measurements:</b>			
pH	pH	0.1	Monthly
Conductivity	µS/cm	0.1	Monthly
Dissolved Oxygen	g/m <sup>3</sup>	0.01	Monthly
Dissolved Oxygen percent saturation (by calculation)		5%	Monthly
Black Disc	Metres	0.1	Monthly
Colour	Munsell	-	Monthly
<b>Bacteriological analysis:</b>			
<i>E. coli</i>	cfu/100 mL	10	Fortnightly Summer Monthly Winter
<b>Nutrients:</b>			
Ammonia-N	g/m <sup>3</sup>	0.01	Monthly
Nitrate-N	g/m <sup>3</sup>	0.002	Monthly
Nitrite-N	g/m <sup>3</sup>	0.002	Monthly
Total Kjeldahl Nitrogen	g/m <sup>3</sup>	0.1	Monthly
Total Nitrogen (by calculation)	g/m <sup>3</sup>	0.1	Monthly
Total Phosphorus	g/m <sup>3</sup>	0.004	Monthly
Dissolved Reactive Phosphorus	g/m <sup>3</sup>	0.004	Monthly
<b>Biological Analysis*:</b>			
Macroinvertebrate analysis (species composition and abundance - to QMCI level of identification)			Annually
Periphyton taxonomic and biomass assessment (qualitative and quantitative)			Annually
<b>Miscellaneous:</b>			
Turbidity	NTU	0.05	Monthly
Total Organic Carbon (TOC)	g/m <sup>3</sup>	0.5	Monthly

\* From the time of a direct discharge to the Ruamahanga River the macroinvertebrate and periphyton monitoring shall be undertaken in accordance with condition 23 with the exception of the monitoring being annually.

14. The locations of the sampling carried out under Condition 13 are:
- Makoura Stream, upstream of the oxidation pond discharge, at or about Map Reference NZMS 260 T26:352-202;

PM it is not clear to me what the differences are between the two versions. Can our version be deleted? Actioned by HA.

GW comment: E. Coli detection should be 1 and test frequency can be changed to fortnightly

MDC agrees with fortnightly test in summer but should be monthly in winter as at present.

E. coli detection should be 10 for river water which can have high E Coli numbers during freshes

GW comment: when the discharge goes to the Ruamahanga River

MDC comment  
These locations are in the existing consent and would

<ul style="list-style-type: none"> <li>• Makoura Stream, downstream of the oxidation pond discharge at or about Map Reference NZMS 260 T26:353-197;</li> <li>• Ruamahanga River, upstream of the confluence with the Makoura Stream and the oxidation ponds at or about Map Reference NZMS 260 T26:364-202;</li> <li>• Ruamahanga River at Wardell's Bridge at or about Map Reference NZMS 260 T26:346-190; and</li> <li>• Ruamahanga River, just upstream of the Waingawa River confluence at or about Map Reference NZMS 260 T26:342-188.</li> </ul> <p><b>GW wording</b></p> <p>The locations of the sampling carried out under Condition 13 are the following <b>until there is a direct discharge to the Ruamahanga River:</b></p> <ul style="list-style-type: none"> <li>• Ruamahanga River, upstream of the confluence with the Makoura Stream and the oxidation ponds at or about Map Reference NZMS 260 T26:364-202;</li> <li>• Ruamahanga River at Wardell's Bridge at or about Map Reference NZMS 260 T26:346-190; and</li> <li>• Ruamahanga River, just upstream of the Waingawa River confluence at or about Map Reference NZMS 260 T26:342-188.</li> </ul> <p>The locations of the sampling carried out under Condition 13 are the following <b>once there is a direct discharge to the Ruamahanga River:</b></p> <ol style="list-style-type: none"> <li>upstream of the wastewater outfall to the Ruamahanga River (downstream of the influence of the Whangaehu River confluence and upstream of the outfall as determined in consultation with Wellington Regional Council);</li> <li>300 m downstream of the discharge to the river (at or about Map Reference NZMS 260 T26:353-197); and</li> <li>approximately 1,250 m downstream of the discharge to the river at Wardell's Bridge (at or about Map Reference NZMS 260 T26:346-190)</li> </ol>	<p>remain if the discharge remained to the Makoura Stream – see below.</p> <p>GW comment 3 sites proposed if discharge to Makoura Stream is removed within 12 months, otherwise 5 sites required.</p> <p>Site needed downstream of the influence of the Whangaehu River and upstream of the outfall and the site needs to be verified. MDC needs to confirm that the land irrigation will not impact on the site. MDC comment; groundwater flow will be parallel to the river and not likely to affect river upstream of the ponds.</p> <p>MDC says water quality monitoring is not necessary at 300m</p>
<p><del>On the day of water quality sampling in accordance with condition 25, the flow in the Makoura Stream shall be measured upstream and downstream of the land irrigation area at the point of water quality sampling (or as near to as possible). The flow gauging shall be carried out by a suitably qualified or experienced person and the flow gauging error shall be no more than +/- 10%. The gauging site shall be determined in consultation with Wellington Regional Council.</del></p>	<p>GW comment: This condition should be moved to Condition 25.</p>

<del>The gauging site shall be determined in consultation with Wellington Regional Council.</del>	
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**Wastewater monitoring programme and standards for effluent discharged to the Ruamahanga River after full commissioning of land irrigation system**

**MDC wording**

16. Treated wastewater discharged to the Ruamahanga River and land, shall comply with the following criteria as measured at the outlet of the oxidation ponds:

Parameter	Geometric Mean (target only)	Percentile compliance standard	Sampling frequency/ Number of samples	Compliance (Exceedances over period)
BOD5 (g/m <sup>3</sup> )	21	42 90%ile	Monthly/12	No more than 3 over 1 year
Filtered BOD (g/m <sup>3</sup> )	10	28 90%ile	Monthly/12	No more than 3 over 1 year
Suspended solids (g/m <sup>3</sup> )	32	91 90%ile	Monthly/12	No more than 3 over 1 year
Dissolved reactive phosphorus (g/m <sup>3</sup> )	3.0	4.0 90%ile	Monthly/12	No more than 3 over 1 year
Total Nitrogen (g/m <sup>3</sup> )	13	20 90%ile	Monthly/12	No more than 3 over 1 year
Nitrate Nitrogen (g/m <sup>3</sup> )	1.0	7.5 90%ile	Monthly/12	No more than 3 over 1 year
Nitrite Nitrogen (g/m <sup>3</sup> )	0.5	2.0 90%ile	Monthly/12	No more than 3 over 1 year
Ammonia-Nitrogen (g/m <sup>3</sup> )	2.0 (summer) 6.0 (winter)	14 90%ile 16 90%ile	Monthly/6 Monthly/6	No more than 2 over 6 months No more than 2 over 6 months
E.coli cfu/100 mL)	300 (summer)	330 median 1800 95%ile	Monthly/6	No more than 5 above 330 over 6 months No more than 1 above 1800 over 6 months
E.coli (cfu/100 mL)	1,000 (winter)	1,000 median	Monthly/6	No more than 5 above 1000 over 6 months
Metals		ANZECC (2000)	Annually	95%ile trigger values
TPH, PAHs, SVOCs, VOCs		ANZECC (2000)	Annually	95%ile trigger values

Replaced with Table 54 AEE values. It would not be possible to comply with some of the WRC values. Ammonia limits increased slightly from AEE Table 24, following trend plot analysis in Archer response evidence 30 March, Attachment N.

Standards apply to land and to river as the discharge may occur to both simultaneously.

Percentile standards are required in accordance with the NZ Municipal Wastewater Monitoring Guidelines therefore geometric mean compliance standards are not appropriate, but useful for monitoring trends in pond performance.

Comment – reduction of inflow due to reduced infiltration may occur, but the changes will be minor and gradual. Composition will not “vary significantly”.

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**GW wording**

16. Treated wastewater discharged to the Ruamahanga River and land shall comply with the following criteria as measured from samples collected at the outlet of the oxidation ponds in accordance with condition 17:

Parameter	Geometric Mean (target)	Percentile compliance standard	Sampling frequency/ Number of samples	Compliance (Exceedances over period)
pH	-	6-9 95%ile	Monthly/12	No more than 2 over any consecutive 12 month period to be outside pH range 6-9
BOD <sub>5</sub> (g/m <sup>3</sup> )	15	35 90%ile	Monthly/12	No more than 3 over any consecutive 12 month period
Filtered BOD (g/m <sup>3</sup> )	10	20 90%ile	Monthly/12	No more than 3 over any consecutive 12 month period
Total suspended solids (g/m <sup>3</sup> )	23	70 90%ile	Monthly/12	No more than 3 over any consecutive 12 month period
Dissolved reactive phosphorus (g/m <sup>3</sup> )	3.0	3.8 90%ile	Monthly/12	No more than 3 over any consecutive 12 month period
Total phosphorus (g/m <sup>3</sup> )	3.3	4.5 90%ile	Monthly/12	No more than 3 over any consecutive 12 month period
Nitrate Nitrogen (g/m <sup>3</sup> )	1.0	4.1 90%ile	Monthly/12	No more than 3 over any consecutive 12 month period
Nitrite Nitrogen (g/m <sup>3</sup> )	0.5	1.1 90%ile	Monthly/12	No more than 3 over any consecutive 12 month period
Ammonia-Nitrogen (g/m <sup>3</sup> )	2.0 (summer)	11 90%ile	Monthly/6	No more than 3 over any

**GW comment**

As pointed out in the s42a report, some of the standards proposed by MDC represent a significant increase in existing contaminant concentrations **and the public needs to be assured that MDC is meeting its word** in the AEE that effluent quality will remain the same or be enhanced (e.g., *E. coli*)

**MDC comment**

Prefer MDC version. The GW comments misconceive the role of consent conditions, whereas the focus should be on adverse effects. Refer to Attachment N of H Archer's reply on 30 March, for trend plots of compliance.

	6.0 (winter)	(year-round)	Monthly/6	consecutive 12 month period
Total Nitrogen (g/m <sup>3</sup> )	13	19 90%ile	Monthly/12	No more than 3 over any consecutive 12 month period
<i>E. coli</i> (cfu100 mL)	300 (summer)	330 median 1,800 95%ile	Monthly/6	No more than 3 above 330 over 6 months No more than 1 above 1,800 over 6 months
<i>E. coli</i> (cfu100 mL)	1,000 (winter)	1,000 median	Monthly/6	No more than 3 above 1,000 over 6 months
Metals	-	ANZECC (2000)	Annually	No sample result shall exceed 20 times the relevant freshwater toxicity trigger values (for the 95% level of species protection) in Table 3.4.1 of the Australian and New Zealand Environmental and Conservation Council (ANZECC, 2000) Water Quality Guidelines
TPH, PAHs, SVOCs, VOCs	-	ANZECC (2000)	Annually	No sample result shall exceed 20 times the relevant freshwater toxicity trigger values (for the 95% level of species protection) in Table 3.4.1 of the Australian and New Zealand Environmental and Conservation Council (ANZECC, 2000) Water Quality Guidelines

Note: 'Summer' is defined as the period 1 November to 30 April inclusive  
'Winter' is defined as the period 1 May to 31 October inclusive

17. The permit holder shall obtain representative measurements of the treated wastewater immediately prior to discharge to the Ruamahanga River or land as follows:

Parameter	Measurement unit and detection limit	Minimum Frequency
Rainfall	0.5 mm	Daily
Temperature	0.1 °C	Weekly
Dissolved oxygen	0.1 g/m <sup>3</sup>	Weekly
pH	0.1 pH	Monthly
Electrical conductivity	10 uS/cm	Monthly
Colour	Visual observation	Monthly
Foam and Scum	Visual observation	Monthly
Total BOD <sub>5</sub>	1 g/m <sup>3</sup>	Monthly
Soluble BOD <sub>5</sub>	1 g/m <sup>3</sup>	Monthly
Total suspended solids	1 g/m <sup>3</sup>	Monthly
<i>Escherichia coli</i>	10 cfu/100 mL	Monthly
Ammoniacal nitrogen	0.1 g/m <sup>3</sup>	Monthly
Nitrite nitrogen	0.1 g/m <sup>3</sup>	Monthly
Nitrate nitrogen	0.1 g/m <sup>3</sup>	Monthly
Total kjeldahl nitrogen	0.1 g/m <sup>3</sup>	Monthly
Total nitrogen (by calculation)	0.1 g/m <sup>3</sup>	Monthly
Dissolved reactive phosphorus	0.1 g/m <sup>3</sup>	Monthly
Total phosphorus	0.1 g/m <sup>3</sup>	Monthly
Sodium	0.05 g/m <sup>3</sup>	Six monthly
Calcium	0.05 g/m <sup>3</sup>	Six monthly
Chloride	0.5 g/m <sup>3</sup>	Six monthly
Total Potassium	0.05 g/m <sup>3</sup>	Six monthly
Total recoverable arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver and zinc	0.001 g/m <sup>3</sup>	Annually in February or March
Alkalinity & hardness	0.1 g/m <sup>3</sup>	Annually in February or March
Semi-volatile organic compounds	0.001 g/m <sup>3</sup>	Annually in February or March
Volatile organic compounds	0.001 g/m <sup>3</sup>	Annually in February or March

Note: The permit holder may want to include additional parameters to assist the sale of the harvested crops.

Weekly measurements of DO and temperature using a portable meter, are standard practice to confirm that there is sufficient DO in the ponds. This would not be done by sending a sample to a Lab.

The ponds have long retention time and effluent quality variations are buffered and are gradual with time. Weekly measurement would be expensive and is not needed.

Polycyclic aromatic hydrocarbon analysis is not required as it is included in semi-volatile organic compound (SVOC) analytical suite.

GW comment: have accepted MDC changes.

~~In February or March each year, the permit holder shall obtain representative grab samples of the treated wastewater prior to discharge to the Ruamahanga River. These samples shall be analysed for:~~

Parameter	Measurement unit and detection limit
Total recoverable arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver and zinc	0.001 g/m <sup>3</sup>
Alkalinity & hardness	0.1 g/m <sup>3</sup>
Semi-volatile organic compounds	0.001 g/m <sup>3</sup>
Volatile organic compounds	0.001 g/m <sup>3</sup>

GW comment: condition not needed as repeats Condition 17.

**Receiving water monitoring programme and standards - Ruamahanga River**

**MDC wording**

19. The combined discharges of wastewater to land via irrigation and seepage in conjunction with discharges via the diffuser, shall not cause undesirable biological growths beyond 300m downstream of the diffuser.

The upstream sampling results required by conditions 21 and 22 will be taken into account when assessing compliance with this condition.

Numerical DRP and DIN limits are not appropriate for compliance enforcement of the “not cause undesirable biological growths” objective. Growths result from complex interaction of nutrient concentrations and flows. There is no need for an instream DRP standard, however if such a standard is included, it should only apply at flows below median flow and should be 0.030 g/m<sup>3</sup>

**GW wording**

The combined discharges of wastewater to land via irrigation and seepage shall not cause:

- (a) the dissolved reactive phosphorus concentration in the Ruamahanga River as measured at Wardell’s Bridge to exceed **0.012 g/m<sup>3</sup>** or to be more than 20% greater than the upstream concentration; or to be no more than 20% greater than the upstream concentration
- (b) the dissolved inorganic nitrogen concentration in the Ruamahanga River as measured at Wardell’s Bridge to exceed **0.580 g/m<sup>3</sup>** or to be more than 20% greater than the upstream concentration; or to be no more than 20% greater than the upstream concentration
- (c) the percentage cover of filamentous algae (greater than 2cm long) on the riverbed to exceed 30%; or
- (d) the percentage cover of algal mats (greater than 0.3cm thick) on the riverbed to exceed 60%.

GW comment: wording is as proposed in the Officers Report with one change to qualify the filamentous algal length.

MDC comment;  
 (a) The “no more than 20% greater “is likely to cause non-compliance at low river flows. Refer AEE Table 39 – groundwater from irrigation will be 0.003 g/m<sup>3</sup> DRP compared to upstream river water < 0.004 g/m<sup>3</sup> (detection limit)  
 (b) data on DIN during low flows

<p>Compliance with the receiving water standards set out above shall be determined on a monthly basis from the results of upstream and downstream sampling undertaken in accordance with conditions 20 and 22. The upstream sampling results will be taken into account when assessing compliance with this condition.</p>	<p>needs to be researched.(the proposal for a DIN standard has was not in the officers report.)</p>										
<p>20.</p> <p><b>MDC wording</b></p> <p>For the first 6 years from the commencement of a discharge to land irrigation system and thereafter every 5 years, at 2 monthly intervals during November to April inclusive .....</p> <p><b>GW wording</b></p> <p>From the commencement of a discharge to the land irrigation system, at monthly intervals during November to April inclusive, when there is no direct discharge of wastewater to the Ruamahanga River, the permit holder shall collect representative water samples from the Ruamahanga River at each of the following locations:</p> <p>(a) upstream of the land irrigation area, at or about Map Reference NZMS 260 T26:358-218;</p> <p>(b) approximately 1,250 m downstream of the diffuser outfall at Wardell's Bridge, at or about Map Reference NZMS 260 T26:346-190.</p> <p>The samples shall be analysed for:</p> <table border="1" data-bbox="183 979 1408 1163"> <thead> <tr> <th>Parameter</th> <th>Measurement unit and detection limit</th> </tr> </thead> <tbody> <tr> <td>Ammoniacal nitrogen</td> <td>0.01 g/m<sup>3</sup></td> </tr> <tr> <td>Nitrite nitrogen</td> <td>0.002 g/m<sup>3</sup></td> </tr> <tr> <td>Nitrate nitrogen</td> <td>0.002 g/m<sup>3</sup></td> </tr> <tr> <td>Dissolved reactive phosphorus</td> <td>0.004 g/m<sup>3</sup></td> </tr> </tbody> </table>	Parameter	Measurement unit and detection limit	Ammoniacal nitrogen	0.01 g/m <sup>3</sup>	Nitrite nitrogen	0.002 g/m <sup>3</sup>	Nitrate nitrogen	0.002 g/m <sup>3</sup>	Dissolved reactive phosphorus	0.004 g/m <sup>3</sup>	<p>Six years will be a long enough period to assess effects.</p> <p>GW comment: Original wording but changed to only 2 sites</p> <p>MDC Comment Review needed after 5 years with aim to reduce this sampling to 5 year intervals, and then cease if no effects. 2 monthly intervals will be sufficient.</p>
Parameter	Measurement unit and detection limit										
Ammoniacal nitrogen	0.01 g/m <sup>3</sup>										
Nitrite nitrogen	0.002 g/m <sup>3</sup>										
Nitrate nitrogen	0.002 g/m <sup>3</sup>										
Dissolved reactive phosphorus	0.004 g/m <sup>3</sup>										
<p>21. .</p> <p><b>MDC wording</b></p> <p>From the commencement of a discharge to land, at 2 monthly intervals to coincide with the monthly water</p>	<p>MDC comment There needs to be provision to reduce this monitoring once it has been verified that any effects on these parameters is minor. The</p>										

<p>sampling during November to April inclusive under condition 20, the permit holder shall undertake an assessment of the percentage cover of both filamentous algae and cyanobacterial mats (to nearest 5%) at 10 points across each of four transects encompassing both riffle and run habitat and extending across the width of the river at each sampling site listed below. The average value for each site shall be used to determine compliance with condition 19. The monitoring sites shall be.</p> <ul style="list-style-type: none"> <li>(i) upstream of the discharge and the influence of the land irrigation area (at or about Map Reference NZMS 260 T26:358-218);</li> <li>(ii) 300 m downstream of the discharge to the river (at or about Map Reference NZMS 260 T26:???) and</li> <li>(iii) at Wardell's Bridge (at or about Map Reference NZMS 260 T26:346-190)</li> </ul> <p>After 5 years the monitoring may cease or may be reduced in agreement with Wellington Regional Council.</p> <p><b>GW wording</b></p> <p>From the commencement of a discharge to land, and to coincide with the monthly water sampling under condition 22(a), the permit holder shall undertake an assessment of the percentage cover of both filamentous algae and cyanobacterial mats (to nearest 5%) at 10 points across each of four transects encompassing both riffle and run habitat and extending across the width of the river at each sampling site listed below. The average value for each site shall be used to determine compliance with condition 19.</p>	<p>condition also overlaps with condition 23</p> <p>Monthly monitoring is unnecessary</p> <p>MDC comment Review after 5 yrs. Also needs agreement on the nature of the cyanobacterial assessment protocol. Two monthly sampling preferred.</p>
<p>22. (a) At monthly intervals to coincide with wastewater sampling undertaken in accordance with condition 17, representative water samples shall be collected from the Ruamahanga River at each of the following locations when treated wastewater is being discharged to the river:</p> <ul style="list-style-type: none"> <li>(i) upstream of the discharge and the influence of the land irrigation area (at or about Map Reference NZMS 260 T26:358-218);</li> <li>(ii) approximately 1,250 m downstream of the discharge to the river at Wardell's Bridge (at or about Map Reference NZMS 260 T26:346-190).</li> </ul> <p>After 5 years the monitoring may be reduced in agreement with Wellington Regional Council.</p>	<p>Sampling from the Bridge during a fresh would be safe but possibly not safe at the upstream location?</p> <p>300m site not needed to assess overall effects and unnecessary expense.</p> <p>There needs to be provision for the reduction of monitoring after</p>

**GW insertion re sites:**

The sites should be:

- (i) upstream of the wastewater outfall to the Ruamahanga River (downstream of the influence of the Whangaehu River confluence and upstream of the outfall as determined in consultation with Wellington Regional Council);
- (ii) 300 m downstream of the discharge to the river (at or about Map Reference NZMS 260 T26:353-197); and
- (iii) approximately 1,250 m downstream of the discharge to the river at Wardell's Bridge (at or about Map Reference NZMS 260 T26:346-190)

The samples shall be analysed for:

Parameter	Measurement unit and detection limit
Soluble BOD <sub>5</sub>	1 g/m <sup>3</sup>
Total organic carbon	0.5 g/m <sup>3</sup>
Total suspended solids	1 g/m <sup>3</sup>
Turbidity	0.05 NTU
<i>Escherichia coli</i>	10cfu/100 mL
Ammoniacal nitrogen	0.01 g/m <sup>3</sup>
Nitrite nitrogen	0.002 g/m <sup>3</sup>
Nitrate nitrogen	0.002 g/m <sup>3</sup>
Total kjeldahl nitrogen	0.1 g/m <sup>3</sup>
Total nitrogen (by calculation)	0.1 g/m <sup>3</sup>
Dissolved reactive phosphorus	0.004 g/m <sup>3</sup>
Total phosphorus	0.004 g/m <sup>3</sup>

- (b) At monthly intervals to coincide with the monitoring undertaken in accordance with condition 22(a), the following in-situ measurements shall be taken using field equipment calibrated in accordance with manufacturer's instructions:

Parameter	Measurement unit and detection limit
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say 5 years.

GW comment: would consider a mechanism for reviewing monitoring after a specified time period.

MDC comment that no purpose is achieved by water quality monitoring at 300m. What is required at this point is effects monitoring. Water quality can be monitored at Wardells and extrapolated back to 300m if necessary.

The additional monitoring adds an unnecessary expense.

GW says E.Coli limit: should be 1 MDC disagrees.

Water temperature	0.1 °C	
Dissolved Oxygen	0.1 g/m <sup>3</sup> and 1 % saturation	
pH	0.1 pH	
Electrical conductivity	0.1 µS/cm	
Black disc (visual clarity)	0.1 m	
Colour	Munsell scale	

  

<p>23. Twice per year, once during the period 31 January to 30 April inclusive and once during the period 1 September and 31 October, and following at least a two week period without a significant flood event (defined as the instantaneous river flow exceeding 37 m<sup>3</sup>/s), the permit holder shall have an appropriately experienced and qualified freshwater ecologist carry out a quantitative ecological survey of the Ruamahanga River upstream and downstream of the point of discharge for the purpose of determining the effect of the discharge on the aquatic ecosystem of the river. The survey shall comprise as a minimum:</p> <p>(a) an inspection of the riverbed within the entire mixing zone (0-300 m downstream of the discharge) for the presence of any nuisance heterotrophic or periphyton growths; and</p> <p>(b) one upstream and two downstream (300m and Wardells) periphyton and macroinvertebrate sampling sites in the general locations outlined in condition 21 that, where possible, share similar habitat features in terms of substrate, flow, depth and width.</p> <p>The sites shall be selected in consultation with Wellington Regional Council.</p> <p>The periphyton survey shall include:</p> <ul style="list-style-type: none"> <li>an assessment of the percentage cover of both filamentous algae and algal mats (to nearest 5%) at 10 points across each of four transects encompassing both riffle and run habitat and extending across the width of the river at each sampling site; and</li> <li>collection of a composite periphyton sample from riffle and run habitat (a composite of scrapings from 10 rocks, 5 from a riffle and 5 from a run) across each sampling site using method QM-1a from the Stream Periphyton Monitoring Manual (Biggs &amp; Kilroy 2000);</li> <li>analysis of periphyton samples for community composition and abundance using the Biggs &amp; Kilroy (2000) relative abundance method, ash free dry weight and chlorophyll a.</li> </ul> <p>The macroinvertebrate survey shall follow Protocols C3 and P3 from the Ministry for the Environment's report on protocols for sampling macroinvertebrates in wadeable streams (Stark et al. 2001). This shall involve:</p>	<p>Periphyton survey (visual) overlaps with condition 22 MDC comment</p> <p>No value in this survey in the spring period. There is not currently a problem.</p> <p>Suggest that we limit this to the first two full years of operation.</p>
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<ul style="list-style-type: none"> <li>• collection of 5 replicate 0.1 m<sup>2</sup> Surber samples at random within a 20 m section of riffle habitat at each sampling site;</li> <li>• 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</li> <li>• enumeration of the results as taxa richness, MCI, QMCI, %EPT taxa and %EPT individuals.</li> </ul> <p>The results of the ecological survey shall be reported in writing to the Manager Environmental Regulation, Wellington Regional Council by 1 June <b>each year</b>.</p> <p><b>After 2 years the monitoring may cease or may be reduced in agreement with Wellington Regional Council. The methodology of the survey may be varied in agreement with Wellington Regional Council.</b></p>	<p><b>MDC comment</b> A review clause is needed as the number of sites or methods could change.</p>												
<p>24. The permit holder shall within 24 hours of any monitoring undertaken in accordance with condition 21, notify the Manager Environmental Regulation, Wellington Regional Council, should the average cover of cyanobacterial mats at the Wardell's Bridge sampling site exceed 20%.</p>													
<p><b>Receiving water monitoring programme - Makoura Stream</b></p> <p><b>MDC wording</b></p> <p>25. (a) From the commencement of a discharge to land, at <b>quarterly</b> intervals for the duration of this permit, the permit holder shall collect representative water samples from the Makoura Stream at each of the following locations:</p> <p>(i) immediately upstream of the land irrigation area at or about Map Reference NZMS 260 T26:353-217;</p> <p>(ii) downstream of the land irrigation area prior to discharge to the Ruamahanga River (at or about Map Reference NZMS 260 T26:353-197).</p> <p>The samples shall be analysed for:</p> <table border="1" data-bbox="181 1182 1406 1398"> <thead> <tr> <th>Parameter</th> <th>Measurement unit and detection limit</th> </tr> </thead> <tbody> <tr> <td><i>Escherichia coli</i></td> <td>10 cfu/100 mL</td> </tr> <tr> <td>Total organic carbon</td> <td>0.5 g/m<sup>3</sup></td> </tr> <tr> <td>Ammoniacal nitrogen</td> <td>0.01 g/m<sup>3</sup></td> </tr> <tr> <td>Nitrite nitrogen</td> <td>0.002 g/m<sup>3</sup></td> </tr> <tr> <td>Nitrate nitrogen</td> <td>0.002 g/m<sup>3</sup></td> </tr> </tbody> </table>	Parameter	Measurement unit and detection limit	<i>Escherichia coli</i>	10 cfu/100 mL	Total organic carbon	0.5 g/m <sup>3</sup>	Ammoniacal nitrogen	0.01 g/m <sup>3</sup>	Nitrite nitrogen	0.002 g/m <sup>3</sup>	Nitrate nitrogen	0.002 g/m <sup>3</sup>	<p><b>2 Monthly monitoring is unnecessary</b></p> <p>Deleted middle site because downstream sampling point will determine effects.</p>
Parameter	Measurement unit and detection limit												
<i>Escherichia coli</i>	10 cfu/100 mL												
Total organic carbon	0.5 g/m <sup>3</sup>												
Ammoniacal nitrogen	0.01 g/m <sup>3</sup>												
Nitrite nitrogen	0.002 g/m <sup>3</sup>												
Nitrate nitrogen	0.002 g/m <sup>3</sup>												

Total nitrogen (at site iii only)	0.01 g/m <sup>3</sup>
Dissolved reactive phosphorus	0.004 g/m <sup>3</sup>
Total phosphorus (at site iii only)	0.004 g/m <sup>3</sup>

(b) At monthly intervals for the duration of this permit, to coincide with the monitoring undertaken in accordance with condition 25(a), the permit holder shall obtain the following in-situ measurements using a field meter calibrated in accordance with manufacturer's instructions:

Parameter	Measurement unit and detection limit
Water temperature	0.1 °C
Dissolved Oxygen	0.1 g/m <sup>3</sup> and 1 % saturation
pH	0.1 pH
Electrical conductivity	0.1 µS/cm

#### GW wording

25. From the commencement of a discharge of treated wastewater to land, the permit holder shall conduct the monitoring outlined below.

- (a) The permit holder shall at **two monthly intervals** collect representative water samples from the Makoura Stream at each of the following locations:
- (i) Upstream of the land irrigation area, at or about Map Reference NZMS 260 T26:353-217; and
  - (ii) Downstream of the land irrigation area prior to the confluence with the Ruamahanga River, at or about Map Reference NZMS 260 T26:353-197.

The samples shall be analysed for:

Parameter	Measurement unit and detection limit
<i>Escherichia coli</i>	1 cfu/100 mL

Total organic carbon	0.5 g/m <sup>3</sup>
Ammoniacal nitrogen	0.01 g/m <sup>3</sup>
Nitrite nitrogen	0.002 g/m <sup>3</sup>
Nitrate nitrogen	0.002 g/m <sup>3</sup>
Total nitrogen (at site ii only)	0.01 g/m <sup>3</sup>
Dissolved reactive phosphorus	0.004 g/m <sup>3</sup>
Total phosphorus (at site ii only)	0.004 g/m <sup>3</sup>

- (b) At **two monthly intervals** to coincide with the monitoring undertaken in accordance with condition 25(a), the permit holder shall obtain the following *in-situ* measurements using a field meter calibrated in accordance with the manufacturer's instructions:

Parameter	Measurement unit and detection limit
Water temperature	0.1 °C
Dissolved Oxygen	0.1 g/m <sup>3</sup> and 1 % saturation
pH	0.1 pH
Electrical conductivity	0.1 µS/cm

- (c) **At two monthly intervals** to coincide with the monitoring undertaken in accordance with condition 25(a), the permit holder shall measure (spot gauge) the flow in the Makoura Stream upstream and downstream of the land irrigation area at the points of water quality sampling (or as near to as possible). The flow gauging shall be carried out by a suitably qualified or experienced person and the flow gauging error shall be no more than +/- 10%. The gauging sites shall be determined in consultation with Wellington Regional Council.

- (d) **Once per year during the period 31 January to 30 April inclusive and following at least a two week period without a significant flood event, an appropriately experienced and qualified freshwater ecologist shall carry out a semi-quantitative ecological survey of the Makoura Stream upstream and downstream of the point of discharge for the purpose of determining the effect of land irrigation and stormwater discharges on the aquatic ecosystem of the stream. The survey shall comprise as a minimum four macroinvertebrate sampling sites in the general locations outlined below (and as agreed with Wellington Regional Council) that, where possible, share similar habitat features in terms of substrate, flow, depth and width:**

- (i) Upstream of the land irrigation area, at or about Map Reference NZMS 260 T26:353-217;**

GW comment  
 Moved from Condition 15  
 MDC comment  
 Additional monitoring in GW condition ,considered to be a high cost for little benefit.  
 If there is to be an ecological survey it should only be for the first 2 years after the discharge is removed.

- (ii) Within the land irrigation area at or about Map Reference NZMS 260 T26:354-210;
- (iii) Within the land irrigation area at or about Map Reference NZMS 260 T26:352-202; and
- (iv) Downstream of the land irrigation area prior to the confluence with the Ruamahanga River, at or about Map Reference NZMS 260 T26:353-197.

The macroinvertebrate survey shall follow Protocols C2 and P3 from the Ministry for the Environment's report on protocols for sampling macroinvertebrates in wadeable streams (Stark et al. 2001). This shall involve:

- Collection of 3 replicate samples at random at each sampling site;
- 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
- Enumeration of the results as taxa richness, MCI, SQMCI, %EPT taxa and %EPT individuals.

The results of the ecological survey shall be reported in writing to Manager Environmental Regulation, Wellington Regional Council by 1 June each year.

**Land Application Requirements**

26. The discharge of wastewater to land shall not result in the following:

- (a) an annual application depth exceeding 2,500 mm;
- (b) the application depth over the length of an irrigation bay shall not exceed an average of 100 mm during a single application. The average daily application rate exceeding 10 mm (including rainfall);
- (c) the distribution efficiency being less than 75 % during any single application as observed by visual assessment of the wetted front
- (d) the application uniformity being less than 50 % during any single application;
- (e) any significant surface water, including ponding, on the irrigation or wipe-off areas, as a result of irrigation, for a period of more than 24 hours after application;
- (f) wastewater being applied to land within 50 m of any neighbouring property boundary.

**GW wording**

Note: Compliance with (b) above shall be determined by a volumetric calculation over the area potentially

Deleted original (b) because difficult/impossible to measure in practice but ok to assess visually as in new (c) and (d)

50m is the minimum buffer shown on the Drawings in the AEE

MDC comment

<p>irrigated.</p> <p>Note: Compliance with (c) above shall be determined by ensuring that preferential flow does not result and there is a visual coverage (area that is wetted) of at least 75 % of each bay irrigated on any given day.</p> <p>Note: Compliance with (d) above shall be determined by visual assessment and in particular ensuring that the duration of active water application at a point 25 % of the distance down a bay is no more than 50 % longer than a point 75 % down the same bay on any given day.</p>	<p>The GW advice notes are agreed</p>
<p>27. No wastewater shall be applied to land where:</p> <ul style="list-style-type: none"> <li>(a) the annual nitrogen loading of wastewater will exceed 300 kg /ha/yr; or</li> <li>(b) the mass of nitrogen and phosphorus applied annually as fertiliser and effluent exceeds 100 kg/ha and 30 kg/ha respectively more than that removed in the harvested biomass; or</li> <li>(c) there is surface water ponding on any irrigation area or in wipe-off drains; or</li> <li>(d) there is the likelihood of significant surface water ponding for a period beyond 24 hours after application; or</li> <li>(e) anaerobic conditions exist at the soil surface; or</li> <li>(f) prior to application a wheeled tractor can not be driven over the area to be irrigated without leaving wheel rutting; or</li> <li>(g) the groundwater depth is within 1 m of the soil's surface; or</li> <li>(h) there is bare land, including weeds, covering more than 15 % of the area to be irrigated; or</li> <li>(i) pasture, or a crop, has less than 4 weeks of growth after being replanted or sown; or</li> <li>(j) the wipe-off volume exceeds 20 % of the applied volume.</li> </ul> <p>Note 1: A bay is defined by the wetted area between two borders and its length is from the turnout (water source) to the furthestmost wetted extent in that bay.</p> <p>Note 2: Significant ponding is deemed to be continuous surface water covering an area of more than 10 square metres or saturated soil conditions which cause an adverse effect on grass growth.</p> <p>Note 3: Irrigation may be applied sooner than 4 weeks, if there is moisture stress on the new growth.</p>	<p>Deleted because not practical to measure in the field and is covered by 26 (c) and (d) based on visual assessment</p>
<p>28. The annual nitrogen loading as a consequence of:</p> <ul style="list-style-type: none"> <li>(a) the exercise of this permit; and/or</li> <li>(b) the application of nitrogen based fertiliser; and/or</li> <li>(c) the application of any other material</li> </ul> <p>shall not exceed a maximum of 600 kilograms per hectare per year.</p>	
<p><b>Irrigation Management</b></p>	

<p>29. The permit holder shall appoint a suitably experienced Irrigation Operator to manage the site.</p> <p>Note: a suitably experienced person would be considered as someone with a farming background and irrigation experience.</p>	
<p>30. The Irrigation Operator shall:</p> <ul style="list-style-type: none"> <li>(a) ensure that the land application area be used primarily as a cut and carry operation;</li> <li>(b) allow for the occasional grazing of sheep;</li> <li>(c) not allow the grazing of cattle or horses;</li> <li>(d) allow for the application of fertilisers to optimise pasture/crop growth;</li> <li>(e) allow for the growing of crops other than pasture; and</li> <li>(f) provide a 2 day withholding period following application and prior to any animal grazing.</li> </ul>	
<p>31. The permit holder shall inspect the property at monthly intervals and as soon as practicable after heavy rainfall events, to record the presence or not of seepages, developing wet areas, changes in pasture or crop growth and any other physical change to the property which may impact on the irrigation or accelerate nutrient losses or reduced system performance. Records shall be kept of those inspections and made available to the Wellington Regional Council upon request.</p>	
<p><b>Buffer area irrigation</b></p> <p>32. The application of wastewater to buffer areas using drip irrigation shall comply with the requirements of conditions 26, 27 and 28, with the exception of 26 (c), (d) and (f) and 27 (h) and (i).</p>	
<p><b>Management of Wipe-off Drains</b></p> <p>33. Wipe-off drains shall be managed so that they:</p> <ul style="list-style-type: none"> <li>(a) do not intercept or collect groundwater; and</li> <li>(b) do not allow the direct or immediate passage (through less than 5m of soil) to surface water drainage which enters the Makoura Stream or Ruamahanga River; and</li> <li>(c) do not allow groundwater to be returned to the treatment ponds.</li> </ul>	<p>Refer Archer evidence Attachment D for separation distance</p>

<p><b>Increasing Application Rate</b></p> <p>34. After a period of 24 months operation of at least 50 ha of the land application area, the permit holder can increase the average daily application rate to 200 mm and the annual application to 4,000 mm, subject to being able to demonstrate to the satisfaction of the Manager Environmental Regulation, Wellington Regional Council, that:</p> <ul style="list-style-type: none"> <li>(a) through appropriate monitoring that the application rates in condition 26, can be complied with;</li> <li>(b) the distribution and application uniformity requirements of conditions 26, 27, 28 can be complied with;</li> <li>(c) anaerobic conditions and wet areas are able to be avoided as required by condition 27;</li> <li>(d) groundwater monitoring shows the nominated water quality targets in condition 40 have not been exceeded;</li> <li>(e) through modelling it can be shown that the increase in application rate will not result in the exceedance of the nominated water quality targets in condition 40;</li> <li>(e) the increase in application rates is limited to application areas to the east of the Makoura Stream.</li> </ul>	<p>(b) now agreed based on visual assessment</p>
<p><b>Increasing Nitrogen Loading</b></p> <p>35. Following demonstration by the permit holder that an average nitrogen removal rate of 300 kg N/ha/yr, with no more than 100 kg of synthetic nitrogen fertiliser being applied, can be achieved, the consent holder can apply to the Wellington Regional Council to have the nitrogen loading rate increased to 500 kg N/ha/yr.</p>	
<p><b>Groundwater Quality Monitoring Programme and Standards</b></p> <p><b><u>MDC wording</u></b></p> <p>36. The permit holder shall install monitoring bores at the following locations [attach map of sites] for the purposes of monitoring groundwater quality and water levels within six months of the commencement of these permits:</p>	<p>Proffitt; HB31 is not appropriate as an upgradient well. Need new well further north and east – see diagram</p> <p>HB12 is not a good location for an eastern downgradient well. Install new well three hundred metres to the south-south-east, outside (east of) irrigation area.</p>

Monitoring Group	Location and purpose	HB2	HB3	HB4	HB9	HB11	New well south east of HB12	HB13	HB16	HB21 & two new wells	HB24	HB6	HB29	New up-gradient well
1a	Up gradient of land application area							x						x
1b	Down gradient of land application area	x		x		x	x		x	x				
1c	Within land application area										x	x	x	
2a	Down gradient of land fill													
2b	Down gradient of de-sludging area	x	x	x										
3a	Upgradient of ponds									HB21		x		
3b	Down gradient of ponds				x					New well				

**GW wording**

36. The permit holder shall install monitoring bores at the following locations [attach map of sites] for the purposes of monitoring groundwater quality and water levels within six months of the commencement of

HB23 is not appropriate as a downgradient well to measure effects on the Makoura Stream and drain. Use HB21 and two further wells one immediately across Makoura Stream and one 400 m west of HB21, see diagram.

HB28 not appropriate for within land treatment area monitoring. Replace with HB6. Only monitor for water level to check mounding. Water quality monitoring of these wells not useful for control of effects on receiving waters.

Use HB21 and HB6 for upgradient control on new ponds. Install one new wells in addition to HB9 to measure downgradient effects – see diagram.

Dedicated upgradient and downgradient wells required for sludge landfill

GW comment: Agree with majority of GP suggestions. Need additional bores for water level monitoring. Don't believe additional bores are needed down gradient of ponds as bores adjacent of river will pick up

these permits:

Monitoring Group	Location and purpose	HB2	HB3	HB4	HB9	HB11	New well south east of HB12	HB13	HB14	HB16	HB17	HB21	HB24	HB6	HB29	New gl monitoring bores	New up-gradient well of HB31
1a	Up gradient of land application area							x									x
1b	Down gradient of land application area	x		x		x	x			x		x					
1c	Within land application area										x		x	x	x	x	
2a	Down gradient of land fill	x		x													
2b	Down gradient of de-sludging area	x	x	x													
3a	Upgradient											x		x			

effects of site. Don't believe need new bores adjacent to stream and Makoura.

	of ponds																		
3b	Down gradient of ponds	x		x	x														

Note: new groundwater level monitoring bores for Group 1c should include: bore to the east of HB28, west of HB18, east of HB18, east of HB29, east of HB10 and north of HB3. These new bores are for the purpose assessing groundwater levels within the irrigation area and need only be 2 m deep at the most.

**MDC wording**

37. The permit holder shall collect representative groundwater samples in accordance with the Wellington Regional Council groundwater sampling protocol. The samples shall be analysed for the following parameters (Group 1c water level only):

Sampling tier	Parameters sampled	Measurement unit and detection limit
T1	Water level Dissolved Reactive Phosphorus (DRP) Dissolved Inorganic Nitrogen (DIN) Nitrate-N (NO <sub>3</sub> -N) Ammoniacal-N (NH <sub>4</sub> -N) E. coli	0.1 m 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 10 cfu/100mL
T2	Water level Phosphorus (DRP) Dissolved Inorganic Nitrogen (DIN) Nitrate-N (NO <sub>3</sub> -N) Ammoniacal-N (NH <sub>4</sub> -N) E. coli	0.1 m 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> cfu/100mL
T3	Water level	0.1 m

Parameters deleted because no corresponding compliance criteria given. Water level retained despite no compliance criteria so as to compare with modelled prediction. E coli and various forms of nitrogen retained to compare with modelled predictions.

**GW wording**

37. The permit holder shall collect representative groundwater samples in accordance with the Wellington Regional Council groundwater sampling protocol. The samples shall be analysed for the following parameters:

Sampling tier	Parameters sampled	Measurement unit and detection limit
T1	Water level Carbonaceous Biochemical Oxygen Demand Dissolved Reactive Phosphorus (DRP) Dissolved Inorganic Nitrogen (DIN) Nitrate-N (NO <sub>3</sub> -N) Ammoniacal-N (NH <sub>4</sub> -N) Chloride Conductivity Soluble iron E. coli pH	0.01 m 1.0 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 1 cfu/100mL
T2	Water level Phosphorus (DRP) Dissolved Inorganic Nitrogen (DIN) Nitrate-N (NO <sub>3</sub> -N) Ammoniacal-N (NH <sub>4</sub> -N) E. coli	0.01 m 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 0.1 g/m <sup>3</sup> 1 cfu/100mL
T3	Water level	0.01 m

**GW comment:**  
Some parameters will assist with the direct management of the land application area. Other parameters will assist with the ongoing operation of the land application area, and are what I would consider best practice. Some parameters have been reinserted from initial Applicant deletion. Should be noted that some are only monitored infrequently eg T1

**GP comment:**  
I have yet to see justification for monitoring of CBOD, soluble iron or chloride. It is not "best practice" to require monitoring with no specific objective. It may be that these parameters are aimed at determining whether the soil health is deteriorating. There are soil monitoring conditions to determine this more directly.

**MDC wording**

38. Groundwater sampling of the Monitoring Groups shall occur quarterly within all wells:

Monitoring Group	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1a												
1b							T1					
1c												

Table needs complete revision. As presented it suggests some wells get monitored several times in the same month.

Quarterly monitoring adequate

2a													
2b													
3													

**GW wording**

38. Groundwater sampling of the Monitoring Groups shall occur quarterly within all wells:

Monitoring Group	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1a	T1		T2		T2		T1		T2		T2	
1b	T1		T2		T2		T1		T2		T2	
1c	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3
2a	T1			T2			T1					
2b	T1	T2	T2	T1	T2	T2	T1	T2	T2	T1	T2	T2
3	T1			T2			T1			T2		

GW comment:  
 Quarterly unacceptable. Should be noted that that some parameters are only monitored every 6 months  
 GP comment  
 Two-monthly monitoring is still considered unnecessary and that GW hasn't justified three-monthly

**MDC wording**

39. The groundwater monitoring undertaken shall be for the following duration:

Monitoring Group	Start	Finish
1a	Within six months of consent commencement	Consent expires
1b	Within six months of consent commencement	Consent expires
1c	Within six months of consent commencement	Discontinue after three years if mounding as per, or less than, modelling
2a	When discharge starts to landfill	Consent expires
2b	As ponds are dewatered	When remediation is completed
3	When discharge starts to new ponds	Discontinue after two years if effects minimal

**GW wording**

39. The groundwater monitoring undertaken shall be for the following duration:

Monitoring Group	Start	Finish
1a	Within six months of consent commencement	Consent expires
1b	Within six months of consent commencement	Consent expires
1c	Within six months of consent commencement	Consent expires
2a	When discharge starts to landfill	Consent expires
2b	As ponds are dewatered	When remediation is completed
3	When discharge starts to new ponds	Discontinue after two years if effects minimal

GW comment: – water level monitoring required for term of consent as fundamental to operation and predicted effects.

**MDC wording**

40. Ground water quality shall comply with the following:

	Primary values	Secondary (Not to exceed) values	
	Any two samples shall not exceed:	No one sample result shall exceed:	
			g/m <sup>3</sup>
Dissolved reactive phosphorus			g/m <sup>3</sup>
In HB2, HB3 and HB4 prior to decommissioning and removal of sludge from existing ponds	1.4	1.9	
In HB2, HB3 and HB4 after sludge removal from existing ponds	0.70	1.3	
HB11	0.03	0.04	
New well 300 m south-south-east of HB12	0.04	0.05	
New well east of HB16	0.10	0.20	
HB21 and new well across stream from HB21	0.6	1.1	

Values deleted because existing quality does not meet the values nominated by WRC.

Values only required for wells downgradient of treatment area and landfill and to be back-calculated from allowable effects in receiving waters to check modelling and to provide early warning of adverse effects.

DIN is not critical relative to DRP according to the modelling. DIN is predicted to increase only 7% in the river relative to existing compared with 30% for DRP, i.e. DRP is four times more sensitive than DIN.

To arrive at DIN monitoring conditions consistent with DRP

New well 400 m west of HB21 adjacent to drain.	0.05	0.10	
E. coli			cfu/100ml

Compliance with the groundwater standards set out above shall be determined from the results of sampling undertaken in accordance with conditions 37, 38 and 39.

values would result in high (tens of  $\text{g/m}^3$ ) compliance conditions in monitoring wells, an unrealistic monitoring condition as they would never be reached because the concentration of eth applied effluent is too low.

If some arbitrarily lower values were chosen we run into the problem of DIN in the existing groundwater being highly variable both spatially and temporally (range  $0.06 - 6.5 \text{ g/m}^3$  in HB5, HB6 and HB11 upgradient of the ponds). Without knowing the existing groundwater quality in the proposed monitoring wells because most have not been monitored, it is impossible to set compliance values based on existing plus an increment from the proposed irrigation. The increment is likely in many cases to be less than the variability of the existing quality.

DRP values set on the basis of a 50% and 100% increase over current mean DRP at RUA1 ( $0.01 \text{ g/m}^3$ ), i.e. to 0.015 and 0.02, both of which are lower than the proposed condition for the river of  $0.03 \text{ g/m}^3$ . Conditions have been set by adding estimated groundwater concentration at each point that would give these increases in the river (multipliers of 1.5 and 3 on the modelled

predictions) to the existing DRP concentration. Typical existing max is 0.025 g/m<sup>3</sup>

Bacteria also deleted as not being critical. Bacteria monitoring does not provide a useful warning of adverse effects in the river because both background in the river is so high and dilution is so large (30 times at summer low flow, greater at higher flows). It also does not provide a useful warning that the modelling is grossly under-predicting, unless the modelling has under-predicted by many orders of magnitude. The prediction is for increase in E.coli in the river of only 0.004 cfu/100ml. An under-prediction of many orders of magnitude is unlikely given the modest bacterial inputs to the aquifer.

**GW wording**

40. Ground water quality shall comply with the following in Monitoring Group 1b, 2a, 2b and 3b (down gradient) bores:

	<b>Primary values</b>	<b>Secondary (Not to exceed) values</b>	
	Any two samples shall not exceed:	No one sample result shall exceed:	

**GW comment**  
 Do not need to differentiate bores. Take worse case. Makes it simpler to manage. Also only need compliance with downstream bores.  
**GP comment:**

Dissolved reactive phosphorus	0.25	0.5	g/m <sup>3</sup>
Dissolved inorganic nitrogen	5	7	g/m <sup>3</sup>
E. coli	50	200	cfu/100ml

Agree that simple not to differentiate, but by the time concentrations approached the proposed values in some wells, the performance would be well off what was predicted. The values would not be providing an early warning in those cases.

DRP value of 0.25 g/m<sup>3</sup> exceeded 5 times in HB2 (a Group 1b well) over the last four years, 4 times in 2005 alone. Until the current ponds are decommissioned, there is a risk that DRP will routinely exceed 0.25 g/m<sup>3</sup>. It will signify nothing more than that the current ponds are leaking. Value would need to go to 0.35 to avoid this.

DIN value of 5 g/m<sup>3</sup> has been exceeded in HB2 on several occasions in 2003 (highest value 7.2), although not recently. Again there is a risk that both the primary and secondary values for DIN will be exceeded until the existing ponds are decommissioned.

At HB21 (a Group 1b well) we do not know existing DIN but the well is close to HB10 for which monitoring is available. The mean and median DIN in HB10 is 3.2 g/m<sup>3</sup> with a 2003/08 high of just over 5 g/m<sup>3</sup>. The modelling predicts DIN increases in the

	<p>vicinity of HB21 of the order of 3 – 4 g/m<sup>3</sup>. If the current DIN in HB21 is similar to HB10 then DIN will routinely exceed the GW proposed primary and secondary values yet the increase in the receiving water will be within the currently measured “noise”.</p> <p>If routine exceedance are to be avoided, and if a before and after pond decommissioning is not be used for HB2 and HB4, then I suggest DIN primary value of 9 g/m<sup>3</sup> and secondary value of 12 g/m<sup>3</sup> to avoid routine exceedances.</p>
<p><b>Soil monitoring</b></p> <p><b>MDC wording</b></p> <p>41. The permit holder shall characterise the quality and variability of the physical and chemical properties across the land application area. Unless otherwise approved in writing by the Manager, Environmental Regulation, Wellington Regional Council, the permit holder shall undertake soil monitoring during June or July of each year. Testing shall be at three yearly intervals, with the first set of testing one year after irrigation first commences for (a) and (b). Each soil type (Greytown sandy loam and Greytown silt loam) shall be divided into three separate areas from which a representative composite sample shall be taken and the following parameters reported upon:</p> <ul style="list-style-type: none"> <li>(a) the permit holder shall measure infiltration capacity (measured under saturated conditions) at two sites within the three separate areas of each soil type as nominated above.</li> <li>(b) soil moisture, bulk density, pH, exchangeable sodium, Olsen phosphorus, total nitrogen%, organic carbon%, C:N ratio, anion storage capacity, cation exchange capacity. Analyses shall be undertaken on composite samples for each soil type at sampling depths of: 0-75 mm and 75-150mm;</li> <li>(c) prior to commencement of irrigation, then every 6 years from granting of the Permit, in conjunction with the testing above, the consent holder shall test for the elements Total As, Cd, Co, Cr, Cu, Fe, Hg, Mn, Ni and Zn in both the irrigated and non-irrigated soils, within the 0-75 mm soil depth.</li> </ul>	<p>Infiltration capacity and bulk density of a disturbed soil sample will not indicate the in situ values.</p>

<p>Note: A composite sample shall be made up of five cores spaced at no closer than 20 metres. Where possible samples in successive years shall be at similar locations.</p> <p><b>GW wording</b></p> <p>41. The permit holder shall characterise the quality and variability of the physical and chemical properties across the land application area. Unless otherwise approved in writing by the Manager, Environmental Regulation, Wellington Regional Council, the permit holder shall undertake soil monitoring during June or July of each year. Testing shall be from each soil type (Greytown sandy loam and Greytown silt loam) which shall be divided into three separate areas from which a representative composite sample shall be taken and the following parameters reported upon:</p> <ul style="list-style-type: none"> <li>(a) the permit holder shall measure infiltration capacity (measured under saturated conditions insitu) at two sites within the three separate areas of each soil type as nominated above. Monitoring shall start one year after irrigation has started and then every three years thereafter;</li> <li>(b) bulk density, pH, exchangeable sodium, Olsen phosphorus, total nitrogen%, organic carbon%, C:N ratio, anion storage capacity, cation exchange capacity. Analyses shall be undertaken on composite samples for each soil type at sampling depths of: 0-75 mm and 75-150mm. Monitoring shall be annually every year, starting the year before irrigation commences;</li> <li>(c) in conjunction with the testing above, the consent holder shall test for the elements Total As, Cd, Co, Cr, Cu, Fe, Hg, Mn, Ni, Pb and Zn in both the irrigated and non-irrigated soils, within the 0-75 mm soil depth. Monitoring shall be every 5 years, starting the year before irrigation commences;</li> </ul> <p>Note: A composite sample shall be made up of five cores spaced at no closer than 20 metres. Where possible, samples in successive years shall be at similar locations.</p>	<p>GW comment- some subtle changes to read better and a 5 year period in (c)</p> <p>NB comment;</p> <p>Pb should be included in the list of metals</p>
<p><b>Crop Monitoring</b></p> <p>42. The permit holder shall record crop management practices across the site, including:</p> <ul style="list-style-type: none"> <li>(a) crop renovation areas, species used and reasons for the renovation;</li> <li>(b) dry matter content removed from the site;</li> <li>(c) the nitrogen and phosphorus content of batches of all dry matter removed from the site;</li> <li>(d) any fertiliser application, including type and amount applied; and</li> <li>(e) records of any grazing undertaken.</li> </ul>	

<p><b>Pond Lining</b></p> <p>43. The permit holder shall submit to the Manager, Environmental Regulation, Wellington Regional Council, at least one month prior to the commencement of construction activities, a Pond Lining Management Plan that includes but is not limited to:</p> <ul style="list-style-type: none"> <li>(a) identifying the source of pond lining material;</li> <li>(b) the placing procedure for lining material;</li> <li>(c) a testing and quality control regime to demonstrate the attainment of the nominated permeability.</li> </ul> <p><b>GW wording</b></p> <p><b>Pond lining and Construction</b></p> <p>The permit holder shall submit to the Manager, Environmental Regulation, Wellington Regional Council, at least one month prior to the commencement of construction activities, a Pond Lining Management Plan that includes but is not limited to:</p> <ul style="list-style-type: none"> <li>(a) identifying the source of pond lining material;</li> <li>(b) the placing procedure for lining material;</li> <li>(c) a testing and quality control regime to demonstrate the attainment of the nominated permeability.</li> <li>(d) remediation, including pond infilling</li> </ul>	<p>GW comment Clause (d) added as was missed out from other conditions.</p>
<p>44. Constructed ponds shall be lined with suitable material to ensure permeability does not exceed <math>5 \times 10^{-9}</math> m/s. Should an earthen liner be used, it shall be no less than 400 mm in depth. Measures shall be taken to prevent cracking of the liner, including above the low water level in any storage ponds.</p>	
<p><b>Pond Capacity</b></p> <p>45. Wastewater ponds shall provide the capacity to store no less than 275,000 m<sup>3</sup>. This shall be 'live' storage and not be relied on for treatment purposes.</p> <p>The provision of sufficient storage volume to ensure compliance with the conditions of this consent is the responsibility of the consent holder.</p>	
<p><b>Groundwater Monitoring Action</b></p>	

<p><b>MDC wording</b></p> <p>46. Should any monitoring undertaken in accordance with condition 40 exceed the nominated Primary Values, the consent holder shall re-sample within 5 days of receiving the laboratory issuing the results. If the results of the re-sampling exceed the nominated Primary values, the permit holder shall notify the Manager, Environmental Regulation, Wellington Regional Council within 14 days of the laboratory issuing the results. The notification shall identify what the exceedance is, why it was caused and steps being undertaken to ensure compliance.</p>	<p>First action should be to repeat monitoring and/or increase frequency for short period to confirm exceedance is real and not a one-off aberration.</p>
<p><b>GW wording</b></p> <p>46. Should any monitoring undertaken in accordance with condition 40 exceed the nominated Primary Values, the consent holder shall re-sample within 5 days of receiving the laboratory issuing the results. If the results of the re-sampling exceed the nominated Primary values, the permit holder shall notify the Manager, Environmental Regulation, Wellington Regional Council within 14 days of the laboratory issuing the second set of results. The notification shall identify what the exceedance is, why it was caused and steps being undertaken to ensure compliance.</p>	<p><b>GW comment</b>  There is a point of difference between Graeme P and HL here. GP is wanting compliance to be set and determined by impact on river. HL wants an early warning system, bearing in mind that the<sup>4</sup> LT/GW operation was the basis for modelling effects on the river.  <b>GP Comment.</b>  As proposed by GW, some downgradient wells will provide a very late warning of differences from predictions, while other will routinely exceed – see comments above.   With respect to DIN, unless the modelling is a long way out, effects in the receiving waters will not be significant until very much higher values than the GW proposed values. Thus, should there be an exceedance, the only logical conclusion that MDC can come to in reporting to GW is that the compliance values are set too low. Hence my previous</p>

	<p>suggestion that the first level of action is to review performance against predictions, rather than having to propose actions to achieve compliance.</p>
<p>47. Should any monitoring undertaken in accordance with condition 40 exceed the Secondary Values, the consent holder shall re-sample within 5 days of receiving the laboratory issuing the results. If the results of the re-sampling exceed the nominated Primary values, the permit holder shall notify the Manager, Environmental Regulation, Wellington Regional Council within 7 days of the laboratory issuing the second set of results. The notification shall identify what the exceedance is, why it was caused and the timing of the establishment of modifications to the activity which resulted in the non-compliance.</p>	<p>These conditions may need modification depending on the final form of Condition 40</p>
<p><b>GW wording</b></p> <p>Further to conditions 46 and 47 above, should any monitoring undertaken in accordance with condition 40 exceed the Secondary or Primary Values, monitoring of the offending bores shall continue on a monthly basis until analysis results decline below the Secondary or Primary Values.</p>	<p>GW comment New condition GP Comment. This condition is unreasonable. Firstly, if there was a continuing exceedance, 46 and 47 require further sampling within 5 days, so it is not just monthly but twice monthly at uneven intervals that would kick in.</p> <p>Secondly, if on reviewing a continuing exceedance it is found that there is no real issue and what is really required is a variation of the compliance values, rather than change of the activity, this condition would require frequent monitoring until such time as a varied condition was put in place.</p> <p>GW needs an "out" so that it can relax the more frequent sampling</p>

<b>GW wording</b>	<b>GW comment</b>
<p>48. Should two samples in any 12 month period exceed the Primary Values, or if any individual sample exceeds the Secondary Values, the consent holder shall within 3 months have presented to the Manager, Environmental Regulation, Wellington Regional Council an alternative method for the activity which resulted in the non-compliance. Within 12 months of the exceedance the consent holder shall have implemented the modifications.</p> <p><b>Note:</b> Modifications may include alternatives however the permit holder is advised that this may require an application to vary the conditions or new consent applications.</p>	<p>MDC do not see need for this condition stating it is a double up of the above. The condition should remain as it reinforces what needs to happen and provides a date/timeframe when changes have to be made.</p>

**WAR 090066 (27164) - Discharge permit to discharge wastewater sludge and residual liquid to land from the sludge dewatering process and sludge landfill.**

This permit shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

Condition	Comment
<b><i>Works in accordance with application</i></b>	
1. This permit only authorises the landfilling of sludge to the area identified as "Sludge Landfill (~0.7 ha)" on plan Proposed Pond Layout Plan 3202216-560-C602 that formed part of the application.	
2. No irrigation of wastewater shall occur over the landfill area.	
<b><i>Landfill Management Plan</i></b>	
<p>3. The consent holder shall submit, at least one month prior to any placement of material in the landfill, a Landfill Management Plan which includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>(a) design and installation of lining material;</li> <li>(b) design and installation of capping material;</li> <li>(c) design and management of leachate retention and handling facilities;</li> <li>(d) moisture content requirements for placed material;</li> <li>(e) management of subsidence and slumping;</li> <li>(f) management of landfill gases.</li> </ul>	(f) Landfill gas is likely to be insignificant but precautionary to measure during first few summers.
<b><i>Landfill Lining</i></b>	
<p>4. The consent holder shall submit, at least one month prior to the commencement of construction activities, a Landfill Lining Plan that includes but is not limited to:</p> <ul style="list-style-type: none"> <li>(a) identifying the source of landfilling lining material;</li> <li>(b) the placing procedure for lining material;</li> <li>(c) a testing and quality control regime to demonstrate the attainment of the nominated permeability.</li> </ul>	
5. Constructed landfilling areas shall be lined with suitable material to ensure permeability does not exceed $5 \times 10^{-9}$ m/s. Should an earthen liner be used, it shall be no less than 400 mm in depth.	

<p>The Consent Holder shall ensure sufficient and appropriate rock armouring is used to protect the exterior of the land fill wall from river erosion.</p>	
<p><b>Dewatering and Sludge Drying</b></p> <p><b>MDC wording</b> 6. delete the condition</p> <p><b>GW wording</b> Excessive leaching of contaminants below the base of the existing ponds during the dewatering/sludge drying process is not permitted.</p> <p>Excessive leaching shall be assessed by groundwater monitoring as required by Condition 36 (Schedule 2 Permits 27160, 27161, 27162 and 27163) and will have deemed to occurred if the water quality targets in Condition 40 (Schedule 2 Permits 27160, 27161, 27162 and 27163) have been exceeded.</p>	<p>It will not be possible to distinguish between leachate from the area of the existing ponds and up gradient sources. Also leaching of contaminants will be insignificant, therefore delete</p>
<p>7. The drying of sludge from the base of the existing wastewater treatment ponds shall be undertaken in accordance with the following:</p> <ul style="list-style-type: none"> <li>(a) Sludge shall be relocated within the base of the existing ponds to facilitate drying and avoid contact with groundwater.</li> <li>(b) Sumps shall be created to assist with dewatering, with 'clean' water being discharged to the Makoura Stream and contaminated water to the new wastewater ponds.</li> <li>(c) Sludge with a moisture content of more than 95 %, as measured on a wet weight basis, (i.e. less than 5 % solids) shall be pumped to the new wastewater ponds.</li> <li>(d) No sludge is to be dried or stored, including temporarily, on the property which is outside the existing wastewater ponds or the new landfill site. This includes not allowing sludge to be stored on the surface of any remediated pond area.</li> <li>(e) All sludge shall be removed from the base of the existing wastewater ponds within 24 months of wastewater discharge to the new ponds commencing.</li> <li>(f) Compliance with water quality parameters in Permit 27171 (check cross reference).</li> </ul> <p>Advice note: If dried sludge is to be used as a soil conditioner, or there is a need for temporary storage outside the base of the existing pond, then additional consents may be required.</p>	<p>MDC comment Check wet or dry weight basis for standard measurements. -- Convention for sludges is the normal scientific basis where moisture is expressed as a % of oven dry weight.</p> <p>GW comment: The Biosolid guidelines refer to wet weight and hence the condition should be consistent. MDC proposed dry weight.</p> <p>MDC comment See Archer evidence 30 March – definitely DRY weight basis in</p>

	Biosolids Guidelines and in Standard Methods.
<p>8. No residual pond sludge, to within practical excavation limits, shall remain in the base of the existing ponds following remediation.</p> <p>Advice note: For the purpose of this condition, "practical excavation limits" refers to not having material in clumps or layers which are greater than 25 mm in depth.</p>	
<p><b>Landfill Operation</b></p> <p>9. The sludge landfill operation shall:</p> <ul style="list-style-type: none"> <li>(a) Only receive sludge from the dewatering of the existing wastewater treatment ponds.</li> <li>(b) Only receive material that has a moisture content of no greater than 65%, as measured on a wet weight basis (i.e. 35% solids).</li> <li>(c) Collect and discharge leachate from the landfill to the new wastewater treatment ponds.</li> <li>(d) Stormwater from the landfill surface shall be collected and discharged to ground soakage. It shall not contain any sludge material or leachate.</li> </ul>	<p>MDC comment Definitely dry weight basis for standard measurements – see 7 above</p> <p>GW comment: The Biosolid guidelines refer to wet weight and hence the condition should be consistent. MDC proposed dry weight.</p>
<p><b>GW wording</b></p> <p>The permit holder shall consider alternative beneficial reuse options, especially to assist with minimising the ongoing and long term management costs of the landfill</p>	<p><b>MDC opposes</b> Beneficial reuse of existing pond sludge has been investigated and has not been adopted as stated in the AEE and Archer evidence. There will be negligible ongoing and long term management costs for the sludge landfill and thus no financial justification for beneficial reuse.</p>

**WAR 090066 (27165) - Discharge permit to discharge odours and aerosols to air from the oxidation ponds, land irrigation system, and sludge dewatering process and landfill, and other activities from the site.**

This permit shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

<b>Condition</b>	<b>Comment</b>
1. There shall be no discharges to air that are noxious, dangerous, offensive or objectionable resulting from the operation of the Masterton wastewater treatment plant and land irrigation system at or beyond the boundary of the plant site as designated in the District Plan.	
2. The consent holder shall develop and implement a Management Plan, incorporated with the Plan detailed in Schedule 1, Condition 6, to address odour arising from operations. The Management Plan shall include but not be limited to recording of events which create an objectionable odour/aerosol occurrence and measures and maintenance regimes to prevent objectionable odour/aerosol.	

**WAR 090066 (27166) - Water permit to divert surface water in the Ruamahanga River during flood events by upgrading existing stopbanks.**

This permit shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

Condition	Comment
1. The consent holder shall notify the Manager, Environmental Regulation Wellington Regional Council, at least 48 hours prior to commencement of any works, and upon completion of works so that compliance inspections may be arranged.	
2. The consent holder shall implement the following procedures if waahi tapu sites or other sites of value to tangata whenua are found: <ul style="list-style-type: none"> <li>• work in the surrounding area is to cease immediately;</li> <li>• the consent holder shall contact the Manager, Planning &amp; Resources, Wellington Regional Council, Rangitaane o Wairarapa, and Ngati Kahungunu o Wairarapa immediately;</li> <li>• Representatives of Rangitaane o Wairarapa and/or Ngati Kahungunu o Wairarapa are to be given sufficient time to carry out an investigations of the site determine any cultural issues and an appropriate course of action. At the discretion of Manager, Planning &amp; Resources, Wellington Regional Council, this action may include a permanent or temporary cessation of work on the site.</li> </ul>	
3. The consent holder shall, within 3 months of completion of the work authorised by this consent, submit a completion certificate prepared by a person suitably qualified in river engineering and stopbank construction which confirms that the work has been undertaken in accordance with the application and all associated plans.	
4. Any substantial damage to the stopbank structure arising from causes other than flood events, shall be repaired by the consent holder as soon as practicable.	Unnecessary – GWRC could instruct MDC to carry out repairs if required under the normal provisions of the river scheme
.	GWRC owns the stopbank and is therefore responsible for monitoring and repairs
6 The consent holder shall regrass the realigned stopbank and any borrow areas as soon as practicable following the completion of works.	



**WAR 090066 (27168) - Land use consent to construct, place, use, and maintain a structure (diffuser outfall) in the bed of the Ruamahanga River.**

**AND**

**WAR 090066 (27169) - Land use consent to disturb the bed of the Ruamahanga River arising from construction and maintenance.**

These permits shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

Condition	Comment
1. The consent holder shall notify the Manager, Environmental Regulation Wellington Regional Council, at least 48 hours prior to commencement of any works, and upon completion of works so that compliance inspections may be arranged.	
2. No construction works shall be carried out in the wetted channel of the Ruamahanga River trout-spawning period (1 June to 30 August) or within the indigenous fish migration period (1 September to 30 November).	Dates inserted
3. The consent holder shall take all practicable steps to minimise sedimentation and increased turbidity of the Ruamahanga River during the construction, implementation and maintenance of the works, including: <ul style="list-style-type: none"> <li>(a) completing all works in the minimum time practicable;</li> <li>(b) minimising the area of disturbance at all times; and</li> <li>(c) installing appropriate erosion sediment control measures.</li> </ul>	
4. The consent holder shall ensure that: <ul style="list-style-type: none"> <li>(a) all machinery is thoroughly cleaned of unwanted vegetation (e.g. weeds), seeds or contaminants prior to entering the site;</li> <li>(b) no contaminants (including but not limited to oil, petrol, diesel, hydraulic fluid) shall be released into water from equipment being used for the works;</li> <li>(c) all machinery is regularly maintained in such a manner so as to minimise the potential for leakage of contaminants; and</li> <li>(d) no machinery is cleaned, stored or refuelled within 10 metres of the river.</li> </ul>	
5. The works shall remain the responsibility of the consent holder and be maintained so that:	

- |   |  |
|---|--|
| <p>(a) any erosion, scour or instability of the stream bed that is attributable to the works carried out as part of this consent is remedied by the consent holder; and</p> <p>(b) the structural integrity of the structure authorised by this consent remain sound.</p> |  |
|---|--|

**WAR 090066 (27167) - Water permit to permanently divert the Makoura Stream around the new oxidation ponds.**

This permit shall be exercised subject to the following conditions together with those conditions specified in Schedule 1: General Conditions.

Condition	Comment
1. The consent holder shall notify the Manager, Environmental Regulation Wellington Regional Council, at least 48 hours prior to commencement of any works, and upon completion of works so that compliance inspections may be arranged.	
2. A riparian management plan consistent with Greater Wellington Regional Council's 'Restoration Planting: A Guide to Planning Restoration Projects in the Wellington Region' shall be prepared. The Plan shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council no less than 2 months prior to this consent being exercised.	
3. A minimum riparian buffer of 5 metres surrounding the new stream channel be permanently retired from farming and riparian planting undertaken consistent with the conceptual planting diagram attached in Appendix C of the AEE (Boffa Miskell Makora Stream Diversion: Indicative Planting Plan), unless constrained by embankment and flood protection works.	
<p>4. In diverting the bed of Makoura Stream the consent holder shall ensure that:</p> <ul style="list-style-type: none"> <li>(a) The new channel is sized to ensure that the hydraulic capacity of the channel can contain a 50 year flow event;</li> <li>(b) The new stream bed is consistent with the natural meander and flow environment of the existing channel;</li> <li>(c) The bed of the new channels is constructed in a way that ensures that there is a minimal reduction in the base flow or transport capacity of as result of the diversion;</li> <li>(d) The work necessary to carry out the diversion is done in the dry stream bed prior to flows being diverted into the new channel;</li> <li>(e) Water shall be diverted in stages over several hours to allow fish to escape the falling water level in the old stream channel;</li> <li>(f) Any fish stranded by the diversion are recovered and transferred to the new channel as soon as possible;</li> <li>(g) Bed disturbance shall does not damage any riverbank or cause any flooding or erosion;</li> <li>(h) All reasonable steps are shall be taken to minimise the release of sediment during the disturbance;</li> <li>(i) Best endeavours are undertaken to ensure that all bed disturbance does shall not damage any stream bank or cause any flooding or erosion;</li> <li>(j) All reasonable steps are shall be taken to minimise the release of sediment during the disturbance.</li> </ul>	

## CONSTRUCTION RELATED CONSENTS

### Schedule 1: General conditions applying to:

WAR 090066 (27170) - Discharge permit to discharge sediment-laden stormwater to the Ruamahanga River and Makoura Stream arising from bulk earthworks.

WAR 090066 (27171) - Discharge permit to discharge any treated wastewater and groundwater to water arising from dewatering processes at various locations.

WAR 090066 (27172) - Water permit to divert and take groundwater arising from dewatering processes from cut-off and drainage trenches during construction activities.

Condition	Comment
<p><b>Procedures prior to commencement of works</b></p> <p>1. The consent holder shall notify the Manager, Environmental Regulation Wellington Regional Council, at least 48 hours prior to commencement of each phase of works, and upon completion of each phase works so that compliance inspections may be arranged.</p> <p>2. The permit holder shall ensure that a copy of this permit is kept on site at all times and presented to any Wellington Regional Council officer on request.</p> <p>3. The permit holder shall provide a copy of this permit and any documents relating to this permit, to each operator or contractor undertaking works authorised by this permit, before that operator or contractor starts any works.</p> <p>Note: It is recommended that the permit holder verbally brief the operators or contractors regarding the conditions of this permit, prior to works commencing.</p>	
<p><b>GW wording</b></p> <p>During the period of construction, the permit holder, shall to the extent practicable, clear plant, equipment and any hazardous materials from the bed of the Ruamahanga River on receipt of a "Heavy Rain Warning" via the Meteorological Service providing for the possibility of a flood event likely to equal or exceed a <b>2-year</b> return period.</p> <p>Should any materials from construction or earthworks works enter the Ruamahanga River channel as a result of the works including such materials washed from the site by flood events, the permit holder shall</p>	

<p>recover those materials to be extent practicable as soon as possible or otherwise ensure they do not cause a hazard.</p>	
<p><b>Management Plans</b></p> <p>5. Where a Management Plan and the Erosion and Sediment Control Plan are required to be submitted it:</p> <ul style="list-style-type: none"> <li>(a) shall be forwarded to the Manager Environmental Regulation, Wellington Regional Council;</li> <li>(b) address the matters set out in the respective management plan;</li> <li>(c) comply with the conditions of all relevant consents; and</li> <li>(d) be to the satisfaction of Wellington Regional Council.</li> </ul> <p>Advice note: Being to the satisfaction of the Wellington Regional Council means that the management plan shall be confirmed in writing by the Wellington Regional Council as containing all the requirements as specified in the conditions, including level of detail of what is to be included in the plan.</p>	
<p><b>Review &amp; Charges</b></p> <p>6. The Wellington Regional Council may review any or all conditions of this consent 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 31 August in each year for the term of this consent 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.</p>	
<p><b>GW wording</b></p> <p>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.</p>	Unnecessary but unobjectionable
<p>8. 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 execution of its functions under Section 35 (duty to gather information, monitor and keep records) of the Act.</p>	Unnecessary but unobjectionable

**Schedule 2 Specific Resource Consent Conditions**

**WAR 090066 (27170) - Discharge permit to discharge sediment-laden stormwater to the Ruamahanga River and Makoura Stream arising from bulk earthworks.**

Condition	Comment
<p>1. The discharge shall be only stormwater from earthworks associated with the construction of the Masterton Wastewater Treatment Plant and Disposal System Long-Term Upgrade.</p>	
<p>2. The consent holder shall submit, at least one month prior to the commencement of construction activities, an Erosion and Sediment Control Plan outlining the construction activities and all practices and procedures to be adopted in the construction of the Masterton Wastewater Treatment Plant and Disposal System Long-Term Upgrade.</p> <p>The Erosion and Sediment Control Plan (ESCP) shall be prepared in accordance with Greater Wellington's Erosion and Sediment Control Guideline 2002, and shall:</p> <p>(a) Clearly define the sediment and erosion control measures to be implemented for each stage of the works. The Plan shall include, but not be limited to:</p> <ul style="list-style-type: none"> <li>(i) a locality map detailing as a minimum the location of roads, property boundaries, surface waterways, the direction of stormwater flows, and the erosion and sediment and control devices;</li> <li>(ii) a detailed programme of works identifying: <ul style="list-style-type: none"> <li>(a) each stage of construction;</li> <li>(b) an estimate of the maximum area of bare ground (cumulative total) exposed at each stage of construction;</li> <li>(c) the volume of earthworks proposed.</li> </ul> </li> <li>(iii) drawings and specifications of all designated erosion and sediment control measures selected from the Erosion and Sediment Control Guidelines, including contingency measures, on-site catchment boundaries, and off-site sources of runoff</li> <li>(iv) a programme for managing exposed areas including progressive stabilisation and minimising areas of exposed soil by: <ul style="list-style-type: none"> <li>(a) ensuring that any earthworks and/or vegetation clearance should where practicable, be limited to the footprint of the works; and</li> <li>(b) staging of the construction.</li> </ul> </li> <li>(v) A schedule outlining the frequency and methods of inspection, monitoring and maintenance of all erosion and sediment control measures.</li> <li>(vi) Details of any proposed monitoring as is adequate to demonstrate the effectiveness of the</li> </ul>	

proposed measures.	
<p>3. The Erosion and Sediment Control Plan may be amended at any time during the construction phase. Any amendments shall be:</p> <p>(a) only for the purpose of improving the efficiency of the erosion and sediment control measures and shall not result in reduced discharge quality into the receiving environment;</p> <p>(b) consistent with the conditions of this resource consent; and</p> <p>(c) submitted in writing to the Manager, Environmental Regulation, Wellington Regional Council, prior to any amendment being implemented.</p>	
<p>4. All erosion and sediment control measures shall be installed prior to the commencement of any earthworks, for each stage.</p>	
<p>5. All erosion and sediment control measures shall remain the responsibility of the permit holder, and be installed, operated and maintained efficiently and in accordance with Wellington Regional Council's Erosion and Sediment Control Guidelines for the Wellington Region (dated September 2002), and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.</p>	
<p>6. The permit holder shall ensure that the site is audited by an appropriately qualified person on a monthly basis to ensure that the erosion and sediment control methods are being maintained in accordance with the Erosion and Sediment Control Plan.</p>	
<p>7. The monthly audits of site with respect to the Erosion and Sediment Control Plan as required by condition 6 shall include, but not be limited to, the following information:</p> <ul style="list-style-type: none"> <li>• Date;</li> <li>• Name of auditor;</li> <li>• Site condition;</li> <li>• Weather conditions;</li> <li>• Sediment management (identification of areas of potential sediment generation and review of sediment control measures);</li> <li>• Runoff control;</li> <li>• Condition of sediment control measures, including silt fences, contour drains and sediment retention ponds;</li> <li>• Maintenance required and the date this will be completed by; and</li> <li>• General comments.</li> </ul>	

<p>The results of the monthly audits as required by condition 6 shall be forwarded to the Manager, Environmental Regulation, Wellington Regional Council on request.</p>	
<p>8. Where the discharge of stormwater enters any surface watercourse, the discharge after [specify distance downstream] for the Ruamahanga River, shall not result in:</p> <p>(a) any visible oil, grease films, scums or foams, or floatable materials; or</p> <p>(b) any conspicuous change in colour or clarity.</p>	<p>MDC suggests Wardells Bridge to allow for entry from Makoura stream</p>

**WAR 090066 (27171) - Discharge permit to discharge any treated wastewater and groundwater to water arising from dewatering processes at various locations.**

Condition	Comment																					
<p><b>Discharge quality and quantity limits</b></p> <p>1. The discharge of treated wastewater and groundwater from the dewatering process to Makoura Stream shall not exceed <b>500 litres per second</b>.</p>	<p>AEE sect 6.3.7, page 97 requested 500 l/s, in order to control groundwater during river floods. <b>This discharge rate is less than the 700 l/s permitted by the Interim Consent.</b></p>																					
<p>2. (a) The permit holder shall monitor water quality every 7 days during any continuous discharge period, with the first sample taken 14 days prior to discharge commencing (to allow for results to be available).</p> <p>(b) The discharge of treated wastewater from the dewatering process to Makoura Stream shall not exceed the following standards:</p> <table border="1" data-bbox="183 751 1258 986"> <thead> <tr> <th>Parameter</th> <th>Unit</th> <th>Standard (rolling geomean)</th> </tr> </thead> <tbody> <tr> <td>E. coli</td> <td>cfu/100 ml</td> <td>1200</td> </tr> <tr> <td>BOD<sub>5</sub></td> <td>g/m<sup>3</sup></td> <td>32</td> </tr> <tr> <td>Suspended Solids</td> <td>g/m<sup>3</sup></td> <td>42</td> </tr> <tr> <td>Total Nitrogen</td> <td>g/m<sup>3</sup></td> <td>13</td> </tr> <tr> <td>Ammonia-N</td> <td>g/m<sup>3</sup></td> <td>7.0</td> </tr> <tr> <td>Total Phosphorus</td> <td>g/m<sup>3</sup></td> <td>3.3</td> </tr> </tbody> </table> <p>Note: monitoring parameters are the same as that expected in Condition 12 of Permits 27160, 27161, 27162, 27163</p>	Parameter	Unit	Standard (rolling geomean)	E. coli	cfu/100 ml	1200	BOD <sub>5</sub>	g/m <sup>3</sup>	32	Suspended Solids	g/m <sup>3</sup>	42	Total Nitrogen	g/m <sup>3</sup>	13	Ammonia-N	g/m <sup>3</sup>	7.0	Total Phosphorus	g/m <sup>3</sup>	3.3	<p>First few results will have to comply with the standard, so the intent of the condition will be achieved – ie to continue discharging to the stream at a similar quality as at present</p>
Parameter	Unit	Standard (rolling geomean)																				
E. coli	cfu/100 ml	1200																				
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<p><b>Notification of dewatering</b></p> <p>3. In addition to general condition 1, the permit holder shall notify the Manager, Environmental Regulation, Wellington Regional Council no later than 12 hours prior to any pumping of water from the existing ponds to the Makoura Stream. The consent holder shall also notify within 24 hours of the discharge ceasing.</p>																						

<p><b><i>Keeping of records</i></b></p> <p>4. The permit holder shall keep a record of the dates, times, volumes and monitoring results of all discharges from the existing wastewater ponds to the Makoura Stream. The records shall be forwarded to the Manager, Environmental Regulation, Wellington Regional Council on request.</p>	
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**WAR 090066 (27172) - Water permit to divert and take groundwater arising from dewatering processes from cut-off and drainage trenches during construction activities.**

Condition	Comment
<p>1. The consent holder shall submit to the Manager, Environmental Regulation, Wellington Regional Council, at least one month prior to the commencement of construction activities a Dewatering Management Plan outlining the dewatering activities, practices and procedures to be adopted in the construction of the Masterton Wastewater Treatment Plant and Disposal System Long-Term Upgrade.</p> <p>The dewatering management plan will includes details of:</p> <ul style="list-style-type: none"><li>(a) the extent of construction activities in relation to the areas where dewatering will be required;</li><li>(b) the types of dewatering methods to be adopted and details of where water will be directed and disposed of;</li><li>(c) a programme including timetable, sequence of events and duration;</li><li>(d) mitigation measures to be adopted; and</li><li>(e) contact details for the person in charge of site works.</li></ul>	