Condition Schedule APP-2005011178.01 – Eketahuna Wastewater Treatment Plant
General Conditions Applying to all Permits

Descriptive Specification

1. The activity authorised by these permits shall be undertaken in general accordance with the concepts, parameters, drawings, specifications, statement of intent, proposed mitigation measures and other information supplied in the application received on 1 April 2015 and supplementary documents received.

    a. On 11 December 2015, being a response to the s92 further information requested of June 2015; and
    b. On 27 February 2017, being a response to the s92 further information request of November 2016.

    Where the application is inconsistent with the requirements of the conditions, the conditions will prevail.

2. The wastewater discharge authorised by these permits shall be limited to:

    a. A maximum 12 month rolling median (midnight to midnight) discharge of 640 cubic metres.
    b. A maximum peak flow discharge of 2,000 cubic metres over a 24 hour period wet weather flow.

Predevelopment Milestones

2a The Permit Holder shall finalise the details of the Treatment Plant, and the treatment process to be used to treat wastewater so it will meet all the conditions of Permit xxxx. The Permit Holder shall prepare an RFP to call for a design for the Treatment Plant within two months of the commencement of these permits. As a minimum the RFP shall specify the minimum effluent standards to be achieved, and detail requirements for monitoring influent flows and characteristics. As a requirement, the RFP shall specify that final design of the process improvements necessary to meet the effluent standards and a procurement strategy shall be completed within 13 months of commencement of these permits. The Permit holder shall ensure that a contract is awarded for the design and construction of upgrades to the WWTP within four months of the final design and procurement strategy. The contract shall include milestones details to ensure all upgrades are installed at the plant no later than 12 months from award of construction contract.

No later than 11 months following award of the construction contract the Permit Holder shall forward details of a plan for the Commissioning phase of the upgrades and details of performance testing to be undertaken. Performance testing, including making seasonal adjustments, shall be undertaken in parallel with the receiving water investigations required by Condition xx.

Advice Note: The milestones for design are subject to negotiation with a contractor to be awarded the tender for the finalised design of WWTP. The dates specified above recognise major milestones and will be subject to additional milestones.

Advice Note: This condition does not replace condition xx which requires a report to be prepared looking in to xxxx. The expectation would be that data collected during the design phase would be able to be used in the process of xx condition.

Environmental Standard

3. **Within two years of commencement** of these permits, the permit holder shall have achieved the requirements of Policy 5-11 by either ensuring the discharge is
   (i) being applied onto or into land, or
   (ii) flowing overland, or
   (iii) passing through an alternative system that mitigates the adverse effects on the mauri of the receiving water body.

Monitoring Provision

4. **Within [xx][1] months of commencement** of these permits, the permit holder shall install signage advising Makakahi River users that treated wastewater is being discharge into the location[2].
5. Within six years of commencement of these permits, the permit holder shall have **completed** an investigation into alternative methods of treatment and discharge, including land based disposal. The alternative disposal feasibility study shall inform the permit holder's decision on the best practicable option for treatment and disposal from the Eketahuna Wastewater Treatment Plant. The findings of the feasibility study shall be provided to the Tararua District Wastewater Forum (TDWF), and to the Regulatory Manager of the Manawatu-Wanganui Regional Council.
6. **Within twelve months of commencement** of these permits, the permit holder shall have completed a recreational user's investigation of the Makakahi River **[xx]** kilometres upstream and **[xx]** kilometres downstream of the discharge point and mixing zone[3].
7. The permit holder shall inspect the Sewage Treatment Plant at least once weekly for the term of these permits for the purpose of attending to all operational requirements, monitoring and maintenance. A record of these visits and any maintenance undertaken shall be kept in a log book, available to the Manawatu-Wanganui Regional Council's Consents Monitoring Officer upon request.
8. **By 31 October of each year**, the Consent Holder shall provide the Manawatu-Wanganui Regional Council's Consents Monitoring Team and the Tararua District

Commented [TM1]: Suggest that MidCentral Health be asked what would consider to be a suitable distance.

[1] May require updating depending on discharge location.
[2] Greater specificity is required as to where the placement of signage should be but until the final dischrage location is known I am unable to indicate this.

Wastewater Forum (TDWF), an Annual Environmental Report for the 12 month period ending 30 June. The monitoring report shall include but shall not be limited to:

a. A summary of analyses and records collected in accordance with conditions of these permits, including all sampling conditions;
b. A summary of the daily inflow and outflow volumes for the oxidation ponds including a comment on the relative volumes;
c. An assessment of the analyses and records;
d. An assessment of the effects on both groundwater and surface water including an assessment of those water quality analyses under Conditions [xx], [xx], and [xx] and against any relevant targets in Schedule E of the One Plan.
e. A report on the effects of the discharge on the benthic biota of the Makakahi River as required by condition xx of the discharge to water permit
f. A comment on the extent to which conditions of these permits have been complied with;
g. A record of any complaints that are received relating to the operation of the Oxidation ponds;[3]
h. Report on trends as a result of permit monitoring.

9. Within 3 months of these permits commencing, the Permit Holder shall install a pond level sensor alarm.

10. Within 3 months of these permits commencing, the Permit Holder shall install a high level alarm.[4]

Tararua District Wastewater Forum (TDWF)

11. The permit holder shall initiate the inaugural meeting of the Tararua District Wastewater Forum **(TDWF)** on or before 31 October in the year either or both of the Pahiatua (APP-1993001253.02) or Eketahuna application (APP-2005011178.01) commence.

ADVICE NOTE: The inaugural TDWF meeting shll be initiated following commencement of the earliest application to be authorised.

12. The permit holder shall secure the services of an independent facilitator who is responsible for facilitating discussions any time the forum meets.

13. The permit holder shall, for all TDWF's, provide the venue and administrative support, including but not limited to recording attendees recording and circulating notes and outcomes discussed at the forum.

14. Two weeks prior to hosting any meeting of the TDWF, the permit holder shall by way of formal correspondence issue invitations to the following parties:

[3] Signage may be required to be shifted depending on any outcomes from this report
[4] These two conditions require further development including what pond level would trip a trigger e.g. how full the pond is and the corresponding warning alarm. It would be best if the applicant provided what these levels would be.

a. Kahungunu ki Tamaki nui-a-rua Trust and Rangitane o Tamaki nui a Rua Inc
b. Water & Environmental Care Ass. Inc
c. Water Protection Society Inc
d. MidCentral District Health Board
e. Manawatu Estuary Trust
f. Wellington Fish and Game,
g. John Bent, Christina Paton, Te Roopu Taiao o Ngati Whakatere, Corny and Charlotte Andrews,
h. A representative of Horizons Regional Council as the Regulatory Authority,
i. A representative of the Tararua District Council as the permit holder, and
j. Manawatu River Accord participants.

15. In addition to condition 14 above, the permit holder shall place in the Manawatu Standard and the Bush Telegraph a public notice advising of the date, time, location and purpose of the TDWF meeting.

16. The permit holder shall ensure that at least one TDWF shall occur annually.

ADVICE NOTE: Meeting frequency can be amended if participants in the TDWF agree.

Review

17. The Manawatu-Wanganui Regional Council may, pursuant to section 128 of the Act, initiate a review of any conditions of these permits in the month of **July 2018, July 2021 and July 2023.** Any review shall be for the purpose of reviewing the effectiveness of the conditions in avoiding, or mitigating any adverse effects on the environment, which may arise as a result of the exercise of this permit. The review of conditions shall be for the purpose of:

a. The modification of the monitoring programme, including reviewing the frequency of the monitoring or the determinants required;
b. Requiring compliance with any relevant rule of an operative Regional Plan;
c. The amendment, deletion or addition of new conditions as necessary to avoid, remedy or mitigate any adverse effect on the environment but not limited to conditions to mitigate adverse effects attributed to any breach of any condition;
d. Addressing any adverse effects on the environment which may arise that are appropriately addressed at a later stage;
e. Requiring the permit holder to adopt the best practicable option to remove or reduce any adverse effects on the environment;
f. Requiring the permit holder to adopt the best practicable option to remove or reduce any adverse effects on the environment;
g. Assessing the performance of the wastewater treatment plant in terms of the quality of the effluent being discharged to the receiving environment;
h. Reviewing the effectiveness of the standards in the conditions of this permit in addressing the adverse effects on the Makakahi River;

i. The review may result in any of the following outcomes to ensure that any adverse effects are appropriately mitigated:
    i. The deletion or amendment of any conditions of the permits;
    ii. The addition of new conditions of consent including conditions imposing more stringent discharge quality standards or more stringent receiving water standards;-
    iii. The addition of new conditions requiring the permit holder to adopt the best practicable option;-
    iv. Achieving an outcome that arises from a review that is initiated by the equivalent.

ADVICE NOTE: Any review exercised under this condition may result in the wastewater discharge volume and / or rate being reduced and / or restricted, or further restrictions being placed on the discharge volume and / or rate during low flow conditions.

Duration

18. These permits shall expire on **1 July 2025.**

Condition Schedule ATH-2013011395.01 – Eketahuna Wastewater Treatment Plant Discharge to Air Permit

Pre-Development Assurance

1. **Within two months** of the granting of this permit**,** the permit holder shall provide an Odour Operation and Management Plan (OMP) for certification to the Regulatory Manager of the Manawatu-Wanganui Regional Council. The purpose of the OMP shall be to detail the measures the permit holder intends to take to avoid and mitigate the potential for odour from the wastewater treatment plant and ponds. The Operation and Management Plan shall include, but not be limited to the following:
    a. Details of regular inspections, plant maintenance and cleaning as required to avoid offensive odours;
    b. Responsibilities of on-site staff;
    c. Monitoring procedures, <u>including reporting procedures for measuring DO ;</u>
    d. <u>A programme for developing reference diurnal DO profiles during the year;</u>
    e. Contingency procedures in the event of equipment failures;
    f. A complaints procedure including;
        i. Provision of a 24 hour telephone contact number,
        ii. A stated commitment by the permit holder to respond to odour complaints within a specified time period,
        iii. Actions to be taken by the permit holder to verify complaints
        iv. Provision for recording the responses made by the permit holder to complaints, and
        v. Records of actions taken by the permit holder to address the sources of any verified odour
    g. Management procedures for storage and handling of primary screenings and other solid wastes handling; and
    h. Procedures for monitoring and managing pond sludge levels to minimize the risk of upset conditions in the ponds resulting in offensive odours.

Environmental Standards

2. The discharge to air authorised by this consent shall not cause the emission of odour that, in the opinion of the Manawatu-Wanganui Regional Council's Consents Monitoring Officer, is offensive or objectionable at or beyond the property boundary of the Eketahuna Wastewater Treatment Plant site.

    ADVICE NOTE: When considering the objectionableness of odour, the Manawatu-Wanganui Regional Council will take into consideration the FIDOL factors: frequency, intensity, duration, offensiveness and location.

3. The Consent Holder shall keep a complaints register to record complaints relating to discharges of odour or contaminant gases to air arising from the Wastewater Treatment Plant. The register shall include:

   a. The details of the complainant if given;
   b. The location of where the contaminant, e.g. odour, was detected;
   c. A description of the wind speed and direction when the alleged adverse effect was detected by the complainant;
   d. The date and time of the detection;
   e. The most likely cause of the discharge detected;
   f. The dissolved oxygen levels in both ponds; and
   g. If applicable, any corrective action undertaken by the Consent Holder to avoid, remedy or mitigate the adverse environmental effect detected by the Complainant.

4. The Consent Holder shall advise the Manawatu-Wanganui Regional Council's Consents Monitoring Team within 24 hours of any complaints relating to air discharges being received.

5. A copy of information recorded in the complaints register shall be included in the Annual Environmental Report required by condition 8 of the General Conditions. The Annual Environmental Report shall be provided to the Regulatory Manager by **31 October** of each year.

6. The permit holder shall ~~continuously~~ monitor Dissolved Oxygen in the wastewater storage ponds and ensure that the Dissolved Oxygen measurement is at or above 0.5 mg/L.

   ADVICE NOTE: A calibrated hand held DO meter shall be used to measure DO levels. Wherever possible readings shall be taken at similar times of the day, as defined in the OMP.

7. In the event that any dissolved oxygen measurement is less than 0.5 mg/L, the consent holder shall take appropriate action to raise the dissolved oxygen as necessary to avoid the occurrence of an incident likely to cause non-compliance with condition 2.

8. The consent holder shall advise the Consents Monitoring Team at least fourteen (14) days prior to undertaking any pond desludging works. The consent holder shall include as part of this advice, notice to the Regional Council of the method or methods proposed for sludge removal, the likely duration of the activity and the methods that will be used to manage the discharge of odour that has the potential to cause non-compliance with condition 2.

Condition Schedule ATH-2015200247.00 – Eketahuna Wastewater Treatment Plant Discharge to Land Permit – Pond Seepage

Environmental Standards

1. **Within three months** of commencing this permit, the Consent Holder shall monitor, calculate and record the daily rate of leakage from the WWTP pond system to groundwater. This leakage rate shall be determined based on a water balance calculation incorporating monitored daily WWTP pond influent and effluent flows and daily climate data (rainfall and evaporation).
2. The Consent Holder shall provide daily Pond Seepage rate data, as monitored and calculated in accordance with consent condition 2 above, on a quarterly basis, in a format that is compatible with the Manawatu-Wanganui Regional Council data system.
3. **By 1 July 2018,** all wastewater treatment ponds must have a lining with a permeability not exceeding 1 $x10^{-9}$ m/s
4. Following completion of the pond lining as required by condition 3, the Consent Holder shall undertake six monthly monitoring of a sub-liner drainage/leakage detection system.

Monitoring Provision

5. Samples collected under Condition 4 shall be analysed for the following parameters:
   a. Total Phosphorus (TP)
   b. Dissolved Reactive Phosphorus (DRP)
   c. Total Nitrogen (TN)
   d. Nitrate Nitrogen (NO3-N)
   e. Nitrite Nitrogen (NO2N)
   f. Ammoniacal Nitrogen (NH$-N)
   g. Escherichia coli (E. coli)
   h. Dissolved oxygen (field measurements)
   i. Electrical Conductivity (EC) (field measurements)
   j. Chloride
   k. Static water level
   l. pH (field measurement and laboratory measurement)
   m. Soluble Carbonaceous Biological Oxygen Demand (ScBOD5)
6. Results of this monitoring shall be transferred within ten working days of their receipt to the Manawatu-Wanganui Regional Council in a format compatible with the Manawatu-Wanganui Regional Council systems.

7. The results from the monitoring required by condition 5 of this permit shall be collated, analysed and interpreted and included in the Annual Report, as required by condition 8 in the General Conditions.

Post-development Assurance

8. Should the consent holder not achieve Condition 3 (the pond lining condition) by 1 July 2018, a plan to install and monitor groundwater at one up-gradient and two down-gradient monitoring wells will be provided to Manawatu-Wanganui Regional Council for approval. Groundwater shall be monitored six-monthly for the suite of analytes listed in 5 above and shall commence no later than **1 September 2018**.

Commented [TM2]: This condition seems to anticipate non-compliance with an earlier condition. I question the vires of this. I would anticipate further discussion could be had around this.

Condition Schedule ATH-2013010987.01 – Eketahuna Wastewater Treatment Plant – Discharge to Water Permit

Definitions:	
$cBOD_5$	Carbonaceous five days Biochemical Oxygen Demand
$ScBOD_5$	Soluble Carbonaceous five days Biochemical Oxygen Demand
NH_4-N	Ammoniacal Nitrogen
NO_xN	Total oxidised nitrogen
TN	Total Nitrogen
TSS	Total Suspended Solids
DRP	Dissolved Reactive Phosphorous
E.coli	*Escherishia coli*
g/m^3	Grams per cubic metre

Environmental Standards

1. **Until 1 July 2020,** the treated wastewater shall meet the following standards:

   a. The concentration of Ammoniacal-nitrogen (NH4-N) shall not exceed 6 g/m3 in more than one out of 10 consecutive samples;

   b. The concentration of soluble carbonaceous BOD5 (sCBOD5) shall not exceed 20 g/m^3 in more than one out of 10 consecutive samples;

   c. The concentration of total suspended solids shall not exceed 45 g/m^3 in more than one out of 10 consecutive samples.

   ADVICE NOTE: Compliance shall be based on grab samples taken immediately downstream of the UV treatment plant.

2. **Until 1 July 2020,** the treated wastewater shall meet the following standards in the Makakahi River as measured at "Makakahi at Hamua" flow recording station is at or below the 20th flow exceedance percentile flow:

   a. The concentration of *E.coli* shall not exceed 460 MPN/100ml in more than 8 out of 12 samples, and no more than 3700 MPN/100ml in more than 2 out of 12 consecutive samples.

Commented [TM3]: Conditions of existing permit, reflecting current treatment configuration

b. The concentration of DRP shall not exceed 1 g/m^3 in more than one out of 10 samples.

3. **By 1 July 2020**, the treated wastewater shall meet the following standards:

   a. The concentration of Ammonical-nitrogen (NH_4-N) shall not exceed 10 g/m^3 in more than 8 out of 12 consecutive samples, and no more than 15 g/m^3 in more than 2 out of 12 consecutive samples;

   b. The concentration of soluble carbonaceous BOD_5 ($sCBOD_5$) shall not exceed 5 g/ m^3 in more than 8 out of 12 consecutive samples; and no more than 8 g/m^3 in more than 2 out of 12 consecutive samples

   c. The concentration of total suspended solids shall not exceed 15 g/m^3 in more than 8 out of 12 consecutive samples, and no more than 30 g/m^3 in more than 2 out of 12 consecutive samples.

   ADVICE NOTE: Compliance shall be based on grab samples taken immediately downstream of the UV treatment plant.

4. **By 1 July 2020**, the treated wastewater shall meet the following standards in the Makakahi River as measured at "Makakahi at Hamua" flow recording station is at or below the 20th flow exceedance percentile flow:

   a. The concentration of *E.coli* shall not exceed 260 MPN/100ml in more than 8 out of 12 samples, and no more than 1000 MPN/100ml in more than 2 out of 12 consecutive samples.

   b. The concentration of DRP shall not exceed 0.5 g/m^3 in more than 8 out of 12 samples, and no more than 1.0 g/m^3 in more than 2 out of 12 consecutive samples.

   ADVICE NOTE: Compliance with condition 4 will be based on the flow at the "Makakahi at Hamua" flow recording station is less than 8,293 l/s. Compliance shall be based on grab samples taken immediately downstream of the UV treatment plant.

5. **By 1 July 2020**, all wastewater discharge into the Makakahi River shall pass through the primary screening unit, the oxidation ponds, rock filter (overland passage?) and be treated by the UV disinfection unit.

6. The UV disinfection unit shall be equipped with a UV sensor to monitor UV transmission or intensity through the wastewater during operation.

7. The UV sensor shall be monitored continuously, with an alarm notifying the consent holder ~~ing is~~ that the applied UV intensity is operating ineffectively.

Receiving Water Quality

8. The treated wastewater discharge shall not cause any of the following in the Makakahi River at the river flows outlined in Table 1, and after the reasonable mixing distance of 330 metres:

   a. the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or

   b. bacterial and / or fungal slime growths visible to the naked eye as plumose growths or mats; or

   c. any emission or objectionable odour; or

   d. any conspicuous change in colour or clarity; or

   e. render the receiving water unsuitable for consumption by farm animals; or

   f. a more than minor adverse effect on aquatic life; or

   g. a change in horizontal visibility, defined as the horizontal sighting range of a black disc, by more than 20%; or

   h. the DO concentration to fall below 80 % saturation; or

   i. the ammoniacal nitrogen (NH_4-N) concentration to exceed 2.1 grams per cubic metre at any time, or to exceed 0.4 grams per cubic metre on an rolling annual average ; or

   j. the average POM concentration to exceed 5 g/m^3 at flows below median; or

   k. the *Chlorophyll a.* to exceed 120 mg/m^2 on more than 8% of sampling occasions, on the basis of monthly measurements taken over a period of at least 36 months; or

   l. the Chlorophyll a levels to move between bands as prescribed by the Freshwater NPS 2014, on the basis of monthly measurements taken over a period of at least 36 months; or

   m. the cover of filamentous mats greater than 2 cm long to exceed 30% or cover of mats greater than 3mm thick to exceed 60%; or

   n. a reduction in QMCI of greater than 20%; or

   o. the concentration of toxicants to exceed the trigger values for freshwater for the protection of 99% of species (ANZECC 2000); or

   p. the soluble carbonaceous BOD_5 concentration due to dissolved organic compounds (that is, material passing through a GF/C filter) to exceed 1.5 g/m^3 at flows below the 20^{th} FEP.

Table 1

Condition	Contaminant or Effect (abbreviated, for reference only)	River Flows	Zone of Reasonable Mixing downstrea
(a)	Films, scums, foams	All	330 metres
(b)	Bacterial/fungal slime growths	All	330 metres
(c)	Objectionable odour	All	330 metres
(d)	Conspicuous colour or clarity change	All	330 metres
(e)	Unsuitable for farm animals	All	330 metres
(f)	Effects on Aquatic Life	All	330 metres
(g)	Horizontal visibility	All	330 metres
(h)	Dissolved Oxygen	All	330 metres
(i)	Ammonia-nitrogen	All	330 metres
(j)	Particulate organic matter	At or below the median	330 metres
(k ,l)	Periphyton biomass	All	330 metres
(m)	Periphyton cover	All	330 metres
(n)	QMCI	All	330 metres
(o)	Toxicants	All	330 metres
(p)	Soluble carbonaceous BOD_5	At or below the 20th FEP	330 metres

ADVICE NOTE: The River flows in Table 1 are those measured at the "Makakahi at Hamua" water level recording station and the 20th flow exceedance percentile at the station is 8,293 l/s.

9. If the consent holder is unable to comply with any of the limits in Condition 8 due to the upstream exceedances, the consent holder shall use a Wilcoxon Signed Rank test to determine if there are any significant increases or decreases that are having adverse effects. If it is determined that there are significant adverse effects occurring, it will be considered as a non-compliance with the respective limit.

ADVICE NOTE: To perform the statistical test, analysis needs to be against a minimum of 12 upstream and downstream paired results from the monthly sampling.

Effluent Monitoring

10. To enable the sampling of the treated wastewater, easy and safe access to a sampling port(s) shall be provided by the Consent Holder and maintained as close as is practicable to those sampling locations specified in condition 17.

11. The consent holder shall take monthly grab samples of the wastewater downstream of the UV treatment unit and the samples shall be analysed for the constituents and at the frequencies listed in Table 2 to assess compliance with Condition 8 and 9 of these consents.

12. **Within three months** of commencement of these consents, the consent holder shall have a flow meter installed, by an accredited installer. The installer must ensure the flow meters are located on the inflow and outflow line. The flow meters must have a pulse counter output traceably calibrated to +/- 5 % or better. The flow meter shall be capable of providing daily inflow and discharge volumes use as well as a pulse counter output. The flow meter shall be positioned to measure the entire volume of treated sewage effluent discharge into the surface water of the Makakahi River discharged under authorisation of these consents.

13. The consent holder shall ensure the flow meter required by Condition 12, is installed by an Irrigation New Zealand Blue Tick accredited installer and be installed in accordance with the standards set out in the Ministry for the Environment Guidelines *Resource Management (Measurement and Reporting of Water Takes) Regulations 2010.*

14. **Within three months of** commencement of these consents, the consent holder shall install and maintain, in a fully operational condition, a GPRS data logger / telemetry unit compatible with the Manawatu-Wanganui Regional Council's Telemetry system on the discharge line traceable to +/- 5 % or better.

    ADVICE NOTE: This unit, which is attached to the pulse counter output, will be monitored by the Manawatu-Wanganui Regional Council to ensure compliance with the resource consent conditions.

15. Where telemetry equipment fails for reasons other than fair wear and tear, replacement or repair will be at the consent holder's expense and replacement will be required within seven days.

16. With the exception of network power failure or network maintenance the consent holder shall ensure that power supply is maintained at the site at all times.

    ADVICE NOTE: If power supply is lost at the site due to consent holder negligence or abuse and telemetry units require recalibration by Manawatu-Wanganui Regional Council staff the costs associated will be recovered from the consent holder.

River Monitoring

17. The consent holder shall take samples from the Makakahi River at approximately T25:380-592; BN35:280-975 90 metres upstream (Site A) and at approximately T25:383-595; BN35:283-977 330 metres downstream (Site B) of the discharge point to the Makakahi River, and a sample of the discharge at the Discharge Point as shown on **Plan APP-200511178.01 A**[5] attached to and forming part of these consent conditions. The samples shall be analysed for the constituents and at the frequency listed in Table 2 to assess compliance with Condition 8 of these consents.

Table 2: Effluent and River Monitoring

Constituent	Wastewater - Monthly	River - Monthly
$cBOD_5$	X	X
$ScBOD_5$	X	X
Dissolved oxygen		X
NH4-N	X	X
Nitrite	X	X
Nitrate	X	X
TN	X	X
TSS	X	X
Turbidity		X
Horizontal visibility (black disc)		X
Particulate organic matter	X	X
DRP	X	X
Total Phosphorus	X	X
E.coli	X	X
pH		X
Conductivity		X
Temperature		X

ADVICE NOTE: pH, temperature, horizontal visibility and dissolved oxygen shall be measured on site, directly in the River.

ADVICE NOTE: It is preferable that the downstream sample is collected before the upstream sample so that disturbed sediment does not impact the downstream sampling result.

18. All wastewater and river water quality analysis shall be undertaken by a appropriate accredited laboratory. All methodologies adopted shall be appropriate for either wastewater or river water analyses respectively and the soluble CBOD[5] shall be GF/C filtered. The

[5] This will be updated depending on discharge location.

methodologies shall be determined in consultation with the Manawatu-Wanganui Regional Council's Regulatory Manager.

19. The consent holder shall have an appropriately experienced and qualified freshwater ecologist undertake macroinvertebrate sampling in the Makakahi River. The macroinvertebrate assessment shall be undertaken following a period of at least three weeks without a significant flood event (defined as an instantaneous river flow exceeding three times the median flow, defined as 9.54 m^3/s in the Makakahi River at Hamua) and during a period of low flow (at least one week below ½ median flow in the Makakahi River at Hamua defined as 1.59 m^3/second).

20. The locations of the assessments and sampling are shown on Plan APP-200511178.01 A as Site A, and Site B and as detailed below.

    a. the Makakahi River at a site located in the reach 200 metres upstream of the discharge point to the Makakahi River (Site A); and

    b. The Makakahi River at a site located in the reach 100 metres to 330 metres downstream of the discharge point to the Makakahi River (Site B); and

21. Macroinvertebrate sampling referred to in Condition 19 is to be undertaken **annually** between **January to March** inclusive when a discharge is occurring. The macroinvertebrate sampling shall follow Protocols C3 (Hard-bottomed quantitative), P3 (full count with subsampling option) and QC3 (Quality control for full count with subsampling option) from the Ministry for the Environment's "protocols for sampling macroinvertebrates in wadeable streams" (Stark et al. 2001). This shall involve:

    a. collection of 5 replicate 0.1 m^2 Surber samples at random within a 20 m section of riffle habitat at each sampling site.

    b. full count of the macroinvertebrate taxa within each replicate sample to the taxonomic resolution level specified for use of the Macroinvertebrate Community Index (MCI).

    c. renumeration of the results as taxa richness, MCI, QMCI, %EPT taxa and %EPT individuals.

22. The consent holder shall have an appropriately experienced and qualified freshwater ecologist undertake monthly assessments of the percentage cover, biomass, chlorophyll a, AFDW and community composition of periphyton, filamentous algae and cyanobacterial mats in riffle habitat, as close as possible to the sites selected under Condition 19 above regardless of flows. The periphyton and algae assessment is to include:

    a. a visual assessment of the percentage cover of both filamentous algae and algal mats (to the nearest 5%) at 5 points across each of four transects encompassing riffle habitat, and extending across the width of the river at each sampling site. The visual monitoring methods shall follow the protocols outlined in Appendix 2 of "A periphyton monitoring plan for the Manawatu-Wanganui Region" (Kilroy et al. 2008). Reported estimates shall include:

i. percentage cover of visible stream or river bed by bacterial and/or fungal growths (sewage fungus) visible to the naked eye;

ii. percentage cover of visible stream or river bed by filamentous algae more than 2 cm long;

iii. percentage cover of visible stream or river bed by diatoms or cyanobacteria mats more than 0.3 cm thick;

iv. percentage cover of visible stream or river bed by diatoms less than 0.3 cm thick; and

v. percentage cover of visible stream or river bed that is clean.

b. the collection of a periphyton sample at the same established monitoring sites and transects as defined in Condition 19 above, using method QM-1b from the Stream Periphyton Monitoring Manual (Biggs & Kilroy 2000). Analysis of periphyton samples shall follow the Biggs & Kilroy (2000) guidelines for *chlorophyll a* analysis.

23. The consent holder shall advise the Manawatu-Wanganui Regional Council's Regulatory Manager if the absence of low flow conditions prevent the monitoring required by Conditions 19, 21 and 22 within five days of a decision being made that the monitoring cannot be undertaken.

Operational Restrictions

24. **Within three months** of commencement of these consents, the consent holder shall arrange safe access to sampling sites consistent with the requirements of Conditions 17 and 19 of these consents. Such safe access shall be maintained at all times for the duration of these consents, with the exclusion of times when high flows in the River may render access hazardous.

Post-Development Assurance

25. At least once every five years, or earlier if there is an unexplained increase in flows, the Consent Holder must review records of wastewater flows received at the treatment plant to ensure there has been no unexplained increase in flows (based on a five year running average) that could adversely affect treatment plant performance. The results of the review must be included in the next annual monitoring report to the Regulatory Manager. In the event that the review shows that unexplained increased flows could result in adverse effects on treatment plant performance, the permit holder must investigate the reasons for the unexplained increased flows and put in place remedial works as necessary. In the event there is disagreement between the permit holder and consent authority in relation to the need for investigations and/or remedial works, the permit holder must commission an independent review by a suitably qualified expert acceptable to the consent authority.

26. The consent holder shall notify the Manawatu-Wanganui Regional Council's Environmental Protection Manager within two working days of any non-compliance occurring or when it becomes certain that a breach of consent conditions is about to occur. For conditions requiring compliance with a particular water quality standard, notification is required

within two working days of receipt of the water quality analysis from the Laboratory.

Monitoring Provision

27. The consent holder shall make results of monitoring undertaken required by Conditions 17 and 19 of these consents available to the Manawatu-Wanganui Regional Council's Regulatory Manager on request, and data records for each three month period ending March, June, September and December shall be forwarded to Manawatu-Wanganui Regional Council's Regulatory Manager in a suitable electronic format, within 14 days after the end of each three monthly period.

28. At least six months prior to the assessment of water quality being required pursuant to condition 29 the permit holder shall engage an independent panel comprising three appropriately qualified and experienced scientists:

    a one scientist nominated by the permit holder;

    b one scientist nominated by Manawatu-Wanganui Regional Council; and

    c one independent scientist (and, for these purposes, an independent scientist shall exclude any person who has presented evidence to the hearing of this permit).

    Should the engagement of any of the appointed scientists cease the party who nominated that scientist shall nominate a further appropriately qualified and experienced replacement.

29. The independent panel engaged pursuant to Condition 28 shall, no later than 4 years following the upgrades are completed, undertake an assessment of the water quality, periphyton, and macroinvertebrate monitoring data collected during the monitoring periods.

    The assessments shall:

    a. examine the effects of the discharge on the Schedule B values identified in the One Plan for this reach of the Makakahi River;

    b. Consider any reports received from the Liaison Group;

    c. Consider the results of macroinvertebrate and periphyton monitoring undertaken in accordance with Conditions 19, 20, 21 and 22;

    d. Consider past and likely future compliance with Conditions 3 and 4.

    e. Provide recommendations on the monitoring frequency and monitoring parameters for the remainder of the permit;

    f. Provide recommendations on any changes required to the discharge regime, and effluent quality (including nutrient concentrations and loads discharged to the Makakahi River),so as to minimize adverse effects on the One Plan's Schedule B values for the Makakahi River.

    g. The findings of the independent panel's assessment shall be submitted to the Regulatory Manager and the **TDWF** by **1 July 2024**.

30. **By 31 July** each year commencing **31 July 2018~~7~~** the consent holder shall prepare a report that summarises and assesses all of the monitoring information required under Conditions 17, 19, 21 and 22 of these consents. The provision of this report should be included in the Annual Environmental Report required by condition 8 of the general conditions..

31. The Report required by condition 30 will be provided to the Manawatu-Wanganui Regional Council's Regulatory Manager by **31 October** of each year.

Commented [TM4]: Date changed to reflect that otherwise would be a short year to review.