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Attention: Tania Diack

Your Reference
Wairoa WWTP Consent

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**WAIROA WWTP DISCHARGE CONSENT - REVIEW OF CONSENT
APPLICATION AND SECTION 92 RESPONSES (Rev B)**

11 July 2019

Dear Tania,

1 EXECUTIVE SUMMARY

Mott MacDonald were commissioned to review the resource consent renewal application and supporting documents for Wairoa District Council's Wairoa wastewater treatment plant (WWTP) discharge. The specific objectives of our review were to focus on the existing wastewater treatment system, and comment on the proposed staging of the works, management regimes, and monitoring conditions.

Our overall findings relating to the treatment plant and associated treated effluent discharge are summarised as follows:

- Detailed assessment of treatment plant performance and expected performance after network and treatment plant upgrade has not been provided, and forms a crucial part of setting conditions for continued performance and improvement in some parameters as identified by the BPO.
- Treatment plant performance as summarised in the reports indicates regular, but not consistent compliance with existing consent conditions, but would appear to be benefiting from significant dilution from the network. Reducing the I&I is an important step for bringing the treatment system into compliance consistently, and should be considered in the assessment of performance.
- The proposed draft consent conditions represent in the most part a significant relaxation of effluent discharge parameters when compared to the previous consent. Significant revision of these is required, including a sound basis for proposed measurement parameters and ranges.
- There is not a strong link between the BPO established in the reports through numerous workshops with key stakeholders, and the proposed draft consent conditions.

Our further recommendations to HBRC relating to the broader application are:

- Consider revision of the consent conditions to measure load equivalent to the existing discharge, so that continued effects can be assured.
- Inclusion of an issues list or similar, or reflection of the key outcomes identified in the BPO within the consent conditions, including some form of review against these. Specific clauses in the draft consent conditions that this relates to have been identified as 16, 17, 18, 21, 22, and 23.

- Assess whether the land discharge applications should be combined with this consent application, given that they represent the same WWTP discharge and are part of the same identified BPO.
- Consider suitability of a 35-year consent term, given that the adaptive approach prescribed in the draft conditions, and the staged BPO strategy only provide a degree of certainty around the improvements that will be made for the first 10 years (the remaining stages are described as “aspirational”).
- Ensure that the loosening of discharge flow effects as described in the draft conditions (1/2 median, median, 3x median etc. in Condition 2 and 3) is adequately assessed for effects based on review by other technical expert reviewers.
- Consider additional suitable conditions covering UV transmissivity, minimum flows to UV treatment before bypassing, and sludge measurement and reporting.

2 INTRODUCTION

Mott MacDonald (MM) were commissioned by Hawkes Bay Regional Council (HBRC) to review the consent application and associated technical reports by Lowe Environmental Impact Ltd (LEI) on behalf of Wairoa District Council (WDC), relating to wastewater discharges from the Wairoa wastewater treatment plant (WWTP) to the mouth of the Wairoa River.

A site visit was undertaken on 08 February 2019 and the following documents were reviewed in cursory detail at this stage:

- AEE: *Application-C0-WDC2018C0-Wairoa_WWTP_Discharge_Consent_AEE-Final.pdf*
- Draft Conditions: *Application-AEE-AppD-Draft_conditions-181129_AEE.pdf*;
- Discharge BPO: *B4-Application-LEI2018B4-Discharge_BPO-181029-AEE.pdf*
- Discharge Concept Design: *C1.0-Application-LEI2018C1.0-Discharge_conceptual_design-181109-AEE.pdf*
- System Data and Compliance Summary: *A211-Treatment-LEI2017A211-System_Data_Compliance-171020-AEE.pdf*

Specifically, the scope of the review covered:

- Review the application and in particular the above reports and comment on whether the existing wastewater treatment system and proposed staged changes are fit for purpose and are robust enough for the proposed duration of the consent.
- Comment on whether the proposed staged works are reasonable in regards to timing.
- Your view on whether other/further management regimes should be required to manage the existing infrastructure and proposed upgrades.
- Any recommended monitoring conditions and/or any changes to those proposed.
- Any other comments on the proposal.
- Review comments addressing the above to be provided as written memo/letter.

Given the number of documents in the application, a number of initial queries were raised with the applicant informally in February 2019, to clear up areas of uncertainty for the reviewers. Where these could not be resolved quickly, formal Section 92 questions were lodged on 26 March 2019, and responded to on 19 May 2019.

This review document has been revised based on the responses from the applicant in February and May 2019.

3 PRELIMINARY FINDINGS

Our preliminary findings are documented under each report as follows:

3.1 Wairoa Wastewater Treatment Plant Discharge Resource Consent Application and AEE (LEI, 2018:C0)

Table 1.1, in Section 1.4, outlines a summary of the proposed future treated wastewater discharge system for Wairoa. However, the text in this section notes that Stages 3 and 4 of the programme (11-20 years and 21-30 years respectively) are aspirational only, despite taking place within the consenting term (35 years) being sought. The text also notes that only the river discharge parameters in this table are covered in this consent application. We also note that the proposed strategy is not directly reflected in the proposed consent conditions (see below).

Section 1.5 notes that consents are sought for a 35-year term for:

- Pump station overflows to the Wairoa River;
- Treated wastewater discharge to the Wairoa River;
- Discharges to air from the WWTP;
- Riverbed occupation and disturbance in the Wairoa River bed.

We note that irrigation to forestry and farms, storage facilities, and catchment improvements are not included within this consent application (Section 1.6), despite being part of the overall package defined by the best practicable option (BPO).

The separation of the surface water discharge and land irrigation consents is problematic in my view. Gradual transfer of discharge flows is identified as part of the BPO (see further comment on this below), and the change in flow regime identified will require greater storage and/or irrigation.

Section 2.1 notes that a treated discharge pipeline overflow into an adjacent stormwater channel exists, but this volume and frequency of this discharge is not known. This is one of the drivers for an upgrade to the outfall pipeline; to remove capacity limitations.

The three pump stations are noted to overflow during wet weather events. The frequency and dilution of these overflows is not stated. This is one of the drivers for network improvements to reduce inflow and infiltration, increase pumping capacity and reliability, and therefore pump station inundation.

The existing consent conditions related to the discharge are noted in the AEE, and copied below.

- 2. The total discharge of sewage effluent as authorised by this Resource Consent shall not exceed 5400 cubic metres per day.*
- 3. The discharge of sewage effluent as authorised by this Resource Consent shall;*
 - (i) Only occur during periods of ebb tide 30 minutes after high tide to 6 hours after high tide;*
 - (ii) Only occur after 6:00 pm; and*
 - (iii) Shall cease by 6:00 am at all times.*
- 4. During times of river mouth closure, the Consent Holder shall cease the discharge of sewage effluent into the Wairoa River, unless:*
 - (i) The ability to store excess effluent has been exceeded; or*
 - (ii) Prior to full capacity, it is recognised that the maximum storage capacity is likely to be exceeded during a time when no discharge is allowed.*

Where discharge is required for reasons 4(i) and 4(ii) above, the discharge shall only be in accordance with condition 3. The Consent Holder shall give notice to the Environmental Regulation Section of the Hawke's Bay Regional Council of the date discharge was stopped due to river mouth closure, and the date discharge re-commenced.

11. Sewage effluent discharged from the treatment plant shall meet the following standards:

COD not greater than 220 mg/l

Total Ammonia not greater than 36 mg/l

Suspended Solids not greater than 87 mg/l

It is noted in the report "WWTP System Data and Compliance Summary" (LEI, 2017:A211) that despite low Hydraulic Retention Times (HRTs), high Inflow and Infiltration (I&I), high BOD load, and high sludge volumes, the plant still performs as per typical maturation pond guidelines.

However, the data presented in Table 1.2 of LEI, 2017:A211 indicates that average influent TP is 3.3mg/L, and average influent ammonia is approximately 17mg/L (derived from the effluent and % reduction). Typically, these values would be expected to be two to three times higher, indicating that the effluent discharge is likely benefiting from significant dilution from infiltration in the network.

Given the known issues around high I&I flows in the network, and the likely resultant of contaminants in the treatment plant discharge, we would recommend considering a load-based discharge consent to ensure that consent conditions are met through treatment rather than dilution.

Section 2.3 notes that a comprehensive community consultation process was carried out, involving expert and community reviews of a variety of options for the treatment and discharge of Wairoa's wastewater. From this, the following key features were agreed:

- Additional treatment was required for pathogen control prior to discharge;
- Ideally 100% land discharges should replace the 100% river discharge regime;
- Significant volumes of storage will be necessary for discharge management; and
- Development of future storage and irrigation needed to occur gradually so that it would remain affordable for the community.

These goals should be represented in some form in the draft consent conditions.

Section 3.1 of the AEE outlines high level information on the treatment plant system, i.e. an aerated pond (4,750m³) followed by a maturation pond (18,250m³), two aerators in the aerated pond (noted to be diffused air Aquarator units at the site visit), and 500mm storage depth in the maturation pond.

Greater detail of these pond parameters is reference in the report WWTP System Data and Compliance Summary (LEI, 2017:A211).

In A211, Table 3.2 indicates WWTP performance data, and suggests a number of parameters (such as TP and TN), which have been "corrected". Whilst many of these do appear erroneous, the values used to replace erroneous data are significantly lower, and we would recommend that these are deleted from the set rather than revised to some arbitrary value which could skew statistical analysis.

Section 4.3 of A211 sets out the pond design parameters. However, it does not correlate the BOD surface loading rate of the pond – a common design parameter for pond capacity assessment. So, it is not possible to determine whether the pond system is actually performing as would be expected (rather than relying on dilution). We recommend that these loading rates are provided to assess this.

From A211 Section 7.3 Dot point 4 after Table 7.1, notes the following:

“Discharge quality limits for COD and/or SS have been exceeded on 1-4 occasions out of 12 in every compliance report, and either the effluent quality limits are too tight and should be increased upon renewal of the discharge consent or treatment is occasionally poorer than expected. It has been noted by HBRC that sludge accumulations have reduced the WWTP’s performance, but high I & I may also contribute. The effluent quality has a wide range despite its median values being well below the consented limits. More recent resource consent conditions for other WWTP discharges, in recognition of the inherently variable effluent quality, often allow the rolling 12-month median to exceed any of the effluent quality limits on 2 out of 12 monthly sampling occasions before they are deemed to be a breach of the effluent quality limit condition. Adopting this approach might have resulted in Wairoa WWTP achieving full compliance most, if not all, of the time.”

The findings of only four compliance reports were presented (2009, 2011, 2013, and 2014). If other compliance reports are available, these should also be included in the assessment, especially given comments regarding worsening performance in recent years.

Exceedances are noted on numerous occasions for flow, and on few occasions for some pollutant parameters.

Table 1: Summary of key compliance report exceedances related to treatment

| Year | Oct 2009 | Feb 2011 | Jun 2013 | Apr 2014 |
|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Flow - <5,400m ³ /d | Exceeded for storm flows | Exceeded for storm flows | Exceeded for storm flows | Exceeded for storm flows |
| Flow – falling tide at night | Exceeded for storm flows | Exceeded for storm flows | Exceeded for storm flows | Exceeded for storm flows |
| COD <220mg/L | 1 of 12 | 3 of 12 | 3 of 12 | 2 of 12 |
| Suspended Solids <87mg/L | None | 1 of 12 | 4 of 12 | 2 of 12 |

The above indicates that managing I&I would assist with compliance with similar conditions in a future consent, and that percentile concentration targets (rather than maximum values) would also be more achievable, as is more common for wastewater discharge consents.

Rather than a rolling monthly median than can be exceeded, modern wastewater discharge consents typically include a median target over a rolling 12-month (monthly samples) average. Further exceedances of this value are not necessarily due to the way a median is calculated. Additionally, many consents include a higher percentile target calculated in a similar way in lieu of a maximum value. We would expect to see a similar approach taken for this consent, with values set by the effects in the environment.

If it is the case that the existing discharge can be shown to have little or no effect on the receiving environment, then we would expect to see a detailed analysis of treatment performance over recent years to demonstrate appropriate median and percentile targets. Graphical and statistical data over the recent years of performance should be provided.

Section 5.7 of the AEE indicates that the only upgrades to the treatment plant will include filters and UV treatment (and possibly a grit trap, which is noted only in the consent conditions). No other upgrades are planned for the treatment plant, as “its treatment performance is currently adequate” and the installation of filtration and UV lamps will improve the treated wastewater quality so that it is more acceptable to discharge.

If the application demonstrates that no effects are noted in the environment, then the above described upgrades may be warranted for the other reasons outlined in the BPO. However, continued performance of the treatment plant ponds requires ongoing upkeep, in terms of sludge management, and aeration. If these aspects are not maintained, then performance will deteriorate.

We also note that the goal of the proposed UV and filtration system is to remove pathogens. Given this aim, membrane filtration may be a better option, especially if the network I&I can be better managed. This option does not seem to have been considered in the BPO or application, and would have similar if not better results.

Current treatment performance is summarised in Table 5.3, Section 5.9 of the AEE. This in turn is extracted from Tables 4.3 and 4.4 of the Conceptual Design Report (LEI, 2018:C1.0).

Table 5.3: Treated Wastewater Quality During 2008-16

| Parameter | Current Quality (2008-16) | | | Potential Quality | | |
|--|---------------------------|-------|--------|-------------------|------|--------|
| | Range | Mean | Median | Range | Mean | Median |
| COD (g/m ³) | 34 – 620 | 158 | 126 | 20 – 60 | 40 | 35 |
| CBOD (g/m ³) | 6 – 190 | 31 | 23 | 3 – 30 | 20 | 17 |
| NH ₃ -N (g/m ³) | 4.0 – 36 | 16.1 | 15.6 | 2.5 – 25 | 12 | 10 |
| TSS (g/m ³) | 7 – 290 | 64 | 52 | 2 – 50 | 15 | 10 |
| <i>E. coli</i> (cfu/100 ml) | 8 – 470,000 | 5,250 | 5,200 | 0 – 5,000 | 60 | 50 |

No basis is provided for the “Potential Quality”, and given the inclusion of only filtration and UV in the treatment plant upgrade, and flow reductions removing the dilutionary effects, these values seem very unlikely.

3.2 Wairoa Wastewater Treatment and Discharge Best Practicable Option (LEI, 2018:B4)

As noted in Section 3.1 of the BPO Report, the RMA defines the best practicable option (BPO) as:

“the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to—

- a) the nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects; and*
- b) the financial implications, and the effects on the environment, of that option when compared with other options; and*
- c) the current state of technical knowledge and the likelihood that the option can be successfully applied.”*

It is also worth noting that the requirements of the NZ Coastal Policy Statement (discussed in the BPO Report Section 3.2), describe the requirements for managing the discharge of human sewerage. This is particularly important when related to the pump station and treatment plant overflows of untreated wastewater.

“In managing discharge of human sewage, do not allow:

- (a) discharge of human sewage directly to water in the coastal environment without treatment; and*
- (b) the discharge of treated human sewage to water in the coastal environment, unless:*
 - (i) there has been adequate consideration of alternative methods, sites and routes for undertaking the discharge; and*
 - (ii) informed by an understanding of tangata whenua values and the effects on them.”*

The BPO Report generally describes the process undertaken to establish the BPO. The applicant describes in this document (and some supporting documents), how stakeholder groups used workshops to establish the guiding values that options should be assessed against, and then development of options and scoring to obtain the BPO.

We have viewed the memo which summarises the outcome of the Values Workshop (LEI,2017 A611) and sets out the agreed scoring and ranking system. However there doesn't appear to be a summary or minutes of the option development and scoring with the Stakeholder group. Providing these minutes will assist with confirmation of the appropriateness of the BPO process, i.e. that the BPO is actually the BPO.

The selected BPO is described in the BPO report (Section 10) as:

“continued discharge to Wairoa River while implementing a package of wastewater irrigation to a series of farms, reductions of reticulation leakage and pump station overflows, installation of filtration and UV treatment at the WWTP outlet, installation of treated wastewater storage, and support for wider Wairoa River catchment improvement projects.”

It is important that these aspects of the BPO are reflected in the consent conditions. It is worth noting that the BPO has identified increased storage and irrigation over time (i.e. shifting the discharge receiving environment), but this intent is not a clear requirement of the draft consent conditions (further comment below).

3.3 Conceptual Design for Wairoa Wastewater Treatment and Discharge (LEI, 2018 C1.0)

This document builds upon the findings of the BPO report, to further develop the preferred solution. In particular, it discusses broad concepts for:

- Filtration and UV treatment;
- Storage systems;
- Discharge system; and
- Discharge regimes.

We note that the in developing the discharge regime, future potential treated wastewater quality values are noted as Table 5.1, (transposed from tables 4.3 and 4.4 in the same report). As noted earlier in our assessment, the likelihood of achieving improved ammonia removal through introduction of filtration, UV treatment, and reduced network dilution is very low. Some improvement in TSS and *E.coli* are likely as noted, but the improvement presented is significant, and doesn't take into account the reduction of the dilutionary effects of the I&I reduction campaign. A more detailed assessment of expected treatment plant performance from the proposed network and treatment changes is recommended, to provide greater confidence that the discharge regime being proposed will behave as expected.

Section 6 of the Conceptual Design report outlines the proposed phasing over four stages, spanning 5 or 10 years each. The report notes that Stages 3 and 4 (11 to 20 years, and 21 to 30 years respectively) are aspirational only. Given that a 35-year consent is being sought, and proposed changes to address the BPO are only outlined for the first 10 years, we would question whether a 35-year term is appropriate. If an adaptive management approach is progressed in the consent conditions, then greater certainty should be provided that the issues identified in the application, and in particular BPO, will be addressed over the full term of the consent.

We note from this report that the ponds are not known to be lined, and so may lose some liquid volume to groundwater.

3.4 WDC's Draft Consent Conditions (AEE-AppD, v14, 29 Nov 2018)

This document sets out WDC's proposed draft conditions for consideration.

We note that the Definitions section at the start, defines the median Wairoa River flow as 60 m³/s. This value will be critical in determining the discharge regime as outlined in the following conditions. If the Wairoa River's median river flow changes over time, will this trigger value be modified, and if not, what effect will it have on the achievability of meeting discharge regime requirements. Sensitivity testing of these changes may assist with demonstrating this.

Proposed Condition 2 continues the currently consented discharge conditions up to median river flows only (previously applicable at all river flows), allows discharge on any tide from median to 3x median river flows, and discharge at any time and volume above 3x median river flow. In effect this is a loosening of the current consent condition. Confirmation is recommended by other technical experts that this the required dilution will be achieved under these conditions – assuming the current WWTP effluent performance.

Proposed Condition 3 expands on Condition 2, and is applicable once filtration, UV disinfection, and storage are in place at the WWTP. It further reduces the river flow regime triggers under which treated wastewater can be discharged to the Wairoa River. Given earlier comments in this review about the low likelihood of achieving the "Potential Quality" outlined in the Conceptual Design Report, we recommend that the applicant demonstrate the dilution and effects of the discharge assuming a more realistic assessment of the treatment plant performance after upgrade with filtration, UV and storage.

Condition 8 outlines discharge quality conditions for the treated wastewater. Parts (a) through (d) set out limits for soluble carbonaceous BOD₅, TSS, *E.coli*, and ammonia-N. All of these limits have two target parameters worded as follows:

1. ... must not exceed XX g/m³ in more than 8 out of 12 consecutive monthly samples, or
2. XX g/m³ in more than 2 out of 12 consecutive monthly samples.

In our view, these conditions are worded incorrectly. Point 1 only requires that 4 of 12 (33%) samples are below the limit specified, and Point 2 requires that 10 of 12 samples are below the limit specified (83%).

It is normal practice that a median target is specified, or alternatively 6 of 12 consecutive monthly samples. The upper limit (83% requirement) is a common approach taken in consents, rather than applying a maximum, which is not usually workable with biological wastewater treatment systems. We recommend that Point 1 (above) is modified in each case as noted above.

Condition 8(a) sets a soluble carbonaceous five-day biochemical oxygen demand (scBOD₅) of 220g/m³ (to be achieved only 4 out of 12 samples). The previous condition was for COD as a maximum at the same value – 220g/m³. ScBOD₅ is filtered to remove particulate matter, and modified to remove the effects of nitrification in the test seed. cBOD₅ is a common parameter for pond discharges as they do not typically nitrify. This parameter change from the previous consent condition introduces a significant loosening of oxygen demand condition for the following reasons:

- BOD always measures at a lower value than COD in any sample, as it only measures the biological oxygen demand, whereas COD measures all oxygen demand (i.e. including chemically available). Typically BOD is approximately half of COD measurements in raw wastewater, and can vary in treated

wastewater depending on the treatment process. Lower target values are required to maintain a similar environmental discharge if changing from COD to BOD.

- Filtering the sample will reduce the measure COD or BOD in the sample. This change also requires that lower target values be set if changing from unfiltered to filtered. In fact, we would expect that even the influent scBOD₅ at a municipal WWTP would be less than the proposed effluent condition.
- Conditions in the previous consent were maximum values, and the monitoring reports indicated that BOD and TSS were exceeded in most years 1 to 4 times out of 12 samples. Changing this to 8 out of 12 samples provides the ability to discharge much higher concentrations on a regular basis.
- The two conditions indicated 220mg/L and 224mg/L are so close together, and with vastly different requirements for frequency of exceedance, that the need for two conditions is meaningless.

For the above reasons, these conditions require revision, and need to align with a more detailed assessment of the expected treatment plant performance after I&I reductions, and the addition of filtration, UV, and storage.

Similarly, Condition 8(b) for TSS, the proposed conditions are 87g/m³ and 98g/m³ for the two exceedance frequency parameters respectively. Again, these parameters are very close together, and the difference is likely to be meaningless. As noted above, the existing consent imposes a maximum limit of 36g/m³, whereas this proposed condition reduces this to a limit that only needs to be achieved ~33% of the time. This condition allows a significant relaxation in treatment performance, and cannot stand up to a claim that a similar level of treatment will be maintained to maintain the same level of effects in the receiving environment.

No parameters have yet been proposed Condition 8(c) for *E.coli*. Given that these are not being driven by receiving environment requirements, but rather cultural and recreational drivers as set out in the BPO, target values should be aligned with a realistic assessment of the treatment plant performance before and after upgrade.

Condition 8(d) for ammoniacal nitrogen, proposes conditions of 36g/m³ and 40g/m³ for the two exceedance frequency parameters respectively. Again, these parameters are very close together, and the difference is likely to be meaningless. As noted above, the existing consent imposes a maximum limit of 36g/m³, whereas this proposed condition reduces this to a limit that only needs to be achieved ~33% of the time. This condition allows a significant relaxation in treatment performance, and cannot stand up to a claim that a similar level of treatment will be maintained to maintain the same level of effects in the receiving environment.

For plants with UV disinfection, we would typically expect to see a condition around achieving UV transmissivity of a suitable percentage. This ensures that UV disinfection actually takes place, and is managed in reality by maintaining effective treatment and filtration upstream. We recommend that a transmissivity condition is included.

We would also recommend setting a minimum flow to be filtered and UV treated before bypass of these systems is initiated. There is generally an expectation that these systems cannot be sized to treat all wet weather flows, and this agrees with the Conceptual Design report. But a level of treatment should be outlined that will address the solution requirements set out in the BPO.

We note that there is only one set of effluent discharge parameters proposed, despite an upgrade to the treatment plant taking place within the term of the consent. We would expect that two sets of parameters be provided, the first maintaining an equivalent treatment performance to the existing consent, and the second demonstrating the improved treatment performance provided by the

upgrade. In this case, discharge TSS and *E.coli* parameters will improve in line with the BPO requirements.

We recommend that a condition be added (or this added to an existing reporting condition) to measure sludge levels in the two ponds approximately every 5 years, and desludge when levels exceed the design requirements for the ponds.

Conditions 25 & 26. We recommend that measurement of influent wastewater to the treatment plant is also measured, as this will be the key gauge of success of the I&I programmes (Condition 15, Network Management Plan).

There are a number of reporting requirements set out in the proposed consent conditions as summarised below.

Table 2: Draft Consent Condition report and comments

| Cond. | Proposed condition | Comment |
|--------------|--|---|
| 10 to 12 | Structural Design Report (in the event of a change to the discharge structure). | |
| 14 | UV and filtration system detailed design report (within 2 years of consent). | |
| 15 | Network Management Plan (within 12 months of consent). | |
| 16 | Annual updates in first 5 years on achieving 50ha of irrigation. | Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE. |
| 17 | Wastewater Education Plan (WEP) (within 12 months of consent). Consent holder must undertake these. | Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE. |
| 18 | Catchment Enhancement Plan (within 12 months). | Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE. |
| 19 | Facilitate a Wastewater Stakeholder Group (>6months prior to System Review Data Reports submission). | |
| 21 & 22 | System Review Data Report (SRDR) (within 5 years, and at 10, 20, 30 years). | Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE. Also consider including assessment of performance against the last SRDR. This condition does not appear to specify who these are issued to. Stakeholder Group? Council? |
| 23 | System Improvement Plans (within 6 months of SRDRs). | Recommend that a council review is required against the issues outlined to be addressed as part of the BPO and AEE. |
| 24 | Wastewater Monitoring Strategy (WMS) or amendments to the existing WMS. (within 12 months of submitting System Improvement Plans). | |
| 34 | In River Monitoring Plan (within 3 months). | |

| | | |
|----|---|---|
| 35 | Invite panel for Cultural Health Index Monitoring (within 2 years). | |
| 36 | Cultural Health Index Monitoring Protocol (no timeframe). | |
| 41 | Asset Management Plan provision every 5 years. Available to Council on request. | |
| 42 | Annual report. 2020 and every 2 years thereafter. | Should be every year or renamed a Biennial Report. Suggest date is linked to 1 year after start of consent. |

In general, we recommend that the required reporting is reviewed against the stated issues that are being addressed in the BPO report. These could be set out in a separate issues list generated with the application, or set out individually in the conditions.

For example, Condition 16 – Land treatment. This requirement is outlined in the BPO and AEE as an integral component in the first 5 years. If this is a part of the BPO, then the issues that it is intended to address should be outlined, and the reporting on this be reviewed by Council or the Stakeholder Group against these issues. At present, the proposed condition requires reporting, but not commitment to work towards the proposed staged upgrades and BPO.

4 SUMMARY OF S92 REQUESTS

Specific questions to be raised initially informally and then through s92 requests to the applicant are as follows. Responses provided by the applicant through informal discussions and s92 responses are added with bullet pointed below the questions. Question numbers refer to the HBRC s92 question numbering.

AEE, BPO, Conceptual Design and Data Summary Reports

1. Please provide evidence that the data set modifications prescribed in Report A2I1 do not significantly modify the resultant summary data.
 - s92 Q 4a) Details of the data modifications were provided.
2. Provide full data sets and summary calculations, including graphical and statistical representations of performance, that form the basis of AEE table 5.3:
 - a. Historical performance flow and load/concentration data for the WWTP;
 - b. Historical influent parameter records (flows and loads).
 - c. Confirm whether there is any treatment plant influent and effluent performance data for 2017 and 2018.
 - s92 Q 4b) Some additional data provided, but complete data sets not provided.
3. Provide technical assessment of the pond treatment capacity against established pond design parameters. This should cover at least historical kgBOD/ha.day, and assessment of changes to performance due to reduced I&I in the network, and changes to the treatment process.
 - s92 Q 4c) The response to this question has been unsatisfactory. Greater detail is required to assess the effects of changing network I&I conditions, and the resultant WWTP treatment effectiveness, given the inconsistent compliance with existing consent conditions.
4. Confirm when the two ponds were last desludged, and what are the measured sludge levels at present.
 - s92 Q 4d) Confirmed that the aerated lagoon was desludged in April 2017, with about 517m³ (dry basis) removed. The maturation pond was de-sludged

in May to September 2010. The latter date indicates that de-sludging may be required again soon (depending on measured sludge levels).

5. Only four compliance reports are included in the assessment in A211, up to the year 2014. Were additional compliance reports available for inclusion in the assessment and if so, what is their impact on A211 Table 7.1.
 - s92 Q 4e) Satisfactory response provided.
6. Provide median and other percentile performance data for the existing pond such that ongoing median values can be considered for consent conditions.
 - s92 Q 4f) Satisfactory response provided.
7. Confirm whether membrane filtration was considered in the BPO long list of options in lieu of filtration and UV.
 - s92 Q 4g) Satisfactory response provided.
8. Does the proposed programme to improve network conditions quantify the expected improvements in influent wastewater?
 - s92 Q 4h) Satisfactory response provided.

Draft Consent Conditions

9. Confirm whether there has been any sensitivity testing of the proposed 60m³/s median flow in the Wairoa River. If the actual median flows of the river change over time, what will impact will this have on either effects, or ability to achieve conditions.
 - s92 Q 9e) Agree that this can be addressed with conditions that address any future changes in median river flow through reviews of river flow rates and the associated regime of treated wastewater discharge rates.
10. Consider rewording of Condition 8 to reflect a median (i.e. 6 of 12 samples) and higher percentile parameter that are aligned with the current treatment plant performance data and realistic performance of the upgraded plant (and network).
 - s92 Q 9f) Agree to resolve this when consent conditions are settled.
11. Confirm why soluble carbonaceous five-day Biochemical Oxygen Demand (scBOD₅) is proposed for the consent measurement? Has there been any performance data for the existing plant been collected to date for this parameter?
 - s92 Q 9g) Agree that there is no evidence to support the use of scBOD₅ for discharge conditions, and that another parameter will need to be agreed to (either cBOD or COD) when consent conditions are settled.
12. Confirm why BOD is being proposed as the oxygen demand parameter, as opposed to COD in the previous consent?
 - s92 Q 9h) Satisfactory response provided.
13. Confirm why such lenient percentiles (e.g. for scBOD₅, 4/12 = 220mg/L 33% of the time, and 10/12 = 224mg/L 83% of the time) are being proposed. However, "current" treated wastewater median is ~23mg/L for cBOD. Current consent is for COD <220mg/L. Note COD will always be significantly higher than scBOD₅.
 - s92 Q 9i) Agree to resolve this when consent conditions are settled.
14. Explain why such narrow bands are to be met between the 33% and 83% trigger values.
 - s92 Q 9j) Agree to resolve this when consent conditions are settled.
15. Provide treated wastewater consent parameters for pre and post upgrade to the network and treatment plant.
 - s92 Q 9k) Satisfactory for now, but will need to be resolved when consent conditions are settled.
16. Provide proposed consent conditions for *E Coli*.
 - s92 Q 9l) Agree to resolve this when consent conditions are settled.

17. Conditions 25 & 26. Confirm whether measurement of influent wastewater to the treatment plant is possible, as this will be the key gauge of success of the I&I programmes (Condition 15, Network Management Plan).
- s92 Q 9n) Satisfactory response provided.
18. Conditions 21 and 22. Confirm who the System Review Data Reports are intended to be issued to at 5, 10, 20, and 30 years.
- s92 Q 9m) Satisfactory response provided.
19. Condition 42. Is the intention that these reports be issued annually or biennially?
- s92 Q 9o) Satisfactory response provided.

5 SUMMARY OF OTHER RECOMMENDATIONS

Specific recommendations for HBRC to consider that are not directly related to the provision of information from the applicant, are as follows:

1. Revision of the consent conditions to measure load equivalent to the existing discharge, so that continued effects can be assured.
2. Inclusion of an issues list or similar, or reflection of the key outcomes identified in the BPO within the consent conditions, including some form of review against these. Specific clauses in the draft consent conditions that this relates to have been identified as 16, 17, 18, 21, 22, and 23.
3. Assess whether the land discharge applications should be combined with this consent application, given that they represent the same WWTP discharge and are part of the same identified BPO.
4. Suitability of a 35-year consent term, given that the adaptive approach prescribed in the draft conditions, and the staged BPO strategy only provide a degree of certainty around the improvements that will be made for the first 10 years (the remaining stages are described as "aspirational").
5. Ensure that the loosening of discharge flow effects as described in the draft conditions (1/2 median, median, 3x median etc. in Condition 2 and 3) is adequately assessed for effects based on review by other technical experts in the team.
6. Consider addition of conditions for UV transmissivity to ensure effective disinfection, and minimum flows to UV treatment before bypassing.
7. Consider the addition of a sludge measurement and reporting condition for the treatment plant.

Yours sincerely,

For and on behalf of
Mott MacDonald New Zealand Limited.



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