
Project:	Pōrangahau and Te Paerahi Wastewater		
Our reference:	343853BA17	Your reference:	APP-126770
Prepared by:	Sven Exeter & Nick Dempsey	Date:	1 October 2021
Approved by:	Sven Exeter	Checked by:	David Hume
Subject:	Pōrangahau and Te Paerahi Wastewater Consent Applications Review		

1 Introduction

Central Hawke's Bay District Council (CHBDC) operates the wastewater treatment plants (WWTP) for the Pōrangahau and Te Paerahi communities. The Pōrangahau WWTP currently provides treatment (pond treatment system) and then discharges wastewater directly to the Pōrangahau River. The Te Paerahi WWTP provides treatment (pond treatment system) and then discharges wastewater to adjacent sand dunes via soakage. The resource consents for these discharges expired on 31 May 2021 and the applicant is exercising S124 (RMA) rights to continue the current discharges while they transition to a new year-round irrigation system and consent to operate a new combined scheme for both townships. Specifically, this includes:

- Discharge of contaminants into air: discharge of aerosols and odour to air associated with the receipt, treatment, storage and discharge of wastewater from the new combined scheme WWTP and wastewater storage pond and existing Pōrangahau and Te Paerahi Wastewater Treatment Plants.
- Discharge of contaminants onto or into land: discharge of treated wastewater from the Te Paerahi WWTP to the existing land disposal area, discharge of treated wastewater from the Pōrangahau and Te Paerahi WWTPs at the proposed irrigation site and discharge of treated wastewater from the proposed new combined scheme WWTP which includes UV disinfection, but the exact wastewater treatment process has yet to be selected.
- Discharge of contaminants into water: discharge of treated wastewater from the Pōrangahau WWTP into the Pōrangahau River.

Mott MacDonald New Zealand Limited (Mott MacDonald) has been engaged by Hawke's Bay Regional Council (HBRC) to provide reviews of the following:

- a. RMA planning matters, assessment of environmental effects (AEE) and the approach to the best practicable option (BPO)
- b. The proposed wastewater treatment plant process and options assessment with regard to the BPO
- c. Infiltration and inflow strategy
- d. Proposed resource consent conditions
- e. Provide S92 (RMA) further information request questions
- f. Review of consultant team technical reviews

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

2 Planning

2.1 Porangahau and Te Paerahi Consent Application & AEE - PD1

Overall, the approach to discharge to land in favour of the existing discharges to the Te Paerahi dunes and Pōrangahau awa may have some benefits provided the assessment is technically robust and does indeed reduce the overall effects compared to the current discharges. However, further information is required as noted below and by PDP and Coast and Catchment before any conclusions can be made.

Riparian planting is proposed which is likely to be of benefit to local ecology and the Pōrangahau estuary which is a significant conservation area under the Regional Coastal Environment Plan (RCEP) area due to the presence of significant avian ecology. Pōrangahau awa itself is an outstanding water body under Plan Change 7 of the RRMP and therefore requires careful consideration. The proposal is also likely to have cultural benefits however this requires qualification upon review of the pending cultural impact assessment (CIA).

2.1.1.1 RRMP and RCEP Rules

The relevant Regional Resource Management Plan (RRMP) and RCEP rules are correctly applied for the discharges.

2.1.1.2 UV disinfection

The Consent Application and AEE (PD1, page 33) states:

For the duration of Stage 1 and Stage 2, treated wastewater from the existing Te Paerahi WWTP will be pumped to the new Discharge Property as described in Section 4.7. There are no proposed changes to the Te Paerahi wastewater quality, other than the addition of UV treatment (at the Discharge Property to manage pathogen concentrations prior to wastewater being applied to the discharge property).

This conflicts with the Land AEE (LEI, PD10) which states that the wastewater quality in Tables 4.5 and 4.6 was used for the assessment (assumes no UV disinfection) and only at stage 3 is UV installed.

Further information request:

- i. Please clarify details of the UV staging.**

2.1.1.3 Discharge area

The proposed new land discharge site is not owned by CHBDC and “CHBDC intend to purchase land at the Discharge Property for the construction of a pond.” (PD1, page 33). The planning evaluation (BECA, 2021, PD 90) states “Wave 3 – Storage pond and treatment plant consents – consents for discharges, earthworks and designations to allow the building of new centralised treatment and storage facility.”

Further information request:

- ii. When will the purchase of the land for the wastewater storage pond happen?**
- iii. Will land be purchased for the WWTP too?**
- iv. What protection or mechanism ensures that the land discharge site will be able to be used by CHBDC for the discharge for the requested 35-year consent duration given that it does not appear to be covered under a land purchase or designation?**
- v. It is assumed that CHBDC or a suitable operator will operate the WWTP. Will the landowner operate the irrigation scheme, or will this also be operated by CHBDC?**

2.1.1.4 Cultural impacts

It is noted that a “CIA is being finalised, which will assess the aspects of the land application system and diffuse discharge to the Pōrangahau River.” In our review of the transitional consent applications (12 July 2021) we requested that the “CIA should also cover the transitional discharges and be undertaken by relevant mana whenua”.

Further information request:

- vi. Please provide a cultural impact assessment for proposed discharges from the Pōrangahau and Te Paerahi WWTPs for stages 0, 1 and 2 and proposed new combined discharge scheme for stage 3 including commentary on the staging and timing.**

2.1.2 Appendix A – Figures

Figure A2 appears to show the discharge area crossing the property boundary.

Further information request:

- vii. If there is a mapping error or for clarity, please amend Figure A2 so that the discharge area and irrigable areas are not shown to be crossing the property boundary.**

2.1.3 Appendix B – Community Engagement Record

A series of names and dates are provided but no minutes are provided. Any potential issues around community engagement and outcomes could be raised by submitters however it seems pertinent to raise the need to have minutes on hand.

Important point of note:

- g. Robust meeting minutes are likely to be of benefit for a possible hearing. Although we do not necessarily need to see the meeting minutes now, we recommend that CHBDC have these on hand in case they are needed in the future.**

2.1.4 Appendix C - Affected party approvals

Appendix C of the Consent Application & AEE (PD1) provides an “Affected Party Approval”. The document states “Treatment improvements to existing ponds (UV, filtration, screens)” however it is unclear if the existing ponds will indeed have ‘UV, filtration, screens’ added during stages 0, 1 and 2. Given the conflicting details noted above, the validity of this “Affected Party Approval” is questionable.

Further information request:

- h. Please confirm if and when UV, filtration and screens will be installed at the existing ponds.**
- i. On 25th February an email was received by CHBDC on behalf of the landowners approving the application for the ‘transitional consent’. The email approval was conditional on CHBDC demonstrating progress towards a long-term solution. Consent conditions have been proposed to address these requirements. Do the proposed consent conditions meet Puketahuinu Trust’s expectations? We note that this can be dealt with via a submission.**
- j. A number of consent application documents appear to be prepared after the date of the signing of the written approvals. Please confirm that the Stoddart’s understand all changes made to the proposal since the date they signed the written approval. For example, are they comfortable with the proposed buffers on the farm? Does the planning assessment that was prepared after they signed the written approval align with their understanding?**

2.1.5 Appendix D – Records of Title

No comments.

2.1.6 Appendix E – Proposed Consent Conditions

The breadth of proposed conditions is reasonable and provides commitments to monitoring and riparian planting.

A number of conditions will require amendments and further details are needed, for example, for Table 3 condition 41 and Table 4 condition 48, there are percentile limits that are missing. These percentiles should be provided now.

Table 4 states condition 58:

The Consent Holder shall establish and maintain for the term of consent dune grass vegetation:

- (a) around the eastern perimeter of the wastewater treatment plant and storage area; and*
- (b) on a 50 m wide section of sand dune within a 20 m riparian margin of the Porangahau River.*

There does not appear to be any reasoning for the 20m riparian margin in the consent application suite i.e. why not 25m?

A detailed review of the consent conditions will be undertaken after the S92 (RMA) further information has been received in conjunction with the s42A (RMA) officer's report.

Further information request:

- k. Please provide the percentile limits for Table 3, condition 41 and Table 4 condition 48.**
- l. Table 4 condition 58 sets a 20 m riparian margin of the Pōrangahau River - there does not appear to be any reasoning for the 20m riparian margin in the consent application suite, please provide details.**

PDP and Coast and Catchment have provided recommendations for amendments to consent conditions which we consider appropriate.

2.1.7 Appendix F – RMA Checklist

No comments.

2.1.8 Appendix G - Customary Marine Title Applicant

No comments.

2.1.9 Appendix H - Discharge to Land of Pōrangahau and Te Paerahi Wastewater - LEI PD10

There are inconsistencies (as also noted by PDP) around the pathogen counts used in the modelling. The potential adverse effects of the land irrigation scheme from odour and spray drift at the property boundaries does not seem to be clear .

2.1.10 Appendix I – Pōrangahau and Te Paerahi Wastewater - Water Quality Assessment

No comments.

2.1.11 Appendix J - Pōrangahau Wastewater Discharge to Land – Ecological Impact Assessment (Beca, 2021:P:D.66)

As noted by PDP, the effects of the proposed activities on wetland at site 1 and possible off-site wetlands within 100m needed to be assessed.

Further information request:

- m. Analysis of the NES Freshwater regulations needs to be re-assessed in light of wetland 1 potentially being a natural wetland and any potential offsite wetlands with regard to the 100m setback clauses of the Freshwater NES.**
- n. Future activities for constructing the wastewater storage pond, rising main, irrigation system and WWTP will involve earthworks, structures and buildings that also would require assessment against the Freshwater NES. Please provide commentary on how this will be dealt with.**

2.1.12 Appendix K – Porangahau Wastewater Discharge - Coastal Ecology Assessment

No comments.

2.1.13 Appendix L – Long Term Planning Assessment

The planning assessment is comprehensive and assesses the range of required RMA matters however some comments are provided below and further information is required.

2.1.13.1 BPO

We agree with the overall concept that a discharge to land with appropriate irrigation application rates to suitable land from a new wastewater treatment plant, with UV disinfection and sufficient treatment to reduce contaminants of concern to an acceptable level, could be considered the BPO. However, as noted above, this is dependent on confirmation that the proposed BPO is technically robust.

Typically, a multi criteria analysis (MCA) would be used for a BPO process, however this was not undertaken noting that the applicant stated that an MCA was not needed due to stakeholders being *well educated* (LEI, 2021:P:C.12). A robust MCA would have been preferable. The BPO assessment would benefit from written approvals or signed minutes from all relevant stakeholders that took part in the BPO process. As noted above, these should be kept on hand by CHBDC in case they are needed later in the consent process. Further comments on the BPO is provided in the BPO section.

Although this is outside of the scope of the RMA, the overall approach to options assessment would have benefitted from factoring in capital and operational carbon / greenhouse gas emissions (GHG) of the different options. This point is elaborated on in the climate change section below.

2.1.13.2 NES Soil Contamination

The assessment states that the proposed works do not involve any trigger activities such as soil disturbance, and yet Stage 2 and beyond of the proposal involves earthworks for the storage pond and other wastewater infrastructure, such as irrigation infrastructure, pipelines and pump stations. The proposed land irrigation site being a sheep and beef farm may have had livestock dip or spray race operations in the past therefore a preliminary site investigation (PSI) should be undertaken.

Further information request:

- o. Please provide a PSI to cover the project where any earthworks will occur on HAIL sites or further commentary or evidence for why a PSI is not required. Alternatively, a PSI could be deferred to a later date providing it does not cause delays to the committed programme.**

2.1.13.3 Ancillary structures and other possible consents

It is noted that new pump stations and a rising main over the bridge or under the Pōrangahau River for a pipeline from Te Paerahi WWTP to the land discharge area would be required and any potential consents would be sought later.

Further information request:

- p. Where will the new pump stations likely be located? Is this on land owned by CHBDC? Would they require odour treatment?**
- q. Will the new wastewater rising main from Te Paerahi to the new land discharge site be attached to the Beach Road Pōrangahau River bridge, a new pipe bridge or run under the Pōrangahau River? Depending on the solution additional consents may be required including new structures over water bodies and dewatering.**

2.1.14 Pōrangahau and Te Paerahi Community Wastewater – Discharge Conceptual Design (LEI, 2021:P:C.15)

No comments.

2.1.15 Appendix N – Te Paerahi Water Quality Assessment (Beca, 2021:P:D.60)

No comments.

2.2 Supporting Documents

2.2.1 PB.43 Porangahau and Te Paerahi Long Term - Planning Evaluation (Part A- Consent Strategy)

No comments.

2.2.2 PC.34 – Poranghau/Te Paerahi Consultation Summary

Same comments for Appendix B 'Community Engagement Record' above.

3 Wastewater Treatment

3.1 Porangahau and Te Paerahi Consent Application & AEE - PD1

We note that 4 and 9 years are proposed to remove the existing discharges from Te Paerahi and Poranghau respectively.

Further information request:

- r. Please explain the reasoning for this extended period, when almost no new treatment or storage infrastructure is planned in this period.**

On page 33 it states:

For the duration of Stage 1 and Stage 2, treated wastewater from the existing Te Paerahi WWTP will be pumped to the new Discharge Property as described in Section 4.7. There are no proposed changes to the Te Paerahi wastewater quality, other than the addition of UV treatment (at the Discharge Property to manage pathogen concentrations prior to wastewater being applied to the discharge property). There may be fouling issues with a UV system if it is not carefully managed.

In Section 3.3 it is noted that:

The ability to implement change is primarily limited by funding. Council has through their 2021-31 Long Term Plan allocated \$17.6 M over the next 9 years, with the full system to be commissioned by 2030.

Further information request:

- s. Where is it described that this is the expected cost of the BPO, and how was this compared with alternatives?**

3.2 Best Practicable Option (LEI, 2021:P:C.12)

The BPO Report includes an Appendix A, "P:C.34 – Porangahau/Te Paerahi Consultation Summary". This in turn includes a list of 3 Annexes of minutes of the stakeholder engagement meetings. The Annexes are not provided. Section 3.3 of the BPO report describes how a BPO selection committee was used to determine the BPO. At present the link between the community consultation / BPO selection committee and the BPO is not clear.

Further information request:

- t. Please provide the above 3 Annexes to present what was discussed at these meetings and how the BPO was arrived at?**

The definition of a BPO includes assessment of the financial implications of options, which does not appear to be included in the BPO report.

Further information request:

- u. Please confirm how financial aspects were addressed in the selection of a BPO.**

Section 8.3 mentions wastewater sources. It does not however discuss Inflow and Infiltration (I&I) and makes no mention of the high I&I issues that are encountered in the area. The draft CHBDC Inflow and Infiltration Management Strategy (Beca, 20 April 2021) highlights this issue and identifies that action is required.

Further information request:

- v. Why has the impact of I&I on treatment and storage, and the resulting cost increases not been addressed in the AEE?**

3.3 Te Paerahi and Porangahau Options Report (Beca, 2020:P:C.10)

This Beca Options report does not select a preferred option, but rather identifies three vastly different solutions and notes that these will be considered through the LTP process.

Figure 31 on page 67 is a strawman which portrays all three options together. The key notes that [C] = Conveyance, but we wonder whether this should be Combined Plant? Please confirm.

Further information request:

- w. Please confirm the definition of C.**

For the treatment options, we note that only five broad categories are assessed, these being:

1. Pond enhancements
2. Fixed film or ASP
3. Tertiary treatment
4. Chemical P removal
5. Disinfection

Items 3 to 5 are discussed as though they are independent solutions that may meet some of the discharge requirements of the discharge options considered. However, these cannot be expected to provide sufficient treatment for any of the proposed discharges without an up-front treatment plant (be it a pond or higher rate system). It is not clear why these have not been put forward as pond enhancements or as sub-sets of the two treatment solutions proposed.

Further information request:

- x. The appendices for this report are not included, please provide them as they are referred to throughout the report.**

3.4 Appendix H - Discharge to Land of Pōrangahau and Te Paerahi Wastewater - LEI PD10

Section 4.4 of this report appears to closely replicate Section 4.2 of Appendix M. See comments below on Appendix M regarding concerns about high I&I, and the risk of overestimating removal of I&I in the future.

3.5 Appendix M - Pōrangahau and Te Paerahi Community Wastewater – Discharge Conceptual Design (LEI, 2021:P:C.15)

Table 4.2 notes that the future flows assume a reduction in I&I at some point between now and 2057. Because no population growth is expected in the catchment the result of this is a design flow which is over 60m³/d less than the current known flows. This does not appear to be sufficiently conservative, for the following reasons:

1. The draft CHBDC Inflow and Infiltration Management Strategy (Beca, 20 April 2021) provides no certainty that this community will receive I&I reductions in the near future,
2. I&I issues can be very difficult to find and remove,
3. I&I issues will continue to be added to the network over time as infrastructure ages and illegal connections are made,
4. Climate change can be expected to have an increasing impact on I&I peak flows (noting that LEI, 2021:P:D.10 in Section 3.10.2 highlights an increase in summer and autumn rainfall of 2-13% by 2090).

Further information request:

- y. Please confirm how this will affect flows to the treatment plant(s) if no I&I improvements are realised.**

In Figure 4.1 the peaks presented for 2057 appear to show that all flows have been increased proportionally rather than separating out population derived flows (average dry weather flow) and the weather derived flows (which is included in the ADF).

Further information request:

- z. Please confirm how the future flow curves in Figure 4.1 were derived.**

Section 4.3 Wastewater Quality, notes that the expected effluent quality following the installation of a new WWTP at Stage 3, is as follows: average quality not exceeding

- 20 g O/m³ carbonaceous biochemical oxygen demand;
- 30 g/m³ total suspended solids;
- 20 g/m³ total nitrogen;
- 5 g/m³ total phosphorus;
- 500 MPN/100 mL E.coli (following UV disinfection).

In the Beca report Outline of Proposed New Combined Treatment Plant Options (P:C.16), the proposed total suspended solids target is lower at 20 g/m³, and a much lower value of 20 g/m³ BOD (rather than the above cBOD) is proposed.

Further information request:

aa. Please clarify which target values are proposed.

We note the proposed staging and timing of activities presented in Table 8.1. It is not clear whether the proposed timeframes are consecutive or intended to occur in parallel. In either case, they appear to be extremely conservative, and cannot be easily aligned with the proposed consent Stages.

Further information request:

bb. Please confirm which of the activities occur in sequence, and which occur in parallel to show alignment with the consent Stages.

3.6 Te Paerahi and Pōrangahau WWTP - Outline of Proposed new combined Treatment Plant options P:C.16

This report (or any others that we have reviewed) makes no mention of sludge management. All of the proposed systems (except ponds) will require management of biosolids. While ponds may not appear to have this requirement, there will be costly sludge dewatering exercises required within the lifetime of the consent.

Further information request:

cc. How are biosolids proposed to be handled, dewatered, stabilised, and disposed of? Is CHBDC aware of this requirement?

Note this question should be streamlined with PDP's similar question.

4 Review of other disciplines

We concur with the Coast and Catchment and PDP reviews.

5 Climate Change

In our review of the transitional consent applications (12 July 2021) provided to CHBDC we stated:

"A number of changes to the RMA and regional plans will be relevant for the new future solution and consenting process:

- *Councils must have regard to emissions reduction plans and national adaptation plans under the Climate Change Response Act 2002 (as amended by the Climate Change Response (Zero Carbon) Amendment Act) when making and amending regional policy statements, regional plans and district plans – in force from 31 December 2021 (unless extended by an Order in Council).*
- *Councils may consider discharges to air of greenhouse gas (GHG) emissions, as the sections prohibiting councils from considering discharges are repealed (that is, sections 70A, 70B, 104E and 104F) - in force from 31 December 2021 (unless extended by an Order in Council).*

In the documents provided, GHG considerations do not appear to be covered as an assessment parameter, either as operational or embodied (capital) GHGs. It is recommended that the future WWTP option takes

a holistic approach and considers GHG emissions and the impacts on climate change (i.e. not just the impacts of climate change on the WWTP system)."

The combined scheme consent application document suite provided does not consider the impacts of the project on climate change, and GHG footprint assessment has not been provided. Detailed design of the proposed new wastewater treatment plant and scheme is some time away and construction would not start for some years. Although GHG footprint assessment is not currently required under the RMA, by the time CHBDC start the next design phase, GHG footprint assessment is likely to be required¹ as councils will be required to reduce their carbon footprints.

The proposed WWTP will include capital or embodied carbon (e.g. from concrete in WWTP buildings and from fossil fuelled vehicles and machinery used to build the assets) and once operational, the WWTP and irrigation scheme would have GHG emissions (e.g. the WWTP and storage pond would release methane and nitrous oxide and the discharge to land also result in nitrous oxide emissions).

The GHG emissions derived from this project will exist in the atmosphere for a long time. Reducing the GHG footprint and the impacts on climate change starts with smart planning and design now as this is typically when the largest savings of GHG emissions can be realised. Undertaking GHG footprint assessment now is likely to reduce physical and transition risks for CHBDC. Designing the new infrastructure with the aim of reducing the overall whole of life carbon footprint may also reduce future carbon offsetting costs for the community.

It is acknowledged that the proposed land discharge scheme may have some carbon sequestration benefits as riparian planting is proposed and by undertaking the assessment the outcome to progress the land irrigation scheme may not change. However, we strongly recommend that GHG footprint assessment of the options and BPO is undertaken. Alternatively, given that the BPO has already been selected but the WWTP treatment process and configuration has yet to be decided on, at the very least a comparison assessment of GHG footprints for the different WWTP options should be undertaken.

Further information request:

- dd. Taking a best practice approach and to mitigate transition risk, please provide a GHG footprint assessment for the whole of life GHG emissions including embodied/capital and operational carbon (i.e. over a 50 year time frame or another suitable time frame) for all options assessed, or as a minimum for the WWTP options for the new land irrigation scheme site. The assessment should be undertaken in accordance with the *IPCC Guidelines for National Greenhouse Gas Inventories* and relevant best practice guidelines which considers carbon dioxide equivalents (i.e. including methane and nitrous oxide) and all relevant Scope 1, 2 and 3 GHG emissions.**

6 Conclusions and Recommendations

- A review of the documents relevant to Mott MacDonald's scope has been undertaken for the purposes of preparing a S92 (RMA) letter.
- It is recommended that all further information request questions from Mott MacDonald, PDP and Coast and Catchment are provided to the applicant.
- Along with the S92 (RMA) further information requests above, it is recommended that GHG footprint assessment should be undertaken for the options that were considered in the BPO assessment or as a minimum for the WWTP options for the new land irrigation scheme site.
- A further review will be undertaken once the S92 (RMA) information has been received.

¹ The Zero Carbon Act emissions reduction plan (ERP) has been delayed to May 2022 (previously due in end of 2021).

