



**CENTRAL
HAWKE'S BAY**
DISTRICT COUNCIL

PŌRANGAHAU AND TE PAERAHI WASTEWATER TREATMENT PLANT DISCHARGE

RESOURCE CONSENT AND ASSESSMENT OF ENVIRONMENTAL EFFECTS

August 2021

CHBDC, 2021:P:D.1



Pōrangahau and Te Paerahi Wastewater Treatment Plant Discharge Resource Consent Application and Assessment of Environmental Effects

Central Hawke's Bay District Council

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Task	Responsibility
Project Manager:	Darren de Klerk
Prepared by:	Hamish Lowe, Katie Beecroft, Sam Morris
Reviewed by:	Darren de Klerk, Anna Lewis, Hamish Lowe
Approved for Issue by:	Josh Lloyd
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Central Hawke's Bay District Council
PO Box 127
Waipawa 4240

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1 EXECUTIVE SUMMARY

1.1 Introduction, Consent and Project Highlights

This resource consent application is part of Central Hawke's Bay's "Big Wastewater Story", a vision and strategy for managing wastewater throughout the Central Hawke's Bay District (the District). This resource consent application provides a pathway to achieving the long-term goal of removing wastewater discharges from the Pōrangahau River and Te Paerahi coastal dune area. The Big Wastewater Story has a commitment to improving environmental health not just related to wastewater – but in a holistic way. A wider programme of actions aims to reduce direct discharges of wastewater to water across the District.

Central Hawke's Bay District Council (CHBDC) is responsible for the management of wastewater from the communities of Pōrangahau and Te Paerahi. Currently the Pōrangahau WWTP has a pond treatment system with treated wastewater being discharged via a wetland drain to the Pōrangahau River. The Te Paerahi WWTP has a pond treatment system with treated wastewater being discharged to sand dunes. The development of the discharge system of Pōrangahau and Te Paerahi's wastewater is proposed to be staged, with initial stages forming a short-term solution and a later stage being the long-term solution.

This resource consent application seeks to enable discharges from the two existing community WWTPs (short term solution) while a new combined long term WWTP and discharge system is built, and then the phasing out of the existing facilities (long term solution). This process is to be implemented in stages as shown below.

Short Term			Long Term
Stage 0 Years 0-6	Stage 1 Within 4 years	Stage 2 Within 6 years	Stage 3 Within 9 years
Continue existing discharge to the sand dunes at Te Paerahi (up to 4yrs)	Cease discharge to the sand dunes at Te Paerahi		
Continue discharge to the Pōrangahau River (up to 6yrs)	Continue discharge to the Pōrangahau River	Cease discharge to Pōrangahau River below median flow	Cease all discharge to the Pōrangahau River
	Commence discharge treated wastewater on 4ha of farmland	Discharge treated wastewater to 10ha of farmland	Discharge treated wastewater to 40ha of farmland

By way of background, a multi-stage consenting process has been undertaken. Due to the pending expiry of consents and the need to develop a long-term solution, transitional consent applications were submitted for continued discharges at Te Paerahi and Pōrangahau while the long-term solution was finalised. This was ensuring that s124 requirements were met. This application seeks to address the long-term land discharge aspects of the project and the continuation of the existing discharges while the long-term solution is being built. Once processed, this consent package will have superseded the earlier transitional application which can then be withdrawn.

Specifically, key actions include:

Short Term

•Stage 0:

allows the existing discharges to occur for **up to 6 years** from **Te Paerahi** and **up to 9 years** from **Pōrangahau**;

•Stage 1:

commences **within 4 years** and results in ceasing discharge to the coastal foredunes at Te Paerahi, and conveying the treated wastewater from Te Paerahi to the **New Discharge Property** located at 474 Beach Road. The treated wastewater from Te Paerahi is to be discharged via irrigation to 4 ha of farmland. Pōrangahau wastewater will continue with its existing discharge;

•Stage 2:

commences **within 6 years** and results in treated wastewater from Pōrangahau being transferred to the same property which receives Te Paerahi wastewater. The irrigation system is to be expended to 10 ha. Discharge to the Pōrangahau River would almost cease except for wet weather events when irrigation was limited and river flow is above median;

Long Term

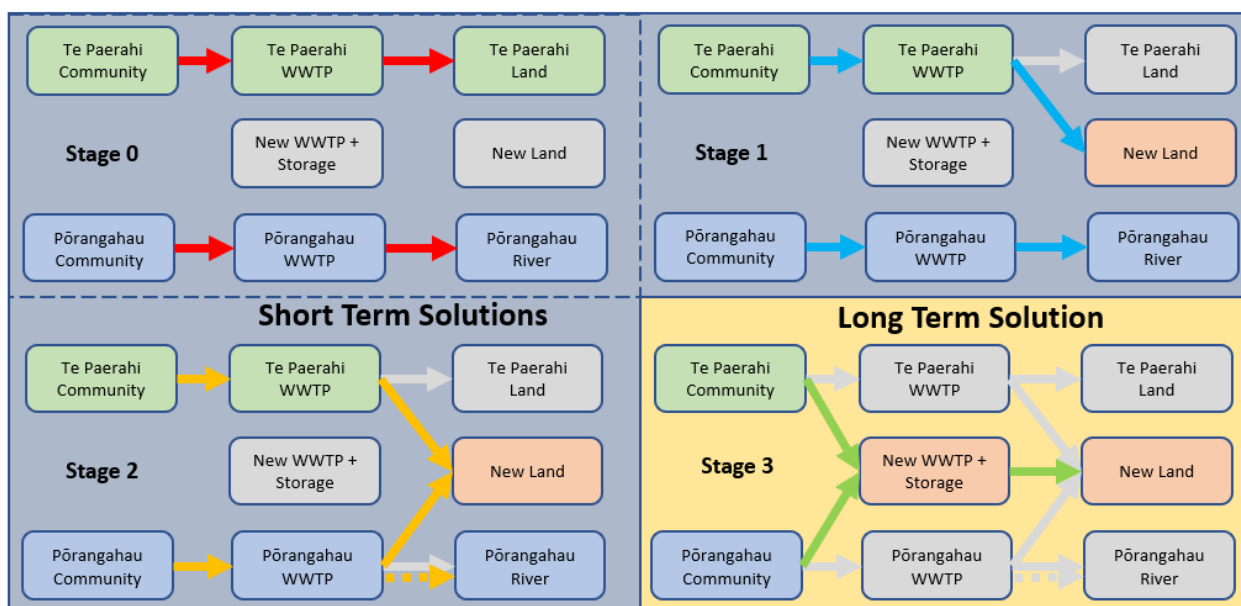
•Stage 3

•commences **within 9 years** and includes the use of a new combined wastewater treatment system at the discharge property, and provision of storage for treated wastewater. The WWTPs at Te Paerahi and Pōrangahau will cease to be used for treatment and the pond at Te Paerahi will eventually be decommissioned. The irrigation area is to be expanded to at least 40 ha.

Each stage sees a progressive reduction in wastewater derived contaminants reaching the Pōrangahau River catchment and at Te Paerahi.

The solutions and stages are also be described in the following image:

Staging of the Te Paerahi and Pōrangahau Wastewater Upgrade



1.2 Objectives of Consents

The development of a preferred discharge option was driven by improving the environmental, cultural and social impact of the current discharges. Key objectives of the consents are:

- Avoid direct surface water discharge;

- Reduce nitrogen and phosphorus discharge to the river and coast;
- Exclude wastewater derived pathogens from surface water;
- Address iwi and community concerns; and
- Provide a solution that considers the long term and is appropriate for the location.

1.3 Setting

During the consenting process (prior to granting) for the existing resource consents for both communities, iwi gave a strong direction that wastewater discharge to the Pōrangahau River and culturally significant dunes should be ceased. CHBDC have subsequently entered into discussions and consultation with the community to progress changes to the treatment and discharge systems. The community reiterated the desire to avoid wastewater to these current receiving environments. This was reflected in an undertaking by CHBDC during this re consenting process to determine a Best Practicable Option (LEI, 2021:P:C.12).

Discharge options were examined (LEI, 2021:P:C.12) and discharge to land emerged as the preferred means to cease the current discharges. Investigations were undertaken to determine the suitability of land within 10 km of the treatment plants to receive a wastewater discharge (LEI, 2020:P:B.11). Feedback was sought from the community and iwi regarding land areas that should be avoided. The result sees the development of a 100 % land based discharge system.

This consent application refers and relates to activities at and around three locations. These are Te Paerahi, Pōrangahau and the Discharge Property. Accompanying this consent application are a number of technical reports which outline the proposed activities. These documents have been produced as part of an iterative process and therefore have evolved over time, incorporating additional information and conclusions along the way. Additionally, over this period, the terminology used in reporting to describe these three locations has also evolved.

Te Paerahi refers to the Te Paerahi WWTP which includes the sand dune discharge field and all reticulation and treatment infrastructure. Pōrangahau refers to the Pōrangahau WWTP, the Pōrangahau River discharge, as well as all reticulation and treatment infrastructure associated with the plant. The Discharge Property refers to the location for future wastewater irrigation located at 474 Beach Road, Pōrangahau. Over the consenting process, the terminology to describe the Discharge Property in particular has varied, with previous names including, the site, discharge site and land application site, with each of these terms essentially all meaning the same thing.

1.4 Structure of the Application

This report is in support of the resource consent applications for the discharges of wastewater from the Te Paerahi and Pōrangahau communities. After setting out a description of the current wastewater system, this report details the long-term discharge solution proposed for the communities. An evaluation of the effects and planning considerations is then provided.

The preparation of these consent applications has been informed by work undertaken over the last two years and brings together a collective approach to wastewater management throughout the District.

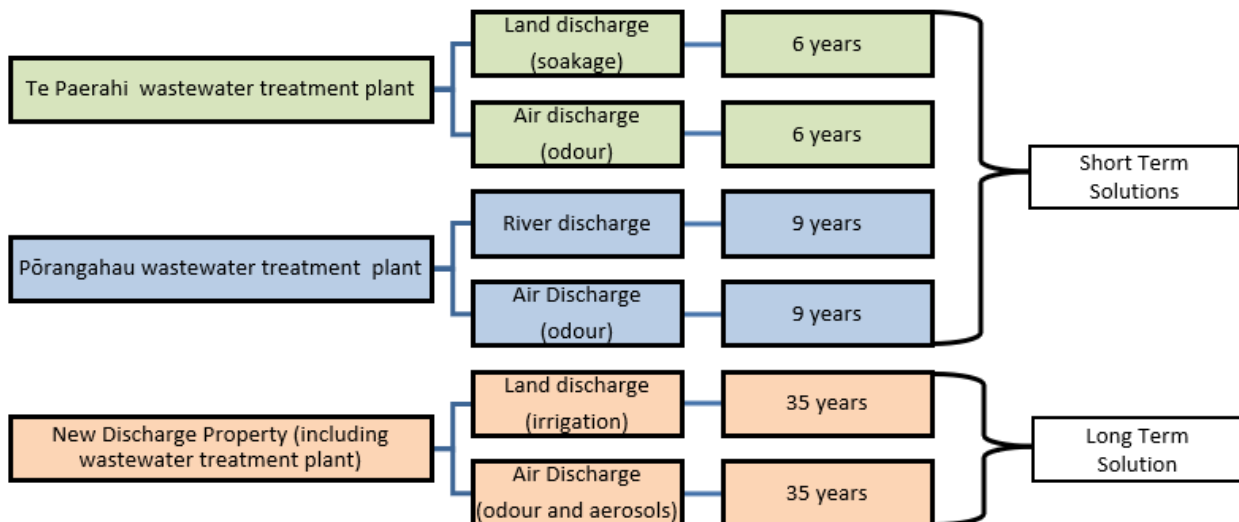
This document is a single report that summarises applications for discharges at the two communities using their current discharge regimes, and then adds a third component being a set of consent applications for a new discharge where wastewater is combined and discharged at a common location.

The following report serves as a summary bringing together a range of reporting. Rather than repeating, this document provides extensive referencing of supporting documents. It is intended to provide a summary and direct the reader to the relevant reports and text. While bringing together discretely separate but similar activities, the content and structure has been crafted to meet the requirements of Section 88 and Schedule 4 of the Resource Management Act (RMA).

A reference list is provided in Section 14, and in order to manage the bulk of reproduction and the overwhelming extent of documentation, only key reports are included with this document as appendices. Related documents not included are supplied electronically¹ and can be obtained upon request from CHBDC. A diagram showing the relationships between all of the reports that directly relate to the production of this application is presented in Figure A0 in Appendix A.

1.5 Resource Consent Requirements

This application provides a full assessment of effects seeking the following consents for the three groups of activities:



1.6 Consultation

During the previous consent process that saw the granting of the current consents, iwi gave a strong direction that discharge to the Pōrangahau River should be ceased. A preference for removal of the treatment system at Te Paerahi was also indicated, and this has subsequently been reinforced as an essential item to address the cultural sensitivity of the peninsula and its many wahi tapu. The Pōrangahau Environmental Management Team (PEMT) was established as a condition of the existing consents for both Pōrangahau and Te Paerahi and included representatives for Ngāti Kere, Ngāti Manuhiri, Ngāti Pihere and Puketauhinu. The PEMT identified potential treatment options for the two communities and recommended further investigation. Investigations were undertaken but were not able to be progressed at the time.

CHBDC have subsequently entered into discussions and consultation with the community since 2019 to progress changes to the two treatment and discharge systems. The community reiterated the desire to avoid wastewater in the Pōrangahau River and to move the Te Paerahi WWTP away from the current dune location. An updated investigation was carried out into the previously identified treatment options.

Discharge options were also examined. Discharge to land emerged as the preferred means to cease the current discharges. Feedback was sought from the community and iwi regarding areas that should be avoided.

CHBDC has connected with the community and iwi in a number of forums over the course of the current consent. This engagement is summarised in Section 7 of this application.

¹ Other referenced documents not included with this report can be obtained upon request from CHBDC.

1.7 Assessment of Environmental Effects

Te Paerahi - The overall effects of the wastewater discharges from the Te Paerahi wastewater treatment plant on the coastal environment will be less than minor to negligible. Following the removal of the Te Paerahi WWTP and discharge field, there will be zero effects on the coastal environment. Table 1.1a summarises effects.

Table 1.1a: Summary of Potential Risk and Actual Effects from Wastewater – Te Paerahi

		Sensitivity	Source / Contaminant			
			Organic matter Nitrogen Phosphorus	Pathogens	Water	Wastewater
Receptor / Pathway / Vector	Soil	Potential risk	Low	Moderate	High	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Groundwater	Potential risk	High	High	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Habitat	Potential risk	High	Moderate	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Cultural	Potential risk	N/A	N/A	N/A	High
		Actual effect	N/A	N/A	N/A	Less than minor
	Air	Potential risk	Moderate	High	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A

Pōrangahau - Overall, the effects of the wastewater discharges from the Pōrangahau wastewater treatment plant on the local receiving environment (Pōrangahau River) will be less than minor for of the majority of river flow conditions. However, during certain conditions there is a theoretical potential for moderate effects, namely faecal coliforms and nitrogen. Table 1.1b summarises the potential for effects.

Table 1.1b: Summary of Potential Risk and Actual Effects from Wastewater – Pōrangahau

		Sensitivity	Source / Contaminant			
			Organic matter Nitrogen Phosphorus	Pathogens	Water	Wastewater
Receptor / Pathway / Vector	Surface water	Potential risk	High	High	Low	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Habitat	Potential risk	High	Moderate	Low	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Cultural	Potential risk	N/A	N/A	N/A	High
		Actual effect	N/A	N/A	N/A	Less than minor
	Air	Potential risk	Moderate	High	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A

Discharge Property - The overall effects of discharges at the new Discharge Property can be sufficiently mitigated through appropriate design such that the effects will be less than minor. Table 1.1c summarises the potential for effects.

Table 1.1c: Summary of Potential Risk and Actual Effects from Wastewater – New Discharge Property

		Sensitivity	Source / Contaminant				
			Organic matter Nitrogen Phosphorus	Pathogens	Water	Wastewater	
Receptor / Pathway / Vector	Soil	Potential risk	Low	Moderate	High	N/A	
		Actual effect	Less than minor	Less than minor	Less than minor	N/A	
	Groundwater	Potential risk	High	High	Moderate	N/A	
		Actual effect	Less than minor	Less than minor	Less than minor	N/A	
	Surface water	Potential risk	High	Low	Low	N/A	
		Actual effect	Less than minor	Less than minor	Less than minor	N/A	
	Coast	Potential risk	High	Moderate	Moderate	N/A	
		Actual effect	Less than minor	Less than minor	Less than minor	N/A	
		Habitat	Potential risk	High	Moderate	Moderate	N/A
			Actual effect	Less than minor	Less than minor	Less than minor	N/A
		Cultural	Potential risk	N/A	N/A	N/A	High
			Actual effect	N/A	N/A	N/A	Less than minor
		Air	Potential risk	Moderate	High	Moderate	N/A
			Actual effect	Less than minor	Less than minor	Less than minor	N/A

1.8 Statutory Assessment

This report is prepared in accordance with s88 and the Fourth Schedule of the Resource Management Act 1991 (RMA). Appendix L provides the assessment of the activity against the objectives and policies of the relevant statutory plans and regulations addressing the Schedule 4(2)(2) and 104(1)(b) matters.

The proposal has been assessed against relevant legislation and planning documents in Section 5 and Appendix L of this application and is found to be in accordance with the identified statutory requirements and consistent with relevant plan provisions relating to surface water and groundwater quality, ecology, air quality and land management.

The proposal will contribute towards achieving beneficial social and cultural outcomes through the steady diversion of treated wastewater discharge from the river and dunes to adjacent farmland at the discharge property. The UV treatment and likely nutrient attenuation of treated wastewater through on-site soils will further contribute to water quality improvements for the Pōrangahau Catchment, thus, satisfying positive water quality directives outlined in the NPS:FM, the RCEP, and the future HBRC RRMP Plan Changes. The beneficial effects associated with the reduction of the direct discharge to the Pōrangahau River is consistent with the local community's, tāngata whenua and regional and national directives.

1.9 Positive Effects

1.9.1 Existing Systems

For Te Paerahi, positive effects relate to the ceasing of the discharge from Te Paerahi to culturally significant sand dunes. Environmentally, positive effects are relatively small due to the existing discharge having negligible effect to the environment.

For the Pōrangahau River, positive effects relate to the eventual ceasing of the surface water discharge, driven strongly by the local community and, regional and national directives. The potential benefits in a reduction of discharge to surface water are an improvement in water quality and habitat value,

improvements in the cultural health of the water ways and the communities' relationship (amenity and recreational) with the waterway.

1.9.2 New System

The long-term discharge to land results in positive effects resulting from wastewater passing through the soil profile at a rate which allows for filtration, absorption and beneficial use of wastewater components (nutrients, contaminants and water), providing mitigation and avoidance of environmentally adverse effects. The adoption of a land discharge regime achieves the beneficial use (for plants and soil biota) and retention (by soil storage) of wastewater components, thereby minimising their release into the groundwater or the surface water environment.

This consent achieves a multitude of positive effects environmentally, culturally and socially for the Pōrangahau and Te Paerahi communities. This consent enables wastewater nutrients to be beneficially returned to the land where they were once derived, increasing land productivity and closing the wastewater loop.

2 CONSENTING OVERVIEW

2.1 Summary of Te Paerahi and Pōrangahau Wastewater Discharges

At Pōrangahau, wastewater is conveyed from the community to the oxidation pond adjacent to the Pōrangahau River at the end of Jones Street for treatment. Wastewater is discharged to a small drain flowing into the river.

At Te Paerahi, wastewater is conveyed from the community to the oxidation pond within coastal sand dunes. Wastewater is discharged from the plant to a small discharge field via soakage.

At both WWTPs, over the course of the current consents, regular testing has occurred which has been used to predict future flows and wastewater quality. A detailed evaluation of the existing systems, alongside flow and quality characteristics is provided in Beca (2020:P:C.10 - Te Paerahi and Pōrangahau Options Report).

Following new population growth projections, future wastewater flows and quality were revised and are described in the memo Beca (2021:P:C.16). The future predicted flows will be used for design of the long-term land discharge regime. The proposed long term discharge for wastewater flows incorporate 2057 population projections and are as follows:

- Te Paerahi - Average annual and daily wastewater volumes of 27,010 m³/year and 74 m³/day; and
- Pōrangahau - Average annual and daily wastewater volumes of 160,000 m³/year and 438 m³/day.

2.2 Historic and Existing Resource Consents

Te Paerahi The Hawke's Bay Regional Council (HBRC) granted resource consent for discharges at the Te Paerahi WWTP on the 14th May 2012 (Consent No. DP030234La). This was to enable CHBDC to discharge treated domestic wastewater from the Te Paerahi oxidation pond into or onto land (via soakage) in circumstances where that contaminant may enter water (Beca, 2020:P:C.10).

The consent authorises no more than 87 m³/day for more than 50% of the time nor 190 m³/day for more than 5% of the time, of treated effluent to be discharged over any 12 month period. This consent expired on the 31 May 2021.

HBRC granted resource consent for the Te Paerahi WWTP on the 22nd October 2009 (Consent No. DP030862a) for the CHBDC to discharge contaminants (odour) to air associated with the operation of the Te Paerahi (Pōrangahau Beach) oxidation pond. This consent expired 31 May 2021.

Pōrangahau HBRC granted resource consent for discharges at the Pōrangahau WWTP on the 22nd October 2009 (Consent No. DP030233W). This was to enable the CHBDC to discharge treated domestic wastewater from the Pōrangahau oxidation pond into or onto land (via soakage) in circumstances where that contaminant may enter water (Beca, 2020:P:C.10).

The consent authorises no more than 130 m³/day for more than 50% of the time nor 415 m³/day for more than 5% of the time, of treated effluent to be discharged over any 12 month period. The consent expired on the 31 May 2021.

HBRC granted resource consent for the Pōrangahau WWTP on the 22nd October 2009 (Consent No. DP030861a) for the CHBDC to discharge contaminants (odour) to air associated with the operation of the Pōrangahau Township oxidation pond. The consent expired 31 May 2021.

Transitional consents for the continuation of the discharges at each of the WWTPs were lodged with HBRC on the 26th of February 2021. These consents allow for the existing discharges to occur whilst a land application regime is investigated, designed and consented. Processing of these transitional consents has been suspended pursuant to Section 37A (2)(b) whilst land discharge consents are lodged.

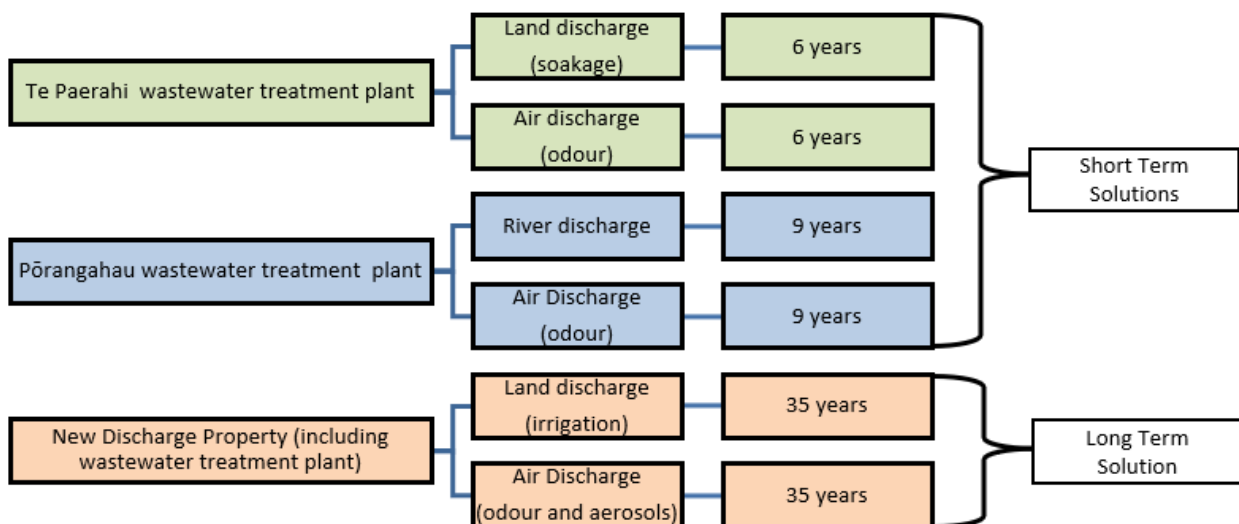
2.3 Terminology

This consent application refers and relates to activities at and around three locations. These are Te Paerahi, Pōrangahau and the Discharge Property. Accompanying this consent application are a number of technical reports which outline the proposed activities. These documents have been produced as part of an iterative process and therefore have evolved over time, incorporating additional information and conclusions along the way. Additionally, over this period, the terminology used in reporting to describe these three locations has also evolved.

Te Paerahi refers to the Te Paerahi WWTP which includes the sand dune discharge field and all reticulation and treatment infrastructure. Pōrangahau refers to the Pōrangahau WWTP, the Pōrangahau River discharge, as well as all reticulation and treatment infrastructure associated with the plant. The Discharge Property refers to the location for future wastewater irrigation located at 474 Beach Road, Pōrangahau. Over the consenting process, the terminology to describe the Discharge Property in particular has varied, with previous names including, the site, discharge site and land application site, with each of these term essentially all meaning the same thing.

2.4 Resource Consenting Requirements and Activity Status

The figure below provides a summary of the activities for which consent is sought from each of the three wastewater treatment plants and their term.



Below is the activity status and Hawke's Bay Regional Resource Management Plan (RRMP) and Regional Coastal Environment Plan (RCEP) provisions that relate to the proposed activities for each WWTP that consent is being applied for –

Activity	Plan/Status	Rule
Te Paerahi WWTP		
Treated wastewater Discharge to Land relating to the discharge field	RRMP- Discretionary Activity	Rule 52 – Non-compliance with other Rules – Discharge to Land/Water
The discharge of contaminants into air from any industrial or trade premises arising from any of the following activities (waste disposal), that is not specifically regulated by any other rule within this Plan.	RRMP – Discretionary Activity	Rule 28 - Miscellaneous industrial & trade premises – Discharge to Air
The discharge of contaminants onto or into land, and any ancillary discharge of contaminants into air, in the Coastal Margin from any existing wastewater system with a rate of discharge exceeding 2m ³ /day averaged over any 7 day period	RCEP – Restricted Discretionary Activity	Rule 29 Existing high discharge volume wastewater systems

Pōrangahau WWTP		
Treated wastewater discharge at the Pōrangahau WWTP	RRMP - Discretionary Activity	Rule 52 - Non-compliance with other Rules – Discharge to Land/Water
The discharge of contaminants into air from any industrial or trade premises arising from any of the following activities (waste disposal), that is not specifically regulated by any other rule within this Plan.	RRMP – Discretionary Activity	Rule 28 - Miscellaneous industrial & trade premises – Discharge to Air

Combined Discharge Property		
Treated wastewater Discharge to Land relating to the discharge field	RRMP- Discretionary Activity	Rule 52 – Non-compliance with other Rules – Discharge to Land/Water
Discharges of contaminants not regulated by, or not complying with, other rules. The proposed activity does not meet the conditions of the permitted activity rules of Rule 19 (Discharge of contaminants to land that may enter water) and Rule 28 (New wastewater systems). Therefore, the activity defaults to a discretionary activity under Rule 9.	RCEP- Discretionary Activity	Rule 9 – Discharges to land in the Coastal Margin

As identified in Section 5 and Appendix L, **consent is required as a Discretionary Activity for all three WWTP discharges.**

2.5 Permitted activity considerations

Rule - RRMP	Comment
Rule 7 - Vegetation clearance and soil disturbance (Permitted) 	<p>Any vegetation clearance and soil disturbance required for the proposed works will need to be assessed against the permitted standards of Rule 7.</p> <p>However, thrusting, boring, trenching or mole ploughing associated with cable or pipe laying or a network utility operation is excluded from this rule.</p>
Rule 21 - Waste & other matter, excluding industrial & trade premises (Permitted) The discharge of contaminants into air arising from the storage, use, transfer, treatment or disposal of waste and other matter, excluding: <ul style="list-style-type: none"> - discharges into air from any industrial or trade premises; - discharges into air addressed by other Rules in this Plan; and - discharges into air from moveable sources 	<p>The wastewater treatment plants are captured in the definition of industrial or trade premises, and subsequently any discharges to air are excluded from consideration under Rule 21.</p>
Rule 31 Discharge of water (Permitted) The discharge of water (excluding drainage water) into water.	<p>The discharge of water to water from any dewatering activities will need to be assessed against the permitted standards of this rule. However, there are no dewatering activities proposed as part of this consent application.</p>
Rule 37 New sewage systems (Permitted) Except as provided for in Rule 35 or Rule 36, the discharge of contaminants (including greywater) onto or into land, and any ancillary discharge of contaminants into air, from a new sewage system	<p>New sewage systems and discharges need to be assessed against the permitted standards of this rule. The proposed land discharge area and discharge volumes exceed the conditions in this Rule. Hence resource consent is being sought as a discretionary activity under Rule 52 (refer to section 2.3).</p>
Rule 42 Diversion and discharge of stormwater (Permitted)	<p>There are no stormwater discharges into constructed open drainage system or a piped stormwater drainage system.</p>
Rule 49 Discharges to land that may enter water (Permitted) The discharge of contaminants onto or into land, in circumstances which may result in those contaminants (or any other contaminant emanating as a result of natural processes from those contaminants) entering water.	<p>The discharge to land from the leakage of the existing unlined pond is provided for under this permitted activity rule.</p> <p>The technical assessments regarding hydrogeology and surface water quality provide evidence of meeting the permitted activity conditions of this rule.</p>
Rule RCEP	Comment
Rule 19 Discharge of contaminants to land that may enter water (Permitted)	<p>Discharges to land need to be assessed against the permitted standards of this rule. The proposed land discharge volumes exceed the conditions in this Rule. Hence resource consent is being sought as a discretionary activity under Rule 9 (refer to section 2.3).</p>
Rule 28 New wastewater systems (permitted)	<p>New sewage systems and discharges need to be assessed against the permitted standards of this rule. The proposed land discharge area and discharge volumes exceed the conditions in this Rule. Hence resource consent is being sought as a discretionary activity under Rule 9 (refer to section 2.3)</p>

2.6 Other (Including Future) Consents and Approvals

A multi-stage consenting process is being undertaken. CHBDC lodged transitional consent applications for each of the existing Pōrangahau and Te Paerahi community discharges in February 2021 to allow for the long-term discharge described by this consent application to be refined. This was ensure that s124 requirements were met.

This application seeks to address the long term land discharge aspects of the project and the continuation of the existing discharges while the long term solution is being built. Once processed, this consent package will have superseded the earlier transitional application which can then be withdrawn.

Following the grant of this consent the process includes detailed design, construction and commissioning of the new treatment plant and discharge system. It is anticipated that additional consents relating to the construction activities and proposed infrastructure will be sought following confirmation of detailed design requirements.

3 PROJECT BACKGROUND

3.1 Development of a District Wide Wastewater Strategy

CHBDC is committed to the health, safety, and wellbeing of the Central Hawke's Bay community. In September 2020 around 2 years of community consultation and technical investigations culminated in the delivery of a district wide [Wastewater Strategy](#) (CHBDC, 2020:A:O.3, #theBIGWasteWaterStory). The overarching goal of the strategy is to:

The Wastewater Strategy developed and set out in this report outlines a process to achieve our vision for resilient and sustainable wastewater management for the next 50 years. The Strategy's aim is to ensure that wastewater systems in the district are developed to be managed efficiently, effectively and sustainably, with one eye on the present and one eye on the future. It will serve as a guide to inform the Council's asset management and planning processes surrounding wastewater.

The Wastewater Strategy aligns with Council's THRIVE objectives (<https://www.chbdc.govt.nz/our-council/about/project-thrive/>). The Strategy provides a cohesive and long-term vision for wastewater management across the district's six reticulated communities (Waipawa, Waipukurau, Otane, Takapau, Pōrangahau and Te Paerahi). The Strategy outlines 5 lynchpin projects for wastewater management in the district. Development of long term wastewater solutions for Pōrangahau and Te Paerahi is Project 2.

The long-term planning for Pōrangahau and Te Paerahi follows the process outlined by the strategy. This includes the use of a series of subsequent phases as follows:

- Phase A: Engagement;
- Phase B: Data gathering;
- Phase C: Optioneering/Concept;
- Phase D: Consent;
- Phase E: Design;
- Phase F: Procure;
- Phase G Construct; and
- Phase H: Commission and Operate.

Following this phasing structure enables the Pōrangahau and Te Paerahi project to be developed, consented and implemented in a logical and incremental manner. The phases are represented in the reporting codes for all documentation associated with the consent application. Each report has a prefix representing the community (Pōrangahau/Te Paerahi = P), followed by the phase reference (Phase A to D) and then a unique report code. Figure A0, Appendix A lists the reports associated with this consent application and shows how they relate to this phasing structure.

This consent approach enables the development of a wastewater management system which meets Council's wider infrastructure strategy of *durable infrastructure which outlines principles of "dig once" and "no bandaids", "Smart Growth" and "Environmentally Responsible"*.

3.2 Development of a Long Term Solution

CHBDC has run a community stakeholder engagement programme over the last three years to consider options for managing wastewater at Waipawa and Waipukurau. The output of this programme was extended and covered all the Council's six seweraged communities. Further to this work was the development of a strawman (LEI, 2020:P:C.36), being a programme of works that could see wastewater at each of the communities being discharged to land. This included Pōrangahau and Te Paerahi, and while

Te Paerahi is currently to land, it was proposed to consider alternative locations due to sensitivities with wahi tapu at the current discharge location.

This Strawman approach, and a review of potential discharge options (Beca, 2020:P:C.10), has subsequently led to the development of long term options. These options have been articulated with the community and are summarised in Beca (2020:P:C.10).

The options provide for a progressive change in wastewater management, namely ceasing discharges and ultimately treatment at Te Paerahi, the same at Pōrangahau, and the combining of the sewers from both communities to a new treatment plant and combined land application scheme.

The initial step is to redirect the existing wastewater discharges to a common land discharge property, leading to the ceasing of the current discharges.

3.3 Long Term Plan

In order to develop an alternative discharge solution funding is required, and a staging process of changing over time assists with managing funding. Staging is set out in a Conceptual Design report (LEI, 2020:P:C.36). The key change is the setting up of a new land treatment system and reticulating initially Te Paerahi wastewater, followed by Pōrangahau's wastewater to this new discharge property. Ceasing treatment and creating a new treatment system is intended to come at a later date, albeit within a 9 year planning window.

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.

3.4 Development of the Best Practicable Option

The RMA consenting process has a requirement to demonstrate that a Best Practical Option (BPO) has been considered and is being sought. This requires an evaluation of alternatives and justification provided as to why one option is preferred over another.

A BPO report has been prepared (LEI, 2021:P:C.12) and provides options and rational for selecting the preferred option, being the continuation of the existing discharges while a new land based discharge system is commissioned.

4 RECEIVING ENVIRONMENT

4.1 Pōrangahau River Catchment

Detail of the Pōrangahau River catchment is provided in Appendix I (Beca, 2021:P:D.25), with a summary below.

The Pōrangahau River catchment is approximately 705 km² and located in the south-eastern corner of the Hawke's Bay Region (Figure 4.1). The Pōrangahau River is known locally to Māori as the Tāurekaitai River. The catchment is constrained by a series of low hill country (~400 m above sea level); it stretches inland from the coast to Flemington and from Blackhead Beach in the north to the Hawke's Bay – Manawatu – Wanganui Regional boundary in the south.

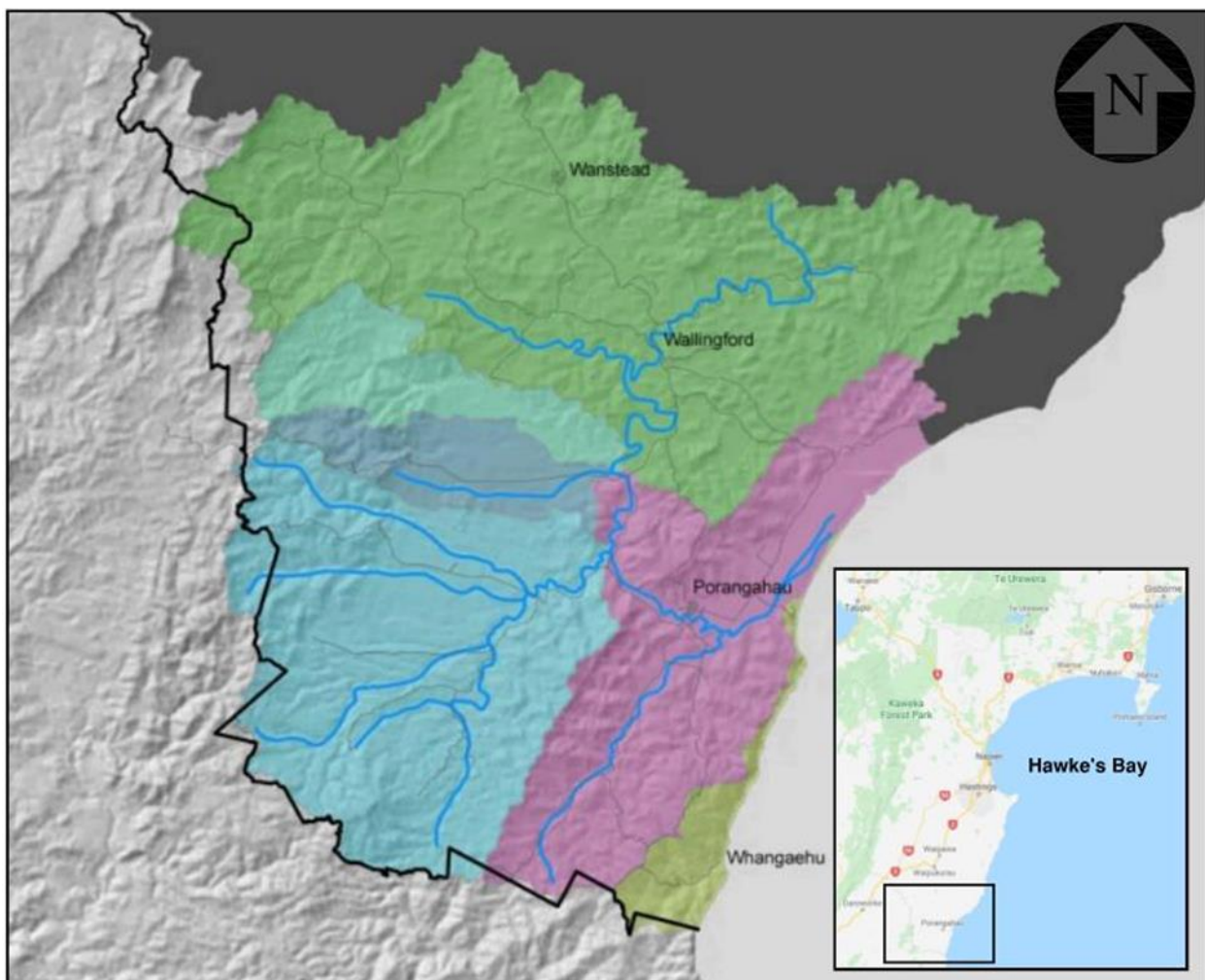


Figure 4.1. Pōrangahau River catchment zone and sub-catchments (Reed & Ide, 2012).

Land use in the Pōrangahau River catchment is predominantly sheep and beef farming. A small amount of forestry, deer, cropping and one vineyard are also present in the catchment. Rainfall is moderate with typically 1,200 mm per year in the lower areas to over 2,200 mm in the higher country. Additionally, the catchment is prone to prolonged summer dry spells.

The Pōrangahau River catchment is underlain by predominantly soft marine sedimentary rocks from the Palliser (lower) and Mangatu (Wanstead Formation) Groups.

4.2 Pōrangahau River Hydrology

Detail of the Pōrangahau River hydrology is provided in Appendix I (Beca, 2021:P:D.25) with a summary below.

The flow in the Pōrangahau River is subject to extremes. HBRC monitor flow conditions at Saleyards Bridge, approximately 6 km upstream of the Pōrangahau WWTP discharge. The median flow is 1.312 m³/s, the highest flow recorded is 456 m³/s and low flows of nil are not uncommon. Very low flows are recorded in summer, with flows of less than 0.1 m³/s common.

The section of the Pōrangahau River around the Pōrangahau WWTP discharge is strongly influenced by the tides with a measured difference between high and low tide of approximately 0.5 m. This tidal influence is stronger during late summer when the contributing flows from the river catchment can decrease below 100 L/s. The river is considered typically saline at the point of discharge for the Pōrangahau WWTP under background, low flow conditions.

4.3 Pōrangahau River Water Quality and Recreational Use

The Pōrangahau River is used by fishermen, kayakers and passive recreation users, predominantly upstream of the WWTP discharge. Shellfish collection at the mouth of the river also occurs.

Water quality in the Pōrangahau River is analysed in detail in Appendix I (Beca, 2021:P:D.25). In summary, the Pōrangahau River is nutrient enriched and water quality worsens downstream. The median values of Total Phosphorus (TP), Dissolved Reactive Phosphorus (DRP) and Total Nitrogen (TN) at a monitoring location 200 m upstream from the Pōrangahau WWTP discharge point are above their respective ANZECC trigger values which indicates a consistent contribution of these nutrients exists in the upstream catchment (ANZECC, 2018). Diffuse agricultural runoff is assumed to be the major contributor of dissolved nutrients and bacterial contamination.

Elevated bacteria levels (E.Coli and faecal coliforms) upstream of the discharge point appear to be a significant issue. The 95th percentile of monitoring data analysed for E.coli (collected between 2014 – 2019, 200 m upstream of the Pōrangahau WWTP discharge point) is 1,644 cfu/100mL, which is classified as a Band D attribute state under the National Policy Statement for Freshwater Management (NPS:FM) and equivalent to a predicted average infection risk of >3% for recreational human contact. The median value for E.coli concentrations is significantly lower at 96 cfu/100mL (equivalent to a Band A under the NPS:FM, with a predicted average infection risk of 1%).

4.4 Pōrangahau River Estuarine Environment

Detail of the Pōrangahau River estuarine environment is provided in Appendix K (Beca, 2021:P:D.65) with a summary below.

The Pōrangahau estuary is a long and narrow estuary that becomes shallow and more open to the north where it spreads across broad tidal flats. A long sandy beach separates the estuary from the open coast, and with the estuary discharging through the beach to the open coast in the northeast. The estuary entrance is relatively mobile and moves along the beach in response to changes in coastal sand movement, wave action and river flow (Stevens & Robertson, 2006). It is strongly river dominated in its upper reaches.

An Area of Significant Conservation Value (ASCVs) was identified by the Department of Conservation and is adopted as a Significant Conservation Area 1 (SCA 1) and an Outstanding Water Body (Pōrangahau Estuary) within the Hawkes Bay Regional Coastal Environment Plan (Harper, 2018). The area extends along the coast and up to the coastal marine boundary alongside the Discharge Property. The SCA is as a nationally significant wildlife and fisheries habitat and supports nationally significant dune vegetation

types. The estuary, adjacent dune systems and wetlands have been identified as a recommended area for protection within the Eastern Hawke's Bay Ecological District.

The ecological value of the Pōrangahau estuary is assessed as Very High based on high ratings for rarity/distinctiveness (ecologically significant for native fishery and threatened avifauna) and representativeness (Significant Conservation Area), and moderate ratings for ecological context, diversity and pattern.

4.5 Te Paerahi Coastal Environment

Details of the Te Paerahi Coastal environment are provided in Appendix N (Beca, 2021:P:D.60) with a summary below.

The Pōrangahau River flows into the Pacific Ocean at Pōrangahau Beach, approximately 2 km north of the Te Paerahi WWTP. The section of Pōrangahau Beach adjacent to the Te Paerahi WWTP is scheduled as a Significant Conservation Area in the *Hawke's Bay Regional Coastal Environment Plan*. Additionally, coastal areas are of significance to tāngata whenua both spiritually, and as a source of resources such as food, weaving and carving materials, and will continue to be a source of sustenance and identity to tāngata whenua.

Ngāti Kere, a local hapu, are concerned about the depletion of important species and kaimoana in the area (Wakefield & Walker, 2005). Mana for the hapu is maintained in the ability to share in the abundance of kaimoana, including shellfish collected from Pōrangahau Beach.

Detail of coastal waters near the Te Paerahi discharge as it relates to public health is provided in Appendix N, with a summary below.

The Te Paerahi community is largely a holiday destination and is located beside Pōrangahau Beach. During summer months, the Te Paerahi population swells and people engage in recreational activities, such as swimming, boating and fishing. HBRC monitor water quality fortnightly at Pōrangahau Beach during summer months as it is popular with swimmers and boaties: historical water quality results show "*it has excellent water quality and is generally not affected by changes in the weather*" (LAWA, 2021). The maximum enterococci value from the last five years of sampling was 115 cfu/100mL.

Kai moana, including shellfish, collected from Pōrangahau Beach is culturally important to local hapu Ngāti Kere. A report (Wakefield & Walker, 2005) produced on behalf of Ngāti Kere in 2005 notes that as Te Paerahi (Pōrangahau) Beach has become less isolated and better known, the pressures of tourism are increasingly visible. Activities such as land yachting, fishing competitions, horse races, unlimited vehicular beach access and an increasing number of recreational vessels launching from the beach are of concern to the hapu because of the potential impact on shellfish and wet fish populations.

4.6 Pōrangahau River Ecology Near Current WWTP Discharge

Detail of the Pōrangahau River ecology is provided in Appendix I, with a summary below. Its location is shown in Figure 4.2.

The Pōrangahau River and Estuary have been designated as outstanding water bodies by HBRC under Proposed Plan Change 7 due to their ecological, significant landscape, cultural and spiritual values. According to HBRC (2019):

The Pōrangahau Estuary is the largest and least modified estuary in Hawke's Bay. The river mouth barrier system is the largest barrier system in Hawke's Bay and the surrounding dune system demonstrates a rare cross-cutting relationship of a series of echelon sand dunes and estuarine strand lines. The Pōrangahau River and Estuary supports large population of wrybill and banded dotterel and is the only location where Caspian terns and royal spoonbill nest. It is an important

feeding and wintering area for migratory waders. The Pōrangahau Estuary has two main inanga spawning sites and the only estuary in Hawke's Bay to contain the seagrass, zostera muelleri. Tāngata whenua of the region have advised that the Pōrangahau River and Estuary have outstanding cultural and spiritual values.

Previous investigations (Opus, 2012) have classified water quality adjacent to and upstream of the WWTP discharge as generally poor. Low quality habitat for freshwater macro-invertebrates is attributed to the soft and silty tidally influenced riverbed rather than pollution effects.

4.7 Discharge Property

The property that will receive wastewater irrigation is described as the Discharge Property. A detailed discussion of the Discharge Property that is proposed to receive wastewater is given in the Site Investigation report (LEI, 2020:P:B.15) and is summarised in the Assessment of Effects to Land (LEI, 2021:P:D.10). Figure 4.2 outlines the location of the Discharge Property with respect to the existing Pōrangahau and Te Paerahi WWTPs. Key receiving environment parameters are given in Table 4.1.



Figure 4.2: Location Map

Table 4.1: Discharge Property - Information

Location	474 Beach Road, Pōrangahau
Area	114.3 ha
Legal Description	LOT 2 DP 3877 & LOT 3 DP 2741
Records of Title	HBE3/424 & HBE3/423
Map Reference	1910345 E, 5533282 N & 1910729 E, 5533831 N
Current Land Use	Pastoral grazing, low intensity rotational cropping
Surrounding Land Use	Pastoral grazing, low intensity rotational cropping
Landform	Wind-blown sand dunes & alluvial floodplain
Soil type(s)	Kairaki Sandy Loam & Kaiapo Silt Loam
Nearest surface water body	Pōrangahau River
Average annual rainfall	912 mm
Average annual potential evapotranspiration	909 mm
Wind conditions	Dominant wind direction from south-west

4.7.1 Locality and surrounding land use

The Discharge Property land use is described in further detail in LEI (2021:P:B.13) and LEI (2020:P:B.15). In summary, the Discharge Property is currently managed as low intensity sheep and beef finishing, with rotational cropping of chicory, raphno, turnips and oats for stock feed. Pastoral grazing is dominant across the Discharge Property. Similarly, the Discharge Property is surrounded to the north, west and south by farmland of largely low to moderate intensity sheep and beef finishing and rotational cropping.

Approximately 400 m east of the Discharge Property boundary is the CHBDC operated Pōrangahau and Te Paerahi Water Treatment Plant (WTP) servicing both communities. Behind this, a further 200 m eastward of the WTP is the Pōrangahau Country Club and Golf Course. Additionally, approximately 400 m north-west of the Discharge Property boundary is the Pōrangahau aerodrome.

4.7.2 Soils

Soils of the discharge property are described in LEI (2020:P:B.15) and LEI (2021:P:D.10). Areas with similar characteristics have been grouped into land management units (LMU). Key characteristics of the LMU across the Discharge Property are summarised in Table 4.2.

Table 4.2: Discharge Property - Soil Types

LMU	Parameter	Description
LMU 1	Area (ha)	50.8
	Landform	Southern alluvial plain
	Soil type	Kaiapo Silt Loam (Flax_69a.1) The clay soil noticed contained a 30 cm deep, silty loam topsoil with a nutty/crumb structure, overlying a heavy clay. Rooting depth was to ~40 cm with the barrier limiting rooting depth being the clay layer. There were no signs of anoxic conditions, other than mottling within the clay layer, indicating a varying water table. The topsoil contained minimal clay content, which is likely to have had a low P retention and a poorly drained permeability status.
	LUC ¹	III
	K _{sat} ²	37 ± 28 mm/h
	K ₄₀ ³	11 ± 4 mm/h
LMU 2	Area (ha)	16.5
	Landform	Northern sand/alluvial plain
	Soil type	Kairaki Sandy Loam (Association) For lower elevation land to the north-east, the same heavy clay layer noticed in the south, was located deeper at approximately 60 cm depth. Overlying this is a silty/sandy topsoil, with fine roots to 50 cm. Topsoil at this location appears similar to that noticed on the central sand dunes, however pasture growth here is significantly higher. It is likely that its position on the landscape influences this soil to the north-east and is thus deemed an association. Due to being positioned at a lower elevation, it is influenced by both the deposition of the Pōrangahau River depositing the lower lying clay layer, which has subsequently received wind-blown sandy material supplying the dunes.
	LUC ¹	III
	K _{sat} ²	88 ± 22 mm/h
	K ₄₀ ³	9 ± 4 mm/h
LMU 3	Area (ha)	39.9
	Landform	Central Sand Dunes
	Soil type	Kairaki Sandy Loam (Kyra_15a.2) This soil is classified as being a raw soil with a sand texture with no barrier to rooting depth. This soil is deep and well drained with a rapid permeability profile. This soil contains a very low profile available water, with fine roots noticed to ~ 45 cm. This soil extends throughout much of the north and central extent of the property, occupying the steeper slopes typical of sand dunes.
	LUC ¹	VI
	K _{sat} ²	124 ± 17 mm/h
	K ₄₀ ³	18 ± 2 mm/h

¹Land Use Capability

²Soil saturated hydraulic conductivity

³Soil unsaturated hydraulic conductivity

4.7.3 Geology and Hydrogeology

Details of the topography, underlying geology and property characteristics are given in (Tonkin + Taylor, 2021:P:B.14a & LEI, 2020:P:B.15). The Discharge Property is located on the alluvial floodplain of the Pōrangahau River which extends from the Pōrangahau township to the river mouth. The alluvial plain is bounded to the south and north-west by steep hill country, underlain by Late Cretaceous to Paleogene aged sedimentary mudstones typical of the Whangai Formation (GNS, 2021). The floodplain is derived from erosion of these hills and is relatively confined, primarily consisting of poorly draining silty and clayey soils (GNS, 2021).

Near to the coast, overlying this alluvial floodplain are a series of westerly wind-blown coastal sand dunes. Two distinctive dune ridgelines, 2-3 m higher than the surrounding plain run throughout the northern

portion of the property (LEI, 2020:P:B.15). Overall, elevations across the Discharge Property vary between 1-8 m.a.s.l*.

*Lidar imagery provided by HBRC contained a z value of +10 m which has been accounted for within elevation imagery and numbers supplied within this report.

4.8 Cultural and Heritage Values

There is a strong history of Māori settlement in the wider area of Pōrangahau dating back to pre-European times. There is also a more recent history of early European settlement in the area that saw land developed leading to its current land use.

Nigel How prepared a summary report titled Māori World View (How, 2020:A:B.42) that describes Māori connection with wastewater. This is an informative document as it provides an overview in so far as various states of water as they relate to wastewater management.

In addition, Council have recently engaged the preparation of a Cultural Impact Assessment (CIA) covering off the significance of the local area and wastewater management considerations. A further report detailing Mahinga kai, particularly addressing the accessibility, use and practices associated with gathering food resources in the areas around the Pōrangahau area, is also being commissioned.

These two reports are yet to be provided to Council, but will be made available to support the applications when ready.

4.9 Amenity, Community, Recreational, and Social Values

The Te Paerahi discharge area is located in back dunes away from the foreshore. Fences around the area exclude public access. Visually, the ponds are obvious, but the discharge is not apparent as it is subsurface.

The Pōrangahau WWTP is located some 300 m from Pōrangahau School and accessed over privately owned land. The WWTP is located close to the riverbank and while walking the riverbank could be possible it would be difficult due to limited access points and its steep banks in places. The discharge is via a drain, similar in characteristics to many drains that enter the river.

4.10 Natural Hazards

Key natural hazards likely to influence the existing WWTPs and Discharge Property are flooding, tsunami and earthquakes.

4.10.1 Earthquake

Earthquakes will impact on both communities and if significant enough potentially cause a failure of the wastewater treatment plant and storage pond walls. Such an event is also likely to create significant structural damage to other infrastructure, including the sewer system conveying the wastewater to the ponds.

There are no active faultlines within proximity to the Discharge Property or either of the WWTPs (HBRC, 2021). Additionally, GNS (2021) outlines an inactive faultline running along the hills parallel to the coast south of Te Paerahi.

4.10.2 Tsunami

The existing Te Paerahi WWTP and discharge field, as well as the alluvial plain to the north-east and stream channels of the discharge property fall within the red zone for tsunami inundation as identified in HBRC

(2021) and shown in LEI (2020:P:B.11). The remainder of the Discharge Property, as well as the existing Pōrangahau WWTP falls within the yellow zone for inundation.

4.10.3 Flooding

Due to being situated on the alluvial floodplain of the Pōrangahau River, all of the Discharge Property is classified by HBRC as being at risk of flooding (LEI, 2021:P:D.10). Flood modelling done by HBRC for a 100 year return period flood, indicates that much of the land outside of the central coastal sand dunes is classified as being 'flood risk areas' with the remaining property area deemed to be 'low risk' for flooding.

Additionally, discussions with the landowner identified that during the February 2004 floods much of the lower elevation alluvial floodplain of the Pōrangahau River was partially or fully inundated by flood waters.

5 STATUTORY CONTEXT

A Statutory Evaluation for Te Paerahi and Pōrangahau WWTP's and the new combined land Discharge Property has been prepared and is included in Appendix L. The relevant statutory provisions for the WWTP's are summarised below.

5.1 Section 9 of the Resource Management Act 1991 (RMA)

Section 9 of the RMA describes certain restrictions on land use. This includes activities that contravene Regional Rules (RMA s9(2)a)) such as the discharges described in Chapter 6 of this report. Activities that contravene regional rules cannot be undertaken unless expressly allowed for by resource consent, as such resource consent is being sought to allow for the activities associated with this proposal.

5.2 Section 15 of the Resource Management Act 1991 (RMA)

Section 15 of the RMA describes restrictions on the discharge of contaminants into the environment. No person may discharge any contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water (s15(1)(b)). The discharge of contaminants cannot be undertaken unless it is expressly allowed by a national environmental standard or other regulations, a rule in a regional plan or a resource consent. As such resource consent is being sought to allow for the discharge activities associated with this proposal.

5.3 Section 104 of the Resource Management Act 1991 (RMA)

Before making a decision on a discretionary activity pursuant to Section 104B of the RMA, Council must consider the proposal in terms of Section 104 of the RMA. In addition to an assessment of the actual and potential effects of the proposal, the following provisions must be given regard to under section 104 as stated below:

Section 104 - When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to—

(a) any actual and potential effects on the environment of allowing the activity; and

(b) any relevant provisions of—

(i) a national environmental standard:

(ii) other regulations:

(iii) a national policy statement:

(iv) a New Zealand coastal policy statement:

(v) a regional policy statement or proposed regional policy statement:

(vi) a plan or proposed plan; and

(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.

Consistent with s104 (a), the actual and potential effects on the environment of the proposed activity for Te Paerahi and Pōrangahau have been assessed in Chapter 9 (Te Paerahi), Chapter 10 (Pōrangahau) and Chapter 11 (Combined land application Discharge Property) of this report.

Consistent with s104 (b), Appendix L identifies the relevant provisions of the documents referred to in Section 104(1)(b) of the RMA that apply to the various activities involved in the proposal; these being the New Zealand Coastal Policy Statement, Regional Policy Statement and Regional Coastal Environment Plan as they apply to the Coastal Environment, and the National Policy Statement for Freshwater Management and Regional Plan as they apply to the freshwater/land environment. The documents listed in section 104(1)(b) have been assessed in Appendix L.

5.4 Section 105 Matters relevant to certain applications

Section 105 of the RMA refers to certain applications (discharges and coastal consents) that require information in addition to the matters set out in section 104(1). Section 105 states:

1) If an application is for a discharge permit or coastal permit to do something that would contravene section 15 or section 15B, the consent authority must, in addition to the matters in section 104(1), have regard to—

- (a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; - provided in Chapter 4; and*
- (b) the applicant's reasons for the proposed choice; - provided in Chapter 3 and*
- (c) any possible alternative methods of discharge, including discharge into any other receiving environment. - provided in Chapter 8.*

The section 105 matters have been addressed in the relevant chapters noted above.

5.5 Section 107 Restrictions on grant of certain discharge permits

Section 107 of the RMA sets out certain restrictions on specific discharge consents including discharge of contaminants to land and/or water (Te Paerahi and Pōrangahau) and/or the coastal environment (Te Paerahi and the combined land Discharge Property).

(1) Except as provided in subsection (2), a consent authority shall not grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15A allowing—

- (a) the discharge of a contaminant or water into water; provided in Chapter 10 or*
- (b) a discharge of a contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water; - provided in Chapter 9, 10 and 11 or*
- (ba) the dumping in the coastal marine area from any ship, aircraft, or offshore installation of any waste or other matter that is a contaminant, — N/A*
- if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:*
- (c) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials: - N/A*
- (d) any conspicuous change in the colour or visual clarity: - N/A*
- (e) any emission of objectionable odour: - provided in Chapter 9, 10 and 11*
- (f) the rendering of fresh water unsuitable for consumption by farm animals: - N/A*
- (g) any significant adverse effects on aquatic life. - provided in Chapter 10 and 11*

The relevant matters set out in section 107 have been addressed in the chapters noted above.

5.6 Part 2 Assessment

Part 2 matters of the RMA are relevant to the proposal and are addressed in Appendix L. This includes Section 6 – Matters of National Importance, Section 7- Other Matters and Section 8 – Treaty of Waitangi.

5.7 New Zealand Coastal Policy Statement (NZCPS)

The relevant provisions of the New Zealand Coastal Policy Statement (NZCPS) have been considered for Te Paerahi and the combined land Discharge Property and are included in the Statutory Evaluation (Appendix L). This is not relevant to the Pōrangahau discharge.

5.8 National Policy Statement – Freshwater Management (NPS – FM)

The National Policy Statement for Freshwater Management 2020 (NPS-FM) came into force on the 3rd September 2020 and supports improved freshwater management in New Zealand by directing Regional Councils to establish objectives and set limits for fresh water in their regional plans.

The intent of the NPS-FM includes prioritisation of the management of the natural and physical resources and has a particular focus on the concept of Te Mana o Te Wai. Te Mana o Te Wai refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and wellbeing of the wider environment.

The relevant provisions of the NPS - FM have been considered for Te Paerahi, Pōrangahau and the combined land Discharge Property discharge activities and are included in the Statutory Evaluation (Appendix L).

5.9 National Environmental Standards for Freshwater (NES – F)

The National Environmental Standards for Freshwater 2020 (NES-F) regulates the undertaking of activities that pose risks to freshwater and freshwater ecosystems and rules specifically relate to works in, or adjacent to, wetlands, structures in waterbodies that may impact on fish passage and the diversion or reclamation of water bodies. The works meet the definition of specified infrastructure in the NPS-FM (Subpart 3 Section 3.21(1)) as the WWTP is a lifeline utility (as defined in the Civil Defence Emergency Management Act 2002).

The relevant provisions of the NES - F have been considered for Te Paerahi, Pōrangahau and the combined land Discharge Property discharge activities and are included in the Statutory Evaluation (Appendix L).

5.10 National Environmental Standards for Sources of Human Drinking Water 2007 (NES-DW)

The National Environmental Standard for Sources of Human Drinking Water 2007 (NES- DW) sets requirements for protecting sources of human drinking water from becoming contaminated. Contaminants such as microorganisms can pose a risk to human health when they enter drinking water supplies and that water is then consumed. The NES-DW requires regional councils to ensure that effects of activities on drinking water sources are considered in decisions on resource consents and regional plans.

Regulation 12 of the NES-DW sets out that when considering a resource consent application, a consent authority must consider whether the activity may lead to an event occurring that may have a significant adverse effect on the quality of the water at any abstraction point; or as a consequence of an event (for example, an unusually heavy rainfall) have a significant adverse effect on the quality of the water at any abstraction point.

The relevant provisions of the NES - DW have been considered for the combined land Discharge Property discharge activities and are included in the Statutory Evaluation (Appendix L).

5.11 Regional Resource Management Plan (RRMP)

The relevant provisions of the Regional Resource Management Plan (RRMP), which includes air discharge activities, have been considered for Te Paerahi, Pōrangahau and the combined land Discharge Property discharge activities and are included in the Statutory Evaluation (Appendix L).

5.12 Hawke's Bay Regional Coastal Environmental Plan

The relevant provisions of the Hawke's Bay Regional Coastal Environmental Plan have been considered and included in the Statutory Evaluation (Appendix L) for the Te Paerahi discharge and combined land Discharge Property (this is not relevant to the Pōrangahau Discharge).

6 DESCRIPTION OF ACTIVITIES

6.1 Discharge Context

CHBDC is required under Local Government legislation to provide wastewater services as part of its sanitary and community health and well-being purpose. The existing systems at Te Paerahi and Pōrangahau were constructed in 1990, with the complete installation of the plants and additional components such as fencing, baffles and earth bunds provided in 2010 (Beca, 2020:P:C.10). The WWTPs are authorised under resource consents DP030234La and DP030233W respectively, with both expiring on the 31st of May 2021. Community engagement has identified that the existing systems are no longer acceptable from a cultural and community perspective for the long-term management of wastewater at these locations.

At Te Paerahi, there is a strong desire from the owners (Puketauhinu Trust) of the land on which the WWTP (and discharge) is located to have the system relocated. The main reason is that the area is considered wahi tapu.

At Pōrangahau, the community holds the view that discharging to the Pōrangahau River is no longer considered acceptable and a discharge to land is desirable. There is a strong desire to have more advanced wastewater treatment technology used and a new combined WWTP location for both communities.

To address those concerns a range of treatment and effluent discharge options were developed that provided a sustainable long-term solution that meet the needs of the environment and the community. These are discussed in Section 8 and in the BPO report (LEI, 2021:P:C.12). CHBDC has engaged with relevant stakeholders and has identified a land discharge regime and property as outlined in Section 4 to receive the wastewater. Changes proposed will see discharges to the existing receiving environments be significantly reduced and eventually ceased, with irrigation from both communities to land being the primary receptor for the wastewater. In the long term, discharge to land will be assisted with the use of storage.

6.2 What's proposed

The development of the discharge system for Pōrangahau and Te Paerahi's wastewater is proposed to be staged, with initial stages forming a short-term solution and a later stage being the long-term solution. This allows for a rapid reduction in the amount of treated wastewater discharged via the current discharge systems to the respective receiving environments, while managing the costs to Council and the time for procurement and construction to occur. Detail around the staging of the Project is outlined in the Conceptual Design report (LEI, 2021:P:C.15). A summary is as follows:

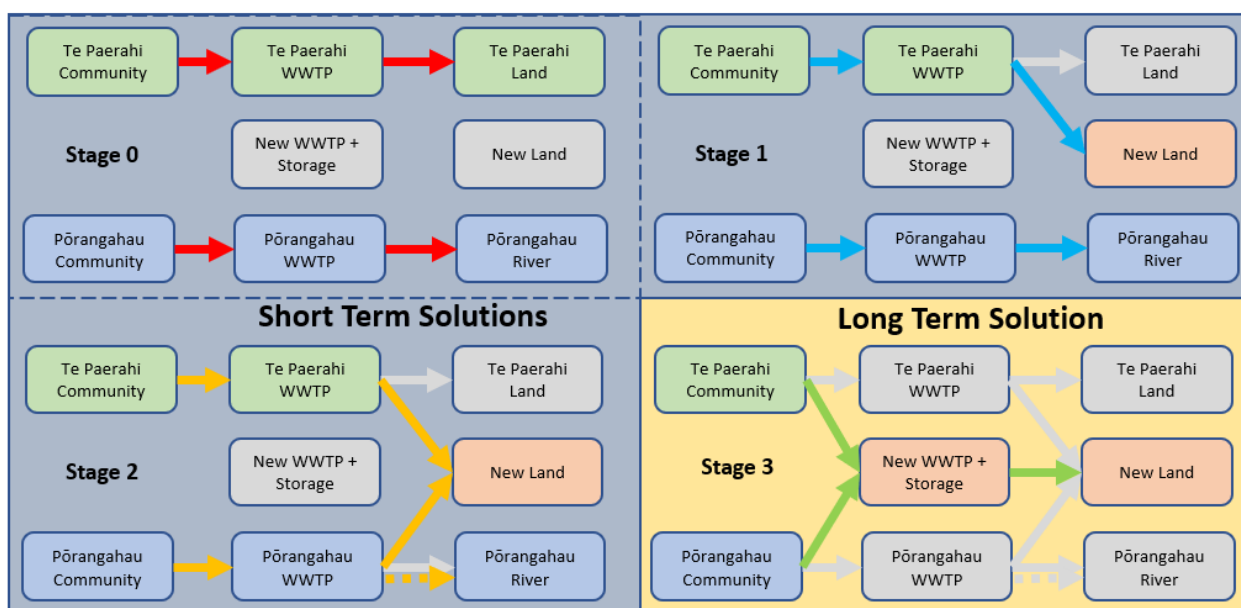
- **Stage 0** allows for the current discharge for both communities to their respective receiving environments to occur for up to six years at Te Paerahi and nine years at Pōrangahau from consent granting while the subsequent stages are enacted;
- **Stage 1** (commencing in 4 years) involves provision of 500 m³ of storage within the Te Paerahi WWTP and development of a minimum 4 ha on the new Discharge Property. This stage **only** includes Te Paerahi flows and applies all to the new Discharge Property, while the existing river discharge for Pōrangahau will continue.

The discharge regime assumes that the currently occurring wastewater flows occur (no allowance for future growth), up to 500 m³ of storage is available at the Te Paerahi WWTP and discharge under a wet soil regime can occur when soils cannot receive wastewater under typical irrigation conditions;

- **Stage 2** (commencing in 6 years) involves development of an additional 6 ha of irrigation for sandy soils (IMU 3), allowing for a minimum 10 ha of irrigation at Stage 2. This stage includes **both** Pōrangahau and Te Paerahi flows, but allows for between 0 % to 39 % of all flows to continue to the Pōrangahau River (when storage is not possible and soil conditions are too wet).
- **Stage 3** (commencing in 9 years) involves development of an additional 10 ha of irrigation for sandy soils (IMU 3) and incorporation of 20 ha of silty/clay soils (IMU 1), allowing for a minimum 40 ha of irrigation at Stage 3. A new combined WWTP and storage pond is to be built at the Discharge Property to receive Pōrangahau and Te Paerahi flows with a capacity of (up to) 35,000 m³.

From a consenting perspective there are essentially **three groups of activities at three locations**, with changes proposed over time which have been grouped into the **four stages**. Stages 0 to 2 are essentially **short term** solutions to manage wastewater at the three locations and Stage 3 is the **long term** solution solely focused at the new Discharge Property.

Staging of the Te Paerahi and Pōrangahau Wastewater Upgrade



Further detail on each of the stages grouped into Short Term and Long Term solutions is provided below. This includes a discussion on the effluent to be managed and its discharge.

6.3 Background

As noted above, Stage 0 represents a continuance of the current discharge system for each of Pōrangahau and Te Paerahi. Stage 1 and Stage 2 see the progressive removal of the discharge to coastal dunes at Te Paerahi and river discharge at Pōrangahau. For both Stage 1 and Stage 2, wastewater from the existing wastewater plants will continue to be discharged.

Land discharge via a low-rate irrigation system is introduced at Stage 1 and expanded at Stage 2. A summary of the wastewater currently discharged (what is produced) and of the discharge activity is as follows.

6.3.1 Wastewater System - Te Paerahi

Description

The Te Paerahi wastewater treatment plant is located approximately 500 m north of the Te Paerahi (Pōrangahau Beach) Freedom Camping grounds at the end of Te Paerahi Road, Pōrangahau Beach. It is located on a wahi tapu site (Beca, 2020:P:C.10). The owner of the land is Puketauhinu Trust and an agreement between the trustees and CHBDC was made in 1981 to construct the plant on the 152 ha property. In 1981 the Te Paerahi wastewater was reticulated to a new centralised oxidation pond and discharged to a soakage field.

At the time this was a relatively modern system and avoided the operation and use of onsite wastewater systems which had been used within the community. It also provided for a discharge to land, something many small rural communities were not doing at that time. The change was largely driven to mitigate effects associated with localised failure of onsite systems and the cumulative effects of drainage passing to the coast.

The relevant land titles associated with this resource consent application are listed in Table 6.1 below.

Table 6.1: Land Parcel Legal Descriptions

Land Use or Purpose	Street Address	Legal Description	Record of Title	Approximate Value of Asset	Surveyed Area (ha)	Land Owner
Te Paerahi WWTP	Te Paerahi Road	Lots 52 54 DP 15951 Lot 4 DP 16750 Pt Puketauhinu	HB2/1161	\$2.08M	152	Puketauhinu Trust

As detailed in the Beca report (2020:P:C.10) wastewater from the community flows to a pumpstation located on the corner of Te Paerahi Road and Puketauhinu Place and is pumped to the Te Paerahi WWTP, which consists of a single clay lined oxidation pond. There is no influent flow monitoring or screening facilities. Therefore, the only treatment that occurs is within the 0.1 ha pond. Within the pond, some of the solids settle to the bottom where they undergo anaerobic treatment. The remaining solids and nutrients undergo aerobic treatment by bacteria and algae within the pond. The pond remains aerobic through wind, photosynthesising algae and one surface aerator (Beca, 2020:P:C.10).

Wastewater Flow Rates

The consented average daily flow is 87 m³/day for no more than 50% of the time and 190 m³/day for no more than 5% of the time.

Te Paerahi is largely a holiday destination and there is no officially reported number of permanent residents, however there is an estimated population of 312 people (Beca, 2021:P:C.16). Population growth is not projected for Te Paerahi and is expected to remaining stable for the consent duration, with the population doubling over summer months (Beca, 2021:P:C.16). The Te Paerahi WWTP does not have a flow meter on the inlet pipe, only effluent daily volumes are monitored. Historical effluent average flows, as well as peak season for the 2008 to 2057 are shown in Table 6.2 below.

Table 6.2: Te Paerahi WWTP Inflows (after Beca, 2021:P:C.16)

Flow	Average Inflow (Current – 2008-2019)	Average Inflow (Future - 2057)	Peak Season Inflow (Current – 2008-2019)	Peak Season Inflow (Future - 2057)
Average Dry Flow per capita (l/p/d)	144	144	144	144
Dry Weather Flow (ADWF) (m ³ /d)	45	45	90	90
Average Daily Flow (ADF) (m ³ /d) **	130	99	260	197***

Effluent volumes include infiltration in the network and rainfall in the pond and population seasonality.

Influent Quality

Influent wastewater quality samples have been taken from the Te Paerahi Pump station every two months for the period of 2011-2019 (May). The Beca (2020:P:C.10) report summarises the results for the five-year period 2014-2019 (May). The incoming wastewater characteristics compare well to typical municipal wastewater. TKN, Ammonia, and TP values are close to typical average wastewater concentrations, with the remainder comparing with typical weak municipal characteristics. There is no significant infiltration with a calculated wet weather factor of 1.6. The average concentrations of the typical wastewater composition has been used to consider future treatment plant loads (Table 6.3), which is considered to be a conservative approach (Beca, 2020:P:C.10).

Table 6.3: Te Paerahi WWTP Influent Wastewater Characteristics (2014-2019) (Beca, 2020:P:C.10)

Parameter	Average
COD, mg/l	381
Unfiltered cBOD ₅ , mg/l	137
TSS, mg/l	136
TKN, mg/l	36.2
Ammonia, mg/l	23.2
TP, mg/l	5.7
Faecal coliforms cfu/100ml	0.31M
<i>E. coli</i> cfu/100 ml	0.26M

Discharge Quality

The quality of the discharge over the period 2018 to 2019 has been summarised in Table 6.4.

Table 6.4: Treated Wastewater Quality During 2018-2019 (Beca, 2020:P:C.10)

Parameter	Percentile	Current Mean	Existing Consent Limit
CBOD ₅ (g/m ³)	50 th	13	<30
	90 th	23	<60
TSS (mg/l)	50 th	39	<60
	90 th	82	<140
pH		7.4-8.4	6.5-9

Consent Compliance History

A detailed evaluation of consent compliance for the Te Paerahi wastewater discharge is given in:

- Section 3.1.4 of Te Paerahi and Pōrangahau Options Report (Beca, 2020:P:C.10);
- Section 3.3 of Te Paerahi Wastewater Treatment Plant Discharge Water Quality Assessment (Beca, 2021:P:D.60); and
- Annual compliance reports prepared by HBRC.

The Te Paerahi WWTP has been generally in compliance with conditions of consent. A high rainfall period during the 2017/2018 monitoring period corresponds to exceedances of the 50th percentile flow limit of 87 m³/day. Results from this period continued to influence rolling the mean into the 2018/2019 monitoring period. Results for cBOD₅, TSS and pH did not breach the consent between 2009 and 2019 although minor exceedances of the 50th percentile or 90th percentile limits were recorded.

6.3.2 Wastewater System – Pōrangahau

Description

The Pōrangahau WWTP is located at the end of Jones Street adjacent to Pōrangahau River, approximately 800 m south-east of the Pōrangahau village centre. The plant treats wastewater from the township, which is then discharged to the Pōrangahau River through the drain adjacent to the plant. Pōrangahau's wastewater system is a lot older than the neighbouring Te Paerahi. Initial sewerage reticulation discharged effectively raw wastewater to the Pōrangahau River using a gravity system. In 1990 a pump station was installed and this pumped wastewater to a new single oxidation pond some 300 m away from the community, with the discharge continuing to the Pōrangahau River.

The land is owned by Central Hawke's Bay District Council and has a shared access with a local farm. The parcel of land is 1.1 ha in total. However, the WWTP is limited to the 0.3 ha oxidation pond in the middle of the land parcel.

The relevant land titles associated with this resource consent application are listed in Table 6.5 below.

Table 6.5: Land Parcel Legal Descriptions

Land Use or Purpose	Street Address	Legal Description	Record of Title	Approximate Value of Asset	Surveyed Area (ha)	Land Owner
Pōrangahau WWTP	Jones St, Pōrangahau	Lot 1 DP 20711 BLK XII Pōrangahau SD	HBL4/1314	\$1.76M	1.1	CHBDC

As detailed in the Beca report (2020:P:C.10) wastewater from the Pōrangahau village centre is pumped to the Pōrangahau WWTP, which consists of a single clay lined stabilisation pond (0.3 ha in size). There is no influent flow monitoring or screening facilities. Within the pond, some of the solids settle on the bottom of the pond and undergo anaerobic treatment. The remaining solids and nutrients undergo aerobic treatment by bacteria and algae within the suspension. The ponds are maintained in an aerobic state through wind and photosynthesising algae (Beca, 2020:P:C.10).

Wastewater Flow

The current consented average daily flow is 130 m³/day for no more than 50% of the time and 415 m³/day for no more than 5% of the time; and instantaneous flow of 1.5 l/sec (50th percentile) and 4.8 l/sec (95th percentile).

Historical effluent flows for the period 2008 to 2019 (LEI, 2021:P:C.15), as well as predicted changes to wastewater flows in future due to population growth, infiltration and stormwater inflow works and trade waste (Beca, 2021:P:C.16) are presented in Table 6.6. Population projections indicate a significant increase in population for the Pōrangahau township described in Beca 2021:P:C.16).

Table 6.6: Pōrangahau WWTP Outflows (2019-2057) (LEI, 2021:P:C.15)

Parameter	2008-2019	2028	2057
Median Flow (m ³ /d)	94	155	374
Average Daily Flow (m ³ /d)	141	205	437
99 th ile Flow (m ³ /d)	849	953	1,330
Maximum Flow (m ³ /d)	2,250	2,354	2,731
Average Annual Flow (m ³)	51,500	75,000	160,000

Influent Quality

Influent wastewater quality samples have been taken from the Jones Street Pump station every two months for the period of 2011-2019 (May). The Beca (2020:P:C.10) report summarises the results for the five-year period 2014-2019 (May). The incoming wastewater characteristic average concentrations are very weak for municipal wastewater, with only TKN and Ammonia values close to that of typical weak municipal wastewater concentrations (Beca, 2020:P:C.10). This could be due to diluted wastewater or the quality of the sampling program and protocols. Due to this uncertainty, the average concentrations of the typical wastewater composition is used for the future treatment plant loads (Table 6.7), which is a conservative approach (Beca, 2020:P:C.10).

Table 6.7: Pōrangahau WWTP Influent Wastewater Characteristics (2014-2019) (Beca, 2020:P:C.10)

Parameter	Average
COD, mg/l	297
Unfiltered cBOD ₅ , mg/l	103
TSS, mg/l	92
TKN, mg/l	25
Ammonia, mg/l	18
TP, mg/l	4
Faecal coliforms cfu/100ml	2.7M
<i>E. coli</i> cfu/100 ml	1.9M

Discharge Quality

The current discharge quality from the Pōrangahau WWTP discharge over the period 2014-2019 is summarised in Table 6.8 below.

Table 6.8: Pōrangahau WWTP Treated Wastewater Quality Discharge between July 2014 and June 2019 (Beca, 2021:P:D.25)

Parameter	5 %	Median	95 %
pH	7.4	7.8	8.6
<i>E.coli</i> (cfu/100 ml)	48.5	2,150	38,800
Faecal Coliforms (cfu/100 ml)	310	8,090	101,500
Total Phosphorus (mg/L)	1.0	1.9	3.2
Dissolved Reactive Phosphorus (mg/L)	0.5	1.3	2.3
Total Nitrogen (mg/L)	7.9	12.7	19.9
Total Ammoniacal Nitrogen (mg/L)	2.3	7.3	14.7
Suspended Solids (mg/L)	3	29	91
cBOD ₅ (mg/L)	3	18	41
Dissolved Oxygen (ppm)	0.3	2.8	10.6

Consent Compliance History

A detailed evaluation of consent compliance for the Pōrangahau wastewater discharge is given in:

- Section 3.2.4 of Te Paerahi and Pōrangahau Options Report (Beca, 2020:P:C.10);
- Section 2.3.3 of Water Quality Assessment: Pōrangahau River (Beca, 2020:P:B.24a); and
- Annual compliance reports prepared by HBRC.

As with Te Paerahi, the Pōrangahau WWTP was generally in compliance with conditions of consent. No exceedances of the 50th percentile flow limit of 130 m³/day were recorded. The 90th percentile flow limit of 415 m³/day was exceeded during the 2017/2018 monitoring period due to large volumes of rainfall during winter and spring, including two ex-tropical-cyclone events (Beca, 2021:P:D.60). Results for cBOD₅, TSS and pH did not breach the consent between 2009 and 2019, although minor exceedances of the 50th percentile or 90th percentile limits were recorded.

6.3.1 Stage 0 – Existing Activity

Te Paerahi

Following treatment in the oxidation pond, wastewater then passes through and under a vegetated area of the pond for final treatment (polishing) before passing through a perforated basket in an effluent channel, designed to catch eels and debris that didn't settle in the pond (Beca, 2020:P:C.10). There is outflow monitoring in this channel. From the channel wastewater is then pumped to a buried distribution system at the base of the adjacent sand dunes. Wastewater is discharged via soakage to land and ultimately, groundwater.

The existing wastewater treatment and discharge system is proposed to continue in the short term (up to 6 years) to allow for the design and development of the new land based irrigation regime.

All flows from Te Paerahi are to be piped to the new Discharge Property from Stage 1 onwards.

Pōrangahau

The treated wastewater from Pōrangahau WWTP is discharged to an adjacent drain via effluent chamber where the outflow volume is monitored. Prior to this, there is a perforated basket in the chamber to catch eels and debris. From the effluent chamber the treated wastewater is discharge to a drain that merges discharges into Pōrangahau River.

The existing wastewater treatment and discharge system is proposed to continue in the short term (up to 9 years as outlined in the previous transitional consent) to allow for the design and development of the land based irrigation regime. The transitional consent outlines the only modification proposed to the WWTP is to reinstate the wetland system in the adjacent drain to provide a more culturally robust land passage system, at least for the short-term whilst the land irrigation regime becomes operative.

The transitional consent proposed a slightly higher flow of an average daily flow of 145 m³/day for no more than 50% of the time and 640 m³/day for not more than 5% of the time.

All flows, except for contingency high flows, from Pōrangahau are to be piped to the discharge property from Stage 2 onwards.

6.3.2 Stage 1

Te Paerahi

All flows will be piped to the Discharge Property for irrigation.

Pōrangahau

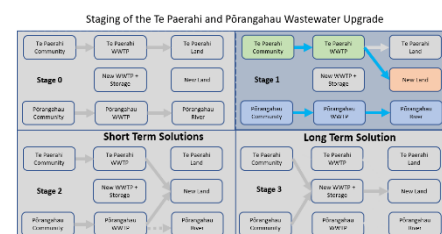
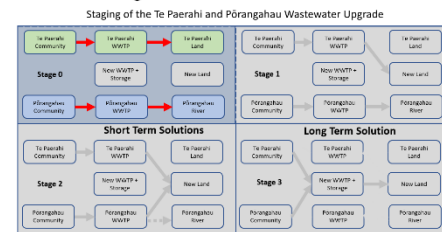
All flows will continue to be discharged as per the existing system.

Transfer to Land Application

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).

No wastewater from Pōrangahau is to be received at the new Discharge Property during this Stage. Year round irrigation to at least 4 ha is allowed. Table 6.4 gives a summary of the discharge regime parameters. Additional detail can be found in LEI (2021:P:C.15).

The wastewater discharge to land happens within an existing farming operation at the new Discharge Property. Details of how the discharge and farming operations are managed together is given in LEI



(2021:P:C.15) and LEI (2021:P:C.14a). Potential nutrient losses from the discharge property are expected to occur due to both activities and effects are assessed on the basis of total losses from the Discharge Property. Details of nutrients drained from the soil are given in LEI (2021:P:C.14a).

6.3.3 Stage 2 – Transfer to Land Application

Te Paerahi

All flows will be piped to the Discharge Property for irrigation.

Pōrangahau

All flows except wet weather flows will be piped to the Discharge Property for irrigation.

Transfer to Land Application

At the commencement of Stage 2, treated wastewater from the existing Pōrangahau WWTP will be pumped to the Discharge Property described in Section 4.7. Additionally, as with Te Paerahi, the addition of UV treatment to manage pathogen concentrations will be implemented prior to wastewater being applied to the discharge property. Details of the property are given in Table 6.5 above.

Year round irrigation from the Stage 1 minimum of 4 ha will be expanded to at least 10 ha in total. Table 6.4 and 6.8 gives a summary of the discharge regime parameters. Additional detail can be found in LEI (2021:P:C.15).

The wastewater discharge to land happens within an existing farming operation. Details of how the discharge and farming operations are managed together is given in LEI (2021:P:C.15) and LEI (2021:P:C.14a). Potential nutrient losses from the discharge property are expected to occur due to both activities and effect are assessed on the basis of total losses from the Discharge Property. Details of nutrients drained from the soil are given in LEI (2021:P:C.14a).

6.4 Stage 3 - Long Term Solution

At Stage 3 (within 9 years) wastewater treatment will no longer occur at the Pōrangahau and Te Paerahi WWTPs. Untreated wastewater is to be conveyed to a new combined WWTP and the irrigation system will be expanded following the construction of storage for treated which will enable the irrigation to be preferentially discharged during optimum climate and growth conditions. Consent requirements for the new wastewater treatment plant will be sought at a later stage.

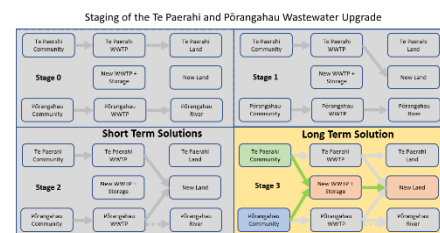
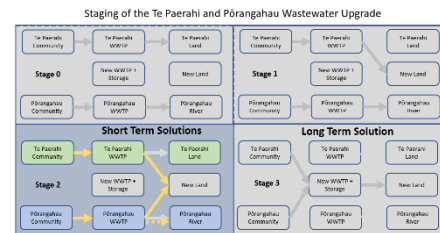
A summary of the wastewater for discharge and of the discharge activity is as follows.

6.4.1 Wastewater System – Combined Pōrangahau and Te Paerahi Flows

A combined wastewater treatment plant servicing both the Pōrangahau and Te Paerahi communities located at the land discharge property is still be designed, and will be consented at a later stage. For the combined WWTP, a minimum treatment standard is proposed with Beca (2021:P:C.16) outlining a range of treatment systems that could be implemented to the combined WWTP to achieve this.

Wastewater Design Flows

The proposed discharge system has been designed to manage future wastewater flows for the communities. Beca (2021:P:C.16) and LEI (2021:P:C.15) outline the projected population increases for the current system, as well as future 2028 and 2057 flows.



Wastewater Design Quality

Wastewater quality from the combined WWTP will achieve mean values in wastewater parameters, no greater than the existing wastewater systems. It is expected than less variance in these parameters will be noticed. Additionally, all flows discharged to the land discharge system across all three stages will be UV treated to manage pathogen concentrations.

Following the establishment of a new WWTP at Stage 3, the wastewater quality has been assumed to achieve **an average quality** of:

- 20 g O/m³ carbonaceous biochemical oxygen demand;
- 30 g/m³ total suspended solids;
- 20 g/m³ total nitrogen;
- 5 g/m³ total phosphorus;
- 5,000 MPN/100 mL *E.coli* (following UV disinfection).

Additional detail regarding future wastewater treatment and performance is given in Beca (2021:P:C.16).

6.4.2 Provision of Storage

Up to a maximum of 35,000 m³ of storage is proposed to be provided in a new pond and WWTP at the commencement of Stage 3. CHBDC intend to purchase land at the Discharge Property for the construction of a pond. The indicative location is given in Figure 6.6. A final location and design of the pond and WWTP is subject to a landform assessment and geotechnical investigations.

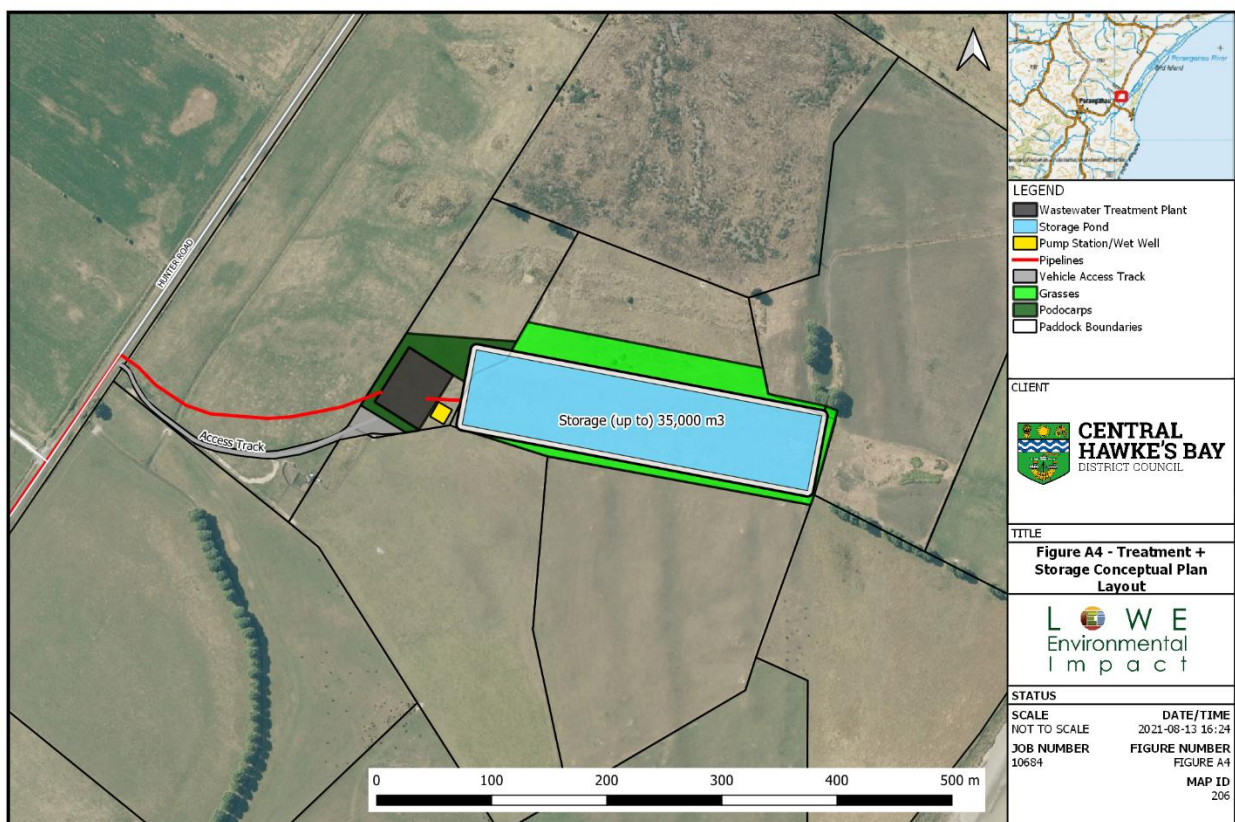


Figure 6.6: Indicative Storage Pond and WWTP Location

6.4.3 Proposed Discharge Activity

At Stage 3 the discharge is from a new WWTP located at the Discharge Property (LEI, 2021:P:C.15). Storage of a minimum of 10,000 m³ and up to a maximum of 35,000 m³ is available to optimise the irrigation system and enable wastewater to be held and irrigated when soil conditions are better suited

to receiving wastewater. Year round irrigation with a combination of deficit and non-deficit irrigation will be used across the property. The irrigation regime is proposed to be a two-step process. As a priority, wastewater is applied under regular irrigation conditions to irrigate up to 2 mm above field capacity, at a rate of up to 10 mm/h and allowing up 20 mm per application to at least 40 ha. When irrigation under these conditions is not possible, wastewater will be firstly directed to storage, where if not available, to the non-deficit (wet soils) system. The wet soils discharge utilises existing regular irrigation infrastructure but enables irrigation up to 10mm/h and 20 mm per event to be applied to 10 ha, irrespective of field capacity restrictions. Table 6.4 and 6.8 gives a summary of the discharge regime parameters. Additional detail can be found in LEI (2021:P:C.15).

The wastewater discharge to land happens within an existing farming operation. Details of how the discharge and farming operations are managed together is given in LEI (2021:P:C.15) and LEI (2021:P:C.14a). Potential nutrient losses from the discharge property are expected to occur due to both activities and effect are assessed on the basis of total losses from the Discharge Property. Details of nutrients drained from the soil are given in LEI (2021:P:C.14a).

6.5 Summary of Discharge Parameters at Each Stage

Table 6.9 provides a summary of the key discharge parameters on which an assessment of effects is based.

Table 6.9: Land Discharge and Management Summary

Parameter	Current Stage 0	Stage 1 (TP)	Stage 2 (P+TP)	Stage 3 (P+TP)
Storage volume (m ³)	~1,000	~500	~1,000	~10,900
Average annual outflow from WWTPs (m ³)	~76,600	~24,600 (~76,600)	~102,000	~ 183,000
Discharge to Pōrangahau River and Te Paerahi Coast				
Volume per year (m ³)	~52,000	~52,000	0	0
N mass loading from wastewater (kg/y)	1,532	1,076	0	0
P mass loading from wastewater (kg/y)	353	269	0	0
Deficit/Non-Deficit Irrigation – Regular Irrigation (Dry Soils)				
Irrigation regime	Nil	Deficit	Deferred, non-deficit	
Landform	Nil	Coastal sand dunes		Coastal sand dunes and alluvial plains
Total area – including non-irrigated (ha)	114.3	114.3	114.3	114.3
Wastewater irrigated area (ha)	-	4	10	40
Irrigation event application (mm/event)	-	Up to 20	Up to 20	Up to 20
Average annual irrigation volume (m ³ /y)	-	~10,000	~31,000	~121,000
Average annual application depth (mm)	-	255	307	305
Wastewater Nitrogen load (kg N/ha/y)	-	51	61	61
Wastewater Phosphorus load (kg P/ha/y)	-	13	15	15

Parameter	Current Stage 0	Stage 1 (TP)	Stage 2 (P+TP)	Stage 3 (P+TP)
Non-Deficit Irrigation – Wet Soils				
Maximum application rate per event (m³)	-	20	20	20
Volume per year (m³)	-	~14,000	~71,000	~66,300
Average annual application depth (mm)	-	350	710	663
Wastewater Nitrogen load (kg N/ha/y)	-	70	142	133
Wastewater Phosphorus load (kg P/ha/y)	-	18	35	33
Sand Dunes (LMU 3/IMU 3)				
Farm Management current/proposed	Pastoral grazing, rotational cropping			
Vegetation current/proposed	Cocksfoot & marram grasses, winter oats			Cocksfoot & marram grasses
Alluvial Plains (LMU 1 & 2/IMU 1)				
Farm Management current/proposed	Low intensity pastoral grazing/ rotational cropping			
Vegetation current/proposed	Ryegrass pasture; crops (e.g. chicory, raphno, oats, turnips)			

6.6 Design as the Basis of Avoiding Effects

6.6.1 General

The generally less than minor adverse effects (discussed in Sections 9, 10 and 11 below) on the receiving environments do not require mitigation. Investigations have identified specific actions that have the potential to impact on the receiving environment. Consequently, design solutions have been developed to result in less than minor effects, and therefore further mitigation is not needed.

To support the ongoing assurance that the effects will be less than minor, proposed consent conditions (as provided in Appendix E) are provided to ensure residual adverse effects are no different to those currently experienced or as predicted for the future system.

6.6.2 Proposed Condition Framework

The applications as described in this report are to essentially allow for business as usual until a new system is developed. This is anticipated to be up and operational within 9-10 years, with parts of the final solution implemented within the next three years. The implementation programme is described in more detail in Section 8.8 and in Te Paerahi and Pōrangahau – Community Wastewater Management into the Future – A Strawman Approach (LEI, 2020:P:C.36).

In general, it is proposed that the existing discharge systems at both WWTPs will continue until such time as a replacement discharge is implemented. Therefore, it is expected that conditions of consent for the existing systems would be much the same as they are now.

For the Te Paerahi application, a term of 6 years is sought in which time the discharge from the WWTP to sand dunes will have ceased. The WWTP will continue to be used, albeit it is intended that this will also cease to be used in time.

For Pōrangahau, it is anticipated that within 9 years the continuous flow from the WWTP to the river will have ceased, with flows being discharged to land. While design is yet to be confirmed, there may be the need for some form of indirect discharge during periods of wet weather and when the river is in flood.

6.7 Proposed Monitoring

This application document recommends that the existing monitoring should continue as outlined in the proposed consent conditions included as Appendix E. Additional monitoring is proposed at both WWTP's and at the new Discharge Property.

7 CONSULTATION

7.1 General

This section provides a brief account of consultation undertaken with regard to wastewater management.

7.2 Iwi Engagement

Early iwi engagement was seen as critical for this Project. Iwi were consulted through numerous channels, including formal and informal meetings and commissioning of the Tāngata Whenua Worldviews report (How, 2020:A:B.42). The overarching direction given to Council was to avoid direct discharges to surface water, as well as culturally significant dunes as these were seen to be culturally abhorrent. LEI (2021:P:C.34) provides a detailed consultation summary outlining all engagement between CHBDC and stakeholders during the consenting process.

A Cultural Impact Assessment (CIA) and Mahinga Kai Assessment has been commissioned for the Discharge Property. This is to build on the Māori World View report and assess issues specific to Pōrangahau and Te Paerahi and the surrounding area. These reports are in the process of being finalised and will be made available as soon as these come to hand.

In the absence of this CIA, it is clear that the proposal seeks to eventually apply all wastewater directly to land, ceasing the existing discharges to the respective receiving environments.

7.3 Public Engagement

Consultation with the community has involved meetings, preparation of newsletters and online communication through the Councils portal. While the consultation programme was significantly impacted by the COVID-19 Levels 2-4 limitations, community meetings were held on the 16th of December 2019 and the 20th of March 2020, with a third scheduled for the 15th of February 2021 but unfortunately cancelled due to COVID-19 alert level changes (LEI, 2021:P:C.34).

Council have been working on a district wide wastewater strategy (#Big Wastewater Story) that requires considerable funding. A series of engagement documents to support the Long Term Plan were released in February 2021. This included a district wide update on proposed wastewater changes, including that at Pōrangahau and Te Paerahi.

Discussions and feedback from each meeting have informed the progress of the investigations leading to a series of options for inclusion in CHBDC's Long Term Plan.

7.4 District Health Board

Hawke's Bay District Health Board (HBDHB) public health staff have been recently consulted. The wider district wastewater strategy has been communicated, along with the plan for Pōrangahau and Te Paerahi.

7.5 HBRC

HBRC staff have been involved in early district wide discussions and the engagement group that lead to the formulation of the Wastewater Strategy (CHBDC:A:O.3, #theBIGWasteWaterStory). They have also been invited in community presentations and participated in one of the recent community meetings.

Senior CHBDC staff have been regularly meeting with HBRC staff and advising of progress for developing alternative long term wastewater solutions and their consenting requirements.

7.6 Customary Marine Title Applicants

The ongoing discharge to coastal dunes at Te Paerahi for the short term triggers the need for engagement with Customary Marine Title (CMT) applicants. The RMA requires that consultation is undertaken with the Customary Marine Title applicants (as lodged in accordance with the Marine and Coastal Area (Takutai Moana) Act) discharge activities within the immediate area of any discharge.

Applicants identified within the Crown Engagement Application Areas are:

- Ngāti Kere Hapu (MAC-01-09-013)
- Heretaunga Tamatea (MAC-01-09-001)

A letter advising the applicants of the intentions of the consent process and discharges has been sent. A copy of this letter is attached as Appendix G.

7.7 Summary

CHBDC has connected with the community and iwi in a number of forums over the course of the current consent. These are detailed within LEI (2021:P:C.34) which provides a detailed consultation summary outlining all engagement between CHBDC and stakeholders during the consenting process. Since 2019 a more directed programme of consultation was undertaken with a list of these engagement for the reconsenting process provided in Appendix B.

Discussions and feedback from each meeting have informed the progress of the investigations leading to a series of options for inclusion in CHBDCs Long Term Plan.

8 CONSIDERATION OF ALTERNATIVES

8.1 General

A brief summary of the alternatives considered is given here. Alternatives for treatment and discharge were identified in the Pōrangahau and Te Paerahi Options Report (Beca, 2020:P:C.10). A detailed discussion is provided in the Best Practicable Option (BPO) report (LEI, 2021:P:C.12) on alternatives considered and the process taken to evaluate them.

Figure 8.1 presents a simplified flowchart of the selection process used by CHBDC to nominate a suitable BPO for the Pōrangahau and Te Paerahi WWTP discharges.

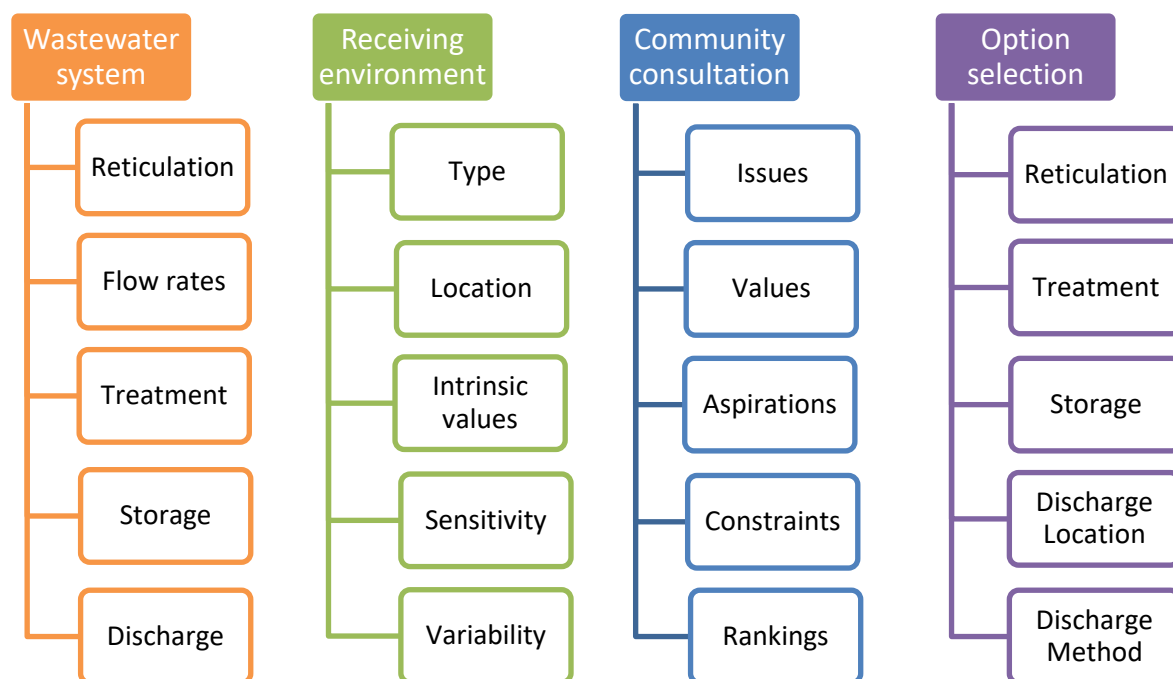


Figure 8.1: BPO Selection Process Overview

A summary of the key outcomes are as follows.

8.2 Alternative Receiving Environments

Potential receiving environments for the Pōrangahau and Te Paerahi WWTP discharges were identified as follows:

- **Discharge System:**
 1. Status quo (River and culturally significant dunes);
 2. Ocean;
 3. Land;
 4. Groundwater; or
 5. Combination

Following consultation the discharge options were further refined to include:

- **Discharge**
 1. Status quo discharge regimes - River + land discharges for Pōrangahau and Te Paerahi respectively;
 2. Ocean discharge;

3. Land irrigation – non-deficit;
4. Land irrigation – deficit;
5. Land irrigation – rapid infiltration basin; or
6. Deep bore injection.

Discharges to groundwater (i.e. by deep bore injection) and ocean were discounted for financial, social and cultural reasons. Direction through consultation was that a combined discharge environment that could avoid the respective existing discharges and get some beneficial use of the wastewater was preferred. Options which focussed on a low rate discharge to land were pursued to meet the communities' expectations.

8.3 Alternative Discharge Locations

CHBDC has investigated the use of land within 10 km of the two WWTP for application of wastewater (LEI, 2020:P:B.11). It has been determined that suitable and feasible land opportunities are available near to the WWTPs.

Following identification of suitable land areas surrounding the WWTPs, correspondence with potential landowners commenced to which engagement with five landowners occurred. From this, the Discharge Property at 474 Beach Road, Pōrangahau was identified as being the preferred discharge location.

8.4 Combined Land and Water Discharge Options

A continuum of options is theoretically available, in combination with storage, for combined land and water discharge systems. The proposed system transitions from a 100 % only discharge (to the river and culturally significant dunes) system towards the ultimate aspirational goal of 100 % land irrigation to a location deemed culturally acceptable for wastewater irrigation.

8.5 Alternative River Discharge Regimes

As with land and water options, there is a continuum of options available for surface water discharges, in combination with storage, for varying the timing and volumes of discharges to the river. A revised regime could be developed to time the discharge so that water quality in the Pōrangahau River was not impacted by the wastewater discharge. Storing all wastewater for discharging only during large flood events that occur a few times a year imposes unrealistically large and expensive storage on the community. It also perversely means that the very large discharge volumes required to be released during such storm events may have greater adverse effects than smaller volumes discharged more often during less elevated river flow conditions.

8.6 Consultation Outcomes

Consistently the community aspiration was for cessation of the river discharge and dune discharge. A further direction from consultation is to investigate and implement ways for the community and local iwi to be involved in the environmental outcomes for their community.

8.7 Financial Implications

The long-term solution will impose a significant cost on the small rating base of the Central Hawke's Bay. Key to the successful implementation of a long solution is security of funding.

8.8 Developing a Preferred Option

As part of the future consent application, an analysis of whether the selected discharge method and its location is the best practicable option (BPO) as defined by the Resource Management Act 1991 (RMA), is required.

A thorough BPO selection process has been undertaken by CHBDC using technical advisors, affected parties (landowners and iwi) and the Pōrangahau and Te Paerahi communities through a series of consultations. These consultations aimed to understand the concerns, aspirations, and design constraints from the respective parties to assess potential discharge and treatment options. For each aspect of the wastewater system, a series of options have been considered, where these were narrowed down through community engagement and technical advice and refined based around BPO principles to arrive at a concept considered the BPO.

For discharge of Pōrangahau and Te Paerahi's wastewater, the BPO is the construction of a new WWTP servicing both communities where the discharge regime is to land under combination of a deficit and non-deficit irrigation system. The choice of suitable soil type and the optimisation of the irrigation system through storage, will effectively allow the ceasing of any direct discharge to the Pōrangahau River and dunes. The Discharge Property for land application is 474 Beach Road, Pōrangahau located between the townships.

The components of the BPO include:

- construction of a new WWTP between Pōrangahau and Te Paerahi servicing both communities;
- a combined wastewater discharge for both communities to land under combination of a deficit and non-deficit irrigation system depending on soil type and the optimisation of storage, allowing the ceasing the discharge to the Pōrangahau River entirely;
- the construction of a storage pond of between 10,000 m³, up to 35,000 m³ to capture wastewater flows; and
- the desired Discharge Property is 474 Beach Road, Pōrangahau located between the two communities.

Each of these aspects are believed to be the BPO for Pōrangahau and Te Paerahi's wastewater discharge system because:

- all components of the BPO have been selected in order to function effectively as an integrated wastewater management and discharge system;
- although costly initially, construction of a new WWTP servicing both communities is considered to be beneficial long term. This also involves the removal of the Te Paerahi WWTP;
- implementation of a land discharge regime is affordable to the respective communities in comparison to other discharge options;
- wastewater flows are to be applied to the land under deficit and non-deficit irrigation, aligning with community aspirations of ceasing a river discharge entirely;
- wastewater is able to be beneficially returned to the land, increasing pasture productivity rather than wasted under a river discharge, rapid infiltration basin, ocean outfall or deep bore injection system;
- environmental impacts are expected to be reduced as wastewater can be filtered through the soil, reducing risks of nitrogen leaching or contamination of waterways;
- combination of a non-deficit and deficit system enables wastewater to be selectively discharged to varying locations across the Discharge Property at varying rates, reducing the demand for excessively high storage requirements; and
- the BPO system has the ability of accommodating for future flows in response to projected population growth for each of the townships.

The BPO report (LEI, 2021:P:C.12) formed the foundation for refining the details of the design, operation, and implementation timing of each aspect of the treatment, storage, and discharge systems. Many of these details are developed and described in the Conceptual Design report (LEI, 2021:P:C.15). This BPO is considered to satisfy the RMA requirement that a nominated discharge is the BPO for the system and its locality.

9 ASSESSMENTS - TE PAERAHI (STAGES 0, 1 AND 2)

9.1 Effects on the Environment

9.1.1 Receiving Environment

The Te Paerahi coastline is not considered a sensitive receiving environment for discharges of Te Paerahi's treated wastewater because of it is a high energy coastline and due to the modest rate of discharge and long travel times leading to contaminant attenuation.

9.1.2 Positive Effects

With respect to this application, positive effects relate to the wastewater treatment and discharge system providing for the health and wellbeing of the Te Paerahi community; and without it there is the potential for localised effects from poorly functioning onsite wastewater facilities and any residual contaminants making their way to the coast via the beach in front of the community.

9.1.3 Effects on Marine Environment

Groundwater flows from the Te Paerahi WWTP discharge area flow towards the coast. Potential migration of wastewater contaminants from the WWTP via groundwater into the marine environment is assessed in the Beca (2021:P:D.60) report.

Low nutrient levels (nitrogen and phosphorus indicator species) have been recorded in the groundwater monitoring wells located around the Te Paerahi WWTP discharge field. The nutrient levels in the groundwater are not considered to contribute to adverse effects within the marine environment due to the travel time for groundwater to reach the coast (between 60 and 340 days), a degree of attenuation of contaminants within the soil, and the dilution and mixing that occurs with regional groundwater and within the coastal zone.

For similar reasons, the very low levels of faecal coliforms observed in the groundwater monitoring wells (majority of results below laboratory detection limits) are not considered to contribute to adverse effects within the marine environment. Expected microbial die-off and filtration of pathogens, such as *E.coli*, in sandy soils are further anticipated to reduce faecal coliform concentrations in groundwater.

Overall, the effects on the marine environment are considered to be negligible.

9.1.4 Effects on Public Health Risks

There are no reported records of public health concern attributed to the current discharge. This includes harvesting shellfish and finned fish, as well as recreational contact with the contaminated water. As discussed in the Beca (2021:P:D.60) report, the low faecal coliform contaminant levels in groundwater surrounding the discharge area and long travel times to reach the coast will contribute to mitigating any risk.

The effects on public health are considered to be negligible.

9.1.5 Effects on Amenity, Community, Recreational, and Social Values

The discharge area is subsurface and while adjacent to the foredunes, is away from community access. The discharge itself will have a negligible effect on existing amenity, community, recreational and social values.

9.1.6 Effects on Air Quality

Odours from the WWTP are generally of low intensity and readily dissipate within the WWTP's boundaries. Where odours become apparent these usually indicate significant failures of treatment

processes and performance. The WWTP operators will have become aware of the treatment problems and are generally able to remedy the treatment processes long before there is any risk of generating offensive or objectionable odours beyond the WWTP boundaries.

Additionally, the Te Paerahi WWTP is relatively isolated from high sensitivity receptors, with no dwellings located within 400 m of its boundaries. A distance of 400 m is typically sufficient distance to avoid any minor wastewater odours that may occur. Odours outside of this normal range for odour strengths and types are not expected to be greater than odours created by surrounding rural activities.

9.1.7 Effects on Cultural Values

The Māori World view report (How, 2020:A:B.42) provides an interpretation of wastewater management. Clearly discharges of wastes need to be mitigated, with transformations from tapu to noa. This inevitably requires passage through Papatuanuku, a practice that currently occurs. However, the area of the discharge (and treatment plant) is considered to be wāhi tapu and avoidance of discharges in this area should ideally be avoided.

This longer term solution of ceasing the existing Te Paerahi discharge and eventually the removal of the Te Paerahi WWTP entirely, will deliver on the aspiration by iwi. Council have committed to developing a solution for the removal of the Te Paerahi WWTP through this consent application and will continue to liaise with iwi through direct engagement and proposed consent conditions.

It should be noted that from a cultural perspective there are two parties to consider. The land is owned by a Māori Trust; and it is clear that by virtue of being owners they have mana whenua. However, there are wider Māori interests in the area beyond land ownership, and they could be considered to have tāngata whenua status.

The consent application seeks to continue the existing discharge from the Te Paerahi WWTP for Stage 0 (existing conditions), with Stage 1 onwards seeing 100 % of flows from Te Paerahi redirected to the Discharge Property.

9.1.8 Effects on Natural Hazards

The operation of the current Te Paerahi discharge will not have an impact on natural hazards, however, natural hazards may impact on the system. Should there be an event, such as earthquake, flood or tsunami, then many other infrastructure components in the immediate area will be compromised and the effects of this operation being compromised (and effects) will be largely insignificant.

9.1.9 Summary of Effects on the Environment

The overall effects of the wastewater discharges on the coastal environment will be less than minor to negligible. This will be the case under Stage 0 conditions where effects will be the existing status quo. The ultimate aspiration is to cease discharges to the sand dunes (Stages 1), at which point there will be zero effects on the coastal environment. Table 9.1 provides a summary of the potential risks and actual effects associated with the Te Paerahi discharge.

Table 9.1: Summary of Potential Risk and Actual Effects from Wastewater for the Te Paerahi Discharge

		Sensitivity	Source / Contaminant			
			Organic matter Nitrogen Phosphorus	Pathogens	Water	Wastewater
Receptor / Pathway / Vector	Soil	Potential risk	Low	Moderate	High	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Groundwater	Potential risk	High	High	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Habitat	Potential risk	High	Moderate	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Cultural	Potential risk	N/A	N/A	N/A	High
		Actual effect	N/A	N/A	N/A	Less than minor
	Air	Potential risk	Moderate	High	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A

9.2 Evaluation Against Statutory Provisions – Te Paerahi Discharge

The Statutory Evaluation (Beca, 2021:P:D.90) provides a thorough assessment of all planning provisions, including Part 2 of the RMA. The findings of that assessment are not repeated here, however a summary of the outcomes of this assessment are provided below for the Te Paerahi Discharge (provided as Appendix A to the Planning Evaluation (Beca, 2021:P:D.90)).

Overall, it is considered that the Te Paerahi proposal is consistent with the objective and policies of the NPS-FM (refer to section 2.3, Appendix A (Beca, 2021:P:D90)).

The NES-F was considered for the Te Paerahi application to ascertain whether the maintenance and operation of the specified infrastructure is located within 100 m of the natural wetland. However, the wetland associated with the treatment pond is planted for waste treatment purposes and is therefore not considered a natural wetland under the NES-F definition. As such, the NES-F provisions do not apply.

The assessment finds that the Te Paerahi application is broadly consistent with the NZCPS (refer to section 2.4, Appendix A (Beca, 2021:P:D.90) and the relevant objectives and policies of the RPS and RRMP (refer to section 2.5, Appendix A (Beca, 2021:P:D.90)).

The continued Te Paerahi discharge to land is broadly consistent with the relevant objectives and policies of the RCEP as the proposal provides:

- The continued operation of the Te Paerahi WWTP which is an essential facility for sewage discharge for the Te Paerahi township providing for the health and needs of the Te Paerahi;
- The assessment of effects concludes that the effects are negligible due to the travel time for groundwater to reach the coast, attenuation of contaminants within the soil, and the dilution and mixing that occurs with regional groundwater and within the coastal zone; and
- Tāngata whenua values have been recognised and provided for through the long-term plan to remove the discharge from the sand dunes.

9.2.1 NPS - FM

The concept of Te Mana o te Wai within the NPS-FM indicates the importance of restoring and preserving the balance between water, the wider environment and the community, and to all aspects of freshwater management. The intent of the NPS-FM includes prioritisation of the management of the natural and physical resources and has a particular focus on the concept of Te Mana o Te Wai. Te Mana o Te Wai refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and wellbeing of the wider environment.

The relevant provisions of the NPS - FM have been considered for Te Paerahi refer to Appendix A in the Statutory Evaluation (Appendix L). In summary, there are no water bodies or freshwater ecosystems within the vicinity that are affected by the discharge to land at this location (Objective 1(a)). The nearest drinking water take is the public potable water bore located 820m south-west of the existing oxidation pond. The Te Paerahi WWTP Discharge Assessment (Beca) finds that there is no migration of contaminants towards the public water supply bore. This proposal also forms part of and provides for a lifeline utility (WWTP) for the community of Te Paerahi (Objective 1(b)). The proposal forms part of the staging of a long-term solution that will provide for the social and cultural wellbeing of the community into the future through improved wastewater treatment and management (Objective 1(c)).

9.2.2 National Environmental Standard for Freshwater 2020 (NES-F)

The proposed works meet the definition of specified infrastructure in the NPS-FM (Subpart 3 Section 3.21(1)) as the WWTP is a lifeline utility (as defined in the Civil Defence Emergency Management Act 2002).

NES-F regulations 46 and 47 apply to the maintenance and operation of specified infrastructure within 100 m of a natural wetland. Guidance on the definition of natural wetland' has recently been provided in the *Interpretation guidance on the wetlands definition in the NPS-FM and Freshwater NES* (Exposure draft 7 April 2021).

The guidance document clarifies the definition of 'Artificially constructed wetlands' which are excluded from the provisions of the NES-F. Examples of 'constructed wetlands' have been provided in the guidance document and include areas of wetland habitat in or around bodies of water created for, or in connection with, any of the following purposes: effluent treatment and disposal systems.

The HRLP used for the discharge of treated effluent referred to in this document meets the definition of artificially constructed wetlands. Therefore, the existing discharge and proposed works are not located within 100 m of natural wetlands and the regulations under the NES-F do not apply.

9.2.3 National Environmental Standard for Sources of Human Drinking Water 2007 (NES-DW)

The proposed works are subject to the provisions NES-DW as the nature of the discharge (being treated wastewater) has the potential to contaminate registered sources of drinking water to greater than 501 people.

Regulations 7, 8 and 10 of the NES-DW apply to activities specifically upstream of an abstraction point. The nearest drinking water take from the Te Paerahi dunes WWTP is the public potable water bore located 820m south-west of the existing oxidation pond. The Te Paerahi WWTP Discharge Assessment (Beca) finds that there is no migration of contaminants towards the upstream public water supply bore.

9.2.4 Hawkes Bay Regional Resource Management Plan (RRMP)

The RRMP incorporates the provisions of the Regional Policy Statement (RPS). The relevant objectives and policies have been assessed in the Statutory Evaluation (Beca, 2021:P:D.90) report. The objectives and policies of the RPS assessed include;

- Integrated Land Use and Freshwater Management;
- Managing the Built Environment;
- The Sustainable Management of Coastal Resources;
- Surface Water Resources;
- Maintenance and Enhancement of Physical Infrastructure; and
- Recognition of Matters Significant to Iwi and Hapu.

The Land, Air Quality, Groundwater Quality and Surface Water Quality objectives and policies of the RRMP have been assessed. Overall, the potential adverse environmental effects of the proposal are minimised such that they are less than minor. The Te Paerahi continued discharge to land is broadly consistent with the relevant objectives and policies of the RPS and RRMP.

9.2.5 Hawkes Bay Regional Coastal Environmental Plan (RCEP)

The Hawke Bay Regional Coastal Plan (RCEP) is to enable the HBRC to promote the sustainable management of the natural and physical resources of Hawke's Bay's coastal environment. The Te Paerahi dunes lie within the coastal environment and are subject to the objectives and policies of the RCEP. The assessment of the relevant RCEP objectives and policies concludes that the Te Paerahi proposal is consistent with the objectives and policies identified in the RCEP for activities subject to Rule 29 - Existing high discharge volume wastewater systems.

10 ASSESSMENTS – PŌRANGAHAU (STAGES 0, 1 AND 2)

10.1 Effects on the Environment - Pōrangahau

10.1.1 Receiving Environment

The Pōrangahau River receiving environment is tidally influenced and has existing water quality issues with elevated levels of nutrients and faecal coliforms. Diffuse agricultural runoff is assumed to be the major upstream contributor of dissolved nutrients and bacterial contamination. Downstream, the Pōrangahau Estuary is the largest and least modified estuary in Hawke's Bay, which is an important feeding and wintering area for migratory waders and an inanga spawning site.

10.1.2 Positive Effects

Positive effects can be considered in two regards with respect to this application. Firstly, the wastewater treatment and discharge system provides for the health and wellbeing of the Pōrangahau community; and without it there is the potential for localised effects from poorly functioning onsite wastewater facilities leading to public health effects.

Secondly, the reduction in direct discharge to the Pōrangahau River is driven strongly by the local community and, regional and national directives. For Pōrangahau, the potential benefits in a reduction of discharge to surface water are an improvement in water quality and habitat value, improvements in the cultural health of the water ways and the communities' relationship (amenity and recreational) with the waterway.

10.1.3 Effects on River Water Quality

Water quality effects associated with the Pōrangahau WWTP discharge on the Pōrangahau River are analysed in detail in the Beca (2020:P:B.24a) report. Based on historic monitoring data and the assumption that the existing average and maximum daily discharge flow rates will remain stable, the water quality effects associated with the existing discharge are equivalent to the continued discharge: these effects are described below.

Increases in the existing concentrations of nutrients and microbiological contaminants are observed in the Pōrangahau River downstream of the discharge point. However, median concentrations of total nitrogen, nitrate, total phosphorus and dissolved reactive phosphorus were found to be already elevated above relevant guidelines upstream of the WWTP discharge point. The most notable effects of the WWTP discharge are an increase in total ammoniacal nitrogen and faecal coliforms, resulting in modelled exceedances of relevant water quality guidelines downstream of the WWTP discharge during low flow river events. These effects are predicted to occur under low river flow events only.

Increased nutrient and microbiological concentrations for most contaminants of concern are relatively low, resulting in minor adverse effects downstream of the WWTP. The exception is associated with the moderate concentration increase for faecal coliforms (above the HBRC RRMP trigger value²) and ammoniacal nitrogen (above the ANZECC physical stressor guideline value) during modelled low river flow scenarios, resulting in a moderate effect on water quality under these conditions.

10.1.4 Effects on River Ecology

The Pōrangahau River is a nutrient enriched environment upstream of the WWTP discharge, with poor water quality negatively impacting on ecological values. Additionally, the soft and silty tidally influenced riverbed provides a low-quality habitat for freshwater macroinvertebrates.

² The faecal coliform environmental guideline value for the Pōrangahau River is 200 cfu/100mL in the HBRC RRMP (Table 8).

As noted in Section 10.1.3 above, at times of low river flows, faecal coliforms and ammoniacal nitrogen concentrations are predicted to exceed relevant guideline values downstream of the discharge point. However, the discharge does not appear to result in the formation of excessive plant, algae and slime growths in the Pōrangahau River relative to upstream. As part of the application for the existing discharge consent (Opus, 2007) it was noted that the effects on stream ecology were considered less than minor as the entire section of the Pōrangahau River (upstream and downstream) was classified by Macro-invertebrate Community Index (MCI) analysis as having degraded water quality (MCI < 100).

Additionally, as part of the existing discharge consent, Opus conducted an ecological investigation (Opus, 2012) in 2012 (as summarised in Beca 2020:P:B.24a) to study the effects of the discharge on the biota at two sites: one near the discharge point and a downstream control site in the Pōrangahau estuary. Biological diversity was relatively poor at both sites, however a higher diversity was observed at the WWTP, due in part to additional freshwater taxa at the site. Sediment quality at both sites corresponded to an estuarine condition of 'good' to 'very good' and the concentrations of contaminants were low in terms of both effects and also relative to other NZ estuaries. The poor biological diversity was attributed as a likely consequence of the salinity gradient and influence of the strong tidal actions rather than the WWTP discharge.

Overall, historical studies indicate that while the WWTP discharge results in a modest increase nutrient concentrations in the river, this increase is anticipated to have a less than minor effect on river ecology in the vicinity.

10.1.5 Effects on Public Health Risks

As discussed in Section 10.1.4, under low flow conditions the modelled downstream concentration of faecal coliforms is predicted to exceed the HBRC RRMP trigger value of 200 cfu/100mL after reasonable mixing. However, this exceedance has not been observed in the in-stream monitoring undertaken as part of the existing consent both upstream and downstream of the discharge.

There are several known recreational uses of the Pōrangahau River downstream from the Pōrangahau WWTP that have been identified as a result of feedback from the community (as shown in Figure 10.1), including:

- Boat access and swimming near the Beach Road bridge;
- Fishing and whitebaiting approximately 0.5km upstream of the bridge; and
- Shellfish gathering in the Pōrangahau estuary.

These areas are a considerable distance downstream and further dilution will occur between the point of discharge and these downstream receiving environments. Previous investigations (Opus, 2012) determined under normal flow conditions it would take about 1.5 tidal cycles for a parcel of treated wastewater to reach the Beach Rd Bridge downstream of the discharge.

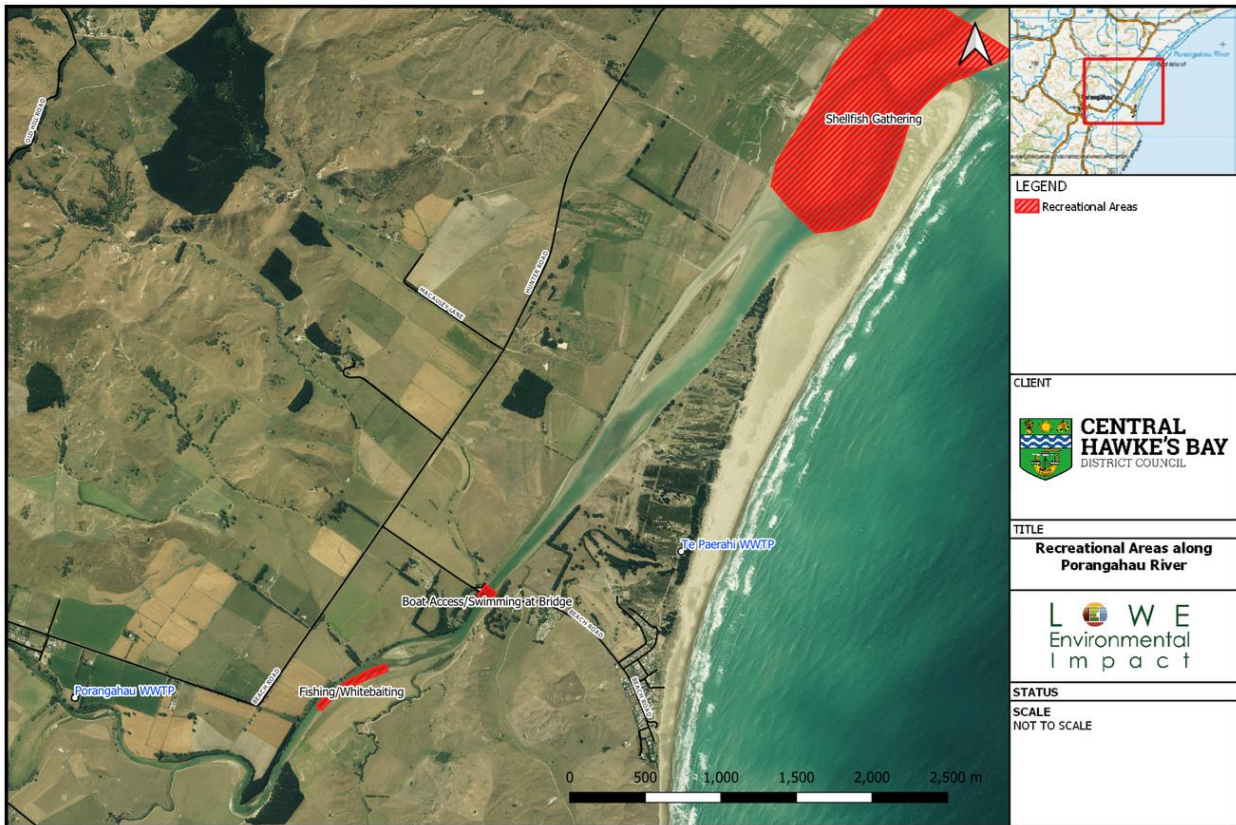


Figure 10.1: Known recreational uses of the Pōrangahau River downstream from the Pōrangahau WWTP

10.1.6 Effects on Amenity, Community, Recreational, and Social Values

The discharge is through a drain and to the river which is not accessible by the community. The discharge itself will have a negligible effect on amenity, community, recreational and social values.

10.1.7 Effects on Air Quality

Odours from the WWTP are generally of low intensity and readily dissipate within the WWTP's boundaries. Where odours become apparent these usually indicate significant failures of treatment processes and performance. The WWTP operators will have become aware of the treatment problems and are generally able to remedy the treatment processes long before there is any risk of generating offensive or objectionable odours beyond the WWTP boundaries.

Additionally, the Pōrangahau WWTP is relatively isolated from high sensitivity receptors, with no dwellings located within 200 m and of its boundaries. The outer extent of the Pōrangahau township is within 500 m of the plant, however it is likely odours outside of the normal range for odour strengths and types are not expected to be greater than typical odours created by surrounding rural activities. There are no records of complaints from odour.

10.1.8 Effects on Cultural Values

The Māori World view report (How, 2020:A:B.42) provides an interpretation of wastewater management. Clearly discharges of wastes need to be mitigated, with transformations from tapu to noa. This inevitably requires passage through Papatuanuku, a practice that currently occurs.

This longer term solution of ceasing the existing Pōrangahau discharge and eventually the removal of the Pōrangahau WWTP entirely, will deliver on the aspiration by iwi. Council have committed to developing a solution for the removal of the Pōrangahau WWTP through this consent application and will continue to liaise with iwi through direct engagement and proposed consent conditions.

This consent application seeks to continue the existing discharge from the Pōrangahau WWTP for Stage 0 (existing conditions), Stage 1 and potentially a partial discharge for Stage 2, with Stage 3 onwards seeing 100 % of wastewater flows from Pōrangahau being directed to the Discharge Property.

10.1.9 Effects on Natural Hazards

The operation of the current Pōrangahau discharge will not have an impact on natural hazards, however, natural hazards may impact on the system. Should there be an event, such as earthquake, flood or tsunami, then many other infrastructure components in the immediate area will be compromised and the effects of this operation being compromised (and effects) will be largely insignificant.

10.1.10 Summary of Effects on the Environment

Overall, the effects of the wastewater discharges from the Pōrangahau wastewater treatment plant on the local receiving environment, namely the Pōrangahau River, will be less than minor for of the majority of river flow conditions. However, during certain conditions there is a theoretical potential for moderate effects, namely faecal coliforms and nitrogen. Table 10.1 provides a summary of the potential risks and actual effects associated with the Pōrangahau discharge.

Table 10.1: Summary of Potential Risk and Actual Effects from Wastewater for the Pōrangahau Discharge

		Sensitivity	Source / Contaminant			
			Organic matter Nitrogen Phosphorus	Pathogens	Water	Wastewater
Receptor / Pathway / Vector	Surface water	Potential risk	High	High	Low	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Habitat	Potential risk	High	Moderate	Low	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Cultural	Potential risk	N/A	N/A	N/A	High
		Actual effect	N/A	N/A	N/A	Less than minor
	Air	Potential risk	Moderate	High	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A

10.2 Evaluation Against relevant statutory provisions – Pōrangahau Discharge

The Statutory Evaluation (refer to Appendix A in the report (Beca, 2021:P:D.90) provides a thorough assessment of all planning provisions, including Part 2 of the RMA. The findings of that assessment are not repeated here, however a summary of the outcomes of this assessment are provided below for the Pōrangahau Discharge.

10.2.1 NPS - FM

The concept of Te Mana o te Wai within the NPS-FM indicates the importance of restoring and preserving the balance between water, the wider environment and the community, and to all aspects of freshwater management. The proposal is not expected to impact the health of freshwater, and in fact is expected to assist with improving its health.

Overall, it is considered that the Pōrangahau proposal is consistent with the objective and policies of the NPS-FM (Refer to section 3.3) as the continued operation of the WWTP provides an essential facility for

sewage disposal for Pōrangahau (i.e. providing for the health and needs of the Pōrangahau community) while having a less than minor effect. The continued discharge of wastewater to the Pōrangahau River is limited to a short duration and it is considered that these effects are acceptable for this period until such time as the long-term solution is in place.

10.2.2 National Environmental Standard for Freshwater 2020 (NES-F)

The proposed works meet the definition of specified infrastructure in the NPS-FM (Subpart 3 Section 3.21(1)) as the WWTP is a lifeline utility (as defined in the Civil Defence Emergency Management Act 2002).

NES-F regulations 46 and 47 apply to the maintenance and operation of specified infrastructure within 100 m of a natural wetland. Guidance on the definition of natural wetland' has recently been provided in the *Interpretation guidance on the wetlands definition in the NPS-FM and Freshwater NES* (Exposure draft 7 April 2021).

The guidance document clarifies the definition of 'Artificially constructed wetlands' which are excluded from the provisions of the NES-F. Examples of 'constructed wetlands' have been provided in the guidance document and include areas of wetland habitat in or around bodies of water created for, or in connection with, any of the following purposes: effluent treatment and disposal systems. Therefore, the existing discharge and proposed works are not located within 100 m of natural wetlands and the regulations under the NES-F do not apply.

10.2.3 National Environmental Standard for Sources of Human Drinking Water 2007 (NES-DW)

The proposed works are subject to the provisions NES-DW as the nature of the discharge (being treated wastewater) has the potential to contaminate registered sources of drinking water to greater than 501 people.

Regulation 12 applies to an activity that has the potential to affect a registered drinking-water supply which the proposed activity in this instance applies (discharge of treated wastewater to land that enters the Pōrangahau River). When considering a resource consent application, a consent authority must consider whether the activity could lead to an event occurring that may have a significant adverse effect on the quality of the water at any abstraction point or, as a consequence of an event (for example, an unusually heavy rainfall) have a significant adverse effect on the quality of the water at any abstraction point.

If the consent authority considers that the above circumstances could occur, then a condition on the consent must be imposed. As noted in the proposed conditions of consent (Appendix E), there are numerous mitigation measures that will be imposed as conditions of consent that will address Regulation 12 of the NES-DW.

10.2.4 Hawkes Bay Regional Resource Management Plan (RRMP)

The RRMP incorporates the provisions of the Regional Policy Statement (RPS). The relevant objectives and policies have been assessed in the Statutory Evaluation (Beca, 2021:P:D.90) report. The objectives and policies of the RPS assessed include;

- Integrated Land Use and Freshwater Management;
- Managing the Built Environment;
- Surface Water Resources;
- Maintenance and Enhancement of Physical Infrastructure; and
- Recognition of Matters Significant to Iwi and Hapu.

The Land, Air Quality and Surface Water Quality objectives and policies of the RRMP have been assessed (refer to section 3.5, Appendix A of the Beca report (Beca, 2021:P:D.90)).

The continued discharge from the Pōrangahau WWTP is broadly consistent with the relevant objectives and policies of the RRMP. The environmental guidelines and implementation of those guidelines are set out in Policies 71-72A. At times of average river flow, the guidelines values of Policy 71 are predicted to be met for all parameters. The activity will not cause any significant adverse effects on aquatic ecosystems and contact recreation consistent with Policy 72.

Policy 72A provides for existing activities and acknowledges the need to allow time to achieve the required improvements associated with the implementation of the long-term solution. This will result in an improvement in water quality in the Pōrangahau River. The associated RRMP environmental guidelines are mostly being met. The effect of the proposal is considered consistent with these policies.

11 ASSESSMENT – DISCHARGE PROPERTY (STAGES 1, 2 AND 3)

11.1 Effects on the Environment

11.1.1 Receiving Environment

Receiving environments associated with the existing discharges for Pōrangahau and Te Paerahi which are both to be phased out have previously been discussed in Sections 9 and 10. Relating to the Discharge Property, there are two immediate receiving environments as shown in Figure 4.2. Firstly, the initial environment of the land application area, specifically the soil and plant system of the Discharge Property and area around the future combined WWTP. If the treated wastewater is not retained or renovated in the soil it may travel to shallow groundwater, or by overland flow to local surface water (Pōrangahau River and/or farm drains entering the Pōrangahau River). Secondly, when land application under a combination of deficit and/or non-deficit conditions using typical irrigation application rates cannot occur, wastewater can then be directed to the wet soils application regime system.

Wastewater constituents entering groundwater can be expected to eventually travel to and enter surface water as a diffuse discharge.

It should be noted existing reporting indicates that the water quality of the Pōrangahau River is nutrient enriched with respect to nitrogen and phosphorus, as shown by the elevated TN, TP and DRP concentrations upstream of the discharge point during median flow conditions (Beca, 2020:P:B.24a). Upstream nutrient concentrations of TN, TP and DRP are already elevated above relevant guidelines, with the Pōrangahau WWTP discharge facilitating moderate adverse effect on downstream faecal coliform and ammoniacal nitrogen concentrations at times of low flow.

11.1.2 Positive Effects

Positive effects can be considered in two regards with respect to this application. Firstly, the wastewater treatment and discharge system provides for the health and wellbeing of the Pōrangahau and Te Paerahi communities; and without it there is the potential for localised effects from poorly functioning onsite wastewater facilities leading to public health effects.

Secondly, the reduction in direct discharge to the Pōrangahau River and culturally significant sand dunes is driven strongly by the local community and, regional and national directives. The potential benefits in a reduction of discharge to surface water and dunes are an improvement in water quality and habitat value, improvements in the cultural health of the water ways and the communities relationship (amenity and recreational) with the waterway.

The discharge of wastewater to land is a key measure to avoid adverse effects of direct discharge of wastewater into surface water bodies. In addition, the application of wastewater to land at a rate which allows for filtration, absorption and beneficial use of wastewater components (nutrients, contaminants and water) provides mitigation and avoidance of adverse effects to groundwater. The adoption of an irrigation method with a low application rate and long return period as proposed by the assessed discharge regime achieves the beneficial use (for plants and soil biota) and retention (by soil storage) of wastewater components, thereby minimising their release into the groundwater or surface water environment.

11.1.3 Effects on Soils

The effects of the application of wastewater to the soil and plant system are given in Appendix H, the Assessment of Effects to Land (LEI, 2021:P:D.10). The activities that may produce actual or potential effects to soil that need to be considered relate to:

- Discharge to land of treated wastewater for land treatment; and
- Discharge to air from the WWTP and land discharge of treated wastewater.

The treated wastewater to be irrigated onto the Discharge Property will have the following properties of potential environmental concern:

- Organic material, expressed as carbonaceous biochemical oxygen demand (CBOD₅);
- Cations (Sodium, potassium, calcium and magnesium);
- Nitrogen (N as ammoniacal nitrogen (NH₄-N) and nitrite/nitrate nitrogen (NO_x-N));
- Total phosphorus (TP); and
- Water.

The proposed loading rate of the wastewater discharge to land will enable soil remediation and plant uptake of applied contaminants including:

- Filtration and incorporation of any suspended solids;
- Assimilation of organic material;
- Plant uptake, microbe use, and soil occlusion of nitrogen and phosphorus, and gaseous loss of nitrogen;
- Cation adsorption; and
- Filtration and attrition of pathogens.

The methods that have been adopted to avoid adverse effects to soils of the Discharge Property are:

- The selection of a property whose soils are dominated by silty to sandy topsoils, with variable draining subsoils, enabling a range of irrigation management practices to be adopted (at least in the case of IMU3 which is to be used for year round irrigation);
- Application rates per event that are around 25 % of the soils water holding capacity;
- Managing stock and cropping activities to enable with holding periods before and after irrigation to avoid soil damage and maintain adequate vegetative cover; and
- Withholding of irrigation when rainfall or prolonged wetness occurs.

In summary, there will be no effects to the soil and landform that are not capable of satisfactory avoidance, remediation or mitigation. The individual effects concluded from the assessments completed are all less than minor.

11.1.4 Effects on Groundwater Quality

The effects of the application of wastewater on groundwater quality are provided in Appendix H, the Assessment of Effects to Land (LEI, 2021:P:D.10).

Effects on groundwater can be significantly mitigated by adopting an appropriate irrigation regime that avoids field capacity being excessively exceeded following irrigation and the adoption of an instantaneous application rate that avoids preferential or bypass flow through large soil pores and cracks. Testing of the soil properties on the Discharge Property has been undertaken (LEI, 2020:P:B.15) to develop an application rate (LEI, 2021:P:C.15) to minimise the potential for preferential flow and loss of applied contaminants directly to groundwater.

Additionally, Tonkin and Taylor (2021:P:B.14a) provide an assessment of the risk of groundwater contamination from the discharge property and the potential risks to the Pōrangahau/Te Paerahi drinking supply bore (Bore No. 4993). This assessment concludes that although contamination of the drinking supply bore cannot be wholly ruled out, the risk to this is very low and that the land discharge regime

poses less risk than the existing river discharge from Pōrangahau to the drinking supply bore (Tonkin and Taylor, 2021:P:B.14a).

There will be no effects on groundwater that are not capable of satisfactory avoidance, remediation or mitigation. **The effects on groundwater quality are expected to be less than minor.**

11.1.5 Effects on River Water Quality

The Pōrangahau River will be the receiving environment of any drainage or overland flow from the irrigation property via either surface waterways (overland flow), or through a diffuse discharge via groundwater.

Effects to Pōrangahau River

The current and future water quality effects associated with the Pōrangahau WWTP discharge on the Pōrangahau River are analysed in detail in the Beca (2021:P:D.25) report, Appendix I.

The existing Pōrangahau WWTP discharge has been shown to have a less than minor effect on river water quality during median flow conditions, with a calculated moderate effect in ammoniacal nitrogen and faecal coliform concentrations during low flow conditions downstream of the discharge point. Total phosphorus, dissolved reactive phosphorus and total nitrogen concentrations were found to be elevated above relevant guidelines upstream of the Pōrangahau WWTP discharge.

Given the diffuse discharge to groundwater and subsequently the Pōrangahau River, adverse effects of the proposed discharge on the water quality of the Pōrangahau River are **predicted to be negligible** (Beca, 2021:P:D.25).

In summary, the proposed development is considered to be consistent with the HBRC RRMP water quality objectives. By removing a significant amount of nutrients from the catchment, the development will contribute towards improving the downstream water quality and ecology of the Pōrangahau River and its catchment.

Effects to Pōrangahau River Catchment

Beca (2021:P:D.25) states that the existing Pōrangahau WWTP, Te Paerahi WWTP and the Discharge Property contributes a mass-load of 3.42 T/yr of total nitrogen and 0.23 T/yr of total phosphorus to the Pōrangahau River Catchment respectively. This amounts to 2.49 % and 2.01 % of the total Pōrangahau Catchment nutrient load, measured at the nearest HBRC water quality monitoring location at Kate's Quarry.

From the Discharge Property, the mass load of total nitrogen is predicted to be greatest at Stage 2, with this reducing at Stage 3. Nitrogen loads increase from the baseline (Stage 0) 2.35 T/yr, 2.55 T/yr in Stage 1, to 3.49 T/yr Stage 2a and 3.30 T/yr at Stage 3. Discharge Property phosphorus load contributions increase from 0.07 T/yr (baseline), to 0.09 T/yr in Stage 1 to 0.16 T/yr in Stage 2 and 0.21 T/yr at Stage 3. Table 11.1 summarises the mass loads at each stage and Figure 11.1 shows them graphically. This is a notable improvement in a catchment where high phosphorus concentrations have been noted historically.

Table 11.1: Total Nitrogen and Total Phosphorus mass load calculations for each development stage for Pōrangahau, Te Paerahi and Discharge Property Farm (Beca, 2021:P:D.25).

Total Nitrogen (T/yr)					Total Phosphorus (T/yr)			
	Pōrangahau WWTP	Te Paerahi WWTP	Discharge Property	Total	Pōrangahau WWTP	Te Paerahi WWTP	Discharge Property	Total
Stage 0	0.70	0.37	2.35	3.42	0.10	0.05	0.07	0.23
Stage 1	0.49	0.00	2.55	3.14	0.07	0.00	0.09	0.18
Stage 2	0.00	0.00	3.49	3.49	0.00	0.00	0.16	0.16
Stage 3	0.00	0.00	3.30	3.30	0.00	0.00	0.21	0.21

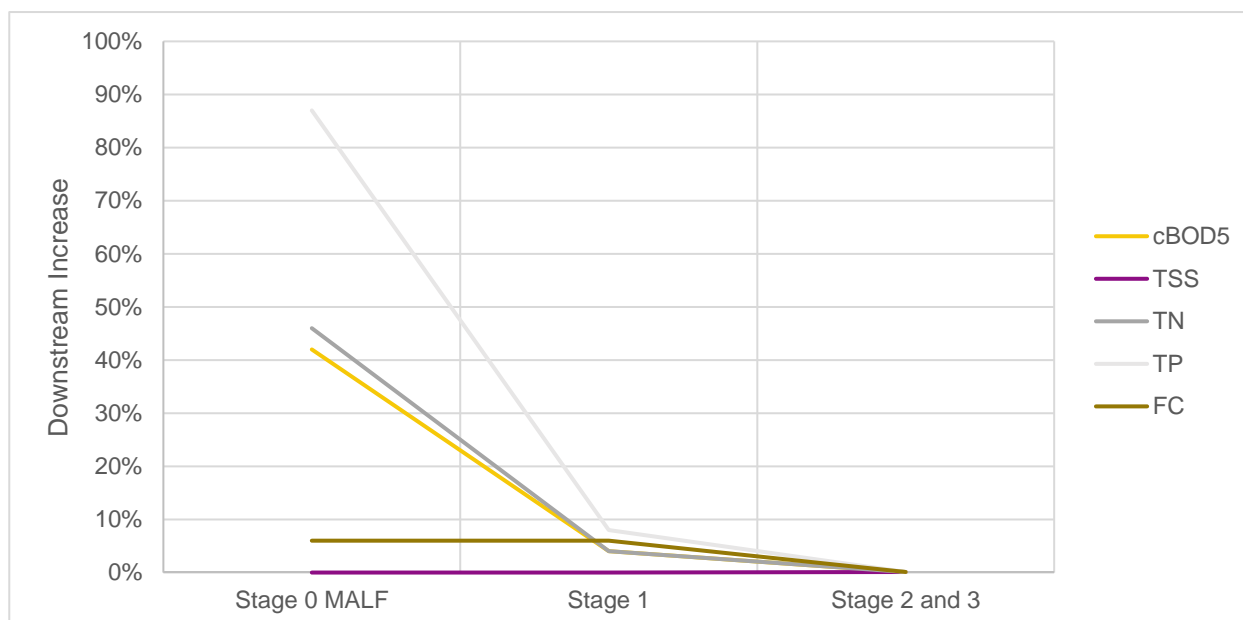


Table 11.1: Downstream contaminant mass-balance percentage increases for each development stage (Beca, 2021:P:D.25).

Overall, the expected effects of the Stage 3 component on surface water is considered to be less than minor.

11.1.6 Effects on River Ecology

There are four potential ecological effects that have been considered for the discharge property (Beca, 2021:P:D.66). These are degradation of water and habitat quality, alterations to hydrology and risk of erosion, excessive growth of nuisance aquatic plants and altered vegetation composition.

The overall ecological effect of the proposal is considered to be very low assuming the recommendations outlined in Beca (2021:P:D.66) are implemented. This includes:

- Ongoing monitoring to ensure eco-toxicity thresholds for freshwater fauna are not exceeded in watercourses through the Discharge Property;
- Fencing of intermittent watercourses to exclude stock; and
- Riparian planting of intermittent watercourses to mitigate any potentially adverse effects on water and habitat quality.

This means that there is only anticipated to be a very slight change from existing baseline conditions. Over long-term time scales (15 - 25 years), a net gain in ecological value is likely due to reductions in pollutants entering the Pōrangahau River and Estuary (Beca, 2021:P:D.66).

11.1.7 Effects on Coastal Environment

The overall ecological effects on coastal ecology are assessed as low as outlined in Beca (2021:P:D.65). This assessment is based on the water quality assessment across the three stages of upgrade (Beca, 2021:P:D.25) that demonstrates that there is no significant increase in nutrients discharged in the Pōrangahau estuary and that in the long-term, a reduction in nutrient mass loads discharged via land into the estuary (when compared to the existing surface water discharges) is highly likely.

11.1.8 Effects on Air Quality

Odours from the existing WWTPs, as well as the future combined WWTP are/will be generally of low intensity and readily dissipate within the WWTP's boundaries. Where odours become apparent these usually indicate significant failures of treatment processes and performance. The WWTP operators will have become aware of the treatment problems and are generally able to remedy the treatment processes long before there is any risk of generating offensive or objectionable odours beyond the WWTP boundaries.

The combined WWTP to be constructed is still to be designed with its layout to be determined. As mentioned, this will be constructed on the sand dune ridgeline running through the property with a conceptual layout shown in Figure A4. From this position, the nearest dwelling will be located >500 m north of the property. The outer extent of the Te Paerahi township will be within 1.5 km of the constructed plant, however it is likely odours outside of the normal range for odour strengths and types are not expected to be greater than typical odours created by surrounding rural activities.

The nearest dwellings to the irrigated property boundary are approximately 270 m north and south of the property as shown in LEI (2021:P:D.10).

The mitigation methods to avoid adverse effects to air quality due to discharges from the irrigation of wastewater are:

- Maintain aerobic conditions in treatment facilities and storage ponds;
- UV treatment of wastewater to reduce pathogen levels;
- Adoption of separation distances between irrigation and any receptors. Across the property, there will be a minimum separation distance of 5 m from the wastewater irrigated area to any property boundary, 20 m to any sensitive environment or waterway, and 150 m separation to any dwelling for all wastewater application; and
- The Discharge Property is located in a down-wind position from the townships based on the predominant wind directions.

11.1.9 Effects on Cultural Values

The Māori World view report (How, 2020:A:B.42) provides an interpretation of wastewater management. Clearly discharges of wastes need to be mitigated, with transformations from tapu to noa. This inevitably requires passage through Papatuanuku, a practice that will occur.

A CIA is being finalised, which will assess the aspects of the land application system and diffuse discharge to the Pōrangahau River. In the absence of the CIA, it is clear that the proposal would see 100 % of Pōrangahau and Te Paerahi's wastewater irrigated to land (by Stage 3). This seeks to address the direction given by tāngata whenua in the initial engagement.

11.1.10 Effects on Natural Hazards

The operation of the current discharges and future discharges will not have an impact on natural hazards, however, natural hazards may impact on the system. Should there be an event, such as earthquake, flood, or tsunami then many other infrastructure components in the immediate area will be compromised and the effects of this operation being compromised (and effects) will be largely insignificant.

The most significant impact may be that of flooding, and for two reasons. Firstly, the lower alluvial plain (parts of IMU1 and IMU2) is within the HBRC identified 1:100 flood plain. The most recent instance of flooding of this flood plain was the 2004 February floods which severely impacted the Lower North Island. Despite no recent records of flooding in the years following this event, there is nevertheless the potential for inundation of a portion of the irrigation area to occur again. Should this area flood there are easily applied mitigation measures that will allow the area to be quickly remediated. Further, there will remain a large area (higher elevated sand dunes in excess of 40 ha) that can continue to be used which will not be flooded. The future WWTP and storage pond will be located on these higher elevated sand dunes and are not expected to be at risk of flooding.

In addition to flooding, a tsunami in response to an earthquake event poses a risk to the irrigation property and infrastructure. Although infrequently occurring, these events could cause significant damage to the Pōrangahau area. HBRC identify the low elevated alluvial plain of the Discharge Property to the north-east (IMU2) as well as the drain channels to the south as being most at risk, with the remaining property area being on alert (Figure 4.3). Within the Pōrangahau/Te Paerahi area in proximity to the two WWTPs, there is no alternative land available for wastewater discharge that is relatively flat and contains rapidly draining sand dunes, that resides outside of these tsunami hazard boundaries.

11.1.11 Summary of Effects on the Environment

Overall, the effects of the wastewater discharges from the Pōrangahau and Te Paerahi and future combined wastewater treatment plants on the local receiving environment, being the soil, groundwater and surface water (Pōrangahau River), will be less than minor. Table 11.1 outlines the potential risk and actual effects associated with the land discharge regime.

Table 11.1: Potential Risk and Actual Effects from Wastewater to Land

		Sensitivity	Source / Contaminant			
			Organic matter Nitrogen Phosphorus	Pathogens	Water	Wastewater
Receptor / Pathway / Vector	Soil	Potential risk	Low	Moderate	High	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Groundwater	Potential risk	High	High	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Surface water	Potential risk	High	Low	Low	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Coast	Potential risk	High	Moderate	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Habitat	Potential risk	High	Moderate	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A
	Cultural	Potential risk	N/A	N/A	N/A	High
		Actual effect	N/A	N/A	N/A	Less than minor
	Air	Potential risk	Moderate	High	Moderate	N/A
		Actual effect	Less than minor	Less than minor	Less than minor	N/A

11.2 Evaluation Against relevant statutory provisions

The Statutory Evaluation (Beca, 2021:P:D.90) provided in Appendix L provides a thorough assessment of all planning provisions, including Part 2 of the RMA.

The following provides a summary of that evaluation including the relevant NPS, NES, RPS and RRMP provisions.

11.2.1 National Policy Statement – Freshwater Management (NPS-FM)

The concept of Te Mana o te Wai within the NPS-FM indicates the importance of restoring and preserving the balance between water, the wider environment and the community, and to all aspects of freshwater management. The proposal is not expected to impact the health of freshwater, and in fact is expected to assist with improving its health.

The relevant provisions of the NPS - FM have been considered for the Discharge Property and are included in the Statutory Evaluation (Appendix L). In summary, the proposal represents a staged approach to improving and preserving the surface water quality of the Pōrangahau River by transferring treated wastewater flows to land irrigation (Objective 1(a)).

The Te Paerahi and Pōrangahau public water treatment plant supply is located across and predominantly upgradient of the Discharge Property as confirmed by the conceptual groundwater model and assessment of proposed Pōrangahau wastewater disposal field (T+T, 2021:P:B.14a), and concludes that the ground infiltrated wastewater is not expected to migrate towards the public water supply bore. This proposal also forms part of and provides for a lifeline utility (WWTP) for the community of Te Paerahi and Pōrangahau (Objective 1(b)).

The proposal is a long-term solution that will provide for the social and cultural wellbeing of the community into the future through improved wastewater treatment and management by removing discharges from the Te Paerahi dunes and Pōrangahau River to a combined Discharge Property. The continued operation of the Te Paerahi and Pōrangahau WWTPs provides essential facilities for sewage disposal for both Te Paerahi and Pōrangahau townships providing for the health and needs of both communities (Objective 1 (c)).

11.2.2 National Environmental Standard for Freshwater 2020 (NES-F)

The NES-F regulates the undertaking of activities that pose risks to freshwater and freshwater ecosystems and rules specifically relate to works in, or adjacent to, wetlands, structures in waterbodies that may impact on fish passage and the diversion or reclamation of water bodies.

NES-F regulations 46 and 47 apply to the maintenance and operation of specified infrastructure within 100 m of a natural wetland. Guidance on the definition of natural wetland' has recently been provided in the *Interpretation guidance on the wetlands definition in the NPS-FM and Freshwater NES* (Exposure draft 7 April 2021).

The Discharge Property ecological report (Beca 2021:P:D.66) addresses the NES – F provisions with a desktop and field assessment of ecology, hydrology, wetland and catchment characteristics in accordance with the Landcare Research wetland delineation procedure. Two potential wetland areas within the Discharge Property were identified, however, the results of the wetland classification in relation to the wetland delineation protocol and NPS-FM (Clarkson, 2018; NPS-FM, 2020) indicate that both potential sites fail the pasture test of 'natural wetlands' as the Discharge Property has been used and managed for livestock grazing pre NPS-FM.

The proposed irrigation is therefore not located within 100 m of 'natural' wetlands (failed pasture test) and the regulations under the NES-F do not apply. Nevertheless, the Discharge Property ecological report

(Beca 2021:P:D.66) has assessed the impacts of the proposal on the wetland beside the Pōrangahau River and concludes that the overall level of effect is *low* (i.e. less than minor) and not expected to result in any loss of potential ecological value.

11.2.3 National Environmental Standard for Sources of Human Drinking Water 2007 (NES-DW)

The proposed works are subject to the provisions of the NES-DW as the nature of the discharge (being treated wastewater) has the potential to contaminate registered sources of drinking water to greater than 501 people.

Regulations 7, 8 and 10 of the NES-DW apply to activities specifically upstream of an abstraction point. As noted previously, the hydrogeological memo (LEI, 2021:P:B.14c) and the T+T groundwater report (T+T, 2021:P:B.14a) has identified that the Discharge Property is adjacent and predominantly down gradient from the Te Paerahi Pōrangahau Water Treatment Plant (WTP) located at 425A Beach Road, Pōrangahau (400m east of the nearest point of the Discharge Property). The report concludes that the risk of contaminants from the Discharge Property migrating through the shallow aquifer to the bore is very low and poses less risk than the existing discharge directly to the river.

Regulation 12 applies to an activity that has the potential to affect a registered drinking-water supply which the proposed activity in this instance applies (discharge of treated wastewater to land that enters groundwater). When considering a resource consent application, a consent authority must consider whether the activity could lead to an event occurring that may have a significant adverse effect on the quality of the water at any abstraction point or, as a consequence of an event (for example, an unusually heavy rainfall) have a significant adverse effect on the quality of the water at any abstraction point.

If the consent authority considers that the above circumstances could occur, then a condition on the consent must be imposed. As noted in section 6 and in the proposed conditions of consent (Appendix E), there are numerous mitigation measures that will be imposed as conditions of consent that will address Regulation 12 of the NES-DW.

11.2.4 New Zealand Coastal Policy Statement (NZCPS)

The New Zealand Coastal Policy Statement (NZCPS) is a national policy statement under the RMA. One of the key issues identified in the NZCPS is poor and declining coastal water quality in many areas as a consequence of point and diffuse sources of contamination, including stormwater and wastewater discharges. An assessment against the objective and policies of the NZCPS relevant to this proposal is provided in the Planning Evaluation report (Beca,2021:P:D.90).

In summary the proposal will remove direct discharges to the Pōrangahau River and coastal estuary and the discharge to the Te Paerahi dune environment and transfer it to a land-based irrigation system within a pastoral site. The removal of these direct discharges will enhance natural biological and physical processes in the coastal environment and will safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land.

Overall, through the conclusions provided in the relevant technical assessments it is considered that the proposal is consistent with the objectives and policies of the NZCPS.

11.2.5 Regional Coastal Environment Plan (RCEP)

The Hawke Bay Regional Coastal Plan (RCEP) enables the HBRC to promote the sustainable management of the natural and physical resources of Hawke's Bay's coastal environment. The Discharge Property is located within the Coastal Margin in between mean high water springs and the Coastal Environment Inland Boundary identified on the Planning Maps. Hence the provisions of the RCEP apply and these have

been assessed in the Statutory Evaluation (Beca, 2021:P:D.90) report. The following is a summary of the RCEP provisions.

The proposal is consistent with the objectives and policies of the RCEP. The discharge property soils are suitable for the application of wastewater under appropriate management practices consistent with the land resources Policy 8.1. Based on the findings of the surface water quality report the proposal exhibits an overall improvement of water quality and catchment nutrient budgets in the lower Pōrangahau River and coastal environment and the effect on surface water quality is consistent with the environmental guidelines set out in Objective 9.1 and Policy 9.1 and 9.2A. The proposal is consistent with the groundwater quality objectives 11.1, 11.2 and policies 11.1 and policy 11.2A. The proposal is consistent with the air quality Policy 14.1 as odour from the irrigated wastewater is expected to be undetectable at the property boundary.

Overall, the proposal is considered consistent with Policies 2.4, 2.6 and 2.9, associated with the adjacent Significant Conservation Area (SCA) Natural Character as the improved water quality outcomes in the Pōrangahau River will contribute towards preserving the natural character of the coastal environment, providing for wastewater services while maintaining and enhancing the coastal environment existing amenity and cultural values. The coastal and Discharge Property ecological assessments provide overarching assessments on indigenous species and habitats in the coastal environment and with the implementation of fencing and planting of riparian and coastal margins and monitoring of freshwater indicators the proposal is consistent with the indigenous species and habitats RCEP Policies 4.1 – 4.4.

The existing WWTP discharge to the Te Paerahi dunes will cease and the existing treatment and discharge infrastructure will be removed. Restoration of the natural dune environment including restoration planting using indigenous species will likely be undertaken consistent with Policy 4.5. Management of the Discharge Property includes buffer setbacks around identified coastal hazard areas will mitigate the risks associated with coastal erosion and inundation, consistent with Policy 15.1.

11.2.6 Hawkes Bay Regional Resource Management Plan (RRMP)

The RRMP incorporates the provisions of the Regional Policy Statement (RPS). The relevant objectives and policies have been assessed in the Statutory Evaluation (Beca, 2021:P:D.90) report. The objectives and policies of the RPS assessed include;

- Integrated Land Use and Freshwater Management;
- Managing the Built Environment;
- Surface Water Resources;
- Maintenance and Enhancement of Physical Infrastructure; and
- Recognition of Matters Significant to Iwi and Hapu.

The relevant RRMP policies for the proposal include **groundwater** Policies 17, 18, 75 and 76, **surface water** Policies 71 and 72 and **air quality** Policy 69.

Other policies considered relevant include PC7 Outstanding Water Bodies (OWB) policies which address specific cultural and spiritual values and ecology (habitat for native aquatic birds)) associated with the OWB. The Pōrangahau River and Estuary downstream of the Beach Road Bridge has been identified as an OWB (OWB 11) in Schedule 25 of the RRMP (PC7). These policies are assessed in the Statutory Evaluation (Beca, 2021:P:D.90) report.

The following table provides a summary of the technical assessments that address each policy and the matters to address under the RRMP (includes RPS).

Table 11.2: Technical reports addressing relevant RRMP policies

RRMP Policy	Matters to Address	Technical Reports/Assessments	Report ID
Policies 47a, 71, 72 and 72A (Surface Water Quality)	Water quality assessment against the Environmental guidelines set out in the RRMP (Table 7 and Table 8). This will address the impacts on the surface water quality of the Pōrangahau River.	<i>Pōrangahau and Te Paerahi Wastewater - Water Quality Assessment</i>	Beca, 2021:P:D.25
		<i>Pōrangahau Wastewater Discharge to Land - Ecological Impact Assessment</i>	Beca, 2021:P:D.66
Policy 17, 18, 75 and 76 (Groundwater Quality)	Groundwater quality assessment against the Environmental guidelines set out in the RRMP (Table 10).	<i>Background Groundwater Conceptual Model</i>	T+T, 2021:P:B.14a
Policy 69 (Air Quality)	The discharge should not cause offensive or objectionable odour, beyond the boundary of the subject property.	<i>Discharge to Land of Pōrangahau and Te Paerahi Wastewater Assessment of Environmental Effects: Land Application.</i>	LEI, 2021:P:D.10
PC7 – Outstanding Water Bodies (OWB) Policies LW3A 1(a), C2 1(a) and C2 1(e)(i)	Extent of the effects specifically on the cultural and spiritual values (CIA) and ecology (habitat for native aquatic birds) of OWB11 need to be assessed. The appropriateness of the location of the activity needs to be articulated (BPO report) in consideration of the identified OBW values and whether the adverse effects on the indigenous biological diversity (biodiversity) values description set out in Policy 11(a) and 13 of the NZCPS can be avoided	<i>Pōrangahau Wastewater Discharge to Land: Coastal Ecology Assessment.</i>	Beca 2021:P:D.65
		<i>Pōrangahau and Te Paerahi Wastewater - Water Quality Assessment</i>	Beca, 2021:P:D.25
		Cultural Impact Assessment - PENDING	PENDING
		<i>Pōrangahau and Te Paerahi Wastewater Treatment and Discharge - Best Practicable Option Report</i>	LEI, 2021:P:C.12
POL 62, 64, 65, 66 (Matters of Significance to iwi/ hapu)	Assessment of adverse effects on cultural aspects and matters considered significant to iwi and hapu.	<i>Cultural Impact Assessment</i> PENDING	PENDING

Overall, the proposal is consistent with the RPS and RRMP policies including groundwater Policies 17, 18, 75 and 76, surface water Policies 71 and 72 and air quality Policy 69 and OWB policies LW3A 1(a), C2 1(a) and C2 1(e)(i).

12 NOTIFICATION

The process for determining notification of resource consents by Councils processing resource consents is set out in section 95 of the RMA. The premise of notification is to provide affected parties and stake holders the opportunity to comment and input into the proposed activity and how the proposed activity may affect them.

The notification test set out in section 95 includes determining whether public notification is mandatory, precluded or required in certain circumstances. If a resource consent is not publicly notified there is then a determination as to whether the consent should be limited notified to those parties required to be notified (i.e. customary rights groups and/or customary marine title groups) or those parties deemed affected, or if there are special circumstances to warrant limited notification.

For the land discharge consenting of the proposed short and long-term solution for Te Paerahi and Pōrangahau, it is recommended that the land discharge application is publicly notified as the works involve community infrastructure i.e. holds public interest in terms of investment, and the proposal has potential adverse effects on the Pōrangahau River and coastal environment (which holds public and cultural interests).

The general consenting approach has been to publicly notify the consents in the past to allow community interests to be considered through due process.

13 CONCLUSIONS

13.1 Pōrangahau

Overall, the effects of the wastewater discharges from the Pōrangahau wastewater treatment plant on the local receiving environment, namely the Pōrangahau River, will be less than minor for of the majority of river flow conditions. However, during certain conditions there is a theoretical potential for moderate effects, namely faecal coliforms and nitrogen.

Specific consideration has been given to the proposed short-term consent durations of 9 years for Pōrangahau WWTP discharge, and taking Section 8.2.4 of the RRMP into account, this is considered an appropriate approach to take regarding the term of the consents sought.

It is considered that the interim discharge consent application is broadly consistent with the relevant objectives and policies of the relevant statutory provisions. The exception is Policy 71 of the RRMP for faecal coliforms and ammoniacal nitrogen during low flows of the Pōrangahau River. However, it is noted that the existing water quality of the Pōrangahau River is degraded above the discharge location and Policy 72 provides a process for assessing degraded water quality, provided the activity does not cause significant adverse effects on aquatic ecology and contact recreation.

13.2 Te Paerahi

The overall effects of the wastewater discharges on the coastal dune will be less than minor. Specific consideration has been given to the proposed short-term consent durations of 6 years for Te Paerahi WWTP discharge, and taking Section 8.2.4 of the RRMP into account, this is considered an appropriate approach to take regarding the term of the consents sought. It is considered that the interim discharge consent application is broadly consistent with the relevant objectives and policies of the relevant statutory provisions.

13.3 Combined

The overall effects of the discharge to land are considered to be less than minor, with many positive effects likely as a result of the irrigation.

Despite a potential for some nutrient loss from the discharge to land system to groundwater and then the river, the wider impact of the proposal is considered less than minor and will contribute towards achieving beneficial social and cultural outcomes through the steady diversion of treated wastewater discharge from the river and dunes to adjacent farmland.

The UV treatment and likely nutrient attenuation of treated wastewater through on-site soils will further contribute to water quality improvements for the Pōrangahau Catchment, thus, satisfying positive water quality directives outlined in the NPS:FM, the RCEP, and the future HBRC RRMP Plan Changes. The beneficial effects associated with the reduction of the direct discharge to the Pōrangahau River is consistent with the local communities, tāngata whenua and regional and national directives.

The proposal is consistent with Part II of the RMA and the objectives and policies of the NPS-FM, NZCPS and RPS. The proposal is largely consistent with the relevant objectives and policies of the RRMP. The proposal has considered and addressed the relevant provisions of the NES-F and NES-DW.

Overall, it is therefore considered appropriate to grant consent pursuant to section 104B and 108 of the RMA.

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15 APPENDICES

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- Appendix C Affected Party Approval
- Appendix D Records of Title
- Appendix E Proposed Consent Conditions
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APPENDIX A

Figure A0: Reporting Structure

Figure A1a: Te Paerahi Site Location

Figure A1b: Pōrangahau Site Location

Figure A1c: Discharge Property Location

Figure A2: Irrigation Layout

Figure A3: Monitoring Location Map

Figure A4: Treatment and Storage Concept Plan Layout

APPENDIX B

Community Engagement Record

APPENDIX C

Affected Party Approval

APPENDIX D

Records of Title

APPENDIX E

Proposed Consent Conditions

APPENDIX F

Schedule IV RMA Checklist

APPENDIX G

Customary Marine Title Applicant

APPENDIX H

**Discharge to Land of Pōrangahau and Te Paerahi
Wastewater – Assessment of Environmental Effects: Land
Application
(LEI, 2021:P:D.10)**

APPENDIX I

Pōrangahau and Te Paerahi Wastewater – Water Quality Assessment (Beca, 2021:P:D.25)

APPENDIX J

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

APPENDIX K

Pōrangahau Wastewater Discharge to Land: Coastal Ecology Assessment (Beca, 2021:P:D.65)

APPENDIX L

**Pōrangahau and Te Paerahi Long Term –
Planning Evaluation (Part B) Discharge to Land Consent –
Discharge Site
(Beca, 2021:P:D.90)**

APPENDIX M

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

APPENDIX N

Te Paerahi Wastewater Treatment Plant Discharge – Water Quality Assessment (Beca, 2021:P:D.60)



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