Ruakākā Wastewater Treatment Plant Land Discharge

Concept Design Report

Prepared for Whangarei District Council
Prepared by Beca Limited

5 September 2025

Contents

Revision History

Revision N°	Prepared By	Description	Date
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Document Acceptance

Action	Name	Signed	Date
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on behalf of	Beca Limited		

Executive Summary

Whangārei District Council (WDC) has engaged Beca Ltd to assess interim land disposal options for the Ruakākā Wastewater Treatment Plant (WWTP) ahead of a planned plant upgrade around 2030. The concept design evaluates the feasibility of discharging up to 2,500 m³/day of treated wastewater to designated land areas—Rama Road, Zone 3 (Z3), Zone 6B (Z6B), and Zone 7 (Z7). The assessment includes layout plans and construction methodology for new disposal infrastructure in Zones 6B and 7.

WDC have developed flow projections with a conservative flow allowance to provide resilience against higher rainfall or unexpected growth. Recent treated wastewater quality data shows high levels of suspended solids and nutrients. Treatment via soil processes is recommended for the discharge. The pond system's capacity for increased flows has not been evaluated within this scope.

The current disposal area at Rama Road covers 11.8 hectares, with existing dual pump/pipeline systems distributing flows between Rama Road and Z3. For the interim period continuing using perforated pipe distribution, similar to the existing system, is preferred due to wastewater characteristics. This disposal method will minimise vegetation disruption and reduce operational complexity. Three workstreams were considered; the preferred option splits flow between Rama Road and Z6B and Z7 over 18.4 hectares (excluding buffers) while retaining current limits for Z3, enabling flexibility and minimising infrastructure investment for the interim period. This option utilises the existing consented flows at Rama Road with additional flows to Z6B and Z7.

Several utility services are present adjacent to the discharge zones including overhead power lines and underground gas. Buffer zones have been included to wetlands, boundaries, and public access routes. Operational measures proposed include wind cut-off controls, fencing, signage, and restricted public access to the irrigation areas and infrastructure.

Construction involves weed clearance, local contouring for pipeline layout, mostly above-ground installation of pipes/valves/cabling, native planting adjacent to infrastructure, and commissioning over an estimated two to three months following site preparation.

Detailed design will need to further consider automation requirements, power and gas service locations, maintenance/flushing provisions for pipelines, buffer implementation around sensitive areas and fencing/signage.

This interim disposal solution will support ongoing development in the Ruakākā area while maintaining compliance until the long-term WWTP upgrades are completed.

1 Introduction

1.1 Purpose

Whangarei District Council (WDC) have commissioned Beca Ltd (Beca) to assess the feasibility of interim discharge to land options for the Ruakākā wastewater treatment plant (WWTP). This is based on discharging 2,500 m^3/day as an annual average flow capacity to land areas - Zone 3 ("Z3"), Zone 6B ("Z6B"), Zone 7 ("Z7"), and Rama Road block, as outlined below.

Figure 1-1: Disposal Areas for R-WWTP Treated Wastewater.

1.2 Background

The WWTP is located on Marsden Point Road with the current treated wastewater discharge being directed to Z3 and Rama Road. A future plant upgrade is scheduled for completion around 2030.

The resource consent allows discharge of up to 1,030 m^3/day to Rama Road between April to September and 1,700 m^3/day between October to March as annual (6 monthly) averages, not allowing for peak limits. For Zone 3 an annual average discharge of 660 m^3/day is permitted. No change is proposed to Zone 3.

WDC is planning an interim expansion of the plant discharge capacity into adjoining land areas and/or an increase to the existing discharge capacity at the Rama Road site to allow for discharge requirements until the future upgrade. The interim expansion will remove the current limitation on commercial/domestic land development in the area, imposed by WDC, as a result of the WWTP approaching the volumetric resource consent conditions for land discharge. Treatment and discharge solutions for the long-term flow projections are currently being investigated by WDC in parallel to the interim discharge work.

The existing Rama Road system consists of k-line pods in the pasture area (refer Figure1-2) and perforated distribution lines with 2mm holes in the top of a 110mm OD PE pipe (refer Figure 1-3). The holes are drilled at 2m centres and the distribution lines are about 40m apart. Flushing valves are located at the ends of the distribution lines. The disposal system is supplied by 2 pumps and dual pipelines.

Figure 1-22: K-line Pasture Disposal Area in Rama Road Block

Figure 1-3: Perforated Distribution System Area in Rama Road Block

In 2008, a concession application was lodged to irrigate treated wastewater to Zones 6(A & B) and 7. A rapid infiltration system was proposed for Zone 6 with a ring main pipe arrangement buried around the edge with gravel trenches at 500mm centres. This system would have an application rate of 12mm/day. For Zone 7 a surface or sub-surface drip irrigation system with a 6mm/day application rate was proposed with a filter to

minimise clogging. The concession application was withdrawn when the Rama Road block was developed instead. Zone 6A is not included in the current disposal concept.

1.3 Scope

A concept design for the different disposal options (workstreams) for the interim period until the future WWTP upgrade, assessed over the above areas including Rama Road, has been included alongside a layout plan for the options and indicative construction methodology for new Zones 6B and 7. Groundwater modelling and assessment of the potential environmental effects for the options are also being considered to assist in finding the recommended interim solution but are not included in this report.

2 Basis of Design

Historical WWTP flow data provided by WDC has not been included within the report due to the periods of instrumentation error, missing data and fluctuations resulting from external influences such as local sewer rehabilitation.

As directed by WDC, based on flow data for the early part of 2025 with an allowance for growth, future flow has been forecast to provide an indication of total disposal requirements. This is shown below in Figure 2-1. This includes expected growth with the restriction on development in place until 2026 plus a 100 m^3/day/year increase from other developments after the restriction is lifted.

A conservative flow allowance of 2,500 m^3/day until 2031, the year beyond the forecast WWTP upgrade, allows for the WDC to meet consent during years of higher rainfall as well as offering resilience if growth rates are greater than estimated. If the assessment shows that this can be further increased to 2,700 m^3/day to offer greater resilience, this will be considered in the preferred option.

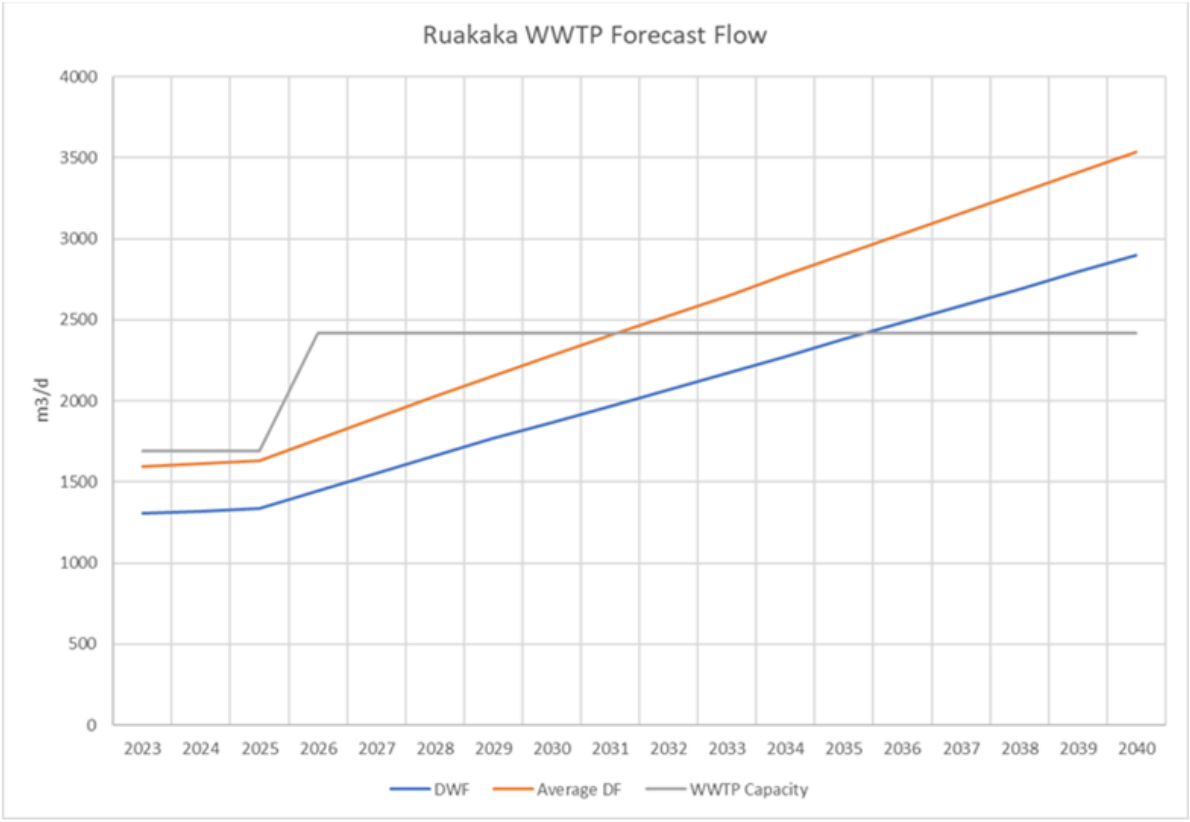


Figure 2-1: Ruakākā WWTP Forecast Flow (WDC).

Based on quality data from the treatment plant for the period 7/07/2020 to 6/03/2025, a summary of the treated wastewater quality from the treatment plant is included in Table 2-1.

Table 2-1: Treated Wastewater Quality Summary.

	Total Suspended Solids - TSS (mg/L)	Carbonaceous Biochemical Oxygen Demand - $CBOD_5$ (mg/L)	Ammoniacal-N (mg/L)	Total Nitrogen (mg/L)	Total Phosphorus (mg/L)	E. Coli (cfu/100 mL)
Median	105	41.5	38.1	50	5.62	2,100
Max	307	77	52.2	88	11	860,000
95th%ile	259	72.5	50.8	69	9.44	184,500

The treated wastewater quality is of a level that further treatment within the discharge to land system is recommended, i.e. utilising the physical and microbial processes which occur within the top layer of soil to reduce solids, organic matter, nutrients and pathogens prior to the treated wastewater draining to groundwater. The TSS levels are particularly high and variable and the pond system is achieving limited removal of nutrients. The Total Nitrogen and Total Phosphorus levels result in high loading rates, in excess of those envisaged under the proposed wastewater environmental performance standards. A consenting pathway independent of the wastewater environmental performance standards will be required. This will need to be reassessed once the final Wastewater Standards are published by The Water Services Authority (Taumata Arowai) later in 2025.

It is assumed that the treated wastewater quality will remain similar to existing. The ability of the pond system to treat increased flows and loads has not been assessed as part of the scope of this report.

3 Concept Design

3.1 Disposal Areas

Using the cartesian polygon area for each of the zones the disposal area has been calculated (refer Table 3-1).

Table 3-1: Disposal Zone Areas.

Zone	Area (m^2)	Area (Ha)
Rama Road (30 m buffer on shared boundaries and actual application area in southern pasture)	118,639	11.8
Zone 3	41,314	4.1
Zone 6B (30 m buffer on western boundary, 30m buffer to access road)	15,107	1.5
Zone 7 (30m buffer to access road, 20m buffer to wetland)	50,604	5.1

The dual pump/pipeline disposal system has been historically run using a set point (generally 700 - 999 m^3/day), with the remaining flow directed via gravity to Z3. Currently WDC are directing up to 1,000 m^3/day to the Rama Road distribution zone with spikes slightly over on days where there is change between areas 1 and 2 for the k-line pods. The pods operate one area at a time for a week's duration. The flow split between the k-line area and the perforated pipe distribution area at Rama Road is not well understood but it is assumed that there is an even distribution between the k-line and drip areas.

Z3 is operating as an infiltration basin and is used regularly, particularly when flows are higher after rainfall events.

Based on the discharge consent limits provided in Section 1.2 and available flow data, current average discharges to Rama Road and Z3 are within the limits. There are no foreseen issues with retaining Z3 area as it is currently used for peak flows. However, it is difficult to monitor flows to Z3 to confirm compliance as only the transfer pipe at the lowest level goes through the flowmeter. Total Z3 discharge can be estimated based on inflow less Rama Road flows but could have significant errors due to issues such as rainfall, evaporation and seepage.

3.2 Disposal Method

A variety of disposal methods are used in New Zealand for municipal wastewater discharges. The type to be employed will depend on the quality of the wastewater and the characteristics of the site.

Reliable removal of algal solids from pond treated wastewater is complex and requires regular operational input. Solids removal would require significant investment in infrastructure such as a Dissolved Air Floatation (DAF) system and would take up to 2 years to implement if a suitable location at the WWTP could be found.

The table below outlines potential options for the disposal method. Only surface disposal with perforated pipe is considered suitable for this site due to the current quality of the wastewater and to minimize disruption to the current vegetation.

Table 34-1: Disposal Method Assessment.

Method	Suitability for 6B and 7	Comments
Sub-surface or surface drip irrigation	Unsuitable	The solids content of the wastewater is not suitable for sub-surface drip technology, would cause blockages. Can be difficult to remove if no longer needed. This type of irrigation may be suitable once the new WWTP is constructed and treated wastewater is a very high quality.
Perforated pipe distribution (same as existing)	Suitable	Proven method for this area. Can be removed easily if no longer needed. Requires flushing valves at the end of each line to avoid solids build up and blocking of holes. Potential risk for spray drift if pressures are set too high.
Spray irrigation (fixed or k-line)	Unsuitable	The dense nature of the existing vegetation would not allow good distribution with spray irrigation. More suitable for pasture. Potential for spray drift.
Soakage wells	Unsuitable	The nutrient and pathogen content of the wastewater requires treatment within the soil prior to drainage to groundwater. Difficult to remove from site if no longer needed.
Soakage trenches	Unsuitable	Large area required, potential for root intrusion, blockage and odour over time from solids in wastewater. Difficult to remove from site if no longer needed. Not suitable for slopes as operating under gravity arrangement.
Infiltration basin	Unsuitable	Zone 7 could operate as an infiltration basin but some treated wastewater would likely flow directly to the wetland adjacent to the seaward boundary and adversely impact the water quality and fauna in the wetland. Regular scarifying maintenance likely to be required to maintain the soakage surface open and free of algal build up.

3.3 Disposal Workstreams

Based on the combined pump flow rate of 26 L/s provided by WDC, the current treated wastewater pump/pipeline system is expected to be suitable for flows up to 1,840 m^3/day within the Rama Road block

and/or additional blocks. Further work will be needed at the next design stage to confirm flows/pressures and the suitability of the current pumps and pipelines.

Additional flow would require the pumps to run for longer periods. For Z6B and Z7, a perforated distribution system could be fed off the main feeder lines. Other types of disposal method don't appear suitable due to the reasons outlined in Table 4-1 above. Pressure compensating drip lines would get blocked due to the suspended solids levels in the treated wastewater and conventional spray irrigation is not suitable for the low-level scrub vegetation in Z6B and Z7.

It is recommended to retain the Z3 area for peak wet weather flows for all Workstreams as the instantaneous flow rate into the wetland ponds is likely to be much higher than 26 L/s so the wetland level would become too high if there wasn't an overflow via gravity.

The disposal workstreams originally investigated for a discharge of 2,500 m^3/day are outlined below:

1. Rama Road (1,840 m^3/day) + Z3 (660 m^3/day)
2. Z6B and Z7 (1,840 m^3/day) + Z3 (660 m^3/day)
3. Rama Road, Z6B and Z7 (1,840 m^3/day) + Z3 (660 m^3/day)

Under the workstreams above there would not be the need for any new equipment as the existing pumps would just run for longer. A new or upgraded control system with associated valves will be needed.

The proposed layouts for the different workstreams are provided in the figures below.

Figure 3-1: Workstream One: Rama Road + Z3.

Figure 3-2: Workstream Two: Z6B + Z7 + Z3

Figure 3-3: Workstream Three: Rama Road + Z6B + Z7 + Z3

The main difference between the different discharge Workstreams is the application rates (depth of treated wastewater applied each day on average). Both Workstream 1 and Workstream 2 increase the application rate compared to the existing situation as shown below. As Zone 3 is a soakage basin, an application rate has not been calculated as the area over which the soakage occurs has not been surveyed. No changes to flows to Zone 3 from what is allowed in the current consent are proposed.

Table 3-22: Disposal Zone Application Rates (excluding Zone 3)

Zone	Area (m^2)	Average application rate (mm/day)
Current consent – Rama Road (Apr-Sept) 1,030m^3	118,639	9
Current consent – Rama Road (Oct-Mar) 1,700m^3	118,639	14
WS 1 - Rama Road 1,840m^3	118,639	16
WS 2 - Zone 6B and Zone 7 1,840m^3	65,711	28
WS 3 - Rama Road, Zone 6B and Zone 7 1,840m^3	184,350	10

3.4 Preferred Workstream

A number of variations to Workstream 3 were considered during the groundwater effects modelling – referred to as Workstreams 4a, 4b, 5 and 6. These workstreams varied the split between Rama Road and Z6B/7. These changes would not significantly impact the disposal system concept design.

At a project team workshop on 4th August 2025, the preferred workstream was determined to be a split between Rama Road and Z6B/7 which retained the existing flow limits for Rama Road and Z3 and gave flexibility over the flow which could be applied to Z6B/7 whilst retaining the total annual average flow discharge of 2,500 m^3/day.

The Z6B/7 flow is expected to range between 660 to 1,040 m^3/day. Using the perforated pipe disposal method, which is similar to the existing Rama Road scrub block, will minimise infrastructure investment for the interim period and the WDC operations team are familiar with the operational and maintenance requirements. The infrastructure layout will be as per Workstream 3 (see Figure 4-3).

3.5 Utility Services

It should be noted that within the Z6B/7 area there are several utility services that will need to be navigated, including overhead transmission and underground gas and electricity. These are outlined as follows:

- A water supply main runs west of the maturation wetlands, supplying water to the wastewater pump station
- Overhead power transmission lines (220kV) are close to the Ruakaka Pipeline Road Track, between Z6B and Z7. The towers and overhead lines are generally within the 30m buffer area proposed alongside the track. The detailed design of the disposal pipe will need to avoid installation of distribution lines and perforated pipe within 10 m of the transmission line towers in Z7, a permit to dig may be required. Construction will also need to consider vertical separation to the overhead power lines which should be a minimum of 10m.
- A natural gas supply line follows the Ruakaka Pipeline Road Track as it travels west of the maturation wetlands, to the north-east end of the Rama Road zone (see Figure 3-4). It is proposed to connect to the existing pumped lines which could avoid any excavations within 2m of the gas supply line. A close approach permit may be required to confirm the location of the gas lines.

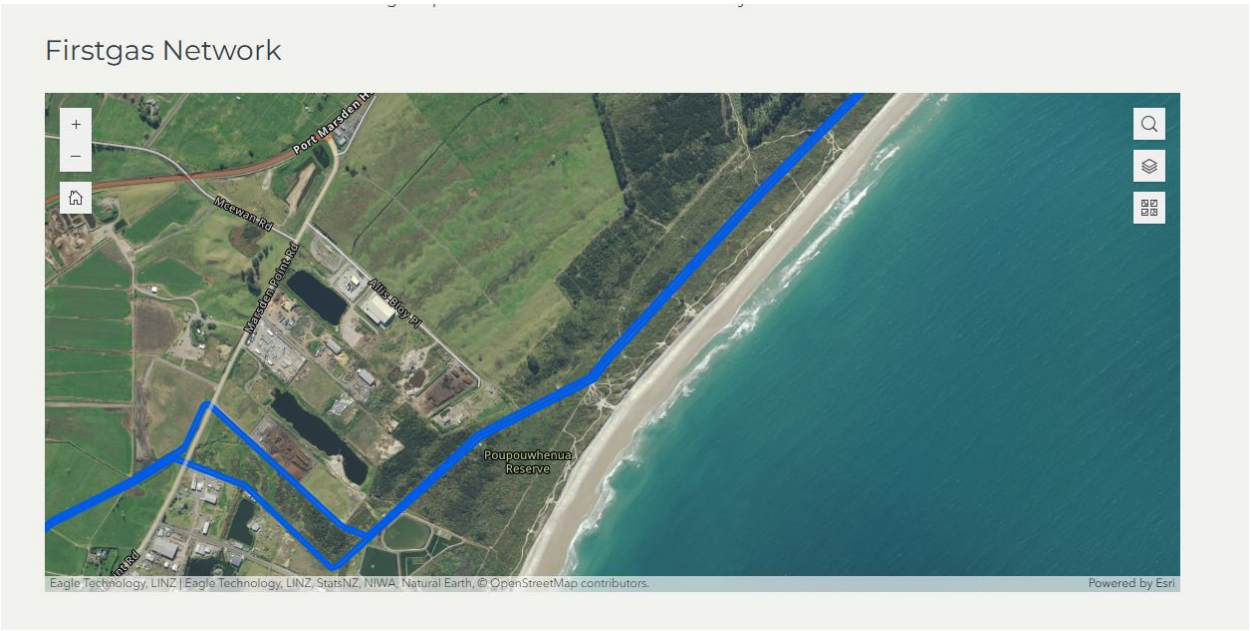


Figure 3-4: First Gas Pipeline Indicative Location

- A physical survey of power and gas locations will be required prior to detailed design.

3.6 Other considerations

Buffers are provided for the disposal system adjacent to boundaries with private properties. This is a 30m buffer for Rama Road along the boundary with the Meridian site. This buffer has been continued for Z6B.

The current operation has an automatic high wind cut off. This would need to be also implemented for any disposal on Z6B and Z7.

A 30m buffer is allowed for either side of the access track between Z6B and Z7 which can be used by the public to access the dunes and beach. This distance will mitigate the risk of exposure to aerosols from the disposal system.

A buffer of 20m is recommended around the small wetland area extending into/adjacent to Z7. This will mitigate any runoff into the wetland.

A more naturalised distribution pipeline layout ‘snaking’ through Z6B and 7 was considered but this would create challenges for maintenance of the system. Where possible, Kānuka could be limbed up to allow the lines to run straight while minimising the impact to the coastal Kānuka.

Public access is not recommended to blocks Z6B and Z7 to avoid actual or potential effects to human health and safety.

4 Construction Methodology

The construction methodology for the disposal pipework in Zones 6B and 7 is expected to involve:

- Weed spraying and selected vegetation clearance around the drip lines (due to the invasive weeds in the Zones 6B/7 it is not recommended that material is mulched but should be removed from site). This is likely to involve a small digger and a truck for vegetation removal.
- Localised contouring on Zones 6B and 7 (assumed to be up to 1m depth) may be required to provide for efficient pipeline layout and even flow distribution – small bulldozer or loader
- Placing of weed suppressant mat/material – small vehicle
- Installation of pipelines (assumed above ground), valves etc, extension and co-laying of valve control cabling (assumed to be up to 1m below ground) – trucks and digger
- Low growing native planting adjacent to pipelines – small vehicle
- Installation control system
- Commissioning

The construction methodology will be reviewed once the design of the additional disposal area is finalised. The duration of the disposal system construction for Z6B and Z7 is expected to be 2-3 months following weed spraying and invasive species clearance. The appropriate time of the year for spraying should be investigated.

5 Next Steps

The detailed design stage for Zones 6B and 7 will need to consider further:

- Pump, control system and automation requirements
- Location of electricity and gas infrastructure
- Any work required on site/s to provide for contour laying of surface pipelines to provide for even distribution of the pumped discharged flows
- Pipeline and valve design including provision for maintenance (particularly flushing) of distribution pipelines
- Buffer zones around wetlands and access tracks
- Planting plan and vegetation management
- Fencing and signage

Resource Consent

File: 21532
03, 04 and 06 to 09
Existing

02
Replacement

01, 05
Change

Document Date: 11 July 2019

Pursuant to the Resource Management Act 1991, the Northland Regional Council (hereinafter called "the council") does hereby grant a Resource Consent to:

WHANGAREI DISTRICT COUNCIL, WASTE & DRAINAGE DIVISION, PRIVATE BAG 9023, WHANGAREI 0148

To carry out the following activities associated with the operation of an existing wastewater treatment system and the construction, upgrading and operation of a new Ruakaka wastewater treatment plant, and the provision for the associated discharge of treated wastewater to land and to the coastal marine area:

Discharge Permits

AUT.021532.01.02 To discharge wastewater to land in a manner that it may enter water via seepage from the base of the Ruakaka Wastewater Treatment Plant on Sec 65 Blk VII Ruakaka SD (Sime Road), at or about location co-ordinates 1732700E 6029800N.

AUT.021532.02.02 To discharge treated wastewater to land in a manner that it may enter water via rapid infiltration basins at the Ruakaka Wastewater Treatment Plant site on Sec 65 Blk VII Ruakaka SD (Sime Road), at or about location co-ordinates 1732700E 6029800N.

AUT.021532.03.01 To discharge contaminants (mainly odour) to air from the Ruakaka Wastewater Treatment Plant site on Sec 65 Blk VII Ruakaka SD (Sime Road), at or about location co-ordinates 1732700E 6029800N.

AUT.021532.04.01 To discharge treated wastewater from the Ruakaka Wastewater Treatment Plant to land in a manner that it may enter water via subsurface irrigation on Lot 1 DP 396871 (known as Roger Hall Memorial Park, Takutai Place), at or about location co-ordinates 1731650E 6029100N.

AUT.021532.05.02 To discharge treated wastewater from Ruakaka Wastewater Treatment Plant into or onto land in a manner that it may enter water via surface irrigation on Lot 4 DP 419151 ("Rama Road Block", Rama Road), at or about location co-ordinates 1733400E 6030850N.

AUT.021532.06.01 To discharge contaminants (mainly odour) to air from surface irrigation of treated wastewater irrigation on Lot 4 DP 419151 ("Rama Road Block", Rama Road), at or about location co-ordinates 1733400E 6030850N.

Northland REGIONAL COUNCIL

Coastal Permits

AUT.021532.07.01 To discharge treated wastewater into Bream Bay via an outfall off Ruakaka Beach at or about location co-ordinates 1736025E 6028848N.

AUT.021532.08.01 To erect and place an ocean outfall structure in, on and under the foreshore and seabed of Bream Bay and the associated deposition of materials on, and disturbance of, the foreshore and seabed in the coastal marine area between approximate location co-ordinates 1733020E 6029630N and 1736025E 6028848N.

AUT.021532.09.01 To occupy and use the coastal marine area within Bream Bay with an ocean outfall structure between approximate location co-ordinates 1733020E 6029630N and 1736025E 6028848N.

Note: All location co-ordinates in this document refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection.

Subject to the following conditions:

GENERAL CONDITIONS

Inflow, Infiltration and Beneficial Re-use

1 The Consent Holder shall minimise the volume of treated wastewater discharged to land and to the coastal marine area by:

(a) Preventing, as far as is practicable, stormwater inflow and infiltration into the sewage reticulation network and treatment system. This shall include the prevention of stormwater run-off from the surrounding land entering the contingency storage pond system. For compliance purposes, this shall be determined using the daily wastewater inflow volume to the treatment system and rainfall records; and

(b) Providing wastewater that has been sufficiently treated for beneficial re-use within the community if there are parties who wish to take the product and it is of a scale to be economic for the Consent Holder.

Advice Note: *It is the intention that the New Zealand Refinery will by private arrangement take up to 2,000 cubic metres per day of highly treated wastewater for beneficial re-use.*

Management Plans

2 At least three months prior to initiating each activity authorised by the respective consents the Consent Holder shall prepare the Management Plans listed in Table 1. The Management Plans shall give effect to **Schedule 2** (**attached**) and may be prepared as separate plans or as part of a combined plan. The Management Plans shall be subject to the written approval of the Northland Regional Council's Monitoring Manager or their successor or nominee (hereafter referred to as "the Manager"). The consents shall thereafter be exercised in conformance with the approved Management Plans.

3 All Management Plans listed in Table 1 are to be prepared by a suitably qualified and experienced person with expertise in the matters that the individual Management Plan is to address.

4 If more than 24 months pass between the time that the written approval of the Manager is obtained for a Management Plan and the commencement of respective activities, then the Management Plan shall be reviewed by the Consent Holder to ensure that current best practice is reflected in it. If that occurs, the written approval of the Manager must be re-obtained prior to the respective activities commencing.

TABLE 1: Management Plans

	Consents
Construction Management Plan	All
Treatment Plant Operations and Maintenance Management Plan	01, 02, 03, 04, 05, 07
Treatment Plant Air Discharge Management Plan	03
Wastewater Discharge Management Plan for Zone 3	02
Wastewater Discharge Management Plan for Roger Hall Memorial Park	04
Wastewater Discharge Management Plan for Rama Road Block	05, 06
Ocean Outfall Construction Management Plan	08

Liaison Group

5 The Consent Holder shall, by providing reasonable organisational and administrative support for the duration of these consents, facilitate the development and on-going role of the Ruakaka Wastewater Liaison Group (the Liaison Group). The membership of the Liaison Group shall comprise a representative (subject to their agreement) of Patuharakeke Te Iwi Trust Board (Inc) (PTB), Bream Bay Land Owners Association (BBLOA), Ruakaka Parish Residents and Ratepayers Association, Ruakaka Economic Development Group, Ruakaka Surf Club, Bream Bay Action Group, Save our Harbour Collective, Bream Bay Coastal Care, Royal Forest and Bird Protection Society of NZ, the operator of the Bream Bay Aquaculture Park, OceaNZ Blue NZ, Mighty River Power, Northland Medical Officer of Health, Department of Conservation, Whangarei Fisherman's Association/Leigh Commercial Fisherman's Association and Northland Scallop Enhancement Company. The membership of this Group may be varied over the term of the consents, as agreed between the Consent Holder and the Manager. The role and functions of this Group shall include, but not be limited to:

(a) Receiving and discussing with the Consent Holder, the results of the consents compliance annual reporting and associated matters;

(b) Being consulted with by the Consent Holder either as a group or as individual members regarding the development of the Management Plans detailed in Conditions 2 and 4;

(c) Receiving from the Consent Holder periodic updates on, and providing input into, the on-going development and implementation of the Ruakaka Wastewater Strategy and the Wastewater Scheme and the Development, Technology and Environmental/Monitoring Review reports;

(d) Receiving and discussing with the Consent Holder updates on the progress of the beneficial reuse of treated wastewater from the Ruakaka Wastewater Scheme by the New Zealand Refining Company and other beneficial reuse options including industrial reuse and other land application reuse;

(e) Receiving a copy of the report on the Survey and Assessment of the Benthic Biota and Sediment Quality in the vicinity of the outfall as required under Condition 833;

(f) Receiving a copy of the report on the results of the near field mixing study to confirm the initial dilutions achieved by the outfall and diffuser as required under Condition 75;

(g) Receiving a copy of the notice to upgrade the treatment plant and/or discharge systems as required under Condition 11 and a copy of the design details and construction plans as required under Condition 13; and

(h) Receiving copies of all existing and any new Trade Waste consents to this wastewater treatment system.

6 The Consent Holder shall facilitate the Liaison Group meeting at least annually, and on other occasions when significant milestones associated with the implementation of the Ruakaka Wastewater Scheme are reached. These milestones include the planning for a new modular treatment plant, extensions to that new plant, and the planning for construction of the ocean outfall. The Consent Holder shall organise meetings at a local venue and invite all representatives of the Liaison Group. The meeting shall be held at a time convenient for the majority of members of the Liaison Group.

Wastewater Discharge Standards

7 All wastewater shall, as a minimum, receive treatment within an oxidation pond and wetland system prior to it being discharged to land from the outlet of the treatment system, unless Condition 9 applies.

8 Prior to the first exercise of consents (04) and (07), the consent holder shall upgrade the wastewater treatment system to achieve the discharge standards set out in Condition 9A.

9 Once the new treatment plant has been constructed, all wastewater reticulated to the Ruakaka wastewater treatment plant site shall receive treatment within the new wastewater treatment system prior to it being discharged in accordance with consents (02), (04), (05) and (07).

9A At all times following the first exercise of consent (07), the quality of the treated wastewater, as measured at the outlet of the new wastewater treatment system required by Condition 8, shall comply with the following concentration standards, based on 60 samples collected over each year (being 12 months from 1 July to 30 June inclusive):

Constituent	Units	Median	95th percentile	Sample Frequency	Standard
$cBOD_5$	mg/L	5	20	1 sample in every 6 day period	Over one year no more than 30 exceedances above 5, and no more than 3 exceedances above 20
Suspended solids	mg/L	5	30	1 sample in every 6 day period	Over one year no more than 30 exceedances above 5, and no more than 3 exceedances above 30
Total nitrogen	mg/L	10	30	1 sample in every 6 day period	Over one year no more than 30 exceedances above 10, and no more than 3 exceedances above 30
Faecal coliforms	cfu/100ml	10	1,000	1 sample in every 6 day period	Over one year no more than 30 exceedances above 10, and no more than 3 exceedances above 1,000

Advice Note: *The indicative upgrading of the treatment plant to achieve and maintain the standard required by this Condition, including staging of development in relation to average dry weather inflow, is set out in Section 4.8 Staged Development of the Proposed Scheme of the "Whangarei District Council Ruakaka Wastewater Long-Term Consents Project Assessment of Effects on the Environmental and Resource Consent Applications, Application Version May 2011".*

10 To enable the sampling of the treated wastewater, easy and safe access to a sampling port(s) located as close as is practicable after the outlet from the Ruakaka wastewater treatment system shall be provided and maintained. This sampling port location shall be to the satisfaction of the Manager.

Wastewater Treatment Plant and Discharge System Upgrades

11 The Consent Holder shall notify the Manager in writing that an upgrade to the treatment and/or discharge systems is to be undertaken, within two weeks of that decision being made by the Consent Holder. This written notification shall provide details of the proposed upgrade and a date by which the upgrade will be commissioned. A copy of this written notice shall also be forwarded to representatives of the Liaison Group.

12 When an upgrade to the treatment and/or discharge systems is to occur, the Consent Holder shall forward to the Manager every six months from the date that the Northland Regional Council receives written confirmation of the upgrade as required by Condition 11, a written update on the progress made towards the final design, construction and commissioning of the upgrade and whether the upgrade will be commissioned by the expected date.

If the upgrade cannot be commissioned by the expected date, then the Consent Holder shall provide details to the Manager of the reasons why and the date by which it will be commissioned.

13 The Consent Holder shall forward to the Manager and members of the Liaison Group a copy of the design details, including construction plans, for the treatment and/or discharge systems upgrade within one month of the details for that upgrade being available to the Consent Holder. All plans shall be drawn to a sufficient scale that allows a Northland Regional Council monitoring officer to identify all structures shown on the plans.

14 The Consent Holder shall ensure that the treatment and/or discharge systems are upgraded in general accordance with the design details required by Condition 13 and those details provided in *"Whangarei District Council Ruakaka Wastewater Long-Term Consents Project Assessment of Effects on the Environmental and Resource Consent Applications, Application Version May 2011".*

15 Prior to commissioning the upgrade, the Consent Holder shall update the relevant Management Plans as appropriate in conformance with Conditions 2 to 4.

Trade Waste Consents

16 The Consent Holder shall forward copies of all Trade Waste consents that currently allow discharges to the Ruakaka wastewater treatment system to each member of the Liaison Group. In addition, a copy of every new Trade Waste consent application to discharge to the wastewater treatment system reticulation shall be forwarded to the operator of the Bream Bay Aquaculture Park facility and the Manager within two weeks of the Consent Holder receiving a Trade Waste consent application for that connection.

Advice Note: *The Consent Holder intends to consult with the operator of the Bream Bay Aquaculture Park facility and afford them reasonable opportunity to provide comment about the potential effects of allowing any new trade wastes to be disposed of to the Ruakaka Wastewater Treatment Plant and give reasonable weight to those comments when considering any such application.*

Flow Meters

17 The Consent Holder shall ensure that meters with an accuracy of ±5% are installed and maintained at each of the following locations to record wastewater volumes:

(a) The contributing rising main(s) to the Ruakaka wastewater treatment site;

(b) The outlet from the treatment system to the land discharge systems on Zone 3, Rama Road Block and the Roger Hall Memorial Park;

(c) Any other discharge for reuse or discharge as may develop in future.

17A Prior to the commissioning of the new wastewater treatment plant required by Condition 8, the Consent Holder shall ensure that meters with an accuracy of ±5% are installed and maintained at each of the following locations to record wastewater volumes:

(a) The inlets to the contingency storage ponds;

(b) The outlet from the contingency storage ponds to the treatment system;

(c) The outlet from the treatment system to the ocean outfall.

18 Once installed, the Consent Holder shall either recalibrate or, for magnetic flow meters, test the electronics of the meters required by Conditions 17 and 17A at least every five years to ensure that the specified accuracy is maintained. The Consent Holder shall also provide a calibration and verification schedule for the continuous monitoring system required by Condition 79 to the Manager. Written verification from a suitably qualified person that the meters and the continuous monitoring system have been tested or calibrated shall be forwarded to the Manager within one month following the completion of each five yearly check.

Complaints Register

19 The Consent Holder shall maintain and keep a complaints register for all complaints made about the treatment plant and discharge sites relating to these consents, received by the Consent Holder. The register shall record:

(a) The date, time and duration of the event/incident that has resulted in the compliant;

(b) Weather conditions at the time of the event/incident was detected by the complainant;

(c) The location of the complainant when the event/incident was detected;

(d) The possible cause of the event/incident;

(e) Any corrective action taken by the Consent Holder in response to the complainant; and

(f) The register shall be available to the Northland Regional Council at all reasonable times.

20 Details of all complaints received by the Consent Holder that may indicate non-compliance with the conditions of these resource consents shall be forwarded to the Northland Regional Council within five working days of the complaint being received unless an alternative arrangement is agreed upon in writing by the Northland Regional Council.

Monitoring and Review

21 The Consent Holder shall monitor these consents in accordance with **Schedule 1 (attached**).

22 The wastewater treatment system, contingency storage ponds and the rapid infiltration basins on Sec 65 Blk VII Ruakaka SD shall be fenced so that access by unauthorised persons is restricted, and signs shall be placed on the fence advising the use of the area and unauthorised persons not to enter. Such fencing shall meet the requirements of the Department of Labour for the activity being undertaken on site and the signs shall be in accordance with New Zealand Standard 1319:1994, Safety Signs for the Occupational Environment.

23 The Consent Holder shall, for the purposes of adequately monitoring these consents, as required under Section 35 of the Resource Management Act 1991, on becoming aware of any contaminant associated with the Consent Holder's operations escaping otherwise than in conformity with this consent:

(a) Immediately take such action, or execute such work as may be necessary, to stop and/or contain such escape;

(b) Immediately notify the Manager, the operator of the Bream Bay Aquaculture Park Facility and the secretary of the Patuharakeke Trust Board, by telephone of an escape of contaminant;

(c) Take all reasonable steps to remedy or mitigate any adverse effects on the environment resulting from the escape; and

(d) Report to the Manager and the Ruakaka Wastewater Liaison Group in writing within one week on the cause of the escape of the contaminant and the steps taken or being taken to effectively control or prevent such escape.

With regard to telephone notification, during the Northland Regional Council's opening hours, the assigned monitoring officer for these consents should be contacted. If that person cannot be spoken to directly, or it is outside of the Northland Regional Council's opening hours, then the Environmental Hotline should be contacted.

24 The Northland Regional Council may, in accordance with Section 128 of the Act, serve notice on the Consent Holder of its intention to review the conditions of these consents:

(a) Annually during the month of June. The review may be initiated for any one or more of the following purposes:

(i) To deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or

(ii) To require the adoption of the best practicable option to remove or reduce any adverse effect on the environment.

(b) Within a two month period of the date that the Northland Regional Council formally receives the reports or notifications required by Conditions 11, 23, 35, 411, 46, 68, 74, 82 and 90 to take into account any issues raised by these reports/notifications that have are not covered by the conditions of consent; and

(c) At any time for the following purposes:

(i) To provide for compliance with rules relating to minimum standards of water quality or air quality in any regional plan that has been made operative since the commencement of the consent; or

(ii) To provide for compliance with any relevant national environmental standards that have been made; or

(iii) Where there are inaccuracies in the information made available with the application that materially influenced the decision on the application and where the effects of the exercise of consent are such that it is necessary to apply more appropriate conditions.

Patuharakeke Te Iwi Trust Board

25 The Consent Holder shall establish and maintain an on-going liaison role with Patuharakeke Te Iwi Trust Board (PTB). The Consent Holder shall facilitate a meeting with PTB at least twice annually and on other occasions when significant milestones associated with the implementation of the Ruakaka Wastewater Scheme. As part of this liaison process, the Consent Holder shall:

(a) Provide to and discuss with PTB results of the consents compliance annual reporting and associated matters;

(b) Seek input from PTB into the development of the Management Plans associated with the resource consents, as listed in Table 1;

(c) Provide PTB with periodic updates on the on-going development and implementation of the Ruakaka Wastewater Strategy and the Wastewater Scheme;

(d) Provide to and discuss with PTB updates on the progress of reusing treated wastewater from the Ruakaka Wastewater Scheme by the New Zealand Refining Company or any other significant treated wastewater users;

(e) Seek input from PTB on the Consent Holder's periodic reviews undertaken under the Development Technology and Environmental/Monitoring and Review Conditions; and

(f) Consult and seek input from PTB about the development and implementation of those matters included under Condition 31.

Advice Note 1: *The Consent Holder acknowledges that Patuharakeke Te Iwi Trust Board are recognised as the Treaty partner with the Crown and are therefore regarded as having a specific role and function in relation to the effects on the environment that are associated with the Ruakaka Wastewater Scheme.*

Advice Note 2: *The Consent Holder recognises PTB as the on-going point of contact between the Whangarei District Council and the wider iwi interest groups in respect of information relating to the exercise of these consents.*

26 The Consent Holder shall, in conjunction with PTB, develop a cultural monitoring programme for the purposes of assessing the impacts of the discharges to air, water and the coastal marine area authorised by these consents on cultural health. The monitoring programme will include the development of a Coastal Cultural Health Index (CCHI), specifically for Te Poupouwhenua to assist in the monitoring of any adverse effects linked to the discharge from the ocean outfall. The monitoring programme including its long-term approach shall be informed by matauranga Maori.

The development of the monitoring programme will include, but not be limited to, the following matters:

(a) Water quality effects;

(b) Air quality effects;

(c) Effects on the coastal environment;

(d) Ecological effects – (marine/terrestrial, particularly mahinga kai species) aquatic life/bird life/natural habitat; and

(e) Customary practices such as rahui and tapu to be followed in the event of observed instances of environmental or ecological impacts.

Advice Note 1: *The Consent Holder should, in conjunction with PTB, seek advice from an appropriate research and/or educational organisation that they may work with in the development of a CCHI.*

Advice Note 2: *The details of how Condition 26(e) is to be implemented is a matter to be negotiated between the Consent Holder and PTB.*

Advice Note 3: *The broader monitoring programme is intended to address the concerns raised by iwi throughout consultation on the Ruakaka Wastewater Long-Term Consents Project.*

27 The Consent Holder shall establish a monetary fund to assist PTB with the development of the cultural monitoring programme under Condition 26. The Consent Holder shall make available a sum of $10,000 per annum (excluding GST) for five years. The first payment will be made two years prior to the proposed

Advice Note: *The first payment is subject to PTB providing details of the proposed monitoring methodology. Alternatively, PTB may elect to commence this monitoring and utilise up to three years funding, at an earlier date to inform the first Development, Technology and Environmental/ Monitoring Review required under Condition 30.*

This fund may be used to assist with the training of cultural monitors and scholarships for tertiary study in environmental management.

28 The Consent Holder shall review the effectiveness of the monetary fund required by Condition 27 within two years following the implementation of the cultural monitoring programme and the annual provision of the results by PTB to the Consent Holder, the Manager and the Liaison Group. The review shall be undertaken with a view to making further funds available having regard to the implementation of the programme and the further needs for its ongoing development and implementation.

Advice Note: *It is anticipated that the cultural monitoring work undertaken by PTB will support general state of the environment reporting of the area.*

29 The Consent Holder shall protect the cultural and heritage landscape in Te Poupouwhenua as far as it relates to the Ruakaka Wastewater Scheme. Such protection shall include, but not be limited to:

(a) Engaging with PTB in the first instance where an archaeological assessment or authority is required pursuant to the Historic Places Act 1993 for invasive investigative assessments or earthworks;

(b) Ensuring construction activities avoid areas of known cultural heritage significance to Patuharakeke i.e. wahi tapu and wahi taonga areas; and

(c) Undertaking, with the agreement of PTB, a constraints mapping exercise that records the location of culturally sensitive sites and places. The protocols for the appropriate use and dissemination of this information shall be included so that culturally sensitive information is protected.

30 The Consent Holder shall, in conjunction with PTB, prepare the following protocol documents to be used in relation to construction activities associated with Ruakaka Wastewater Scheme:

(a) A Koiwi Tangata/Human Remains discovery protocol;

(b) Artefact discovery protocol (ADP);

(c) Tikanga protocols;

(d) Archaeological site identification training for contractors; and

(e) Cultural training for contractors.

31 The Consent Holder shall, in conjunction with PTB, provide for the following activities as far as these have a relationship with the overall Ruakaka Wastewater Scheme:

(a) Recognition of those cultural heritage sites and places in Te Poupouwhenua which are significant to PTB through Wahi Tapu Registrations under the Historic Places Act 1993;

(b) Assistance to PTB with initiating an interpretation programme outlining the significance of Te Poupouwhenua to tangata whenua;

(c) Establishment of memorial pou/kohatu/plaques to commemorate the significance of Te Poupouwhenua to tangata whenua; and

(d) Provision of opportunities to conduct rituals and ceremonies associated with new buildings and activities associated with the Ruakaka Wastewater Scheme.

Development, Technology and Environmental/Monitoring Review

32 The Consent Holder shall submit to the Manager, a Development, Technology and Environmental/Monitoring Review Report not later than 30 September 2015 and thereafter at six yearly intervals, for the duration of the consents, and also six months prior to the construction commencement of major infrastructural components of the Ruakaka Wastewater Scheme being the modular construction and extension of the new wastewater treatment plant and the construction of the offshore ocean outfall. The Review Report shall be made available to all members of the Ruakaka Wastewater Liaison Group within one month of it being submitted to the Northland Regional Council. The scope of the Review shall address as a minimum the following:

(a) The rate and extent of land use development and associated domestic and business wastewater flows (volumes) and key contaminant loads over the period since either lodgement of the AEE (May 2011) or the previous review, and the future projections at that review time through to the end of the most distant expiry date of the consents;

(b) An update on the on-going development and implementation of the Ruakaka Wastewater Strategy and the Wastewater Scheme. This update shall be based on the further development of Figure 4.1 ‘Development of the Ruakaka ‘Wastewater Strategy’ and ‘Proposed Scheme’ (**Attachment 2**) and shall include the relevant activities as set out in Figure 4.2 ‘Ruakaka Wastewater Strategy and Scheme Implementation – Activities to be Undertaken Within the Duration of Consents’ (**Attachment 3**);

(c) Assessment of the need, justification and cost effectiveness for major components of future upgrades of the Ruakaka Wastewater Scheme including the modular construction and extensions of the wastewater treatment plant and construction of the ocean outfall;

(d) Ongoing compliance with the requirements of these resource consents and any reported non-compliance with consent conditions;

(e) An assessment of compliance/consistency with any relevant national, or regional water quality policies, standards or guidelines in effect at the time;

(f) A summary of any major upgrades made to the wastewater reticulation, treatment or discharge system since the commencement of consent that are likely to have an effect on the exercise of the consents;

(g) A summary of current technological knowledge in relation to wastewater management, treatment, disposal and beneficial re-use technologies that are relevant to the Ruakaka Wastewater Scheme;

(h) Information relating to the use, development and success of alternative wastewater disposal/discharge techniques in New Zealand, in particular land based discharge, and the relevance and possible adoption of these techniques as part of the Ruakaka Wastewater Strategy and Scheme;

(i) A summary of known advancements in the knowledge regarding the presence, monitoring, treatment and environmental effects of contaminants of emerging concern that are relevant to the Ruakaka Wastewater Scheme; and

(j) The applicability of the shortlisted reuse options included in Table 5.1 of the Report titled "Whangarei District Council Ruakaka Wastewater Stage 2 Study, Task 2B Part 2: Review and Development of Stage 1 Options, Investigate Options for Reuse of Treated Wastewater, December 2007, (Support Document 10 of the Assessment Effects on the Environment and Resource Consent Applications, Application Edition May 2011)", along with any new reuse options that may be practicable and have been identified by the Ruakaka Wastewater Liaison Group and/or PTB.

33 In addition to complying with Condition 32(j), the Consent Holder shall continuously evaluate opportunities for reuse and recycling of treated wastewater, and shall implement these opportunities if they are reasonably practicable and affordable in the opinion of the Consent Holder.

(01) Discharge to Land –Wastewater Ponds

34 In addition to the requirements of Condition 13, the Consent Holder shall submit to the Manager for approval the design details for retrofitting the existing oxidation ponds to serve as contingency storage ponds. These design details shall include express provision for preventing the accumulation of rainwater within the contingency storage ponds so that the maximum storage volume is kept available for contingency use and how the wastewater will be treated to achieve the requirements of Condition 9A.

35 The Consent Holder shall notify the Northland Regional Council by telephone on each occasion that the contingency storage ponds are being used. This notification shall be made as soon as practical after commencement of the use of the contingency storage ponds, but shall not be greater than one working day. During the Northland Regional Council's opening hours, the assigned monitoring officer for this consent should be contacted. If that person cannot be spoken to directly, or it is outside of the Northland Regional Council's opening hours, then the Pollution Hotline should be contacted. Notification is not required if the contingency storage ponds are being utilised for sludge storage.

36 The following information shall be submitted to the Manager in writing no later than seven working days after the cessation of each use of the contingency storage ponds, as notified in accordance with Condition 35:

(a) Reasons for the contingency storage pond use;

(b) Duration of use;

(c) Approximate wastewater volume stored;

(d) If storage was the result of a rainfall event, details of the event and an assessment of whether storage capacity needs to be increased to cope with a similar or greater rainfall event;

(e) If appropriate, means to eliminate or reduce future use of the contingency storage ponds for a similar purpose; and

(f) Any other relevant information.

37 To ensure that the discharge from the treatment plant is meeting Condition 9A as a result of the use of the contingency storage ponds during off-specification incidents and extreme wet weather events, the Consent Holder shall assess the results of the sampling required under the "Continuous" column of Table S.1 in Schedule 1 (**attached**) to ascertain whether or not the Condition 9A determinand limits are being complied with. That assessment shall be forwarded to the Manager upon request.

Advice Note: *The determinands in Condition 9A are not monitored on a continuous basis. They are monitored once every six days. However, some of the determinands that are monitored continuously can be used to verify compliance with Condition 9A when the contingency storage ponds are discharging. For example, turbidity can be used to ascertain compliance with suspended solids limits.*

(02) Discharge to Land – Zone 3

38 The rate of wastewater discharged to land on Sec 65 Blk VII Ruakaka SD ("Zone 3") shall not exceed a daily average of 660 cubic metres. The average daily volume shall be calculated for the period between 1 April and 31 March of the following year.

39 The rate of discharge authorised by Condition 38 may include up to 230 cubic metres per day of reject water from a Reverse Osmosis Treatment Plant or similar treatment unit provided that the reject water is first diluted with treated wastewater at a ratio of at least two parts treated wastewater to one part reject water.

40 There shall be no ponding of wastewater within the land disposal area as a result of the exercise of this consent.

41 If monitoring results show that the exercise of consents (01) and (02) result in the exceedance of any the following determinand concentrations, as measured in the identified monitoring bores shown on NRC Plan 4885 (**Attachment 4**) then the Consent Holder shall forward to the Manager and the Liaison Group, a report that assesses the environmental effects of the exercise of this consent on the water quality of Ruakaka Beach and the Ruakaka River. The report shall identify any actions required to correct any exceedance and identify trends that are evident in the monitoring results and discuss the possible reasons for any exceedance in the concentrations specified.

Seaward Bores from Disposal Area	
Determinand	Median Concentration
Faecal Coliforms (Most probable number test)	35 per 100 millilitres
Total Ammoniacal Nitrogen	20 milligrams per Litre
Inland Bores from Disposal Area	
Determinand	Median Concentration
Faecal Coliforms (Most probable number test)	50 per 100 millilitres
Total Ammoniacal Nitrogen	2 milligrams per Litre
Nitrate + Nitrite	3 milligrams per Litre
Dissolved Reactive Phosphorus	0.6 milligrams per Litre

The median shall be a "rolling" median calculated using the five most recent sample event results.

42 The consent holder shall undertake the upgrades set out in (a) and (b) below unless condition 43 applies:

(a) Prior to the 31 October 2019, the consent holder shall reconfigure the existing oxidation ponds in order that they operate in parallel, in general accordance with Section 9.3.1 of the report entitled 'Ruakaka WWTP Treatment System Review Report', prepared by MWH Limited and dated July 2016, (**Attachment 9**).

(b) Prior to the average dry weather flows entering the wastewater treatment plant exceeding 1,650 cubic metres per day, the consent holder shall install additional aeration into the oxidation ponds in general accordance with Section 9.3.2 of the report entitled 'Ruakaka WWTP Treatment System Review Report', prepared by MWH Limited and dated July 2016 (**Attachment 10**).

43 The specific upgrade requirements set down in conditions 42(a) or 42(b) do not apply should the following requirement be met for each condition:

(a) The consent holder provides a report to the Manager prepared by a suitably qualified and experienced wastewater engineer that:

ii. identifies the treatment capacity of the oxidation pond system;

iii. identifies upgrade options to increase the treatment capacity;

(b) The consent holder confirms in writing to the Manager the intended upgrade option;

(c) That option is approved in writing by the Manager; and

(d) The upgrade is completed in general accordance with the option approved by the Manager within those timeframes or trigger points specified in conditions 42(a) or 42(b).

44 Notwithstanding any other conditions, the exercise of consents (01) and (02) shall not cause more than minor adverse effects on the following:

(a) Water quality in the coastal marine area;

(b) Edible shellfish quality;

(c) The stability of the foredunes of Ruakaka Beach;

(d) Surface water quality draining to, and including, the Ruakaka River; and

(e) Groundwater levels beneath adjacent properties not covered by this consent.

(03) Discharge to Air – Wastewater Treatment Plant

45 The Consent Holder's operation shall not give rise to any discharge of contaminants at or beyond the boundary of Sec 65 Blk VII Ruakaka SD which is deemed by a suitably trained and experienced Enforcement Officer of the Northland Regional Council to be noxious, dangerous, offensive or objectionable to such an extent that it has, or is likely to have, a more than minor adverse effect on the environment.

46 The Consent Holder shall notify the Northland Regional Council by telephone of any incident, including mechanical or power failures, leading to significant emission of odour from the treatment plant or land disposal area, as soon as practical after becoming aware of the incident, but shall not be greater than one working day. During the Northland Regional Council's opening hours, the assigned monitoring officer for this consent should be contacted. If that person cannot be spoken to directly, or it is outside of the Northland Regional Council's opening hours, then the Environmental Hotline should be contacted.

47 A written report shall be forwarded to the Manager within seven working days of an incident notified in accordance with Condition 466 providing details of:

(a) The incident;

(b) The reasons for it occurring;

(c) Any complaints received;

(d) Measures taken to avoid, remedy or mitigate its effects; and

(e) Measures (if any) undertaken to prevent a reoccurrence of the event.

48 In the event of non-compliance with Condition 455, the Consent Holder shall commission a suitably qualified and independent expert who has been approved by the Manager to undertake an investigation into the source of the odour or airborne contaminants. This person shall provide a written report to the Manager on the outcome of the investigation which shall include recommendations to remedy and/or mitigate the effects so that Condition 455 is complied with. The Consent Holder shall implement those recommendations as soon as it is practicable.

49 All odour control equipment shall be designed by an appropriately experienced wastewater treatment specialist and maintained and monitored in accordance with standard industry practice. Evidence of maintenance and monitoring shall be recorded and provided immediately to the Manager upon written request by that manager.

(04) Discharge to Land – Roger Hall Memorial Park

50 The discharge of treated wastewater shall occur by subsurface irrigation on up to 5.95 hectares of land on Lot 1 DP 396871, as shown in Figure 10-1 of the "*Whangarei District Council Ruakaka Wastewater Long-Term Consents Project Assessment of Effects on the Environmental and Resource Consent Applications, Application Version May 2011*" (**Attachment 5**).

51 No discharge shall occur within 15 metres of the property boundary of Lot 1 DP 396871.

52 The Consent Holder shall, prior to exercising this consent, install signs at regular intervals around the perimeter of the Roger Hall Memorial Park site that advise of the use of the area for subsurface application of treated wastewater. Written confirmation of the signage wording, size and placement shall be provided to the Manager within three months of commencement of these consents.

53 The rate of discharge shall not exceed 260 cubic metres per day during the period from October to March, inclusive, and 123 cubic metres per day during the period from April to September inclusive.

54 The discharge of treated wastewater to the irrigation area shall:

(a) Be evenly distributed to the entire area being utilised for irrigation;

(b) Only be to areas that are in soil moisture deficit;

(c) Not increase soil moisture levels above field capacity.

(05) Discharge to Land – Rama Road Block

55 The discharge to Lot 4 DP 419151, as shown in Figure 11-1 of the "Whangarei District Council Ruakaka Wastewater Long-Term Consents Project Assessment of Effects on the Environmental and Resource Consent Applications, Application Version May 2011" (**Attachment 6**), shall be via a low or medium pressure spray irrigation system and a perforated pipe or similar low pressure surface irrigation system.

56 No spray irrigation shall be undertaken:

(a) Within 30 metres of the property boundary for wastewater treated by the pond and wetland system prior to the operation of the new wastewater treatment plant:

(b) Within 20 metres of the property boundary when the treated wastewater quality meets the standards required by Condition 9A of these consents; and

(c) Within 15 metres of any surface water on the property.

57 The average daily discharge volume shall not exceed 1,700 cubic metres during the period from 1 October to 31 March inclusive or 1,030 cubic metres during the period from 1 April to 30 September inclusive. The daily average discharge volume shall be calculated in accordance with Schedule 1 (**attached**).

58 The rate of discharge authorised by Condition 577 may include reject water from a Reverse Osmosis Treatment Plant or similar treatment unit provided that:

(a) The reject water is first diluted with treated wastewater at a ratio of at least two parts treated wastewater to one part reject water; and

(b) The resultant mixture is not to be irrigated on any areas of sand kanuka or freshwater wetlands.

59 In addition to the requirements of Condition 9A, the treated wastewater discharged to Lot 4 DP 419151 shall not exceed the following standards:

Determinand	Concentration
Sodium	460 milligrams per litre
Chloride	700 milligrams per litre
Fluoride	2 milligrams per litre
Boron	4 milligrams per litre
Sodium Absorption Ratio	20
ECse	3 decisiemens per metre

60 To enable the collection of samples for testing compliance with Condition 59, the Consent Holder shall provide and maintain easy and safe access to the outlet point of the facility used to blend reject water with treated wastewater.

61 Not less than three months prior to commencement of installation of the discharge system on the site, the Consent Holder shall prepare and submit a detailed plan of the following to the Manager for approval:

(a) The location of at least three new groundwater monitoring bores seaward of the Rama Road Block; and

(b) The location of surface water quality monitoring sites including within any interceptor drain(s).

62 If the monitoring results from the groundwater bores show that the exercise of consent (05) results in the exceedances of the specified median concentration for the following determinands, the Consent Holder shall forward to the Manager a report that assesses the environmental effects of the discharge on the water quality of Ruakaka Beach. The report shall identify any actions required to address any adverse effects.

Seaward Bores from Disposal Area	
Determinand	Median Concentration
Faecal Coliforms	35 per 100 millilitres
Total Ammoniacal Nitrogen	20 milligrams per Litre

The median shall be a "rolling" median calculated using the five most recent sample event results.

63 Notwithstanding any other conditions, the exercise of this consent shall not cause more than minor adverse effects on the following:

(a) Water quality within the Bercich Drain;

(b) Edible shellfish quality in the vicinity of the Bercich Drain outfall; and

(c) The stability of the foredunes of Ruakaka Beach.

Advice Note: *There are a number of other discharges (diffuse and point source) into Bercich Drain and any drain monitoring related to this consent should consider the ability to distinguish effects of this activity.*

64 The Consent Holder shall, prior to exercising this consent, install signs at regular intervals around the perimeter of the Rama Road Block that advise of the use of the area and warn unauthorised persons not to enter. The signs shall be in accordance with New Zealand Standard 1319:1994, Safety Signs for the Occupational Environment. Written confirmation of the signage wording, size and placement shall be provided to the Manager within three months of commencement of these consents.

65 The exercise of this consent shall not result in more than minor foliar damage to, or die-off of, sand kanuka or other native plant species within the irrigated area. For compliance purposes, a suitably qualified and experienced person shall undertake a baseline study of the type and location of the different vegetation species on Lot 4 DP 419151. A written report by this person shall be forwarded to the Manager not less than three months prior to commencement of installation of the wastewater discharge system on the site. The vegetation study shall then be repeated at five yearly intervals until use of the Rama Road Block for wastewater discharge ceases.

(06) Discharge to Air – Rama Road Block

66 The Consent Holder's operation shall not give rise to any discharge of contaminants at or beyond the boundary of Lot 4 DP 419151 which is deemed by a suitably trained and experienced Enforcement Officer of the Northland Regional Council to be noxious, dangerous, offensive or objectionable to such an extent that it has, or is likely to have, a more than minor adverse effect on the environment.

67 There is no detectable spray drift beyond the boundaries of the property. In addition, there shall be no discharge of wastewater when the wind speed exceeds 12 metres per second for more than 10 minutes.

Advice Note: *It is expected that the Consent Holder will establish and utilise a meteorological station at or close to the main wastewater treatment plant to demonstrate compliance with this condition.*

68 The Consent Holder shall notify the Northland Regional Council by telephone of any incident, including mechanical or power failures, leading to significant emission of odour from the discharge operation, as soon as practical after becoming aware of the incident, but shall not be greater than one working day. During the Northland Regional Council's opening hours, the assigned monitoring officer for this consent should be contacted. If that person cannot be spoken to directly, or it is outside of the Northland Regional Council's opening hours, then the Environmental Hotline should be contacted.

69 A written report shall be forwarded to the Manager within seven working days of an incident notified in accordance with Condition 688 providing details of:

(a) The incident;

(b) The reasons for it occurring;

(c) Any complaints received;

(d) Measures taken to avoid, remedy or mitigate its effects; and

(e) Measures (if any) undertaken to prevent a reoccurrence of the event.

70 In the event of non-compliance with Conditions 666 or 677, the Consent Holder shall commission a suitably qualified and independent expert who has been approved by the Manager to undertake an investigation into the source of the odour or airborne contaminants. This person shall provide a written report to the Manager on the outcome of the investigation which shall include recommendations to remedy and/or mitigate the effects so that Conditions 666 and 677 are complied with. The Consent Holder shall implement those recommendations as soon as it is practicable.

(07) Treated Wastewater Discharge to the Coastal Marine Area

71 This consent can only be exercised for the first time once the daily volume of wastewater required to be discharged exceeds 80% of the combined average daily volume authorised to be discharged to land under Consents (02) and (05).

72 The treated wastewater discharge to Bream Bay shall not exceed an average dry weather flow rate of 185 litres per second (which equates to 16,000 cubic metres per day) or a maximum wet weather flow rate of 740 litres per second. Compliance with this condition shall be determined in accordance with Schedule 1 (**attached**).

73 The treated wastewater discharge into Bream Bay shall only occur through an ocean outfall pipeline that is located in accordance with Consents (08) and (09) and terminates in a multiport discharge diffuser that is approximately 62 metres long, with 32 ports spaced at two metre intervals.

74 Not less than three months prior to commencement of installation of the ocean outfall pipeline, the Consent Holder shall submit a final design for the multiport discharge diffuser to the Manager for approval. If this final design is significantly different from that required by Condition 0, then sufficient technical detail shall be provided to demonstrate the design will achieve a minimum dilution ratio of 288 to 1 (±15%) at the edge of the mixing zone for a discharge flow rate of 244 litres per second (or equivalent). For the purposes of this consent, the edge of the mixing zone shall be 100 metres from any part of the multi-port diffuser and the design dilution rates apply to dry weather flows.

If the final design is significantly different than that required by Condition 03 and is approved by the Manager, then the design approved in accordance with this condition shall prevail.

Advice Note: *This minimum dilution ratio was the worst case scenario modelled by DHI for average dry weather conditions and is the basis for the assessment of effects for the coastal discharge.*

75 The Consent Holder shall, within the first six months of the commissioning of the ocean outfall, undertake a near-field mixing study at neap tide during the period when the daily treated wastewater flow is at its maximum to confirm the level of initial dilution of the discharged treated wastewater. The study shall include the following:

(a) Calculation of the mixing achieved at the edge of the 100 metre mixing zone using an approved dye dispersion methodology. An alternative method of dilution calculation, that also allows the plume to be detected at the edge of the mixing zone for sampling purposes, may be used with the approval of the Regional Council's Monitoring Manager; and

(b) Measurement of water quality characteristics within the discharge plume, during the dilution study required under (a), at the edge of the 100 metre mixing zone including:

  (i) In situ temperature, pH, salinity and dissolved oxygen; and

  (ii) Collection of three grab samples at least three minutes apart to be analysed for faecal coliforms, total ammoniacal nitrogen, total nitrogen, nitrite/nitrate nitrogen, total phosphorus and dissolved reactive phosphorus.

(c) Table 3.3 "Predicted CORMIX Dilutions at the Edge of the 100 metre Mixing Zone" (**Attachment 7)** and Section 1.4 both of the DHI report entitled "Bream Bay Dilution and Dispersion Study – Final Report May 2010" shall be used to assist in the preparation of this study.

A written report on the results of this study shall be provided to the Manager and the Liaison Group within one month of the study being completed.

Advice Note: *For the purposes of this condition, the expected minimum dilution at the edge of the 100 metre mixing zone is 437:1 (514:1 less an allowance for 15% modelling accuracy, based on the DHI report entitled "Bream Bay Dilution and Dispersion Study – Final Report May 2010") at a flow of 70 L/s (or equivalent).*

76 If the results of the near-field mixing study required under Condition 755 indicate that the level of initial dilution of the treated wastewater, as measured at the edge of the mixing zone, is less than 437:1 (being 514:1 less 15%) and the Consent Holder wishes to retain the diffuser structure, then the Consent Holder shall, within three months of the results of the study being known, prepare and submit a report to the Manager and the Liaison Group examining the likely effects of the reduced dilution on the coastal water and ecological quality of Bream Bay and associated flow-on effects for other users of the Bay.

Advice Note: *If the proposed alteration to the diffuser may result in adverse effects that are greater than those authorised by this consent, or the change is outside the scope of what was applied for, then either a change to the conditions of this consent under Section 127 of the Resource Management Act, or a new consent would need to be obtained.*

77 The discharge of treated wastewater authorised by this consent shall not cause any of the following effects outside of the mixing zone defined under Condition 755:

(a) The production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials;

(b) Any conspicuous changes in colour or visual clarity; or

(c) Any significant adverse effects on aquatic life.

78 All monitoring methods, procedures and analyses required under Schedule 1 (**attached**) in relation to this consent shall be commenced at least 12 months prior to treated wastewater being first discharged to the coastal marine area via the ocean outfall in accordance with this consent. The purpose of this initial treated wastewater monitoring and analysis shall be to:

(a) Generally establish baseline treated wastewater characteristics in relation to all those determinands specified in Table S1 of Schedule 1;

(b) Compare actual levels of selected determinands against the trigger values specified in Table S1 of Schedule 1 in order to provide an early assessment of the level of risk associated with the discharge of those determinands, if present, to the coastal marine area; and

(c) Derive upper limit values (and for pH, also a lower limit value) for parameters to be used in continuous instrument monitoring under Condition 79(a).

79 During the operation of the Bream Bay Aquaculture Park research facility, the Consent Holder shall:

(a) Install and maintain devices to continuously monitor the following contaminants or their surrogates. The measurement interval and surrogates used shall be agreed between the Consent Holder and the Manager:

(i) temperature

(ii) pH

(iii) electrical conductivity

(iv) turbidity

(v) biochemical oxygen demand

(vi) ammoniacal nitrogen

(vii) nitrate nitrogen

(viii) faecal coliform bacteria

(b) In conjunction with the continuous monitoring described in (a), establish a "real time" information system to alert the operator of the Bream Bay Aquaculture Park research facility and PTB to any exceedances of the upper and lower limit values developed under Condition 788(c).

(c) Monitor treated wastewater quality against the trigger values set out in Table S1 in Schedule 1 (**attached)**.

80 In the event of any exceedance of the trigger values set out in Table S1, the Consent Holder shall undertake the following actions:

(a) Immediately notify the operator of the Bream Bay Aquaculture Park research facility and PTB of the exceedance;

(b) Immediately implement the plant operational checks and procedures required by the approved Treatment Plant Operations and Maintenance Management Plan;

(c) If, following the operational checks and procedures, the wastewater treatment plant is confirmed to be performing to normal specifications, within one week of (a) re-sample and analyse for the trigger value parameter(s) exceeded; and

(d) If a second exceedance occurs, undertake a Toxicity Identification Evaluation (TIE) to examine the cause of the exceedance.

81 A report on the results of the Toxicity Identification Evaluation (TIE), the wastewater flows and likely dilutions at the edge of the mixing zone and at the Bream Bay Aquaculture Park intake at the time when the triggers values were exceeded shall be forwarded to the Manager, the operator of the Bream Bay Aquaculture Park research facility and PTB within 30 days of the TIE results being obtained by the Consent Holder.

82 The Consent Holder shall thereafter, but within 10 working days of the provision of the report under Condition 81, discuss with the operator of the Bream Bay Aquaculture Park research facility how any adverse effect on the Bream Bay Aquaculture Park resulting from further exceedances of the trigger values can reasonably be avoided, including the practicality of providing additional treatment for the Bream Bay Aquaculture Park intake and the reasonable apportionment of the costs of any such treatment as between the Consent Holder and the operator of the Bream Bay Aquaculture Park research facility. The Consent Holder shall report to the Manager regarding the outcome of the discussions and the timeframe within which any additional treatment (if required) is to be provided at either the wastewater treatment plant or the Bream Bay Aquaculture Park research facility.

Advice Note: *The expe*ctation, based on the evidence provided to the Hearing in 2011, is t*hat the Consent Holder and the operator of the Bream Bay Aquaculture Park research facility will agree on the type of any additional treatment if required and that the Consent Holder will contribute to those costs, with the majority of them being met by the operator of the Bream Bay Aquaculture Park research facility.*

83 At least three months prior to the commencement of any physical works within the Coastal Marine Area, and during the summer months (November to March) the Consent Holder shall undertake a survey of the benthic biota and sediment quality in the vicinity of the outfall that is comparable with the study undertaken by Golder Associates entitled "Bream Bay Environmental Assessment: Bream Outfall Benthic Survey and Assessment. July 2010". A report on the results of this survey shall be

forwarded to the Manager prior to the construction of the outfall commencing. This survey shall then be repeated every five years after commencement of the discharge through the ocean outfall. The results of the studies shall be made publicly available by the Consent Holder.

(08) Coastal Outfall Structure and Associated Deposition of Marine Sediments on and Disturbance of Foreshore and Seabed

84 The ocean outfall structure shall be located in general accordance with Figure 4.7 of the Assessment of Effects on the Environment and Resource Consent Applications Application Edition May 2011, entitled "Ocean Outfall Location", MWH dated 20/04/2011, Reference number Z1583510, Revision C (**Attachment 8**).

85 The midpoint of the diffuser section of the outfall terminal structure shall terminate within a radius of 30 metres of location co-ordinates 1736025E 6028848N.

86 The location of the outfall terminal structure shall be clearly marked at all times by a buoy(s) that complies with navigation safety regulations.

Advice Note: *The Consent Holder will need to contact the Regional Harbourmaster for Northland for advice before it proceeds to give effect to this condition.*

87 The erection or placement of structures shall be limited to a pipeline to convey treated wastewater, an outfall diffuser and any temporary structures associated with the construction, repair and maintenance of the outfall structure.

88 During installation of the outfall structure, the Consent Holder shall provide monthly reporting to the Manager, on details of the monitoring undertaken to demonstrate the activities are in accordance with the Outfall Construction Management Plan.

89 The disturbance of the foreshore and seabed and associated deposition of marine sediments shall be limited in area to within 25 metres of the centreline of the pipeline route and limited in volume to that necessary for the construction of the outfall structure as defined in the Outfall Construction Management Plan.

90 The Consent Holder shall contact the Regional Harbourmaster, at least one month in advance of any construction in the coastal marine area, to initiate the issue of a Notice to Mariners regarding any necessary navigation warning arising from construction activities.

91 The Consent Holder shall notify the Manager, a representative of Mighty River Power and the operator of Bream Bay Aquaculture Park in writing of the date construction is intended to commence on the outfall structure, at least two weeks beforehand, on each occasion. The Consent Holder shall arrange a site meeting between the principal contractor and the assigned Northland Regional Council monitoring officer at least five days prior to commencement of construction.

92 The Consent Holder shall publicly advertise the timing of construction activity associated with the construction of the outfall structure that is to take place in the coastal marine area in a local newspaper at least one week beforehand.

93 On completion of the construction activity, all disturbed areas of the foreshore and seabed shall be returned to a state generally consistent with the surrounding seabed and foreshore.

94 All practicable measures shall be undertaken to ensure that construction activities or the completed outfall structure does not exacerbate coastal erosion.

95 In the event of coastal erosion occurring as a direct result of the works, the Consent Holder shall, in consultation with the Manager, undertake all practicable measures to remedy any damages caused and minimise the potential for future erosion.

96 In the event of the detection of any system or mechanical failure of the pipeline, whether during construction, maintenance or operation of the outfall structure, the Manager shall be notified within 24 hours and provided with details of:

(a) The nature of the failure; and

(b) Any remedial works proposed to be carried out in response to the failure.

97 The Consent Holder shall provide to the Manager every five years a report prepared by a suitably qualified and experienced person(s) to demonstrate that the outfall structure is:

(a) In sound condition and that there are no significant losses of wastewater occurring from the pipeline;

(b) The crown of the pipeline, other than any part of the outfall terminal structure that is designed to be above seabed level, is not exposed above the seabed; and

(c) The diffuser ports are in good operating condition.

98 In the event that the Consent Holder becomes aware that the pipeline is exposed, either as a result of an inspection carried out or at any other time, the Manager shall be notified immediately and provided with a report within ten working days providing an assessment of environmental effects resulting from the exposure together with any proposed remediation or risk management action to be undertaken.

99 The Consent Holder shall keep the coastal marine area free of debris resulting from the Consent Holder's activities.

100 Appropriate navigation signals shall be shown on vessels used in construction activities.

101 The Consent Holder shall, immediately upon completion of the installation of all works associated with the outfall structure, notify in writing:

Nautical Information Advisor
Land Information New Zealand
Private Box 5501
Wellington 6140

Maritime Safety Authority
P O Box 25620
Wellington 6140

Whangarei District Council
Private Bag 9023
Whangarei Mail Centre
Whangarei 0148

Northland Regional Council
Private Bag 9021
Whangarei Mail Centre
Whangarei 0148

The Consent Holder shall include a scale plan of the completed works with the notification.

102 The Consent Holder shall forward copies of the results of all testing required by the conditions of this consent to the Manager within one month of the test date.

(09) Occupation and Use of Coastal Space by the Offshore Outfall Pipelines

103 The occupation of the Coastal Marine Area of the Bream Bay shall be limited to the physical space of:

(a) The pipeline and outfall diffuser to convey treated wastewater; and,

(b) The temporary structures associated with the construction of the outfall structure.

104 The use of the ocean outfall structure shall be limited to the discharge of treated wastewater from the Ruakaka Wastewater Treatment Plant.

105 The Consent Holder may from time to time temporarily exclude the public from the area of construction, maintenance and operation for safety and security reasons during construction, maintenance and operation of the outfall structure. The area referred to in this condition shall be the minimum area required to provide for the necessary public safety or security. In all cases where this condition is applied, the Consent Holder shall immediately contact the Manager to advise of the detail of the exclusion.

Advice Note: *For the avoidance of doubt, this condition does not provide for any exclusive occupation of the coastal marine area. The Consent Holder may apply for consent for exclusive occupation of an area once its construction method has been established, upon which any need for exclusion of others may be known.*

106 Prior to the expiry, cancellation, or lapsing of this consent the Consent Holder shall remove all structures (other than reclamations) and other materials and refuse associated with this consent from the consent area and shall restore the consent area to the satisfaction of the Manager, unless an application for a replacement consent has been properly made beforehand.

	EXPIRY DATE	**EXTENDED LAPSE PERIOD**
AUT.021532.01.02	**31 MAY 2046**	**10 YEARS**
AUT.021532.02.02	**31 MAY 2046**	
AUT.021532.03.01	**31 MAY 2046**	
AUT.021532.04.01	**31 MAY 2046**	**10 YEARS**
AUT.021532.05.02	**31 MAY 2031**	**10 YEARS**
AUT.021532.06.01	**31 MAY 2031**	**10 YEARS**
AUT.021532.07.01	**31 MAY 2046**	**15 YEARS**
AUT.021532.08.01	**31 MAY 2046**	**15 YEARS**
AUT.021532.09.01	**31 MAY 2046**	**15 YEARS**

Advice Note: *An application can be made to the Northland Regional Council to extend the period after which the consent lapses pursuant to section 125(1) of the Resource Management Act. Such an application must be made before the consent lapses.*

These consents were granted on 14 June 2019 under delegated authority from the council by Stuart Savill, Consents Manager. The commencement date for consent 02 is 11 July 2019. The commencement date for consents 01 and 03 to 09 is 16 March 2012.

SCHEDULE 1

MONITORING PROGRAMME

The Consent Holder shall undertake the following monitoring:

1. WASTEWATER TREATMENT SYSTEM

1.1 Inflow Volume

A record of the total daily wastewater inflow volume, midday to midday, to the treatment system shall be kept. The average daily inflow volume shall be calculated using the recorded wastewater inflow volumes for the period between 1 April and 31 March each year.

The Northland Regional Council's closest rainfall recorder site – presently being NRC 548215 (Marsden Point) – shall be used as the daily rainfall recorder for these consents to determine wet weather flow events, unless the Consent Holder installs an approved weather station on the treatment site.

For each rain event, the following records shall be kept:

(a) Date(s), duration and intensity of the event;

(b) The duration of any observable increase in the daily wastewater inflow and discharge volumes as a result of the rain event, and

(c) The estimated increase in daily wastewater inflow and discharge volume as a result the rain event.

Advice Note: *The Northland Regional Council will forward a copy of the rainfall records from this recorder site to the Consent Holder on written request.*

2. Discharge Volume

With the exception of wastewater discharged to Zone 3, the Consent Holder shall keep a written record of the daily volume of wastewater discharged, midday to midday, from the outlet of the treatment system to each of the land discharge areas, any reuse system or the ocean outfall using the meters required to be installed and maintained under Condition 17 and 17A.

Wastewater discharged to Zone 3 shall be estimated by subtracting the combined daily discharge volume to all other areas from the total daily inflow volume to the treatment system.

2.1 Daily Average Flow

The daily average discharge volume shall be calculated using the total recorded wastewater volumes for the period specified in the relevant condition and divided by the number of days within that period.

2.2 Average Dry Weather Flow

The average dry weather inflow shall be a “rolling” (moving) average based on the inflow volumes from the 30 most recent “dry weather flow” days.

For the purposes of this calculation, a “dry weather flow” day is any day on which there is less than 1 millimetre of rainfall and that day occurs after three consecutive days either without rainfall or with rainfall of less than 1 millimetre.

2.3 Maximum Wet Weather Flow

For the purposes of Condition 722 of this consent, the maximum wet weather flow shall be the maximum flow recorded on any day that is not a dry weather day as defined in Section 1.2.2 above.

3. Treated Wastewater Quality

3.1 Oxidation Ponds and Wetland

The Consent Holder shall, take a composite* sample of the treated wastewater from:

(a) The oxidation pond outlet(s) to the marsh system; and

The following NRC Sampling Sites, where discharges are occurring, as shown on NRC Plan 4885 (**attached**):

(b) Site 100779: Number 1 Marsh outlet – far

(c) Site 100780: Number 1 Marsh outlet – near

(d) Site 100782: Number 2 Marsh outlet – near

(e) Site 100783: Number 2 Marsh outlet – far

The composite* sample shall be analysed for the following:

(a) Faecal coliforms

(b) Carbonaceous biochemical oxygen demand

(c) Total ammoniacal nitrogen

(d) Total Nitrogen

(e) Total Phosphorous

(f) Suspended Solids

Temperature, pH and dissolved oxygen concentration shall be recorded in the wastewater sample using an appropriate meter, and in accordance with standard procedures.

The frequency of sampling shall be as follows:

(i) quarterly in the months of January, April, July and October; or

(ii) on a monthly basis for a period of five consecutive months following any sampling result from a marsh outlet discharge point exceeding a BOD_5 of 60 mg/L.

**A sample made up of equal volumes from three samples taken at least one minute apart during the same sampling event.*

3.2 New Treatment Plant Wastewater

The Consent Holder shall take samples of treated wastewater from the outlet of the wastewater treatment plant in accordance with Table S1 and analyse these for the determinands, and to the detection limits, and at the frequency specified.

TABLE S1: Treated wastewater sampling frequency, sample type, detection limit and trigger value specifications

Determinand	Monitoring Frequency					Sample Type	Units	Detection limit	Treated wastewater trigger values (composite samples)	Notes A
	Continuous beginning 12 months before first operation of outfall	1 sample in each 6 day period	Monthly	Quarterly	Additional Quarterly for 12 months before and 12 months after first operation of outfall; Annually thereafter subject to conditions - see (h)					
Temperature	✓					continuous	°C	0.1	-	B
pH	✓					continuous	pH	0.1	-	B
Electrical conductivity	✓					continuous	mSm	0.1	-	B
Turbidity	✓					continuous	NTU	0.1	-	B
UV dose	✓					continuous	mWs/cm^2	1	-	B
$cBOD_5$		✓				composite	mg/L	1	refer Condition 9A	
COD	✓					continuous	mg/L	1		
Suspended solids		✓				composite	mg/L	1	refer Condition 9A	
Faecal coliform		✓				grab	cfu/100 ml	1	refer Condition 9A	
Enterococci			✓			grab	cfu/100 ml	1		
Total Nitrogen		✓				composite	mg/L	0.1	refer Condition 9A	
Ammonia-Nitrogen	✓		✓			continuous/ composite	mg/L	0.1	79	B
Nitrate-Nitrogen	✓		✓			continuous/ composite	mg/L	0.1	87	B
Nitrite-Nitrogen			✓			composite	mg/L	0.1	5.1	
Total Phosphorus			✓			composite	mg/L	0.1	-	
Dissolved Reactive Phosphorus			✓			composite	mg/L	0.1	-	
Arsenic (Total)				✓		composite	µg/L	5	95	
Cadmium (Total)				✓		composite	µg/L	0.1	25	
Chromium (Total)				✓		composite	µg/L	0.5	547	

Determinand	Monitoring Frequency					Sample Type	Units	Detection limit	Treated wastewater trigger values (composite samples)	Notes A
	Continuous beginning 12 months before first operation of outfall	1 sample in each 6 day period	Monthly	Quarterly	Additional Quarterly for 12 months before and 12 months after first operation of outfall; Annually thereafter subject to conditions - see (h)					
Copper (Total)				✓		composite	µg/L	0.2	161	
Lead (Total)				✓		composite	µg/L	0.1	280	
Mercury (Total)				✓		composite	µg/L	0.08	0.22	D
Nickel (Total)				✓		composite	µg/L	0.5	880	
Zinc (Total)				✓		composite	µg/L	1	635	
Total sulphide					✓	composite	µg/L	2	3,177	C
VOC					✓	composite	µg/L	trace	-	E
SVOC					✓	composite	µg/L	trace	-	E
DDT					✓	composite	ng/L	trace	52	
Endrin					✓	composite	ng/L	trace	516	
17β-estradiol					✓	composite	ng/L	trace	129	
Estrone					✓	composite	ng/L	trace	387	
17α-ethynylestradiol (EE2)					✓	composite	ng/L	trace	45	
Octylphenol					✓	composite	ng/L	trace	4,515	
Nonylphenol					✓	composite	ng/L	trace	12,900	
Bisphenol A					✓	composite	ng/L	trace	19,350	
Phthalates					✓	composite	ng/L	trace	-	E
Whole Effluent Toxicity Testing					✓	composite	Percent effluent	NA	see note (g)	

For the purposes of this monitoring:

(a) 'Continuous monitoring' refers to the continuous measurement of specified determinands or their surrogates by a suitable monitoring device.

(b) A 'composite sample' means a 24 hour flow weighted sample of the treated wastewater discharge.

(c) A 'grab sample' means a random sample taken from the treated wastewater discharge.

(d) The routine faecal coliform grab sample shall to be taken between the hours of 9.00 a.m. and 4.00 p.m.

(e) Analysis for total metals and metalloids shall be by strong acid digestion.

(f) The timing of the sample collection for analysis of metals, VOC and SVOC shall be the same as for the Whole Effluent Toxicity Testing.

(g) For Whole Effluent Toxicity Testing (WETT) – a 24-hour flow weighted composite sample of the discharge shall be taken and tested for toxicity, using no less than three different trophic levels. The test shall follow internationally accepted protocols, including a reputable method for evaluating chronic toxicity. Compliance shall be based on the statistically derived no observed concentration (NOEC) for the test dilution series, allowing for an 129:1 dilution. Test procedures and choice of test organisms shall be determined in consultation with the National Institute of Water and Atmospheric Research or any successor(s) and approved by the Manager.

(h) The additional quarterly sampling for the specified determinands may only be reduced to annual sampling after the first 12 months of operation of the ocean outfall if the tested levels for the relevant determinand or determinands are less than the specified trigger values. If subsequent annual monitoring indicates that level(s) of the relevant determinand or determinands are at or above the specified trigger values then quarterly sampling shall be resumed. In the event that four consecutive quarterly samples of the those determinands are thereafter less than the specified trigger levels then the sampling frequency for those determinands may be reduced to once yearly.

Advice Notes:

*A. Contaminant concentrations trigger values in the treated wastewater are calculated using guideline concentrations in the WDC AEE (Table 8.12) corrected for background water quality (Roper et al 2006) and allowing a worst case dilution for predicted flows in the year 2047 (129-fold, AEE Table 8.6) at the edge of the mixing zone. The table attached (**Attachment 1**) shows background concentrations, receiving water trigger values, and dilution factors used for the derivations.*

B. Continuous instrument monitoring for process control monitoring. A range of values for 'normal' operation of the plant shall be established over the year prior to discharging to the marine environment.

C. The total sulphide, nitrate and nitrite standards are based on guidelines for freshwater species protection, since no marine guidelines currently exist.

D. Mercury concentration is calculated using food chain bioaccumulation guideline for human consumption of fish (0.0012 µg/L: from US EPA 2001 and using the worst case dilution at the aquaculture intake (405:1, AEE Table 8.7).

E. Standards to be determined based on the ANZECC (2000) guidelines for individual compounds and allowing for a 129-fold dilution.

3.3 Rama Road Block

In order to monitor compliance with Condition 59, any wastewater containing reject water in accordance with Condition 58 and discharged to the Rama Road Block shall be monitored for the following parameters:

(a) Soluble sodium

(b) Chloride

(c) Fluoride

(d) Boron

(e) Sodium absorption ratio (SAR)

(f) Electrical conductivity

The sampling shall be undertaken on a three monthly basis with the exception of the following:

(i) for the first 12 month period of reject water being discharged to the Rama Road block, sampling of all parameters shall be undertaken monthly; and

(ii) at any time a sampling parameter exceeds the limits specified in condition 60, the sampling of that parameter shall be monitored monthly until such time as it can be demonstrated that compliance has been achieved with five consecutive monthly samples.

4. WASTEWATER DISCHARGE SYSTEMS

The Consent Holder shall visually inspect all the land discharge systems at least once every two weeks to assess the hydraulic performance of the systems. A record shall be kept of any areas where ponding has occurred or matting on the infiltration surface is visible.

5. ODOUR

If there are any objectionable or offensive odours detected at the boundary of the area legally occupied by the wastewater treatment and disposal/discharge system, then the Consent Holder shall notify the Manager immediately in accordance with Conditions 466 and 688.

6. GROUNDWATER

6.1 Zone 3

The Consent Holder shall, during the first week of the months of January, April, July and October, take a groundwater sample from each of the following groundwater monitoring bores, as shown on NRC Plan 4885 (**attached**):

Seaward Bores:

(a) Site 100784: Number 1 monitoring bore

(b) Site 100785: Number 2 monitoring bore

(c) Site 100786: Number 3 monitoring bore

(d) Site 100787: Number 4 monitoring bore

(e) Site 100788: Number 5 monitoring bore

(f) WDC monitoring bore 30

Inland Bores:

(a) WDC monitoring bore number 22

(b) WDC monitoring bore number 25

These groundwater samples shall be analysed the following parameters following the commencement of this resource consent:

(a) Faecal coliforms

(b) Total ammoniacal nitrogen

(c) Total Nitrogen

(d) Total Phosphorous

On commencement of the discharge of reject water:

(a) Sodium

(b) Chloride

(c) Boron

Groundwater samples from inland bores shall also be analysed for the following:

(a) Dissolved Reactive Phosphorus

(b) Nitrate + Nitrite

During this groundwater quality sampling, the Consent Holder shall also measure the depth to groundwater in all the above monitoring bores.

6.2 Rama Road Block

The Consent Holder shall, during the first week of the months of January, April, July and October, take a groundwater sample from each of the seaward monitoring bores installed in accordance with Condition 61(a) and analyse the samples for the same determinands as specified for the Zone 3 groundwater monitoring.

7. SURFACE WATER

7.1 Rama Road Block

The Consent Holder shall, during the first week of the months of January, April, July and October, take a surface water sample from each of the surface water sites to be specified in accordance with Condition 61(b).

These surface water samples shall then be analysed for the following:

(a) Faecal coliforms

(b) Total ammoniacal nitrogen

(c) Total Nitrogen

(d) Nitrate + Nitrite

(e) Total Phosphorous

(f) Dissolved Reactive Phosphorus

8. COLLECTION, TRANSPORT AND ANALYSIS OF SAMPLES

The groundwater samples shall be taken in accordance with guidelines provided in Rosen, M R, *et al*., 1999; "New Zealand guidelines for the collection of groundwater samples for chemical and isotopic analysis"; Institute of Geological and Nuclear Sciences Limited; science report 99/9; 80 p.

All wastewater and surface water samples shall be collected using standard procedures and in appropriate laboratory supplied containers.

All samples collected as part of this monitoring programme shall be transported in accordance with standard procedures and under chain of custody to the laboratory.

All samples taken shall be analysed at a laboratory with registered quality assurance procedures[#], and all analyses are to be undertaken using standard methods, where applicable.

[#] *Registered Quality Assurance Procedures are procedures which ensure that the laboratory meets recognised management practices and would include registrations such as ISO 9000, ISO Guide 25, Ministry of Health Accreditation.*

9. NON COMPLIANCES

The Consent Holder shall notify the Manager of any non-compliance with any conditions of consent immediately after the results of the monitoring required by Sections 1 to 4 become known to the Consent Holder.

If the Consent Holder detects any noxious, dangerous, offensive or objectionable odours at the legal boundary of the treatment or land disposal systems, then the Manager shall be notified immediately.

10. REPORTING

The Consent Holder shall forward a report to the Manager and members of the Liaison Group detailing the monitoring results of Sections 1 to 5 of this Schedule by the 15th day of February, May, August and November for the previous three month period, excluding the month that the report is due in.

The Consent Holder shall, by 1 May each year, for the preceding year 1 April and 31 March, forward an annual report to the Manager and representatives of the Liaison Group detailing the following:

(a) An assessment of compliance with the wastewater treatment quality limits set down in these resource consents; and

(b) The maintenance undertaken on the treatment and discharge systems during the previous 12 month period and any identified maintenance requirements for the following 12 month period.

(c) An assessment of wetland performance including, but not limited to:

i. Approximate percentage plant cover in each wetland cell; and

ii. Wetland performance, including an analysis of wetland influent compared to wetland effluent;

iii. An estimate of sludge volumes within the wetland;

(d) If the BOD_5 trigger of 60g/m^3 has been exceeded at any time within the report period, assessment of the discharge quality from the wetland for the purpose of determining whether BOD loading has resulted in a deterioration of discharge quality over the reporting period.

All required numerical monitoring results shall be provided in a Microsoft Excel spreadsheet, or an alternative format agreed to with the Manager.

SCHEDULE 2

MANAGEMENT PLANS

Construction Management Plans

1. The consent holder shall prepare a Construction Management Plan which shall meet the following outcomes:

    (a) Demonstrate how, where practical, the construction methodology will:

        (i) ensure ongoing access by Transpower to the Bream Bay Deviation A (BBR-DEV A) 220 kV transmission line and support structures for reasonable maintenance at all reasonable times, or for emergency works, whilst construction activities associated with the development are being undertaken;

        (ii) ensure any discharge of dust, odour and/or any other matter does not create any hazard or nuisance to Transpower's Bream Bay Deviation A (BRB-DEV A) 220kV transmission line, including support structures and insulators, which are within or close to the application site;

        (iii) ensure compliance with the New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP 34:2001);

        (iv) ensure trees and vegetation used for landscaping are located and managed to comply with the Electricity (Hazard from Trees) Regulations 2003; and

    (b) Demonstrate how the construction methodology has incorporated the outcomes of consultation with Transpower.

2. The Construction Management Plan shall include (but is not limited to) the following details:

    (a) A plan showing the dimensions, location and relative position of any new buildings and other structures required for the new wastewater treatment plant;

    (b) Type of construction method(s) proposed;

    (c) The proposed timeframe and programme for construction (including contingencies relating to time); and

    (d) The proposed mitigation measures that will be put in place to avoid or minimise potential adverse effects including measures to be used to avoid or minimise effects on the Bream Bay Deviation A (BBR-DEV A) 220 kV transmission line and support structures.

    (e) The proposed mitigation measures that will be put in place to avoid or minimise potential adverse effects on neighbouring properties, including but not limited to dust, noise and traffic.

Treatment Plant Operations and Maintenance Management Plan

1. The Consent Holder shall prepare a Treatment Plant Operations and Maintenance Management Plan which shall meet the following outcomes:

    (a) Demonstrate how the wastewater treatment system is to be operated and maintained to ensure compliance with the conditions of these consents.

    (b) The Treatment Plant Operations and Maintenance Management Plan shall include (but is not limited to) the following details:

(i) A description of the entire wastewater treatment plant and sampling points;

(ii) A description of routine maintenance procedures to be undertaken to ensure compliance with these consents;

(iii) An outline of the methods used to monitor the wastewater treatment plant operation and performance and process-oriented influent monitoring;

(iv) Measures to deal with high influent flows under excessively wet weather conditions and contingency measures that will be put in place if the wastewater treatment system is overloaded;

(v) Specific management procedures for ensuring the efficient functioning of the wastewater treatment system and any odour control equipment or technology;

(vi) Procedures for recording routine maintenance and all repairs undertaken;

(vii) Contingency measures in place including the operational procedures for the contingency storage ponds to deal with unusual events such as any process failures;

(viii) Specific management procedures for receiving and responding to odour complaints;

(ix) Specific operational checks and procedures for responding to any exceedance of the trigger values in Table S1 of Schedule 1 (**attached**);

(x) Other actions necessary to comply with the conditions of this resource consent; and

(xi) Procedures for improving and/or reviewing the Operations and Management Plan.

Advice Note: *The operational checks and procedures required under (xi) to ensure that the treatment plant is operating within design specifications and that the exceedance of the trigger values is not due to suboptimal plant performance. The implementation of these checks and procedures are additional to the required actions under Conditions 80 and 81.*

(c) The Plan shall be reviewed by the Consent Holder in consultation with the Northland Regional Council at least every two years after the first staged upgrade of the new treatment plant has been commissioned. The Consent Holder may also amend the Plan at any time following consultation with the Manager and the operator of the Bream Bay Aquaculture Park Facility. If any changes are made to the Plan, then a copy of the amended plan shall be forwarded to the Manager for certification with the requirements of clause 2 above, and the operator of the Bream Bay Aquaculture Park Facility, prior to it being made operative.

Treatment Plant Air Discharge Management Plan

1. The Consent Holder shall prepare a Treatment Plant Air Discharge Management Plan which shall meet the following outcomes:

   (a) Demonstrate how the wastewater treatment system is to be operated and maintained to ensure compliance with the conditions of these consents.

2. The Treatment Plant Air Discharge Management Plan shall include (but is not limited to) the following details:

(a) The details of the operating and maintenance regimes for all of the odour management system;

(b) The details of the operating and maintenance regime for any biofilter(s) including specification of the optimal operating range for pH, moisture content and back pressure; the monitoring regime for these parameters; the action that will be taken in the event of the filter becoming 'out of range' for any of these parameters;

(c) The details of influent screening and biosolids management including ingress, egress and covering of trucks, and covering of any stored screenings, sludge or biosolid piles; and

(d) The details of the odour complaints procedure, record keeping and response procedure.

3. The Plan shall be reviewed by the Consent Holder in consultation with the Northland Regional Council at least every two years after the first stage of the new treatment plant has been commissioned. The Consent Holder may also amend the Plan at any time following consultation with the Manager. If any changes are made to the Plan, then a copy of the amended plan shall be forwarded to the Manager for certification with the requirements of clause 2 above, prior to it being made operative.

Wastewater Discharge Management Plan for Zone 3

1. The Consent Holder shall prepare a Wastewater Discharge Management Plan for Zone 3 (Sec 65 Blk VII Ruakaka SD) which shall meet the following outcomes:

   (a) Demonstrate how the wastewater treatment system is to be operated and maintained to ensure compliance with the conditions of these consents.

2. The Wastewater Discharge Management Plan shall include (but is not limited to) the following details:

   (a) A detailed description of the application method to be used, including the management of the timing and volume of wastewater application;

   (b) Specifications for buffer zone distances from water bodies within the boundaries of the property;

   (c) A system to log when this zone is utilised and which of the wetland outlet(s) are operating;

   (d) How stagnant ponding areas will be avoided; and

   (e) How the system will be operated and maintained.

Wastewater Discharge Management Plan for Roger Hall Memorial Park

1. The Consent Holder shall prepare a Wastewater Discharge Management Plan for Roger Hall Memorial Park (Lot 1 DP 396871) which shall meet the following outcomes:
   (a) Demonstrate how the wastewater treatment system is to be operated and maintained to ensure compliance with the conditions of these consents.

2. The Wastewater Discharge Management Plan shall include (but is not limited to) the following details:

   (a) A detailed description of the treatment level (including filtration), application method to be used, including the management of the timing and volume of wastewater application;

(b) A method for ascertaining the soil moisture status prior to and during treated wastewater irrigation;

(c) A system to log the daily applications including application area, duration, time and volume irrigated;

(d) A description of projected daily and annual hydraulic and nutrient (nitrogen and phosphorus) loading rates;

(e) How the system will be operated and maintained;

(f) Monitoring records of days of use of the irrigation scheme and wastewater volumes irrigated on those days;

(g) Location of soils to be monitored and their variability across the site;

(h) The frequency of monitoring events;

(i) The range of parameters to be measured;

(j) Nomination of critical monitoring and wastewater discharge loading parameters that may require changes to management and additional on and offsite monitoring;

(k) A methodology for sample collection and analysis; and

(l) A record of any complaints associated with the irrigation procedures.

3. The Plan shall be reviewed by the Consent Holder in consultation with the Northland Regional Council at least every two years after the Park is first used for wastewater disposal. The Consent Holder may also amend the Plan at any time following consultation with the Manager. If any changes are made to the Plan, then a copy of the amended plan shall be forwarded to the Manager for certification with the requirements of clause 2 above, prior to it being made operative.

Wastewater Discharge Management Plan for Rama Road Block

1. The Consent Holder shall prepare a Wastewater Disposal Management Plan for the Rama Road Block (Lot 4 DP 419151) which shall meet the following outcomes:

   (a) Demonstrate how the wastewater discharge system is to be operated and maintained to ensure compliance with the conditions of consents (05) and (06).

2. The Wastewater Discharge Management Plan shall include (but is not limited to) the following details:

   (a) A detailed description and plan of the application system to be used, including the management of the timing and volume of wastewater application;

   (b) A description of projected daily and annual hydraulic and nutrient (nitrogen and phosphorus) loading rates;

   (c) A method for ascertaining the soil moisture status prior to and during treated wastewater irrigation;

   (d) Specifications for buffer zone distances from water bodies within the Block's boundary;

   (e) A system to log the daily applications including application area, duration, time and volume irrigated;

   (f) How the system will be operated and maintained;

(g) Monitoring records of days of use of the irrigation scheme and wastewater volumes irrigated on those days including the section(s) of the Block irrigated, the application depth and duration;

(h) Monitoring records of the locations where Reverse Osmosis treatment plant reject water is applied and a methodology to demonstrate how the dilution rates have been met;

(i) Methods to exclude stock from pasture areas when irrigating and soil moisture is high;

(j) Methods to avoid the disturbance of soil when irrigating and soil moisture is high;

(k) The details of the operating and maintenance regimes for all odour management systems;

(l) The details of operating procedures to minimise aerosols and spraydrift; and

(m) The details of the odour complaints procedure, record keeping and response procedure.

3. The Plan shall be reviewed by the Consent Holder in consultation with the Northland Regional Council at least every two years after the Block is first used for wastewater disposal. The Consent Holder may also amend the Plan at any time following consultation with the Manager. If any changes are made to the Plan, then a copy of the amended plan shall be forwarded to the Manager for certification with the requirements of clause 2 above, prior to it being made operative.

Ocean Outfall Construction Management Plan

1. The Consent Holder shall prepare an Ocean Outfall Construction Management Plan which shall meet the following outcomes:

   (a) Demonstrate how the wastewater outfall is to be operated and maintained to ensure compliance with the conditions of these consents.

   (b) Demonstrate how the construction methodology has incorporated the outcomes of consultation with Mighty River Power regarding potential effects on the existing Marsden A and Marsden B intake and outfall structures.

2. The Ocean Outfall Construction Management Plan shall include (but is not limited to) the following details:

   (a) Pipeline design concept and pipeline material type, cross-sectional dimensions and configuration;

   (b) Type of construction method;

   (c) Details of the hydrostatic and any other testing required of the pipeline during construction and/or upon completion of construction;

   (d) The proposed timeframe and programme for construction (including contingencies relating to time);

   (e) The proposed mitigation measures that will be put in place to minimise potential adverse effects, including, but not limited to, measures to be used to minimise effects on marine ecosystems, and on those taking water via the Marsden A and B pipelines.

(f) Health and safety and access matters relating to general public accessing and use of the coastal marine area in an around the construction area during pipeline construction, including, but not limited to, safety signage;

(g) Minimising the footprint of the area disturbed by construction activities;

(h) Fuel storage and machinery refuelling procedures and storage and handling of other hazardous materials and drilling fluid, if any;

(i) The risk management procedures that will be in place; and

(j) Details of proposed testing regime to demonstrate the levels of dilution the diffuser achieves as required under Condition 74.

Advice Note: *The term 'pipeline' means any configuration of one or more pipelines between Mean High Water Springs to and including the outfall terminal structure that forms the outfall diffuser.*

ATTACHMENT 1

Background concentrations, trigger values and dilution factors used to derive allowable concentrations in treated wastewater in Table S1.

Analysis	Background concentration (Table 8.12 AEE)	Units	Trigger value	Dilution factor	Source of Trigger Value
Arsenic (Total)	1.56	µg/L	2.3	129	95% ANZECC As III
Cadmium (Total)	0.006	µg/L	0.2	129	ANZECC human consumption shellfish
Chromium (Total)	0.16	µg/L	4.4	129	95% ANZECC CrVI
Copper (Total)	0.056	µg/L	1.3	129	95% ANZECC
Lead (Total)	0.0142	µg/L	2.2	129	99% ANZECC
Mercury (Total)	0.00065	µg/L	0.0012	405	USEPA 2001
Nickel (Total)	0.175 C	µg/L	7	129	99% ANZECC
Zinc (Total)	0.079	µg/L	5	129	Site specific ANZECC (Clearwater 2009)
Total sulphide	0	µg/L	25 (A)	129	95% ANZECC
VOC	0	µg/L	B	129	ANZECC (2000)
SVOC	0	µg/L	B	129	ANZECC (2000)
DDT	0	ng/L	0.4	129	ANZECC (2000)
Endrin	0	ng/L	4	129	99% ANZECC
17β-estradiol	0	ng/L	1	129	Gadd (2009)
Estrone	0	ng/L	3	129	Gadd (2009)
17α-sthynylestradiol (EE2)	0	ng/L	0.35	129	Gadd (2009)
Octylphenol	0	ng/L	35	129	Gadd (2009)
Nonylphenol	0	ng/L	100	129	Gadd (2009)
Bisphenol A	0	ng/L	150	129	EU (2008)
Phthalates	0	ng/L	B	129	ANZECC (2000)

Advice Notes:

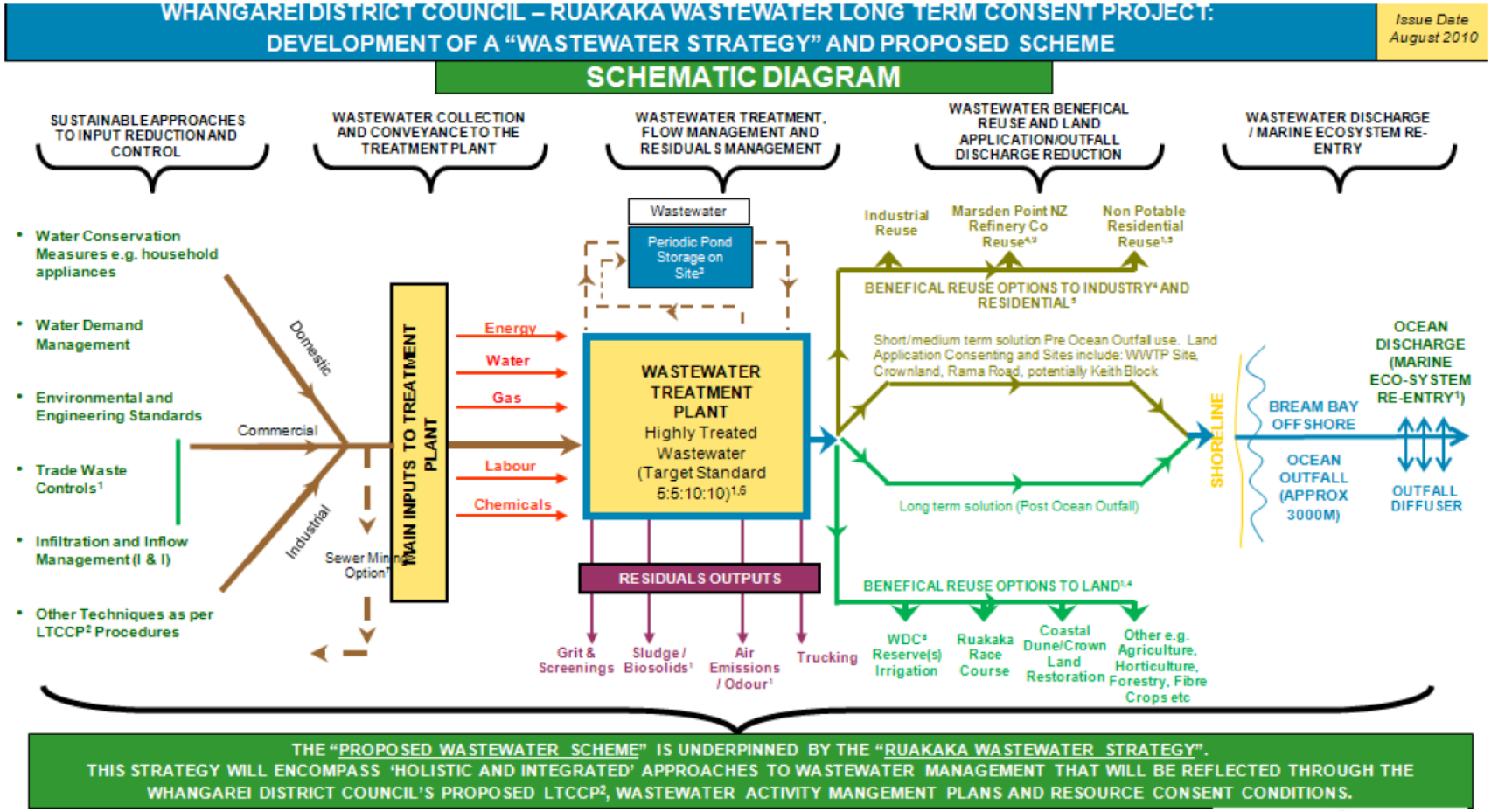
A *Derived from hydrogen sulphide 95% ANZECC marine guideline (1.0 µg/L), using H2S is 4.06% of total sulphides at 20^{o}C, pH 8.0, 32.5 ppt salinity (see ANZECC (2000) Table 8.3.10).*

B *See guidelines for individual VOCs, SVOCs and phthalates, and use most conservative values when measurable in treated wastewater (ANZECC 2000).*

C *Background nickel from Roper et al (2006).*

ATTACHMENT 2

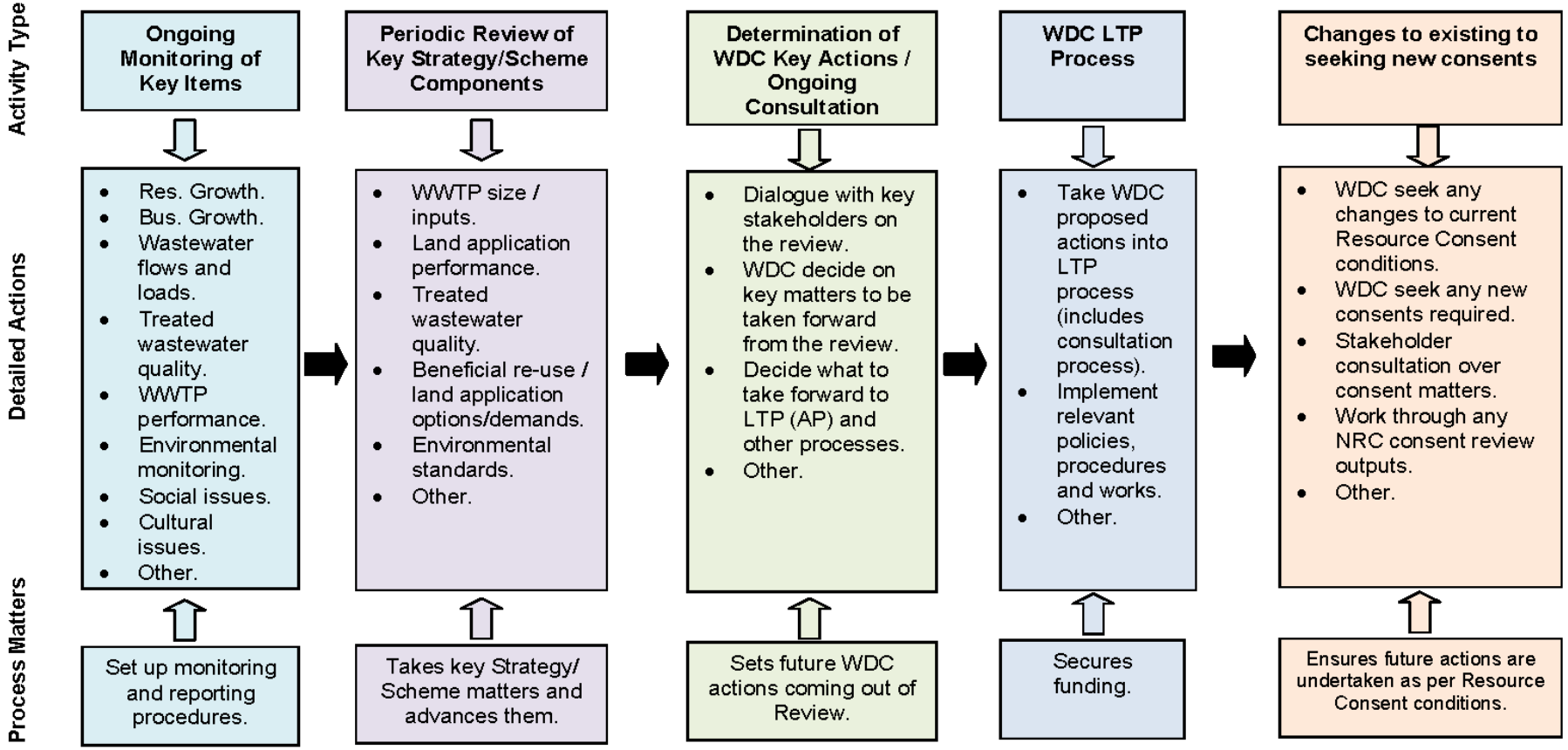
Figure 4.1 Development of a the Ruakaka 'Wastewater Strategy' and 'Proposed Scheme'



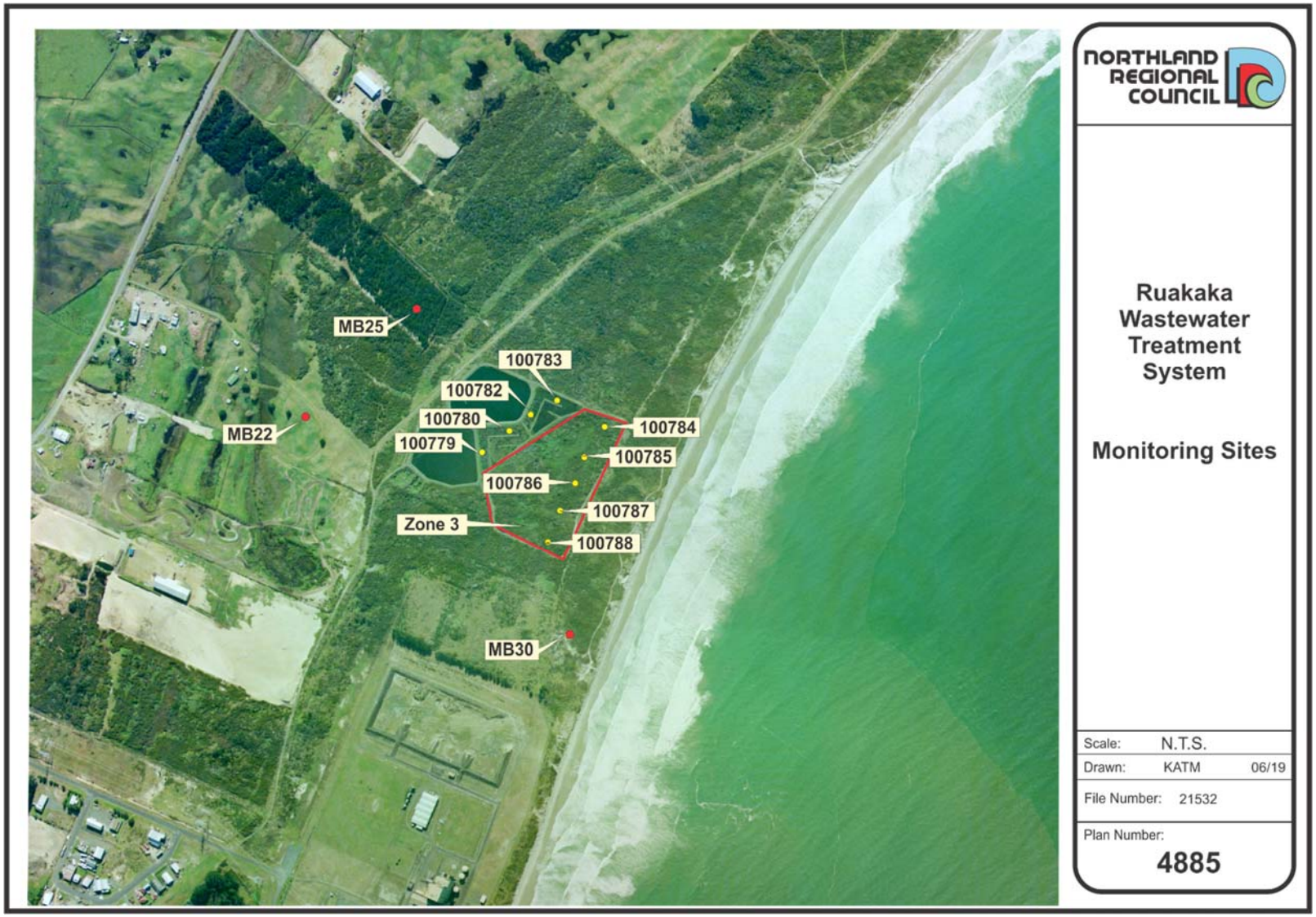
ATTACHMENT 3

Figure 4.2 Ruakaka Wastewater Strategy and Scheme Implementation – Activities to be Undertaken within the Duration of Consents

Activities driven (in part) by key Resource Consent Condition(s) requiring periodic Development, Technology and Environment / Monitoring Review and preparation of a **'Ruakaka Wastewater Strategy and Scheme Review'** Report.



ATTACHMENT 4



ATTACHMENT 5

Figure 10.1 Indicative Footprint of Irrigable Area, Roger Hall Memorial Park

ATTACHMENT 6

Figure 11.1 Aerial Plan Showing the WDC Rama Road Block Outlined in Red

ATTACHMENT 7

Table 3-3 Predicted CORMIX dilutions at edge of 100m mixing zone.

Scenario	Dilution (fold)					
	2012 ADWF		2047 ADWF		2047 PWWF	
	Neap	Spring	Neap	Spring	Neap	Spring
1	514	1533	289	476	86	129
2	986	1463	313	456	91	124
3	1064	1462	334	457	95	124
4	984	1455	334	455	91	124
5	1165	1542	373	476	105	129
6	1057	1532	333	476	95	129
7	1058	1531	333	476	95	129

ATTACHMENT 8

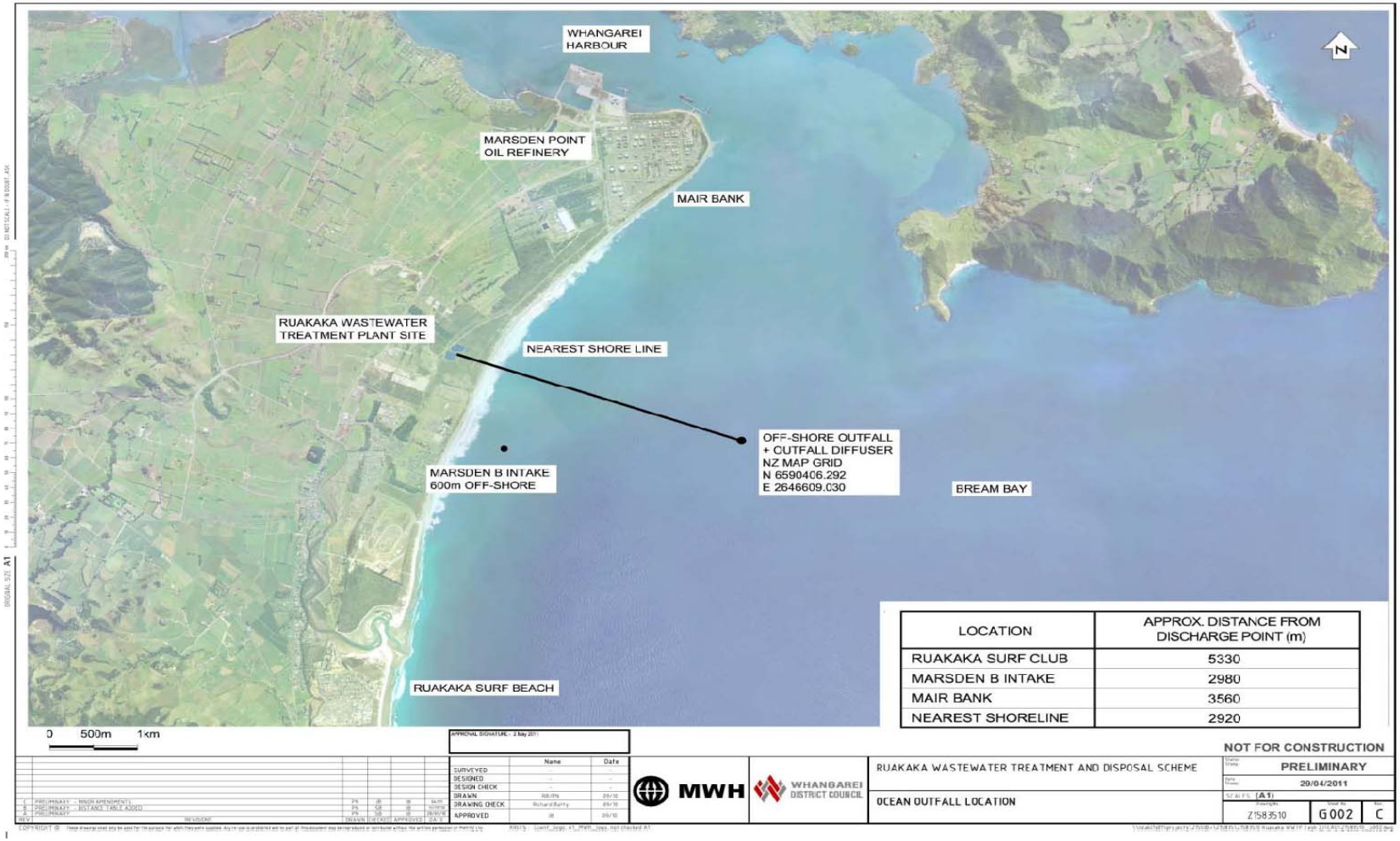


Figure 4.7 Proposed Ocean Outfall Location – Location 22

ATTACHMENT 9

Excerpt from Section 9.3.1 of the report entitled *Ruakaka WWTP Treatment System Review Report*, prepared by MWH Limited and dated July 2016

This option is based on the operation of the two oxidation ponds in parallel (although for simplicity and to minimise capital expenditure, treated wastewater from Pond 1 will continue to be discharged into the south eastern corner of Pond 2) utilising mechanical equipment as installed at present (i.e. a single aerator located in Pond 1).

Screened wastewater will be discharged to a newly constructed manhole/splitter chamber then would be utilised to direct raw wastewater flows to pond 1 and pond 2. A new pipeline would be constructed from the splitter chamber to direct flows to Pond 2. Given the available surface area of the two ponds and the existing supplemental aeration provided in Pond 1, it is envisaged that around 60 percent of the flows would be directed to Pond 1 and 40 percent of the flows to Pond 2.

ATTACHMENT 10

Excerpt from Section 9.3.2 of the report entitled *Ruakaka WWTP Treatment System Review Report*, prepared by MWH Limited and dated July 2016

This option follows on from the reconfiguration of the ponds to parallel operation as described in Section 9.3.1 but provision for additional supplemental aeration in both ponds. It is envisaged that two additional 4 kW brush aerators would be provided in Pond 1 and that up to three 4 kW brush aerators would be provided in Pond 2. Flow splitting to the two ponds would be as prescribed in Section 9.3.1, i.e. 60 percent of the flows would be directed to Pond 1 and 40 percent of the flows to Pond 2. Supplemental aeration would be provided such that the flow split remains appropriate.

PROPOSED CONSENT CONDITIONS FOR ZONES 6B AND ZONE 7

HOW TO READ THESE PROPOSED CONDITIONS: New resource consents are required to authorise the discharge of treated wastewater to Z6B and Z7. However, administrative variations are proposed to AUT.021532 to add the new resource consents for Z6B and Z7 discharges to the AUT.021532 resource consent document. The reason for this approach is because the Z6B and Z7 consents still need to rely on the effective operation of the WWTP which is already addressed by conditions of the AUT.021532 resource consents and this way avoids duplication of these consent conditions making it much simpler to implement by the Operators. New Z6B and Z7 proposed consent conditions are indicated in purple text to clearly demarcate these as the new consents and respective conditions, while administrative variations to AUT.021532 consent conditions to integrate the Z6B and Z7 consents are shown in green text. Additional administrative variations to the AUT.021532 conditions are proposed and these are also shown in green and, where a cancellation is proposed, is shown with a strike-through ~~(strike-through)~~.

RESOURCE CONSENTS ISSUED TO WHANGAREI DISTRICT COUNCIL, WASTE & DRAINAGE DIVISION

To carry out the following activities associated with the operation of an existing wastewater treatment system and the construction, upgrading and operation of a new Ruakaka wastewater treatment plant, and the provision for the associated discharge of treated wastewater to land and to the coastal marine area:

Discharge Permits

AUT.021532.01.02 To discharge wastewater to land in a manner that it may enter water via seepage from the base of the Ruakaka Wastewater Treatment Plant on Sec 65 Blk VII Ruakaka SD (Sime Road), at or about location co-ordinates 1732700E 6029800N.

AUT.021532.02.02 To discharge treated wastewater to land in a manner that it may enter water via rapid infiltration basins at the Ruakaka Wastewater Treatment Plant site on Sec 65 Blk VII Ruakaka SD (Sime Road), at or about location co-ordinates 1732700E 6029800N.

AUT.021532.03.01 To discharge contaminants (mainly odour) to air from the Ruakaka Wastewater Treatment Plant site on Sec 65 Blk VII Ruakaka SD (Sime Road), at or about location co-ordinates 1732700E 6029800N.

AUT.021532.04.01 To discharge treated wastewater from the Ruakaka Wastewater Treatment Plant to land in a manner that it may enter water via subsurface irrigation on Lot 1 DP 396871 (known as Roger Hall Memorial Park, Takutai Place), at or about location co-ordinates 1731650E 6029100N.

AUT.021532.05.02 To discharge treated wastewater from Ruakaka Wastewater Treatment Plant into or onto land in a manner that it may enter water via surface irrigation on Lot 4 DP 419151 ("Rama Road Block", Rama Road), at or about location co-ordinates 1733400E 6030850N.

AUT.021532.06.01 To discharge contaminants (mainly odour) to air from surface irrigation of treated wastewater irrigation on Lot 4 DP 419151 ("Rama Road Block",

Rama Road), at or about location co-ordinates 1733400E 6030850N.

AUT.###### To discharge treated wastewater from the Ruakākā Wastewater Treatment Plant into or onto land in a manner that it may enter water on Sec 2 SO 461691, at or about location co-ordinates 1732708E 6030110 (Zone 6B) and 1732887E 60300417N (Zone 7).

AUT.##### To discharge contaminants (mainly odour) to air from discharge of treated wastewater on Sec 2 SO 461691, at or about location co-ordinates 1732708E 6030110 (Zone 6B) and 1732887E 60300417N (Zone 7).

Coastal Permits

AUT.021532.07.01 To discharge treated wastewater into Bream Bay via an outfall off Ruakaka Beach at or about location co-ordinates 1736025E 6028848N.

AUT.021532.08.01 To erect and place an ocean outfall structure in, on and under the foreshore and seabed of Bream Bay and the associated deposition of materials on, and disturbance of, the foreshore and seabed in the coastal marine area between approximate location co-ordinates 1733020E 6029630N and 1736025E 6028848N.

AUT.021532.09.01 To occupy and use the coastal marine area within Bream Bay with an ocean outfall structure between approximate location co-ordinates 1733020E 6029630N and 1736025E 6028848N

Note: All location co-ordinates in this document refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection.

Subject to the following conditions:

GENERAL CONDITIONS
Inflow, Infiltration and Beneficial Re-use

1. The Consent Holder shall minimise the volume of treated wastewater discharged to land and to the coastal marine area by:

   (a) Preventing, as far as is practicable, stormwater inflow and infiltration into the sewage reticulation network and treatment system. This shall include the prevention of stormwater run-off from the surrounding land entering the contingency storage pond system. For compliance purposes, this shall be determined using the daily wastewater inflow volume to the treatment system and rainfall records; and

   (b) Providing wastewater that has been sufficiently treated for beneficial re-use within the community if there are parties who wish to take the product and it is of a scale to be economic for the Consent Holder.

Advice Note: *It is the intention that the New Zealand Refinery will by private arrangement take up to 2,000 cubic metres per day of highly treated wastewater for beneficial re-use.*

Management Plans

2. At least three months prior to initiating each activity authorised by the respective consents the

Consent Holder shall prepare the Management Plans listed in Table 1. The Management Plans shall give effect to **Schedule 2** (**attached**) and may be prepared as separate plans or as part of a combined plan. The Management Plans shall be subject to the written approval of the Northland Regional Council's Monitoring Manager or their successor or nominee (hereafter referred to as "the Manager"). The consents shall thereafter be exercised in conformance with the approved Management Plans.

3. All Management Plans listed in Table 1 are to be prepared by a suitably qualified and experienced person with expertise in the matters that the individual Management Plan is to address.

4. If more than 24 months pass between the time that the written approval of the Manager is obtained for a Management Plan and the commencement of respective activities, then the Management Plan shall be reviewed by the Consent Holder to ensure that current best practice is reflected in it. If that occurs, the written approval of the Manager must be re-obtained prior to the respective activities commencing.

Table 1: Management Plans	**Consents**
Construction Management Plan	All
Treatment Plant Operations and Maintenance Management Plan	01, 02, 03, 04, 05, 07
Treatment Plant Air Discharge Management Plan	03
Wastewater Discharge Management Plan for Zone 3	02
Wastewater Discharge Management Plan for Roger Hall Memorial Park	04
Wastewater Discharge Management Plan for Rama Road Block	05, 06
Ocean Outfall Construction Management Plan	08
Wastewater Discharge Management Plan for Zone 6B and Zone 7	TBC
Wetland Monitoring and Management Plan for Zone 6B and Zone 7	TBC

Liaison Group

5. The Consent Holder shall, by providing reasonable organisational and administrative support for the duration of these consents, facilitate the development and on-going role of the Ruakaka Wastewater Liaison Group (the Liaison Group). The membership of the Liaison Group shall comprise a representative (subject to their agreement) of Patuharakeke Te Iwi Trust Board (Inc) (PTITB), Bream Bay Land Owners Association (BBLOA), Ruakaka Parish Residents and Ratepayers Association, Ruakaka Economic Development Group, Ruakaka Surf Club, Bream Bay Action Group, Save our Harbour Collective, Bream Bay Coastal Care, Royal Forest and Bird Protection Society of NZ, the operator of the Bream Bay Aquaculture Park, OceaNZ Blue NZ, Mighty River Power, Northland Medical Officer of Health, Department of Conservation, Whangarei Fisherman's Association/Leigh Commercial Fisherman's Association and Northland Scallop Enhancement Company. The membership of this Group may be varied over the term of the consents, as agreed between the Consent Holder and the Manager. The role and functions of this Group shall include, but not be limited to:

   (a) Receiving and discussing with the Consent Holder, the results of the consents compliance annual reporting and associated matters;

   (b) Being consulted with by the Consent Holder either as a group or as individual members regarding the development of the Management Plans detailed in Conditions 2 and 4;

   (c) Receiving from the Consent Holder periodic updates on, and providing input into, the on-going development and implementation of the Ruakaka Wastewater Strategy and the Wastewater Scheme and the Development, Technology and Environmental/Monitoring

Review reports;

(d) Receiving and discussing with the Consent Holder updates on the progress of the beneficial reuse of treated wastewater from the Ruakaka Wastewater Scheme by the New Zealand Refining Company and other beneficial reuse options including industrial reuse and other land application reuse;

(e) Receiving a copy of the report on the Survey and Assessment of the Benthic Biota and Sediment Quality in the vicinity of the outfall as required under Condition 83;

(f) Receiving a copy of the report on the results of the near field mixing study to confirm the initial dilutions achieved by the outfall and diffuser as required under Condition 75;

(g) Receiving a copy of the notice to upgrade the treatment plant and/or discharge systems as required under Condition 11 and a copy of the design details and construction plans as required under Condition 13; and

(h) Receiving copies of all existing and any new Trade Waste consents to this wastewater treatment system.

6. The Consent Holder shall facilitate the Liaison Group meeting at least annually, and on other occasions when significant milestones associated with the implementation of the Ruakaka Wastewater Scheme are reached. These milestones include the planning for a new modular treatment plant, extensions to that new plant, and the planning for construction of the ocean outfall. The Consent Holder shall organise meetings at a local venue and invite all representatives of the Liaison Group. The meeting shall be held at a time convenient for the majority of members of the Liaison Group.

Wastewater Discharge Standards

7. All wastewater shall, as a minimum, receive treatment within an oxidation pond and wetland system prior to it being discharged to land from the outlet of the treatment system, unless Condition 9 applies.

8. Prior to the first exercise of consents (04) and (07), the consent holder shall upgrade the wastewater treatment system to achieve the discharge standards set out in Condition 9A.

9. Once the new treatment plant has been constructed, all wastewater reticulated to the Ruakaka wastewater treatment plant site shall receive treatment within the new wastewater treatment system prior to it being discharged in accordance with consents (02), (04), (05) and (07).

9A At all times following the first exercise of consent (07), the quality of the treated wastewater, as measured at the outlet of the new wastewater treatment system required by Condition 8, shall comply with the following concentration standards, based on 60 samples collected over each year (being 12 months from 1 July to 30 June inclusive):

Constituent	Units	Median	95th percentile	Sample Frequency	Standard
$cBOD_5$	mg/L	5	20	1 sample in every 6 day period	Over one year no more than 30 exceedances above 5, and no more than 3 exceedances above 20
Suspended solids	mg/L	5	30	1 sample in every 6 day period	Over one year no more than 30 exceedances above 5, and no more than 3 exceedances

					above 30
Total nitrogen	mg/L	10	30	1 sample in every 6 day period	Over one year no more than 30 exceedances above 10, and no more than 3 exceedances above 30
Faecal coliforms	cfu/ 100 ml	10	1,000	1 sample in every 6 day period	Over one year no more than 30 exceedances above 10, and no more than 3 exceedances above 1,000

Advice Note: *The indicative upgrading of the treatment plant to achieve and maintain the standard required by this Condition, including staging of development in relation to average dry weather inflow, is set out in Section 4.8 Staged Development of the Proposed Scheme of the "Whangarei District Council Ruakaka Wastewater Long-Term Consents Project Assessment of Effects on the Environmental and Resource Consent Applications, Application Version May 2011".*

10. To enable the sampling of the treated wastewater, easy and safe access to a sampling port(s) located as close as is practicable after the outlet from the Ruakaka wastewater treatment system shall be provided and maintained. This sampling port location shall be to the satisfaction of the Manager.

Wastewater Treatment Plant and Discharge System Upgrades

11. The Consent Holder shall notify the Manager in writing that an upgrade to the treatment and/or discharge systems is to be undertaken, within two weeks of that decision being made by the Consent Holder. This written notification shall provide details of the proposed upgrade and a date by which the upgrade will be commissioned. A copy of this written notice shall also be forwarded to representatives of the Liaison Group.

12. When an upgrade to the treatment and/or discharge systems is to occur, the Consent Holder shall forward to the Manager every six months from the date that the Northland Regional Council receives written confirmation of the upgrade as required by Condition 11, a written update on the progress made towards the final design, construction and commissioning of the upgrade and whether the upgrade will be commissioned by the expected date.

    If the upgrade cannot be commissioned by the expected date, then the Consent Holder shall provide details to the Manager of the reasons why and the date by which it will be commissioned.

13. The Consent Holder shall forward to the Manager and members of the Liaison Group a copy of the design details, including construction plans, for the treatment and/or discharge systems upgrade within one month of the details for that upgrade being available to the Consent Holder. All plans shall be drawn to a sufficient scale that allows a Northland Regional Council monitoring officer to identify all structures shown on the plans.

14. The Consent Holder shall ensure that the treatment and/or discharge systems are upgraded in general accordance with the design details required by Condition 13 and those details provided in *"Whangarei District Council Ruakaka Wastewater Long-Term Consents Project Assessment of Effects on the Environmental and Resource Consent Applications, Application Version May*

2011".

15. Prior to commissioning the upgrade, the Consent Holder shall update the relevant Management Plans as appropriate in conformance with Conditions 2 to 4.

Trade Waste Consents

16. The Consent Holder shall forward copies of all Trade Waste consents that currently allow discharges to the Ruakaka wastewater treatment system to each member of the Liaison Group. In addition, a copy of every new Trade Waste consent application to discharge to the wastewater treatment system reticulation shall be forwarded to the operator of the Bream Bay Aquaculture Park facility and the Manager within two weeks of the Consent Holder receiving a Trade Waste consent application for that connection.

Advice Note: *The Consent Holder intends to consult with the operator of the Bream Bay Aquaculture Park facility and afford them reasonable opportunity to provide comment about the potential effects of allowing any new trade wastes to be disposed of to the Ruakaka Wastewater Treatment Plant and give reasonable weight to those comments when considering any such application.*

Flow Meters

17. The Consent Holder shall ensure that meters with an accuracy of ±5% are installed and maintained at each of the following locations to record wastewater volumes:

    (a) The contributing rising main(s) to the Ruakaka wastewater treatment site;

    (b) The outlet from the treatment system to the land discharge systems on Zone 3, Rama Road Block and the Roger Hall Memorial Park;

    (c) Any other discharge for reuse or discharge as may develop in future.

17A Prior to the commissioning of the new wastewater treatment plant required by Condition 8, the Consent Holder shall ensure that meters with an accuracy of ±5% are installed and maintained at each of the following locations to record wastewater volumes:

    (a) The inlets to the contingency storage ponds;

    (b) The outlet from the contingency storage ponds to the treatment system;

    (c) The outlet from the treatment system to the ocean outfall.

18. Once installed, the Consent Holder shall either recalibrate or, for magnetic flow meters, test the electronics of the meters required by Conditions 17 and 17A at least every five years to ensure that the specified accuracy is maintained. The Consent Holder shall also provide a calibration and verification schedule for the continuous monitoring system required by Condition 79 to the Manager. Written verification from a suitably qualified person that the meters and the continuous monitoring system have been tested or calibrated shall be forwarded to the Manager within one month following the completion of each five yearly check.

Complaints Register

19. The Consent Holder shall maintain and keep a complaints register for all complaints made about the treatment plant and discharge sites relating to these consents, received by the Consent Holder. The register shall record:

    (a) The date, time and duration of the event/incident that has resulted in the compliant;

(b) Weather conditions at the time of the event/incident was detected by the complainant;

(c) The location of the complainant when the event/incident was detected;

(d) The possible cause of the event/incident;

(e) Any corrective action taken by the Consent Holder in response to the complainant; and

(f) The register shall be available to the Northland Regional Council at all reasonable times.

20. Details of all complaints received by the Consent Holder that may indicate non-compliance with the conditions of these resource consents shall be forwarded to the Northland Regional Council within five working days of the complaint being received unless an alternative arrangement is agreed upon in writing by the Northland Regional Council.

Monitoring and Review

21. The Consent Holder shall monitor these consents in accordance with **Schedule 1 (attached**).

22. The wastewater treatment system, contingency storage ponds and the rapid infiltration basins on Sec 65 Blk VII Ruakaka SD, and the discharge areas on Sec 2 SO 461691 (Zone 6B and Zone 7) shall be fenced so that access by unauthorised persons is restricted, and signs shall be placed on the fence advising the use of the area and unauthorised persons not to enter. Such fencing shall meet the requirements of the Department of Labour for the activity being undertaken on site and the signs shall be in accordance with New Zealand Standard 1319:1994, Safety Signs for the Occupational Environment.

23. The Consent Holder shall, for the purposes of adequately monitoring these consents, as required under Section 35 of the Resource Management Act 1991, on becoming aware of any contaminant associated with the Consent Holder's operations escaping otherwise than in conformity with this consent:

(a) Immediately take such action, or execute such work as may be necessary, to stop and/or contain such escape;

(b) Immediately notify the Manager, the operator of the Bream Bay Aquaculture Park Facility and the secretary of the Patuharakeke Trust Board, by telephone of an escape of contaminant;

(c) Take all reasonable steps to remedy or mitigate any adverse effects on the environment resulting from the escape; and

(d) Report to the Manager and the Ruakaka Wastewater Liaison Group in writing within one week on the cause of the escape of the contaminant and the steps taken or being taken to effectively control or prevent such escape.

With regard to telephone notification, during the Northland Regional Council's opening hours, the assigned monitoring officer for these consents should be contacted. If that person cannot be spoken to directly, or it is outside of the Northland Regional Council's opening hours, then the Environmental Hotline should be contacted.

24. The Northland Regional Council may, in accordance with Section 128 of the Act, serve notice on the Consent Holder of its intention to review the conditions of these consents:

(a) Annually during the month of June. The review may be initiated for any one or more of the following purposes:

i. To deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or

ii. To require the adoption of the best practicable option to remove or reduce any adverse effect on the environment.

(b) Within a two month period of the date that the Northland Regional Council formally receives the reports or notifications required by Conditions 11, 23, 35, 41, 46, 68, 74, 82 and 90 to take into account any issues raised by these reports/notifications that have are not covered by the conditions of consent; and

(c) At any time for the following purposes:

i. To provide for compliance with rules relating to minimum standards of water quality or air quality in any regional plan that has been made operative since the commencement of the consent; or

ii. To provide for compliance with any relevant national environmental standards that have been made; or

iii. Where there are inaccuracies in the information made available with the application that materially influenced the decision on the application and where the effects of the exercise of consent are such that it is necessary to apply more appropriate conditions.

Patuharakeke Te Iwi Trust Board

25. The Consent Holder shall establish and maintain an on-going liaison role with Patuharakeke Te Iwi Trust Board (PTITB). The Consent Holder shall facilitate a meeting with PTITB at least twice annually and on other occasions when significant milestones associated with the implementation of the Ruakaka Wastewater Scheme. As part of this liaison process, the Consent Holder shall:

(a) Provide to and discuss with PTITB results of the consents compliance annual reporting and associated matters;

(b) Seek input from PTITB into the development of the Management Plans associated with the resource consents, as listed in Table 1;

(c) Provide PTITB with periodic updates on the on-going development and implementation of the Ruakaka Wastewater Strategy and the Wastewater Scheme;

(d) Provide to and discuss with PTITB updates on the progress of reusing treated wastewater from the Ruakaka Wastewater Scheme by the New Zealand Refining Company or any other significant treated wastewater users;

(e) Seek input from PTITB on the Consent Holder's periodic reviews undertaken under the Development Technology and Environmental/Monitoring and Review Conditions; and

(f) Consult and seek input from PTITB about the development and implementation of those matters included under Condition 31 and the initial condition assessment of the Kānuka with Zones 6B and Zone 7 and reassessment studies required by Condition 113.

Advice Note 1: *The Consent Holder acknowledges that Patuharakeke Te Iwi Trust Board are recognised as the Treaty partner with the Crown and are therefore regarded as having a specific role and function in relation to the effects on the environment that are associated with the Ruakaka Wastewater Scheme.*

Advice Note 2: *The Consent Holder recognises PTITB as the on-going point of contact between the Whangarei District Council and the wider iwi interest groups in respect of information relating to the exercise of these consents.*

26. The Consent Holder shall, in conjunction with PTITB, develop a cultural monitoring programme for the purposes of assessing the impacts of the discharges to air, water and the coastal marine area authorised by these consents on cultural health. The monitoring programme will include the development of a Coastal Cultural Health Index (CCHI), specifically for Te Poupouwhenua to assist in the monitoring of any adverse effects linked to the discharge from the ocean outfall. The monitoring programme including its long-term approach shall be informed by matauranga Maori.

    The development of the monitoring programme will include, but not be limited to, the following matters:

    (a) Water quality effects;

    (b) Air quality effects;

    (c) Effects on the coastal environment;

    (d) Ecological effects – (marine/terrestrial, particularly mahinga kai species) aquatic life/bird life/natural habitat; and

    (e) Customary practices such as rahui and tapu to be followed in the event of observed instances of environmental or ecological impacts.

Advice Note 1: *The Consent Holder should, in conjunction with PTITB, seek advice from an appropriate research and/or educational organisation that they may work with in the development of a CCHI.*

Advice Note 2: *The details of how Condition 26(e) is to be implemented is a matter to be negotiated between the Consent Holder and PTITB.*

Advice Note 3: *The broader monitoring programme is intended to address the concerns raised by iwi throughout consultation on the Ruakaka Wastewater Long-Term Consents Project.*

27. The Consent Holder shall establish a monetary fund to assist PTITB with the development of the cultural monitoring programme under Condition 26. The Consent Holder shall make available a sum of $10,000 per annum (excluding GST) for five years. The first payment will be made two years prior to the proposed commissioning of the ocean outfall.

Advice Note: *The first payment is subject to PTITB providing details of the proposed monitoring methodology. Alternatively, PTITB may elect to commence this monitoring and utilise up to three years funding, at an earlier date to inform the first Development, Technology and Environmental/ Monitoring Review required under Condition 30. This fund may be used to assist with the training of cultural monitors and scholarships for tertiary study in environmental management.*

28. The Consent Holder shall review the effectiveness of the monetary fund required by Condition 27 within two years following the implementation of the cultural monitoring programme and the annual provision of the results by PTITB to the Consent Holder, the Manager and the Liaison Group. The review shall be undertaken with a view to making further funds available having regard to the implementation of the programme and the further needs for its ongoing development and implementation.

Advice Note: *It is anticipated that the cultural monitoring work undertaken by PTITB will support general state of the environment reporting of the area.*

29. The Consent Holder shall protect the cultural and heritage landscape in Te Poupouwhenua as far as it relates to the Ruakaka Wastewater Scheme. Such protection shall include, but not be limited to:

    (a) Engaging with PTITB in the first instance where an archaeological assessment or authority is required pursuant to the Historic Places Act 1993 for invasive investigative assessments or earthworks;

    (b) Ensuring construction activities avoid areas of known cultural heritage significance to Patuharakeke i.e. wahi tapu and wahi taonga areas; and

    (c) Undertaking, with the agreement of PTITB, a constraints mapping exercise that records the location of culturally sensitive sites and places. The protocols for the appropriate use and dissemination of this information shall be included so that culturally sensitive information is protected.

30. The Consent Holder shall, in conjunction with PTITB, prepare a Kaitiaki Monitoring Plan and Programme (KMP) that includes, at minimum, the following protocol documents to be used in relation to construction and discharge (where relevant) activities associated with the Ruakaka Wastewater Scheme:

    (a) A Koiwi Tangata/Human Remains discovery protocol;

    (b) Artefact discovery protocol (ADP);

    (c) Tikanga protocols;

    (d) Archaeological site identification training for contractors;

    (e) Cultural training for contractors;

    (f) Monitoring of the health and condition of indigenous vegetation; and

    (g) Ongoing maintenance of ecological and landscape restoration areas.

31. The Consent Holder shall, in conjunction with PTITB, provide for the following activities as far as these have a relationship with the overall Ruakaka Wastewater Scheme:

    (a) Recognition of those cultural heritage sites and places in Te Poupouwhenua which are significant to PTITB through Wahi Tapu Registrations under the Historic Places Act 1993;

    (b) Assistance to PTITB with initiating an interpretation programme outlining the significance of Te Poupouwhenua to tangata whenua;

    (c) Establishment of memorial pou/kohatu/plaques to commemorate the significance of Te Poupouwhenua to tangata whenua; and

    (d) Provision of opportunities to conduct rituals and ceremonies associated with new buildings and activities associated with the Ruakaka Wastewater Scheme.

Development, Technology and Environmental/Monitoring Review

32. The Consent Holder shall submit to the Manager, a Development, Technology and Environmental/Monitoring Review Report not later than 30 September 2015 and thereafter at six yearly intervals, for the duration of the consents, and also six months prior to the construction commencement of major infrastructural components of the Ruakaka Wastewater

Scheme being the modular construction and extension of the new wastewater treatment plant and the construction of the offshore ocean outfall. The Review Report shall be made available to all members of the Ruakaka Wastewater Liaison Group within one month of it being submitted to the Northland Regional Council. The scope of the Review shall address as a minimum the following:

(a) The rate and extent of land use development and associated domestic and business wastewater flows (volumes) and key contaminant loads over the period since either lodgement of the AEE (May 2011) or the previous review, and the future projections at that review time through to the end of the most distant expiry date of the consents;

(b) An update on the on-going development and implementation of the Ruakaka Wastewater Strategy and the Wastewater Scheme. This update shall be based on the further development of Figure 4.1 'Development of the Ruakaka 'Wastewater Strategy' and 'Proposed Scheme' (**Attachment 2**) and shall include the relevant activities as set out in Figure 4.2 'Ruakaka Wastewater Strategy and Scheme Implementation – Activities to be Undertaken Within the Duration of Consents' (**Attachment 3**);

(c) Assessment of the need, justification and cost effectiveness for major components of future upgrades of the Ruakaka Wastewater Scheme including the modular construction and extensions of the wastewater treatment plant and construction of the ocean outfall;

(d) Ongoing compliance with the requirements of these resource consents and any reported non-compliance with consent conditions;

(e) An assessment of compliance/consistency with any relevant national, or regional water quality policies, standards or guidelines in effect at the time;

(f) A summary of any major upgrades made to the wastewater reticulation, treatment or discharge system since the commencement of consent that are likely to have an effect on the exercise of the consents;

(g) A summary of current technological knowledge in relation to wastewater management, treatment, disposal and beneficial re-use technologies that are relevant to the Ruakaka Wastewater Scheme;

(h) Information relating to the use, development and success of alternative wastewater disposal/discharge techniques in New Zealand, in particular land based discharge, and the relevance and possible adoption of these techniques as part of the Ruakaka Wastewater Strategy and Scheme;

(i) A summary of known advancements in the knowledge regarding the presence, monitoring, treatment and environmental effects of contaminants of emerging concern that are relevant to the Ruakaka Wastewater Scheme; and

(j) The applicability of the shortlisted reuse options included in Table 5.1 of the Report titled "Whangarei District Council Ruakaka Wastewater Stage 2 Study, Task 2B Part 2: Review and Development of Stage 1 Options, Investigate Options for Reuse of Treated Wastewater, December 2007, (Support Document 10 of the Assessment Effects on the Environment and Resource Consent Applications, Application Edition May 2011)", along with any new reuse options that may be practicable and have been identified by the Ruakaka Wastewater Liaison Group and/or PTITB.

33. In addition to complying with Condition 32(j) the Consent Holder shall continuously evaluate opportunities for reuse and recycling of treated wastewater, and shall implement these opportunities if they are reasonably practicable and affordable in the opinion of the Consent

Holder.

(01) Discharge to Land –Wastewater Ponds

34. In addition to the requirements of Condition 13, the Consent Holder shall submit to the Manager for approval the design details for retrofitting the existing oxidation ponds to serve as contingency storage ponds. These design details shall include express provision for preventing the accumulation of rainwater within the contingency storage ponds so that the maximum storage volume is kept available for contingency use and how the wastewater will be treated to achieve the requirements of Condition 9A.

35. The Consent Holder shall notify the Northland Regional Council by telephone on each occasion that the contingency storage ponds are being used. This notification shall be made as soon as practical after commencement of the use of the contingency storage ponds, but shall not be greater than one working day. During the Northland Regional Council's opening hours, the assigned monitoring officer for this consent should be contacted. If that person cannot be spoken to directly, or it is outside of the Northland Regional Council's opening hours, then the Pollution Hotline should be contacted. Notification is not required if the contingency storage ponds are being utilised for sludge storage.

36. The following information shall be submitted to the Manager in writing no later than seven working days after the cessation of each use of the contingency storage ponds, as notified in accordance with Condition 35:

    (a) Reasons for the contingency storage pond use;

    (b) Duration of use;

    (c) Approximate wastewater volume stored;

    (d) If storage was the result of a rainfall event, details of the event and an assessment of whether storage capacity needs to be increased to cope with a similar or greater rainfall event;

    (e) If appropriate, means to eliminate or reduce future use of the contingency storage ponds for a similar purpose; and

    (f) Any other relevant information.

37. To ensure that the discharge from the treatment plant is meeting Condition 9A as a result of the use of the contingency storage ponds during off-specification incidents and extreme wet weather events, the Consent Holder shall assess the results of the sampling required under the "Continuous" column of Table S.1 in Schedule 1 (**attached**) to ascertain whether or not the Condition 9A determinand limits are being complied with. That assessment shall be forwarded to the Manager upon request.

Advice Note: *The determinands in Condition 9A are not monitored on a continuous basis. They are monitored once every six days. However, some of the determinands that are monitored continuously can be used to verify compliance with Condition 9A when the contingency storage ponds are discharging. For example, turbidity can be used to ascertain compliance with suspended solids limits.*

(02) Discharge to Land – Zone 3

38. The rate of wastewater discharged to land on Sec 65 Blk VII Ruakaka SD ("Zone 3") shall not exceed a daily average of 660 cubic metres. The average daily volume shall be calculated for

the period between 1 April and 31 March of the following year.

39. The rate of discharge authorised by Condition 3838 may include up to 230 cubic metres per day of reject water from a Reverse Osmosis Treatment Plant or similar treatment unit provided that the reject water is first diluted with treated wastewater at a ratio of at least two parts treated wastewater to one part reject water.

40. There shall be no ponding of wastewater within the land disposal area as a result of the exercise of this consent.

41. If monitoring results show that the exercise of consents (01) and (02) result in the exceedance of any the following determinand concentrations, as measured in the identified monitoring bores shown on NRC Plan 4885 (**Attachment 4**) then the Consent Holder shall forward to the Manager and the Liaison Group, a report that assesses the environmental effects of the exercise of this consent on the water quality of Ruakaka Beach and the Ruakaka River. The report shall identify any actions required to correct any exceedance and identify trends that are evident in the monitoring results and discuss the possible reasons for any exceedance in the concentrations specified.

Seaward Bores from Disposal Area	
Determinand	**Median Concentration**
Faecal Coliforms (Most probable number test)	35 per 100 millilitres
Total Ammoniacal Nitrogen	20 milligrams per Litre
Inland Bores from Disposal Area	
Determinand	**Median Concentration**
Faecal Coliforms (Most probable number test)	50 per 100 millilitres
Total Ammoniacal Nitrogen	2 milligrams per Litre
Nitrate + Nitrite	3 milligrams per Litre
Dissolved Reactive Phosphorus	0.6 milligrams per Litre

The median shall be a "rolling" median calculated using the five most recent sample event results.

42. The consent holder shall undertake the upgrades set out in (a) and (b) below unless condition applies:

    (a) Prior to the 31 October 2019, the consent holder shall reconfigure the existing oxidation ponds in order that they operate in parallel, in general accordance with Section 9.3.1 of the report entitled 'Ruakaka WWTP Treatment System Review Report', prepared by MWH Limited and dated July 2016, (**Attachment 9**).

    (b) Prior to the average dry weather flows entering the wastewater treatment plant exceeding 1,650 cubic metres per day, the consent holder shall install additional aeration into the oxidation ponds in general accordance with Section 9.3.2 of the report entitled 'Ruakaka WWTP Treatment System Review Report', prepared by MWH Limited and dated July 2016 (**Attachment 10**).

43. The specific upgrade requirements set down in Conditions 42(a) or 42(b) do not apply should the following requirement be met for each condition:

    (a) The consent holder provides a report to the Manager prepared by a suitably qualified and experienced wastewater engineer that:

        i. identifies the treatment capacity of the oxidation pond system;

        ii. identifies upgrade options to increase the treatment capacity;

(b) The consent holder confirms in writing to the Manager the intended upgrade option;

(c) That option is approved in writing by the Manager; and

(d) The upgrade is completed in general accordance with the option approved by the Manager within those timeframes or trigger points specified in Conditions 42(a) or 42(b).

44. Notwithstanding any other conditions, the exercise of consents (01) and (02) shall not cause more than minor adverse effects on the following:

(a) Water quality in the coastal marine area;

(b) Edible shellfish quality;

(c) The stability of the foredunes of Ruakaka Beach;

(d) Surface water quality draining to, and including, the Ruakaka River; and

(e) Groundwater levels beneath adjacent properties not covered by this consent.

(03) Discharge to Air – Wastewater Treatment Plant

45. The Consent Holder's operation shall not give rise to any discharge of contaminants at or beyond the boundary of Sec 65 Blk VII Ruakaka SD which is deemed by a suitably trained and experienced Enforcement Officer of the Northland Regional Council to be noxious, dangerous, offensive or objectionable to such an extent that it has, or is likely to have, a more than minor adverse effect on the environment.

46. The Consent Holder shall notify the Northland Regional Council by telephone of any incident, including mechanical or power failures, leading to significant emission of odour from the treatment plant or land disposal area, as soon as practical after becoming aware of the incident, but shall not be greater than one working day. During the Northland Regional Council's opening hours, the assigned monitoring officer for this consent should be contacted. If that person cannot be spoken to directly, or it is outside of the Northland Regional Council's opening hours, then the Environmental Hotline should be contacted.

47. A written report shall be forwarded to the Manager within seven working days of an incident notified in accordance with Condition 46 providing details of:

(a) The incident;

(b) The reasons for it occurring;

(c) Any complaints received;

(d) Measures taken to avoid, remedy or mitigate its effects; and

(e) Measures (if any) undertaken to prevent a reoccurrence of the event.

48. In the event of non-compliance with Condition 45, the Consent Holder shall commission a suitably qualified and independent expert who has been approved by the Manager to undertake an investigation into the source of the odour or airborne contaminants. This person shall provide a written report to the Manager on the outcome of the investigation which shall include recommendations to remedy and/or mitigate the effects so that Condition 45 is complied with. The Consent Holder shall implement those recommendations as soon as it is practicable.

49. All odour control equipment shall be designed by an appropriately experienced wastewater treatment specialist and maintained and monitored in accordance with standard industry practice. Evidence of maintenance and monitoring shall be recorded and provided immediately

to the Manager upon written request by that manager.

Discharge to Land – Roger Hall Memorial Park

~~50. The discharge of treated wastewater shall occur by subsurface irrigation on up to 5.95 hectares of land on Lot 1 DP 396871, as shown in Figure 10-1 of the "*Whangarei District Council Ruakaka Wastewater Long-Term Consents Project Assessment of Effects on the Environmental and Resource Consent Applications, Application Version May 2011*" (**Attachment 5**).~~

~~51. No discharge shall occur within 15 metres of the property boundary of Lot 1 DP 396871.~~

~~52. The Consent Holder shall, prior to exercising this consent, install signs at regular intervals around the perimeter of the Roger Hall Memorial Park site that advise of the use of the area for subsurface application of treated wastewater. Written confirmation of the signage wording, size and placement shall be provided to the Manager within three months of commencement of these consents.~~

~~53. The rate of discharge shall not exceed 260 cubic metres per day during the period from October to March, inclusive, and 123 cubic metres per day during the period from April to September inclusive.~~

~~54. The discharge of treated wastewater to the irrigation area shall:~~

~~(a) Be evenly distributed to the entire area being utilised for irrigation;~~

~~(b) Only be to areas that are in soil moisture deficit;~~

~~(c) Not increase soil moisture levels above field capacity.~~

NOTE: This consent has lapsed so it is recommended that as part of the variation, these conditions are cancelled.

Discharge to Land – Rama Road Block

55. The discharge to Lot 4 DP 419151, as shown in Figure 11-1 of the "Whangarei District Council Ruakaka Wastewater Long-Term Consents Project Assessment of Effects on the Environmental and Resource Consent Applications, Application Version May 2011" (**Attachment 6**), shall be via a low or medium pressure spray irrigation system and a perforated pipe or similar low pressure surface irrigation system.

56. No spray irrigation shall be undertaken:

    (a) Within 30 metres of the property boundary for wastewater treated by the pond and wetland system prior to the operation of the new wastewater treatment plant:

    (b) Within 20 metres of the property boundary when the treated wastewater quality meets the standards required by Condition 9A of these consents; and

    (c) Within 15 metres of any surface water on the property.

57. The average daily discharge volume shall not exceed 1,700 cubic metres during the period from 1 October to 31 March inclusive or 1,030 cubic metres during the period from 1 April to 30 September inclusive. The daily average discharge volume shall be calculated in accordance with Schedule 1 (**attached**).

~~58. The rate of discharge authorised by Condition 57 may include reject water from a Reverse Osmosis Treatment Plant or similar treatment unit provided that:~~

~~(a) The reject water is first diluted with treated wastewater at a ratio of at least two parts treated wastewater to one part reject water; and~~

~~(b) The resultant mixture is not to be irrigated on any areas of sand kanuka or freshwater wetlands.~~

~~59. In addition to the requirements of Condition 9A, the treated wastewater discharged to Lot 4 DP 419151 shall not exceed the following standards:~~

~~Determinand~~	~~Concentration~~
~~Sodium~~	~~460 milligrams per litre~~
~~Chloride~~	~~700 milligrams per litre~~
~~Fluoride~~	~~2 milligrams per litre~~
~~Boron~~	~~4 milligrams per litre~~
~~Sodium Absorption Ratio~~	~~20~~
~~ECse~~	~~3 decisiemens per metre~~

~~60. To enable the collection of samples for testing compliance with Condition 59, the Consent Holder shall provide and maintain easy and safe access to the outlet point of the facility used to blend reject water with treated wastewater.~~

NOTE: Refinery reject water is no longer a part of the discharge, recommend cancellation of these conditions.

61. Not less than three months prior to commencement of installation of the discharge system on the site, the Consent Holder shall prepare and submit a detailed plan of the following to the Manager for approval:

    (a) The location of at least three new groundwater monitoring bores seaward of the Rama Road Block; and

    (b) The location of surface water quality monitoring sites including within any interceptor drain(s).

62. If the monitoring results from the groundwater bores show that the exercise of consent (05) results in the exceedances of the specified median concentration for the following determinands, the Consent Holder shall forward to the Manager a report that assesses the environmental effects of the discharge on the water quality of Ruakaka Beach. The report shall identify any actions required to address any adverse effects.

Seaward Bores from Disposal Area	
Determinand	**Median Concentration**
Faecal Coliforms	35 per 100 millilitres
Total Ammoniacal Nitrogen	20 milligrams per Litre

The median shall be a "rolling" median calculated using the five most recent sample event results.

63. Notwithstanding any other conditions, the exercise of this consent shall not cause more than minor adverse effects on the following:

    (a) Water quality within the Bercich Drain;

    (b) Edible shellfish quality in the vicinity of the Bercich Drain outfall; and

    (c) The stability of the foredunes of Ruakaka Beach.

Advice Note: *There are a number of other discharges (diffuse and point source) into Bercich Drain and any drain monitoring related to this consent should consider the ability to distinguish effects of this activity.*

64. The Consent Holder shall, prior to exercising this consent, install signs at regular intervals around the perimeter of the Rama Road Block that advise of the use of the area and warn unauthorised persons not to enter. The signs shall be in accordance with New Zealand Standard 1319:1994, Safety Signs for the Occupational Environment. Written confirmation of the signage wording, size and placement shall be provided to the Manager within three months of commencement of these consents.

65. The exercise of this consent shall not result in more than minor foliar damage to, or die-off of, sand kanuka or other native plant species within the irrigated area. For compliance purposes, a suitably qualified and experienced person shall undertake a baseline study of the type and location of the different vegetation species on Lot 4 DP 419151. A written report by this person shall be forwarded to the Manager not less than three months prior to commencement of installation of the wastewater discharge system on the site. The vegetation study shall then be repeated at five yearly intervals until use of the Rama Road Block for wastewater discharge ceases.

(06) Discharge to Air – Rama Road Block

66. The Consent Holder's operation shall not give rise to any discharge of contaminants at or beyond the boundary of Lot 4 DP 419151 which is deemed by a suitably trained and experienced Enforcement Officer of the Northland Regional Council to be noxious, dangerous, offensive or objectionable to such an extent that it has, or is likely to have, a more than minor adverse effect on the environment.

67. There is no detectable spray drift beyond the boundaries of the property. In addition, there shall be no discharge of wastewater when the wind speed exceeds 12 metres per second for more than 10 minutes.

Advice Note: *It is expected that the Consent Holder will establish and utilise a meteorological station at or close to the main wastewater treatment plant to demonstrate compliance with this condition.*

68. The Consent Holder shall notify the Northland Regional Council by telephone of any incident, including mechanical or power failures, leading to significant emission of odour from the discharge operation, as soon as practical after becoming aware of the incident, but shall not be greater than one working day. During the Northland Regional Council's opening hours, the assigned monitoring officer for this consent should be contacted. If that person cannot be spoken to directly, or it is outside of the Northland Regional Council's opening hours, then the Environmental Hotline should be contacted.

69. A written report shall be forwarded to the Manager within seven working days of an incident notified in accordance with Condition 68 providing details of:

    (a) The incident;

    (b) The reasons for it occurring;

    (c) Any complaints received;

    (d) Measures taken to avoid, remedy or mitigate its effects; and

    (e) Measures (if any) undertaken to prevent a reoccurrence of the event.

70. In the event of non-compliance with Conditions 66 or 67, the Consent Holder shall commission a suitably qualified and independent expert who has been approved by the Manager to undertake an investigation into the source of the odour or airborne contaminants. This person shall provide a written report to the Manager on the outcome of the investigation which shall include recommendations to remedy and/or mitigate the effects so that Conditions 66 and 67 are complied with. The Consent Holder shall implement those recommendations as soon as it is practicable.

(07) Treated Wastewater Discharge to the Coastal Marine Area

71. This consent can only be exercised for the first time once the daily volume of wastewater required to be discharged exceeds 80% of the combined average daily volume authorised to be discharged to land under Consents (02) and (05).

72. The treated wastewater discharge to Bream Bay shall not exceed an average dry weather flow rate of 185 litres per second (which equates to 16,000 cubic metres per day) or a maximum wet weather flow rate of 740 litres per second. Compliance with this condition shall be determined in accordance with Schedule 1 (**attached**).

73. The treated wastewater discharge into Bream Bay shall only occur through an ocean outfall pipeline that is located in accordance with Consents (08) and (09) and terminates in a multiport discharge diffuser that is approximately 62 metres long, with 32 ports spaced at two metre intervals.

74. Not less than three months prior to commencement of installation of the ocean outfall pipeline, the Consent Holder shall submit a final design for the multiport discharge diffuser to the Manager for approval. If this final design is significantly different from that required by Condition 73, then sufficient technical detail shall be provided to demonstrate the design will achieve a minimum dilution ratio of 288 to 1 ($\pm$15%) at the edge of the mixing zone for a discharge flow rate of 244 litres per second (or equivalent). For the purposes of this consent, the edge of the mixing zone shall be 100 metres from any part of the multi-port diffuser and the design dilution rates apply to dry weather flows.

    If the final design is significantly different than that required by Condition 73 and is approved by the Manager, then the design approved in accordance with this condition shall prevail.

Advice Note: *This minimum dilution ratio was the worst case scenario modelled by DHI for average dry weather conditions and is the basis for the assessment of effects for the coastal discharge.*

75. The Consent Holder shall, within the first six months of the commissioning of the ocean outfall, undertake a near-field mixing study at neap tide during the period when the daily treated wastewater flow is at its maximum to confirm the level of initial dilution of the discharged treated wastewater. The study shall include the following:

    (a) Calculation of the mixing achieved at the edge of the 100 metre mixing zone using an approved dye dispersion methodology. An alternative method of dilution calculation, that also allows the plume to be detected at the edge of the mixing zone for sampling purposes, may be used with the approval of the Regional Council's Monitoring Manager; and

    (b) Measurement of water quality characteristics within the discharge plume, during the dilution study required under (a), at the edge of the 100 metre mixing zone including:

        i. In situ temperature, pH, salinity and dissolved oxygen; and

ii. Collection of three grab samples at least three minutes apart to be analysed for faecal coliforms, total ammoniacal nitrogen, total nitrogen, nitrite/nitrate nitrogen, total phosphorus and dissolved reactive phosphorus.

(c) Table 3.3 "Predicted CORMIX Dilutions at the Edge of the 100 metre Mixing Zone" (**Attachment 7)** and Section 1.4 both of the DHI report entitled "Bream Bay Dilution and Dispersion Study – Final Report May 2010" shall be used to assist in the preparation of this study.

A written report on the results of this study shall be provided to the Manager and the Liaison Group within one month of the study being completed.

Advice Note: *For the purposes of this condition, the expected minimum dilution at the edge of the 100 metre mixing zone is 437:1 (514:1 less an allowance for 15% modelling accuracy, based on the DHI report entitled "Bream Bay Dilution and Dispersion Study – Final Report May 2010") at a flow of 70 L/s (or equivalent).*

76. If the results of the near-field mixing study required under Condition 75 indicate that the level of initial dilution of the treated wastewater, as measured at the edge of the mixing zone, is less than 437:1 (being 514:1 less 15%) and the Consent Holder wishes to retain the diffuser structure, then the Consent Holder shall, within three months of the results of the study being known, prepare and submit a report to the Manager and the Liaison Group examining the likely effects of the reduced dilution on the coastal water and ecological quality of Bream Bay and associated flow-on effects for other users of the Bay.

Advice Note: *If the proposed alteration to the diffuser may result in adverse effects that are greater than those authorised by this consent, or the change is outside the scope of what was applied for, then either a change to the conditions of this consent under Section 127 of the Resource Management Act, or a new consent would need to be obtained.*

77. The discharge of treated wastewater authorised by this consent shall not cause any of the following effects outside of the mixing zone defined under Condition 75:

(a) The production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials;

(b) Any conspicuous changes in colour or visual clarity; or

(c) Any significant adverse effects on aquatic life.

78. All monitoring methods, procedures and analyses required under Schedule 1 (**attached**) in relation to this consent shall be commenced at least 12 months prior to treated wastewater being first discharged to the coastal marine area via the ocean outfall in accordance with this consent. The purpose of this initial treated wastewater monitoring and analysis shall be to:

(a) Generally establish baseline treated wastewater characteristics in relation to all those determinands specified in Table S1 of Schedule 1;

(b) Compare actual levels of selected determinands against the trigger values specified in Table S1 of Schedule 1 in order to provide an early assessment of the level of risk associated with the discharge of those determinands, if present, to the coastal marine area; and

(c) Derive upper limit values (and for pH, also a lower limit value) for parameters to be used in continuous instrument monitoring under Condition 79(a).

79. During the operation of the Bream Bay Aquaculture Park research facility, the Consent Holder

shall:

(a) Install and maintain devices to continuously monitor the following contaminants or their surrogates. The measurement interval and surrogates used shall be agreed between the Consent Holder and the Manager:

i. Temperature

ii. pH

iii. electrical conductivity

iv. turbidity

v. biochemical oxygen demand

vi. ammoniacal nitrogen

vii. nitrate nitrogen

viii. faecal coliform bacteria

(b) In conjunction with the continuous monitoring described in (a), establish a "real time" information system to alert the operator of the Bream Bay Aquaculture Park research facility and PTITB to any exceedances of the upper and lower limit values developed under Condition 78(c).

(c) Monitor treated wastewater quality against the trigger values set out in Table S1 in Schedule 1 (**attached)**.

80. In the event of any exceedance of the trigger values set out in Table S1, the Consent Holder shall undertake the following actions:

(a) Immediately notify the operator of the Bream Bay Aquaculture Park research facility and PTITB of the exceedance;

(b) Immediately implement the plant operational checks and procedures required by the approved Treatment Plant Operations and Maintenance Management Plan;

(c) If, following the operational checks and procedures, the wastewater treatment plant is confirmed to be performing to normal specifications, within one week of (a) re-sample and analyse for the trigger value parameter(s) exceeded; and

(d) If a second exceedance occurs, undertake a Toxicity Identification Evaluation (TIE) to examine the cause of the exceedance.

81. A report on the results of the Toxicity Identification Evaluation (TIE), the wastewater flows and likely dilutions at the edge of the mixing zone and at the Bream Bay Aquaculture Park intake at the time when the triggers values were exceeded shall be forwarded to the Manager, the operator of the Bream Bay Aquaculture Park research facility and PTITB within 30 days of the TIE results being obtained by the Consent Holder.

82. The Consent Holder shall thereafter, but within 10 working days of the provision of the report under Condition 81, discuss with the operator of the Bream Bay Aquaculture Park research facility how any adverse effect on the Bream Bay Aquaculture Park resulting from further exceedances of the trigger values can reasonably be avoided, including the practicality of providing additional treatment for the Bream Bay Aquaculture Park intake and the reasonable apportionment of the costs of any such treatment as between the Consent Holder and the operator of the Bream Bay Aquaculture Park research facility. The Consent Holder shall report

to the Manager regarding the outcome of the discussions and the timeframe within which any additional treatment (if required) is to be provided at either the wastewater treatment plant or the Bream Bay Aquaculture Park research facility.

Advice Note: *The expe*ctation, based on the evidence provided to the Hearing in 2011, is t*hat the Consent Holder and the operator of the Bream Bay Aquaculture Park research facility will agree on the type of any additional treatment if required and that the Consent Holder will contribute to those costs, with the majority of them being met by the operator of the Bream Bay Aquaculture Park research facility.*

83. At least three months prior to the commencement of any physical works within the Coastal Marine Area, and during the summer months (November to March) the Consent Holder shall undertake a survey of the benthic biota and sediment quality in the vicinity of the outfall that is comparable with the study undertaken by Golder Associates entitled "Bream Bay Environmental Assessment: Bream Outfall Benthic Survey and Assessment. July 2010". A report on the results of this survey shall be forwarded to the Manager prior to the construction of the outfall commencing. This survey shall then be repeated every five years after commencement of the discharge through the ocean outfall. The results of the studies shall be made publicly available by the Consent Holder.

(08) Coastal Outfall Structure and Associated Deposition of Marine Sediments on and Disturbance of Foreshore and Seabed

84. The ocean outfall structure shall be located in general accordance with Figure 4.7 of the Assessment of Effects on the Environment and Resource Consent Applications Application Edition May 2011, entitled "Ocean Outfall Location", MWH dated 20/04/2011, Reference number Z1583510, Revision C (**Attachment 8**).

85. The midpoint of the diffuser section of the outfall terminal structure shall terminate within a radius of 30 metres of location co-ordinates 1736025E 6028848N.

86. The location of the outfall terminal structure shall be clearly marked at all times by a buoy(s) that complies with navigation safety regulations.

Advice Note: *The Consent Holder will need to contact the Regional Harbourmaster for Northland for advice before it proceeds to give effect to this condition.*

87. The erection or placement of structures shall be limited to a pipeline to convey treated wastewater, an outfall diffuser and any temporary structures associated with the construction, repair and maintenance of the outfall structure.

88. During installation of the outfall structure, the Consent Holder shall provide monthly reporting to the Manager, on details of the monitoring undertaken to demonstrate the activities are in accordance with the Outfall Construction Management Plan.

89. The disturbance of the foreshore and seabed and associated deposition of marine sediments shall be limited in area to within 25 metres of the centreline of the pipeline route and limited in volume to that necessary for the construction of the outfall structure as defined in the Outfall Construction Management Plan.

90. The Consent Holder shall contact the Regional Harbourmaster, at least one month in advance of any construction in the coastal marine area, to initiate the issue of a Notice to Mariners regarding any necessary navigation warning arising from construction activities.

91. The Consent Holder shall notify the Manager, a representative of Mighty River Power and the operator of Bream Bay Aquaculture Park in writing of the date construction is intended to

commence on the outfall structure, at least two weeks beforehand, on each occasion. The Consent Holder shall arrange a site meeting between the principal contractor and the assigned Northland Regional Council monitoring officer at least five days prior to commencement of construction.

92. The Consent Holder shall publicly advertise the timing of construction activity associated with the construction of the outfall structure that is to take place in the coastal marine area in a local newspaper at least one week beforehand.

93. On completion of the construction activity, all disturbed areas of the foreshore and seabed shall be returned to a state generally consistent with the surrounding seabed and foreshore.

94. All practicable measures shall be undertaken to ensure that construction activities or the completed outfall structure does not exacerbate coastal erosion.

95. In the event of coastal erosion occurring as a direct result of the works, the Consent Holder shall, in consultation with the Manager, undertake all practicable measures to remedy any damages caused and minimise the potential for future erosion.

96. In the event of the detection of any system or mechanical failure of the pipeline, whether during construction, maintenance or operation of the outfall structure, the Manager shall be notified within 24 hours and provided with details of:

    (a) The nature of the failure; and

    (b) Any remedial works proposed to be carried out in response to the failure.

97. The Consent Holder shall provide to the Manager every five years a report prepared by a suitably qualified and experienced person(s) to demonstrate that the outfall structure is:

    (a) In sound condition and that there are no significant losses of wastewater occurring from the pipeline;

    (b) The crown of the pipeline, other than any part of the outfall terminal structure that is designed to be above seabed level, is not exposed above the seabed; and

    (c) The diffuser ports are in good operating condition.

98. In the event that the Consent Holder becomes aware that the pipeline is exposed, either as a result of an inspection carried out or at any other time, the Manager shall be notified immediately and provided with a report within ten working days providing an assessment of environmental effects resulting from the exposure together with any proposed remediation or risk management action to be undertaken.

99. The Consent Holder shall keep the coastal marine area free of debris resulting from the Consent Holder's activities.

100. Appropriate navigation signals shall be shown on vessels used in construction activities.

101. The Consent Holder shall, immediately upon completion of the installation of all works associated with the outfall structure, notify in writing:

Nautical Information Advisor
Land Information New Zealand
Private Box 5501
Wellington 6140

Maritime Safety Authority
P O Box 25620
Wellington 6140

Whangarei District Council
Private Bag 9023
Whangarei Mail Centre
Whangarei 0148

Northland Regional Council Private Bag
9021 Whangarei Mail Centre
Whangarei 0148

The Consent Holder shall include a scale plan of the completed works with the notification.

102. The Consent Holder shall forward copies of the results of all testing undertaken as part of the monthly report required by Conditions 88 of this consent to the Northland Regional Council within one month of the test date.

(09) Occupation and Use of Coastal Space by the Offshore Outfall Pipelines

103. The occupation of the Coastal Marine Area of the Bream Bay shall be limited to the physical space of:

(a) The pipeline and outfall diffuser to convey treated wastewater; and,

(b) The temporary structures associated with the construction of the outfall structure.

104. The use of the ocean outfall structure shall be limited to the discharge of treated wastewater from the Ruakaka Wastewater Treatment Plant.

105. The Consent Holder may from time to time temporarily exclude the public from the area of construction, maintenance and operation for safety and security reasons during construction, maintenance and operation of the outfall structure. The area referred to in this condition shall be the minimum area required to provide for the necessary public safety or security. In all cases where this condition is applied, the Consent Holder shall immediately contact the Manager to advise of the detail of the exclusion.

Advice Note: *For the avoidance of doubt, this condition does not provide for any exclusive occupation of the coastal marine area. The Consent Holder may apply for consent for exclusive occupation of an area once its construction method has been established, upon which any need for exclusion of others may be known.*

106. Prior to the expiry, cancellation, or lapsing of this consent the Consent Holder shall remove all structures (other than reclamations) and other materials and refuse associated with this consent from the consent area and shall restore the consent area to the satisfaction of the Manager, unless an application for a replacement consent has been properly made beforehand.

(##) Discharge to land – Zone 6B and Zone 7

107. The Consent Holder shall ensure that the discharge system is designed and installed in general accordance with the details provided in *"Assessment of Environmental Effects, Ruakākā Interim Wastewater Discharge, Resource Consent Applications by Whangarei District Council to Whangarei District Council and Northland Regional Council"*, dated 16 October 2025.

108. The discharge to Sec 2 SO 461691 as shown in [PLAN TBC] shall be via a perforated pipe or similar low pressure surface discharge system.

109. No spray discharge shall be undertaken:

(a) Within 30 metres of the fence installed under Condition 22 for wastewater treated by the pond and wetland system prior to the operation of the new wastewater treatment plant:

(b) Within 20 metres of the fence installed under Condition 22 when the treated wastewater quality meets the standards required by Condition 9A of these consents; and

(c) 20 metres of the *Machaerina juncea* sedgeland wetland located at or about 1733008E 6030070N.

110. The average daily discharge volume shall not exceed 840 cubic metres to the combined areas of Zones 6B and 7 as shown on the [PLAN TBC] provided that in combination with the discharges to Sec 65 Blk VII (Zone 3), and Lot 4 DP 410151 (Rama Road), the overall average daily discharge volume does not exceed 2,500 cubic metres. The daily average volumes shall be calculated in accordance with Schedule 1 (**attached**).

111. Notwithstanding any other conditions, the exercise of this consent must not cause instability of the foredunes of Ruakākā Beach.

112. The Consent Holder must undertake targeted and ongoing pest plant control for the duration of the consent within a 30-metre buffer of all identified Kānuka (individual or stands). Control must focus on, but not be limited to, invasive nitrate-fixing species such as gorse, acacia, and lupins.

113. The exercise of this consent must not result in more than minor foliar damage to, or die-off of, the Kānuka within the disposal area. For compliance purposes, a suitably qualified and experienced person must undertake a baseline inventory of the type and location of the Kānuka and a written report by this person must be forwarded to the Northland Regional Council's monitoring officer not less than three months prior to commencing the installation of the wastewater discharge system on the site. The vegetation study must then be repeated within five years of first discharging to Z6B and Z7 for wastewater discharge ceases.

Advice Note: *The main strategy is to offset the potential increase in nutrients from the wastewater. The EcIA recommends controlling invasive, nitrate-fixing species like gorse, acacia, and lupins thereby reducing "background enrichment" of the soil which has been provided for through Condition 112. This is expected to counteract the additional nutrients from the wastewater and protect the ecological integrity of the Kānuka stands, however, monitoring of the health and condition of the Kānuka is proposed as a precaution.*

114. These consents must be monitored and managed in accordance with the relevant sections of Schedules 1 and 2 (attached).

115. The exercise of this consent must not result in any adverse change in wetland condition and an initial baseline monitoring event of the *Machaerina juncea* sedgeland wetland (located at or about 1733008E 6030070N) vegetation condition must be undertaken prior to commissioning of the discharge system and a further baseline monitoring event must take place during the alternate season to obtain representative baseline information of wetland condition.

116. Annual vegetation monitoring and bi-annual wetland condition monitoring must continue for the duration of consent unless:

(a) following completion of the first 5 year's wetland monitoring, a SQEP recommends that the monitoring is no longer required or recommends a reduction to the monitoring and methodologies set out in a certified Wetland Monitoring Plan; and

(b) the Consent Holder provides the recommendations and proposed changes to the Wetland Monitoring Plan to the Northland Regional Council for certification; and

(c) any recommended changes that reduce monitoring requirements may only be implemented through a change to these consent conditions under the Act.

Groundwater Monitoring

117. Not less than three months prior to commissioning of the discharge system, a detailed plan of the location of at least three new groundwater monitoring bores in or around locations recommended in the report titled *"Ruakākā WWTP Interim Discharge Options and Applications, Groundwater Assessment of Environmental Effects",* prepared by Beca Limited for Whangarei District Council, dated 24 September 2025, must be submitted to the Northland Regional Council for certification. These bores must be monitored and reported on in accordance with Sections 6.3 of Schedule 1 (**attached**).

118. All monitoring bores identified in a certified location plan must be installed prior to discharging treated wastewater to Zone 6B and Zone 7.

119. If the monitoring results from the groundwater bores shows that the exercise of this consent results in the exceedance of the specified median concentration for the following determinands, the Consent Holder must undertake an assessment of the environmental effects of the discharge on the water quality of the Ruakaka Beach and the pond at 546 Marsden Road.

Seaward Bores from Disposal Area	
Determinand	***Median Concentration**
Faecal Coliforms	35 per 100 millilitres
Total Ammoniacal Nitrogen	20 milligrams per Litre
Inland Bores from Zone 6	
Determinant	***Median Concentration**
Faecal Coliforms	50 per 100 millilitres
Total Ammoniacal Nitrogen	2 milligrams per Litre
Nitrate + Nitrite	3 milligrams per Litre
Dissolved Reactive Phosphorus	0.6 milligrams per Litre
*the median shall be a "rolling" median calculated using the twelve most recent sample event results.	

The report must identify any actions required to correct any exceedance and identify trends that are evident in the monitoring results and discuss the possible reasons for any exceedances in the concentrations specified.

(##) Discharge to Air – Zone 6B and Zone 7

120. The Consent Holder's operation shall not give rise to any discharge of contaminants at or beyond the boundary of the fenced area of the discharge areas (Zones 6B and Zone 7) on Sec 2 SO 461691 which is deemed by a suitably trained and experienced Enforcement Officer of the Northland Regional Council to be noxious, dangerous, offensive or objectionable to such an extent that it has, or is likely to have, a more than minor adverse effect on the environment.

121. There is no detectable spray drift beyond the fenced area of the discharge areas (Zones 6B and Zone 7) on Sec 2 SO 461691. In addition, there shall be no discharge of wastewater when the wind speed exceeds 12 metres per second for more than 10 minutes.

Advice Note: *It is expected that the Consent Holder will establish and utilise a meteorological station at or close to the main wastewater treatment plant to demonstrate compliance with this condition.*

122. The Consent Holder shall notify the Northland Regional Council by telephone of any incident, including mechanical or power failures, leading to significant emission of odour from the discharge operation, as soon as practical after becoming aware of the incident, but shall not be

greater than one working day. During the Northland Regional Council's opening hours, the assigned monitoring officer for this consent should be contacted. If that person cannot be spoken to directly, or it is outside of the Northland Regional Council's opening hours, then the Environmental Hotline should be contacted.

123. A written report shall be forwarded to the Manager within seven working days of an incident notified in accordance with Condition 122 providing details of:

    (a) The incident;

    (b) The reasons for it occurring;

    (c) Any complaints received;

    (d) Measures taken to avoid, remedy or mitigate its effects; and

    (e) Measures (if any) undertaken to prevent a reoccurrence of the event.

124. In the event of non-compliance with Conditions 120 or 121, the Consent Holder must commission a suitably qualified and independent expert who has been approved by the Manager to undertake an investigation into the source of the odour or airborne contaminants. This person must provide a written report to the Manager on the outcome of the investigation which shall include recommendations to remedy and/or mitigate the effects so that Conditions 120 and 121 are complied with. The Consent Holder shall implement those recommendations as soon as it is practicable.

	EXPIRY DATE	EXTENDED LAPSE PERIOD
AUT.021532.01.02	**31 MAY 2046**	**10 YEARS**
AUT.021532.02.02	**31 MAY 2046**	
AUT.021532.03.01	**31 MAY 2046**	
AUT.021532.04.01	**31 MAY 2046**	**10 YEARS**
AUT.021532.05.02	**31 MAY 2031**	**10 YEARS**
AUT.021532.06.01	**31 MAY 2031**	**10 YEARS**
AUT.021532.07.01	**31 MAY 2046**	**15 YEARS**
AUT.021532.08.01	**31 MAY 2046**	**15 YEARS**
AUT.021532.09.01	**31 MAY 2046**	**15 YEARS**
AUT.####	**ADD**	**ADD**
AUT.####	**ADD**	**ADD**

Advice Note: *An application can be made to the Northland Regional Council to extend the period after which the consent lapses pursuant to section 125(1) of the Resource Management Act. Such an application must be made before the consent lapses.*

NOTE: All Schedules and information have not been included in these Proposed Conditions for sake of simplicity and does not represent any proposal to vary or cancel except where indicated in purple or green text in the following.

SCHEDULE 1

MONITORING PROGRAMME

The Consent Holder shall undertake the following monitoring:

1. WASTEWATER TREATMENT SYSTEM

1.1. Inflow Volume

A record of the total daily wastewater inflow volume, midday to midday, to the treatment system shall be kept. The average daily inflow volume shall be calculated using the recorded wastewater inflow volumes for the period between 1 April and 31 March each year.

The Northland Regional Council's closest rainfall recorder site – presently being NRC 548215 (Marsden Point) – shall be used as the daily rainfall recorder for these consents to determine wet weather flow events, unless the Consent Holder installs an approved weather station on the treatment site.

For each rain event, the following records shall be kept:

(a) Date(s), duration and intensity of the event;

(b) The duration of any observable increase in the daily wastewater inflow and discharge volumes as a result of the rain event, and

(c) The estimated increase in daily wastewater inflow and discharge volume as a result the rain event.

Advice Note: *The Northland Regional Council will forward a copy of the rainfall records from this recorder site to the Consent Holder on written request.*

2. Discharge Volume

With the exception of wastewater discharged to Zone 3, the Consent Holder shall keep a written record of the daily volume of wastewater discharged, midday to midday, from the outlet of the treatment system to each of the land discharge areas, any reuse system or the ocean outfall using the meters required to be installed and maintained under Condition 17 and 17A.

Wastewater discharged to Zone 3 shall be estimated by subtracting the combined daily discharge volume to all other areas from the total daily inflow volume to the treatment system.

2.1. Daily Average Flow

The daily average discharge volume shall be calculated using the total recorded wastewater volumes for the period specified in the relevant condition and divided by the number of days within that period.

2.2. Average Dry Weather Flow

The average dry weather inflow shall be a "rolling" (moving) average based on the inflow

volumes from the 30 most recent “dry weather flow” days.

For the purposes of this calculation, a “dry weather flow” day is any day on which there is less than 1 millimetre of rainfall and that day occurs after three consecutive days either without rainfall or with rainfall of less than 1 millimetre.

2.3. Maximum Wet Weather Flow

For the purposes of Condition 72 of this consent, the maximum wet weather flow shall be the maximum flow recorded on any day that is not a dry weather day as defined in Section 1.2.2 above.

3. Treated Wastewater Quality

3.1. Oxidation Ponds and Wetland

The Consent Holder shall, take a composite* sample of the treated wastewater from:

(a) The oxidation pond outlet(s) to the marsh system; and

The following NRC Sampling Sites, where discharges are occurring, as shown on NRC Plan 4885 (**attached**):

(b) Site 100779: Number 1 Marsh outlet – far

(c) Site 100780: Number 1 Marsh outlet – near

(d) Site 100782: Number 2 Marsh outlet – near

(e) Site 100783: Number 2 Marsh outlet – far

The composite* sample shall be analysed for the following:

(a) Faecal coliforms

(b) Carbonaceous biochemical oxygen demand

(c) Total ammoniacal nitrogen

(d) Total Nitrogen

(e) Total Phosphorous

(f) Suspended Solids

Temperature, pH and dissolved oxygen concentration shall be recorded in the wastewater sample using an appropriate meter, and in accordance with standard procedures.

The frequency of sampling shall be as follows:

(i) quarterly in the months of January, April, July and October; or

(ii) on a monthly basis for a period of five consecutive months following any sampling result from a marsh outlet discharge point exceeding a BOD_5 of 60 mg/L.

**A sample made up of equal volumes from three samples taken at least one minute apart during the same sampling event.*

3.2. New Treatment Plant Wastewater

NOT REPEATED IN THIS COPY (UPGRADE CONDITIONS)

3.3. Rama Road Block

NOT REPEATED IN THIS COPY (REJECT WATER ONLY).

4. WASTEWATER DISCHARGE SYSTEMS

The Consent Holder shall visually inspect all the land discharge systems at least once every two weeks to assess the hydraulic performance of the systems. A record shall be kept of any areas where ponding has occurred or matting on the infiltration surface is visible.

5. ODOUR

If there are any objectionable or offensive odours detected at the boundary of the area legally occupied by the wastewater treatment and disposal/discharge system, then the Consent Holder shall notify the Manager immediately in accordance with Conditions 46, ~~and~~ 68, and 122.

6. GROUNDWATER

6.1. Zone 3

The Consent Holder shall, during the first week of the months of January, April, July and October, take a groundwater sample from each of the following groundwater monitoring bores, as shown on NRC Plan 4885 (**attached**):

Seaward Bores:

(a) Site 100784: Number 1 monitoring bore

(b) Site 100785: Number 2 monitoring bore

(c) Site 100786: Number 3 monitoring bore

(d) Site 100787: Number 4 monitoring bore

(e) Site 100788: Number 5 monitoring bore

(f) WDC monitoring bore 30

Inland Bores:

(a) WDC monitoring bore number 22

(b) WDC monitoring bore number 25

These groundwater samples shall be analysed the following parameters following the commencement of this resource consent:

(a) Faecal coliforms

(b) Total ammoniacal nitrogen

(c) Total Nitrogen

(d) Total Phosphorous

On commencement of the discharge of reject water:

(a) Sodium

(b) Chloride

(c) Boron

Groundwater samples from inland bores shall also be analysed for the following:

(a) Dissolved Reactive Phosphorus

(b) Nitrate + Nitrite

During this groundwater quality sampling, the Consent Holder shall also measure the depth to groundwater in all the above monitoring bores.

6.2. Rama Road Block

The Consent Holder shall, during the first week of the months of January, April, July and October, take a groundwater sample from each of the seaward monitoring bores installed in accordance with Condition 61(a) and analyse the samples for the same determinands as specified for the Zone 3 groundwater monitoring.

6.3. Zone 6B and Zone 7

6.3.1.Baseline

The Consent Holder must take a groundwater sample from each of the bores installed in accordance with Condition 118 every calendar month for the first 12-months of commencing discharge to Zone 6B and Zone 7 and analyse the samples for the same determinands as specified for the Zone 3 groundwater monitoring.

6.3.2.Ongoing

After the first 12-months from commencing discharge of treated wastewater to Zone 6B and Zone 7, the Consent Holder must, during the first week of the months of January, April, July and October, take a groundwater sample from each of the bores installed in accordance with Condition 118 and analyse the samples for the same determinands as specified for the Zone 3 groundwater monitoring.

7. SURFACE WATER

7.1. Rama Road Block

The Consent Holder shall, during the first week of the months of January, April, July and October, take a surface water sample from each of the surface water sites to be specified in accordance with Condition 61(b).

These surface water samples shall then be analysed for the following:

(a) Faecal coliforms

(b) Total ammoniacal nitrogen

(c) Total Nitrogen

(d) Nitrate + Nitrite

(e) Total Phosphorous

(f) Dissolved Reactive Phosphorus

7.2. Zones 6B and 7 Wetland Monitoring Management Plan – Monitoring Sites

An initial baseline monitoring event of wetland vegetation condition must be undertaken prior to commissioning of the discharge system and a further baseline monitoring event must take place during the alternate season to obtain representative information of wetland condition.

The primary criteria for selecting monitoring sites for the Wetland Monitoring and Management Plan shall be the level of contamination risk associated with the discharge of

treated wastewater within Zone 7 with respect to daylighting and spray-drift. Level of risk shall take into account the wetland type and:

(a) Spatial representativeness of the monitoring site network across the area of predicted groundwater mounding.

(b) Selection of high-risk permanent plots that also have high biodiversity values (all else being equal).

Paired control sites will be at no/negligible risk from effects associated with the discharge of treated wastewater and are less likely to be subject to confounding effects.

8. COLLECTION, TRANSPORT AND ANALYSIS OF SAMPLES

The groundwater samples shall be taken in accordance with guidelines provided in Rosen, M R, *et al*., 1999; "New Zealand guidelines for the collection of groundwater samples for chemical and isotopic analysis"; Institute of Geological and Nuclear Sciences Limited; science report 99/9; 80 p.

All wastewater and surface water samples shall be collected using standard procedures and in appropriate laboratory supplied containers.

All samples collected as part of this monitoring programme shall be transported in accordance with standard procedures and under chain of custody to the laboratory.

All samples taken shall be analysed at a laboratory with registered quality assurance procedures[#], and all analyses are to be undertaken using standard methods, where applicable.

[#] *Registered Quality Assurance Procedures are procedures which ensure that the laboratory meets recognised management practices and would include registrations such as ISO 9000, ISO Guide 25, Ministry of Health Accreditation.*

9. NON COMPLIANCES

The Consent Holder shall notify the Manager of any non-compliance with any conditions of consent immediately after the results of the monitoring required by Sections 1 to 4 become known to the Consent Holder.

If the Consent Holder detects any noxious, dangerous, offensive or objectionable odours at the legal boundary of the treatment or land disposal systems, then the Manager shall be notified immediately.

10. REPORTING

The Consent Holder shall forward a report to the Manager and members of the Liaison Group detailing the monitoring results of Sections 1 to 5 of this Schedule by the 15th day of February, May, August and November for the previous three month period, excluding the month that the report is due in.

The Consent Holder shall, by 1 May each year, for the preceding year 1 April and 31 March, forward an annual report to the Manager and representatives of the Liaison Group detailing the following:

(a) An assessment of compliance with the wastewater treatment quality limits set down in these resource consents; and

(b) The maintenance undertaken on the treatment and discharge systems during the previous 12 month period and any identified maintenance requirements for the

following 12 month period.

(c) An assessment of wetland performance including, but not limited to:

(i) Approximate percentage plant cover in each wetland cell; and

(ii) Wetland performance, including an analysis of wetland influent compared to wetland effluent;

(iii) An estimate of sludge volumes within the wetland;

(d) If the BOD_5 trigger of 60g/m^3 has been exceeded at any time within the report period, assessment of the discharge quality from the wetland for the purpose of determining whether BOD loading has resulted in a deterioration of discharge quality over the reporting period.

All required numerical monitoring results shall be provided in a Microsoft Excel spreadsheet, or an alternative format agreed to with the Manager.

SCHEDULE 2 MANAGEMENT PLANS

Wastewater Discharge Management Plan for Zone 6B and Zone 7

1. The Consent Holder shall prepare a Wastewater Disposal Management Plan (WwDMP) for Zone 6B and Zone 7 (Sec 2 SO 461691) which shall meet the following outcomes:

   (a) Demonstrate how the wastewater discharge system is to be operated and maintained to ensure compliance with the conditions of consents (#) and (#).

2. The WwDMP must include (but is not limited to) the following details:

   (a) A detailed description and plan of the application system to be used, including the management of the timing and volume of wastewater application;

   (b) A description of projected daily and annual hydraulic and nutrient (nitrogen and phosphorus) loading rates;

   (c) A method for ascertaining the soil moisture status prior to and during treated wastewater irrigation;

   (d) Specifications for buffer zone distances from the *Machaerina juncea* sedgeland, network utilities, and the Pipeline Track;

   (e) A system to log the daily applications including application area, duration, time and volume discharged;

   (f) How the system will be operated and maintained;

   (g) Monitoring records of days of use of the discharge system and wastewater volumes discharged on those days including the section(s) of the Zones irrigated, the application depth and duration;

   (h) The details of the operating and maintenance regimes for all odour management systems;

   (i) The details of operating procedures to minimise aerosols and spraydrift; and

   (j) The details of the odour complaints procedure, record keeping and response procedure.

3. The WwMP must be reviewed by the Consent Holder in consultation with the Northland Regional Council at least every two years after the Zones are first used for disposal of treated wastewater. The Consent Holder may also amend the WwMP at any time following consultation with the Northland Regional Council. If any changes are made to the WwMP, then a copy of the

amended WwMP must be forwarded to the Northland Regional Council for certification with the requirements of clause 2 above, prior to it being made operative.

Wetland Monitoring and Management Plan

1. The Consent Holder must commission a suitably qualified wetland ecologist to prepare a Wetland Monitoring and Management Plan (WMMP) during the first year of the exercise of the consent and provide it to the Northland Regional Council for certification. The WMMP has the purpose of;

   (a) Detecting adverse effects on the *Machaerina juncea* sedgeland wetland located at or about 1733008E 6030070N from the exercise of this consent; and

   (b) Informs the adaptive management regime set out in the Consent including any requirements for avoiding adverse ecological effects.

2. The WMMP must include the following information:

   (a) The wetland monitoring site selection criteria (in accordance with Section 6.3, Schedule 1) and approach including the use of baseline monitoring and control reference site(s).

   (b) Ecological indicators to be monitored including, but not limited to, the following:

      i. Soil nutrients at quarterly intervals;

         - Olsen P;
         - Nitrate-Nitrogen; and
         - Ammoniacal Nitrogen.

      ii. Wetland condition monitoring in general accordance with Table 5 of Clarkson et al. (2004). *The Handbook for Monitoring Wetland Condition. Coordinated Monitoring of New Zealand Wetlands*. Ministry for the Environment Sustainable Management Fund Project 5105.", to assist with the characterisation and interpretation of potential changes over time; and

      iii. Detail on how the monitoring is to be undertaken, noting that:

         - Quarterly vegetation and wetland condition monitoring must be undertaken at least for the first five years (in the same months) beginning the year after the initial baseline monitoring required by Condition 126(b)(iii)A above; and

      iv. Define trigger levels for implementing adaptive management measures; and

      v. Outlines the adaptive management measures to be implemented, which may include enhanced planting, adjustments to wastewater discharge, or implementing upgrades at the wastewater treatment plant.

Advice Note: *An alternate season is one that is alternative to the season that the baseline condition monitoring took place.*

Advice Note: *Given the low likelihood of interaction with the natural inland wetland, particularly during average conditions, and low volumes of discharge during the first months of operation, part of the baseline monitoring can occur at the same time as the discharge due to there being a very low likelihood of interaction.*

PROPOSED CONDITIONS FOR RESOURCE CONSENTS

To carry out the following activities associated with the construction of wastewater disposal infrastructure:

Land Use Consents issued by Whangārei District Council

LUCONSENT1 To carry out earthworks within the sand dunes (Poupouwhenua Scenic Reserve) at Bream Bay for the purpose of undertaking minor recontouring and excavations to lay or bury wastewater pipelines as a Discretionary activity pursuant to Rule CE-R7 of the WDP.

LUCONSENT2 To install and operate new wastewater disposal infrastructure within a Flood Hazard Area as a Restricted Discretionary activity pursuant to Rule NH-R7 of PC1 to the WDP.

Subject to the following conditions:

Management Plans

1. At least three months prior to initiating construction activity authorised by these consents the Consent Holder must prepare the Management Plans listed in Table 1. The Management Plans must give effect to Schedule 1 (attached) and may be prepared as separate plans or as part of a combined plan.

Table 1: Management Plans
Construction Environment Management Plan (CEMP)
Landscape and Ecological Management Plan (LEMP)
Kaitiaki Monitoring Plan (KMP)

2. All Management Plans listed in Table 1 are to be prepared by a suitably qualified and experienced person with expertise in the matters that the individual Management Plan is to address.

3. The consents must be exercised, at all times, in conformance with a Management Plan (from Table 1) that has been certified by the Council.

Vegetation Management

4. Prior to any vegetation clearance, the final pipeline routes must be physically demarcated on site. The project ecologist must then map all impacted Kānuka (*Kunzea linearis*) specimens and identify specific areas requiring ecologist supervision during clearance.

5. Clearance of vegetation in the vicinity of Kānuka must be supervised by the project ecologist to ensure damage is minimised. Where practicable, Kānuka must be retained in situ, and vegetation clearance must be achieved by trimming or 'limbing up' branches rather than whole tree removal.

6. For every Kānuka tree that cannot be avoided and must be removed, at least two new Kānuka specimens must be planted in the wider project area.

    (a) Replacement plants must be a minimum size of PB8.

(b) All plants must be eco-sourced from the Waipū Ecological District, preferably from duneland habitats.

(c) Planting must be undertaken in the first planting season (typically April-September) following the completion of construction works.

7. All vegetation clearance activities must be undertaken outside of the typical native bird nesting season, which is 1 August to 28 February inclusive.

8. If vegetation clearance is unavoidable during the bird nesting season, the following protocol must be implemented by an approved ecologist:

(a) A pre-work survey must be undertaken no more than 5-7 days prior to work commencing in any specific area to identify and map any active nests.

(b) If clearance is ongoing during this period, daily checks for active nests must be undertaken.

(c) If an active nest is found, a no-work buffer zone must be established around it, appropriate to the species (as per Table 4 of the EcIA), and clearly demarcated. No work must occur within this buffer until the ecologist has confirmed the chicks have fledged.

Patuharakeke Te Iwi Trust Board Incorporated

9. When submitting the Management Plans required by Condition 1, the Consent Holder must include evidence of consultation with Patuharakeke Te Iwi Trust Board Incorporated (PTB), allowing at least 20 working days for its review. Any opinions and recommendations from PTB must be noted in the CEMP and those formally adopted by the Consent Holder must be incorporated into the CEMP.

10. Prior to the start of works authorised by these consents, the Consent Holder must advise the Council that either the KMP has been agreed between the parties or that agreement has not been reached despite the Consent Holder's best endeavours, with the Consent Holder providing reasons for this.

Advice Notes

1. *All native lizards and almost all native birds are protected under the Wildlife Act 1953. It is an offence to harm or disturb them or their nests without an authority from the Department of Conservation.*

2. *For the purpose of compliance with the conditions of consent, "the council" refers to the council's monitoring officer unless otherwise specified.*

3. *The scope of the resource consents at grant must be upheld throughout the duration of the consent. Therefore, it is necessary that the Consent Holder is not bound to incorporate opinions and recommendations on Management Plans where these do not serve a resource management purpose of the consents granted. However, it may be useful for the Consent Authority to be aware of the discussions.*

4. *The consent holder is responsible for obtaining all other necessary consents, permits, and licences, including those under the Building Act 2004, and the Heritage New Zealand Pouhere Taonga Act 2014. This consent does not remove the need to comply with all other applicable*

Acts (including the Property Law Act 2007 and the Health and Safety at Work Act 2015), regulations, relevant Bylaws, and rules of law. This consent does not constitute building consent approval. Please check whether a building consent is required under the Building Act 2004.

5. *A copy of this consent should be held on site at all times during the establishment and construction phase of the activity.*

6. *All archaeological sites are protected under the provisions of the Heritage New Zealand Pouhere Taonga Act 2014. It is an offence under that act to modify, damage or destroy any archaeological site, whether the site is recorded or not. Application must be made to Heritage New Zealand for an authority to modify, damage or destroy an archaeological site(s).*

Schedule 1

Construction Environment Management Plan

The CEMP must include:

(a) The expected duration of construction and staging inclusive of earthworks.

(b) Details of erosion and sediment controls in the Coastal Area Environment.

(c) Details of temporary stockpiling and storage management in the Coastal Area Environment.

(d) Details of surface revegetation of disturbed sites and other surface covering measures to minimise erosion and sediment runoff following construction in the Coastal Area Environment.

(e) Details of temporary stormwater diversion drains, and channels.

(f) Details of all earthworks operations that must be carried out in a manner that minimises the potential for slope instability and soil erosion in the Coastal Area Environment inclusive of any mitigation measures must be installed as required to mitigate and/or remedy any slope failures.

Landscape and Ecological Management Plan

The purpose of the LEMP is to detail the methods to be used to avoid, remedy, or mitigate adverse effects on ecological values. The LEMP must include, but not be limited to, the following:

(g) All conditions detailed in the sections below.

(h) A construction timeline, showing key milestones and the timing of ecological management action.

(i) Roles and responsibilities of all parties involved in implementing the LEMP.

(j) Protocols for monitoring, reporting, and adaptive management.

Lizard Management Plan

A site-specific LMP must be prepared by a suitably qualified and experienced herpetologist and included within the LEMP. The LMP must be prepared and a Wildlife Act Authority (WAA) obtained from the Department of Conservation prior to any site works commencing. The LMP must detail methods for:

(k) Pre-clearance surveys and salvage operations.

(l) Safe handling, temporary housing, and translocation of any captured native lizards to a suitable, approved receptor site.

(m) Timing works to occur during warmer months (October-April) when lizards are most active and able to disperse.

(n) Habitat enhancement measures at the receptor site, such as the creation of rock/log refugia.

Kaitiaki Monitoring Plan & Programme

A KMP must be developed in cooperation with Patuharakeke Te Iwi Trust Board. This programme must be developed to include provisions for cultural monitoring and cultural effects associated with:

(a) The implementation of all work in accordance with tikanga of Patuharakeke Te Iwi Trust Board, including cultural inductions, sod turning ceremonies, and karakia;

(b) Indigenous species habitat disturbance, including lizard and bird habitat;

(c) Accidental discovery of kōiwi and/or cultural artefacts during works; and

(d) Ongoing maintenance of ecological restoration areas within the site.

RUAKĀKĀ WWTP - ZON 7 LAND DISCHARGE

The purpose is to manage weed the site from damage by vehicles successfully establish mitigation landscape and ecological values Reserve. This is implemented usi planting, which is appropriate for Waipu Ecological District which a area, providing integration with e Plant species selection consider and food for lizards.

KEY

- 30m buffer zone - all weed species shall be removed, revegetation planting as per species list to be retained and protected
- Wetland buffer zone - all weed species shall be removed, revegetation planting as per species list to be retained and protected
- 3m wide pipeline corridor - clear existing vegetation as required (retain native species where possible). Low revegetation planting (0.5m max height)
- 1m Contours
- Proposed fencing to zone boundary
- Pipeline system
- Existing Kānuka forest on sand dune
- Existing Coprosma acerosa shrubland on sand dune
- Existing Pōhuehue sedgeland on sand dune

NATIVE SPECIES PLANTING LIS

SCIENTIFIC NAME	C
Austroderia *splendens*	To
Cordyline *australis*	Tī
Coprosma *acerosa*	Tā
Coprosma *repens*	Tā
Ficinia *nodosa*	W
Kunzea *linearis*	Kā
Phormium *tenax*	H
Muehlenbeckia *complexa*	Pō

NOTE: Pipeline system layout indicative only, refer to detailed design drawings

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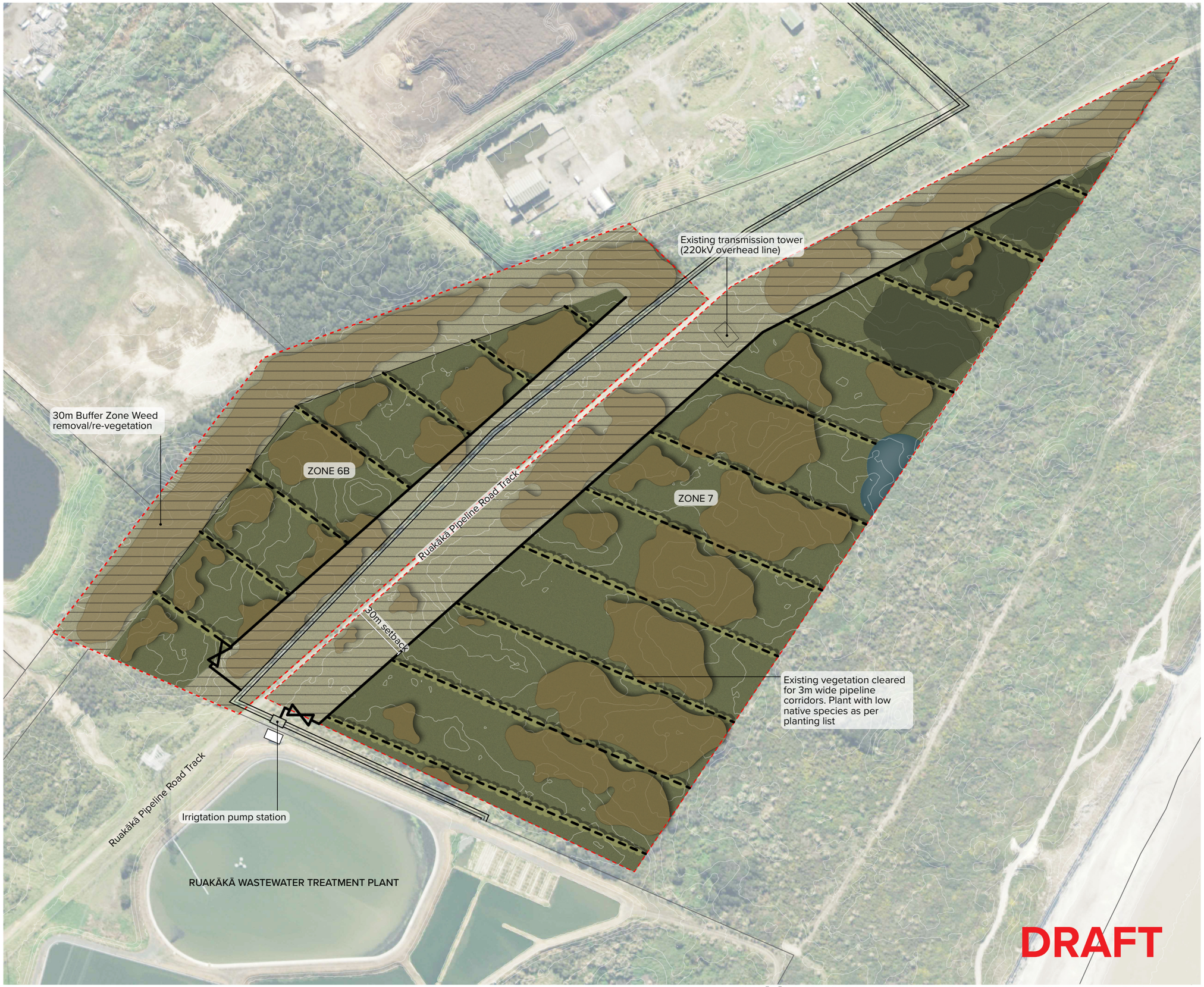

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