Application for Resource Consents

To Construct & Operate the Aratapu Water Storage Reservoir

TE TAI TOKERAU WATER TRUST

WWLA0239 | Rev. 1

18 September 2020

Aratapu Water Storage Reservoir, Pouto

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Williamson Water & Land Advisory

Unit 5A
Waimauku Village Retail Centre
11F Factory Road
Waimauku
Auckland
New Zealand
T +64 65 4422

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1	16 September 2020	Te Tai Tokerau Water Trust	For review
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Glossary of Terms

Term / Abbreviation	Definition
CEMP	Construction Environmental Management Plan
DoC	Department of Conservation on behalf of the Director-General of Conservation
ESCP	Erosion and Sediment Control Plan
KDC	Kaipara District Council
KDP	Kaipara District Plan
NES-CS	Resource Management (National Environmental Standard for Assessing Managing Contaminants in Soil to Protect Human Health) Regulations 2011
NES-FW	Resource Management (National Environmental Standards for Freshwater) Regulations 2020
NPS-FM	National Policy Statement for Freshwater Management 2020
NRC	Northland Regional Council
NWSUP	Ngā Mahi a Wai Māori - Northland Water Storage and Use Project
PRP	Proposed Regional Plan for Northland (Appeals Version – June 2020)
RAQP	Regional Air Quality Plan for Northland 2005
RMA	Resource Management Act 1991
RPS	Regional Policy Statement for Northland 2016
RWSP	Regional Water & Soil Plan for Northland 2004 (updated 2016)

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Appendices:

1. Introduction

1.1 Overview of the Proposal

Williamson Water & Land Advisory Ltd (WWLA) was commissioned by Te Tai Tokerau Water Trust (the applicant) to prepare this application for resource consents to authorise the construction and operation of the Aratapu Water Storage Reservoir[1] in the headwaters of the Aratapu Creek Catchment, off West Coast Road, between Te Koporu and Glinks Gully (**Figure 1**).

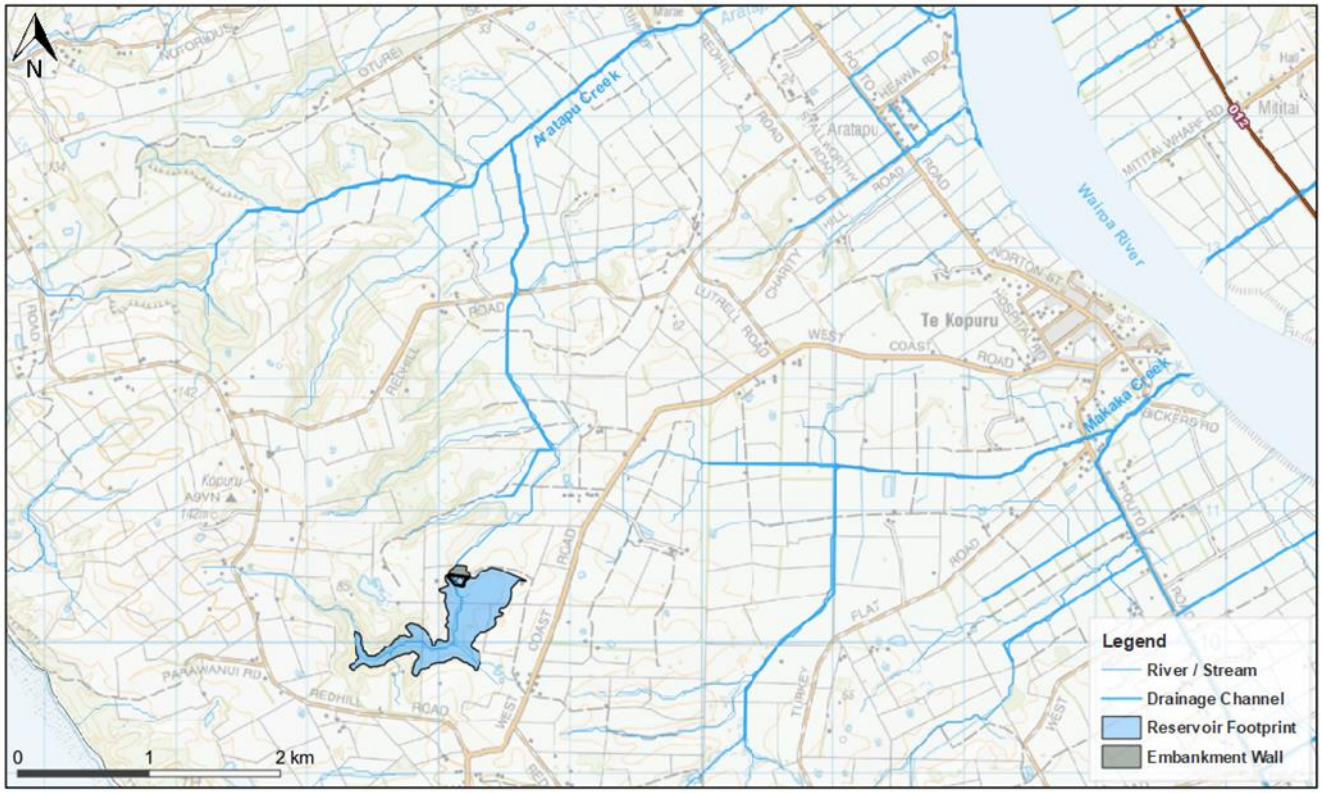

Figure 1: Location of the proposed Aratapu Water Storage Reservoir, Pouto Peninsula

The proposed reservoir embankment is approximately 22 m high and will be capable of storing approximately 4 million cubic metres (m^3) of water at full supply level. While the exact land the reservoir will service is not currently known (that depends on future uptake), it is expected that it will be able to provide sufficient water to irrigate approximately 1,070 hectares of horticultural development.

The proposed reservoir will be filled by a combination of direct catchment inflows and water taken from the other locations in the area (Makaka Creek and Cole Drain, and potentially a run-of-river water take from the Kaihu River). Applications for the taking of water from the water bodies will be the subject of another resource consent application.

The proposed Aratapu Water Storage Reservoir was identified as a viable water storage option through the Northland Water Storage and Use Project (NWSUP), as a complementary part of a larger distributed community scheme.

This application is made in accordance with Schedule 4 of the RMA. Resource consents are required under the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NES-FW), the

[1] Also referred to as K13 in other documents.

Regional Water and Soil Plan for Northland (RWSP), the Proposed Regional Plan for Northland (PRP), and the Far North District Plan (FNDP).

Northland Regional Council's (NRC) and Kaipara District Council's (KDC) prescribed application forms for resource consent are attached at **Appendix A**.

1.2 Applicant Details

The applicant's details are set out in **Table 1** below.

Table 1. Applicant details

Charitable Trust Board Name	Te Tai Tokerau Water Trust
NZBN	9429048360210
Incorporation Number	50038862
Charitable Trust Board Status	Registered
Date of Incorporation	16 June 2020
Registered Office Address	Thomson Wilson, 125 Bank Street, Whangarei, 0110, New Zealand

1.3 Report Structure

This report contains the following information:

- An overview of the Northland Water and Storage Use Project (**Section 2**).
- A description of the proposal (**Section 3**).
- A description of the receiving environment (**Section 4**).
- Permitted activities and resource consent requirements (**Section 5**).
- An assessment of the proposal against Part 2 of the RMA and relevant planning provisions (**Section 6**).
- An assessment of the proposal's effects on the environment (**Section 7**).
- A summary of consultation and feedback on the proposal (**Section 8**).
- A description of the how the effects of the proposal will be monitored (**Section 9**).

2. Project Overview and Purpose

Starting in 2013, NRC began investigating opportunities to provide economic benefits in Northland through land use change involving water storage. The work, originally funded by Crown Irrigation Investments Limited, identified two areas that would benefit most from investment: Dargaville-Pouto area in the Kaipara District and the Mid-North area in the Far North District.

In July 2019, the Ministry of Business Innovation and Employment (MBIE) entered into an agreement with NRC to co-fund the delivery of a prefeasibility phase, including research reports on the technical feasibility and benefits of building water storage reservoirs, harvesting water during high flows, and distributing stored water to stimulate the conversion of existing land use to higher value horticulture activities in the Mid-North and Kaipara. The project was named the Northland Water Storage and Use Project (NWSUP).

The prefeasibility phase was governed by a Project Steering Group (consisting of the chief executive officers of NRC, Far North District Council and KDC and two Crown appointed representatives) and a Project Advisory Group (made up of invited representatives from iwi and hapū, Lake Ōmāpere Trust, landowners, primary industry sectors, environmental agencies and community).

The prefeasibility reports, completed in March 2020, identified that a Mid-North Water Scheme and a Kaipara Water Scheme could provide $150 million per annum lift in GDP and an additional 877 jobs. The Kaipara Water Scheme alone could increase the area's GDP by 9% and employment by 5%. The overall conclusion of the prefeasibility phases was that a viable scheme exists in the Mid-North and Kaipara areas. The preferred options will consist of multiple water storage sites connected through a distribution system rather than one or two large reservoirs.

The NWSUP is now being delivered by Te Tai Tokerau Water Trust. The proposed Aratapu Water Storage Reservoir is one of three proposed reservoirs in the Mid-North Scheme. The proposed Matawii Water Storage Reservoir (listed project 16 in Schedule 2 of the Act), part of the Mid-North Water Scheme, was the first component of the NWSUP for which resource consents have been sought.

Te Tai Tokerau Water Trust commissioned WWLA, Riley Consultants Ltd (RILEY) and other partners to undertake the NWSUP feasibility demand assessment and design phase. The work is supported by the Provincial Growth Fund and includes obtaining resource consents to authorise the construction and operation of the Mid-North and Kaipara Schemes.

Figure 2 shows the location of the locality of the potential command area in the Kaipara identified through the pre-feasibility stage. Note that the locations of the other proposed reservoirs are deliberately not shown.

The key findings of the Kaipara Scheme pre-feasibility phase are summarised in the sections below.

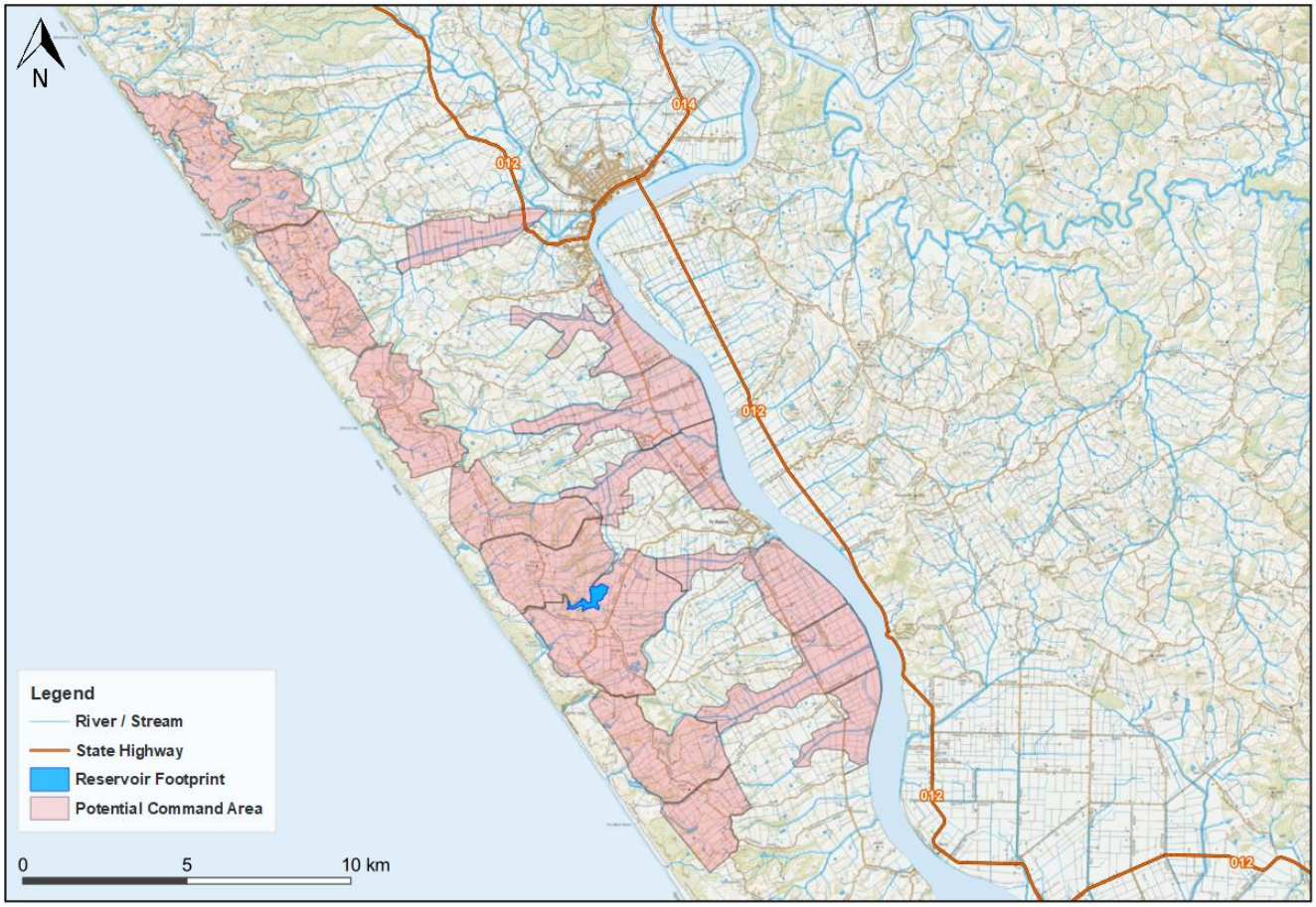

Figure 2. Potential Kaipara command area

2.1 Demand

A detailed analysis of soil types, land gradient and solar aspect was undertaken[2]. Around half of the land in the Kaipara (46%) command area has been identified as being highly suitable for horticulture production (**Table 2**).

Landowners in the Kaipara command area have expressed strong support for a scheme. The wider primary sector has strong interest in the project and believe that there is significant potential to grow high value horticulture if more water is available.

Table 2. Summary of potential demand factors

Variable	Kaipara
Command area (ha)	10,150
Irrigation area – Farm (ha)	3,700
Irrigation area – Canopy[3] (ha)	2,600
Land in command area identified as very suitable for horticulture (ha)	4,714
Land in command area identified as very suitable for horticulture (%a)	46%
Canopy area as share of very suitable land area (%)	55%

[2] WWLA, 27 March 2020. Volume 1: Command Area Analysis and Refinement – Northland Water Storage and Use Project. Prepared by Williamson Water & Land Advisory Ltd. Project no; WWLA0156.
[3] Canopy is the land area that requires water. The farm area includes the canopy area and unproductive areas such as transportation tracks, storage sheds, etc, that are required to support the canopy area.

2.2 Economic Opportunities

There are significant on-going economic opportunities to be realised through development of the Kaipara Water Scheme (**Table 3**). These benefits arise from both a major increase in horticultural production and the flow-on effects to other sectors. Economic analysis in the prefeasibility phase indicates an increase in GDP of $83 million per annum in Kaipara, equivalent to a 9% increase in the district's current GDP (valued at $914 million in the year ended March 2019).[4] The additional 437 FTE filled jobs represents a 5% increase over pre-COVID-19 employment levels in the district.

Table 3. Potential annual economic impacts of proposed Kaipara Water Scheme

Variable (per annum)	Direct	Total
Value of output	$176M	$220M
GDP	$64M	$83M
Employment (FTE)	360	437
Household Income	$28M	$36M

The economic impact of constructing the proposed Aratapu Water Storage Reservoir, a component of the Kaipara Water Scheme is provided in **Section 7.1.1.**

2.3 Community

A Kaipara Water Scheme is likely to address local municipal supply issues (Dargaville and Te Kopuru). The scheme area includes proposed reservoirs reasonably close to urban centres. Discussions between the applicant and KDC are underway to determine how its municipal water supply systems will need to be reconfigured to accept additional water and how to fund the work through its Long-Term Plan.

2.4 Environment

The use of water to shift away from intensive pastoral farming in both areas is likely to benefit the environment from improved water quality due to less sediment and bacterial run-off. **Table 4** contains summarises the nature of the current land use in the command area, which is currently dominated by high producing grassland. The identified water storage sites are predominantly in modified catchments that have been drained as part of flood supply schemes. There is an opportunity to create improved habitat for native flora and fauna as part of creating the proposes reservoir

Table 4. Current land cover of the command area

Selected land cover type	Kaipara (% command area)
High producing exotic grassland	80%
Short rotation crop land	8%
Indigenous forest or scrub	2%
Exotic forest	2%
Orchard, vineyard or other perennial crop	0%

2.5 Climate change

The NWSUP project provides significant opportunities to mitigate the impacts of climate change, which is predicted to increase the frequency and severity of droughts.[5] Having a reliable water supply will become

[4] Te Tai Tokerau Water Trust. August 2020. Project Overview and Economic Assessment.
[5] NIWA. September 2016. Climate Change Projections and Implications for Northland. Prepared for Northland Regional Council. NIWA Client Report No: 2016072AK.

increasingly important to provide resilience for farmers, municipal water supplies, and to support small rural economies.

There is low lying land in the Kaipara that is at risk from future sea level rise. An increase in land value through a shift to higher economic use and increased GDP has the potential to increase available funding for future flood mitigation measures. Investment in flood defences will be more cost effective if the defences protect higher value land.

3. Description of the Proposal

3.1 Overview

The applicant is seeking land use consents, pursuant to regulations in the NES-FW, rules in the RWSP, PRP, and the KDP, and water permits and discharge permits pursuant to regulations in the NEW-FW and rules in the RWSP and PRP to authorise activities associated with constructing and operating the proposed Aratapu Water Storage Reservoir.

The site of the proposed reservoir is located on the Pouto Peninsula, approximately 12 km south of Dargaville and between Te Koporu and Glinks Gully. The proposed reservoir will be located in the headwaters of the Aratapu Creek Catchment (see **Figure 3**). The proposed reservoir will have a maximum working storage volume of approximately 4 million cubic metres. While the exact land the reservoir will service is not currently known (that depends on future uptake), it is expected that it will be able to provide sufficient water to irrigate approximately 1,070 hectares of horticultural land use.

It is expected that the proposed reservoir will be filled through a combination of direct catchment inflows, high flow water takes from the Makaka Creek and Cole Drain, and run-of-river water take from the Kaihu River. It is proposed that high catchment inflows (flows exceeding the median inflow) will be dammed when the reservoir is not full, and low flows will also be dammed outside of the irrigation season (i.e., during winter months). A continuation flow will always be provided. Please see the Hydrology Assessment report at Error! Reference s ource not found. for detailed information.

Applications for resource consents to authorise the taking and use of water from the Kaihu River and the Makaka Creek and Cole Drain are the subject a separate resource consent application.

3.2 Site Details

Records of Title of the land parcels affected by the proposed Aratapu Water Storage Reservoir are contained in **Appendix B** and are summarised in **Table 5**. Information on owners of land adjoining proposed reservoir site are provided in **Table 6**.

A map of the proposed reservoir in relation to the properties is also contained in **Appendix B.**

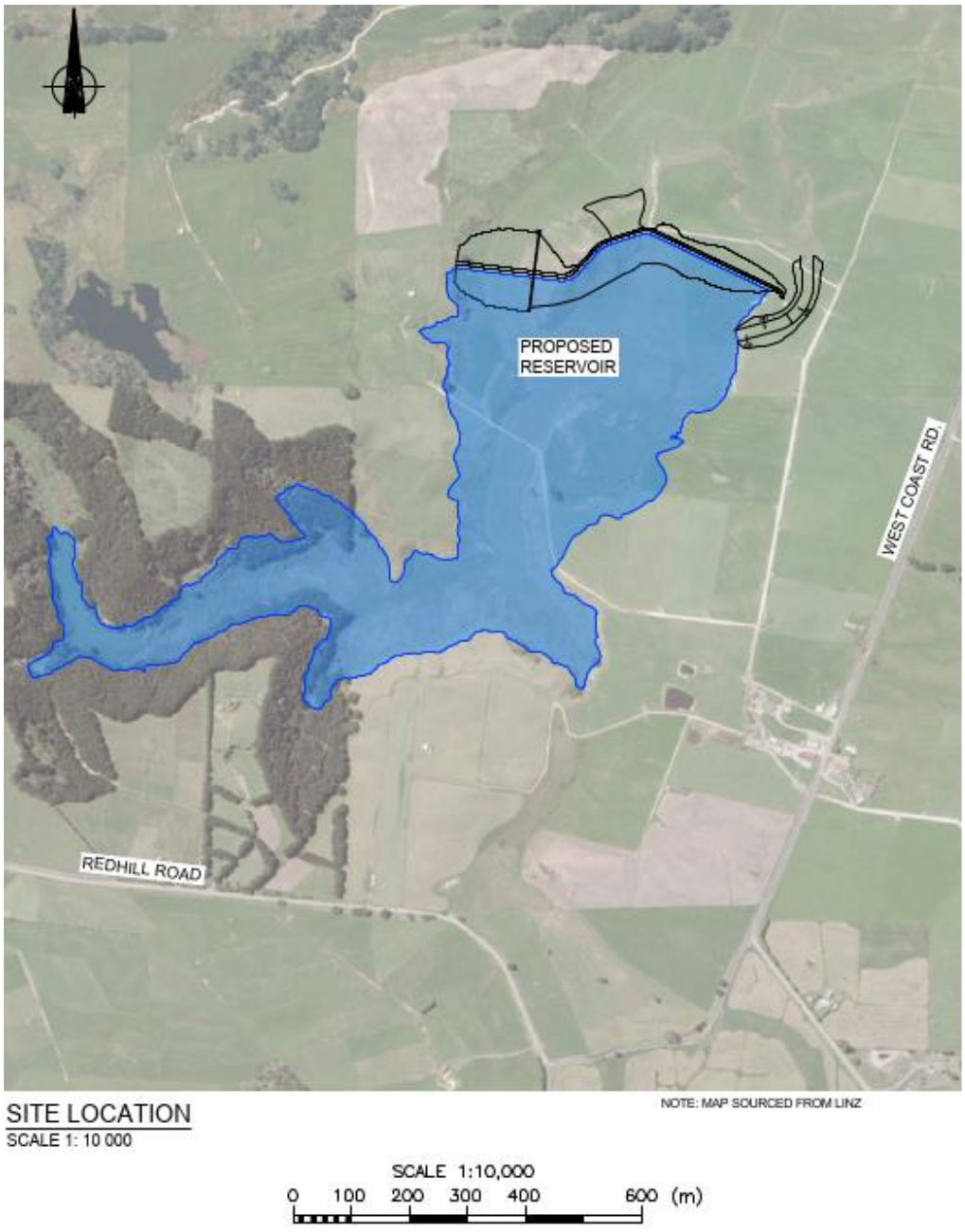

Figure 3. Location of the Aratapu Water Storage Reservoir

Table 5: Property and ownership details of the Aratapu Water Storage Reservoir site.

Legal Description	Record of Title	Estate Type	Registered Owner
Allotment 127 PSH OF Kopuru	NA86D/19	Fee Simple	Smith Farms Ltd
Allotment 128 PSH OF Kopuru	NA86D/21	Fee Simple	Smith Farms Ltd
Allotment 129 PSH OF Kopuru	NA2D/640	Fee Simple	Smith Farms Ltd
Allotment 131E PSH OF Kopuru Allotment 131D PSH OF Kopuru	NA80D/995	Fee Simple	Neil Robert Doherty
Allotment 131C PSH OF Kopuru Allotment 131B PSH OF Kopuru Allotment 131D PSH OF Koporu	NA80D/996	Fee Simple	Joy Helen Hadland and Michael Kevin Hadland

Table 6. Property and ownership details of land adjacent to the K13 Reservoir site

Legal Description	Record of Title	Estate Type	Registered Owner
Allotment 126 PSH OF Kopuru	NA77D/131	Fee Simple	Alexander Stanley Harvey Charmaine Denise O'Shea Leonarda Anna Maria Harvey
Pt Allotment 134 PSH OF Kopuru	NA35B/163	Fee Simple	Anthony Gary Nelson Tracy Lorraine Nelson **De Bruin Trustee Limited**
Lot 2 Deposited Plan 78025	NA34B/224	Fee Simple	Alexander Stanley Harvey Charmaine Denise O'Shea Leonarda Anna Maria Harvey
Lot 1 Deposited Plan 78025	NA34B/223	Fee Simple	B & O Hall Limited
Allotment 131A PSH OF Kopuru	NA80D/996	Fee Simple	Joy Helen Hadland Michael Kevin Hadland
Edged Deeds Plan 1314	NA763/14	Fee Simple	Craig Wesley Gunson **Onehunga Trustee Company Limited**
Pt Lot 17 Deposited Plan 261	NA93D/212	Fee Simple	Kate Rosalind Biddles Samuel Richard Biddles **Hadeda Trustees Limited**
Pt Allotment 174 PSH OF Kopuru	NA13C/1135	Fee Simple	Kate Rosalind Biddles Samuel Richard Biddles **Hadeda Trustees Limited**

3.3 Geotechnical Conditions

A geotechnical and site suitability assessment for the proposed reservoir was completed by RILEY. RILEY's report is attached at Error! Reference source not found.. At the time of writing this application, RILEY was u ndertaking comprehensive ground investigations, of which to date the findings are consistent with those of the preliminary geotechnical assessment. The investigations are necessary for detailed design.

3.4 Reservoir Construction

It is intended for construction to commence in March 2021 and it is expected that the reservoir will be constructed by the end of the 2021/2022 earthworks season. This section provides summary details from RILEY's report.

The proposed dam will span a valley that is approximately 70 m wide at its base and approximately 170 m wide at the dam crest, which is 22 m high (from the base of the valley).

The approach for constructing the 22-metre-high embankment of the proposed reservoir is set out in RILEY's design report (refer Error! Reference source not found.).

The main earthwork associated with the reservoir construction will include:

- Clearing and stripping of topsoil from the dam, spillway, and borrow areas.
- Sub-excavation of unsuitable foundation materials and placement in a designated area.
- Excavation of the spillway and borrow area and placement of fill within the dam or designated area.

The two unnamed tributaries flowing through proposed embankment site will need to be diverted to provide a dry working area during construction and also to prevent the overtopping of a partially formed embankment. RILEY has stated that the design intent is to construct the diversion culvert offline from the existing tributaries. The tributaries will be diverted into the culvert once it has been constructed, and the upstream shoulder of the

dam will be preferentially constructed ahead of the downstream area, to form a cofferdam. The culvert is likely to have a 1,200 mm diameter to cater to a 50-year flood event, however further assessments will be required at the detailed design stage (refer **Appendix E**).

Ground improvement will be undertaken across the dam foundations prior to constructing the embankment. This involves removal or stabilisation of soft soils. It is proposed that that the upper 6 metres of soils will be excavated by temporary sheet-pile walls and well-point dewatering. Stabilisation of the variable depth of soft soil will be undertaken through dewatering, mass stabilisation of the soft soils using lime and/or cement, and following mass stabilisation, backfill of the excavated ground will be completed using compacted earth fill.

The spillway will be constructed to divert overflows during storm events when there is little or no capacity in the reservoir. It will be designed to have a low risk of erosion during more frequent and smaller magnitude flood events. Design of the spillway is addressed in RILEY's Hydrology and Hydraulic Assessment report. The discharges from the spillway are permitted under both regional plans therefore no application for resource consent is being made for this activity.

The construction of the reservoir will also involve the removal of woody vegetation within the reservoir footprint. It is expected that all vegetation within the reservoir footprint will be removed. The total quantity of indigenous vegetation loss is approximately 3.6 hectares, and an additional 0.82 hectares of pine forest, 0.86 hectares of pampas-dominated wetland and 1.44 hectares of wet pasture. For more information refer the Assessment of Ecological Effects report prepared by Puhoi Stour Ltd (**Appendix F**).

The footprint of the embankment will be excavated to remove geotechnical unsuitable materials to a solid foundation and be constructed in horizontal layers zones with certified fill taken from the excavated area. It will comprise a number of key engineering features, including a riprap facing on the upstream side of the 3H:1V embankment slope to prevent erosion of the dam face.

A spillway will be constructed to divert overflows during storm events when limited capacity in the reservoir exists. The spillway will operate at a level equal to the top of the freeboard and will likely incorporate a portion in concrete for service spills, with the remaining area being grassed. The spillway will not have gates nor require any external mechanism to operate (e.g. free-overflow).

The estimated volumes of earth to be disturbed as part of constructing the proposed reservoir are set out in **Table 7** below.

Table 7. Estimated volumes of earth to be cut and filled associated with constructing the proposal reservoir.

Activity	Estimated volume of earth (m^3)
Cut for spillway	55,100
Excavate to subgrade	239,500
Stabilisation of embankment base (mix in situ, no material removed)	169,900
Fill for dam embankment	329,700
Total	**794,200**

The anticipated site management and processes that will be utilised during construction have yet to be finalised and will be subject to review and updates once the design is complete and a contractor appointed. The applicant proposes that a Construction Environmental Management Plan be developed and implemented in accordance with a condition of resource consent. The key purposes of the CEMP will be:

- To ensure compliance with resource consent conditions and other relevant RMA requirements;
- Provide specific guidance on the management of construction and commissioning activities; and
- To ensure any adverse effects associated with the construction and commissioning of the proposed reservoir are appropriate remedied or mitigated.

Erosion and sediment control measures will be undertaken throughout the duration of the construction phases in accordance with industry best practice (i.e., Auckland Council Guideline Document 2016/005[6]). The purpose of the erosion and sediment control measures is to minimise, to the full extent practicable, erosion, sediment discharges and sedimentation occurring during and after the construction of the proposed reservoir.

It is proposed that a condition of the sought resource consent requires a comprehensive Erosion and Sediment Control Management Plan (ESCMP) to be prepared and submitted to NRC and KDC for approval prior to any earthworks commencing (refer **Appendix J**). The ESCMP will be prepared in accordance with Auckland Council Guideline Document 2016/005 and will be part of the CEMP.

Disestablishment works will include ensuring stabilisation of all earthworks, and retention and management of erosion and sediment control devices for a minimum 3-month period or until vegetation has established.

All construction related infrastructure including the temporary site premise will be deconstructed on completion. A sealed (gravel) access will be maintained to the dam site post construction.

3.5 Reservoir Operation Activities

The reservoir will be operated in accordance with an Operational Reservoir Management Plan (ORMP), which is to be prepared as a proposed condition of consent (refer **Appendix J**). Operation and monitoring of the system will be in accordance with the ORMP that will be developed from the principles outlined in the NZSOLD Dam Safety Guidelines. The ORMP is expected to include the following details:

- An overview of the reservoir characteristics and construction.
- Relevant as-built drawings will be included, particularly those relating to its operation and maintenance.
- Roles and responsibilities of the various parties.
- Inspection forms for engineering, water monitoring and maintenance inspections.
- Operational/design storage levels and conditions for spillways
- Design levels, triggers and telemetric monitoring requirements.
- Data management and information ownership.
- Maintenance functions and reporting requirements.
- Details of annual reporting requirements to NRC and FNDC.

Filling will commence with re-connection of the two diverted modified headwater tributaries of the Aratapu Creek with all flows retained behind the embankment, while residual flow is proposed to be passed via a conduit pipe discharging through the dam embankment.

While the reservoir is filling, the residual flow cannot be provided for by the conduit pipe due to the cover level of this pipe and water levels. The preferred option for residual flow provision during filling has not been decided at this time but could include maintaining the construction diversion channel with a high flow offtake channel until the reservoir water level is sufficient to cover the conduit pipe. The final detail on the residual flow bypass will be confirmed in the ORMP. A condition requiring the provision of a continuous residual flow is proposed.

The filling process will take some time, the timing dependant on the season in which reconnection of the stream occurs. Filling will be monitored according to the ORMP.

The volume of water required to be stored in the reservoir cannot be attained from the natural catchment inflows. Therefore, as stated in the Hydrological Assessment Report (see **Appendix C**):

> *It is currently proposed that the reservoir will be filled through a combination of direct catchment inflows, a pumped high flow take from Makaka Creek and Cole Drain, and a pumped core allocation / low flow take from the Kaihu River. For*

[6] Erosion and sediment control guide for land disturbing activities in the Auckland region. Auckland Council Guideline Document GD2016/005. Incorporating amendment 1. Prepared by Beca Ltd and SouthernSkies Environmental for Auckland Council.

direct catchment inflows, it is currently proposed to harvest high flows above the median, up to two times the standard deviation of flow at all times they are available (and the reservoir is not full), and low flow core allocation outside of the irrigation season (i.e. winter months) only.

It is important to note that this application is only for the damming, diversion and taking upstream catchment inflows. Applications for the taking and use of water from the Makaka Creek, Cole Drain and Kaihu River will be the subject of a separate application for resource consents.

Table 8 below summarises the current and imminent water take proposals. It also sets out the minimum (i.e., continuation) flow proposals, which is consistent with policy direction in the PRP.

Table 8. Water take details

Take location and type	Rate (L/s)	Minimum flow criteria (L/s)	Note
Direct inflow – high-flow take (subject of this application)	n/a	32	Median < 2x Std. Dev
Direct inflow – core allocation / low flow (subject of this application)	1.9	3.8	Winter Only
Makaka Creek – high-flow take (subject of an imminent application)	250	69	Pumped Above Median Take
Cole Drain – high-flow take (subject of an imminent application)	200	67	Pumped Above Median Take
Kaihu River – core allocation / low flow (subject of an imminent application)	50	1,200	-

Table 9 sets out the rates of water takes from the proposed reservoir. It is important to note that the values are based on dammed direct catchment inflows, i.e., they do not account for augmented water to be taken from other water bodies. The dammed water will be able to provide sufficient water to develop approximately 200 hectares of land for horticulture.

Table 9. Proposed water rates of take from the reservoir

Take	Rate
Median Annual Take	618,000 m^3/yr
1:10 Year ARI Take	798,000 m^3/yr
Maximum Daily Take	95 L/s

4. Description of the Receiving Environment

4.1 General Settings

The site of the proposed reservoir is approximately 4 km east of the township of Te Kopuru (refer **Figure 1**) on land currently used for pastoral farming. The properties on which the proposed reservoir will be located are identified in **Section 3.2**. The proposed reservoir will be situated in a gully that forms part of the headwaters of the Aratapu Stream, which flows east to the Wairoa River.

Figure 4. A downstream north-east view from the right abutment

4.2 Zoning

The proposed reservoir is within land zoned for Rural purposes. The KDP recognises that while farming activities are the defining feature of the Rural Zone, other activities are also appropriately located in the Rural Zone. The KDP contemplates a range of other activities establishing in the Rural Zone where necessary. There are no planning overlays in the KDP that affect the site. The reservoir footprint is currently an operational dairy farm and has been highly modified consistent with its agricultural land use.

The Aratapu Stream is classified as a “small river” in the Proposed Regional Plan for Northland (PRPN) for the purposes of setting freshwater quantity objectives and associated minimum flows and allocation limits.

4.3 Terrestrial Environments

4.3.1 Landform and geology

An assessment of landscape and visual amenity effects associated with the proposed Aratapu Water Storage Reservoir was prepared by Simon Cocker Landscape Architecture. The report, attached at **Appendix G**, contains detailed information on the topography, geology and soils of the site and its context.

In short, the proposed site is situated on the eastern side of a major central ridge line, running generally north-west to south-east, formed by Early Pleistocene parabolic dunes, which adjoin the Awhitu Group dunes. Simon Cocker points out that "this is characterised by steeply rounded landform which varies in height between 40 and 100m in height. The Awhitu Group dunes are dissected by incised and steep sided gullies which extend westwards from the eastern low-lying and gently undulating landscape of the lower flats". The proposed site is in the southern headwater gully of the Aratapu Creek.

Preliminary site investigations (refer **Appendix D**) revealed that the valley infill material is comprised of very soft to soft, organic silt or silty peat. It is understood that historically the valley floor would have been wetland, however it has been drained as evidenced by the farm drainage network and the nature of the tributaries draining the site. Below the surface, Tauranga Group deposits are underlain by silty sand with minor clay (Awhitu Group). The Awhitu Group is also exposed on the dam abutments.

4.3.2 Terrestrial Ecology

An assessment of ecological effects of the proposed reservoir site was undertaken by Puhoi Stour Ltd in association with Tonkin & Taylor Ltd, and is attached at **Appendix G**. The report states:

> *Located in the Kaipara Ecological District (ED) (Northland Conservancy), the proposed reservoir is approximately 2 km from the west coast and 5 km from Wairoa River to the east. There are no mapped areas of significance in the site, however, the site is located in close proximity to … a shallow water wetland (PNAP P08/212) within 1 km to the west, the Upper Aratapu Creek shrubland (PNAP P08/062), located 2 km north of the site, and fragments of WF10 Kauri forest, WF11 Kauri, podocarp, broadleaved forest, and WL1 Manuka, gumland, Machaerina scrub/sedgeland. Historically, vegetative cover in the area would have consisted of kauri, podocarp, broadleaved forest, and dune forest comprised of tōtara, kānuka, broadleaf forest intermixed with areas of mānuka gumland. Much of the indigenous forest in the ED has been cleared for the purposes of farming and forestry, resulting in a fragmented landscape.*

Regarding the current terrestrial ecological values, the report found:

> *The Project footprint primarily consists of pasture grass and pugged and grazed wet pasture, however natural high-value wetland habitat is present in the south-western corner of the proposed footprint. In this area terrestrial ecosystems are also present, consisting of native mamaku treeland and exotic pine forest.*
>
> *Stock have access to all areas of the Project footprint, and therefore all habitats have been affected by grazing and/or pugging. Furthermore, substantial areas of pampas and to a lesser extent, gorse and Spanish heath have invaded areas of the south-western area of the footprint.*
>
> *A 2.5 ha wetland complex is present at the south-western corner and upstream end of the proposed reservoir footprint. Due to the historic landforms (kauri forest) and topography of the area acidic soils and poor drainage have resulted in the formation of mānuka, gumland, Machaerina scrub sedgeland in the headwaters, which transitions to raupō reedland downstream. Areas of Machaerina, Eleocharis wetland are present downstream of the raupō reedland before a defined channel forms the main tributary which draws water into the main farm area. Some areas of this wetland complex have been severely compromised by invasion of pampas. Despite formed channels increasing drainage on hill slopes around the main tributary in the headwaters of the Project footprint, drainage is poor, particularly on the south side of the main tributary, and areas of Machaerina, Eleocharis-Isolepis wetlands remain. Outside of the south-west arm the proposed reservoir footprint has been heavily grazed, with the land cover consisting of pasture grasses and some grazed Isolepis in wetter areas.*

A geological survey undertaken in 1928 maps the site of the proposed reservoir as part of "The Black Swamp" (see the Archaeological Assessment of the proposed Aratapu Water Storage Reservoir at **Appendix H**).

4.3.3 Cultural Landscape & Features

Geometria Ltd undertook an archaeological assessment of the site of the proposed reservoir (**Appendix H**). The assessment also contains an brief overview of the pre- and post-colonial history of the site and the broader area within which it is located.

The report identified one archaeological site just outside of the footprint of the proposed reservoir, which is comprised of a series of terraces and pits. They are not confident of the nature of the terraces and pits but speculate that they could be kauri gum workings, given that the property was historically part of Te Koperu Kauri Gum Reserve Block.

The report also describes a series of natural tomos, which are common in the area. The tomos have been filled in by the current or previous farmer. They are not archaeological features, but tomos were often used by Maori to inter the dead. No other archaeological sites were identified during the survey.

A cultural impact assessment is being prepared for Te Roroa, Te Uri o Hau, Ngati Whatua, and Te Kuihi. The assessment was not completed when this application was lodged. However, it is understood that it will be available to the consent authority prior to it making a decision on this application. The cultural impact assessment will contain an analysis of the proposal on tangata whenua and their taonga.

4.3.4 Contaminated land

WWLA undertook a preliminary contaminated land assessment of the site following a desktop review of historical aerial imagery sourced from Google Earth and Retrolens (refer **Appendix I**). In summary, no contaminated land-related issues have been identified relating to the reservoir footprint or outside of the reservoir footprint, and therefore no contaminated land related mitigation or management is required.

4.4 Aquatic Environments

4.4.1 Aratapu Creek

As stated above, the proposed reservoir is to be situated in the southern gully that forms part of the headwaters of the Aratapu Creek catchment. The ecological assessment report (Error! Reference source not found.) d escribes the site as:

> *…characterised by highly modified deepened and straightened channels along paddock edges and base or slopes….*
>
> *Two main stems are classified as continuously flowing permanent streams situated along the centre of the proposed reservoir. There are several small tributaries from the main stems throughout the site (shown in Appendix A [of the AEE)). Most of the tributaries are located fully within the proposed reservoir or are fed by farm ponds just outside the proposed reservoir footprint. Shallow water was present in the narrow tributaries, therefore these were classified as intermittent given the likelihood of becoming periodically dry over summer.*

4.4.1.1 Hydrology

WWLA undertook catchment modelling to characterise the existing hydrological regime of the Aratapu Creek Catchment (refer **Appendix C**). **Table 10** below sets out key flow statistics at the embankment of the proposed reservoir.

Table 10. Flow statistics at the embankment of the proposed Aratapu Water Storage Reservoir

Statistic	Value
Minimum (L/s)	0.5
Median (L/s)	34.3
Maximum (L/s)	1,240
7-Day MALF (L/s)	5.0
FRE3 (count)	18.2

4.4.1.2 Aquatic Ecology

The ecological assessment report (**Appendix F**) summarises the aquatic ecology of the unnamed tributaries as follows:

> *The main permanent channels were on average 1.3 m wide and had a depth of 0.2 m. The intermittent tributaries were on average 0.54 m wide and had a depth of 0.04 m. For both permanent and intermittent tributaries, the streambed was dominated by fine sediments and instream habitat was limited to macrophytes. Large clumps of green filamentous algae were collected in the fish nets and traps in May, which is an indication of nutrient enrichment in the channels.*
>
> *Stream channels traversed through paddocks and intact vegetation was absent along most of the stream margins. Some channels in the upper catchment had dense pampas clusters growing on the streambed and banks. Where pampas dominated, the stream channel was shaded but often became moist or dry. While most of the channels were fenced from stock by a single hot-wire, the fences were erected <1 m setback from the edge of the channel which is a very small setback. The main permanent channels flow out of a large wetland complex and reappears as an online channel in the wetland in two short sections upstream of where farm access tracks intersect. The culverts upstream and in the mid-section of the wetland complex are not perched and therefore do not appear to be barriers to fish passage.*
>
> *Stream ecological valuations were undertaken on stream reaches considered to be representative of the remainder of the reaches on site. The main permanent stream channel (Watercourse 1) and the intermittent tributary (Watercourse 1A) have low current ecological value, with SEV scores of 0.31 and 0.31, respectively. This reflects the highly modified and uniform nature of the channels, the lack of vegetation along the riparian margins, limited instream habitat provisions for freshwater fauna, and low fish and macroinvertebrate biodiversity.*

However, on adult inanga (*Galaxias maculatus)* was recorded in the stream channels near the proposed embankment. *Galaxias maculatus* are an “At Risk-Declining” species and because of that the stream channels are classified as a ‘significant habitat of indigenous fauna’ in accordance with Appendix 5 of the RPS. A photo of the approximate location of the stream channels is shown in **Figure 5**.

4.4.1.3 Recreational and Amenity Values

The Aratapu Creek and its tributaries are highly modified, shallow, and characterised by soft, muddy substrates. The catchment is a drainage district (Aratapu Swamp Drainage District) managed by Kaipara District Council. As such, the majority of the low-lying areas contain reticular drainage channels. Indeed, the unnamed tributaries at the site flow into drainage channels.

It is understood that the Aratapu Creek have limited recreational and amenity value. There are no known freshwater swimming sites in the catchment.

Figure 5. Photo of the stream channels at the approximate site of the proposed embankment (looking west).

4.4.1.4 Consumptive Take Values

It is understood that there is only one consented take (AUT.007743.014) located in the catchment downstream of the proposed reservoir. That take is a surface water take for irrigating pasture. As part of undertaking catchment modelling to characterise the existing hydrological regime of the Aratapu Creek Catchment (refer **Appendix C**), WWLA assessed the hydrological impacts of the proposed reservoir on downstream surface water flow regimes, including the consented and likely permitted takes. The modelled impacts are addressed in **Section 7.1.4** of this application.

5. Permitted Activities and Resource Consent Requirements

This section identifies regulations and rules that are relevant to the proposal.

5.1 Resource Management Act 1991

The proposal includes land use activities, activities in the bed of a river, taking, using, damming and diverting fresh water, and discharges to land, air and water.

Section 9 of the RMA places restrictions on the use of land:

(1) No person may use land in a manner that contravenes a national environmental standard unless the use—
- *(a) is expressly allowed by a resource consent; or*
- *(b) is allowed by section 10; or*
- *(c) is an activity allowed by section 10A; or*
- *(d) is an activity allowed by section 20A.*

(2) No person may use land in a manner that contravenes a regional rule unless the use—
- *(a) is expressly allowed by a resource consent; or*
- *(b) is an activity allowed by section 20A.*

(3) No person may use land in a manner that contravenes a district rule unless the use—
- *(a) is expressly allowed by a resource consent; or*
- *(b) is allowed by section 10; or*
- *(c) is an activity allowed by section 10A.*

Section 13 of the RMA places restrictions on certain uses of beds of lakes and rivers:

(1) No person may, in relation to the bed of any lake or river,—
- *(a) use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed; or*
- *(b) excavate, drill, tunnel, or otherwise disturb the bed; or*
- *(c) introduce or plant any plant or any part of any plant (whether exotic or indigenous) in, on, or under the bed; or*
- *(d) deposit any substance in, on, or under the bed; or*
- *(e) reclaim or drain the bed—*

unless expressly allowed by a national environmental standard, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent.

(2) No person may do an activity described in subsection (2A) in a manner that contravenes a national environmental standard or a regional rule unless the activity—
- *(a) is expressly allowed by a resource consent; or*
- *(b) is an activity allowed by section 20A.*

(2A) The activities are—
- *(a) to enter onto or pass across the bed of a lake or river:*
- *(b) to damage, destroy, disturb, or remove a plant or a part of a plant, whether exotic or indigenous, in, on, or under the bed of a lake or river:*
- *(c) to damage, destroy, disturb, or remove the habitats of plants or parts of plants, whether exotic or indigenous, in, on, or under the bed of a lake or river:*
- *(d) to damage, destroy, disturb, or remove the habitats of animals in, on, or under the bed of a lake or river.*

Section 14 of the RMA places restrictions and duties on the taking, use, damming, diversion of water:

…

(2) No person may take, use, dam, or divert any of the following, unless the taking, using, damming, or diverting is allowed by subsection (3):

(a) water other than open coastal water; or ...

(3) A person is not prohibited by subsection (2) from taking, using, damming, or diverting any water, heat, or energy if—

(a) the taking, using, damming, or diverting is expressly allowed by a national environmental standard, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent; or

(b) in the case of fresh water, the water, heat, or energy is required to be taken or used for—

(i) an individual's reasonable domestic needs; or

(ii) the reasonable needs of a person's animals for drinking water,—

and the taking or use does not, or is not likely to, have an adverse effect on the environment; or …

(e) the water is required to be taken or used for emergency or training purposes in accordance with section 48 of the Fire and Emergency New Zealand Act 2017.

Section 15 of the RMA places restrictions on discharges, with applicable restrictions stating that –

(1) No person may discharge any—

(a) contaminant or water into water; or

(b) contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water; or …

unless the discharge is expressly allowed by a national environmental standard or other regulations, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent.

(2) No person may discharge a contaminant into the air, or into or onto land, from a place or any other source, whether moveable or not, in a manner that contravenes a national environmental standard unless the discharge—

(a) is expressly allowed by other regulations; or

(b) is expressly allowed by a resource consent; or

(c) is an activity allowed by section 20A.

(2A) No person may discharge a contaminant into the air, or into or onto land, from a place or any other source, whether moveable or not, in a manner that contravenes a regional rule unless the discharge—

(a) is expressly allowed by a national environmental standard or other regulations; or

(b) is expressly allowed by a resource consent; or

(c) is an activity allowed by section 20A.

5.2 National Environmental Standards

Relevant national environmental standards and regulations are:

- Resource Management (National Environmental Standards for Freshwater) Regulations 2020
- Resource Management (Measurement and Reporting of Water Take) Regulations 2010
- Resource Management (National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

5.2.1 Resource Management (National Environmental Standards for Freshwater) Regulations 2020

The NES-FW were gazetted on 3 August 2020 and come into force on 3 September 2020. It contains standards for farming activities (Part 2) and standards for other activities that relate to freshwater (Part 3), including activities in and adjacent to natural wetlands, reclamation of rivers, construction of culverts, and information requirements about dams. **Table 11** identifies the national regulations that are relevant to the construction of the proposed reservoir.

5.2.2 Resource Management (Measurement and Reporting of Water Takes) Regulations 2020

The Regulations establish a nationally consistent regime for measuring water use. The regulations only apply to a water permit that allows fresh water to be taken at a rate of 5 litres per second or more, and do not apply to a water permit for a non-consumptive take.

Dewatering the reservoir footprint will be required to stabilise the soils prior to reservoir construction. The shallow groundwater will then be discharged back to the Aratapu Creek just below the point of take. The exact dewatering design has yet to be completed. However, the taking of shallow groundwater for site dewatering is deemed to be a non-consumptive take, which is defined in the Regulations as (clause 4(2)):

(a) The same amount of water is returned to same water body at or near the location from which it is taken; and

(b) There is no significant delay between the taking and returning of the water.

The application is also made for a water permit to authorise the taking of water from the dam for use. The take rate will exceed 5 L/s and therefore the applicant will be required to measure the water take, store the water take records, and electronically submit the water take data to NRC in accordance with the Regulations.

5.2.3 National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011

The NES-CS came into effect on 1 January 2012. The legislation sets out nationally consistent planning controls appropriate to district and city councils for assessing potential human health effects related to contaminants in soil. The regulation applies to specific activities (including land use change and soil disturbance, activities associated with reservoir development) on land where an activity included on the HAIL has occurred.

The contaminated land investigation (Appendix J) confirms there are no HAIL activities on the land thus the NESCS does not meet the regulations applicability criteria in Regulation 5, Clause 7.

5.3 Regional Plans

The following tables (**Tables 11-13**) identifies rules in the Proposed Regional Plan for Northland (PRPN), Regional Water and Soil Plan for Northland (RWSP) and the Regional Air Quality Plan for Northland (RAQP) for activities associated with the construction and operation of the Aratapu Water Storage Reservoir.

5.4 Kaipara District Plan

Table 14 identifies rules in the KDP for activities associated with the proposal. It also demonstrates that the activity complies with the requirements, conditions, and permissions for permitted activities.

Table 11. National regulations in the NES-FM relating to the construction of the Aratapu Reservoir.

Regulation	Description of the relevant activity/activities or matter covered by the regulation	Assessment of the activity
54 – 'Non-complying activities'	The regulation states that the following activities are non-complying activities if they do not have another statis under subpart 1: (a) vegetation clearance within, or within a 10 m setback from, a natural wetland: (b) earthworks within, or within a 10 m setback, from, a natural wetland: (c) the taking, use, damming, diversion, or discharge of water within, or within a 100 m setback from, a natural wetland. A natural wetland is defined in the NPS-FM 2020 as: *"…a wetland (as defined in t he Act) that is not:* *(a) a wetland constructed by artificial means (unless it was constructed to offset impacts on, or restore, an existing or former natural wetland); or* *(b) a geothermal wetland; or* *(c) any area of improved pasture that, at the commencement date, is dominated by (that is more than 50% of) exotic pasture species and is subject to temporary rain-derived water pooling."*	The construction of the proposed reservoir will involve activities listed in regulation 54(a) and (c). Woody vegetation within natural wetlands in the reservoir footprint will be cleared and water will be diverted and dammed within a 100 metre setback of a natural wetland. The areas of natural wetland are identified in the ecological assessment report contained in **Appendix F.** An application for a resource consent is sought pursuant to regulation 54.
57 – 'Discretionary activities'	The regulation states that the reclamation of the bed of any river is a discretionary activity. The term reclamation is defined in the National Planning Standards 2019 as: *"…the manmade formation of permanent dry land by the positioning of material into or onto any part of a waterbody, bed f a lake or river or the coastal marine area, and:* *(a) includes the construction of any causeway; but* *(b) excludes the construction of natural hazard protection structures such as seawalls, breakwaters or groynes except where the purpose of those structures is to form dry land."*	The construction of the embankment will involve reclamation of the two unnamed tributaries of the Aratapu Creek that meander through the proposed site of the embankment. An application for a resource consent is sought pursuant to regulation 57.
62 – 'Requirements for all activities: information about structures and passage of fish'	The regulation sets out information requirements about structures and passage of fish. The regulation requires information specified in the regulation to be collected and provided to the relevant regional council within 20 working days after the activity is finished, as a condition of resource consent granted for the activity.	The information set out in regulation 62 will be provided to Northland Regional Council in accordance with a condition of resource consent (refer **Appendix J**).

Regulation	Description of the relevant activity/activities or matter covered by the regulation	Assessment of the activity
63 – 'Requirement for culvert activities: information about culverts'	The regulation sets out information requirements about culverts. The regulation requires information specified in the regulation to be collected and provided to the relevant regional council within 20 working days after the activity is finished, as a condition of resource consent granted for the activity.	The information set out in regulation 63 will be provided to Northland Regional Council in accordance with a condition of resource consent.
66 – 'Requirement for dam activities: information about dams'	The regulation sets out information requirements about dams. The regulation requires information specified in the regulation to be collected and provided to the relevant regional council within 20 working days after the activity is finished, as a condition of resource consent granted for the activity.	The information set out in regulation 66 will be provided to Northland Regional Council in accordance with a condition of resource consent.
68 – 'Requirement for certain structure activities: information about aprons and ramps'	The regulation sets out information requirements about aprons and ramps. The information is required pursuant to regulations 63, 66, and 68.	The information set out in regulation 68 will be provided to Northland Regional Council in accordance with a condition of resource consent.
69 – 'Conditions of resource consent for activities: monitoring and maintenance'	The regulation specifies conditions that must be imposed in resource consent granted for the placement, use, or alteration of the following structures in, on, over, or under the bed of any river or connected area: (a) a culvert (b) a dam	The information set out in regulation 69 will be provided to Northland Regional Council in accordance with a condition of resource consent.
71 – 'Discretionary activities'	The regulation states that the placement, use, alteration, extension, or reconstruction of a culvert in, on, over, or under the bed of a river is a discretionary activity if it does not comply with any of the conditions in regulation 70(2).	It is not clear if the placement and use of a culvert for the purposes of stream diversion during reservoir construction will comply with all conditions of regulation 70(2). Therefore, an application for a resource consent is sought. An application for a resource consent is sought pursuant to regulation 71.

Table 12. Relevant rules in the Proposed Regional Plan (Appeals Version, June 2020)

Rule	Description of the relevant activity/activities covered by the rule	Comment
C.2.1.11 'Activities in the beds of lakes and rivers – discretionary activity'	The following activities that are not the subject of any other rule in the plan are discretionary activities: • Disturb the bed of a river. • Deposit a substance in, on, or under the bed of a river. • Reclaim or drain the bed of a river.	Constructing the proposed reservoir will involve disturbing the beds of the unnamed tributaries at the site of the proposed embankment. This includes disturbance associated with diverting the tributaries during the construction to provide a dry working area and the installation of a culvert offline form the existing tributaries. There is also the potential for disturbance of other tributaries in the reservoir site and deposition of substances during site preparation.
C.2.2.5 'Activities in significant wetlands – non-complying activities'	Damage, destruction, disturbance, or removal of vegetation in a significant wetland.	The construction and filling of the reservoir will ultimately result in the loss of significant natural wetlands within the reservoir footprint. The PRPN defines significant wetlands using area thresholds for different wetland classes and natural wetlands that trigger the significance criteria in the RPS.
C.3.1.1 'Off-stream damming and diversion – permitted activity.	The damming or diversion of rainfall runoff, including in sediment ponds and stormwater detention structures, or water in an artificial watercourse, subject to conditions.	It is understood that a cofferdam will be constructed to divert surface water runoff away from the reservoir embankment construction site.
C.3.1.7 'River channel diversion – discretionary activity'	The diversion of water in a river and any associated disturbance of the bed or deposition of material on the bed.	The unnamed tributaries of the Aratapu Stream need to be diverted during construction.
C.3.1.8 'Damming or diverting water – discretionary activity'	The use, erection, reconstruction, placement, alteration or extension of a dam in the bed of a river, and any associated disturbance of the bed of a river deposition of material on the bed, and the associated damming and diversion of water.	The construction of the reservoir embankment is a discretionary activity.
C.5.1.12 'Other water takes – discretionary activity'	The taking and use of water, that is not the subject of any other rule in the plan.	The proposal involves the taking of groundwater for the purposes of ground improvement works. The rate and duration of take exceed the permitted conditions in rule C.5.1.6. The proposal also involves the taking and use of stored water from the reservoir. Because the stored water is from an available allocation the activity is discretionary (not non-complying).
C.6.9.4 'Discharge of water from a reservoir – permitted activity'	The discharge of water from a reservoir into water or onto land where it may enter water.	Water will be discharged from the reservoir via a spillway during rainfall events when the reservoir is at full capacity. It is considered that such discharges will comply with the conditions of rule C.6.9.4. That is, the discharge will not cause:

Rule	Description of the relevant activity/activities covered by the rule	Comment

		• any permanent scouring or erosion of the channel or banks of the receiving water body at the point of discharge, or
		• any of the following effects in the receiving waters beyond the zone of reasonable mixing:
		  ○ an increase in the temperature of the water by more than three degrees Celsius, or
		  ○ a conspicuous change in the colour or visual clarity, or
		  ○ an emission of objectionable odour, or
		  ○ the rendering of fresh water unsuitable for consumption by farm animals.
		The spillway will be designed to have a flow risk of erosion.

C.7.2.7 'Discharges to air – permitted activity'	The discharge of a contaminant into air that is not the subject of any other rule in the plan.	The discharge of a dust into air from the earthworks activity is not specifically regulated under a rule in the PRPN there is a permitted activity under Rule C.7.2.7 as it complies with the conditions of the rule. That is, the discharge is not from an industrial or trade premises or dry abrasive blasting, and the discharge will not result in any noxious, dangerous, offensive or objectionable odour, smoke, dust, or any noxious or dangerous levels of airborne contaminants beyond the boundary of the subject property.
C.8.3.4 'Earthworks – discretionary activity'	Earthworks outside the bed of a river or wetland, and any associated damming and diversion of stormwater and discharge of stormwater onto or into land where it may enter water, that are not a permitted or controlled activity under another rule in section C.8.3 of the plan.	The earthworks required for constructing the proposed reservoir will exceed permitted and controlled activity thresholds. As such, the earthworks and the associated damming and diversion of stormwater and discharge of stormwater are discretionary activities.
C.8.4.3 'Vegetation clearance in riparian areas – discretionary activity'	Vegetation clearance within 10 metres of a natural wetland, or within 10 metres of the bed of a continually or intermittently flowing river, and any associated damming and diversion of stormwater and discharge of stormwater onto or into land where it may enter water, that are not a permitted activity in section C.8.4 of the plan.	The proposal includes vegetation clearance within 10 metres of a natural wetland and river and therefore is a discretionary activity.

Table 13. Relevant rules in the Regional Water and Soil Plan for Northland

Rule	Description of the relevant activity/activities covered by the rule	Comment
22.3.1 'Stormwater discharges and diversions from land disturbance activities – discretionary activity'	The diversion and discharge of stormwater into water or onto or into land where it may enter water from any land disturbance activity, where that activity is a discretionary activity under a land disturbance activity rule in section 33 of the plan.	Earthworks and vegetation clearance activities in the Riparian Management Zone are discretionary activities and therefore rule 22.3.1 for stormwater discharges applies.

Rule	Description of the relevant activity/activities covered by the rule	Comment
23.1.4(5) 'Discharges from water reservoirs – permitted activity'	The discharge of water from reservoirs or impounded areas.	Water will be discharged from the reservoir via a spillway during heavy rainfall events when the reservoir is at full capacity. It is considered that such discharges will comply with the conditions of rule 23.1.4(5). That is, the quality of the discharge is not expected to breach the discharge and receiving water quality standards set in conditions (a) –(h) of the rule.
24.3.3 'All other takes – discretionary activities'	The taking, use, damming or diverting of surface water which does not meet the requirements of the permitted activity rules, or is not covered by the non-complying activity rules, and is not otherwise covered by a rule in any other section of the plan.	The taking and use of water from the reservoir is a discretionary activity in accordance with rule 24.3.3.
25.3.1 'Taking, use and diverting groundwater – discretionary activity'	The taking, use or diversion of groundwater from an aquifer, and any associated discharge of groundwater onto or into land or into water, which does not meet the requirements of the permitted, controlled or non-complying activity rules of the plan.	The taking, diverting and discharge of groundwater by dewatering for ground improvement associated with the constructing the reservoir is a discretionary activity because the activities do not meet the requires of the permitted, controlled, or non-complying activity rules in the plan.
28.3.1 'Construction of a dam – discretionary activity'	The construction and placement of a dam structure, including the associated, damming, diversion or discharges of water in, on or under the bed of a river, that is not a provided for by another rule of the plan.	The construction of a dam on the bed of a river and the associated damming, diversion and discharges.
29.1.3 'Culvert crossings – permitted activity'	The use, placement, replacement, repair or alteration of a culvert crossing on the bed of a river and any associated excavation or disturbance of the bed, and diversion of water through the structure.	The design intent is to construct a diversion culvert offline from the unnamed tributaries of the Aratapu Creek. When the culvert is constructed, the tributaries will be diverted into the culvert. It is understood that the placement and use of the culvert will comply with the conditions of rule 29.1.3. However, it is important to note that it is not clear if the culvert design will comply with the regulation 71 of the NESFW, and because of that resource consent is being sought for the placement and use of a culvert pursuant to the regulations.
33.2.1 'Earthworks – controlled activity'	Earthworks, that are not located in the Riparian Management Zone not located on erosion prone land and the volume moved or disturbed is greater than 5,000 m^3 in any 12-month period.	The volume of earthworks required for constructing the reservoir will exceed the thresholds in the permitted activity rules
34.3.1 'Land disturbance – discretionary activity'	Earthworks and vegetation clearance in Riparian Management Zone which cannot comply with, or is outside the scope of, the permitted rules, or is not a non-complying activity	Construction of the proposed reservoir will involve vegetation clearance and earthworks within the Riparian Management Zone that cannot comply with permitted nor controlled activity thresholds.

Table 14. Relevant rule in the Regional Air Quality Plan for Northland

Rule	Description of the relevant activity/activities covered by the rule	Comments
10.1.2 'Discharges of dust to air – permitted activity'	The discharge of dust to air from activities associated with earthworks, road and rail construction or maintenance.	The proposal would comply with this rule due to the separation distance to places frequented by people.

Table 15. Relevant rules in the Kaipara District Plan

Rule	Description of the relevant activity/activities covered by the rule	Comments
12.10.1a 'Excavation and Fill' – Restricted discretionary activity	Rule 12.10.1a provides for excavation and fill as a permitted activity, subject to conditions..	The excavation and fill activities associated with the construction of the reservoir will not meet permitted activity standards and therefore is a restricted discretionary activity. The rule specifies that the council will require (as a condition of consent) an Excavation and Fill Management Plan to lodged prior to undertaking the works. A Construction Management Plan (CMP), which will include an Erosion and Sediment Control Plan (ESCP), is proposed as a condition of resource consent.
12.10.2a 'Indigenous Vegetation Clearance' – Restricted discretionary activity	Rule 12.10a provides for the clearance of indigenous vegetation as a permitted activity, subject to conditions.	The construction of the reservoir will involve clearing indigenous vegetation within an indigenous wetland (as defined in the KDP), and therefore the activity is a restricted discretionary activity.
12.10.5 'Maximum Height' – Restricted discretionary activity	Rule 12.10.5 states that a building is a permitted activity if it does not exceed 10 m in height.	The KDP defines a building as: *"A temporary or permanent movable or immovable structure (including a structure intended for occupation by people, animals,* *machinery, or chattels) and includes—* *a) A deck exceeding 1m in height;* *b) A mechanical, electrical, or other system; and* *c) Any fence or wall exceeding 2m in height; and* *d) A vehicle or motor vehicle (including a vehicle or motor vehicle as defined in Section 2(1) of the Land Transport Act 1998) that is immovable and is occupied by people on a permanent or long-term basis; and* *e) A mast, pole, aerial, or dish that is on, or forms part of, a building and that is more than 7m in height above the point of its attachment or base support (except a dish aerial that is less than 2m wide); but does not include any tent or marquee erected for periods not exceeding 50 days in any continuous term of occupancy."* Because the proposed reservoir embankment is effectively a wall and will be 22 m high, it is considered that it is a building and is a restricted discretionary activity.
12.10.7 'Setbacks' – Permitted activity	Rule 12.10.7 states that a building is a permitted activity if it is located outside of setback distances (set out in conditions of the rule).	It is considered that the proposed embankment will comply with the conditions of the rule.
12.10.8 'Permeable Surfaces' – Permitted activity	Rule 12.10.8 permits buildings and other impermeable surfaces subject to conditions. It states for any site over 5 ha in size, an activity is a permitted activity if water collected from impermeable surfaces is disposed of on-site or discharged to an existing watercourse.	The KDP defines an impervious surface as: *In relation to a site means any part of the site which does not allow natural percolation of water into the ground and includes:* *a) Roofs;* *b) Solid or non-slotted decks less than 1m in height about the ground;* *c) Any paved surface used for manoeuvring, access, loading or motor vehicles or parking; and*

Rule	Description of the relevant activity/activities covered by the rule	Comments
		d) Any paved area with a continuous surface or with open jointed slabs, gobi or similar blocks. It is considered that the proposed earth reservoir embankment will not be an impervious surface. It is also noted that the site on which the proposed reservoir will be situated is approximately 66 hectares.
12.10.15 'Construction Noise – permitted activity' – Permitted activity	Rule 12.10.15 provides for construction noise as a permitted activity if the noise from the site does not exceed the limits recommended in, and are measured and assessed in accordance with New Zealand Standard NZ6803:1999 "Acoustics – Construction Noise".	It is considered that the construction noise from the site will not exceed the limits specified in the rule.
12.10.17 'Vibration' – Permitted activity'	Rule 12.10.17 states that an activity is a permitted activity if vibration from the activity does not exceed specified levels within a dwelling on any adjacent site zone Rural Zone.	It is considered that the construction activities will not exceed the permitted vibration thresholds within a dwelling on any adjacent site zoned Rural Zone.
12.10.18 'Traffic Intensity' – Permitted activity	Rule 12.10.18 states that any activity is permitted if the cumulative traffic generated on any road does not exceed 60 one-way movements based on the Traffic Intensity Factor Guidelines. However, the rule does not apply to construction traffic associated with the establishment of an activity.	Construction traffic are exempt from the rule.
12.10.23 'Lighting and glare' – Permitted activity	Rule 12.10.23 states that any activity is permitted if between the hours of 22:00 and 07:00 any artificial lighting does not exceed 10 lux, measured at any point on the boundary of any Residential Zoned site or at the notional boundary of any Rural or Maori Purpose Zoned site.	There could be lighting at the site but will meet the standard in this rule.
12.10.24 'Signage' – Permitted activity	The rule provides for signs as a permitted activity, subject to conditions.	Any sign associated with the proposal will not exceed 3 m^2 and will therefore be permitted under the rule.
12.10.25 'Vehicle Access and Driveways' – Permitted activity	Rule 12.10.25 states that any activity is permitted if the owner of occupier of the site provide and maintains adequate access for emergency vehicles and vehicles generally associated with activities on site, and has a driveway that meets the conditions of the rule.	As part of preparing the site for construction activities, a driveway will be formed off West Coast Road utilising an existing access way and will be prepared and maintained in accordance with the conditions of the rule.

5.5 Overall Activity Status

Multiple resource consents are required to authorise the construction and operation of the proposed reservoir. The resource consent applications should be 'bundled' together because the activities for which resource consents are sought overlap to such an extent that they cannot be realistically separated. A decision to 'bundle' the applications is consent with the decision of the High Court in *Newbury Holdings Ltd v Auckland Council* [2013] NZHC 1172. On this basis, the overall classification status for the proposed activity is non-complying.

5.6 Other Authorisations

Table 16 identified other activities associated with the proposal that require authorisations. All necessary authorities will be applied for at the appropriate times to avoid non-compliance.

Table 16. Other activities which require authorisations.

Activity	Classification	Relevant document	Authority
Construction of a large dam	Activity must be authorised	Building Act 2004	Waikato Regional Council[7]
To modify unrecorded subsurface archaeological sites and features which may be affected by the Aratapu Water Storage Reservoir.	By a general authority	Heritage New Zealand Pouhere Taoonga Act 2014.	Heritage New Zealand
Transfer live aquatic animals	By permit only	Conservation Act 1987 (CAct)	DoC, Ministry for Primary Industries
Catch alive or kill any absolutely protected or partially protected wildlife for any purpose approved by the Director-General.	Activity requiring Ministers approval	Wildlife Act 1953	DoC

[7] It is understood that all North Island councils, except Auckland Council, have transferred their powers to process all building consent applications for dams to Waikato Regional Council.

6. Statutory and Planning Assessment

Clause 2(1) of Schedule 4 of the RMA states:

> *An application for a resource consent for an activity (the **activity**) must include the following:*
>
> *…*
>
> *(f) an assessment of the activity against the matters set out in Part 2:*
>
> *(g) an assessment of the activity against any relevant provisions of a document referred to in section 104(1)(b).*

Clause 2(2) of Schedule 4 states:

> *The assessment under subclause (1)(g) must include an assessment of the activity against—*
>
> *(a) any relevant objectives, policies, or rules in a document; and*
>
> *(b) any relevant requirements, conditions, or permissions in any rules in a document; and*
>
> *(c) any other relevant requirements in a document (for example, in a national environmental standard or other regulations).*

An assessment of relevant rules, requirements, conditions and permissions is included in Section 5 above.

This section provides an assessment of the matters set out in Part 2 of the Act and relevant objectives and policies in the following documents:

- The National Policy Statement for Freshwater Management 2020
- The Regional Policy Statement for Northland
- The Proposed Regional Plan for Northland (Appeals Version, 2020)
- The Regional Water and Soil Plan for Northland
- The Kaipara District Plan

6.1 Part 2 of the RMA

Section 5 of the RMA states:

> *(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.*
>
> *(2) In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while —*
>
> *(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
>
> *(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
>
> *(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

As pointed out in Environmental Defence Society Inc. v The New Zealand King Salmon Company Ltd [2014] NZSC 38, the term sustainable management is “broadly framed” and the language is “necessarily general and flexible.[8]

[8] *Environmental Defence Society Inc. v The New Zealand King Salmon Company Ltd* [2014], para 24.

The Court also stated that:[9]

> *… the RMA envisages the formulation and promulgation of a cascade of planning documents, each intended, ultimately, to give effect to s 5, and to pt 2 more generally. These documents form an integral part of the legislative framework of the RMA and give substance to its purpose by identifying objectives, policies, methods and rules with increasing particularity both as to substantive content and locality.*

It is understood that the objectives, policies and rules that are relevant to this application give effect to part 2 of the RMA, although some of the relevant provisions in the PRP are the subject of appeals to the Environment Court.

Sections 6, 7, and 8 of the RMA set out principles of varying importance to give guidance on the way that the purpose of the RMA is to be achieved.

Section 6 states the following matters of national importance that must be recognised and provided for by all persons exercising functions and powers under the RMA:

(a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:

(b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:

(c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:

(d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:

(e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:

(f) the protection of historic heritage from inappropriate subdivision, use, and development:

(g) the protection of protected customary rights:

(h) the management of significant risks from natural hazards.

Section 7 states the following other matters that particular regard must be had to by all persons exercising functions and powers under the RMA:

(a) kaitiakitanga:

(aa) the ethic of stewardship:

(b) the efficient use and development of natural and physical resources:

(ba) the efficiency of the end use of energy:

(c) the maintenance and enhancement of amenity values:

(d) intrinsic values of ecosystems:

(e) [Repealed]

(f) maintenance and enhancement of the quality of the environment:

[9] Ibid, para 40.

(g) any finite characteristics of natural and physical resources:

(h) the protection of the habitat of trout and salmon:

(i) the effects of climate change:

(j) the benefits to be derived from the use and development of renewable energy.

Section 8 requires all persons exercising functions and powers under the RMA to take into account the principles of the Treaty of Waitangi.

As pointed out in *Environmental Defence Society Inc. v The New Zealand King Salmon Company Ltd* [2014] NZSC 38, the term sustainable management is "broadly framed" and the language is "necessarily general and flexible.[10] The Court also stated that:[11]

> *… the RMA envisages the formulation and promulgation of a cascade of planning documents, each intended, ultimately, to give effect to s 5, and to pt 2 more generally. These documents form an integral part of the legislative framework of the RMA and give substance to its purpose by identifying objectives, policies, methods and rules with increasing particularity both as to substantive content and locality.*

It is considered that the proposal will achieve the purpose and principles of the RMA because it will enable people and communities to provide for their social, economic, and cultural well-being and for their health and safety by:

- Enabling land use change from pastoral farming to higher value use land (i.e., horticulture), and consequential benefits to other sectors.
- Being able to supply water for municipal supplies.

While at the same time sustaining the potential of water and soils to meet the needs of future generations, safeguarding the life-supporting capacity of water, soil and ecosystems, and avoiding, remedying and mitigating (including through offsetting and compensation) adverse effects of the proposed reservoir on the environment.

The proposal is consistent with the relevant matters of national important, i.e. section 6(a), (c), (e), and (h). The other relevant matters in section 7 are important drivers of the proposal, i.e., section 7(a), (aa), (b), (c), (d), (f), (g), and (i).

6.2 National Environmental Standards and Other Regulations

A general assessment of the relevant requirements and conditions of relevant national environmental standards and regulations is set out in **Section 5.2**.

6.3 National Policy Statement for Freshwater Management 2020

The NPS-FM was first issued in 2011, replaced in 2014, and then amended in 2017. On 3 August 2020, a new NPS-FM was approved by the Governor-General under section 52(2) of the RMA and was published by the Minister for the Environment under section 54 of the Act. The new NPS-FM replaced the NPS-FM 2014 (as amended in 2017) on 3 September 2020. The NPS-FM 2020 is structurally and, in many respects, substantively different to the NPS-FM 2014 (as amended 2017). It contains one objective (at clause 2.1) and 15 policies (at clause 2.2).

The key purpose of the NPS-FM is to direct how regional councils are to manage fresh water through their regional policy statements and regional plans.

[10] *Environmental Defence Society Inc. v The New Zealand King Salmon Company Ltd* [2014], para 24.
[11] Ibid, para 40.

The following assessment is made against the objective and relevant policies of the NPS-FM 2020.

The objective, which reflects the hierarchy of obligations in Te Mana o te Wai, is:

> *(1) …to ensure that natural and physical resources are managed in a way that prioritises:*
>
> *(a) first, the health and well-being of water bodies and freshwater ecosystems*
>
> *(b) second, the health needs of people (such as drinking water)*
>
> *(c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.*

The objective is to be achieved through 15 policies. Regard is had to policies relevant to the proposal as follows:

> ***Policy 1:** Freshwater is managed in a way that gives effect to Te Mana of te Wai.*

Clause 1.3 of the NPS-FM sets out the meaning of Te Mana o te Wai. It is described as:

> *…a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. It protects the mauri of the wai. Te Mana o te Wai is about restoring and preserving the balance between the water, the wider environment, and the community.*

The concept involves six principles relating to the roles of tangata whenua and other New Zealanders in managing fresh water. The six principles are:

- Mana whakahaere – the power, authority, and obligations of tangata whenua to make decisions that maintain, protect, and sustain the health and well-being of, and their relationship with, freshwater.
- Kaitiakitanga – the obligation of tangata whenua to preserve, restore, enhance, and sustainably use freshwater for the benefit of present and future generations.
- Manaakitanga – the process by which tangata whenua show respect, generosity, and care for freshwater and for others.
- Governance – the responsibility of those with authority for making decisions about freshwater to do so in a way that prioritises the health and well-being of freshwater now and into the future.
- Stewardship – the obligation of all New Zealanders to manage freshwater in a way that ensures it sustains present and future generations.
- Care and respect – the responsibility of all New Zealanders to care for freshwater in providing for the health of the nation.

The applicant has undertaken meaningful engagement with tangata whenua (refer **Section 8**) and the applicant recognises the fundamental importance of the principles of mana whakahaere, kaitiakitanga, and manaakitanga.

Clause 1.3 of the NPS-FM 2020 states:

> *There is a hierarchy of obligations in Te Mana o te Wai that prioritises:*
>
> *(a) first, the health and well-being of water bodies and freshwater ecosystems*
>
> *(b) second, the health needs of people (such as drinking water)*
>
> *(c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.*

It is considered that the proposal to construct and operate the Aratapu Water Storage Reservoir is consistent with hierarchy of obligation in Te Mana o te Wai. That is because, the project will ensure flows below the dam are maintained to the extent needed to the ecological health of the Aratapu Stream and it will involve a comprehensive suite of mitigation, offsetting and compensation measures to maintain and improve the health of aquatic (and terrestrial ecosystems) in the area.

One of the purposes of the project is to provide water to KDC for its municipal water supply network. The key purpose of the project is to improve the social and economic well-being of communities in the Kaipara District by providing sufficient and reliable water for converting pastoral farming to horticulture.

> ***Policy 2:*** *Tangata whenua are actively involved in freshwater management (including decision-making processes), and Māori freshwater values are identified and provided for.*

As stated above, the applicant has undertaken meaningful engagement with tangata whenua and intends to involve Te Roroa, Te Uri o Hau and Te Kuihi in the project.

It is understood that the cultural impact assessment, which had not been finalised at the date of lodgement, will contain recommendations on how mana whenua should be actively involved in the project moving forward.

> ***Policy 3:*** *Freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments.*

This application considers the interconnected nature of the catchment upstream of the proposed reservoir embankment and the actual and potential effects of the proposed reservoir on the surrounding land use and downstream receiving environments.

> ***Policy 4:*** *Freshwater is managed as part of New Zealand's integrated response to climate change.*

The proposed reservoir will improve resilience to the effects of climate change, including predicted more frequent and longer droughts. The availability of reliable water is necessary for social, cultural and economic reasons and for the health and safety of people, particularly in the context of a changing climate.

> ***Policy 6:*** *There is no further loss of extent of natural inland wetlands, their values are protected, and their restoration is promoted.*

Constructing the reservoir result in the inundation of natural wetland (as defined in the NPS-FM). A description of the wetland is provided in the ecological assessment report (**Appendix F**). The proposed reservoir was one of several sites shortlisted from approximately 100 sites due to, in part, the need to avoid significant indigenous wetlands. However, some natural high-value wetland habitat complex is present in the south-western corner of the footprint of the proposed reservoir. It is considered significant under the PRP because it contains 'wet heathland', 'swamp', and 'marsh, fen, ephemeral wetland, or seepage' that exceed the size thresholds in the significance criteria.

The applicant proposes to offset and compensate for the loss of the natural wetland due to inundation. That will involve planting and enhancing wet land outside of the reservoir footprint creating new wetlands in the gullies draining to the reservoir. The construction of the reservoir will result in the creation of edge wetland habitat for wetland birds, including Australasian bittern, fernbird, spotless crake, marsh crake and other native waterfowl.

The ecological assessment report states that "management plans will be required prior to construction in order to remedy, offset and compensate impacts to vegetation and habitats." Based on preliminary offset and compensation, they consider that approximately 12.26 hectares of wetland offset planting (on land that was historically wetland) is required to achieve a new gain.

Table 17. Table showing Net Present Biodiversity value (in green) for all attributes input into BOAMs[12], as well as the overall offset and compensation area required for Net Gain for each ecosystem type [Reproduced from the ecological assessment report.]

Ecosystem type / Biodiversity attribute	Mānuka gumland	Kutakuta	*Machaerina*	Raupō	*Isolepis*	Pampas wetland	Total
Indigenous canopy cover (%)	0.87	0.01	0.84	0.16	0.01	0.6	
Height (m)	0.01	0.02	0.02	0.01	0.12	0.04	
Basal area (m^2/ha)	0.01						
Species richness	0.12	0.14	0.74	0.11	0.03	0.4	
Impact area (ha)	*0.59*	*0.14*	*0.62*	*0.17*	*1.42*	*0.86*	*3.8*
Offset area required for Net Gain (ha)	**5.25**	**0.28**	**2.7**	**0.45**	**1.8**	**1.8**	**12.26**

The ecological assessment report also states:

> *It may be possible to undertake benching around the proposed water reservoir to create suitable areas for wetland plantings. However, further site visits will be used to determine additional potential offsetting areas for each of the wetland types being affected. Once additional site visits have been undertaken, further RECCE[13] plots at offset sites will provide additional data that will be used to update the assumptions in the offset models.*
>
> *To offset and compensate for loss of mānuka gumland Machaerina scrub sedgeland, it is recommended that habitat upstream of the proposed footprint is enhanced and planted to restore existing habitat. This will potentially include stock-proof fencing, pest control and planting. Other potential offset and compensation areas will be explored in order to successfully offset this Critically Threatened ecosystem type.*

It is considered that the mitigation, offsetting and compensation measures will not result in an overall loss of extent of natural inland wetlands, and their values will be retained. The proposal also involves restoring natural wetland.

> ***Policy 7:*** *The loss of river extent and values is avoided to the extent practicable.*

The proposed reservoir will inundate the gully system resulting in modification of approximately 3,000 m^2 of permanent streambed and approximately 370 m^2 of intermittently flowing streams. The stream is of low value but was deemed moderate value open discovery of an inanga.

The ecological assessment report states that "approximately 5,717 m^2 and 725 m^2 (collectively 6,443 m^2) of similar permanent and intermittent streambed area habitat enhancement in nearby catchments in Te Kopuru is required to achieve no net loss of ecological function." The applicant proposes that such enhancement be required as a condition of resource consent.

> ***Policy 9:*** *The habitats of indigenous freshwater species are protected.*

Almost all-natural waterbodies are habitats of indigenous freshwater species. While the proposed reservoir will inundate approximately 3.8 hectares of a degraded wetland complex and highly modified watercourses, the

[12] BOAM is the acronym for Biodiversity Offset Accounting Model
[13] Landcare Research (2007). The recce method for describing New Zealand vegetation – field protocols.

proposal involves mitigation, offsetting and compensation measures to achieve no net loss[14] and likely net gain[15]. The reservoir will provide habitat for eels and other freshwater species, e.g., invertebrates and macrophytes.

> ***Policy 11:*** *Freshwater is allocated and used efficiently, all existing over-allocation is phased out, and future over-allocation is avoided.*

The proposal involves damming (i.e., storing) water which will be taken and used primarily for supporting horticulture development in the area. The proposal will not result in over-allocation (as defined in the NPS-FM). That is, the proposal will not exceed a take limit in the PRP.

> ***Policy 15:*** *Communities are enabled to provide for their social, economic, and cultural well-being in a way that is consistent with this National Policy Statement.*

Policy 15 of the NPS-FM encapsulates the purpose of the proposal (as described elsewhere in this application).

Policies 5, 8, 10, 12, 13, and 14 of the NPS-FM are not relevant to the proposal. Policy 5, 12, 13, and 14 are specific to regional council planning requirements under the NPS-FM. Policy 8 is about protecting the significant values of outstanding water bodies. The Aratapu Creek is not deemed an outstanding freshwater body under the RPS or PRP. Policy 10 is about protecting the habitat of trout and salmon. The Aratapu Creek is not habitat for trout and salmon.

6.4 Regional Policy Statement for Northland 2016

The RPS contains several objectives and policies that are relevant in the consideration of the proposal. It is important to note that regard is only had to provisions that have not been implemented through the PRP or KDP. The provisions are grouped by resource management topics as follows.

6.4.1 Freshwater Quantity

The freshwater quantity management provisions in the RPS is consistent with the direction in the NPS-FM 2020 and have for the most part been implemented through the PRP. However, Policy 4.3.4 stresses the importance of water storage. Policy 4.3.4 is to "recognise and promote the benefits of water harvesting, storage and conservation". The explanation to the policy states:

> *Security and reliability of supply can be increased by harvesting and storing water for distribution and use during shortages.*
>
> *Water harvesting, storage, and conservation can improve the efficient allocation and use of water. These measures will become increasingly important – particularly in Northland because of its many short catchments – as demand for water increases and the local climate changes with longer dry spells and more frequent high intensity rain events. Water storage measures can also have other benefits such as buffering storm flows, recharging aquifers, creating habitat and improving recreational opportunities.*
>
> *Policy 4.3.4 is an important consideration for decision-makers when assessing applications for resource consents and changing regional and district plans.*

The proposal has come about because of the demand for sufficient reliable water in the area. It is acknowledged that the reservoir will have other positive benefits, including buffering storm flows and creating habitat for indigenous fauna.

[14] Means the measurable positive effects of actions match any loss of extent or values over space and time, taking into account the type and location of the wetland or river. (NPS-FM 2020)
[15] Means that the measurable positive effects of actions exceed the point of no net loss. (NPS-FM)

6.4.2 Water Quality

Objective 3.2 seeks to improve the overall quality of Northland's fresh and coastal waters, with a particular emphasis on the trophic level of lakes, macroinvertebrate communities in rivers, sedimentation rates in estuaries and harbours, human health. Policy 4.2.1 of the RPS sets out how the objective is to be achieved:

> *Improve the overall quality of Northland's water resources by:*
>
> *(a) Establishing freshwater objectives and setting region-wide water quality limits in regional plans that give effect to Objective 3.2 of this regional policy statement.*
>
> *(b) Reducing loads of sediment, nutrients, and faecal matter to water from the use and development of land and from poorly treated and untreated discharges of wastewater; and*
>
> *(c) Promoting and supporting the active management, enhancement and creation of vegetated riparian margins and wetlands.*

It is considered that the proposal will help achieve Policy 4.2.1 and in turn Objective 3.2. The water storage reservoir will enable the conversion of land used for pastoral farming to horticulture, and in doing so it is likely to result in a reduction of losses of sediment, nutrients, and faecal matter to water. The proposed comprehensive suite of mitigation, offsetting and compensation measures will involve active management, enhancement an creation of riparian margins and wetlands, which should in turn have localised positive impacts on water quality.

6.4.3 Indigenous Ecosystems and Biodiversity

Objective 3.4 is to:

> *Safeguard Northland's ecological integrity by:*
>
> *a) Protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna;*
>
> *b) Maintaining the extent and diversity of indigenous ecosystems and habitats in the region; and*
>
> *c) Where practicable, enhancing indigenous ecosystems and habitats, particularly where this contributes to the reduction in the overall threat status of regionally and nationally threatened species.*

The objective is to be achieved through several policies, of which Policy 4.4.1 is directly relevant. Policy 4.4.1 is very similar to D.2.16 of the PRP. A key difference is the former applies to terrestrial and aquatic ecosystems and the latter applies only to terrestrial ecosystems. Policy 4.4.1 is:

> *(1) In the coastal environment, avoid adverse effects, and outside the coastal environment avoid, remedy or mitigate adverse effects of subdivision, use and development so they are no more than minor on:*
>
> *(a) Indigenous taxa that are listed as threatened or at risk in the New Zealand Threat Classification System lists;*
>
> *(b) Areas of indigenous vegetation and habitats of indigenous fauna, that are significant using the assessment criteria in Appendix 5;*
>
> *(c) Areas set aside for full or partial protection of indigenous biodiversity under other legislation.*
>
> *…*
>
> *(3) Outside the coastal environment and where clause (1) does not apply, avoid, remedy or mitigate adverse effects of subdivision, use and development so they are not significant on any of the following:*
>
> *(a) Areas of predominantly indigenous vegetation;*
>
> *(b) Habitats of indigenous species that are important for recreational, commercial, traditional or cultural purposes;*

(c) Indigenous ecosystems and habitats that are particularly vulnerable to modification, including wetlands, dunelands, northern wet heathlands, headwater streams, floodplains and margins of freshwater bodies, spawning and nursery areas.

(4) For the purposes of clause (1), (2) and (3), when considering whether there are any adverse effects and/or any significant adverse effects:

(a) Recognise that a minor or transitory effect may not be an adverse effect;

(b) Recognise that where the effects are or maybe irreversible, then they are likely to be more than minor;

(c) Recognise that there may be more than minor cumulative effects from minor or transitory effects.

(5) For the purpose of clause (3) if adverse effects cannot be reasonably avoided, remedied or mitigated then it maybe appropriate to consider the next steps in the mitigation hierarchy i.e. biodiversity offsetting followed by environmental biodiversity compensation, as methods to achieve Objective 3.4.

The site of the proposed reservoir is not located in the coastal environment. The footprint of the proposed reservoir contains manuka, which is a threatened species due to the threat of myrtle rust. The applicant proposes offsetting planting outside the reservoir footprint to achieve a net gain.

The ecological assessment report (refer **Appendix F**) states that one adult inanga (*Galaxias maculates*) was found during monitoring. The presence of an inanga, an At Risk – Declining species, at the site meets the 'rarity/distinctiveness criteria' within Appendix 5 of the RPS, and therefore the stream channels within the footprint area classified as a 'significant habitat of indigenous fauna'.

The site also contains 3.8 hectares of 'natural wetland' which will be inundated by the proposed reservoir. The applicant proposes approximately 12.26 hectares of wetland offsetting planting to achieve a net gain. The report summarise how this would be done:

Offset areas for each ecosystem type will be replaced with like-for-like wetland revegetation or enhancement. For the pampas-dominated wetland, a trade-up in wetland condition is proposed, whereby offset and compensation wetland areas will be planted with mānuka gumland Macaherina scrub/sedgeland or raupō depending on water depth. All plantings will be set out in a manner that provides landscape connectivity and be undertaken in close proximity to the impact site.

It may be possible to undertake benching around the proposed water reservoir to create suitable areas for wetland plantings. However, further site visits will be used to determine additional potential offsetting areas for each of the wetland types being affected. …

To offset and compensate for loss of mānuka gumland Machaerina scrub sedgeland, it is recommended that habitat upstream of the proposed footprint is enhanced and planted to restore existing habitat. This will potentially include stock-proof fencing, pest control and planting. Other potential offset and compensation areas will be explored in order to successfully offset this Critically Threatened ecosystem type.

6.4.4 Natural Character, Features, Landscapes

Objective 3.14 is:

Identify and protect from inappropriate subdivision, use and development;

(a) The qualities and characteristics that make up the natural character of the coastal environment, and the natural character of freshwater bodies and their margins;

(b) The qualities and characteristics that make up outstanding natural features and outstanding natural landscapes;

(c) The integrity of historic heritage.

Policy 4.6.1 is:

…

(2) Outside the coastal environment avoid significant adverse effects and avoid, remedy or mitigate other adverse effects (including cumulative adverse effects) of subdivision, use and development on the characteristics and qualities of outstanding natural features and outstanding natural landscapes and the natural character of freshwater bodies. Methods which may achieve this include: …

(a) Minimising, indigenous vegetation clearance and modification (including earthworks / disturbance and structures) to natural wetlands, the beds of lakes, rivers and their margins.

The streams in the reservoir footprint are highly modified deepened and straightened channels along paddock edges and base of slopes (see **Figure 6**)

The construction of the proposed reservoir will result in the inundation of rivers (streams). It is considered that the natural character of the streams within the reservoir footprint need to be considered within the context of the broader catchment. The applicant proposes to enhance the habitat of streams in other parts of the catchment or nearby catchments through planting riparian margins as part of an Offset and Compensation Plan. The riparian margins of the reservoir will also be planted with native vegetation. It is considered that this will avoid, or at least minimise, adverse effects on the natural character of freshwater bodies in the area.

Figure 6. A view of the reservoir footprint from the right abutment. The modified, fenced stream channels are on the sides and through the middle of the flat paddocks at the base of the reservoir footprint.

6.4.5 Active Management and Improvement

Objective 3.15 is:

Maintain and/or improve:

(a) The natural character of the coastal environment and fresh water bodies and their margins;

(b) Outstanding natural features and outstanding natural landscapes;

(c) Historic heritage;

(d) Areas of significant indigenous vegetation and significant habitats of indigenous fauna (including those within estuaries and harbours);

(e) Public access to the coast; and

(f) Fresh and coastal water quality

by supporting, enabling and positively recognising active management arising from the efforts of landowners, individuals, iwi, hapū and community groups.

The explanation to the objective states, among other things, that "appropriate subdivision, use and development can be the most effective means to achieve on-going management and improvement of these resources and can provide opportunities to address ongoing impacts / risks and result in net positive effects that may not otherwise occur."

Policy 4.7.1 seeks that beneficial effects of active management be given due weight in decision-making:

In plan provisions and the resource consent process, recognise and promote the positive effects of the following activities that contribute to active management:

(a) Pest control, particularly where it will complement an existing pest control project / programme;

(b) Soil conservation / erosion control;

(c) Measures to improve water quality in parts of the coastal marine area where it has deteriorated and is having significant adverse effects, or in freshwater bodies targeted for water quality enhancement;

(d) Measures to improve flows and / or levels in over allocated freshwater bodies;

(e) Re-vegetation with indigenous species, particularly in areas identified for natural character improvement;

(f) Maintenance of historic heritage resources (including sites, buildings and structures);

(g) Improvement of public access to and along the coastal marine area or the margins of rivers or lakes except where this would compromise the conservation of historic heritage or significant indigenous vegetation and / or significant habitats of indigenous fauna;

(h) Exclusion of stock from waterways and areas of significant indigenous vegetation and / or significant habitats of indigenous fauna;

(i) Protection of indigenous biodiversity values identified under Policy 4.4.1, outstanding natural character, outstanding natural landscapes or outstanding natural features either through legal means or physical works;

(j) Removal of redundant or unwanted structures and / or buildings except where these are of historic heritage value or where removal reduces public access to and along the coast or lakes and rivers;

(k) Restoration or creation of natural habitat and processes, including ecological corridors in association with indigenous biodiversity values identified under Policy 4.4.1, particularly wetlands and / or wetland sequences;

(l) Restoration of natural processes in marine and freshwater habitats.

As stated previously, the applicant is proposing to prepare and implement an Offset and Compensation Plan, as a condition of consent, to address residual adverse effects on aquatic and terrestrial ecosystems and habitats.

While the plan has not been prepared at this time, it is envisaged that it will address planting and pest and weed control, with associated improvements to the natural character of the area.

6.4.6 Infrastructure

Objective 3.7 is to "recognise and promote the benefits of regionally significant infrastructure, (a physical resource), which through its use of natural and physical resources can significantly enhance Northland's economic, cultural, environmental and social wellbeing."

While the proposed reservoir is not explicitly identified as regionally significant infrastructure in Appendix 3 of the RPS, it will provide considerable public benefits to the extent that it warrants consideration as regionally significant infrastructure.

Objective 3.8 is:

> *Manage resource use to:*
>
> *(a) Optimise the use of existing infrastructure;*
>
> *(b) Ensure new infrastructure is flexible, adaptable, and resilient, and meets the reasonably foreseeable needs of the community; and*
>
> *(c) Strategically enable infrastructure to lead or support regional economic development and community wellbeing.*

Policy 5.2.3 is to "promote the provision of infrastructure as a means to shape, stimulate and direct opportunities for growth and economic development." This application demonstrates that the proposal will lead and support regional economic development and community wellbeing.

6.4.7 Other

Objective 3.5 is that "Northland's natural and physical resources are sustainably managed in a way that is attractive for business and investment that will improve the economic wellbeing of Northland and its communities." The proposed reservoir, as part of the Kaipara Water Scheme, will attract investment in high value horticulture development and improve economic and social wellbeing.

6.5 Proposed Regional Plan for Northland (Appeals Version) June 2020

In September 2017, NRC notified the PRPN. The PRP replaces three existing regional plans[16]. In April 2019, NRC accepted and adopted the recommendations of an independent hearing panel of decisions on provisions and matters raised in submissions. Several provisions in the PRP are the subject of appeals to the Environment Court.

The RMA does not distinguish between weights to be given to an operative plan and a proposed plan. Case law has established that relevant factors in determining weight include the extent to which the proposed measure has been subject to independent decision-making, possible injustice to the applicant or others, and the extent to which a new measure, or absence of one, may implement a coherent pattern of objectives and policies in a plan.[17]

In this assessment, where there same or similar provisions in the PRP and the RWSP regard it only had to the provisions in the PRP.

[16] Regional Air Quality Plan for Northland (operative March 2003), Regional Coastal Plan for Northland (operative July 2004) and Regional Water and Soil Plan for Northland (operative August 2004).
[17] *Keystone Ridge Ltd v Auckland CC* HC Auckland AP24/01

The provisions are grouped by topic as follows.

6.5.1 Tangata Whenua

Objective F.1.8 is that "tangata whenua's kaitiaki role is recognised and provided for in decision-making over natural and physical resources." Policies D.1.1 – D.1.5 provide for the achievement of the objective.

Policy D.1.1 states:

> *A resource consent application must include in its assessment of environmental effects an analysis of the effects of an activity on tangata whenua and their taonga135 if one or more of the following is likely:*
>
> *1) adverse effects on mahinga kai or access to mahinga kai, or*
>
> *2) any damage, destruction or loss of access to wāhi tapu, sites of customary value and other ancestral sites and taonga with which Māori have a special relationship, or*
>
> *3) adverse effects on indigenous biodiversity in the beds of waterbodies or the coastal marine area where it impacts on the ability of tangata whenua to carry out cultural and traditional activities, or*
>
> *4) the use of genetic engineering and the release of genetically modified organisms to the environment, or*
>
> *5) adverse effects on tāiapure, mataitai or Māori non-commercial fisheries, or*
>
> *6) adverse effects on protected customary rights, or*
>
> *7) adverse effects on sites and areas of significance to tangata whenua mapped in the Regional Plan (refer I Maps |Ngā mahere matawhenua).*

Te Tai Tokerau Water Trust asked Te Uri o Hau Settlement Trust, Te Roroa Whatu Ora Trust, and Te Kuihi hapū to prepare a cultural impact assessment regarding the construction and operation of the proposed reservoir. The impact assessment had not been finalised at the date this application was lodged. However, it is understood that the impact assessment will be provided to the consent authority prior to it deciding whether to grant the sought resource consents.

6.5.2 Freshwater Quantity

Objective F.1.1 is:

> *Manage the taking, use, damming and diversion of fresh water so that:*
>
> *1) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems of fresh water are safeguarded and the health of freshwater ecosystems is maintained, and*
>
> *2) the significant values, including hydrological variation in outstanding freshwater bodies and natural wetlands are protected, and*
>
> *3) the extent of littoral zones in lakes are maintained, and*
>
> *4) rivers have sufficient flows and flow variability to maintain habitat quality, including to flush rivers of deposited sediment and nuisance algae and macrophytes and support the natural movement of indigenous fish and valued introduced species such as trout, and*
>
> *5) flows and water levels support sustainable mahinga kai, recreational, amenity and other social and cultural values associated with freshwater bodies, and*

6) *adverse effects associated with saline intrusion and land subsidence above are avoided (except where the taking, use, damming or diversion is for groundwater management at the Marsden Point refinery, in which case this clause does not apply), and*

7) *it is a reliable resource for consumptive and non-consumptive uses.*

It is considered that that the proposal to divert and dam water behind the proposed reservoir embankment meets the objective. The assessment of hydrological effects (refer **Appendix C**) demonstrates that reservoir will have minimal effects on downstream hydrological variation, and based on the assessment of ecological effects (refer **Appendix F**) it is considered that the aquatic ecosystem health of the Aratapu Creek will be maintained. The reservoir will provide a reliable resource for consumptive water uses.

Policy D.4.10 reinforces the direction in the NPS-FM to avoid over-allocation[18]:

For the purpose of assisting with the achievement of Objective F.1.1 of this Plan:

1) *apply the allocation limits set in H.4 Environmental flows and levels when considering and determining applications for resource consents to take, use, dam or divert fresh water, and*

2) *ensure that no decision will likely result in over-allocation.*

Over-allocation is defined in the NPS-FM as "…the situation where: (a) resource use exceeds a limit; or (b) if limits have not been set, an FMU or part of an FMU is degraded or degrading". A "limit means either a limit on resource use or a take limit". The allocation limits in Policy H.4.3 of the PRP were set in accordance with the NPS-FM 2014 (as amended 201&), which has been replaced. That said, the allocation limits are effectively take limits.

The allocation limits specify the maximum quantity fresh water that can be taken, dammed, or diverted from a river when the flow in the river is between the minimum flow and median flow. The limits do not apply to the taking, damming of diverting flows above the median flow. Policy H.4.3, which is the subject of an appeal to the Environment Court, is:

1) *The quantity of fresh water that can be taken from a river at flows below the median flow must not exceed whichever is the greater of the following limits:*

   a) *the relevant limit in Table 26: Allocation limits for rivers, or*

   b) *the quantity authorised to be taken by:*

      i. *resource consents existing at the date of public notification of this Plan less, with the exception of water permits for takes from rivers in the Mangere Catchment, any resource consents subsequently surrendered, lapsed, cancelled or not replaced, and*

      ii. *takes that existed at the notification date of this Plan that are subsequently authorised by resource consents under: Rule C.5.1.8 Replacement water permits for registered drinking water supplies – controlled activity, Rule C.5.1.9 Takes existing at the notification date of the plan – controlled activity and Rule C.5.1.11 Takes existing at the notification date of this Plan – discretionary activity.*

2) *The allocation limits specified in Clause 1) include volumes allowed to be taken under section 14(3)(b) of the RMA and permitted to be taken by rules in this Plan, and the estimated or measured volumes associated with such takes should be considered when making decisions on applications water permits.*

3) *The allocation limits specified in Clause 1) apply to applications for water permits for the taking and use of fresh water from rivers, but do not apply to non-consumptive components of takes.*

[18] Policy 11, NPS-FM.

Table 26: Allocation limits for rivers

River water quantity management unit	*Allocation limit (m^3/day)*
Outstanding rivers	*10 percent of the seven-day mean annual low flow*
Coastal rivers	*30 percent of the seven-day mean annual low flow*
Small rivers	*40 percent of the seven-day mean annual low flow*
Large rivers	*50 percent of the seven-day mean annual low flow*

The proposal is to dam the available 'core' allocation outside of the irrigation season (i.e., during winter months) and dam water above the minimum flow. The stored water will be taken and used for municipal water supply purposes and supporting horticulture development. It is considered that the taking and use of the stored water will not exceed 40% of the 7-day MALF.

Policy D.4.12 directs decision-makers to apply the minimum flows and levels in Policies H.4.1 and H.4.2 of the PRP when making decisions on applications for activities that require water permits. The policy, which the subject of an appeal to the Environment Court, is:

1) *For the purpose of assisting with the achievement of Objective F.1.1 of this Plan, ensure that the minimum flows and levels in H.4 Environmental flows and levels apply to activities that require water permits pursuant to rules in this Plan, and*

2) *Notwithstanding this general requirement, for rivers an alternative minimum flow (comprising the minimum flow set in H.4 Environmental flows and levels less a specified rate of flow particular to an activity) may be applied where the water is to be taken, dammed or diverted for:*

   a) *the health of people as part of a registered drinking water supply, or*

   b) *root stock survival water, or*

   c) *an individual's reasonable domestic needs or the reasonable domestic needs of a person's animals for drinking water that is, or is likely to be, having an adverse effect on the environment and is not permitted by a rule in this Plan, or*

   d) *a non-consumptive take*.

The proposed reservoir will provide for a continuation flow through the reservoir that will exceed (i.e., have a greater flow rate) than the specified minimum flow (80% of 7-day MALF) for 'small rivers' set in Policy H.4.1.

Table 18. Proposed damming of catchment inflows and designed continuation flows.

Damming type	Rate (L/s) (Daily mean)	Minimum flow criteria (L/s)	Note
High-flow damming	0 - 156	32	Catchment inflow from median to median plus 2x Std Dev
Core allocation ('low flow') damming	1.9	3.8	Catchment inflow during winter only

Policies D.4.13 and D.4.14 require applicants for resource consents for the taking and use of water for irrigation and community water supplies, respectively, to demonstrate that the sought volumes are reasonable and that the water will be used efficiently. It is important to note that while the intended purposes are known, supply agreements are not in place. The applicant considers that it is appropriate to grant resource consent to take the stored water for future horticulture development in the command area and for municipal supply.

The applicant proposes that as a condition of consent the consent holder must prepare, and keep regularly updated, a Water Supply Management Plan that will include:

- A general policy on how decisions will be made to supply water to persons from the reservoir.
- Identification of allocation quantities to persons as set out under Water Supply Agreements.
- Responsibilities of persons receiving the water to ensure water is conveyed and used efficiently, including the following considerations.
- Responsibilities of persons receiving the water to ensure water is conveyed and used efficiently, including the following considerations: (a) an assessment of the demonstrated need for water, including current and likely future demand; and (b) implementation of industry good management practices , taking into account the nature of the activity, to efficiently use water

Policy D.4.19 is the transitional direction included in the PRPN pursuant to the requirement of Policy B7 of the NPS-FM. The policy, which applies until the provisions in the PRPN that give effect to Policies B1, B2, and B6 of the NPS-FM become operative, is:

1. *When considering any application the consent authority must have regard to the following matters:*

    a. *the extent to which the change would adversely affect safeguarding the life-supporting capacity of fresh water and of any associated ecosystem and*

    b. *the extent to which it is feasible and dependable that any adverse effect on the life-supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided.*

2. *This policy applies to:*

    a. *any new activity and*

    b. *change in the character, intensity or scale or any established activity –*

    that involves any taking, using, damming or diverting of fresh water or draining of any wetland which is likely to result in any more than minor adverse change in the natural variability of flows or level of any fresh water, compared to that which immediately preceded the commencement of the new activity or the change in the established activity (or in the case of a change in an intermittent or seasonal activity, compared to that on the last occasion on which the activity was carried out).

It is considered that the proposed reservoir will not result in a more than minor adverse change in the natural variability of flows in the Aratapu Creek. The effect of the proposed reservoir on downstream flows dissipates rapidly with distance. Refer **Section 7** for a summary of the assessment of hydrological effects.

Despite that conclusion, the actual and potential effects of the proposed reservoir on aquatic and associated ecosystems has been assessed, and measures have been proposed to avoid, remedy and mitigate adverse effects.

6.5.3 Water Quality

Policy D.4.26 is:

When assessing an application for resource consent for an earthworks, vegetation clearance or land preparation activity and associated discharge of a contaminant, ensure that the activity:

1) will be done in accordance with established good management practices, and

2) avoids significant adverse effects, and avoids, remedies or mitigates other adverse effects on:

a) drinking water supplies, and

b) areas of high recreational use, and

c) aquatic ecosystem health, indigenous biodiversity in water bodies and coastal water and receiving environments that are sensitive to sediment or phosphorus accumulation.

The construction of the proposed reservoir will be done in accordance with established erosion and sediment control practices (i.e., the Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region). The applicant proposes that an ESCMP, part of a CEMP, be prepared and implemented as a condition of resource consent (refer **Appendix J**).

6.5.4 Indigenous Ecosystems and Biodiversity

Objective F.1.3 is very similar to Objective 3.4 of the RPS and is the subject of an appeal to the Environment Court. The objective is:

In the coastal marine area and in fresh waterbodies, safeguard ecological integrity by:

1) protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna, and

2) maintaining regional indigenous biodiversity, and

3) where practicable, enhancing and restoring indigenous ecosystems and habitats to a healthy functioning state, and reducing the overall threat status of regionally and nationally Threatened or At Risk species, and

4) preventing the introduction of new marine or freshwater pests into Northland and slowing the spread of established marine or freshwater pests within the region.

Policy D.2.16 the main policy by which Objective F.1.3 will be achieved. The policy, which is also the subject of an appeal to the Environment Court, is very similar Policy 4.4.1 of the RPS and is:

Manage the adverse effects of activities on indigenous biodiversity by:

…

2) outside the coastal environment:

a) avoiding, remedying or mitigating adverse effects so they are no more than minor on:

i. indigenous taxa that are listed as Threatened or At Risk in the New Zealand Threat Classification System lists, and

ii. areas of indigenous vegetation and habitats of indigenous fauna, that are significant using the assessment criteria in Appendix 5 of the Regional Policy Statement, and

iii. areas set aside for full or partial protection of indigenous biodiversity under other legislation, and

b) avoiding, remedying or mitigating adverse effects so they are not significant on:

i. areas of predominantly indigenous vegetation, and

ii. habitats of indigenous species that are important for recreational, commercial, traditional or cultural purposes, and

iii. indigenous ecosystems and habitats that are particularly vulnerable to modification, including wetlands, wet heathlands, headwater streams, spawning and nursery areas, and

…

5) assessing the potential adverse effects of the activity on identified values of indigenous biodiversity, including by:

a) *taking a system-wide approach to large areas of indigenous biodiversity such as whole estuaries or widespread bird and marine mammal habitats, recognising that the scale of the effect of an activity is proportional to the size and sensitivity of the area of indigenous biodiversity, and*

b) *recognising that existing activities may be having existing acceptable effects, and*

c) *recognising that discrete, localised or otherwise minor effects impacting on the indigenous biodiversity may be acceptable, and*

d) *recognising that activities with transitory effects may be acceptable, and*

6) *recognising that appropriate methods of avoiding, remedying or mitigating adverse effects may include:*

a) *careful design, scale and location proposed in relation to areas of indigenous biodiversity, and*

b) *maintaining and enhancing connections within and between areas of indigenous biodiversity, and*

c) *considering the minimisation of effects during sensitive times such as indigenous freshwater fish spawning and migration periods, and*

d) *providing adequate setbacks, screening or buffers where there is the likelihood of damage and disturbance to areas of indigenous biodiversity from adjacent use and development, and*

e) *maintaining the continuity of natural processes and systems contributing to the integrity of ecological areas, and*

f) *the development of ecological management and restoration plans, and*

7) *recognising that significant residual adverse effects on biodiversity values can be offset or compensated:*

a) *in accordance with the Regional Policy Statement for Northland Policy 4.4.1, and*

b) *after consideration of the methods in (6) above, and*

8) *recognising the benefits of activities that:*

a) *include the restoration and enhancement of ecosystems, habitats and indigenous biodiversity, and*

b) *improve the public use, value or understanding of ecosystems, habitats and indigenous biodiversity.*

Parts of the natural wetland within the reservoir footprint are deemed to be significant areas of indigenous vegetation because they trigger the area thresholds in the significance criteria of Appendix 5 of the RPS. It is considered that inundating the significant natural wetland will be an adverse effect, however the applicant is proposing that an Offset and Compensation Plan be developed and implemented, which will involve wetland restoration and enhancement outside of the area footprint. Offset areas for each wetland type will be replaced with like-for-like wetland revegetation or enhancement.

The stream channels are also deemed to be a significant habitat of indigenous fauna in accordance with Appendix 5 of the RPS because of the presence of inanga. It is considered that inundating the stream channels through the construction of the proposed reservoir will not have a more than minor adverse effects on the habitat of inanga because the length of stream channels in the reservoir is a tiny fraction of inanga habitat in the district. It is also important to note that the proposed Offset and Compensation Plan will include a planting and enhancing streams in the area. This will result in an overall improvement in inanga freshwater habitat.

Policy D.4.22 provides policy direction on how activities that affect natural wetlands should be managed:

Activities affecting a natural wetland:

1) *should maintain the following important functions and values of wetlands, including:*

    a) *water purification and nutrient attenuation, and*

    b) *contribution to maintaining stream flows during dry periods, and*

    c) *peak stream flow reduction, and*

    d) *providing habitat for indigenous flora and fauna, including ecological connectivity to surrounding habitat, and*

    e) *recreation, amenity and natural character values, and*

2) *must avoid, remedy, or mitigate adverse effects on important wetland functions and values, or*

3) *must provide biodiversity off-setting or environmental biodiversity compensation, so that residual adverse effects on the important functions and values of wetlands are no more than minor.*

The area of natural wetland within the reservoir footprint is relatively small (3.8 ha). The proposed reservoir will provide the important functions and values of wetlands listed in the first clause of the policy. That is, it will provide water quality improvement functions (e.g., attenuating fine sediments and nutrients); contribute to maintaining stream flows during dry periods; reduce peak flows; provide habitat for indigenous flora and fauna; and will have positive amenity and natural character values. The proposal also involves biodiversity offsetting and ecological compensation.

Policy D.4.23 provides further directs decision-makers when considering applications for activities that affect wetlands:

When considering resource consents for activities in wetlands, recognise:

1) *the benefits of wetland creation and restoration, and the enhancement of wetland functions, and*

2) *that the values of induced wetlands or reverted wetlands are likely to relate to:*

    a) *the length of time the wetland has been in existence (ecological values are generally lower in newly established wetlands), and*

    b) *whether long-term viability of the wetland relies on maintenance works to maintain suitable hydrological conditions (wetlands that do not require maintenance are of greater value), and*

3) *that the consent duration should be for as long as active restoration or enhancement works are required.*

The Offset and Compensation Plan will involve the restoration and enhancement of natural wetland outside of the reservoir footprint.

Policy D.4.24 requires decision-makers to recognise:

When considering resource consent applications for activities in freshwater bodies recognise:

1) *that in the absence of alternative evidence, most Northland continually or intermittently flowing rivers and some lakes and natural wetlands provide habitat for Threatened or At Risk indigenous fish species, and*

2) *that all fish species have varying degrees of sensitivity to habitat disturbance, changed water flow and degraded water quality, particularly increased turbidity or sedimentation, and*

3) *the need to maintain the ability for non-pest fish species to effectively move up and downstream of the activity site, and*

4) opportunities to reduce the risk of spreading or introducing pest species, and

5) the benefits of avoiding:

a) activities in continually or intermittently flowing rivers during fish migration periods, and

b) spawning habitat disturbance, particularity during spawning periods.

It is important to note that the first clause of Policy D.4.24 effectively states that all of Northland's continually and intermittently flowing rivers are significant habitats of indigenous fauna – as per Policy D.2.16(1)(a)(ii).

The streams flowing through the reservoir footprint are significant habitats of indigenous fauna because an inanga was found in them. The reservoir embankment will prevent inanga, but not eels, from passing. The fish passage will also prevent the upstream movement of any introduced pest fish species. The Freshwater Fauna and Salvage Plan will assist with avoiding and minimising adverse effects on native freshwater fish species

6.5.5 Natural Character, Features, Landscapes

Objective F.1.1 is also similar to the objective in the RPS regarding natural character, outstanding natural features and historic heritage (Objective 3.14). The objective, which is subject of an appeal to the Environment Court, is:

Protect from inappropriate use and development:

3) the characteristics, qualities and values that make up:

…

c) natural character in freshwater bodies outside the coastal environment…

It is considered that the proposed reservoir is not inappropriate development because it will provide significant social and economic benefits and is strategically located to minimise adverse effects on the environment.

Policy D.2.15 also provides similar direction to the RPS. It states that the adverse effects of activities on natural character of freshwater bodies and their margins outside of the coastal environment must be managed by avoiding significant adverse effects on the characteristics, qualities and values that contribute to natural character. The policy also recognises:

4) …that in relation to natural character in waterbodies (where not identified as outstanding natural character), appropriate methods of avoiding remedying or mitigating adverse effects may include:

a) ensuring the location, intensity, scale and form of activities is appropriate having regard to natural elements and processes, and

…

c) in freshwater, minimising to the extent practicable modification (disturbance, structures, extraction of water and discharge of contaminants) …

The assessment of the activity against Policy 4.6.1 of the RPS satisfies the required assessment against Policy D.2.15 of the PRP.

6.5.6 Resource Consent Duration

Section 123 of the RMA defines the period for which consents may be granted. Under section 123(b) the period for which any land use consent is granted is unlimited unless otherwise specified in the consent or if it for an activity that would contravene section 13 of the RMA. Section 123 goes on to set an upper limit of 35 years for

discharge and water permits but section 123(d) limits discharge and water permits to five years unless an alternative duration is specified in the consent.

Policy D.2.12, which is the subject of appeals to the Environment Court, provides direction on resource consent duration:

> *When determining the expiry date for a resource consent, have particular regard to:*
>
> *1) security of tenure for investment (the larger the investment, then generally the longer the consent duration), and*
>
> *2) the administrative benefits of aligning the expiry date with other resource consents for the same activity in the surrounding area or catchment, and*
>
> *3) certainty of effects (the less certain the effects, the shorter the consent duration), and*
>
> *4) whether the activity is associated with regionally significant infrastructure (generally longer consent durations for regionally significant infrastructure), and*
>
> *5) the following additional matters where the resource consent application is to re-consent an activity:*
>
> *a) the applicant's past compliance with the conditions of any previous resource consent or relevant industry guidelines or codes of practice (significant previous non-compliance should generally result in a shorter duration), and*
>
> *b) the applicant's voluntary adoption of good management practice (the adoption of good management practices that minimise adverse environmental effects could result in a longer consent duration).*

Having considered the policy, Te Tai Tokerau Water Trust considers that the resource consents for which it has applied should be for the periods set out in **Table 19.** Proposed consent durations and lapse.

Table 19. Proposed consent durations and lapse.

Land use consents		
Activity	**RMA**	**Duration**
• Erect a dam structure in, on, under, and under the bed of the Aratapu Creek[19] • Disturb the bed of the Aratapu Creek • Deposit a substance in, or, and under the bed of the Aratapu Creek • Reclaim the bed of the Aratapu Creek	Section 13	10 years
Water permits		
Activity	**RMA**	**Duration**
• Temporarily divert the Aratapu Creek Sduring construction	Section 14	10 years
• Divert and dam freshwater behind the proposed reservoir embankment when catchment inflows exceed the median flows • Divert and dam available 'core allocation' freshwater behind the proposed reservoir embankment outside the irrigation season (May – October) • Divert freshwater through the proposed embankment • Divert freshwater around the proposed embankment (via spillway) • Take and use dammed water	Section 14	35 years
Discharge permits		

[19] Once the embankment is constructed its presence is a permitted activity as it has been lawfully established.

Activity	RMA	Duration
• Discharge stormwater to water associated with land disturbance activities	Section 15	10 years
• Discharge groundwater from dewatering activities to water	Section 15	10 years

6.5.7 Other

The PRP contains several other relevant provisions. Objective F.1.4 is that "Northland's natural and physical resources are managed in a way that is attractive for business and investment that will improve the economic well-being of Northland and its communities." Objective F.1.10 is to "enable and positively recognise activities that contribute to improving Northland's natural and physical resources. Granting consents to authorise the proposal will achieve the objective.

Policy D.2.2 is that "regard must be had to the social, cultural and economic benefits of a proposed activity, recognising significant benefits to local communities, Māori and the region including local employment and enhancing Māori development, particularly in areas of Northland where alternative opportunities are limited."

The policy goes to the nub of the issue that prompted the NSWUP – there is an important need for sustainable and enduring projects that will recognise significant social, economic and cultural benefits to people and communities in Northland.

Policy D.4.25 is about the benefits of freshwater structures, dams and diversions:

> *Recognise the significant benefits activities in water bodies can provide to local communities, Māori and the region, including:*
>
> *1) socio-economic well-being and resilience of communities or industry, and*
>
> *2) regionally significant infrastructure, and*
>
> *3) enhanced fish passage and ecological connectivity between the coastal marine area and the upstream extent of water bodies, and*
>
> *4) flood protection and the safeguarding of public health and safety, and*
>
> *5) public access along, over or in the water body, and*
>
> *6) enabling community resilience to climate change, and*
>
> *7) enhancing recreation opportunities including walking, bird watching, fishing, game bird hunting and boating, and*
>
> *8) education and scientific research, and*
>
> *9) enhancing amenity and natural character.*

The proposal is expected to deliver the benefits identified in the first, fourth and sixth clauses of the policy.

Objective E.1.1 is specific to the several catchments, including the Poutō Peninsula:

> *Recognise the following values in the Doubtless Bay, Waitangi, Poutō, Mangere and Whāngarei Harbour Catchments:*
>
> *1) cultural and recreational uses associated with fresh and coastal waters, and*
>
> *2) the ability to gather mahinga kai, and*
>
> *3) the natural character of waterbodies and their margins, and*

4) *the quality of habitat for aquatic native species, and*

5) *access to freshwater for productive uses.*

Policy E.2.1 provides of the achievement of the objective. It requires decision-makers on resource consent applications affecting natural and physical resources on the Poutō Peninsula to have regard to the following matters:

1) *reducing the amount of sediment entering waterways from hill slope and stream-bank erosion, and*

2) *improving the quality of fresh and coastal water for cultural and recreational uses, particularly contact recreation and the ability to gather mahinga kai, and*

3) *protecting the ecosystem health and natural character of freshwater bodies, particularly outstanding lakes, and*

4) *enabling the extraction and use of freshwater where this will not compromise other values or exceed a minimum flow or level, or an allocation limit.*

It is considered that this application for resource consent addresses the policy direction.

6.6 Regional Water and Soil Plan for Northland 2007 (updated 2014)

The PRP will replace the RWSP, and because it has progressed through to the appeals process it is appropriate to put more emphasis on it.

The focus here is on provisions that are not reflected in the PRP but are directly relevant to the proposal. They are about managing activities in the beds of river

Objective 11.4.4 is:

The management, control of location and frequency of structures in, on, under or over the beds of rivers and lakes so as to maintain adequate minimum continuation flows in order to provide for:

(a) The protection of indigenous aquatic ecosystems and habitats;

(b) The current and potential needs of existing lawful water users;

(c) The need to manage potential risk upon property and people; and

(d) The maintenance of natural character.

Continuation flows will be provided through the embankment of the proposed reservoir to maintain the health of downstream aquatic ecosystems, habitats and species and ensure that existing authorised takes are not adversely affected.

Objective 11.4.5 is “[t]he provision of fish and invertebrate passage for indigenous fish and invertebrate species and trout, within rivers, lakes and indigenous wetlands sufficient to sustain viable fish and invertebrate populations.”

The reservoir embankment will be designed to incorporate fish passage for eels. The reservoir will support viable invertebrate populations.

Objective 11.4.6 is “[t]he use of off-stream reservoirs and other off-stream water storage techniques as an alternative to the placement of dam structures on the beds of rivers and lakes.”

While an off-stream water storage system is desirable from an ecological perspective, a system is not practicable for the Kaipara Water Scheme. Constructing a 4M m^3 water storage reservoir requires a valley formation for it to be economically viable.

Policy 11.5.13 is:

> *When considering consents for constructing new dam structures on the bed of a river or lake to require:*
>
> *(a) In permanently flowing rivers the maintenance of design minimum flows sufficient to meet the needs of existing aquatic ecosystems;*
>
> *(b) That the migration of indigenous fish and invertebrate species, and trout is provided for in accordance with Policies 11.05.15 and 11.05.16;*
>
> *(c) Dissolved oxygen, water temperature and other chemical thresholds that are critical to indigenous aquatic life and healthy ecosystem functioning are maintained;*
>
> *(d) Current and potential future land uses are considered;*
>
> *(e) The proximity of dwellings, public land and areas where the public reside or congregate are taken into consideration with regards to the potential risks and hazards;*
>
> *(f) Adverse effects on significant indigenous vegetation and significant habitats of indigenous fauna are avoided, remedied or mitigated;*
>
> *(g) Potential adverse effects on existing lawful water users are avoided, remedied or mitigated.*

Policy 11.5.14 is "to control the location, size, scale and frequency of dam structures within rivers and lakes to ensure that adequate continuation flows are maintained within the catchment."

Policy 11.5.15 is "depending on actual or potential upstream existence of habitat for indigenous fish or invertebrate species or trout, the construction and maintenance of fish and invertebrate passes for new dam structures on the beds of rivers or lakes is required, except where no flow beyond the structure is required."

This application addresses the requirements of Policies 11.5.13, 11.5.14, and 11.5.15.

6.7 Kaipara District Plan

It is important to note that the KDP predates the RPS and therefore it is considered that weight should be had to the relevant provisions in the RPS and the (refer Section 6) regarding indigenous ecosystems and biodiversity, and active management and enhancement. This is consistent with case law on the matter. Importantly, the RPS specifies a different approach to identifying and protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna.

Chapter 12 of the KDP recognises that while farming activities are the defining feature of the Rural Zone, in which the proposed reservoir is to be located, other activities are also appropriately located in the rural environment. That is because in some cases, the rural environment is the only place where they can establish because of the requirements for resources and land type. The objectives in Chapter 12 reflect the purpose of the zone, i.e., to maintain rural character and amenity, recognised the importance of primary production, industrial and commercial activities, avoid, remedy and mitigate reverse sensitivity effects on existing land uses. It is considered that the proposal is consistent with the following relevant objectives: 12.5.2, 12.5.5, and 12.5.6.

Land use consents are sought from KDC for excavation and filling activities, clearing indigenous vegetation, and constructing a dam that will exceed 10 metres in height.

The proposal is consistent with the relevant policy direction in Chapter 12. Policy 12.6.3 is about allowing development where it is offset by, among other things, restoration and enhancement of vegetation that will

significantly contribute to natural environmental values and rural character and amenity. The proposed Offset and Compensation Plan will help achieve this.

Policy 12.6.7 is to avoid, remedy or mitigate the adverse effects of activities that pose the greatest threat to remaining areas of significant indigenous vegetation and significant habitats of indigenous fauna, and rural amenity (e.g., vegetation clearance and excavation and fill, and the bulk and location of buildings and structures).

It is considered that the potential adverse landscape and visual amenity effects of the proposal will be low once the proposed landscape and mitigation measures have been completed, and the temporary adverse effects arising from the construction will be low at most (refer **Appendix G**).

6.8 Assessment Summary

The economic and social benefits arising from the proposal are well-documented. The potential productive uses that may result from a resilient and efficient source of water supply as proposed are profound and extensive, and therefore the objectives and policies that support economic and social well-being can be met.

It is considered that the proposal to construct and operate the Aratapu Water Storage Reservoir is not contrary to any objectives or policies of the PRP, RWSP and KDP.

7. Assessment of Environmental Effects

Clause 2(3) of Schedule 4 of the RMA states:

> *An application must also include an assessment of the activity's effects on the environment that—*
>
> *(a) includes the information required by clause 6; and*
>
> *(b) addresses the matters specified in clause 7; and*
>
> *(c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.*

The information requirements in clause 6 are addressed in **Table 20** below.

Table 20. Information requirements in clause 6(1).

Information requirement	Comment
(a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity:	It is considered that the proposal will not result in any significant adverse effects on the environment if the proposed conditions of consent are adopted and implemented.
(b) an assessment of the actual or potential effects on the environment:	The following section of this application contains an assessment of actual and potential effects on the environment.
(c) if the activity includes the use of hazardous installations, an assessment of any risks to the environment that are likely to arise from such use:	The term "hazardous installation" is not defined in the RMA or otherwise used in the RMA. It is assumed here that the proposed reservoir will be a hazardous installation because there is the risk of people and property being adversely affected if the dam would fail. The potential impact classification is set out in RILEY's report at **Appendix E** of this application. It is important to note that potential impact classifications are independent of the likelihood failure, which, for a suitably designed, constructed and operated dam, should be very low. Detailed dam designs have yet to be completed but will be required to obtain a building consent to authorise the construction of the proposed reservoir.
(d) if the activity includes the discharge of any contaminant, a description of— *(i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and* *(ii) any possible alternative methods of discharge, including discharge into any other receiving environment:*	Discharges of stormwater, including sediment, are expected during the construction of the reservoir. However, best practice erosion and sediment control measures will be implemented before and throughout the duration of the activity and will be removed once the site is fully stabilised. Discharges of water from the proposed reservoir (via a constructed spillway) will happen periodically. More information that is required by clause 6(1)(b) of Schedule 4 of the RMA is provided in this section.
(e) a description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect:	A description of the mitigation measures reflected in the proposed conditions of resource consent.
(f) identification of persons who may be affected by the activity and any response to the views of any persons consulted, including the views of iwi or hapū that have been consulted in relation to the proposal:	See **Section 8** of this application.

Information requirement	Comment
(g) *if the scale and significance of the activity's effects are such that monitoring is required, a description of how the effects will be monitored and by whom, if the activity is approved:*	See **Section 9** of this application.
(h) *If the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).*	No customary rights will be affected by the proposal.

Clause 7(1) of Schedule 4 of the RMA states:

An assessment of the activity's effects on the environment must address the following matters:

(a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects:

(b) any physical effect on the locality, including any landscape and visual effects:

(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:

(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:

(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:

(f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or hazardous installations.

The matters are addressed below.

7.1 Effects on the Neighbourhood and Wider Community

7.1.1 Enabling Social and Economic Wellbeing

Northland is a regional economy that underperforms relative to most other regions of New Zealand despite its resource base. The way natural and physical resources (including infrastructure) are managed, particularly through regulation, is important to the economy. It directly affects how markets, and individuals and businesses in those markets, operate and allocate their resources. Availability and security of water is fundamental to productive land use for food production and potable water supply for the health and well-being of the people and communities, particularly with a changing climate.

The purpose of proposed Aratapu Water Storage Reservoir is primarily, along with other components of the Kaipara Water Scheme, to change pastoral land use to higher value horticultural land use, while avoiding increases in livestock intensification. It is expected that the Aratapu Water Storage Reservoir will be able to support approximately 1,070 hectares of horticulture development.

The development of the proposed reservoir and other components of the Scheme will result in intergenerational benefits for the Kaipara area. The findings from the prefeasibility phase confirm that there are substantial economic benefits to be realised through the development of the Kaipara Scheme. The benefits will come from a substantial lift in horticultural production and flow-on effects to other sectors. It is expected that for every $1 million invested on building the Scheme, there will be an on-going annual lift in economic activity (as measured

by GDP) of $1.3 million and a rise in economic well-being (measured by household income) of $0.6 million per year.

PricewaterhouseCoopers (PwC) have estimated the employment that will be generated by the construction of the reservoir and associated distribution network.[20] PwC consider that around 85 FTE positions will be created – an average of 42 in each year of the two-year construction period. It is important to note that the values only reflect direct employment, not the additional employment that will result from the flow-on impact on other sectors of the economy.

7.1.2 Life-Supporting Capacity of Soil Resource

The proposed development will have a positive impact on the life supporting capacity of the soil on the properties which it will service. It will enable more sustainable and higher value farming operations on soils currently under pasture but suited to horticulture.

The reservoir footprint is not suited to horticulture and is currently being used to graze dairy cows. It is considered that it is not necessary to conserve the small footprint to protect the capacity for food production

7.1.3 Effects on Tangata Whenua Values and Interests

Te Uri o Hau Settlement Trust, Te Roroa Whatu Ora Trust, and Te Kuihi hapū are preparing a cultural impact assessment of the proposed reservoir. The impact assessment was not completed at the lodgement date of this application, however it is understood that it will be available for the consent authority to review.

7.1.4 Effects on Existing Authorised Takes

It is understood that there is only one consented take (AUT.007743.01.04) downstream of the proposed reservoir. No information is available on non-consented takes, i.e., takes permitted by section 14(3)(b) of the RMA or rules in the RWSP and PRP, or illegal takes).

Appendix C contains WWLA's report on the hydrological analysis of the Aratapu Creek and the effects on downstream water users because of the reservoir. Regarding the impact of the proposed 'core allocation' take, the report states:

> *The proposed core allocation take for direct inflows to [the Aratapu Water Storage Reservoir] will only occur during winter. As the downstream consented take (AUT.007743.01.04) is for irrigation of pasture, the consent would only be utilised during summer. Therefore, it is considered there will be no effect on this downstream consented water take associated with a winter core allocation take for direct inflows to [the reservoir].*

Regarding the impact of the proposed 'high flow take':

> *The harvesting of high flows will not negatively affect the downstream consented water take. The reservoir high flow take will only occur during times of above median flow at the reservoir (> 34.5 L/s), thus there will be at least 30.51 L/s in excess of the consented take rate passing downstream of the reservoir during periods of high flow harvesting. In addition, the consented irrigation take is not likely to be operational during times of high-flow taking (i.e. wet periods).*
>
> *In terms of takes permitted under a regional plan or by Section 14(3)(b) of the Resource Management Act 1991, total daily take per property downstream of the lowest point of proposed taking is estimated at:*
> *a) 10 cubic metres (equivalent to 0.116 L/s), or*
> *b) 30 cubic metres (equivalent to 0.347 L/s) for the purposes of dairy shed wash down and milk cooling water.*
>
> *Flows below the median (up to 34.5 L/s) will not be harvested and will bypass the reservoir. Therefore, significant water remains available for permitted takes during periods of high flow harvesting. The median flow of 34.5 L/s at the location immediately downstream of K-13 embankment is equivalent to 297 0.116 L/s permitted takes at 0.116 L/s, or 99 0.347 L/s permitted takes at 0.347 L/s. In addition, catchment flow increases with increasing distance downstream as additional lateral inflows occur and tributaries join.*

[20] Mark Robinson and Craig Price., 11 September 2020, pers. comm.

Based on the above, there are no potential negative impacts anticipated on downstream water users.

Consistent with the findings of the report, it is considered that any adverse effects on authorised downstream takes will be no more than minor.

7.2 Physical Effects, Including Landscape and Visual Effects

Simon Cocker Landscape Architecture undertook a comprehensive landscape and visual amenity assessment (refer **Appendix G**). Cocker (2020) states:

The proposal will result in a moderate to high degree of localised change with respect to abiotic attributes [i.e., landform, geology, and water catchments], but that the change will be small when considered within the context of the wider landscape. The biotic effect of the proposal can be mitigated or offset such that the effect will be low. With regard to experiential and perceptual values, the proposal will result in a very low impact and the impact on spiritual, cultural and associative attributes will be low.

Overall therefore, it is assessed that the potential adverse landscape character effects on the wider environment that will be generated by the proposal will be low once the mitigation measures are completed.

Mitigation measures include revegetation of the riparian margins and gully slopes adjoining and upstream of the proposed reservoir. Indeed, there is an opportunity to enhance the natural character of catchment of the reservoir and in other areas through the implementation of an Ecological Offsetting and Compensation Plan, as recommended in the Assessment of Ecological Effects report (refer **Appendix F**) and proposed as a condition of resource consent (refer **Appendix J**).

Geometria Ltd undertook an archaeological assessment of the site and adjacent area (refer **Appendix H**). The report recorded archaeological features outside of the reservoir footprint that will not be affected by the construction of the proposed reservoir.

7.3 Effects on Ecosystems

Puhoi Stour in association with Tonkin & Taylor undertook a comprehensive assessment of ecological effects associated with the construction of the proposed reservoir (refer **Appendix F**). A summary of the findings and recommendations are set out in this section.

7.3.1 Aquatic Ecology

Heggie-Grace, et al (2020) identified six categories of actual and potential adverse effects on aquatic ecology:

- Sedimentation during construction.
- Injury or mortality of freshwater fauna.
- Fish passage.
- Permanent modification of stream habitat.
- Downstream water quality effects.
- Downstream habitat effects

7.3.1.1 Sedimentation During Construction

The construction of the proposed reservoir has the potential to result in a temporary increase in sediment losses to water. It is well recognised that elevated levels of suspended and deposited sediment can adversely affect aquatic ecosystems.

Despite the ecological assessment finding that the modified stream channels have low/moderate ecological value, because an inanga (*Galaxias maculatus*) was found (a species with a conservation status of 'At Risk – Declining') the potential effect they consider that the activity is considered to have a potential effect on

freshwater fauna with high ecological value. They recommended that earthworks within and adjacent to the beds of wetlands and streams at the site be done during the earthworks season and in accordance with best practice (i.e., Auckland Council Guidance Document 5). The report considers that "with the appropriate construction and sediment and erosion control methodologies to mitigate sediment and erosion control effects, the magnitude of effects could be reduced to low, and so the overall level of effects could be reduced to a low level.

It is proposed that an Erosion and Sediment Control Plan is required as a condition of resource consent.

7.3.1.2 Injury or Mortality of Freshwater Fauna

Constructing the proposed reservoir could result in injury to or the death of native freshwater fauna during mechanical modification of waterbodies within the reservoir footprint. The ecological assessment report recommends that a Freshwater Fauna Relocation Plan be prepared as part of the reservoir construction methodology to minimise injury or mortality or freshwater fauna during streamworks and reservoir filling. The report states that with appropriate salvage and relocation methods, as detailed in a FFRP, the magnitude of adverse effects on fish during construction and reservoir filling, could be reduced to low and the overall level of effects to low.

It is proposed that a Freshwater Fauna Relocation Plan be required as a condition of resource consent.

7.3.1.3 Fish Passage

The placement of structures in streams and rivers can restrict the movement of fish, this is particularly relevant for dams. The ecological report recommends the provision of fish passage for eels (upstream and downstream) into the proposed reservoir. They consider that an elver pass could be constructed up and over the face of the dam, however if that is not feasible then a trap and haul programme should be established to populate the reservoir with elvers. They also recommend consideration for downstream movement of migrant eels should be included in the spillway design.

With respect to eel passage, the ecology report states that the magnitude of the effect caused by impeding fish passage is low and the overall effect is low. However, they recommend that the dam design provides for eel passage.

It is proposed that eel passage is required as a condition of resource consent.

7.3.1.4 Permanent Modification of Stream Habitat

The ecology report indicates that the proposed reservoir will inundate approximately 2,317 m (or approximately 2,.939 m^2 of streambed area) of continually flowing streams and approximately 677 (or approximately 366 m^2 of streambed area) of intermittently flowing stream.

The ecological assessment states that the magnitude of effects is very high due to the stream loss. However, because of the existing ecological value of the streams the overall level of effects from the permanent loss of stream habitat is deemed high. The report recommends restoration of existing streams outside of the footprint of the proposed reservoir to offset the effects of the reservoir. They used an Environmental Compensation Ration tool to determine that approximately 5,717 m^2 and 725 m^2 (collectively 6,443 m^2) of similar permanent and intermittent streambed area habitat enhancement in nearby catchments in Te Kopuru is required to achieve no net loss of ecological function.

It is proposed that a Offset and Compensation Plan is required as a condition of resource consent. The Plan will identify, among other things, the location(s) of proposed riparian planting, plant species and sizes, spacing and weed maintenance.

7.3.1.5 Downstream Water Quality Effects

Reservoirs have the potential to impact on downstream water quality, particularly as a result of changes in water temperature. The reservoir outlet will be situated close to the base of the reservoir, and therefore water at the outflow will not be affected by solar and thermal radiation. The ecological assessment report states that the magnitude of the potential impact of the reservoir on water quality to be low and as such the overall level of effect is low.

7.3.1.6 Downstream Habitat Effects

Dams affect the downstream transport for coarse and fine sediment, which has the potential to impact physical instream habitat. They also modify downstream flow regimes.

The ecological assessment found that the magnitude and impact of the proposed reservoir on downstream habitat is likely to be low.

WWLA undertook an assessment of the proposed reservoir on downstream flows. The study found that the largest impact on stream flow in the unnamed tributary in the upper catchment of the Aratapu Creek is directly downstream of the proposed reservoir due to the damming of flows above the median. The study also found that because flows below the median flow are bypassed, there is no change in streamflow's 50% of the time. The hydrological impacts of the proposed reservoir decrease relatively quickly downstream of the reservoir.

The WWLA report also concludes that the proposed reservoir may cause a small, localised increase in groundwater levels due to reservoir seepage, which is beneficial because of increased stream flows.

7.3.2 Terrestrial Ecology

7.3.2.1 Vegetation Effects

Constructing the reservoir will involve removing vegetation within its footprint. The ecological assessment quantified the total area of vegetation to be removed as approximately 3.56 ha, with an additional 0.82 ha of pine forest, 0.86 ha of pampas-dominated wetland, and 1.44 ha of wet pasture. Specifically:

- 0.62 ha of mamaku treeland.
- 0.82 ha of exotic pine forestry, including 3 standalone trees on the farm.
- 0.59 ha of Mānuka, gumland, Machaerina scrub sedgeland.
- 0.62 ha of Machaerina– dominated wetland.
- 0.14 ha of kutakuta-Isolepis-dominated wetland.
- 0.17 ha of raupō reedland.
- 1.42 ha of Isolepis – dominated pasture wetland.
- 0.86 ha of pampas-dominated wetland removal.
- Rank grass and pasture removal, including 1.44 ha of exotic dominated wet pasture grass.

Without mitigation, the ecology assessment found that the removal of the vegetation will result in a loss of habitat for indigenous fauna, increased landscape fragmentation, the loss of natural wetland habitats. However, they consider that the overall level of adverse ecological effects can be offset and compensated as per the recommendations set out in their report. They state that the implementing the mitigation, offset and compensation measures will ensure 'No Net Loss' of vegetation values (refer **Appendix F**).

It is proposed that an Offset and Compensation Plan (to address both freshwater and terrestrial residual effects) be required as a condition of resource consent.

7.3.2.2 Fauna Effects

Without mitigation, the ecological assessment found that the removal of vegetation can result in the injury or mortality of birds, bats and lizards. It recommended that the following fauna management plans be developed and implemented to prior to reservoir construction:

- Freshwater Fauna Salvage and Relocation Plan
- Bat Management Plan
- Avifuana Management Plan
- Lizard Management Plan

It is proposed that the management plans be required as a condition of resource consent.

7.3.3 Summary

The ecological assessment concludes:

> *If the ... management recommendations are implemented in full, and subject to further site visits to confirm potential offset and compensation areas, it is considered that effects to terrestrial and wetland ecosystems can be mitigated, offset and compensated for sufficiently, primarily through wetland planting and enhancement, and fauna management plans. Similarly, effects on freshwater ecosystems and fauna can be mitigated through implementation of management plans and residual adverse effects addressed through offset or compensation measures on similar habitats in the wider catchment.*

The following table, reproduced from tables 10 and 11, of the report summarises the magnitude of effects (before and after) on ecological values and overall level of effect associated with each activity.

Table 21. Summary of level of effects (before and after mitigation) on ecological values associated with each activity.

Activity	Level of effect (prior to management measures)	Overall level of effect (if management measures implemented in full)	Comment
Aquatic ecology			
Sedimentation effects from construction activities	High	Low	Earthworks will be undertaken during the earthworks season and be done in accordance with an ESCP.
Injury or mortality to aquatic fauna	High	Low	A Freshwater Fish Salvage and Relocation Plan will be prepared and implemented.
Impediments to fish passage	High	Low	Fish passage for eels will be provided.
Permanent modification and loss of stream habitat	Very High	High (can be offset)	An Offset and Compensation Plan will be prepared and implemented.
Impacts on water quality and habitat downstream of the proposed dam	Potentially High	Unknown	The proposed reservoir will be constructed with an outlet towards the base and will be operated in accordance with an ORMP.
Terrestrial ecology			
Removal of threatened trees and vegetation	Low to Very High	Low to Very High (can be offset)	An Offset and Compensation Plan will be prepared and implemented.
Long-tailed bat	Very High	Low	The Bat Management Plan will include vegetation removal protocols (including seasonal clearance constraints) which will avoid impacts to potentially

Activity	Level of effect (prior to management measures)	Overall level of effect (if management measures implemented in full)	Comment
			roosting bats. The results of acoustic monitoring will also guide appropriate measures to address the loss of potential roost, foraging and commuting habitat if required.
Tūī	Moderate	Low	Offset and compensation will provide additional habitat. An Avifauna Management Plan will involve seasonal clearance constraints and bird nest checks, further reducing the magnitude of effect.
Other Not Threatened avifauna	Low	Very low	
Wetland birds	Very High	Low	
New Zealand pipit	Low	Low	Seasonal clearance constraints and bird nest checks as outlined in the Avifauna Management Plan.
Herpetofauna	Very High	Low	A Lizard Management Plan will include seasonal vegetation clearance and salvaging protocols. Salvaging protocols will include construction-assisted habitat searches and gecko spotlighting.

7.3.4 Ecological Benefits

There are environmental benefits to developing a water storage scheme given an increased focus on environmental enhancement opportunities such as riparian planting and development and enhancement of wetlands post construction to be implemented by way of an Ecological Offsetting and Compensation Plan.

It is expected that the proposed reservoir will provide same and similar functions to the degraded wetlands within the reservoir footprint, including buffering storm flows, reducing water temperature, and providing habitat for eels. Revegetated surrounding margins and adjoining gullies will provide habitat to indigenous fauna and flora.

The conversation of land used for pastoral farming to horticulture is likely to result in a reduction of sediment and faecal pathogen losses to water. The availability and reliability of water supply is needed to support such land use change.

7.4 Effects on Natural and Physical Resources Having Other Special Values

Clause 7(1)(d) of Schedule 4 of the RMA requires an assessment of environmental effects to address any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations.

7.4.1 Recreational Values

There are no known recreational values associated with the unnamed tributaries of the Aratapu Creek within and downstream of the proposed reservoir. See **Section 4.4.1.3** of this application.

7.4.2 Historical Values

Geometria Ltd undertook a detailed archaeological assessment of the site of the proposed Aratapu Water Storage Reservoir. The archaeological assessment includes an overview of the historic background of the location of the proposed reservoir and the broader area within which it is to be located. The report identified an archaeological site at the site, which consists for a series of terraces and pits, located above the inundation level on the western slopes overlooking the footprint of the proposed reservoir. They point out that because the

location of the terraces and pits is part of the former Te Koperu Kauri Gum Reserve Blocks, and an early 19th century hum diggers camp was located further north, they may be gum workings.

The archaeological report stated that because the location of the archaeological site is outside the footprint of the proposed reservoir there is no immediate threat to the site. They recommend that earthworks are not undertaken in the immediate area around the archaeological site. No other archaeological sites were identified during the survey.

The study concluded that:

> *The proposed new reservoir itself will not affect any known archaeological or historic heritage sites or features. However one new pit and terrace complex site was recorded immediately adjacent to the western side of the project area. …*
>
> *Given the scale of the project it is possible that subsurface archaeological sites or features may be affected in the course of earthworks. For that reason, a precautionary approach is recommended, including applying for an archaeological authority from Heritage New Zealand Pouhere Taonga under the Heritage New Zealand Pouhere Taonga Act 2014, and preparation of an appropriate archaeological site instruction to monitor higher risk areas and provide protocols for managing effects on other areas.*

7.4.3 Cultural and Spiritual Values

A cultural impact assessment is being prepared but was not finalised at the lodgement date of this application. It is understood that the impact assessment will be available for the consent authority to consider prior to it deciding whether to grant resource consents.

7.5 Discharge of Contaminants and Emission of Noise

7.5.1 Construction Noise, Dust, and Traffic Effects

During construction, there will be potential for noise, dust nuisance, and traffic effects associated with the works.

It is noted that rule 12.10.15 of the KDP provides for construction noise as a permitted activity, provided the noise does not exceed the limits recommended in, and measured and assessed in accordance, with the New Zealand Standard NZ6803:1999: “Acoustics – Construction Noise. The limits specified in this Standard will be complied with during all construction activities on the site, noting that the nearest dwelling on any other site is located approximately 400 m from the embankment of the proposed reservoir.

Given the scale of the proposal, the construction period required for site preparation, construction work (including earthworks), and disestablishment, is expected to take at least one full construction season (up to 8 months) or potentially more depending on weather conditions. This does not include the implementation and completion of the replanting and ecological offsetting programme and full reservoir commissioning.

Traffic generated during the construction phase will involve transportation of heavy vehicles onto the site during the phase of site establishment, contractor vehicles entering and exiting the site on a daily basis during construction works, and transportation of heavy vehicles off the site on completion of works. Once commissioned, there is expected to be very little traffic generation (<2 vehicles per day) associated with the on-going operation of the reservoir. It is noted that the KDP rules exclude traffic movements associated with construction activities.

However, to provide some certainty regarding the extent of these effects and to mitigate any potential adverse effects that may arise, the applicant intends to prepare and implement a CMP (refer **Section 3.4**).

7.5.2 Construction Stormwater Effects

When sediment enters water, it can have a number of adverse effects on streams. For example, sediment can:

- Transport nutrients, particularly phosphorus.
- Smother aquatic organisms, habitats and food sources.
- Cause discoloration of the water, detracting from its aesthetic qualities.
- Reduce light penetration and damage habitat value for fish and plant life.
- Clog filters and machinery if the water is used for water supplies and lead to an unacceptable drinking quality.
- Reduce the water carrying capacity of streams, increasing their susceptibility to flooding.

An ESCMP will be prepared, as part of the CMP, by the contractor and implemented by them during construction. The ESCMP will be prepared in accordance with best practice and will include a range of industry best practice controls (refer **Section 3.4**). These may include silt fences, decanting earth bunds, cleanwater diversion bunds (cut-offs) and immediate re-grassing of the site on completion. Erosion and sediment controls will be in place until the site has been re-vegetated/ stabilised.

Using industry best practice controls will ensure the effects of earthworks, reservoir grades and embankment formation are no more than minor.

7.5.3 Operational Stormwater Management

Stormwater entering the reservoir could, if not appropriately managed, cause erosion of key parts of the infrastructure and impact on its integrity over time.

An ORMP will be prepared to support operation of the reservoir as set out in **Section 3.5** in accordance with its design standards. The ORMP will provide methods, procedures, inspection details and reporting forms for all operational aspects of the Aratapu Reservoir system. The ORMP will be provided to NRC and KDC for certification and will be reviewed in accordance with industry best practice. An annual report on the monitoring and functioning of the reservoir will be provided annually to Council.

No more than minor effects are expected when operating the Aratapu Reservoir in accordance with the ORMP.

7.6 Risks to People and Property through Natural Hazards

RILEY has completed a Potential Impact Classification (PIC) assessment in accordance with the New Zealand Dam Safety Guidelines ((New Zealand Society on Large Dams (NZSOLD), 2015). RILEY's report is attached at **Appendix E**. A PIC assessment considers the consequences of an uncontrolled release of a reservoir's contents as a result of a dam breach. It is important to note that, as RILEY states, PIC assessments are independent of the, which, for a suitably designed, constructed and operated dam, should be very low.

RILEY determined dam breach characteristics and undertook hydraulic modelling to determine a 'medium' PIC for the proposed Aratapu Water Storage Reservoir, given that the likely damage level is moderate, the population at risk is conservatively assessed in the range of 11 to 100, and there is low likelihood of loss of life.

The detailed dam design has yet to be completed but will be required to support an application for a building consent to authorise the construction of the reservoir under the Building Act 2004.

7.7 Assessment Summary

Constructing and operating the proposed Aratapu Reservoir will result in significant social and economic benefits through the provision of sufficient and reliable volumes of water to enable conversion of pastoral land uses to horticulture and, in combination with other soon to be proposed reservoirs in the Kaipara Scheme, water to augment municipal water supplies.

The proposed reservoir is expected to have no more than minor adverse effects on landscape and amenity values if landscape and ecological mitigation measures are completed as proposed, and that the temporary effects will also be no more than minor. Similarly, it is considered that adverse effects associated with

discharges, risks to people and property, and damage or destruction of historic heritage values will be no more than minor if the reservoir is constructed and operated in accordance with the recommendations in this application, and detailed in the relevant attached reports.

The construction of the reservoir will result in the permanent loss of the modified watercourses within the reservoir footprint and the loss of natural wetlands also in the footprint. There is also potential for adverse effects on aquatic and terrestrial fauna. However, the applicant has identified and proposed mitigation, offsetting, and compensation measures that are intended to minimise the overall loss of flora and fauna such that the adverse effects will be no more than minor.

In summary, it is considered that the proposal will generate an acceptable level of adverse environmental effects in the receiving environment, while generating a significant level of positive effects.

8. Consultation

Te Tai Tokerau Water Trust engaged and consulted several groups and people regarding the project. This section provides an overview of what has been done to date.

8.1 Landowners and Occupiers of the Project Site

Employees of Te Tai Tokerau Water Trust went to each property to meet with landowners individually. Trustees, Mr McCully and Matua Samuels, along with two other Trust employees, met with landowners at Mr and Mrs Smith's property and this meeting included Mr Doherty and Mr Hadland who videoed in.

In between these two meetings, regular dialogue was had with landowners about accessing the site for technical investigations.

A site blessing was undertaken by tangata whenua on 6th August 2020 and attended by the landowners, the trustees of Te Tai Tokerau Water Trust (see **Figure 7**)

Figure 7. Photo of people attending the site blessing on 6 August 2020.

8.2 Local Authorities

The local authorities with responsibilities in this Project area are NRC and KDC.

8.2.1 Northland Regional Council

NRC was the responsible for delivering the outputs required under the funding agreement with Ministry of Business, Innovation, and Employment (MBIE) for the prefeasibility phase of the NWSUP. Chief Executive Officer, Mr Malcolm Nicholson, was the Chair of the NWSUP prefeasibility phase Project Steering Group.

While NRC are no longer the responsible entity for the delivery of the NWSUP Feasibility outcomes, NRC staff continue to be consulted with by the Project team including:

- Meetings and phone calls with the Consents Manager, Stuart Savill, on a regular basis to discuss consenting approach. The most recent meeting with Mr Savill was held 20th August 2020.
- Technical peer review of WWLA Hydrology Studies by independent experts (Tonkin & Taylor Ltd) commissioned by NRC.
- As a member of the Project Advisory Group.

8.2.2 Kaipara District Council

KDC Chief Executive Officer, Ms Louise Miller, was a member of the NWSUP prefeasibility phase Project Steering Group.

KDC had a member of staff, Mr Mark Schreurs, on the Project Management Group, with other KDC staff attending Project Management Group meetings on an as required basis, as documented in meeting minutes (copies of meeting minutes can be provided upon request).

During the prefeasibility phase, KDC was consulted by the Project Team, including:

- A site visit on 22nd January 2020 to potential storage sites in the Kaipara with KDC Planning and Design Engineer Mr Matthew Smith, and KDC General Manager Infrastructure Mr Jim Sephton;
- Email discussions (February 2020) on potential network distribution options for municipal supply to Dargaville with Mr Smith, Mr Donnick Mugusto, and Mr Sephton;

While the delivery of the NWSUP feasibility phase no longer sits under the structure of the Project Steering Group or Project Management Group, KDC continue to be consulted with by the Project team, including:

- A video meeting with Ms Wendy Robinson and Mr Ueli Sasagi from the Resource Consents department held on 26th August 2020 to discuss the consenting approach and rule interpretation.
- During monthly meetings of Trust technical staff with KDC Operations staff.

Te Tai Tokerau Water Trust has also engaged with KDC, including as a potential customer/shareholder of the NWSUP. Trustees and senior executives of KDC are in regular communication on the potential of the NWSUP to resilience within KDC service provision to their community.

8.3 Iwi and hapū

Engagement on the NWSUP with iwi and hapū began around June and July 2019 and included invitations to participate in the project with opportunities for iwi and hapū involvement on both the project management and advisory groups. Specifically, the following persons were invited:

- Mr Jonathan Rishworth, Chief Executive Officer of Te Uri o Hau Settlement Trust
- Mr Snow Taoho Tane, General Manger of Te Roroa Whatu Ora Trust
- Mr Ric Parore of Te Kuihi hapū;
- Mr Alan Riwaka, Manahautu/Chief Executive Officer of Te Runanga o Ngāti Whātua.

Their attendance, or their representatives' attendance, and participation in Project Advisory Group meetings is recorded in the minutes of the meetings (copies can be supplied upon request).

As the NWSUP transitioned the proposed Aratapu Water Storage Reservoir to the feasibility phase, hui were held with Mr Rishworth, Mr Tane, and Mr Parore on 17th June at the offices of Te Uri o Hau in Whangarei and 22nd June 2020 at the Kauri Coast Office of the Department of Conservation and were attended by Project delivery team members, the NWSUP Project Manager, and Matua Samuels as a Trustee and former PSG member.

It was agreed at the hui held on 22nd June 2020 that Environs Holdings Limited would prepare the Cultural Effects Assessment on behalf of Te Roroa, Te Kuihi, and Te Uri o Hau. Environs Holdings Limited is the environmental subsidiary of Te Uri o Hau Settlement Trust.

8.3.1 Iwi Authorities

The relevant Iwi Authorities to the Project extents are;

- Te Roroa Whatu Ora Trust which represents Te Roroa as an Iwi Authority for the purposes of the RMA;
- Te Runanga o Ngāti Whātua which represents Ngāti Whātua as an Iwi Authority for the purposes of the RMA;
- Te Uri o Hau Settlement Trust which represents Te Uri o Hau as an Iwi Authority for the purposes of the RMA.

8.4 Department of Conservation

The Department of Conservation has a statutory advocacy role with regard to the conservation of natural and historic resources under the Conservation Act 1987 and also administer the Reserves Act 1977. Given the ecological values present at the site, DoC may be considered affected.

DoC nominated Mr Steven Soole to the Project Advisory Group during the NWSUP prefeasibility phase to advise on matters concerning DoC and to communicate the plans being scoped as part of the prefeasibility work back to relevant people at DoC.

Mr Soole's attendance and participation at the Project Advisory Group meetings has been recorded through meeting minutes. Copies of these minutes can be provided upon request.

Mr Andrew Kirk, DoC Site Lead Wairua Northland, was contacted by the Project's Lead Ecologist (Dr Martin Neale, Puhoi Stour Ltd) on 23 July 2020 to brief him on the details of the ecological survey methods and offset compensation package approach being derived in response to the indigenous biodiversity values identified onsite.

8.5 Northland Fish and Game Council

Mr Rudi Hoetjes, Manager of the Northland Fish and Game Council, was invited to participate as a member of the Project Advisory Group in a letter dated 8th July 2019. Mr Hoetjes nominated Daryl Reardon to the Group. Mr Reardon's attendance and participation within the Project Advisory Group is recorded in the minutes (copies of which can be provided upon request). From the minutes reviewed, Mr Reardon did not raise any concerns or issues with the NWSUP as a Group member. Mr Reardon remains an active member of the Project Advisory Group.

8.6 Maori Landowners

One of the key investment principles of the PGF for the NWSUP prefeasibility phase was that water storage helps to address disparities in Māori access to water for land development.

Analysis of the command area of the long-list of potential storage sites indicated that there was only one significant block of Māori Freehold Land in the Kaipara area of interest, the block being Oturei M10C Block which is approximately 300 hectares in area. There are smaller blocks of Maori Freehold Land near to Oturei marae that may also benefit from the NWSUP, and it was determined that Mr Te Tuhi and communications through the marae would be better suited for engaging with the landowners.

Members of the Project delivery team and the Project Manager met with Mr Denis Te Tuhi on 22nd January 2020 at Ōtūrei to discuss the opportunities of the NWSUP with him as both a landowner in the command area and as a representative of the whanau of Ōtūrei.

8.7 Integrated Kaipara Harbour Management Group

Mr Willie Wright of the Integrated Kaipara Harbour Management Group was invited to participate as a member of the Project Advisory Group in a letter dated 9th August 2019. Mr Wright's attendance and participation on the Group is recorded in the minutes (copies of which can be provided upon request).

8.8 Kaipara Drainage Districts

The proposed reservoir sits within the southern headwaters of the Aratapu Swamp Drainage scheme, which is managed by Kaipara District Council in conjunction with local stakeholders.

The applicant has had regular conversations about the project with Mr Matthew Smith from KDC. It is understood that individual stakeholders to the Drainage Scheme have been briefed on the proposal (i.e., landowners and/or drainage committee members).

8.9 Downstream Landowners and Occupiers

To date, no consultation has been undertaken with downstream landowners and occupiers. A potential impact classification (PIC) has been included in the preliminary dam design work. The PIC assessment classifies the proposed reservoir as Medium PIC due to potential damages to roading, property, and buildings.

It is important to note that a PIC assessment is independent of the risk of dam failure. The proposed reservoir will be designed, constructed, and operated in accordance with best practice guidelines (NZSOLD)[21] and the probability of dam failure will be extremely low. For example, NZSOLD specifies that the flood hazard performance criteria for Medium PIC dam is a 1 in 1,000 AEP to 1 in 10,000 AEP inflow design flood.

A building consent for the dam is required under the Building Act 2004.

8.10 Lawfully Established Water Takes

There is only one currently consented surface water take downstream of the proposed reservoir (Water Permit AUT.007743.01.04). The purpose of this consent is "to take water for pasture irrigation". The consent allows for a maximum daily allocation limit of 3.99 L/s, and a maximum annual take of 69,000 m^3/year.

The reservoir embankment will dam water above the median flow (> 34.5 L/s), thus there will be at least 30.5 L/s more than the consented take rate passing downstream of the reservoir during periods of high flow harvesting. In addition, the consented irrigation take is not likely to be operational during times of high flow taking (i.e. wet periods).

The reservoir embankment will also dam the core allocation that is available during winter months, i.e., outside the irrigation season. It is considered that the activity will not adversely affect downstream authorised takes.

[21] New Zealand Dam Safety Guidelines (NZSOLD). ISBN: 978-0-908960-65-1

9. Proposed Monitoring

Clause 6(1)(g) of Schedule 4 of the RMA requires a description of how and by whom the activity's effects will be monitored if the scale and significance of the activity's effects are such that monitoring is required.

Table 22 summarises the proposed monitoring, which are the subject of proposed consent conditions.

Table 22. Proposed monitoring

Monitoring	Responsibility
Installation erosion and sediment control measures	The applicant or its agent
Inspection of erosion and sediment control measures	NRC and/or FNDC's compliance monitoring manager
Construction water quality monitoring	The applicant or its agent
Long-term water quality monitoring	The applicant or its agent
Water quantity monitoring (reservoir levels, continuation flows, and water takes)	The applicant or its agent
Dam inspections (as per NZSOLD)	The applicant or its agent
Monitoring of the implementation of flora and fauna management plans and the Offset and Compensation Plan	The applicant or its agent
Post-dam construction eel monitoring	The applicant or its agent

10. Conclusion

There is a demonstrated need for water storage infrastructure in the Kaipara to unlock sustainable long-term productive outcomes and jobs thereby stimulating the economy. The proposed Aratapu Water Storage Reservoir will improve social outcomes for the people in the Kaipara community by creating jobs and generating secondary economic stimulus and social wellbeing.

Developing water storage capacity will minimise effects on surface water bodies and create enduring infrastructure to stimulate primary industry development in the region whilst providing for the foreseeable future needs of the community in accordance with Te Mana o Te Wai.

The applicant is seeking various resource consents from NRC and KDC to authorise the construction and operation of the Aratapu Water Storage Reservoir. The activities for which resource consents are sought range in classification from restricted discretionary to non-complying and as such. Consistent with a 'bundling' approach the overall activity status of the proposal is non-complying.

Subject to the proposed conditions (refer **Appendix J**), the actual and potential effects on the environment are considered to be no more than minor, with most adverse effects able to be avoided, remedied, or mitigated. Furthermore, the proposal is not contrary to relevant objectives and policies in the PRP and RWSP.

It is considered that the consent authority should grant resource consents to authorise the construction and operation of the Aratapu Water Storage Reservoir in accordance with section 104D of the RMA.

Appendix A. Application Forms

See attached

Appendix B. Records of Title

See attached

Appendix C. Hydrology Assessment Report

See attached

Appendix D. Geotechnical Concept Assessment Report

See attached

Appendix E. Hydrology and Hydraulics Assessment Report

See attached

Appendix F. Ecological Assessment Report

See attached

Appendix G. Landscape and Visual Amenity Assessment Report

See attached

Appendix H. Archaeological Assessment Report

See attached

Appendix I. Ground Contamination Review

See attached

Appendix J. Proposed Conditions of Consent

See attached