Nga Wai o Waiapu

Waiapu Catchment Plan Background Document

Image Credit: Eruera Walker

NOVEMBER 2022

The Waiapu Catchment Plan is a tool to support the management of freshwater and land uses within the Waiapu River catchment. This document outlines the background and key technical information to support the development of the Waiapu Catchment Plan. The document provides a starting point for shared understanding of the Waiapu catchment and a context to discussions on the setting of future freshwater objectives and associated limits.

CONTENTS

Image Credit: Te Runanganui o Ngati Porou

TE WAIU – TE WAI MAORI MO NGATI POROU

Mauriora kia Ranginui
Ko Io Matua Kore anake
Tawhirimatea e muia nei i tona koka i te waiora,
Mauriora kia Papatuanuku
Ko Ngati Porou tangata, Ko Ngati Porou whenua, tona taiao, tona turangawaewae, tona papatipu.
I te hitanga ake o Maui Tikitiki a Taranga i te whenua nei
Whakaeteteete mai Ko Hikurangi
Ka tau tona waka a Nukutaimemeha ki te roto o Hinetakawhiti kei nga tihi tapu o Hikurangi, ara,Te Tone o Houku me te Tipi o Taikehu, e rangona nei te whakatauaki,

"Ko Hikurangi te maunga, Ko Waiapu te awa, Ko Ngati Porou te iwi"

Ko te waiutanga mai i Potikirua ki te Toka a Taiau, atu i te Raukumara ki te uru, whakawhiti ki te hikumutu ki te rawhiti
Ko te tuanui o tona kainga Ko Ranginui, a Ko Papatuanuku tona papa
Ko te wai te toto o Papatuanuku i roto i tona tapu me tona noa.

He wai mou!, He wai mau! Hei whakaora i te ngakau o Porou.

Nga Hapu o Ngati Porou establish their authority, rights and interests in the Wai through descent from Ranginui, Papatuanuku and Tawhirimatea and their uninterrupted occupation of the Eastern seaboard lands between Potikirua and Te Toka a Taiau since Maui fished up his great fish- Te Ika a Maui. The Wai is the life blood of the land with its ritual and sacred elements and its functional, daily elements. Our relationship and association with the Wai is recorded in our waiata, whakatauaki, the names of our children, rivers, streams, creeks and puna and in our everyday practice.

Image Credit: Eruera Walker

HAI TIMATA INTRODUCTION

Ko Hikurangi te Maunga
Ko Waiapu te Awa
Ko Ngati Porou te Iwi

The Waiapu River is of great spiritual and cultural significance to Ngati Porou. Ngati Porou have maintained ahi kaa rights mai i Potikirua ki te Toka a Taiau since Maui established mana whenua rights which have transferred down through the generations to the descendants of today. The tribal boundaries for Ngati Porou determine the geographic and cultural context within which Ngati Porou land operates.

The Waiapu is the source of many sacred waiata and whakatauki to Ngati Porou. The Waiapu is at the foundation of Ngati Porou culture and identity and is referenced whenever reciting the tribal Pepeha.

The traditional, historical, cultural and spiritual association to the Waiapu River is summarized by the following statement from the Ngati Porou Deed of Settlement:

"Ngati Porou tradition relates that there has been an undisturbed relationship with the Waiapu River since the time of Maui. Ngati Porou hapu continue to occupy the lands within the Waiapu Valley, Te Riu o Waiapu, and exercise kaitiekitanga for the river and its tributaries. The numerous hapu traditionally associated with the lands alongside the Waiapu River have always been responsible for protecting the mauri of the river."[1]

For Ngati Porou, the last 180 years has seen significant degradation of the lands and waters in their rohe, particularly in the Waiapu Catchment. This has caused great mamae (pain) for Ngati Porou. The Crown has acknowledged that previous management of the Waiapu Catchment has failed to manage the result of extensive erosion within the Waiapu Catchment:

"The Crown acknowledges that deforestation in the late nineteenth and early twentieth centuries fuelled significant acceleration of erosion and flooding that has had a devastating impact on Ngati Porou rohe wide. It also acknowledges that the measures it adopted to address this problem failed effectively to resolve it."[2]

NGATI POROU CO-DESIGN

To recognise the enduring relationship of Ngati Porou to wai and particularly the Waiapu Catchment, Gisborne District Council and Te Runanganui o Ngati Porou (on behalf of nga hapu o Ngati Porou) entered into a Joint Management Agreement (JMA) in 2015. The JMA enables joint decision making on notified resource consents and planning documents. The JMA also provides for the co-development of the Waiapu Catchment Plan. Gisborne District Council and Te Runanganui o Ngati Porou are working together to draft the Waiapu Catchment Plan. This collaboration is key to ensuring Ngati Porou driven kaupapa are central to the process of understanding and managing freshwater in the catchment. Through mana-enhancing partnerships, the Waiapu catchment plan will enable the application of a diverse system of values and knowledge in the protection, management, and restoration of the Waiapu catchment.

The JMA follows key agreements that have been reached following the Ngati Porou Treaty Settlement to address the restoration of the Waiapu Catchment:

- **Waiapu Accord – Memorandum of Understanding:** Tripartite relationship with Te Runanganui o Ngati Porou, Gisborne District Council, and Ministry for Primary Industries which demonstrates a 100-year commitment to collaboratively work with landowners to address the health of the Waiapu River Catchment;
- **Waiapu Koka Huhua Restoration Project:** Partnership approach to achieving the desired outcome of:

  "Ko te mana ko te hauora o te whenua, ko te hauora o nga awa, ko te hauora o te iwi (Healthy land, healthy rivers, healthy people)"

1 Ngati Porou Deed of Settlement, 2010
2 Ngati Porou Claims Settlement Act, 2012, section 7 (clause 21)

TE MATAURANGA O NGATI POROU

Ngati Poroutanga (Ngati Porou world view) incorporates complex values that encapsulates matauranga (knowledge) that are truly unique to Ngati Porou. Te reo me ona tikanga o Ngati Porou conveys knowledge (matauranga), practice (mohiotanga) and enlightenment (maramatanga). The relationship between Ngati Porou and the taiao is embodied by te reo ake o Ngati Porou and conveys all expressions of mana.

Matauranga a whanau, matauranga a hapu and matauranga Ngati Porou has been developed over generations of continued occupation of lands adjacent to the many treasured waterways and taonga ecosystems within the Waiapu Catchment. The Waiapu Catchment Plan will incorporate Matauranga Ngati Porou and western science to ensure integrated management of freshwater from the mountains to the sea. Embedding Matauranga Ngati Porou throughout the Catchment Plan and subsequent environmental monitoring is essential to giving effect to Te Mana o te Wai and complying with the NPS-FM.

"Ko te mana ko te hauora o te whenua, ko te hauora o nga awa, ko te hauora o te iwi
(Healthy land, healthy rivers, healthy people)"[3]

3 Desired outcomes of Waiapu Koka Huhua Restoration Project

ROHENGA TIPUNA

There are 57 hapu within Ngati Porou (as per the Ngati Porou Deed of Settlement, 2010) and approximately 37 hapu, and 28 marae that fall within the Waiapu Catchment and/or the adjacent coastal catchments. Many Ngati Porou hapu collectivise into hapu clusters based on the Rohenga Tipuna illlustrated in Figure 1. The Waiapu Catchment Plan area falls across five of the seven Rohenga Tipuna:

- Rohenga Tipuna 2 - Whangaokena ki Waiapu
- Rohenga Tipuna 3 - Pohautea ki Te Onepoto
- Rohenga Tipuna 4 - Te Onepoto ki Rahuimanuka
- Rohenga Tipuna 5 - Rahuimanuka ki Mataahu
- Rohenga Tipuna 6 - Mataahu ki Kokoronui

To give effect to Te Mana o te Wai, Gisborne District Council and Te Runanganui o Ngati Porou are working with whanau and hapu to determine how to manage freshwater and land resources in a manner that is consistent with a Ngati Porou world view. This includes promoting whakapapa-based management of natural resources, therefore we are working with Ngati Porou to determine how we can align the Waiapu Catchment Plan to the Ngati Porou Rohenga Tipuna. This report groups the monitoring data and the physical qualities of the catchment within these Rohenga Tipuna.

Image Credit: GNS, D Townsend 2022

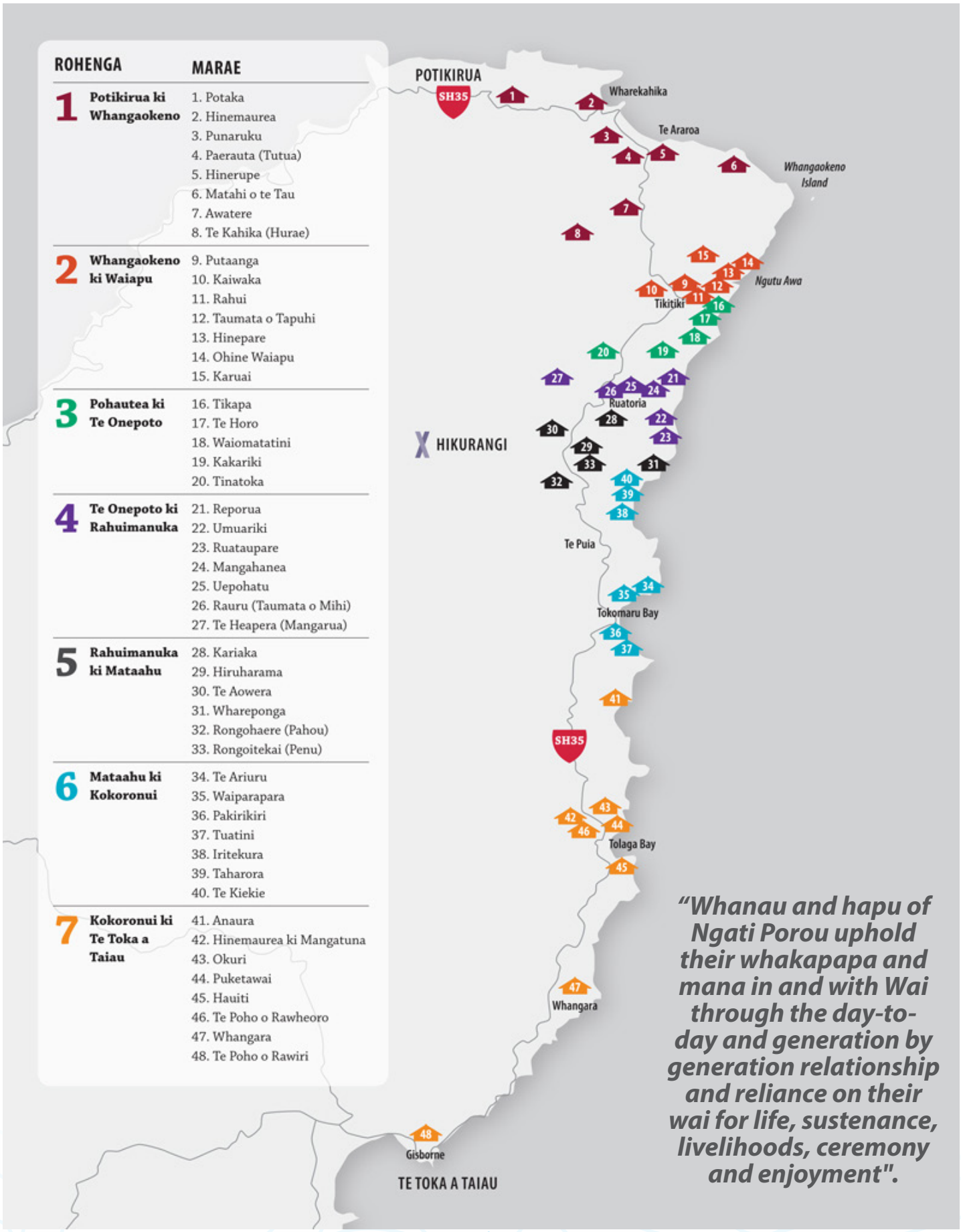


Figure 1: Ngati Porou Rohenga Tipuna (sourced and adapted from https://ngatiporou.com/nati-biz/about-te-runanganui-o-ngati-porou/rohenga-tipuna-0)

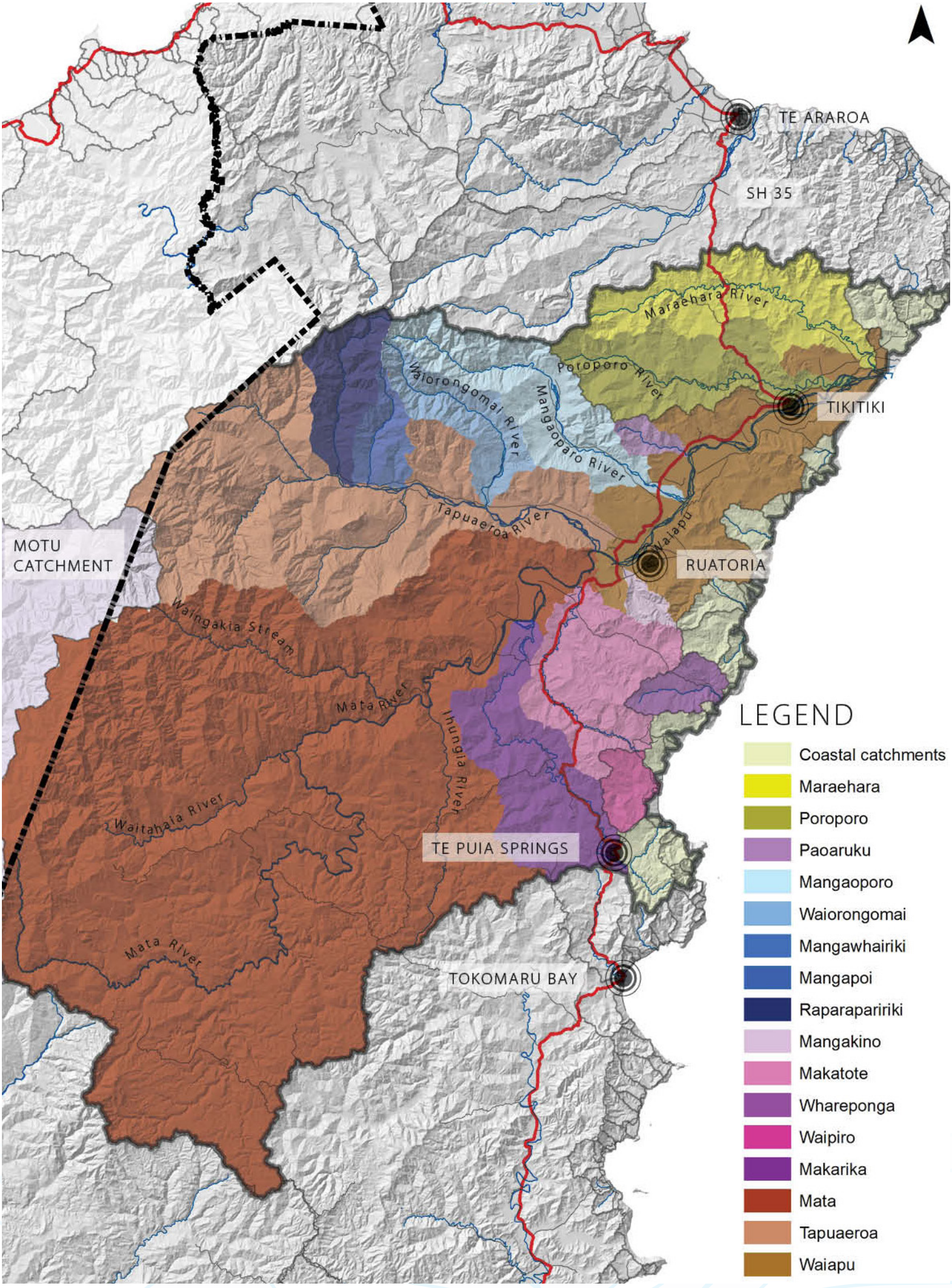


Figure 2: Waiapu Catchment Area

NGA WHAKARITENGA MO NGA WAI O WAIAPU

CATCHMENT PLANNING PROCESS

WHAT IS A CATCHMENT PLAN?

A catchment plan outlines the way in which any catchment is managed. In the case of the Waiapu Catchment Plan, it provides Gisborne District Council and Ngati Porou a vehicle to jointly articulate our vision and ideas about how to manage the resources within that area.

The catchment plan is being developed under the National Policy Statement for Freshwater Management (NPS-FM) and the Tairawhiti Resource Management Plan (TRMP). These documents set the high-level direction for Council to manage land and water resources. Some of the key terminology from the NPS-FM is attached as Appendix 3. In accordance with the NPS-FM, the Waiapu Catchment Plan must ensure that Te Mana o te Wai is at the heart of its drafting. This helps Gisborne District Council make better decisions about land and water use in the catchment in partnership with Ngati Porou.

WHERE DOES IT APPLY?

The Waiapu river catchment includes the area of land where water run-off eventually leads to the Waiapu. The Waiapu catchment is the largest river catchment within the Ngati Porou Iwi rohe and the second largest river catchment in the Gisborne-Tairawhiti Region. The Waiapu catchment comprises of many subcatchments of the major tributaries including Mata (also inclusive of the Waitahaia, Ihungia, Makarikia, Aorangiwai and Makatote), Tapuaeroa, Mangaoporo, Poroporo and Maraehara.

The coastal catchments adjacent to the Waiapu Catchment will also be included in the Waiapu Catchment Plan. This includes streams flowing directly to the sea from Whangaokena to Koutunui Head to align with the management arrangements in Nga Rohe Moana o Nga Hapu o Ngati Porou Act 2019. Further minor changes to the boundary of the catchment may also occur as the plan progresses.

TE MANA O TE WAI

Te Mana o te Wai is the fundamental concept of the NPS-FM. Te Mana o te Wai refers to the vital importance of water. Te Mana o te Wai recognizes that protecting the health of freshwater protects the health and well-being of the wider environment – including people. Te Mana o te Wai must protect the mauri of the wai. All freshwater management must give effect to Te Mana o te Wai, including the Waiapu Catchment Plan.

Te Mana o te Wai sets out the hierarchy of obligations to ensure that freshwater is managed in a way that prioritises (in this order):

1. **the health and well-being of water.**
2. **the health needs of people and**
3. **the ability of people and communities to provide for their social, economic and cultural well being.**

All freshwater management must give effect to Te Mana o te Wai. Ngati Porou understandings of mana – enshrined within our matauranga Ngati Porou, will inform how Te Mana o Te Wai be given effect to within the Waiapu Catchment.

"Waimaori and whenua are intrinsically part of Ngati Porou identity, belonging and ways of living, knowing and being. Ngati Porou understandings of mana – enshrined within matauranga o Ngati Porou – will inform how Te Mana o Te Wai will be given effect to within the Waiapu Catchment."[4]

4 Pohatu, P. and Walker, K. (2021). Waiapu Koka Huhua Hapu Leading Te Mana o Te Wai. A mana whenua case study prepared for Poipoia Ltd. July 2021

WHAT IS REQUIRED?

Through partnership with Ngati Porou, the Waiapu Catchment Plan will implement the NPS-FM by:

- Giving effect to Te Mana o te Wai;
- Identify values and set freshwater objectives according to the National Objectives Framework (NOF);
- Meet community and Ngati Porou values and aspirations;
- Set the limits for use, water quality and water quantity and land management that achieve, protect and/or enhance the values identified in the catchment;
- Enable a holistic approach to land and water management, and a variety of regulatory and non-regulatory methods.

Further information on the NPS-FM requirements (including the NOF) is provided in Appendix 3. Council and Ngati Porou will work together to develop a catchment plan that aligns with the Ngati Porou worldview while also incorporating the views and aspirations of the wider community as well.

There is also a wider national context that will need to be considered as the plan develops. In September 2020, the Resource Management (National Environmental Standards for Freshwater) Regulations and the Resource Management (Stock Exclusion) Regulations were introduced. There are also National Environmental Standards for Plantation Forestry which were introduced in 2017. The new regulations cover a range of activities that may relate to the Waiapu catchment including standards for dairy farming, intensive winter grazing, stock exclusion, natural wetlands, culverts and how and where forestry can be planted and harvested. The impacts of these new regulations and standards will be considered as we move through the process. We will ensure that we have hui with our landowners so we can discuss what this will look and feel like.

ENGAGEMENT

The Waiapu Catchment Plan provides a way to recognize tangata whenua and community values and the vision they have for the catchment. GDC and TRONPnui will use a range of ways to seek community views during the development of the catchment plan. Community engagements will be publicly advertised.

To give effect to the NPS-FM, council must actively involve tangata whenua in freshwater management. In addition to the NPS-FM, Ngati Porou must be involved in the co-development of the Waiapu Catchment plan in order to give effect to the Ngati Porou JMA. GDC and TRONPnui have a dedicated working group to develop the Waiapu Catchment Plan. This group is informed by a hapu technical group consisting of representatives of the Rohenga Tipuna within the Waiapu Catchment. The hapu technical group will guide Gisborne District Council and Te Runanganui o Ngati Porou on how to engage with whanau and hapu within the Waiapu Catchment. This will include additional wananga run by Ngati Porou.

Stakeholder engagement is also essential in the development of the Waiapu Catchment Plan. A stakeholder questionnaire has been developed to understand stakeholder thoughts on freshwater issues in the first instance. Sector specific meetings will also be advertised as the plan progresses.

Our aim is to have prepared a draft catchment plan by the end of 2023. The formal process of submissions and hearings is expected to be undertaken over 2024. By law, the Council must have completed its catchment planning work for the whole region by the end of 2024.

CATCHMENT DESCRIPTION

The Waiapu Catchment has an area of 1734 km2, making it the largest river catchment in the Ngati Porou Rohe and the second largest in the Tairawhiti Region. Originating in the Raukumara Ranges including nga maunga tapu o Hikurangi, Aorangi, Wharekia, Taitai, Wharekia, and Whanakao, the Waiapu River begins at the confluence of the Mata and Tapuaeroa Rivers, just above the Rotokautuku Bridge at Ruatorea. The river spans 26 kilometres through a system of river flats and flows to the coast at the Ngutu Awa (river mouth).

The Mata River is the largest tributary of the Waiapu and therefore the majority of the Waiapu Catchment is upstream of the Waiapu River in the Mata subcatchment. The Mata River catchment also consists of the following tributaries:

- Waitahaia River;
- Waingakia Stream;
- Ihungia River;
- Makarika Stream;
- Aorangiwai Stream; and
- Makatote Stream.

The main tributaries that flow into the mainstem of the Waiapu River include:

- Mangaoporo River;
- Poroporo River; and
- Maraehara River.

Due to the combination of geology, climate and land use, erosion within the Waiapu Catchment is significant on a global scale (MPI, 2012). The significant erosion of land within the catchment has resulted in an extreme sediment yield within the Waiapu River and tributaries (Harmsworth et al., 2002; MPI, 2012). The average suspended sediment yield of the Waiapu River has been estimated to be 36 million tonnes (Mt) per annum, which is one of the highest sediment yields in the world (Walling & Webb, 1996; Harmsworth & Warmenhoven, 2002).

The land within the Waiapu catchment is predominantly steep to rolling hill country with highly fertile and productive river flats adjacent to the main rivers.

The different vegetation types and landcover are shown in Appendix 2. These geographical factors have dictated land use options available to those within the catchment, particularly Ngati Porou. The main land uses in the catchment of the mainstem Waiapu River are pastoral farming, pine forestry and indigenous vegetation.

The rugged landscape reflects the independent nature and character of Ngati Porou – "He iwi moke, he iwi whanoke".

43% of the land within the Waiapu Catchment is classified as highly erodible (MPI, 2012). Extensive channel widening and bank erosion have affected a large portion of the catchment which has caused large scale inundation of land and the undermining of adjacent hillsides (Harmsworth et al., 2002). The Tapuaeroa sub-catchment, has a disproportionate presence of landslides, gullies and debris flow gully complexes (Tunnicliffe, 2019) which has resulted in significant riverbed aggradation in the main Tapuaeroa River and in many tributaries, including the Raparapaririki and Wairongomai Streams.

Sources of discharges in the catchment include septic tanks from the Ruatorea township, contaminant discharges from roads, pastoral farming, intensive stock grazing and cropping, sediment discharges from erosion, forestry and gravel abstraction, and point source discharges from the Waiapu landfill, and former Tikitiki and Ruatorea landfills.

There are a number of farms in this sub catchment. Drinking water for stock is commonly provided by direct access to streams.

There is currently one Regionally Significant Wetland within the catchment – the Mahora wetland. It drains to the Mangareia Stream, into the Kopuaroa Stream and from there into the Waiapu downstream of Ruatorea.

NGA NEKEHANGA O TE WAI HYDROLOGY

RAINFALL

The Council monitors rainfall through rain guages at eleven sites in the Waiapu Catchment Plan area. These are:

- **Whangaokena ki Waiapu** - Poroporo Fire
- **Pohautea ki Te Onepoto** - No sites
- **Te Onepoto ki Rahuimanuka** – Raparapaririki, Pakihiroa Telemetry Station, Raukumara Station, Ruatorea Telemetry Station at Barry Ave
- **Rahuimanuka ki Mataahu** – Owhena DRF, Puketoro Telemetry Station
- **Mataahu ki Kokoronu**i - Arowhana Repeater, Tauwhare Station, Tutamoe Station, Puketawa Station, Fernside Station, Te Puia DRF

The average rainfall across the area varies very widely – the rain gauge at the Raparapaririki site has the highest rainfall in the area at approximately 3.9 metres per year, and the other sites in the Raukumara Range and foothills also have very high rainfall with the more southern sites and those closer to the coast having much lower rainfall of an average of 1.6 to 1.9m per year.

RIVER WATER LEVELS & FLOWS

Water quantity is inextricably connected to ecosystem health and ensuring that the wai has enough flow in all seasons to sustain the mauri of the wai, inclusive of the taonga ecosystems and the communities that the wai sustains.

Ngati Porou desire to have undisturbed flow within the Waiapu Catchment. A common Ngati Porou saying refers to the undisturbed flow of the Waiapu:

Ko Hikurangi te Maunga, ka tu tonu, ka tu tonu
Ko Waiapu to Awa, ka rere tonu, ka rere tonu
Ko Ngati Porou te iwi.

This saying describes the mana of Mount Hikurangi and the Waiapu River. The maunga (mountain) has always strong and will continue to stand strong, and the awa has always flowed and will continue to flow.

Water level and flow data are collected at several sites in the catchment.

- **Whangaokena ki Waiapu** – Poroporo River at SH35 Bridge and Poroporo River at Rangitukia Bridge
- **Pohautea ki Te Onepoto** – No sites.
- **Te Onepoto ki Rahuimanuka** – Waiapu River at Rotokautuku Bridge, Mangaoporo River at Tutumatai Bridge.
- **Rahuimanuka ki Mataahu** – Ihungia River at Ihungia Rd Bridge, Mata River at Pouturu Bridge, Mata River at Aorangi (Makarika Road).
- **Mataahu ki Kokoronu**i - No sites.

Summary flow statistics have been calculated for the Mata River at Pouturu Bridge, the confluence with the Tapuaeroa River, and the Waiapu River at the Rotokautuku Bridge at Ruatorea. The data used is for 1989 - 2012 as the record is nearly complete between these dates.

Site	Mean	Median	7 Day MALF	Upper Quartile	Lower Quartile	95%	Flushing flows /year
Mata River at Pouturu	25.1 m3/s	3.53m3/s	0.398 m3/s	9.795 m3/s	0.808m3/s	-	12.97
Mata River at Tapuaeroa Confluence	76.6m3/s	29.4m3/s	4.85m3/s	74.53/s	13.7m3/s	-	12.97
Waiapu at Rotokautuku Bridge	97m3/s	38.8m3/s	6.398m3/s	98.4m3/s	16.7m3/s	370m3/s	13.77

In addition, flow estimates for the following rivers are available from NIWA NZ River Maps National Estimate.

River	Mean	Median	MALF
Maraehara	1.63m3/s	0.726m3/s	0.215m3/s
Mangaoporo	2.19m3/s	1.12m3/s	0.369m3/s
Ihungia	0.916 m3/s	0.419 m3/s	0.165 m3/s

GROUNDWATER

There are many springs (puna) within the catchment, many of which have cultural and spiritual significance. Many people within the catchment rely on these springs to provide water.

There are 94 bores within the catchment recorded in the GDC bore database but currently no GDC monitoring bores. The Waiapu Catchment is thought to have a complex groundwater system similar to that found in Turanga – with multiple aquifers present. However no investigations have yet been undertaken to understand the location or extent of these.

WATER ALLOCATION

"Waimaori is a precious taonga, possibly the most precious, and we must always respect it, and its purpose which is to provide life. We must always be respectful in the way that we interact with it, in how we use it and in how we care for it"[5]

There are currently two consented water takes in the Waiapu Catchment Plan area – with most water used as permitted activities for stock water and domestic use. Permitted Takes are allowed up to 10m3/day of water without resource consent, and there is no register or monitoring of Permitted Takes.

There is no GDC water supply withing the Waiapu Catchment and adjacent coastal catchments. Aside from one community drinking water supply, most whanau must source their own drinking water and at their own expense get it transported to their homes.. Many whanau will source their domestic water supply from puna, streams and rivers as permitted water takes.

Reticulated water systems for stock water are utilised within in the Waiapu Catchment, however direct access of stock to rivers and streams is common.

The geothermal water at Te Puia Springs is a low temperature resource which has not been quantified in any way. Currently there are two known takes from this resource.

5 Ngati Porou Hui a Iwi - 2014

KUKUPANGO ME NGA RAWA KIRIKIRI RIVERBEDS & GRAVEL RESOURCE

"The river is our taonga and our life essence"[6]

Gravel extraction in the Waiapu catchment supplies aggregate for roading in the transport and forestry industries within the Gisborne region. Although there is significant aggradation of riverbeds within the Waiapu catchment (particularly in the Tapuaeroa River, Raparapaririki and Wairongomai tributaries), the material is not necessarily suitable for commercial gravel aggregate due to the geology of the source material.

Most of the gravel extraction activity in the Waiapu catchment has occurred in the lower reaches of the Mata River (the major southern tributary to the Waiapu River) due to the quality gravel resource found there and the proximity to State Highway 35. Recent riverbed cross-section surveys undertaken in the Lower Mata River indicate the riverbed has not been aggrading since 1997 and is in a stable state or degrading in some areas.

As of February 2020, rates of consented gravel extraction from the catchment are in the order of 450,000m3/year, with 150,000m3/year from the mainstem Waiapu River. This is in excess of the net bedload transfer for the mainstem which are assessed as being around 35,000 – 45,000m3/year.

Most of the gravel takes are located in two main locations – the Waiapu (40%) and Mata (41%). Most of the riverbed aggradation is actually occurring in the Tapuaeroa Valley. 8% of gravel takes are from the Tapuaeroa and 12% from the Mangaoporo.

Allocation of gravel resource has been identified as a priority issue to address within the Waiapu Catchment Plan. From the research, monitoring and analysis it is clear that there is significant over-allocation of the gravel resource in the Mata and Waiapu Rivers, and other rivers may also be over-allocated.

The preparation of a Gravel Management Plan is intended to be undertaken as part of the Waiapu Catchment Plan process.

The following table has been produced that summarises the outcomes of gravel bed monitoring undertaken by the Council.

River	Bed Level Trend
Waiapu River	Upper catchment gradually increasing, however lower catchment no significant trend
Mata River	Upper catchment decreasing, lower catchment increasing
Makarika Stream	Gradually increasing
Makatote and Kopuaroa Stream	Gradually decreasing
Paoaruku Stream	Gradually increasing
Mangaoporo River	Increasing
Tapuaroa River	Increasing
Waiorongomai Stream	Increasing, poor quality bed material
Poroporo River	Increasing, recently rate has slowed
Maraehara River	No significant trend
Manutahi Stream	Gradually decreasing
Mangaharei Stream	Gradually decreasing
Waitahaia	No sufficient data
Aorangiwai	No sufficient data

6 Harmsworth, G & Warmenhoven, T. (2002). The Waiapu Project: Maori Community Goals for Enhancing Ecosystem Health. New Zealand Association of Resource Management.

PAINGA O TE WAI
WATER QUALITY

"The health of the wai also determines our health"[7]

Water quality within the catchment affects the aquatic ecosystems within the catchment but also the people who rely on freshwater resources for domestic water supply and mahinga kai. Water quality needs to be restored, maintained and/or protected to ensure that aquatic ecosystems are abundant and diverse, the water is safe to drink and swim in, and that mahinga kai is safe to eat.

High water quality has been observed in undisturbed headwaters throughout the catchment however varied water quality is observed in the remaining areas of the catchment. Water quality is commonly impacted by suspended sediment and E.coli throughout the catchment. Whanau and hapu continually express their concern regarding the sediment moving through the awa and impacting the takutai moana.

MONITORING SITES

The Council undertakes monthly State of Environment (SOE) water quality monitoring at sites throughout the region. This involves a monthly collection of water samples using national standardised methodology. Samples are sent to a lab for analysis of a range of chemical, physical and bacterial parameters. Field data such as water temperature and clarity are recorded at the same time.

Biomonitoring sites are also included in the monitoring network. These sites are sampled annually in summer. A field assessment of the habitat quality, deposited sediment and density of periphyton (algae) is undertaken, and a sample of macroinvertebrates (water insects) and periphyton are collected and analysed in a laboratory.

The following sites make up the water quality monitoring network in the Waiapu Catchment.

Mataahu ki Kokoronui

- Waipiro Stream at Te Puia (Biomonitoring) (Coastal catchment)
- Ratahi Lake at SH35 Culvert (SOE)
- Mata Upper (Biomonitoring)

Rahuimanuka ki Mataahu

- Mata River at Pouturu Bridge (SOE)
- Ihungia River at Ihungia Road Bridge (SOE)
- Koeutumara Stream at Ihungia Road (Biomonitoring)
- Makarika Stream at Keelan Road (Biomonitoring)
- Mata River at Aorangi (Makarika Road) (SOE)

Te Onepoto ki Rahuimanuka

- Huitatariki Stream (Biomonitoring)
- Tapuaeroa River at Tapuaeroa Road (SOE)
- Waiapu at Rotokautuku Bridge (SOE)
- Waitekaha Stream at Tupuroa Road (Biomonitoring) (Coastal Catchment)
- Mangaoporo River at Tutumatai Bridge (SOE)
- Mangaoporo River at Mangaoporo Road (Biomonitoring))

Whangaokena ki Te Onepoto

- Poroporo River at Rangitukia Bridge (SOE + Gravel)

Pohautea ki Te Onepoto - – no sites

7 Pohatu, P. and Walker, K. (2021). Waiapu Koka Huhua Hapu Leading Te Mana o Te Wai. A mana whenua case study prepared for Poipoia Ltd. July 2021

WATER QUALITY

An analysis of the monthly water quality monitoring data is shown in Appendix 4. This includes a comparison with the NPS – FM attribute states. The NPS – FM attribute states provide a nationally consistent reference for a range of water quality and ecosystem health indicators. Contaminant levels are graded into a series of bands, with the A-band being the lowest contaminant level and indicating the best water quality for that attribute. Lower bands are indicative of progressively higher concentrations of contaminants and lower water quality.

D band represents the level at which the contaminant concentrations occur at levels that have been decided as unacceptable nationally – national bottom lines. Where a site is indicated as being below a national bottom line, actions are required to improve water quality over time.

Some sites have good quality for some indicators but poor water quality for others. This can be because of the nature of the contributing catchment – both its geology and land use.

WATER QUALITY OVERVIEW

Mataahu ki Kokoronui

There is one SOE site and two biomonitoring site in this Rohenga Tipuna. The SOE site is at Ratahi Lake (man-made) at Te Puia Springs. The monitoring data indicate that the lake is substantially eutrophied – with exceedingly high rates of nitrogen, ammonia and phosphorus. This lake falls below the National Bottom Line for these three nutrient attributes. While periphyton and cyanobacteria are not currently measured at this lake site, the nutrient data combined with the visual clarity data suggest that there are likely to be algal blooms and very poor aquatic ecosystem health also. The extent that the water quality is influenced by the geothermal water flowing into the lake is not known, but there are known discharges of wastewater which are the likely source of nutrients.

The Upper Mata biomonitoring site shows this stream is in excellent health – with all biomonitoring indicators showing that it is among the healthiest streams in the Tairawhiti Region.

The Waipiro Stream biomonitoring site shows the stream is in very poor health and below the National Bottom Line for macroinvertebrate health. Deposited sediment levels are also poor and below the National Bottom Line, however there is no evidence of nutrient enrichment with periphyton levels falling within the A band.

Rahuimanuka ki Mataahu

There are three SOE sites– Mata River at Pouturu, Mata River at Aorangi and Ihungia River at Ihungia Road and three biomonitoring sites - Mangaokura Stream, Koeutumara Stream and Makarika Stream, in this Rohenga Tipuna. The three SOE monitoring sites all show low levels of nutrients and periphyton, but all fall below the national bottom lines for visual clarity and E.coli.

In terms of aquatic ecosystem health ,the Mangaokura Stream is in good health, but the Koeutumara Stream, Makarika Stream and Mata River at Aorangi show ecosystem health is under stress. The Ihungia River and Mata River at Pouturu Bridge both fall below the national bottom line for MCI (numbers of insects), with the Ihungia River also falling below the National Bottom Line for QMCI (variety of insects), ASPM and Deposited Sediment.

Te Onepoto ki Rahuimanuka

There are three SOE sites and three biomonitoring sites in this Rohenga Tipuna. The SOE sites are Tapuaeroa River at Tapuaeroa Road, Waiapu River at Rotokautuku Bridge and Mangaoporo River at Tutumatai Bridge. The biomonitoring sites are Huitatariki Stream, Waitehaka Stream at Tupuroa Road and Mangaoporo River at Mangaoporo Road.

The Tapuaeroa Road site has only been monitored for two years so it is difficult to draw conclusions on its health. The Waiapu River SOE site is below the national bottom lines for visual clarity and E.coli but show low levels of nutrients.

In terms of ecosystem health the Huitatariki Stream is in good health but the Mangaoporo River and Waiapu River sites are impacted.

Pohautea ki Te Onepoto

There are no monitoring sites within this Rohenga Tipuna.

Whangaokena ki Waiapu

There is one SOE site in this Rohenga Tipuna – Poroporo River at Rangitukia Bridge. This site shows low levels of nutrients but is below the national bottom line for E.coli and Deposited Sediment. It is in poor health in relation to biomonitoring indicators, with sediment being the most obvious cause of this.

The monitoring data tables are attached at Appendix 4.

SWIMMING

Recreational use, particularly swimming within the Waiapu River and tributaries is a significant part of the Ngati Porou way of life. Many of the rivers and streams within the Waiapu Catchment are heavily used for swimming throughout the warmer months. Due to the lack of water supply for domestic use, awa are commonly used for bathing and in some instances laundry purposes during summer when water supply to homes becomes scarce. Swimming is an essential part of expressing the relationship between Ngati Porou and their awa. The ability for whanau to bathe or swim in their freshwaters is an indicator of activity within that area. Their ability to be in their water is a direct reflection of te painga o te wai and is also an indicator of the mauri. Due to the placement of landfills directly adjacent to the mainstem of the Waiapu River and the general decline in water quality, many locals now prefer to swim in the tributaries where water quality is higher. However due to the close proximity to the Ruatoria community and easy access, the Waiapu River at the SH35 bridge remains a popular swimming spot. Data for E. coli (a measure of water quality for swimming) are shown in the tables below.

KEY: Red = D Band | Dark Orange = C Band | Yellow = B Band | Green = A Band

Whangaokena ki Te Onepoto

Attribute	Poroporo at Rangitukia Bridge
E.coli cfu/100mL	95th Percentile 890
E.coli) cfu/100mL	Median 250

Te Onepoto ki Rahuimanuka

Attribute	Tapuaeoroa River at Tapuaroa Road (2 years data)	Waiapu River at Rotokautuku Bridge	Mangaoporo River at Tutumatai Bridge	Huitatariki Stream	Waitehaka Stream	Mangaoporo River at Mangaoporo Road
E.coli cfu/100mL	95th Percentile unable to be calculated	95th Percentile 1437	95th Percentile 156	Not monitored		
E.coli) cfu/100mL	Median 18	Median 78	Median 54			

Rahuimanuka ki Mataahu

Attribute	Mata River at Pouturu Bridge	Mata River at Aorangi	Ihungia River at Ihungia Road	Koeutumara Stream at Ihungia Road	Makarika Stream at Keelan Road	Mangaokura Stream
E.coli cfu/100mL	95th Percentile 594	95th Percentile 618	95th Percentile 1180	Not monitored		
E.coli) cfu/100mL	Median 174	Median 50	Median 155			

POTENTIAL CONTRIBUTORS TO WATER QUALITY & ECOSYSTEM DEGRADATION

There are several issues in the Waiapu Catchment Plan area that are negatively affecting water quality. The main drivers for degraded water quality are sediment and E.coli. The aquatic ecosystem health results reflect the degraded water quality and habitat. The following are key contributors to the degraded water quality. In some parts of the catchment (eg Rototahi Lagoon) nutrients are also a concern.

Sediment

The Waiapu catchment is known internationally for its soft sedimentary geology, and crushed geology resulting from the nearby Hikurangi subduction zone. In much of the catchment plan area the land is severely erosion prone, with some of the most severe gully erosion in the world. This transports vast amounts of sediment into the streams and rivers.

- Activities such as gravel abstraction and crushing, vehicle and stock crossings, culvert, track, road and dam maintenance and construction are all potential sources for sediment to enter waters and can have particularly significant impacts on smaller streams and rivers.
- Much of the Waiapu catchment is planted with exotic forestry – largely established as a way of reducing the slipping and erosion of the land. When forestry is harvested on these very erosive lands, especially clear fell harvest, large amounts of sediment are contributed to streams and rivers. Sediment mobilisation following clear fell forestry harvest is likely a large contributor to sediment loads in the catchment plan area.

E.coli

- High levels of E.coli in the catchment are likely to be mostly driven by stock access directly to the waterways from paddocks and at stock crossings. Other sources of e.coli are yet to be investigated.

Nutrients

- Nutrients are generally contributed by fertiliser, animals and wastewater. While in most of the catchment nutrient levels are low, in the Ratahi Lagoon they are very high. Wastewater discharges from the hospital and septic tanks at Te Puia Springs are thought to be the source.

Ecosystem Health

- Ecosystem health is a more holistic measure of water quality and captures many parameters such as sediment, shade, nutrient and periphyton levels. These combine to drive the overally ecosystem health metrics. The main influences are land use (eg loss of stream shade, increased areas of exposed sediment, reduced catchment vegetative cover and nutrient inputs). In the Waiapu Catchment the poor ecosystem health will be strongly influenced by the amount of sediment in the rivers.

GAPS IN MONITORING DATA

Water quality and ecosystem health is assessed at representative rivers across Tairawhiti as it is not feasible or affordable to collect this information everywhere. In developing catchment plans the best available information is used – including applying relevant and applicable information from similar catchments elsewhere.

As the catchment planning progresses, key information gaps will be identified and programmes to collect the information will be put in place to help inform future versions of the catchment plan.

Potential information gaps area identified below – though not all of this is needed to develop the first Waiapu Catchment Plan.

- Water quality data for coastal catchments flowing into the sea
- Hydrology monitoring data for the coastal catchments flowing into the sea
- Continuous dissolved oxygen data to enable grading against NPS- FM attribute states
- Monthly periphyton monitoring data at water quality sites
- Monthly deposited sediment data at water quality sites
- Fish data to a level enabling calculation of the Fish Index of Biotic Integrity for the catchment area.
- Mapping of all wetlands down to a size of 500m2

Gisborne District Council will work with Ngati Porou and the community to determine the best way to fill data gaps that aligns with statutory requirements as well as Ngati Porou and community values and aspirations.

AQUATIC ECOLOGY

Anecdotal evidence from whanau and hapu describes the significant decline in native freshwater fish species within the Waiapu Catchment and adjacent coastal catchments. Most people have attributed the decline of these species to the extreme sediment loads moving through the catchment. According to local knowledge, the following freshwater fish species were once abundant throughout the Waiapu Catchment:

- Inanga;
- Kokopu;
- Lamprey;
- Longfin eel;
- Shortfin eel;
- Freshwater crayfish; and
- Grayling.

However, now the presence of the above species is very limited. Lamprey are no longer found in the Waiapu Catchment and Grayling are now extinct. Gisborne District Council and Te Runanganui o Ngati Porou will look to undertake further investigation into the fish species present and their abundance within the Waiapu Catchment and adjacent coastal catchments. These investigations must take into account previous work undertaken as well as the anecdotal evidence of whanau and hapu as well as community values.

MAHINGA KAI

Many Ngati Porou cultural practices and customs, tikanga and kawa, have been shaped by the environment – particularly around food gathering. Each hapu or whanau typically manage and source food from their respective kapata kai (food cupboard) within their own takiwa. Typically, our kai gatherers are the kaitieki over those particular resources.

A food source is a great indicator of mauri within an area. The ability for whanau to gather kai from their kapata is an indicator of activity within that area. The abundance and health of the kai an indicator of the mauri. The Waiapu River, tributaries and wetlands within the catchment have supplied the Ngati Porou people with many foods overtime. Traditional foods were once heavily relied on by whanau as a sole source of food, particularly tuna which was considered the staple diet of many Ngati Porou whanau.

The abundance of food sources within the Waiapu Catchment have been recorded in many waiata, moteatea, whatatauaki and korero tuku iho. These food sources that were once plentiful have now significantly decreased in abundance throughout the catchment. Whanau and hapu have observed the sediment from the Waiapu and adjacent coastal catchments has had a huge impact on the kaimoana. The depletion of mahinga kai species due to poor management and/or decline in the state of the environment has been linked to the decrease of knowledge and awareness of our mahinga kai practices.

Carrying out mahinga kai practices is an essential way of intergenerational transfer of knowledge of our traditional practices and values. There were once many traditional food gathering practices that locals would follow which no longer occur as a result of the depletion of these food sources.

REFERENCES

Easton, L., Alipin, J. and Roil, H. (2019). **State of the Waiapu Water Resources. Environmental Monitoring and Science Report.** Prepared for Gisborne District Council.

Harmsworth, G & Warmenhoven, T. (2002). **The Waiapu Project: Maori Community Goals for Enhancing Ecosystem Health.** New Zealand Association of Resource Management.

MPI, (2012). **Waiapu River Catchment Study.** Report prepared by SCION for Ministry of Primary Industries. November 2012.

Pohatu, P. and Walker, K. (2021). **Waiapu Koka Huhua Hapu Leading Te Mana o Te Wai.** A mana whenua case study prepared for Poipoia Ltd. July 2021

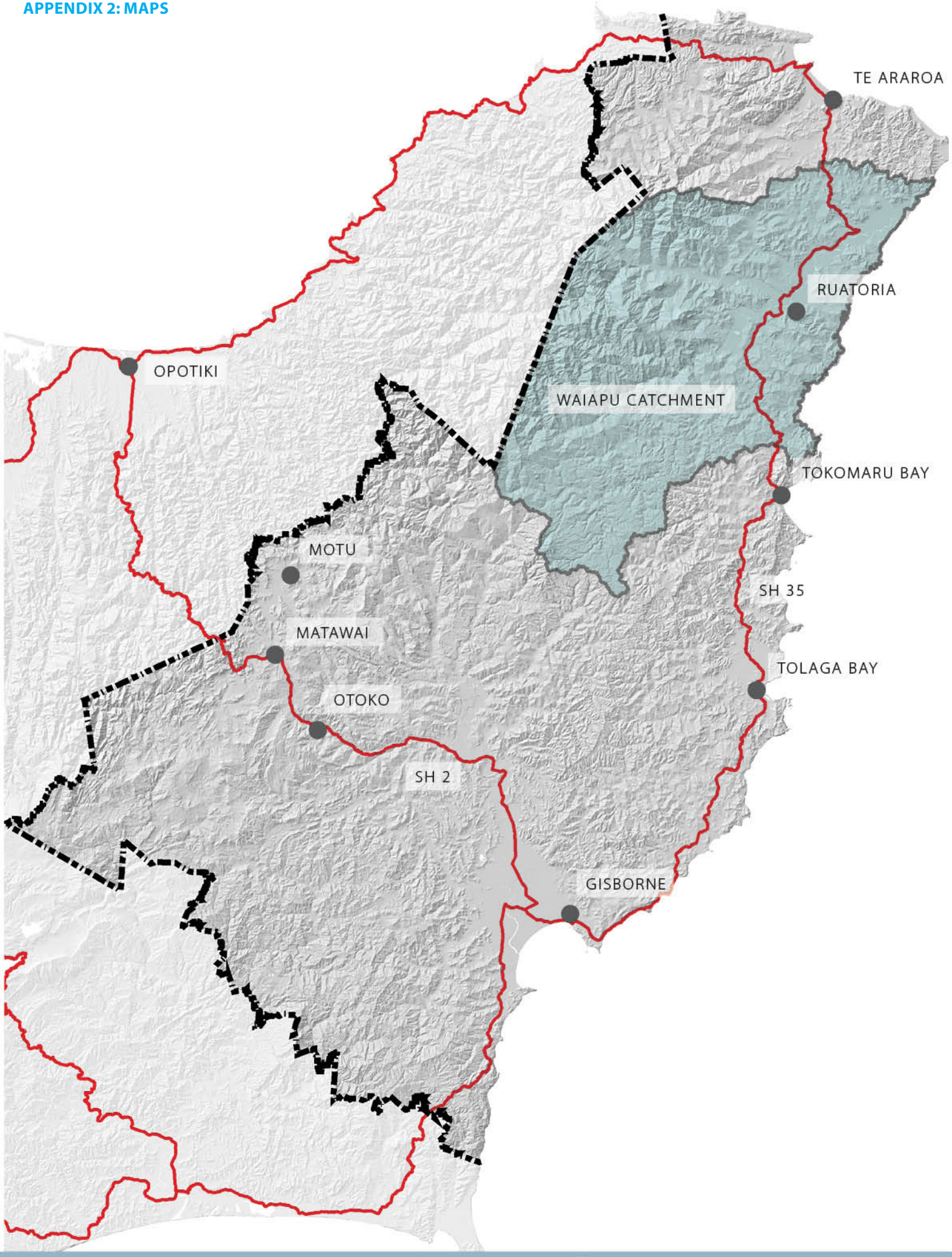
Tunnecliffe, J. and Baucke, D. (2021). **Bedload Transport and Gravel Supply in the Waiapu Catchment. Steps toward a framework for managing gravel extraction.** University of Auckland, School of Environment. April 2021

Walling, D.E.; Webb, B.W. (1996). **Erosion and sediment yield: A global overview.** IAHS Publication 236. Proceedings of the Exeter Symposium, July 1996, University of Exeter, England. Pp. 3–19.

NGA TAPIRITANGA APPENDICES

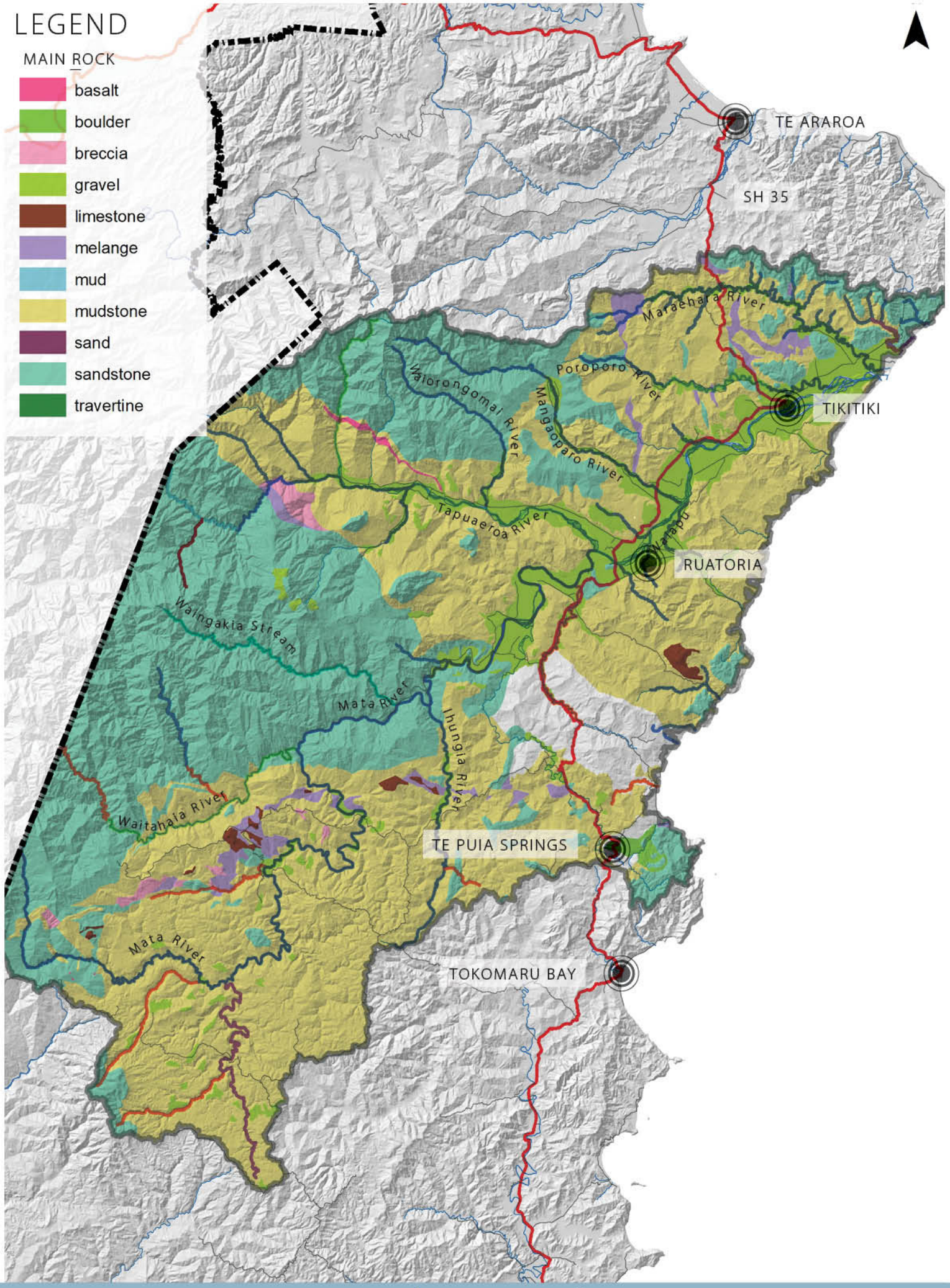
APPENDIX 1: GLOSSARY OF TERMS

Action Plan	A part of the Catchment Plan which identifies how we are going to get attributes that are degraded from their current state to where we want them to be. Can include rules or other types of methods.
Attribute	A water quality indicator used to help us understand if the values of the water are being provided for e.g. the amount of E.coli bacteria in the water tells us if it is safe for swimming. This will be measured in a standard way. E.g. E.coli is measured in cfu/100 mL of water.
Target Attribute state	What we want the water quality to be like for that indicator.
Baseline state	What the water quality was like on 7 September 2017.
Catchment Plan	A regional plan under the Resource Management Act that determines how freshwater and land uses within specific catchment areas are managed.
Degraded	Water quality that is below a national bottom line or is not achieving a target attribute state.
Degrading	Water quality that is showing a deteriorating trend.
Environmental outcome	A desired outcome that a regional Council identifies for a freshwater value and then includes as an objective in its regional plan.
Freshwater Management Unit (FMU)	A management area (e.g. site, river reach, water body, part of a water body or groups of water bodies). They are often quite big – for example the Waipaoa Catchment has 4 Freshwater Management Units.
Freshwater values	The sorts of things and uses we value waterbodies for. e.g. ecosystem health, human contact, threatened species, mahinga kai, fishing, animal drinking water.
Limit	A type of rule for water. Can be the amount of pollutant allowed in the water e.g. amount of nitrate nitrogen, or a flow limit –e.g. a minimum flow below which water takes cannot occur.
National Bottom Line	An attribute state that we are not allowed to let water quality fall below.
Outstanding waterbody	A water body or part of a water body that has outstanding values and is identified for special protection.
Over-allocation	Where resource use exceeds a limit or where an FMU is degraded or degrading.
Primary contact site	An area where lots of people swim or do things which mean they are likely to end up drinking the water or getting spray in their mouth.



WAIAPU CATCHMENT PLAN
CATCHMENT ANALYSIS

REGIONAL CONTEXT

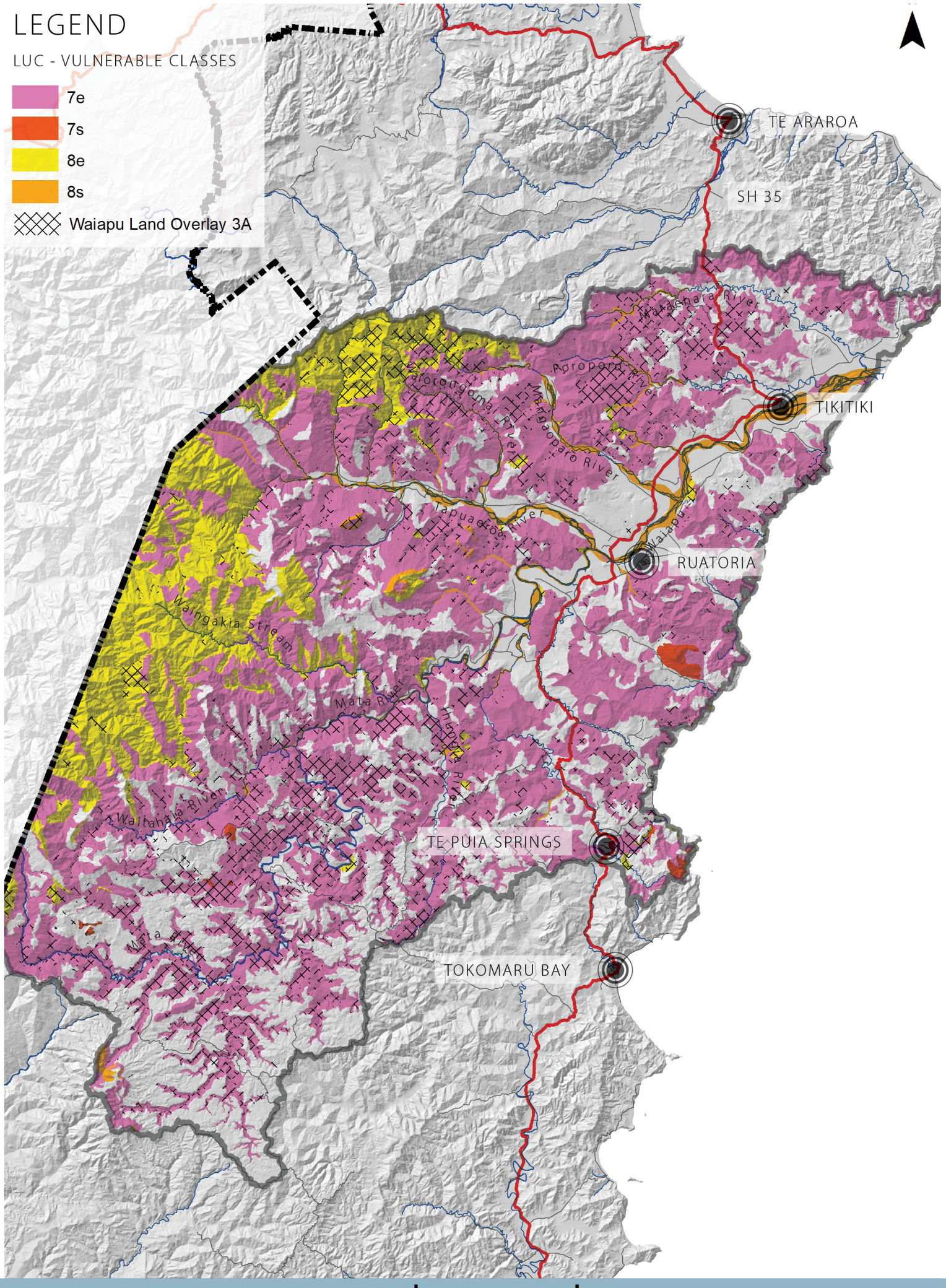


WAIAPU CATCHMENT PLAN

CATCHMENT ANALYSIS

GEOLOGY

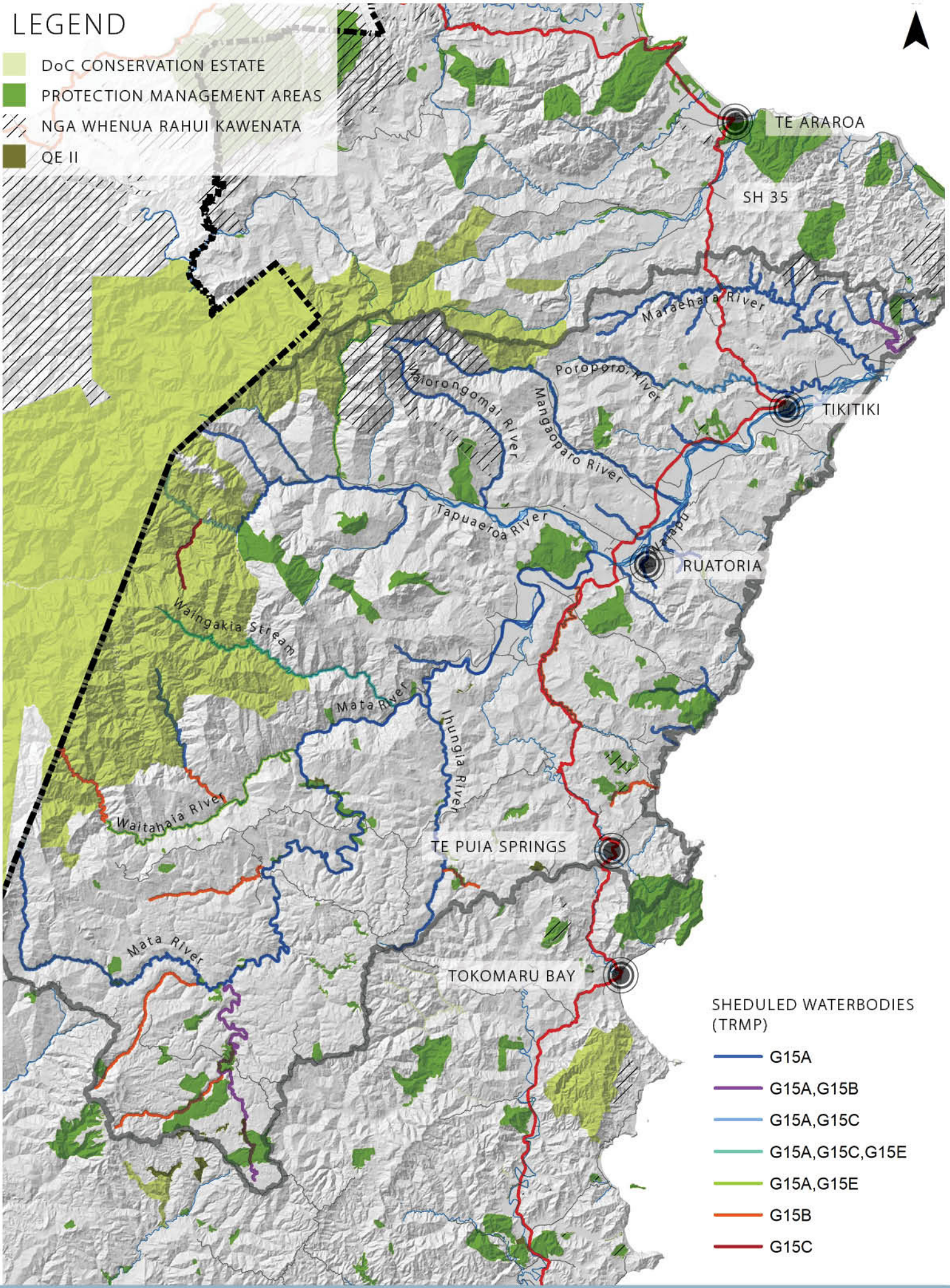
0 3 6 12 Kilometers



WAIAPU CATCHMENT PLAN

CATCHMENT ANALYSIS

LANDUSE CAPABILITY

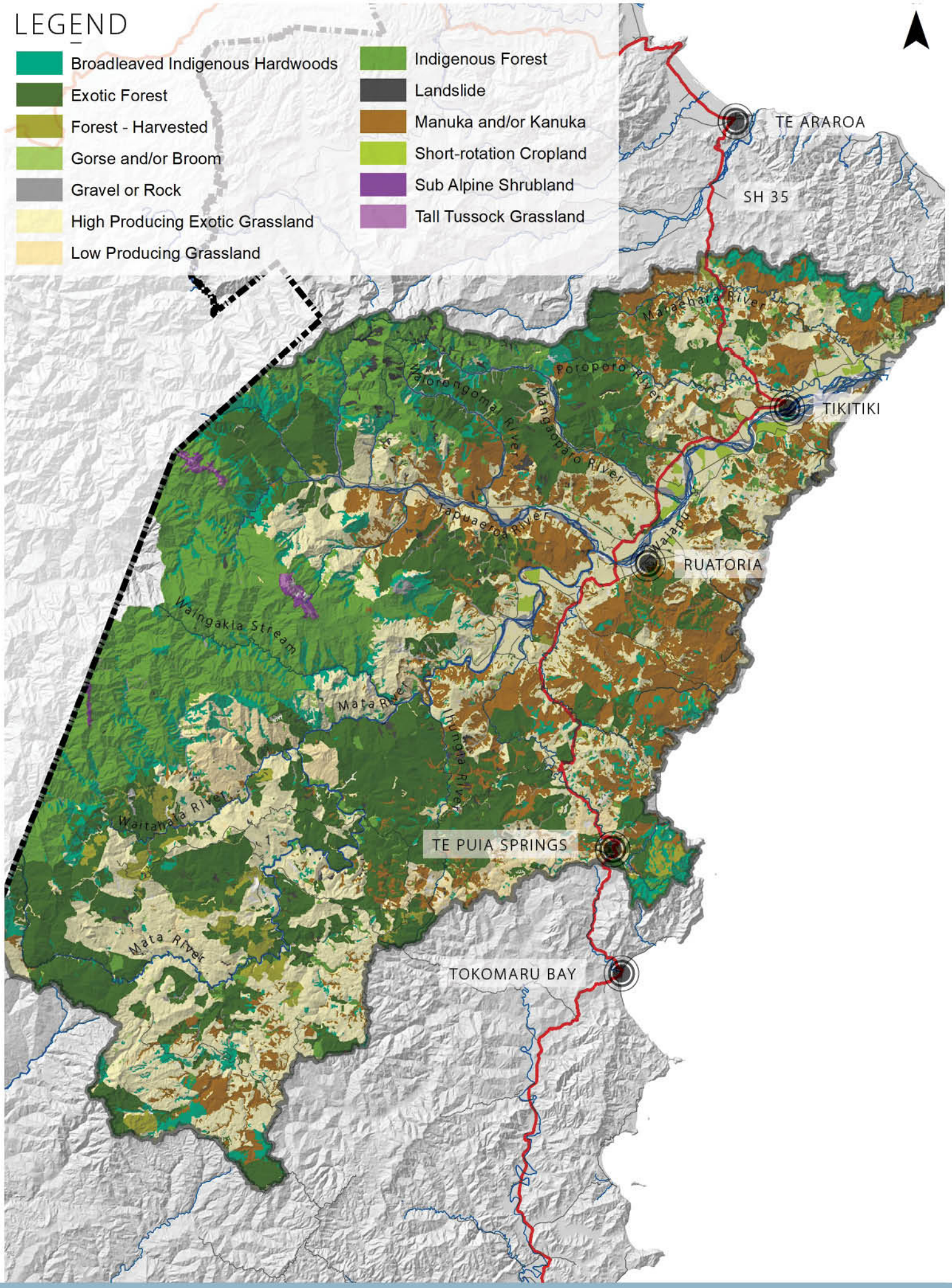


WAIAPU CATCHMENT PLAN

CATCHMENT ANALYSIS

NATURAL VALUES

0 3 6 12 Kilometers

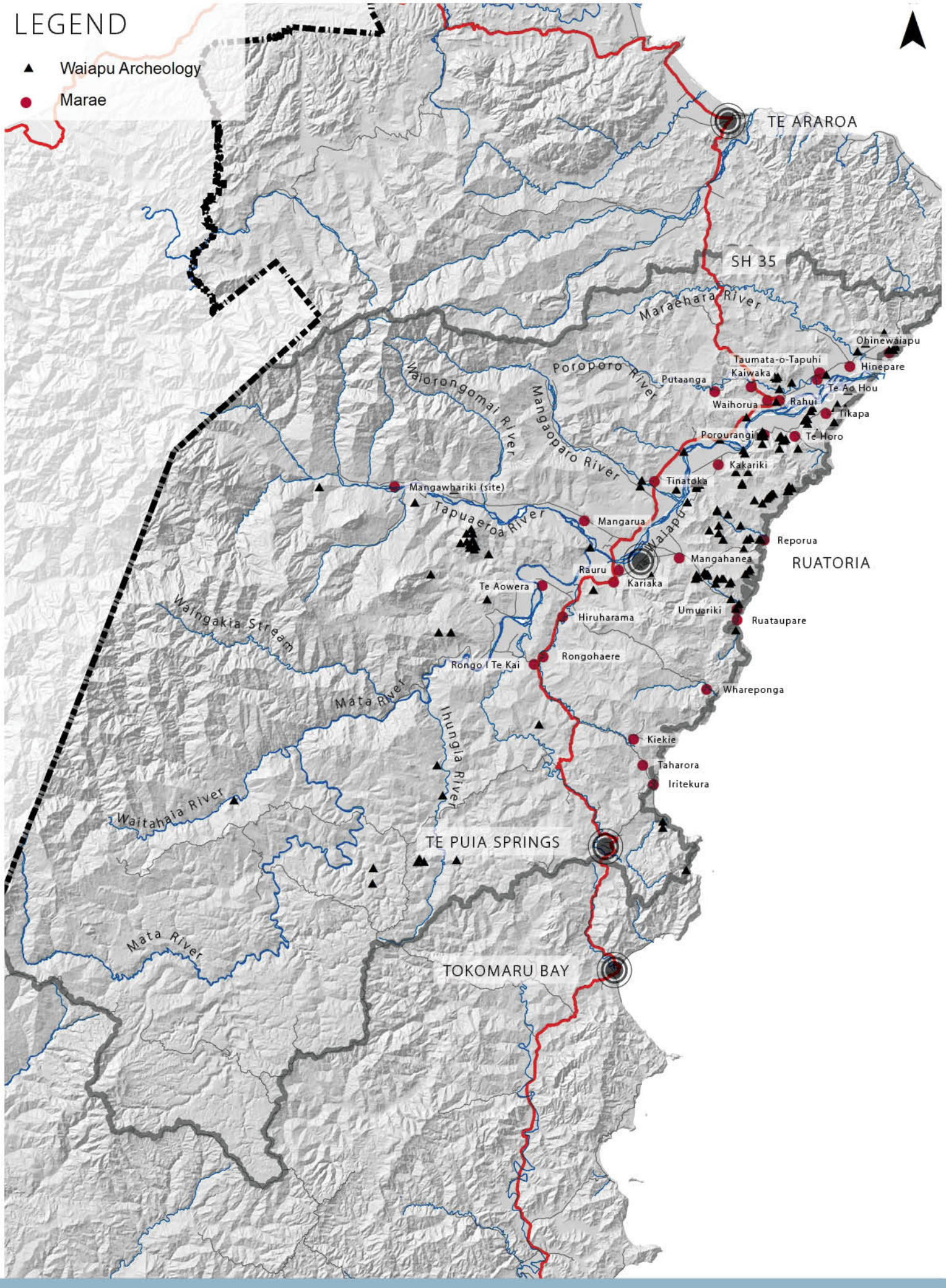


WAIAPU CATCHMENT PLAN

CATCHMENT ANALYSIS

LAND CLASS DATABASE

0 3 6 12 Kilometers



WAIAPU CATCHMENT PLAN

CATCHMENT ANALYSIS

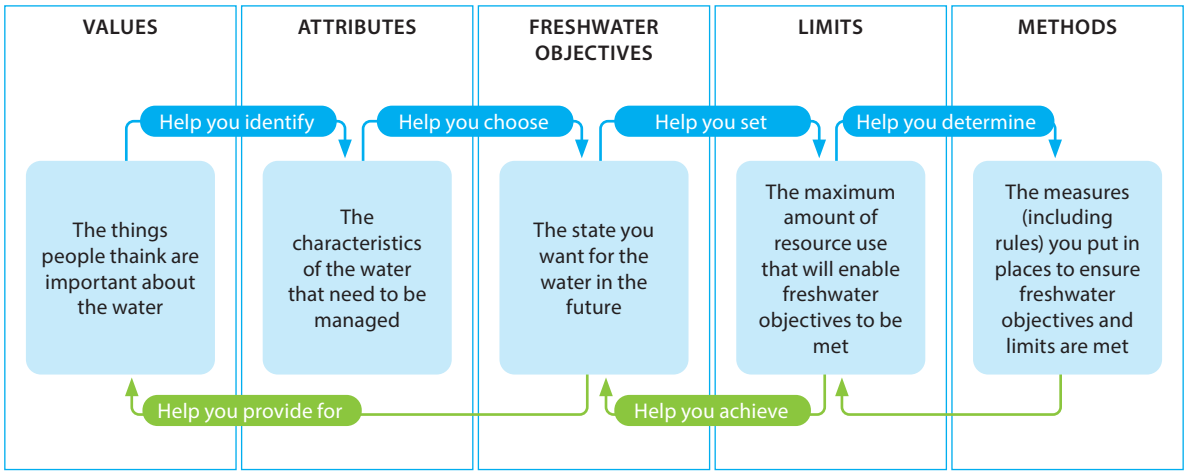
PLACES

0 3 6 12 Kilometers

APPENDIX 3 - NATIONAL OBJECTIVES FRAMEWORK

The Waiapu Catchment Plan will identify the objectives, limits and targets that apply to waterways (or groups of waterways) within each catchment area. They will also set out any action plans and projects to achieve the objectives, limits and targets.

The NPSFM provides a framework that must be followed to achieve this - the National Objectives Framework (NOF). It is intended to be a nationally consistent approach to setting freshwater objectives, with flexibility for recognising local circumstances. The NOF must also be viewed through the lens of Te Mana o te Wai and includes a compulsory value of Mahinga Kai ('to work the food' and relates to the traditional value of food resources and their ecosystems, as well as the practices involved in producing, procuring, and protecting these resources).



The following summarises the steps required to meet the NOF:

- Identify Freshwater Management Units (FMU) – whether and how we split up the Catchment Plan area for management;
- Within each FMU identify:
  - monitoring sites including those relating to Maori freshwater values
  - swimming sites;
  - locations of habitats of threatened species;
  - outstanding waterbodies;
  - natural inland wetlands;
  - Freshwater values for each FMU (e.g. ecosystem health, human contact, threatened species, mahinga kai, fishing, animal drinking water);
- Set environmental outcomes for each value – and the objectives to be included in the Regional Plan that arise from these;
- Identify water quality attributes for each value;
- Identify the baseline states for each attribute;
- Set target states for attributes – which become rules in the Regional Plan;
- Set target states for environmental flows and water levels – which become rules in the Regional Plan;
- Set limits for water quality attributes – which become rules in the Regional Plan;
- Develop Action Plans to achieve environmental outcomes.

The NPSFM also requires that long-term visions are developed for each catchment. This includes;

- Setting ambitious but achievable goals.
- Identifying a timeframe to achieve those goals.
- Identify the catchment approach to giving effect to Te Mana o Te Wai.
- Identify any Maori freshwater values that apply.

APPENDIX 4 - WATER QUALITY DATA

KEY: Red = D Band / Below National Bottom Line | Dark Orange = C Band | Yellow = B Band | Green = A Band

Mataahu ki Kokoronui

Attribute	Ratahi Lagoon	Waipiro Stream at Te Puia	Mata Upper
Periphyton	Not monitored	35.70	7.0
Cyanobacteria	Not monitored	N/A	N/A
MCI	N/A	89.52	140
QMCI	N/A	4.1	7.88
ASPM	N/A	0.17	0.7
Deposited sediment %	N/A	45.1	7.2
Total P mg/L	Median 0.04 95th Percentile 0.07295		
Ammonia mg/L	Median 0.02 Annual maximum 0.76		
Total N (lakes) mg/L	Median 1.00 95th Percentile 2.72		
Visual Clarity cm	Median 44.25	Not monitored	
DO summer 1 day minimum mg/L	7.27		
E.coli cfu/100mL	95th Percentile 115		
E.coli cfu/100mL	Median 6.3		

Rahuimanuka ki Mataahu

Attribute	Mata River at Pouturu Bridge	Mata River at Aorangi	Ihungia River at Ihungia Road	Koeutumara Stream at Ihungia Road	Makarika Stream at Keelan Road	Mangaokura Stream
Periphyton	32.7	30.7	21.6	15.5	26.6	4.8
MCI	89.9	103	88.9	100	113	125
QMCI	5.04	6.21	4.17	5.28	5.16	7.46
ASPM	0.38	0.43	0.26	0.32	0.45	0.63
Deposited sediment %	3.96	8.18	35	22.1	13.2	0
DRP mg/L	Median 0 95th Percentile 0.01575	Median 0.01 95th Percentile 0.02025	Median 0 95th Percentile 0.0140			
Ammonia mg/L	Median 0.01 Annual Max 0.11	Median 0.01 Annual Max 0.0212	Median 0.01 Annual Max 0.0534			
Nitrate mg/L	Median 0.06 95th Percentile 0.291	Median 0.07 95th Percentile 0,274	Median 0.02 95th Percentile 0.4155			
Visual Clarity cm	Median 0.23 Some few records >1m in summer	Median 0.30 Some few records >1m in summer	Median 0.615		Not monitored	
DO summer 1 day min mg/L	8.2	8.825	7.0			
E.coli cfu/100mL	95th Percentile 594	95th Percentile 618	95th Percentile 1180			
E.coli) cfu/100mL	Median 174	Median 50	Median 155			

Te Onepoto ki Rahuimanuka

Attribute	Tapuaeoroa River at Tapuaroa Road (2 years data)	Waiapu River at Rotokautuku Bridge	Mangaoporo River at Tutumatai Bridge	Huitatariki Stream	Waitehaka Stream	Mangaoporo River at Mangaoporo Road
Periphyton	Not monitored	5.5	9.5	15.3	46.8	13.9
MCI		98	98	129	96.92	98
QMCI		6.22	7.04	7.91	5.6	5.38
ASPM		0.49	0.48	0.65	0.45	0.41
Deposited sediment %		14.56	1.01	0	18.9	0.98
DRP mg/L		Median 0.01 95th Percentile 0.01975	Median 0.01 95th Percentile 0.013	Not monitored		
Ammonia mg/L	Median 0.006 Annual Maximum 0.035	Median 0.01 Annual Maximum 0.043	Median <0.01 Annual Maximum 0.065			
Nitrate mg/L	Median 0.026 95th Percentile unable to be calculated	Median 0.07 95th Percentile 0.2215	Median 0.07 95th Percentile 0.1834			
Visual Clarity cm	Median 0.54 Some records>1m in summer	0.29 some few records >1m in summer	Median 0.47 In summer is >1m			
DO summer 1 day min mg/L	8.376	8.29	8.645			
E.coli cfu/100mL	95th Percentile unable to be calculated	95th Percentile 1437	95th Percentile 156			
E.coli) cfu/100mL	Median 18	Median 78	Median 54			

Whangaokena ki Te Onepoto

Attribute	Poroporo at Rangitukia Bridge
Periphyton	9.4
MCI	103
QMCI	5.03
ASPM	0.31
Deposited sediment %	36.43
DRP mg/L	Median 0.01 95th Percentile 0.013
Ammonia mg/L	Median 0.01 Annual Maximum 0.076
Nitrate mg/L	Median 0.06 95th Percentile 0.209
Visual Clarity cm	0.63 in summer is >1m
DO summer 1 day min mg/L	7.8
E.coli cfu/100mL	95th Percentile 890
E.coli) cfu/100mL	Median 250

WHAKAPA MAI
CONTACT US

15 Fitzherbert Street,
PO Box 747,
Gisborne 4010,
New Zealand

www.gdc.govt.nz

service@gdc.govt.nz

0800 653 800 or
(+64 06) 867 2049

www.facebook.com/GisborneDC

Our customer service is available to help with any enquiry. Our business hours are Monday to Friday 8:30 – 5pm.

Te Kaunihera o Te Tairāwhiti
GISBORNE
DISTRICT COUNCIL